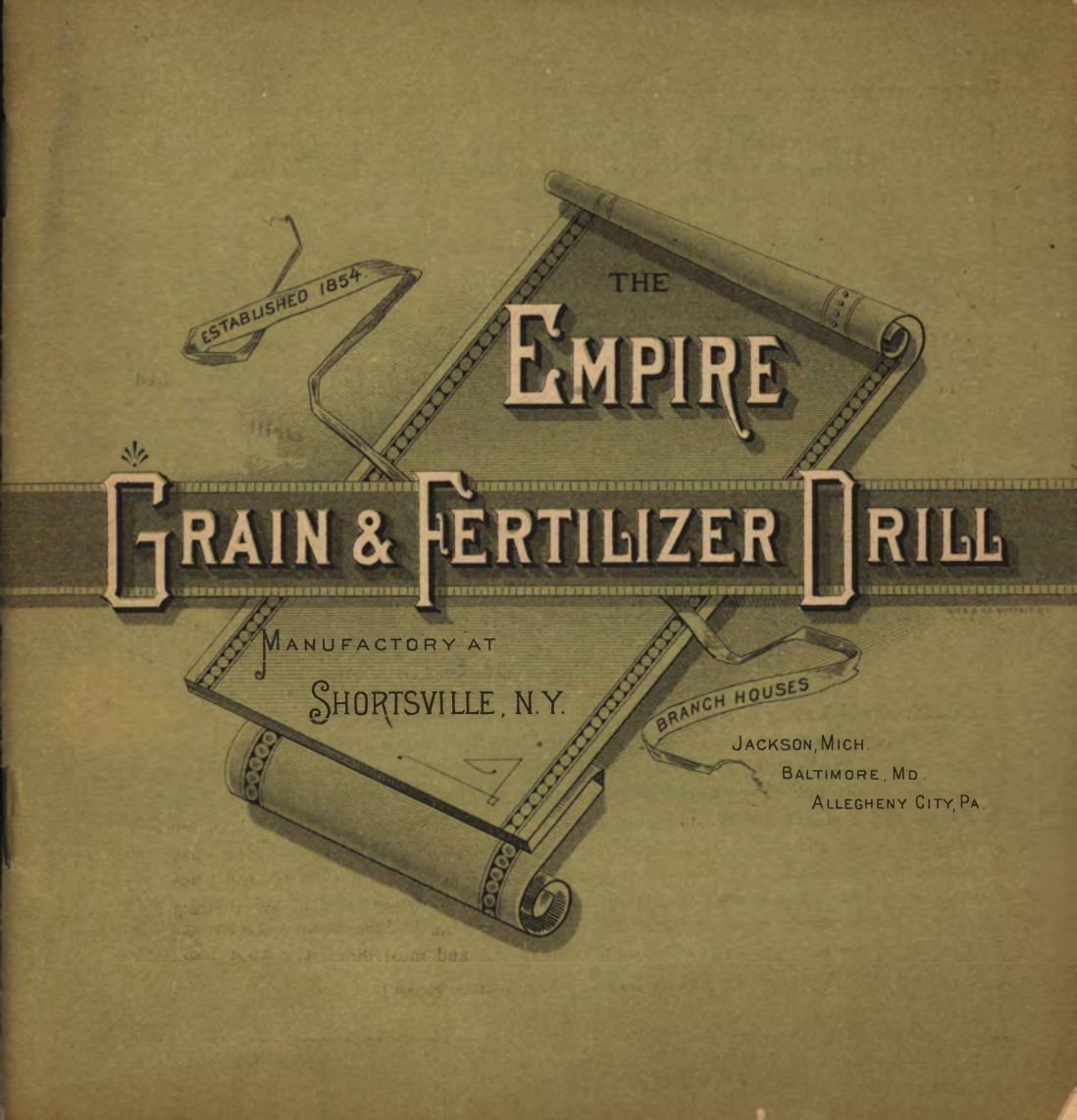

ESTABLISHED 1854.
THE
EMPIRE
GRAIN & FERTILIZER DRILL
MANUFACTORY AT
SHORTSVILLE, N.Y.
BRANCH HOUSES
JACKSON, MICH.
BALTIMORE, MD.
ALLEGHENY CITY, PA.

UNCOMMON USES FOR THE GRAIN DRILL.

By HENRY IVES, in New York Tribune.

It is almost frightful to think of the multiplication of farm implements in these days of great improvement in agricultural tools; there is not a branch of tillage but has some "labor saver" especially designed for it. Many times, however, the farmer by exercise of a little skill can do different classes of work with such tools as he has, and there is no one that can be utilized to

Better Advantage than the Common Grain Drill.

For more than twenty years I have found it better planting corn and beans in drill rows, and beets and carrots also, where quantities are to be grown for stock, than any of the planters made especially for these seeds, besides doing the work much more quickly and easily. I also sow any kind of grain broadcast with it, by taking off the teeth, when it will do better than any broadcast seeder in the market. I thus make it do the work of five different tools, and if grass and fertilizer attachments are added, it will make the

Drill Count Good for Seven Uses,

for each of which many farmers think a special implement necessary.

For beets or carrots I take the quantity of seed required, and as these seeds germinate much surer and quicker by being previously soaked in warm water for one or two days, in this way I keep them moist until they are well swollen. Then, after partially draining off, I mix them with about a bushel of fine middlings for each acre to be sown; rolling and rubbing the seed into this until it is evenly mixed and well incorporated with the meal, so as to flow readily. Then use such teeth of the drill as give rows of proper distance apart, (mine is an 8-inch drill, and I use every third tooth, making rows two feet apart,) taking off or tying up the others, and shutting off the feed to them from the hopper. Then by gauging the drill for sowing three bushels per acre, it will sow the one bushel of this prepared seed and meal through the one-third of the

[CONTINUED ON THIRD PAGE OF COVER.]

OFFICE OF

Empire Drill Company,

SHORTSVILLE, N. Y.

IN presenting our Annual Catalogue for 1886, we review with pride the record we have made since commencing the manufacture of Grain Drills in 1850, and celebrate with joy this our 32d year of existence as manufacturers, upon the same site.

We were one of the first to make the manufacture of Drills a specialty.

We were the first to make a Positive Force Feed for all kinds of grain, and are the only ones making such a machine at the present time.

We were the first to manufacture a Force Feed for the distribution of commercial manures, and its success is attested by thousands of farmers who have it in use to-day.

Others have copied, but none have succeeded in wresting from us the prestige we have established.

The reputation we have won and the friends we have gained are our pride, and if our efforts will avail, the former shall not grow dim, nor the latter few, but rather grow brighter and more numerous as time passes.

To all who have favored us with their patronage, and by their warm words of commendation, shown their appreciation of our endeavors, we extend our hand for a hearty shake, and remain,

Gratefully,

EMPIRE DRILL CO.

GIES & CO., ENG. & PRS., BUFFALO, N. Y.

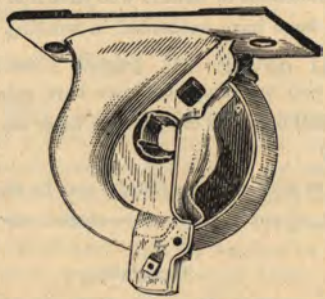
The Empire Grain Drill.

The essential point of a Grain Drill which is most easily overlooked by the purchasers, the least understood by the agent, and around which the manufacturer throws such a halo of mystery by a confusion of assertions, is the

GRAIN FEED.

There is no drill manufactured to-day, but which is claimed by its makers to be a Positive Force Feed, and it is heralded throughout the length and breadth of the land, as the only one; but further than making the claim, none dare go, they know that an attempt to prove it by actual test would result in a dismal failure.

The "Empire" is the only Positive Force Feed Drill made, and proves itself entitled to this great distinction by *feeding out in an equal time, with the same combination of gear, the same quantity of any small grain.*



The accompanying cut shows the principle of our feed. The device is screwed to the bottom of the box, and the grain enters at the top and is immediately received upon the flange of the rotating disc, and is carried forward to the point of discharge with a uniform velocity, and emptied into the funnels in an even continuous stream. The flange on the rotating disc forms the

floor or bottom of the feeding device, and as the whole column of grain must rest upon this bottom, it is plain that it must be carried forward in a solid, compact mass, every particle moving at the same speed, not pushed nor rolled; consequently there is no liability to break the seed as it passes through the channel.

The quantity discharged is regulated by the speed with which the feeding shaft revolves; this is done by cog gear wheels of different sizes, and being scientifically correct, admits of no error, if operated according to instructions.

The feeding devices are exactly alike, and the quantity of grain which each and all will discharge, is a known definite quantity, which never varies. If different quantities are required, different speeds are given to the device, by larger or smaller gear wheels.

It is the most reliable device ever manufactured, because no item of chance or guess work is to be found in its whole mechanism. It is as positive in its action, as the half-bushel measure is in the hands of the farmer. Its motion is slow, and the wear so very slight, that after years of use it will do as accurate work as when first taken from the shop.

SIMPLICITY.

There are but three pieces in the feed-run, and these are bolted firmly together, and unless in case of accident need never be touched. If necessary, it is easily taken apart, and a broken piece replaced at the most trifling expense.

There are no levers, nor gates, nor rose washers, nor any of the many pieces which have been put together, and with fine spun theories placed upon the market as its superior. It will sow any and all kinds of grain through its one channel, that can or is desired to be sown by the farmer, and do the work in a manner excelled by no other drill.

Do not buy a complicated drill for sowing different kinds of grain, when a simple one does the work better, and all liability to mistakes is avoided

HOPPER BOTTOM.

The novel arrangement of a hopper bottom was first applied to a grain drill by us, and its value is more clearly seen in cleaning out the drill when seeding is finished, it being only necessary to raise the wheel from the ground, and by turning it the grain will all be discharged.

The draught of the "Empire" is lighter than that of any other drill, because its wheels are hung on taper axles, with the same pitch and gather as wagon wheels, and always run true

without binding. The draw-bars are short, and the steel points only engage the surface sufficiently to cover the grain well, and the drill is so evenly balanced that little or no weight is upon the horses' necks.

FORCE FEED FERTILIZER ATTACHMENT.

As the use of commercial manures has passed the stage of experiment, it only remains for the farmer to investigate closely the various devices offered for this work, and decide which in his judgment is the best machine for applying them, so as to obtain the best results.

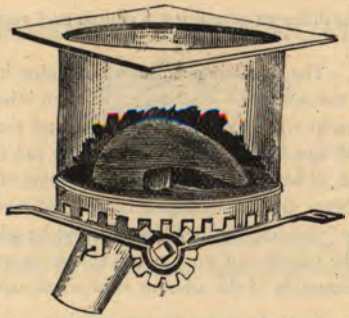
For years the difficulties met with in endeavoring to overcome the obstacles in distributing the different brands of phosphate, seemed well nigh insurmountable, and the manufacturer who made the drills, and the farmer who used them, were forced to exercise all the patience with which nature endowed them, to sell and operate the devices which were put forward for this work. The gumming, pasting and clogging of the many times damp material; the bother and worry of mind, the weariness of body, and the utter dissatisfaction with the work when done; the waste of time and money, all caused the farmer to ponder over the subject himself, and discuss with his neighbors whether it paid or not. This was the trying time for the manufacturer. He of course could only praise the merits of his own device, and claim superiority over all others, but in his own mind admitting that the criticisms of his customers were just and true, continue to experiment, and waste time and money in his earnest efforts to discover some device which would overcome all difficulties, and place him where he could, without mental reservation, put into the hands of the farmer a tool which he knew would do all that he claimed.

This was not accomplished until we perfected and put on the market, the device now so widely and favorably known as the

"EMPIRE" FORCE FEED ATTACHMENT.

We were the first to recognize merit in this invention, and to invest our money in it, and that the farmers of the country have appreciated our efforts is shown by the demand which they have made for it, and the satisfaction it has given them in practical use, notwithstanding the abortive schemes which some of its pretended friends have put forward to belittle its merits.

This device completely and wholly obviates all of the difficulties met with in the distribution of commercial manures, and fulfills the conditions which are so conspicuous by their absence in all the gravity feeds.



The accompanying cut represents a view of this feeding device, with the side of the cup broken away so that the inside and feeding cap can be seen, showing the opening in the cap through which the fertilizing substance is carried and discharged into the spout below. It is composed of only four pieces: 1st.—The stationary spider or support, which is screwed fast to the under side of the box, and upon which the whole mechanism rests. 2d.—The revolving bottom or carrying plate, with cogs on the under side. 3d.—The feeding cap or shell, which is stationary. 4th.—The galvanized iron top, riveted securely to the revolving bottom, to form a cup, which when at work is full of phosphate.

These different parts are made of sufficient weight and strength to be durable and substantial and are held together firmly, without the use of a nut, key, bolt or spring, yet are quickly and easily taken apart when occasion requires.

It feeds an even continuous stream, because the cup, revolving at a uniform speed, *continually brings to the discharge an unvarying stream, which by the scroll lip of the feed-cap is* as constantly forced out.

The size of the discharge aperture is never altered, consequently it cannot clog when a small quantity is being sown, as in the gravity devices, where the quantity sown is dependent upon the size of the discharge opening.

There is no guess work about it. Each revolution of the revolving or carrying plate takes out a definite, known quantity at each revolution, and as the quantity is desired to be greater or less, it is made to revolve more rapidly or slowly by a series of gear-wheels. The manner of

changing these gear-wheels for different quantities is simple and easily made, and when made is positive and accurate.

No stirring or pasting. The fertilizing substance remains in the cup quiet, and is not stirred nor worked, except at the instant of discharge, and then is immediately dropped out, thus overcoming the great objection in all other drills, of pasting and clogging.

Sowing the long way of the field. In no other device can the box be filled full enough to sow the long way of a field, as before the end is reached some of the tubes will stop up, and gradually the discharge will cease, leaving bad spots in the field, and affecting seriously the yield of grain. With the "Empire" the box can be filled full, and be relied upon to do its work accurately at all times, and thus the farmer can work to advantage by going the long way; avoiding so much turning, and add perceptibly to the amount of work accomplished during the day.

15 PER CENT. OF PHOSPHATE IS SAVED

by distributing it evenly over the surface, and accurately as to quantity, thus obtaining the fullest results from the amount used.

The gearing for driving the attachment is on the opposite end from the grain gear, equalizing and overcoming any tendency to side draft.

By automatic action, produced by raising and lowering the teeth, it is thrown out of or into gear instantaneously, thus avoiding any waste by scattering on the surface.

An ingenious device enables the operator to put the attachment out of and into gear without stopping the team, or affecting the working of the drill in any other way, thus allowing him to put fertilizer on one part of his field, and leave it off on another, if he so desires.

For ease and quickness in cleaning, this device has no equal. If when the seeding is finished, phosphate is left in the box, raise the left-hand wheel off from the ground, and by turning it will all be discharged, and caught on something suitable placed under the hoes, and every particle saved; and we recommend that when this is done, that the light triangular strip along the inside of the box be taken off, and the top plates removed, beginning at the left-hand end, and the whole mechanism be taken out and thoroughly cleaned and oiled with kerosene, to prevent rusting.

The severe tests to which this device has been subjected in actual use since its introduction by us in 1879, have proven beyond question its superiority over all others, and the increasing demand for it *demonstrates its value to the farmer.*

GRASS SEED ATTACHMENT

The Grass Seeder is constructed upon the same principles as the grain feed, and is as positive in its motion, thus presenting all of the advantages for sowing grass seed, as the grain feed does for sowing grain.

The quantity sown is regulated by change of gear. It is attached in front of the hoes, so that the seed is distributed evenly over the surface, and the action of the teeth following is to put it between the rows of grain where the roots have plenty of room to grow and thrive, and not be retarded by the larger and more thrifty grain.

The Tube Shifter for shifting the teeth from a straight line to a zig-zag, or *vice versa*, is simple, durable, and easily operated from the rear of the machine.

The Tube Elevator is upon an entirely different principle from any other made, and presents many points of superiority. It is easily operated by means of a handle, by which a back rolling action is given to the roll, and the teeth are lifted. Each hoe or tooth is attached by means of a chain, to a corresponding lever or handle upon the roll, so that each one can be raised independently, if necessary.

The action of this lever and roll is such that all attachments are thrown out of gear before the teeth are out of the ground, and the teeth are in the ground, ready for work, before the drill is in gear, thus ensuring that the seed and fertilizer discharged are in the ground and properly covered as soon as the drill passes along in its work

The chains which suspend the teeth are made of sufficient length, so that the back rolling action takes up the slack, and drops the gear-wheels apart before the teeth are out of the ground.

We can attach a swing-roll, with rings and chains for this purpose, as well as any manufacturer, and at a less cost to ourselves, but on account of ease and convenience of operating prefer this device, even at a greater expense.

Our steel points are made from our own patterns, which we have used for years, and which are of such shape as long experience has shown us to be best adapted to clear in all varieties of soil, and cover the seed properly under all conditions. They make a broad-bottomed furrow, and the seed is scattered to a certain extent, while those drills using a long, hooked, sharp point deposit the seed in a bunch at the bottom of a narrow, deep furrow. They are single-pointed, and warranted to give as much wear as any double-pointed tooth in use.

Our Conductors are made of the best sheet iron, in four sections, which are riveted upon strips of leather (made for our special use by one tanner, who has made it for years), so that when the tubes are raised, the sections telescope into one another, and by their action are sure to conduct the grain to the ground, under all circumstances, as they adjust themselves to all inequalities of the surface, and are constructed of the best material, so that with ordinary care, they will last for years. In case they should become broken or damaged from any cause, the farmer can easily repair them himself, without the necessity of sending miles away, and paying more in express charges than the repairs are worth.

We furnish Rubber Conductors to those who desire them, but do not recommend their use, for the reason that they will, on an average, wear out in from one to two years, and when once fractured are useless, and necessitate the purchase of new ones. They are liable, when in use, and the tube falls into a low place, and rises again, to double up and retain the seed; or, when the tubes rise on a high knoll or ridge, to project through, the ground turning the lower end backwards, discharging the seed upon the surface.

Cut-off slides are provided for each run on all of our drills, so that the farmer is enabled to regulate the drill for planting corn, in a short time, without trouble, thus dispensing with the use of sheet iron covers, with which some drills are provided, and which can never be found when wanted. These slides are attached beneath the box in a neat, substantial manner, and when not wanted for use are completely out of the way.

Our method of changing gear is at once simple, durable and substantial, enabling the operator to change from one quantity to another, at any time, in a moment, by simply loosening one nut; but with our perfect force feed a change is seldom necessary, as the same gear that sows two bushels of oats per acre, will sow the same quantity of any other small grain on the same area.

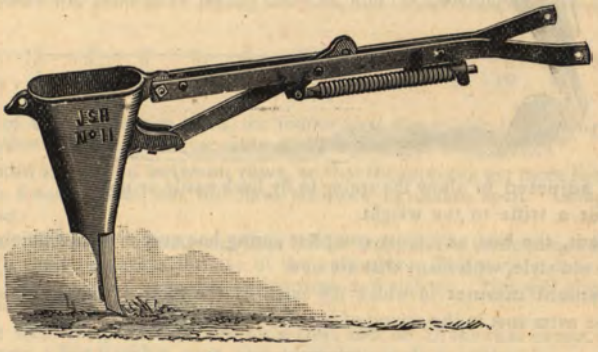
In the matter of conveniences for handling and operating the drill with ease, accuracy and economy, combined with simplicity and durability, we have all of the latest and best

improvements to date, seeking by numerous devices to save labor, ensure proper delivery of seed and fertilizer, and at the same time enable the farmer to practice that close economy which, in these times of low prices of produce, is absolutely essential to successful and remunerative farming.

Our land measure is the epitome of simplicity and compactness, measuring the land as accurately as can be done by the means employed, and only registering that portion of the surface upon which seed has been sown.

SPRING HOE.

IT IS ENTIRELY NEW, AND A MODEL OF SIMPLICITY.



It is simple, durable and effective in its action.

It is operated by a steel coil-spring, which works as well after years of use as at first.

It is free from the objections which are strongly urged against rubber springs.

It is so constructed that the pitch of the tooth is regulated without removing or even loosening a nut or bolt.

The pitch of all the teeth can be adjusted in less time than one tooth by the old style.

There is no strain on the spring when the tooth is in its proper working position.

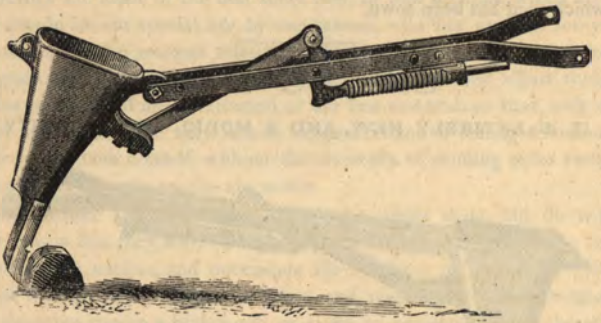
There is no strain on the spring when not in use, which is about eleven months in the year.

The strain is so brought to bear on the spring that it does not weaken by use.

The spring never fails to do its work instantly and thoroughly.

It never costs anything to replace broken springs, as none ever break

It is impossible for the spring to get out of its proper place.



It can be adjusted to allow the spring to fly back easily or not.

It adds but a trifle to the weight.

It is, in fact, the best and most complete spring hoe ever made, combining all the good qualities of the old style, with many that are new.

The convenient manner in which the pitch of the tooth is regulated, is well worth to every farmer the extra cost in the saving of time.

PLANTING CORN.

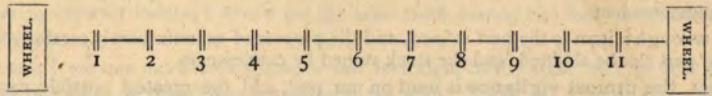
In many sections of the country at present the practice is prevailing largely of using the grain drill for planting corn for a crop, and the reasons are obvious. The work is done in a manner much superior to the old method of hand planting, and much more rapidly, and saving to the farmer the time required to mark out his ground. The crop is larger both of fodder and corn, for more of the surface is utilized.

The Empire is the only Drill with which corn can be planted without an additional device; all others are obliged to have a special attachment, thus complicating the machine, and rendering the operator more liable to mistakes.

With our Fertilizer Drill, any of the different brands of commercial manures can be applied and deposited in the ground, thus obtaining greater results than can be obtained from a much larger amount of the same material, when placed upon the surface.

Farmers will find that it will be to their advantage in sowing phosphates with corn, if they will use three rows of phosphate to one of corn, *i. e.*, use the tubes each side of the row, putting in some with the corn. This will give the corn a good thrifty start, and the spreading roots will find that at the side when the plant is large enough to absorb it, and give strength to the large brace roots which corn always throws out.

While corn may be planted with any of our drills (the feeding device being identical), yet our *11 tube, 7-inch Drill,* will be found the most advantageous; being so constructed that two rows may be planted 3 feet 6 inches apart, and the wheel marks used as guides for driving. The diagram below will show more plainly our idea, and the advantage of this size of drill:



When all of the Tubes are used, for fodder corn, the mode of operating is the same as when sowing other kinds of grain (see table of directions with each drill).

If more room is wanted between rows, so that the crop can get more light and air, shut off runs 2, 4, 6, 8 and 10, and you will have six rows 14 inches apart. Using the wheels as guides in driving.

Some farmers desire to cultivate their fodder crop, and in consequence must have their rows far enough apart to permit the use of the cultivator. This may be done by shutting off runs 1, 3, 4, 5, 7, 8, 9 and 11, using for sowing runs, 2, 6 and 10. This will give three rows 28 inches apart, and still use the wheels as guides.

To use the Drill for planting corn for a crop, shut off all the runs except 3 and 9. This will give two rows 3 feet 6 inches apart, also using the wheels as guides.

Thus it will be seen that the 11 tube Drill may be so operated as to perform a large amount of labor on a farm, outside of the regular use for which it is intended, and at the same time, on account of its light draft, much more surface can be gone over in a day than with a smaller drill, when seeding small grain, as each tooth added to the smaller size adds an acre or more to each ordinary day's work.

For quality of material used and skillful labor employed, we yield the banner to no one. Of the lumber, every piece must pass the personal inspection of the senior member of our company, whose long experience peculiarly fits him for selecting the very best, and the reputation for

square and honest goods, the building of which has been the labor of his life, is his incentive to buy none except that which fills completely his knowledge of what is required, and consequently a guarantee to the customer that he will get value received in purchasing one of our Drills.

The frames are made of the finest kind of white maple and white ash, thoroughly seasoned by time, not steam; painted with two coats of white lead and varnished

The tongues are the very best second-growth white ash. None are better.

The boxes are of whitewood of the finest quality, wrought into shape by skilled hands, and finished in the neatest style and most durable manner.

The wheels are made by ourselves, and the material most carefully selected by the workmen who have made the manufacture of wheels a specialty. We buy the stock in the rough, turn and finish the spokes, dress and bend the rims, cast the hubs, and make when finished the best wheel ever put on a grain drill.

The castings are all made in our own foundry, and the iron frequently tested for strength by the Superintendent.

The wrought iron is the best refined, and the process of manufacture is carefully watched, so that no part can be slighted, and the stock ruined by carelessness.

In fact, the utmost vigilance is used on our part, and the greatest possible care taken, that every piece, and the whole as a machine, shall go out of our hands bearing the stamp of honest endeavor to make the best goods possible, and every Drill is sold upon the following broad and liberal

WARRANTY.

We warrant our drill to be made of good material, and well finished, and to distribute all kinds of grain and fertilizer in a good and workmanlike manner. If it fails thus to perform, the Agent of whom it was purchased, or ourselves, must be notified within ten days therefrom; and if upon a second trial, under the supervision of the Agent, it fails thus to perform, it may be returned, and the purchase money, if any, will be refunded. But if notice of difficulty is not received as above stated, it shall be conclusive evidence that the machine is accepted.

The regular sizes of Drills which we carry in stock, and can ship promptly from the Factory, or either of our Branch Houses, are 8 hoe, 8-inch; 9 hoe, 7 or 8-inch, and 10 and 11 hoe, 7-inch. We can get up, on short notice, drills with any reasonable number of hoes, from six to nine inches apart; but for such drills must have a special order in writing from the customer.

Thanking you all for kind favors, and soliciting a continuance, we remain,

Yours truly,

EMPIRE DRILL CO.

teeth used, and plant about an acre an hour as well as any seed drill, and I think even better, besides doing the work more quickly, and giving the chance of soaking the seed before planting.

Or, as I have often found to be more practicable and even necessary, I let all of the tubes receive the beet, carrot or other seed, from the hopper, gauging the drill accordingly, and then, by conducting the tubes of the adjoining teeth from either side into the tooth that is being used, I can seed much heavier if necessary, which will be the case in drilling corn by every third tooth for fodder, or in mixing more meal, or other materials with the beet or carrot seeds. All of which if used will act as fertilizers with planting.

Another nice use to put such a drill to, is for drilling early peas, or any other seed which it is desired to drill in rows far enough apart to culivate and hoe them. By triple feeding of the drill teeth used, as above described, an even distribution of the amount of seed desired can be put into the ground in the best manner, and quicker than with any tool made especially for the purpose.

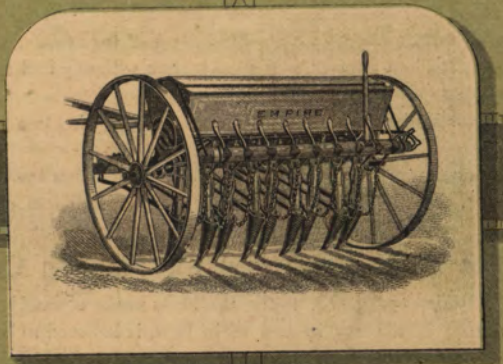
For sowing corn for fodder, I would use the same teeth, sowing two feet apart; and then cultivate as it grew.

For beans, I use one more tooth space, or two feet eight inches apart, and for field planting of corn use one more, or forty inch space, with my drill. Drills of other widths should be gauged accordingly.

The Grain Drill used for Planting Corn,

or beans either, is, I believe, preferable to the machines made especially for these crops. The drill seeding of a seed in a place instead of in hills, is believed to be a better condition for the growing crops, favoring a larger yield, and when beans are to be harvested with a bean puller, it will do better work than when they are in hills. By taking off the teeth, and placing a board some eight inches wide under the hopper and declining back, so the grain will drop obliquely upon it in falling to the ground, one will have the very best broadcast seeder of all kinds of grain, and if the farmer wishes to sow grass seed or clover, or fertilizers, he can buy drills with these attachments. Then after broadcast seeding, he can, if he wishes, use the drill with all the teeth, without being put into gear, as a wheel drag, to put the seed into the ground, or cover it, instead of using a drag or cultivator.

As some one asks for advice through the *Tribune*, as to the best machines with which to "lay out, plant and cover corn in one operation," I have endeavored to show how we do it very successfully with the wheat drill, besides putting it to several other uses.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