

HURST SPRAYING MACHINES



MADE BY
H. L. HURST MANUFACTURING CO.
CANTON, OHIO

Spraying Machinery Experts

High-Grade Sprayers

Special Low-Prices

22 Year's Experience

OUR HONESTY

THE following article was published by the Practical Farmer, one of the oldest and best farm papers: "We the publishers of this paper are acquainted with the H. L. Hurst Mfg. Co., and know their methods **are perfectly honest—they do exactly as they agree.** On their Free Trial you need send no money, and you are in no way bound to pay for sprayer unless you decide to keep it after trial, or if you take advantage of their Cash-with order plan you save a little and it is just as safe for you, as **your money will be promptly refunded without question if you return any sprayer after trial.**"

We will be "honest with you"—

We believe you will be "honest with us."

DOUBLE YOUR CROPS

A Sprayer for Every Purpose
On Free Trial. Order Now

DON'T WAIT AND BE TOO LATE

SPRAYOLOGY



HERE is no need for us to tell the American or Canadian farmer nowadays that there is an "absolute necessity" for spraying. If the fruit grower and farmer would preserve his truck, small fruits, apples, potatoes, vineyards and other money-makers, from the ravages of scale, blight, rot, etc., he must apply at the proper time spraying solutions that will cut short the life of these profit-eaters. However, we have prepared some forceful, straight-from-the-shoulder arguments for spraying. We have not only done this, but have given the remedies with exact formulas so that the farmer can **easily prepare them himself.**

Another thing we realize. Every farmer and fruit grower does not always have ready money with which to purchase the implements which he recognizes would be an absolute necessity for making his prospective crop a financial success. Having been farmers ourselves and sympathizing with the situation, we have for several years worked on a "give and take" plan, which enables the buyer of our machines to **save and increase his crop and pay us for our machines out of the extra profit.**

Our whole plan is explained in detail on the following pages of this catalog. We believe in the "honesty" of the average farmer. We have not been disappointed in the past in trusting him, and do not expect to be in the future. Thousands of our machines have been placed in the hands of fruitmen and farmers all over the United States. In very few instances do we lose any money from these trustworthy workers of the soil.

In the following pages we have described by word and illustrations our various styles of spraying machines. You will notice their adaptability; the care with which they are put together; the high-quality of the materials; the simplicity of their operation, and the ease with which they are adapted either to truck growing or small fruit raising; for orchards, for park use, for white-washing, painting, and any other use to which a sprayer can be put.

H. L. HURST MANUFACTURING CO.,

Established 1887.

Canton, O., U. S. A.

We can furnish you anything you want in the spraying machinery line, or any form of equipment. We show, herein however, only what we have found by our long experience to be best and most economical for the user.

If in doubt as to just what you require, tell us what crops you have to spray, or anything you want to know—we'll gladly advise you.

"FREE TRIAL"—NOT A CENT IN ADVANCE

THERE are "no strings" to our agreement,—We will ship you the sprayer "without a cent in advance," you need sign no notes before trial, there is no bank deposit required. We have such confidence in our sprayers that we leave it all to you for we know that if you get a machine on any of the plans of the order blank you will not want to return it.

Three years' selling in this way has proven that a really good machine can be sold on the liberal terms we offer you.

OUR EASY PAY PLAN

We Will Ship You a Sprayer on the following Plans:

- No. 1. Time plan—see trial agreement. No interest if paid at maturity.
- No. 2. A small amount with order and a small amount each month until paid. No interest.
- No. 3. Cash at "end of trial"—A liberal discount allowed on this plan.
- No. 4. Cash with order—same trial privilege, **money promptly refunded** if machine is not satisfactory, and you return it to us. We pay freight in advance, and allow a liberal discount on this plan.

Use the "trial agreement" with this catalog in sending in your order. If you cannot find the trial agreement form write us. We will mail you another at once.

WE PAY FREIGHT in advance when cash is sent with the agreement. If you accept plan 1 or 2 you will pay the freight when the Machine arrives, and send us the Freight Bill, and we will place the amount to your credit the same as so much cash. On plan 3, deduct freight in sending in remittance.

This offer applies to all points east of the Mississippi River and north of the south boundary line of Tennessee and North Carolina. To points west of the Mississippi, south of Tennessee and North Carolina and to Canada, we pay or allow one-half of the charges.

FIVE-YEAR-GUARANTEE

We guarantee all "HURST" Sprayers to be made of the best of material for the purpose, and to do **well any work that a sprayer may reasonably be expected to do.** We further **guarantee** them to be exactly as we represent them in our advertisements, letters, circulars and catalog. We will replace free of charge any parts showing defect of material, or workmanship, within **5 YEARS.**

The H. L. Hurst Mfg. Co.

This guarantee protects you whether you pay cash or not. If within ten days of purchase you find that any HURST Sprayer does not come up to our claims you can return it and we will pay all costs of transportation both ways. Moreover the guarantee protects you for five years.

If you desire more information, testimonials, etc., send us a post card with your name and address stating which machine you are interested in. They are free to you.

THE HURST FITZ-ALL BARREL SPRAYER

HAPPILY named was this style of sprayer. It fills the demand for a pump, at a reasonable, low price, which will fit on any barrel, tank, or other water-tight vat. It can be attached to the top of a barrel when lying horizontal, or it can be placed on the head either at the side or in the center. You do not have to hunt around for a barrel to fit the pump—

these solutions, whether salt, hot lime, whitewashing solutions, sulphate of copper, or what not, can ruin a Fitz-All. Whether you wish to spray your small fruits, potatoes, truck; whether you desire it in your orchard or for your shade trees; whether you paint your out-buildings, or spray your hen-house, dairy barn, or pig pens, the Fitz-All is always ready and adaptable to every demand.

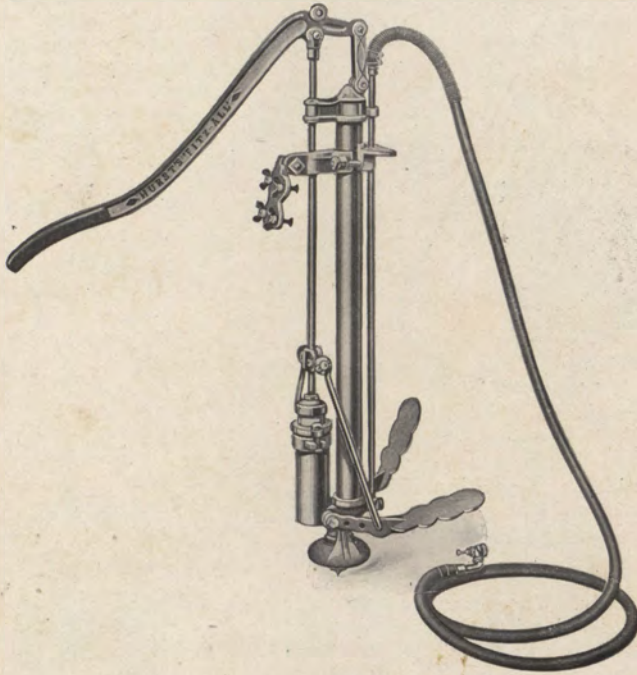


Photo No. 2.
FITZ-ALL SPRAYER (OUTFIT NO. 1).

instead, the pump fits the barrel. If wanted for use on a wagon, it will fit any tank up to 36 inches deep.

What it Will Spray.—In our spraying calendar in this catalog, we have not only given formulas for the combinations of chemicals which are not liable to hurt the average spraying pump, but we have included everything which would be needed by the operator at any season. None of

How It Is Made.—If the reader will kindly follow the letters marked on the outline cut, he will be able to follow the explanation of this machine with clearer intelligence. (See page 5.)

The reasons why the Fitz-All outlasts, out-pumps and out-sprays many of the poorer kinds are evident. Parts exposed to chemicals, as plunger, plunger case, strainer valves and valve

SIMPLE, POWERFUL, EFFECTIVE

seats, are of solid brass. The valves are brass specially hardened for the purpose.

The brass plunger and plunger case are marked "F" and "G" in the cut. The agitators marked "I" and "J" can



Photo No. 1.

be swung into any position, whether the pump is on end or side. Their movements are so rapid and constant that they keep the mixture in continuous agitation, sending it through the hose uniformly. The strainer cleaner marked "D" is a kind of third agitator, which cleans the fine sieve strainer at every stroke of the handle. This works at the extreme bottom of the pump and surrounds the pump case. It keeps large grains of lime or any form of sediment from entering the strainer. It needs no attention. Cannot get out of order and is much superior to a brush. We warn you against brush cleaning devices, because they not only wear out, but the broken bristles get wedged into the fine sieve. This would not be so bad but a worse condition happens when these same bristles are forced into the nozzles and

clog them. This is a great nuisance and causes no end of trouble and discouragement to the operator.

Our No-wear-out Valves.—These are made of specially hardened brass and are removable. We believe this is the simplest and yet the strongest arrangement yet brought out. Many claim that the valves of their pumps may be easily gotten at, but unless you are a machinist you will find it difficult to remove them. Our valves, and in fact, all of the interior mechanism, may be quickly taken out and separated by hand. These ball valves are extremely hard and so differ from the soft kinds often sold. Valves which do not exactly fit the valve seat will leak and your pump is worthless. We guarantee the valves to last as long as you need a pump.

Full Brass Plunger.—This works in a brass case and is worth two or



Photo No. 6.

three of many of the styles of pumps sold today. It measures two inches in diameter and eight inches in length. No other pump has such a

HIGH PRESSURE—PERFECT AGITATION

plunger. The pump handle is easy to work because the stroke is short. Any 16-year-old boy can operate it with ease. Other pumps demand a

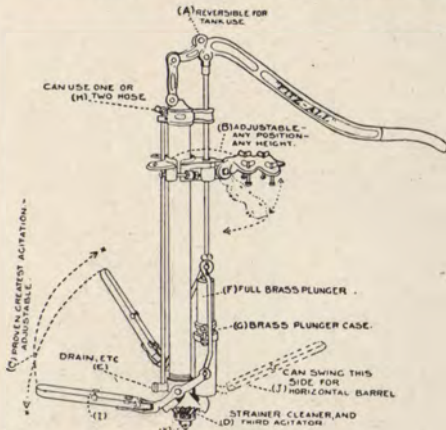


Photo No. 18.
Sectional View.

long stroke, and as many users have expressed themselves, "it is a man-killing job." Instead of having to bend the back for hours at a time in long sweeps, with the average length of arm, any man can make the two-inch strokes without bending his back but little. This handle is also reversible for tank use. (See hole at "A.")

High Pressure.—The Fitz-All develops 200 pounds pressure if worked to its capacity. With eighteen two-inch strokes of the handle per minute, it will carry easily 120 pounds pressure. (70 to 90 pounds is sufficient for any spraying operation.) No other pump that we know of can accomplish this.

Adjustments.—At "B" will be noticed our simple and adjustable brace which attaches to either side or head of barrel or tank. There are four bolts with thumb-screw heads, which are easily tightened. Any boy of 12 can put the Fitz-All on any tank or barrel. If to be mounted on a tank, all that is necessary is to reverse the handle (see "A" in cut) putting same upside down, thus you need simply to stand erect and push the handle back and forth, same as a thresher pump.

With any ordinary wrench you can remove the ball valves and all the in-

terior parts. Thus you do not need to purchase special tools.

Hose and Nozzle.—You can use one or two lines of hose with the Fitz-All and the pressure will be sufficient for every need. Our Improved Vermoral Nozzles surpass the old style in the wonderfully fine, fog-like spray which they deliver. This is really a mist, and when properly applied will penetrate through every part of the foliage, underneath the bark, and in all other places where the insect pests are hiding. It can be cleaned instantly by simply pressing against the limb of a tree, having push-button and needle-point cleaner governed by strong spring. It also has thumb-screws and cap may be easily removed, so that any part of the nozzle can be cleaned or repaired.

Ideal Agitation and Power.—From the above description it can be seen that the Fitz-All satisfies every requirement for the fruitman, gardener or farmer. Specially is it to be no-

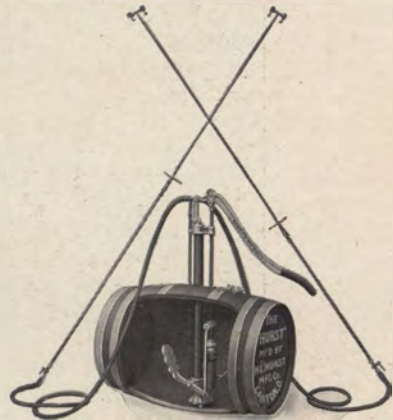


Photo No. 5.

ticed that the agitation and power developed are superior to many of the cheap, thrown-together affairs called "spray pumps." Everybody knows that rapid agitation is absolutely essential to successful spraying. If the copper or arsenical chemicals are not uniformly shaken up and distributed through the mixture; if kerosene emulsions are allowed to separate; if

HIGH QUALITY—LOW PRICE

the liquid comes out of the nozzle first as a weak solution and then a strong one, the caustic effect of the latter will burn the foliage and the weakness of the former will do no permanent harm to the pests that it touches. **We warn you against many of the weak pumps which are able to stir water to some extent, but do not keep the chemical mixtures hurriedly bubbling.**

The Fitz-All Wheel Outfit.—This is a very handy affair which can be

Sprayer complete with Agitators, 10 feet Hose, Hose Couplings and one Hurst Never-Clog Vermoral Nozzle. Price \$13.90. Mounted on good second-hand 30 to 60-gallon barrel, \$2.50 extra. New barrel, \$3.50 extra.

OUTFIT No. 2.—"Fitz-All" Wheel Outfit complete as shown in Photo No. 4 includes regular "Fitz-All" Sprayer, with 10 feet Hose, 8 feet Galvanized Iron Extension Rod with



Photo No. 4.
FITZ-ALL WHEEL OUTFIT (OUTFIT No. 2).

pushed anywhere as a cart. It consists of a 40-gallon oak barrel, mounted on steel wheels, which are 26 inches in diameter and have 3-inch tires.

**Our "Special Price" on "Fitz-All"
Sprayer.**

We Pay Freight—See page 2.

OUTFIT No. 1.—As shown in Photo No. 2 includes the "Fitz-All"

Drip-Guard, Double Never-Clog Nozzle, mounted on 32 to 60-gallon barrel on strong 26-inch iron wheels with 3-inch tire. Price, \$21.90. These prices subject to "cash discount," see trial agreement.

For extra attachments, barrels, etc., as shown in Photos Nos. 1, 5 and 6, see accessories on page 21.

CHEERY WORDS FROM USERS

A Few Letters from Users—We've Many More Like Them.

"BETTER THAN HE EXPECTED, DOES MORE THAN WE CLAIMED."

Cedarburg, Wis., June 30, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: I have today tried the "Fitz-All" Barrel Outfit whitewashing my barn. It is the best machine I ever saw. It is better than I expected and does all and more than you claim for it.

Yours truly,
HENRY KURTZ.

"WORKS EASY, SPRAYS HIGH TREES, NEVER CLOGS."

Mooresville, Ind., April 15, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: We received "Fitz-All" Barrel Sprayer complete and have given it a thorough trial on two acres of 20-year-old apple trees and it has done the work well, reaching the topmost branches of the 25 ft. trees, and is certainly a never-clog sprayer, as per your recommendation. The pump works so easily and with so little exertion that most any 12-year-old boy could work it.

Enclosed find freight bill for which credit me on account. I shall forward next monthly payment about May 1st, 1908.

Hoping you may receive this within due time, I am,

Yours truly,
VERNON PLUNKET.

"SPRAYED 60 LARGE APPLE TREES IN A DAY."

Fairview, Mich., May 3, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Dear Sirs: I have tried the "Fitz-All" Sprayer bought of you and it works to my entire satisfaction. I sprayed my orchard of about 60 apple trees in less than a day. Prepared the spray lime sulphur and salt in that time.

Yours respectfully,
D. D. SCHLABACH.

Myrtle Point, Ore., May 13, 1907.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: I have set up your Sprayer and sprayed 6 acres of apple trees, and can say that it is a high-grade sprayer, and does its work thoroughly; the trees were all sizes from 2 years to 30 years old.

Yours truly,
W. W. WHITTINGTON.

"UNEXPECTED HAS HAPPENED—SPRAYER A GRAND SUCCESS."

Spring Valley, N. Y., March 3, 1908.
The H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: Your Sprayer received yesterday. I put it up and done one large apple tree and you can say for me to the world at large, that the unexpected has happened. Your Sprayer is a grand success.

Enclosed find note as per your request, I remain,

Very respectfully,
JOHN DEIS.

"FIRST CLASS WORKMANSHIP—HIGHLY PLEASED."

Redford, Mich., June 18, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: Received the Sprayer Saturday and am highly pleased with it, as I find it to be of first class workmanship. Am pleased to recommend it to anyone interested in spraying. Shall furnish you names later.

Thanking you for past favors and hoping to hear from you soon, I remain,

Yours truly,
FRED. GLEASON.

"WORKS O. K., THROWS LARGE SPRAY."

Oxford, Mich., June 6, 1908.
Hurst Mfg. Co.,
Canton, O.

Dear Sirs: Enclosed find note for \$17.00 payable at Home Bank. Received Sprayer May 23rd., have given it a good thorough trial; works O. K. Throws as large a spray with two nozzles as ones in use here with four cluster. I would advise anyone in need of Sprayer to buy a Hurst.

Yours very truly,
ALLEN FULLER.

Denton, Md., April 29, 1907.
H. L. Hurst Mfg. Co.,
Canton, O.

Dear Sirs: Yours of the 27th rec'd with check enclosed for \$6.00 to cover commission of the sale of two Fitz-All Sprayers. Accept my thanks for same and rest assured that I shall always speak a good word for the "Hurst" sprayer, as the one I have is entirely satisfactory. Thanking you again for the commission, I beg to remain,

Yours very respectfully,
J. FRANK BOOTH.

THE VALUE OF EDUCATION

THE EXPERIMENT STATIONS of the various states of the Union have done an inestimable amount of good for fruit growers and all farmers. The value of their experiments has been proven again and again. If farmers would study these reports and apply the principles which have been so carefully and laboriously proven they would increase the profits of their soil one hundred to two hundred per cent. If the well-known and constantly-recommended remedial measures against orchard insects were applied in good earnest, these pests would diminish to a noticeable and wholesale degree. It merely rests with the owners of the trees. Many farmers and fruit growers do not know that the destruction of infested fruit which occurs in wind-falls and other poor specimens, is an absolute necessity. The turning loose of a half dozen hogs in an orchard will prevent the reproduction of billions of orchard pests. But this is only a part of the battle. Farmers must not remark as some do in Maine, "I haven't had an apple to eat from that high-top sweeting tree in five years, the railroad worm gets them all."

No wonder that our orchards are infested with all kinds of destructive pests. The only salvation for such conditions is to destroy the older infested trees and to spray the better ones.

Every farmer knows that these Experiment Station reports are free, and should make it his regular and systematic business to study them. His pocketbook will be fatter, his house will be better painted, his children will have more educational advantages and his whole farm will take on a renewed and improved condition if he fights the insect pests by spraying.

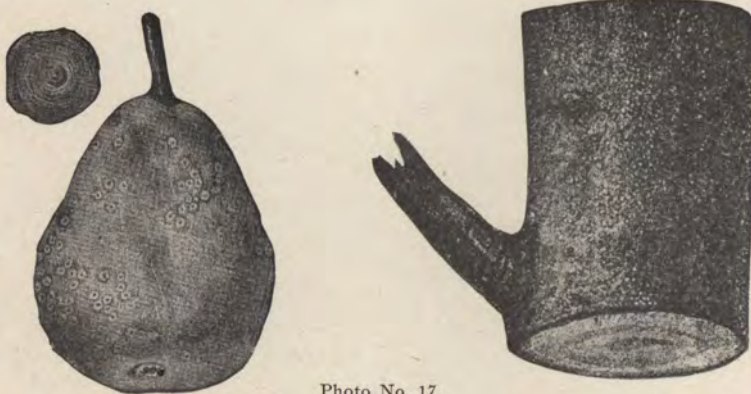


Photo No. 17.

THE SAN JOSE SCALE.

This pest is one of the most destructive insects that the fruit grower has to contend with, and is now generally distributed over the United States, doing an enormous amount of damage. This insect infests practically all deciduous trees, and if not stopped will eventually destroy them. It multiplies with marvelous rapidity, one pair breeding thousands in a single year. It will be seen by the cut above that the Scales are perfectly round, or at most only slightly elongated.

It is flat, pressed close to the bark, and resembles the bark of the twigs in color, and when fully grown are about one-eighth of an inch in diameter. At or near the middle of each Scale is a small round slightly elongated black, or yellow point. When the Scales occur on the bark of the twigs or leaves, and in large numbers, they lie close to each other, frequently overlapping, and are at such times hard to distinguish without a magnifying glass. The general appearance which they represent is of a grayish, very slightly roughened scurfy deposit. The pest is transmitted from one orchard to another by birds, by being carried by the wind, and from nursery stock that is affected by it. The only remedy for the San Jose Scale is to spray, and the most successful remedies now being used are, Crude Petroleum, or the Lime, Sulphur and Salt Wash, the latter being the most effective.

In many states the legislatures have passed laws compelling the spraying of all trees infected by this pest, which is very good, for if the pest was allowed to grow unmolested it would soon cut short the fine fruit for which our country is well known. Let your watchword be **SPRAY, SPRAY, SPRAY**. It is the only insurance that you can get for your orchard.

REMEDY—See Lime, Sulphur and Salt Wash; also Oregon Wash, page 24.

THE HURST MAN-POWER POTATO AND ORCHARD SPRAYER

Handiest Sprayer Ever Invented—Sprays "Anything."

THIS is the machine par-excellence for every kind of spraying. Of all the machines which have been marketed in recent years, the Hurst Combination Potato and Orchard Sprayer has been a significant success. It is so adaptable, easily handled and simple to operate and understand, that every owner is an unconscious salesman and advertisement. This machine was a happy thought. Its success and popularity are the natural growth of its evident and proven usefulness. There is nothing we can say about this sprayer

the pushing easy, is all steel with a three-inch wide tire and is twenty-six inches in diameter. This frame is rigid, strong, well bolted together and braced, so that there is no weaving or shaking apart of bolts or pins. **The machine is well balanced and carries the load easily.**

The Pump and Tank.—The tank is constructed of heavy, galvanized steel especially made for this purpose. In designing the tank we have had in mind the varying conditions of use and misuse to which it will be put. This tank has been banged and gone through all courses of tough trials

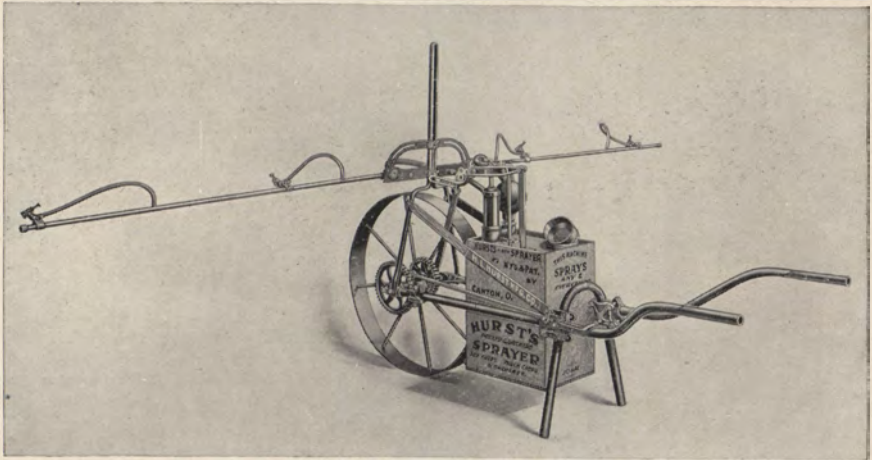


Photo No. 15.
MAN-POWER SPRAYER (OUTFIT No. 3).

that is exaggeration. We stand back of every one of these machines with an unqualified, steel-riveted, iron-bound guarantee. We challenge competition in every shape and are not afraid of all comers in the field which this great machine covers. We give a detailed description whereby the fruitman, gardener and farmer may learn exactly what he is getting.

The Frame.—This sprayer is mounted on a steel wheel-barrow frame. It is constructed of steel tubing, light and strong. The wheel, which makes

and unfair tests, but has still retained its water-tight qualities and resisted many damaging strokes. You do not have to be a tinsmith with soldering iron and solder, in order to keep the tank in repair. If your tank leaks it is a source of discouraging worry. "Get a Hurst Sprayer and be sure." The inside of the tank is heavily coated with an anti-rust enamel. It holds ten gallons. Tank has drain.

The Pump.—The source of power which works this pump is in the large

HANDY AND EASY TO OPERATE

wheel which is geared to rods which work the pump, shown in the illustrations. This pump has great power, having an extra air-chamber, and yet works very easily. It can be thrown out and in gear and still retain the pressure in the air-chamber while turning at the end of the row, or crossing a road or path. The air-chamber gives a steady spray through the hose. As will be noticed in the illustration, the gearing can be thrown out or in as the operator wishes. It

rosive solutions are **brass**. These parts are fitted with our **Never-wear-out** specially hardened brass ball-valves and will last as long as the operator needs the sprayer. The pump works-as-you-push-it-along.

Materials Well-mixed.—As before mentioned this is a very important matter. The spraying ingredients must be thoroughly mixed, distributed and suspended throughout the liquid. Our special **dasher-agitator** churns the liquid **thoroughly** and is arranged



Photo No. 16.
MAN-POWER SPRAYER—FIELD SCENE.

can also be disconnected and the pump and the sprayer worked by hand. This pump will develop 200 lbs. pressure when worked to its capacity (70 to 90 lbs., however, is sufficient for any kind of spraying).

Valves.—As in all our other pumps, the valves, plunger and all the other parts that come in contact with cor-

so as to **clean** the strainer at the bottom end of suction pipes at every stroke. **Look out for brush cleaners**—bristles are eaten off by the chemicals and clog the nozzles.

Detachable Spray-arms.—For field and vineyard work this sprayer is unsurpassed. It has two long arms which spray four rows of potatoes or

LIGHT, STRONG AND DURABLE

other truck at a time. The nozzles can be adjusted to any width up to 15 feet, and to any height up to 10 feet. The long arms can be fitted to **any angle** for working between grape vines, berry bushes, or rows of anything tall. It is as adaptable to all situations as the human arms. The nozzles can be twisted on the spray arms to any position, or adjustable to any width of rows. Thus **any angle or position** may be reached according to the nature of the growth to be sprayed. Each spray can be thrown

nozzles are pictured and priced on page 21.

No Waste of Chemicals.—The machine is supplied with brass stop-cock, so that the pressure can be generated by closing the cock and pumping by hand. When ready to start, open the stop-cock and you have a fine spray to begin with. This enables you to spray from the end of the row, which cannot be done with any other power sprayer since with them it is necessary to run several rods to get up your pressure. If you



Photo No. 8.

MAN-POWER SPRAYER—ORCHARD SCENE.

three feet or more. Two sprays can be concentrated on "one row," or can be arranged to spray "broadcast." With all this adaptability the spray arm is simple and easy to handle, the changes being made quickly by means of thumb-nuts. The nozzles are the "Hurst Improved Never-Clog Vermoral" design. They are the same as were described under the Fitz-All heading. The different styles of these

have occasion to stop, simply turn the stop-cock which holds the pressure and "saves the liquid."

Strainer.—As will be noticed in the engraving of the machine on page 9, there is a small cup-like affair lying on its side in the right hand corner of the top of the tank. This is a brass strainer through which all your spraying mixture will be poured. This pre-

ALL PURPOSES—CHEAP IN PRICE

vents any large chunks or impurities from getting into the valves of the pump.

For Orchard Spraying.—You can change this machine over in five minutes and make it easily adaptable for work in the orchard. You need no tools. The spray arms can be removed by easily detached hand-screws and the hose attached for high or low spraying. Of course, for orchard work you need the long extension rod for reaching the tops of the trees. Since the machine is only about as wide as a man and can be pushed **anywhere**, there is no reason why every man owning an orchard should not have a Hurst "Combination" Potato and Orchard Sprayer.

Simplicity.—We challenge the reader to find a machine easier and quicker to set up and get in motion. Any 16-year-old boy can make every adjustment necessary. **There is nothing complicated or hard to understand.**

Where It Can Be Used.—We give a partial list of some of the places where it will pay you to use this unexcelled machine. You can spray **anything, everything, anywhere you choose.** Use it on "potatoes," all kinds of truck, melons, strawberries, cabbage, beets, beans, peas, tomatoes, celery, asparagus, raspberries, blackberries, cranberries, currants, gooseberries, cotton, tobacco, grape vines, bushes—in fact on **anything that grows** and needs to be protected from insect devastation. Any man can cover 20 acres per day, four rows at a time. It will pay even growers who have but two acres to own this machine.

You Can Make \$70 to \$90 More Per Acre by Spraying Your Potatoes.

This is what the "New York Experiment Station" found in a series of tests covering ten years. The average gain due to spraying each year was 233 bushels per acre, which was more than double the crop. This yield at 40c per bushel made \$93.20 more per acre to be credited to "spraying." "Hurst" Sprayers are paying and will pay for themselves

over and over again each succeeding season.

Sprayer Sent Complete.—Whatever you want to spray, whether for potatoes and truck, or for orchard, every outfit is sent complete ready for the solution.

**Our "Special Price" on
MAN-POWER Combination Potato
and Orchard Sprayer.**

We Pay Freight. See Page 2.

OUTFIT No. 3.—As shown in photo No. 15. Includes the combination Sprayer complete with everything necessary to spray Potatoes, Truck, Vineyards, etc., as well as small trees. Price, \$23.50.

OUTFIT No. 4.—Includes Combination Sprayer complete as in outfit No. 3, together with outfit as shown on bottom of page 21, consisting of 8 ft. Extension Rod, 10 ft. Hose and Tee for 2 Nozzles (Nozzles from spray arm used), with all attachments for "high-tree spraying." Price \$25.50.

These prices subject to cash discount, see "trial agreement."

If Horse-Hitch is wanted for hilly-ground add \$1.50 to above prices.

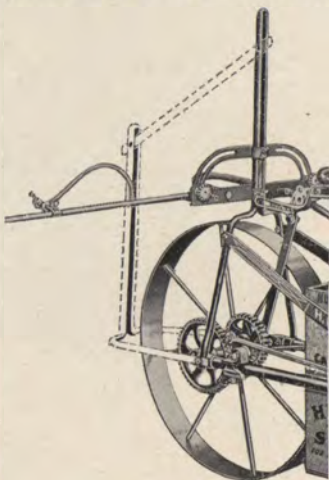


Photo No. 19.

If attachment for "Very low spraying" as shown above (photo 19) is wanted, add \$1.50 to above prices. This attachment is especially valuable for spraying cranberry bogs.

POINTED "PROOFS"

**We Do Not Ask You to Take Our Word as to the Merit of Our Sprayer.
Read What Our Customers Say.**

"SPRAYED FOUR ACRES POTATOES IN TWO HOURS"

Jackson, Mich., Sept. 19, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Dear Sirs: Enclosed you will find money order for \$21.57 to pay for my Man-Power Sprayer, for which send me my note back by return mail.

You are welcome to use my name in your testimonials if you like. In two hours my hired man sprayed 4 acres of potatoes, done it easy with this Sprayer. I am known well all through Jackson Co.

Thanking you for past favors, I remain,
Yours respectfully,

FRANK E. KELLOGG.

"BEST THING HE EVER HAD ON THE FARM."

Glenhazel, Pa., Aug. 25, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: Enclosed find check for \$12.50 balance for Sprayer. It is the best thing I ever had on my farm. My potatoes are good and no bugs after the third spraying. I would not think of raising potatoes any more, unless I had one of your Sprayers, and it works fine.

Very truly yours,

J. H. HANEY.

"AFTER GOOD TRIAL, IS VERY MUCH PLEASED."

Danvers, Mass., May 11, 1908.
Messrs. H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: I hand you herewith my note to cover the purchase of the Sprayer. I have given it a very good trial and I am very much pleased with it.

Thanking you for your promptness in shipping same by express, I remain,
Yours very truly,

J. M. MARKLE.

"TAKES PEOPLE WHO HAVE SEEN IT—WORKS COMPLETE."

Genoa, N. Y., June 24, 1907.
The H. L. Hurst Mfg. Co.,
Canton, O.

Dear Sirs: I received machine all in good condition, have sprayed $7\frac{1}{2}$ acres of beans and it works complete. There is no machines in this locality for miles around, but majority of the farmers are all small growers. It just takes the people who have seen it, everybody that I met when I was bringing it home stopped me to know what it was. I will send names of those that I think would be interested in a few days. There are a number of different mail routes in this locality, and I will have to hunt up the different routes before sending names.

Yours truly,

CLAUDE WHITTEN.

"WORKS TO PERFECTION."

Hardwick, Vt., July 24, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: The Sprayer has just arrived, and works to perfection. Enclosed find note for same less freight.

Yours truly,

E. H. NELSON.

"GETS COMMISSION—DOES EXCELLENT WORK."

Muir, Mich., July 14, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: Your check received today, the amount due me as commission on Spraying Machine. I wish to thank you and hope to interest those who need such a machine, as mine is doing excellent work.

Very truly yours,

W. A. CORREY.

"SENDS CHECK—BEST SPRAYER EVER HAD."

Waterford, Wis., June 15, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: I received the Sprayer on the 6th day of June. I have given it a trial, and think it is the best thing I ever had on the place for spraying. Enclosed find check for \$24.50 to balance account.

Yours truly,

C. L. PIERCE.

"LIKES SPRAYER FINE—WANTS MORE NEXT YEAR."

Emporia, Va., June 19, 1908.
H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: I enclose note for Sprayer, freight was 96 cents. We like Sprayer fine and will need more next year.

Yours truly,

FLETCHER KEARNEY.

"SPRAYER SATISFACTORY—GLAD HE HAS GOT IT."

Painesville, O., June 17, 1908.
The H. L. Hurst Mfg. Co.,
Canton, O.

Gentlemen: Enclosed please find my check for \$22.25, amount of your bill which I enclose.

The Sprayer is altogether satisfactory, and my son on the farm is glad he has got it.

Respectfully yours,

HORACE BACON.

We shall be glad to have you write to any of our customers—and will pay you \$1,000 if every letter we publish is not genuine. Will mail you long list if you want it.

ENORMOUS LOSS ON TRUCK CROPS

IT is hardly believable, but the **United States Department of Agriculture** reports that the "annual loss" by insect pests to truck crops, which of course includes potatoes, to be \$53,000,000.00, while the total loss is \$700,000,000. They say this statement is rather below the average than above it. Raising potatoes nowadays without spraying means often partial and sometimes complete failure. **Blight and rot** have been so thoroughly introduced and seem to be almost a part of the soil in many vicinities that the only way to fight it is by spraying. Most potatoes which rot in the ground and after they are dug, could be saved by keeping the plants free from blight by spraying. The blight keeps the tubers from developing to maturity. Of course they are not only small in size, but unsound, unsightly and liable to rot.

lead has been found best by the Maine Experiment Station. The application should be made as soon as the beetles appear, in order to kill off the first brood, and it must be repeated as often during the season as is necessary to keep the pest in check.

The **Flea Beetle** is one of the most troublesome insect pests affecting potatoes. Although very small it appears in enormous numbers and eats small holes in the surface of the leaves. They thus not only injure the tissues of the leaf directly, but the holes they make furnish easy access to the pores of disease-producing organisms.

Remedies.—Spraying with arsenate of lead (or Paris Green) and Bordeaux mixture will prevent to a great extent at least the depredations of this pest. The more thorough the application the more effective will it be.

THE POTATO.

The **Colorado Potato Beetle (Bug)** deposits its orange-colored eggs in masses, varying in number from a dozen to fifty or more, on the under surface of the potato leaf, and occasionally also upon the leaves of grass, smart-weed, or other plants in the potato field. They hatch about a week later in peculiar little grubs that feed upon the foliage a few weeks. They then descend to the ground, where just beneath the soil surface, or under the rubbish above it, they change to pupae. About ten days later they emerge as perfect beetles. There are from two to four annual broods, the number varying with the latitude; and the insect hibernates in the beetle state.

Remedies.—Spray with almost any of the arsenical poisons. Arsenate of

FUNGUS ENEMIES.

There are at least two distinct fungus diseases which are called the **Potato Rot** or **Potato Blight**. One of these is the **Late Blight** or **Downy Mildew**, due to fungus *phytophthora infestans*, and the other is the **Early Blight** or **Leaf-Spot Disease**, due to the fungus called *alternaria solani*. They may usually be distinguished by the fact that leaves affected by the former have on their under surface a white, velvety mould, visible to the naked eye, but more readily seen through the microscope; with the **Early Blight** no such mildew is present. With both, the foliage of plants attacked becomes spotted with brown, and the spots gradually enlarge, finally involving the whole leaf, and then cause the stem to wilt and wither.

ACTUAL FACTS FROM EXPERIMENT STATIONS

According to Prof. F. L. Scribner, the life-history of the **Downy or Mildew Potato Rot Fungus** may be summarized as follows: "The spores lighting upon the leaves of the potato germinate in drops of dew or rain, and the product of germination—the zoospores,—penetrate to the interior tissues of the plant, and after growing for a time through these tissues, the mycelium sends out, chiefly from the under surface of the leaves, slender fruiting branches, whereon are produced a new crop of spores. These may carry the disease to the other plants in the field, or to the other parts of the same plant; that is, they serve to spread the disease in the tops, which we term blight, over the entire field, or being washed into the ground they may reach the tubers and cause

brittle spots, scattered over the leaf. Careful inspection shows that their upper surfaces are more or less roughened by dark areas rising above the dead gray tissue. The spots gradually enlarge, and finally run together to form large brown patches, the intermediate tissues becoming yellow or sickly green in color. The entire plant finally withers, and dies long before the proper period, the tubers being small—generally less than half full size. The fungus has proven difficult to study in the field the spores being only produced only in the later stages of the disease. It winters over in the spore stage on the dead vines.

Remedies.—A number of experiments have shown that these diseases may be prevented by **spraying** with the Bordeaux mixture. Seed should



Photo No. 20.
Yield of "unsprayed plot."



Photo No. 21.
Yield of "sprayed plot."

the rot. The fungus once having gained entrance to the tubers, may or may not vegetate rapidly. Its presence, however, is soon made evident by a "browning of the flesh underlying the skin, and by more or less extensive discoloration and depression of the latter." When such affected tubers are planted, the disease is very likely to develop in the plants from them.

Above is shown the beneficial effect of treatment with Bordeaux mixture, as it resulted in some experiments by Professor Jones, of Vermont. The sprayed vines yielded marketable tubers at the rate of 291 bushels per acre, while those unsprayed yielded only at the rate of 99½ bushels per acre.

The Early Blight appears in summer in the shape of small brown,

be obtained from regions where blight and rot did not occur upon potatoes, or from fields which were sprayed the year before. Then spray from two to four times with the Bordeaux mixture, making the first application when the vines are about one-half grown, or earlier if signs of the disease appear, and repeat the application when it is washed off—in about a fortnight usually. Add half a pound of London purple or Paris green to each barrel of the mixture whenever the Colorado beetles threaten injury. While the best results are most likely to be reached when the seed is not infected, very satisfactory results are obtained from **spraying crops** from ordinary seed.

(For **Formulas**—Bordeaux Mixture, etc., see page 24.)

THE HURST HORSE-POWER POTATO AND ORCHARD SPRAYER

SPRAYS ANYTHING—1 or 2 Horses, 4 or 6 Rows, 60 or 100 Gallons.
For Spraying Potatoes, Trees, Vineyards, Wild Mustard, Etc.

THE foundation of a sprayer must be rigid, firm, not liable to weave from side to side. Some sprayer frames are apparently bound together very strongly, but where put into actual use in field and orchard, when exposed to corroding chemicals and the elements they rust out and

to be found on any sprayer. The common form of axle is made of cheap iron.

The wheels are iron, the only suitable material for farm implements. Wood wheels soon dry or rot out and have to be continually repaired. It's better to have dependable iron wheels at first and be free from fuss and

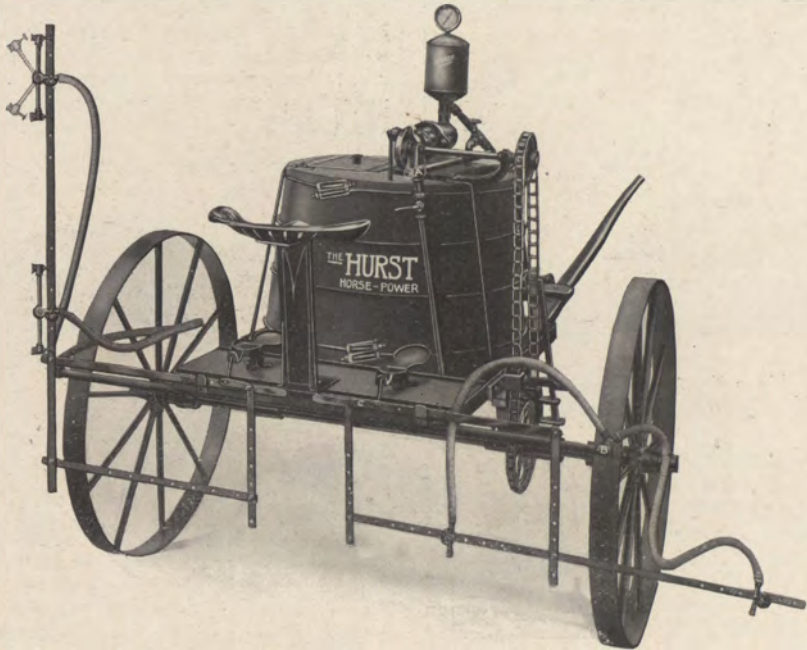


Photo No. 10.

decay in parts, making the sprayer worthless—an uncertain, precarious structure for the working parts to do their part.

Frame, Wheels, Axle.—The Hurst Horse-Power Sprayer has a solid steel frame formed of heavy two-inch angle steel in **one piece**—notice, “one piece”—which makes it stronger than any other.

This supporting frame rests on a solid cold rolled **steel axle** 1 11-16 inches in diameter—the heaviest axle

worry. Our wheels are 44 inches high with a $\frac{3}{8}$ -inch tire 3 inches wide. They are adjustable on the axle. Each wheel is spring ratcheted so that the sprayer can be easily backed or turned in any direction. Both wheels drive the pump, developing plenty of power for the compressor-pump.

FOR VINEYARD SPRAYING the spray arms are set straight up as shown in cut (left arm) or can be set at any angle,—also nozzles are adjustable to

ECONOMICAL IN TIME, MONEY, MATERIAL

any position on the spray arms, and by means of the foot treadles the operator can adjust the nozzles to or away from the row at will, as the machine moves along which makes it the handiest sprayer made for vineyard work. Regular length of axle 6 ft. 3 in., but can furnish axle 5 ft. 4 in. long for vineyard work without extra charge.

The Pump and Tank.—The tank is

and all other working parts that come in contact with the corrosive solution are brass.

Detachable Spray-Arms.—These are shown at the rear of the machine with the four nozzles attached. These spray-arms are constructed of $\frac{3}{8}$ x $\frac{7}{8}$ -inch iron; strong and durable. They can be adjusted to any height of row for potatoes, truck, etc. They can be set straight up for vineyard

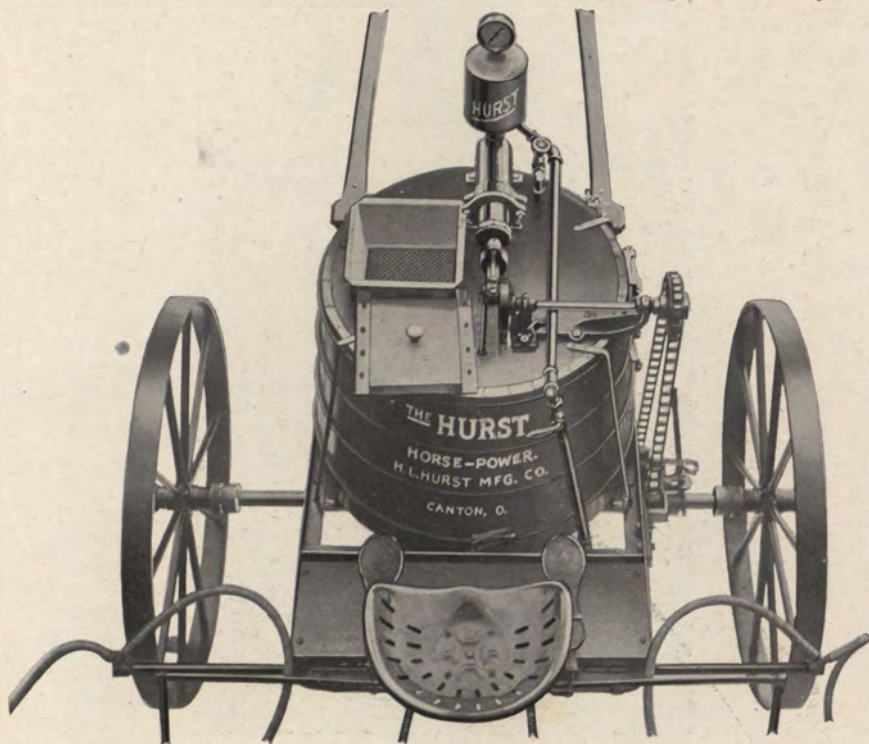


Photo No. 9.
TOP VIEW HORSE-POWER SPRAYER.

made of the best cypress wood, both edges of every stave carefully fitted together snugly and tightly bound by round steel hoops, the ends of which are united by adjustable take-up lugs.

The Pump is powerful, developing 200 pounds pressure when worked to its capacity. 70 to 90 pounds, however, is sufficient for any kind of spraying. Has $2\frac{1}{2}$ -inch cylinder and large air-chamber surmounted with an accurate pressure gauge directly in front of the operator. The pump has Brass Ball Valves, Brass Plunger

work and fold up completely for passing through a gate or other narrow place.

These spray-arms can be easily and quickly removed from the machine by simply loosening the bolt at "C" in cut. The hose for field work is detached at "B." The orchard attachment is connected at the tee marked "A" in Photo No. 10.

The **source of power** is the steel axle. When the wheels start the large sprocket wheel (seen on the right in cut) turns also and transmits

DURABLE, RELIABLE, STRONG, EFFICIENT

its power through an endless chain to the small sprocket wheel on top edge of tank. This is mounted on the end of a shaft. On the farther end of this shaft an eccentric wheel is forged. This eccentric works like the pitman of an engine, is positive in its action, uniform in stroke. This is the strongest possible mechanical

pressed air piston. The second or compressed air agitator is only in use when driving to field and keeps the mixture hurriedly bubbling until it is ready for spraying.

No Sediment Left.—We guarantee that there will be no sediment left in the tank at the finish. This is a very important matter. Spraying ingre-



Photo No. 11.

HORSE-POWER ORCHARD SPRAYER (OUTFIT No. 6).

arrangement. This pump has no leather or rubber packing, nor cup-leathers; but is packed and adjusted the same as an engine. This pump is mechanically perfect in every detail, yet is so simple and thoroughly efficient, that it would be difficult to improve it.

There are two Agitators which keep the ingredients of the spraying mixture thoroughly agitated at all times. The first or mechanical agitator is a paddle moved by the same eccentric wheel that drives the com-

ponents must be thoroughly mixed and evenly distributed, or it will fail in the desired effect. If the solution is weak for five minutes, then strong for five, the former is useless and the latter burns up the foliage and generally destroys the plant.

The Nozzles.—These are attached to the four-spray tubes that connect with the supply-pipe which runs from the pump. These nozzles are the Hurst Improved Never-clog Vermonal design. They can be moved by means of thumb-nuts on the

POWERFUL. EASY ON MAN AND HORSE

spray-arms either left or right and directed at any angle. The nozzles can be adjusted and directed at each row as the machine moves along by two, balanced foot treadles, which move the spray-arms. Thus the operator covers every little irregularity of the rows and does not miss a lot of plants as in the case of most sprayers. **You do not have to leave the seat to**

make any of these adjustments. Remember, you can spray four or six rows at one time.

No Waste of Mixture.—The supply pipe is provided with two shut-off valves easily reached by the operator. With these he can shut off the spray in an instant, so as to save chemical in turning at the end of the rows or



Photo No. 12—Outfit No. 5.

We have many more letters like these, but have room for only two here,—write for big list of users.

"WORTH ITS WEIGHT IN GOLD."

Earl, Wis., July 20, 1908.

The H. L. Hurst Mfg. Co., Canton, O.

Gentlemen: Find enclosed note, also freight bill for Horse-Power Sprayer. It is all O. K., and think it worth its weight in gold where a man has lots of work to do. Hoping this to be all right, I am ever,

Yours truly,

SHERMAN GROVE.

"MACHINE ALL O. K."

Washington, Ga.

The H. L. Hurst Mfg. Co., Canton, O.

Gentlemen: Enclosed you will find check to pay for Sprayer less expense as per enclosed freight bill. The machine is all O. K. I put it up and worked this morning; fifteen minutes time will convince any man that the Sprayer will do the work.

Yours truly,

R. A. ALMAND.

REASONABLE IN PRICE—"A CROP INCREASER"

in stopping. The pressure is automatically retained at the same time, so that there is no need to drive several rods to again get up pressure. The hose leading from the supply pipe is best quality—5-ply rubber, wound with wire.

Spray Solution Strainer.—An opening in the tank 10 inches square at the left of the pump is provided with a fine, brass removable sieve-strainer through which all mixtures are to be filtered. A tight cover prevents slopping out of contents of tank when machine is moving.

Seat and Rear Platform.—The whole machine is evenly balanced so that the operator can stand with ease on platform or top of tank, and spray with pleasure and comfort. Can furnish angle iron frame to elevate operator as high as desired for any special work, at extra cost. The seat is comfortable and made of metal, as well as its support. The shafts or pole (if used for two horses on hilly ground) are made of well seasoned timber suitable for the purpose.

The Pipes and Fittings are Galvanized inside and outside and are therefore not affected by the spraying

chemicals. Beware of sprayers with black iron pipe and fittings, as they soon rust out and after one season's use the particles of rust will clog the nozzles making it almost impossible to use the machine. Brass pipes cost more money than Galvanized but are no better, therefore we do not recommend them but can furnish them if wanted. The best Steel, Iron and Brass Castings are used throughout and the machine is well painted and nicely striped. Weight 900 lbs.

As An Orchard Sprayer.—This machine requires no hand pumping (thereby saving the cost of an extra man) the power being generated and stored in the 10-gallon compression tank in-driving-from-tree-to-tree sufficient to spray the side of a good sized tree under high pressure. When the machine is under 150 lbs. pressure it will spray from 4 nozzles for 5 to 8 minutes which is ample time to spray the side of a very large tree when 4 nozzles are used. When 2 nozzles are used it will spray just twice as long. **Consider this saving in deciding on which sprayer you should buy.** (See cut on page 18.)

**Our "Special Price" on HORSE-POWER Combination
Potato and Orchard Sprayer.**

We Pay Freight. See Page 2.

OUTFIT No. 5 as shown on page 19 (Photo No. 12) for Potato Spraying or any kind of field work, complete with all attachments except pressure gauge, price \$72.50. Fitted for 6 rows \$5.00 extra. (These prices subject to discount for cash. See trial-agreement.) Double nozzle, \$3.00 extra.

OUTFIT No. 6, as shown on page 18 (Photo No. 11) for Orchard Spraying complete, except pressure gauge, price \$72.50.

OUTFIT No. 8, combination of both outfits, Nos. 5 and 6, complete with all attachments for spraying potatoes or field crops and also all attachments for orchard use. Without pressure gauge, price \$84.50. (These prices subject to discount for cash. See trial-agreement.) Above prices are for 60-gallon tank and shafts. With pole and long evenner with singletrees complete instead of shafts (for hilly or sandy ground) add \$4.50—for 100-gallon tank and pole with long evenner and singletrees, add \$12.50. Six rows instead of 4, \$5.00 extra.

EXTRAS.

Orchard Attachment for outfit No. 5, includes large Compression Tank, 10 feet 5-ply Hose, 8 feet Galvanized Iron Extension Rod, Stop-Cock and Double Nozzle. Price \$12.00.

Potato Attachment for field work for outfit No. 6, includes 4 Row Spray-Arms, 4 pieces 5-ply Wire-wound Hose with connections, 4 Never-Clog Nozzles with attachments to fasten to spray-arms, one ¾-inch Brass Valve, and all necessary pipe and connections to attach to machine. Price, \$12.00. These attachments can be gotten at any time as they are easily attached to the machine. Adjustable Double Nozzles as shown on left arm of photo No. 10—\$10.00 extra for set of 4.

Pressure Gauge registers from 1 to 250 lbs. Price \$2.50.

HURST SPRAYING ACCESSORIES—"NET PRICES"



Photo No. 22.

Single Never-Clog Vermoral Nozzle as shown in cut, 75c each.



Photo No. 23.

Double Never-Clog Vermoral Nozzle as shown in cut, \$1.50 each.



Photo No. 24.

Four Nozzle Cluster Never-Clog Vermoral Nozzle as shown in cut, \$3.00 each.



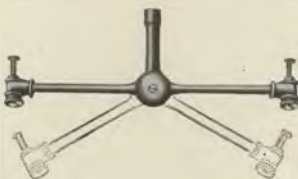
Photo No. 25.

Brass Tee as shown fits regular Nozzle, Hose or Extension Rod—also for 2 leads Hose, 40c each.



Photo No. 26.

1/4" Brass Stop Cock as shown fits Hose or extension Rod, 75c each.



Adjustable Nozzle. Price \$3.00 each.



Photo No. 27.

1/2 or 3/4" Brass Valve as shown, \$1.40 each.

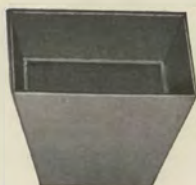


Photo No. 29.

Large Galvanized Iron Strainer with Brass Sieve as shown, \$2.00.

8 ft. Iron Extension Rod with Drip-Guard as shown with Couplings, \$1.00 each.

8 ft. Bamboo Rod Brass lined as shown with Couplings, \$1.75 each.



Photo Nos. 28 and 28a.

HOSE.

3-ply best spray pump hose, 10c per ft.

5-ply best spray pump hose, 12c per ft.

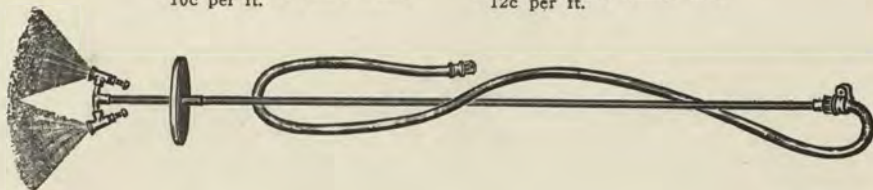


Photo No. 30.

The above cut shows the "Orchard Attachment" for the Man-Power Combination Potato and Orchard Sprayer. The Sprayer develops a high pressure, and delivers a fog-like spray which is so light that it will not rise very high owing to the resistance of the air, and where you have high trees to spray it is therefore necessary to have the above outfit which consists of an 8 ft. Iron Extension Rod, with Drip Guard and 10 ft. 5-ply 1/2-inch Hose and "T" Connection for attaching two Nozzles. Price of outfit complete, \$2.00. The regular Nozzles that come with the Machine fit on the "T" Connection. No extra Nozzles needed.

With the above outfit you have a complete Machine for spraying "high trees, white-washing, etc."

(All Extras, when not ordered with the Sprayer, are strictly cash-with-order.)

HURST PATENT SPRAY AND FORCE PUMP

Description of Hurst Patent Spray and Force Pump

THIS handy device measures 24 inches high and will fit over any pail 14 inches tall. It has a stroke 6 inches long and develops a strong, fine spray. The hose to which the nozzle is attached is 36 inches long. It is a marvel of simplicity. All parts can be easily removed as shown by the cut. At the extreme bottom there is an opening marked "L." This



Photo No. 14.
Bucket Sprayer.
(Outfit No. 9.)

is the automatic mixer by which a jet of liquid is forced out into the bucket which keeps the mixture well agitated. At "I" is the strainer which can be easily screwed off by hand for cleaning. The valve at "J" just above it can be taken off in like manner. Resting on this is the ball-valve which drops out of its own weight. By unscrewing the plunger cap at the top you can look through the whole pump. The plunger is simple, provided with a wrapping that can be renewed in a few minutes without any cost. The body of the pump is of special quality, having galvanized steel and cannot rust. By removing brass cap at "H" other ball valves can be seen also. At "K" there is a passage called the Patent Overflow which allows all surplus liquid to run back into the vessel and not splash out at the top. This is very important for if chemicals get on the skin or in the face, they will act as caustics and cause many days of discomfort. Therefore, we warn you against the cheaply made spray pumps, which are always out of order and are dangerous to operate.

With this pump you can spray trees, bushes, garden truck, potatoes, or any other product to which you can carry a pail.

For Whitewashing hen-houses,

dairy barns, pig pens, cellars and any other place around the farm, it is unexcelled. You can even clean the windows, (or outhouse) in a third-story building with it as the following testimonial proves. Mr. J. A. Casset, Bloomdale, Ohio, writes: "My patrons buy the Hurst Force Pumps even when they have several others already, because they find them much handier and serve the purposes the others won't. Yesterday we cleaned the windows on the third-story of a brick building. I have had one of your pumps in use for over nine years."

Price.—Outfit No. 9. Pump complete with combination "Trio" nozzles, making three different sprays for all kinds of work, all ready to use, \$3.00, cash with order. Money refunded if not satisfactory.

WHITE-WASHING.

The Hurst Patent Spray and Force Pump is an ideal machine for white-washing hen houses, cow barns, out-buildings, etc. For extensive work the "Fitz-All" Sprayer is the best on the market. Many professional white-washers use the Hurst "Fitz-All."

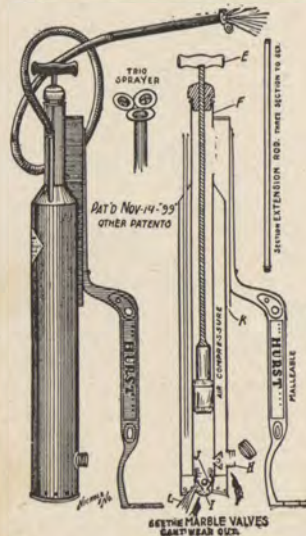


Photo No. 31.
Sectional View Bucket Sprayer.

HURST COMPRESSED AIR SPRAYERS

Description of Hurst Compressed Air Sprayers.

AS shown by the illustration, this sprayer is for carrying under the arm, and can be easily used in orchard or field. It is suitable for spraying potatoes, fruit trees, vegetables, tobacco, cotton, etc. For washing wagons, windows; for putting out small fires; for white-washing hen houses, cellars, and other places, for disinfecting, etc. When charged with

This nozzle can be cleaned without stopping the spray or removing the nozzle from the tree. You can make a flat, round or solid spray. A slight pressure of the thumb **starts the spray**—remove it and the spray **stops** instantly. The sprayer holds between four and five gallons, and can be carried by either strap or air pump handle.

How To Work It.—This is charged with air, same as you would a bicycle pump. It also agitates the solution at the same time. When the correct pressure has been gained, there is a safety valve which "blows off" showing you that there is no need of further pumping. After this you need to stop for nothing, just walk along from row to row until your machine is empty of liquid. The liquid comes out either as a fine spray or a solid continuous stream, just as you choose.

Prices.—Outfit No. 10. With galvanized steel body, hose (2 ft. long), strap carrier and nozzle, as shown in illustration, \$5.00. With polished brass body, \$6.50. Cash with order. Money refunded if not satisfactory.



Photo No. 32.
(Outfit No. 10).

liquid the sprayer weighs only about 20 lbs. It is 20 inches high with a diameter of 10 inches. It is provided with an adjustable strap to hang over shoulder. It can be used with a long handle spray rod, or with short length hose. The body of the sprayer is made up of heavy polished brass or galvanized steel. The top and bottom are joined together under heavy pressure, making air-tight and water-tight seam. This is further supported at the bottom by a heavy steel band. The air pump is made of heavy brass two inches in diameter.

Hose couplings are solid brass. Hose is high-grade three-ply, supported by a coil spring. It is furnished with a Never-Clog Nozzle.



Photo No. 33.

"Hurst" Spraying Guide and Formulas, Tried and True

BORDEAUX MIXTURE.

Copper Sulphate 4 lbs.
Water 40 to 60 gal.

Fresh Lime (unslaked) 4 to 6 lbs.

Dissolve the copper sulphate by putting it in a bag of coarse cloth and hanging this in a vessel holding at least 4 gallons, so that it is just covered by water. Use an earthen or wooden vessel. Slake the lime in an equal amount of water. Then mix the two and add enough water to make 40 gallons. It is then ready for immediate use. For rots, moulds, mildews and all fungous diseases.

Also for *Strawberry* leaf-blight and mildew.

SODA-LEAUX.

Babbitt's Lye 1½ lbs.
Copper Sulphate 4 lbs.
Lime 10 oz.
Water 50 gal.

Slake the lime, and dissolve the copper sulphate and lye. Mix the two solutions, and then add the lime water and dilute before using.

This mixture is used instead of ordinary Bordeaux, when a fungicide is needed within six weeks of the time the fruit is to be gathered, as it will not seriously spot it. It is of course more expensive than the weak copper sulphate solution, but it gives rather better results, especially against the black rot of the grape for which it is recommended.

COPPER SULPHATE SOLUTION.

Copper Sulphate 1 lb.
Water 15 to 25 gal.

For use before the buds open the above solution is fully as effectual as Bordeaux mixture, and is easier to prepare and apply. The weaker solution should be used upon the peach, although no injury would be done upon any kind of fruit tree, while in a dormant condition, if the stronger solution should be used, but it should not be applied to any plant after the buds have opened.

ARSENATE OF LEAD.

Arsenate of Soda 4 oz.
Acetate of Lead 11 oz.
Water 16 gal.

Dissolve each separately in two quarts of warm water; mix and add water to make sixteen gallons. It is perhaps the best of arsenical poisons in adhering qualities. May be used alone or in Bordeaux Mixture.

KEROSENE EMULSION.

Hard Soap ½ lb.
Boiling Water 1 gal.
Kerosene 2 gal.

Dissolve the soap in the water, add the kerosene and churn with a pump for five or ten minutes. Dilute four to twenty-five times before applying. Use strong emulsion for all scale insects in March or April. For such insects as plant lice, mealy bugs, red spider, thrips, weaker preparations will prove effective. Cabbage worms, currant worms, and all insects which have soft bodies, can also be successfully treated. It is advisable to make the emulsion shortly before it is used.

HELLEBORE.

Fresh White Hellebore 1 oz.
Water 3 gal.

Apply when thoroughly mixed. This poison is not so energetic as the arsenites, and may be used a short time before the sprayed portions mature. For insects which chew.

PARIS GREEN.

Paris Green 1 lb.
Water 100 to 200 gal.

For the destruction of insects that eat the foliage or fruit. Paris green is a valuable

See also Pages 8, 14 and 15.

remedy. It can be used in water in the above proportions, the stronger mixture being used for potatoes, while for fruits it is seldom advisable to use more than one pound in 200 gallons of water, unless in connection with lime water or Bordeaux mixture. It is always advisable to first form a paste with a small amount of water before preparing it for spraying. *London Purple* is sometimes used in place of Paris green.

WHITE ARSENIC.

Instead of Paris green, white arsenic is much used. It costs at wholesale but one-fourth as much and will go nearly twice as far. It must be prepared by placing 10 pounds of arsenic and 20 pounds of freshly slaked lime in 20 gallons of water and boiling for 40 minutes.

It can be applied with Bordeaux mixture, but if used in water 2 pounds of lime should be added for each barrel. Before using the arsenic, stir well to secure an even mixture and take 2 gallons, which contain about 1 pound of arsenic, for 100 or 150 gallons of Bordeaux mixture or lime water, if to be used on potatoes, or 200 to 250 gallons for spraying fruit trees.

POTASSIUM SULPHIDE SOLUTION.

Potassium Sulphide (liver of sulphur) ½ to 1 oz.
Water 3 to 4 gal.

This preparation loses its strength upon standing, so should be made immediately before using. Particularly valuable for surface mildew.

WHALE OIL SOAP SOLUTION.

Use from 1 to 2 pounds of the soap to 1 gallon of water.

AMMONIACAL COPPER CARBONATE.

Copper Carbonate 6 oz.
Ammonia 3 pt.
Water 50 gal.

For use late in ripening season when Bordeaux may stain the fruit.

LIME, SULPHUR AND SALT.

Lime 15 to 30 lbs.
Salt 15 lbs.
Sulphur 15 lbs.
Water 50 gal.

The Best Treatment for San Jose Scale.

The above mixture can be prepared in different quantities by using a proportionate amount of each.

This is prepared in the following manner: Place the full amount of lime in a kettle or vat and start it to slake in hot water, using enough to prevent the lime from being air-slaked but not enough to drown it. During the slaking process add the sulphur, all lumps having first been pulverized, then the salt; stir both of them in thoroughly and add water gradually to reduce the mixture to a thin paste. If the mixture is already boiling, bring it to this point and allow it to boil for one hour, stirring frequently to prevent burning to the side of the vessel. After one hour's boiling, add enough water to make 50 gallons of the mixture. When emptying into the spraying barrel, it should be passed through a fine screen to remove all sediment. If possible, apply to the trees.

It requires about 3½ gallons of the wash for a full grown apple tree.

To be used only before buds begin to open.

OREGON WASH.

Lime 15 lbs.
Sulphur 15 lbs.
Water 50 gal.
Copper Sulphate (blue vitriol) 1½ lbs.

To be mixed similar to LIME, SULPHUR AND SALT formula.

"HURST" SPRAYING GUIDE and FORMULAS Condensed

HOW AND WHEN TO SPRAY

PLANT.	First Application.	Second Application.	Third Application.	Fourth Application.	Fifth Application.
Apple —(Canker worm, codling moth, bud moth, scab).	Spray before buds start, using copper sulphate solution.	After the blossoms have formed, but before they open, Bordeaux and Paris green.*	Within a week after blossoms have fallen, Bordeaux and Paris green.	10 to 14 days later, repeat.	10 to 14 days later, Bordeaux, or weak copper sulphate.
Bean —(Anthracnose).	When blossoms appear, spray with Bordeaux.	10 days later, repeat.	10 to 14 days later, weak copper sulphate solution.	Repeat last, if necessary.	
Cabbage —(Worms, aphids).	When worms first appear, kerosene emulsion, or Paris green.	If worms or aphides are present, repeat if plants are not heading, using emulsion for aphids.	If aphides persist, or if worms reappear, use kerosene emulsion, if plants are not heading.	After heads form, use saltpetre for worms, a teaspoonful to a gallon of water, emulsion for aphides.	Repeat, if necessary.
Carnation —(Rust and other fungous diseases).	When planted out, dip in Bordeaux.	7 to 12 days later, spray plants with Bordeaux.	Repeat at intervals of a week or ten days until blossoms open.	While in bloom spray every week with the dilute copper sulphate solution.	
Cherry —(Rot, aphids, curculio and slug).	Before buds start, use copper sulphate solution. For aphids, kerosene emulsion.	When fruit has set, Bordeaux and Paris green.*	10 to 12 days later, if signs of rot appear, repeat.	10 to 12 days later, copper sulphate solution, weak.	Repeat, if necessary.
Currant —(Worms, mildew).	As soon as worms are seen, Paris green.	If they reappear, repeat, adding Bordeaux for mildew.	If worms still trouble, pyrethrum or hellebore.		
Gooseberry —(Mildew, worms).	As leaves open, Bordeaux and Paris green.	In 10 to 14 days, repeat with both.	10 to 14 days later, sulphide of potassium on English varieties.	10 to 14 days later, repeat if necessary.	If mildew persists after crop is gathered, Bordeaux.
Grape —(Flea-beetle, fungous diseases).	Before buds burst, copper sulphate solution and Paris green.	When first leaves are half grown, Bordeaux and Paris green.	As soon as fruit has set, repeat.*	10 to 14 days later, Bordeaux mixture, if disease is present.	If necessary, very weak copper sulphate solution.
Nursery Stock —(Fungous diseases).	When buds burst, Bordeaux.	Repeat at intervals	of 10 to 14 days.		
Peach, Apricot —(Leafcurl, curculio, mildew and rot).	Before buds swell, copper sulphate solution.	As soon as fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 12 days later, repeat.	If rot persists, use very weak copper sulphate solution every 5 to 7 days.
Pear —(Leaf blight, scab, psylla and codling moth.)	Before buds start, copper sulphate solution.	Within a week after blossoms fall, Bordeaux and Paris green.	10 to 12 days later, repeat.	10 to 18 days later, Bordeaux.	10 to 16 days later, Bordeaux.
Plum —(Black knot, rot and all fungous diseases, curculio).	As buds start, copper sulphate solution. Cut out knot and burn.	When fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 20 days later, Bordeaux.	Weak copper sulphate solution, as is necessary.
Quince —(Leaf and fruit spot, rot).	Before buds start, copper sulphate solution.	When fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 20 days later, Bordeaux.	Bordeaux or copper sulphate solution, as is necessary.
Raspberry, Blackberry —(Anthracnose, rust).	Cut out badly diseased canes. Spray with copper sulphate solution before growth starts.	When new canes are one foot high, spray with Bordeaux mixture.	10 to 14 days later, weak copper sulphate solution.	When crop is gathered, remove old canes, thin new ones and spray with Bordeaux mixture.	Special Notes. For BLACK KNOT on cherries and plums, cut out and destroy by burning the diseased parts as soon as discovered. For APHIS on all plants use kerosene emulsion. If RED RUST appears the entire stools affected should be cut out and burned. YOUNG PLANTS should be sprayed with Bordeaux mixture at the time of the first and third applications to bearing plants.
Rose —(Mildew, black spot, red spider, aphids).	Mildew: keep heating pipes painted with equal parts lime and sulphur mixed with water to a paste.	Black spot: Spray plants once a week with weak copper sulphate.	Red spider: Kerosene emulsion to under side of foliage.	Aphis: Kerosene emulsion.	
Strawberry —(Rust).	Just before blossoms open, Bordeaux and Paris green.	When fruit has set, Bordeaux* or weak copper sulphate solution.	As soon as berries are harvested, Bordeaux (if to be kept longer).		
Tomato —(Rot and blight, worms).	When first fruits have set, Bordeaux.	If disease appears, repeat* or use weak copper sulphate solution.	If necessary, spray with weak copper sulphate solution.		
Violet —(Blight, red spider.)	When blight is first seen, weak copper sulphate. Kerosene emulsion for insects.	Repeat at intervals of 10 to 20 days, as necessary for blight.	None.—Use kerosene emulsion, very weak.		

EXPLANATION.—Whenever an asterisk (*) is used it cautions against spraying with poisons while the plants are in blossom; a dagger (†) indicates that there is danger of making an application within three weeks of the time the fruit is to be used as food. While the number of applications recommended will be found desirable, in seasons when the fungi are less troublesome a smaller number may often suffice.

FOR SAN JOSE SCALE.—Full treatise with illustrations on page 8.

FOR POTATO SPRAYING.—Full treatise and valuable advice on pages 14 and 15.

You must spray for the **Blight, Rot and Bugs**, or quit rising Potatoes (the Experiment Stations say.) Apply Bordeaux and Paris Green (or other arsenites) mixed when bugs or their larvae first appear—and thus destroy the beetles and prevent blight and rot.

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