

P. P. MAST & CO.



J. A. HUNES,
AGENT,
MILFORD, DE.

BUCKEYE GRAIN DRILLS.

PHILADELPHIA, PA.

WINTERS PRINT & LITHO. CO., SPRINGFIELD, O.

BUCKEYE AGRICULTURAL WORKS.

P. P. MAST & CO.,

PROPRIETORS, SPRINGFIELD, OHIO.

MANUFACTURERS OF THE

BUCKEYE

Grain and Fertilizer Drills.

THE BUCKEYE HAS BEEN FOR MORE THAN TWENTY-FIVE YEARS THE LEADING GRAIN DRILL OF AMERICA AND THE WORLD. THE SALES OF BUCKEYE DRILLS HAVE GREATLY EXCEEDED THOSE OF ANY OTHER MAKE AND SO MANY OF THEM HAVE BEEN AND NOW ARE IN USE THAT ON ALMOST EVERY FARM IN THE UNITED STATES THE WORD "BUCKEYE," AS APPLIED TO SEEDING MACHINERY, IS AN OLD, FAMILIAR NAME. NO IMPLEMENT IS AS FAVORABLY KNOWN.

ALSO MANUFACTURERS OF

THE BUCKEYE BROAD-CAST SEEDERS,

THE BUCKEYE SUNBEAM CULTIVATORS,

BUCKEYE SPRING TOOTH CULTIVATORS,

HAY RAKES, CIDER MILLS, ETC., ETC.

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THE WINTERS PRINT & LITHO CO., SPRINGFIELD O.

THE IMPROVED BUCKEYE PLAIN DRILL

The description of the Buckeye Plain Drill, which follows below, is applicable in large part to our regular Spring Pressure Drill, Shoe Drill and Fertilizer Drill, all of which are illustrated in the succeeding pages. The Spring Pressure Drill and Shoe Drill vary from the Plain Drill only in minor respects, and the Fertilizer Drill only in the respect that it has a Fertilizer Attachment combined with it. The essential features of these different machines are all found in our Plain Drill, and therefore its description practically includes them.

The Buckeye Plain Drill, illustrated on the opposite page, has been a special favorite with the general farming community of the United States for many years. It entered into extensive use long ago, and has been popular with the farmers, particularly with the progressive and practical class, for **more than a quarter of a century**. Most of the drills which have since come into existence were modeled after it, and it is a matter of history that the more closely they resembled it in appearance and the more nearly they approached it in imitation of its construction, principles and working qualities the more favorably they were received by the public and the less likely were they to be exposed to adverse criticism.

The Buckeye has always "set the fashion" among grain drills, and remains to-day the recognized leader. A few have at different times attempted to compete with it, but the many have been content to imitate. It has never stood still, but has continually advanced taking on, one after another, those excellent features which make it so valuable to the farmer.

It was first in the field with a **true and positive Force Feed**, and last year it appeared with its new **Center Gear and Ratchet Wheels**, which have given such a high degree of satisfaction to customers. For the coming season the Buckeye Plain Drill will be supplied to our patrons with all the

ADMIRABLE FEATURES

Which proved so desirable during the last.

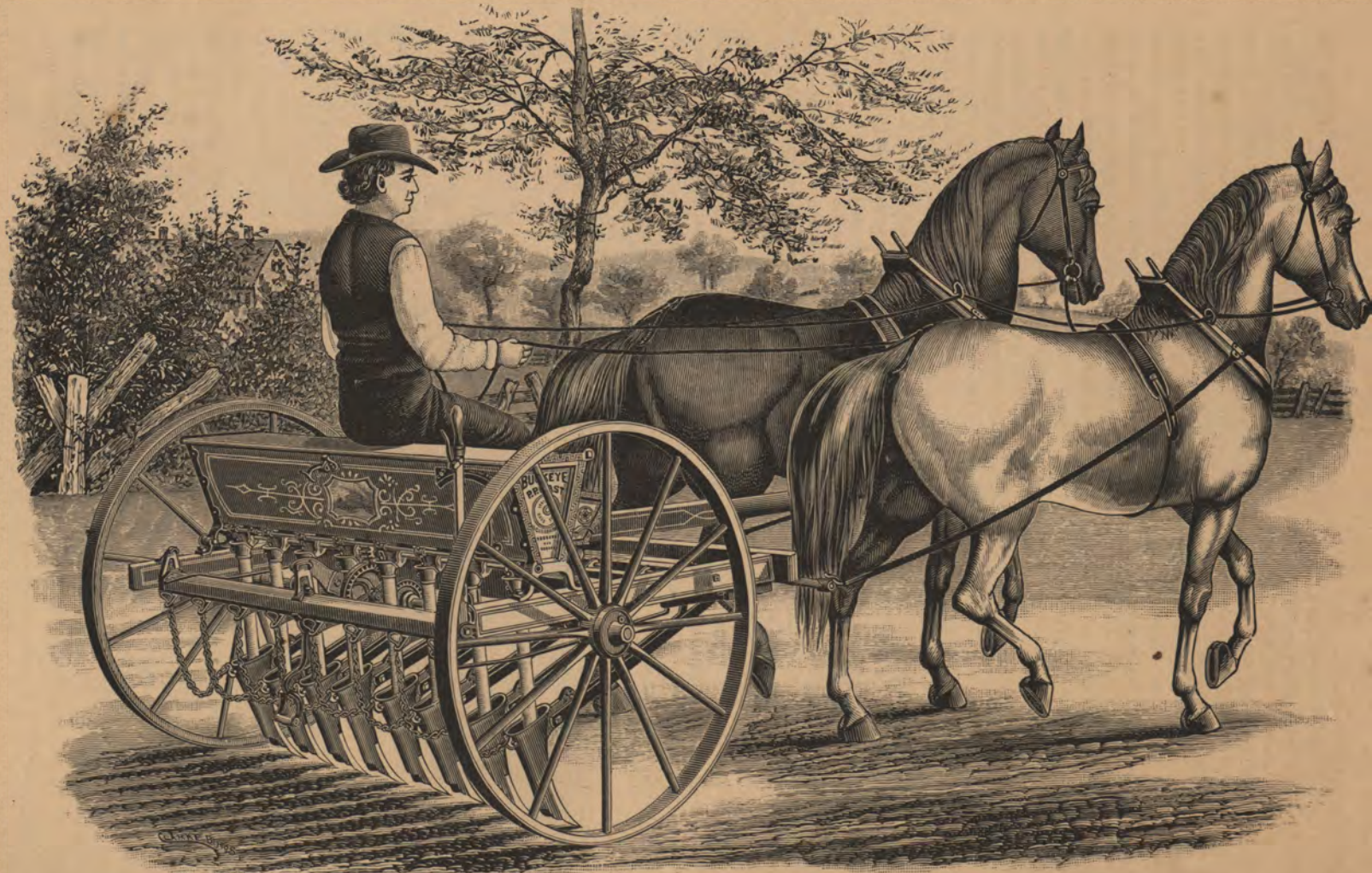
The illustration shows the **Buckeye 8-Hoe, Pin Hoe, Plain Drill**, just as it is now built for

the general trade. There is not among all drills manufactured a single one that, all things considered, will rank with this famous machine. Our patrons are so well satisfied with it that they ask for nothing better, and most of them, no doubt, would, if asked as to whether in their judgment, it could be further improved, promptly and frankly answer **No**. Nevertheless, we are always on the alert for improvements, and we never hesitate to adopt a new feature after we become satisfied it will impart some **new and additional advantage** to our machines. The **Center Gear and Ratchet Wheels** were the principal new features for the past season, and their adoption has brought about such gratifying results that they are now regarded by many as among the best features of the Buckeye machines. We ourselves look upon them as features well worthy the high praise they have called forth from our customers. The chief value of our

NEW CENTER GEAR

consists in the fact that it has dispensed with the side gear wheels, which by the old plan of construction were located **on one end** of the machine; there was but one driving wheel, which fact was sometimes attended with disadvantages. By locating the driving gearing in the center of the machine under the hopper, where it is out of the way and not likely to cause any inconvenience or trouble to the operator, we acquired the substantial advantage of making **both ground wheels drivers**.

As shown by the illustration, the casing in which the new gearing, now called our **Center Gear**, is contained is pivoted on the steel axle



THE NEW IMPROVED BUCKEYE PLAIN DRILL.

at the center and in part rests upon and is supported by the Lifting Bar in the rear. The new gearing consists substantially of three **cog or gear wheels**, the first of which is fastened to the steel axle and revolves with it; the second is attached to the feed shaft and revolves with it, while the third wheel is a central wheel and transmits the power from the first to the second or from the axle to the feed shaft, being merely an idler.

The axle is of **cold rolled steel** and both of the ground wheels are employed in driving it, and it always revolves with the wheels, whether the machine is sowing or otherwise, if it is going forward. When the machine is being backed the wheels revolve on the axle, which remains stationary.

As both of the ground wheels are drivers it does not make any difference in the sowing of the grain or seed whether they continue to move in conjunction or not. Either one may stop entirely and the other one will keep the axle in motion, which in turn keeps the feed shaft, and through it the grain and seed distributors, surveyor, etc., in **uniform and uninterrupted action**. As they do not depend upon one wheel exclusively and are certain to be set in motion at the least forward movement of either wheel, they cannot fail to act promptly and properly in every instance or under all circumstances.

This is the great advantage of the new arrangement, and by it **all irregularity in sowing or bunching** of grain are entirely prevented.

If in turning a corner one of the wheels stops or remains practically stationary, the other wheel keeps the driving gearing in motion. If a field full of corn shocks, for instance, is being planted there will be no difficulty whatever with the drilling about the shocks, as, when the team is pulled out to pass around them one or the other of the wheels will be in motion **all the time** and that will be sufficient to insure uniform seeding. After the shock is passed and the team is pulled in again the other wheel will be in motion. So that whatever the movement of the machine, unless it be backward, the driving gearing and seeding devices are certain **to be in operation**.

Obstructions may be passed equally well either in turning to the right or the left and the uniform speed of the feed shaft is maintained in either case.

Another advantage of our Center Gear is the fact that the removal of the gearing from

the end left room so that the ground wheel could be set up **closer to the machine**. The wheels should be, and on our new machines are, about the same distance from the first hoes that the hoes are from each other. The hoes on our Plain Pin Hoe Drill are generally either seven or eight inches apart, those with hoes seven inches apart having nine hoes and those with hoes eight inches apart having eight hoes, the aim being to sow about the same amount of grain per acre. The beauty of this arrangement is that the wheel tracks can be taken as accurate markers or guides by the driver.

When the new Center Gear was first introduced our jealous competitors raised the cry that in a little time, in practical operation, it would put such a strain on the feed shaft and axle as to spring them out of line. But the cry did not alarm the farmers. They bought the Buckeye machines, as usual, and on our assurance that the new gearing would work all right. And it did. So far as we are now advised there was not the slightest trouble on that or any other score. We knew that neither the shaft nor the axle would spring because they could not, and so did our worthy competitors. However, they had to assail the new gearing in some manner, but they were particularly unfortunate in selecting the point of attack. In the first place the strain put upon either the feed shaft or the axle is very slight and in the second place both the axle and shaft are so well supported in all directions that it would be almost a physical impossibility to spring either of them. Farmers may buy the Buckeye with the full assurance that it has the **best driving gearing** in the world. We do not now hear anything more from our competitors on the subject of the springing of shafts. That fallacy is effectually exploded.

OUR NEW RATCHET WHEELS

are much superior to the ordinary spring and pawl wheels used on nearly all other drills. The springs in the latter soon wear out and getting out of order cause all kinds of trouble. Our wheels are similar to those usually found on reaping and mowing machines, and are the best for the purpose yet devised. With their use there can be no lost motion.

The ground wheels cannot turn more than a half inch before the axle is set in motion, and with it the feed shaft, etc.

The axle passes entirely through both hubs and has **three long bearings** in addition, one

on the inside of each hub and one in center, attached to center rail. These hold the axle **perfectly rigid** and true to line. It can't bend, spring or get out of shape, which fact greatly aids to keep down the draft of the machine. None of the shafts on the machine **have shoulders**, the hubs on the wheels acting as shoulders for the revolving axle. Shafts always break first at the points where the shoulders begin, those points being weak places.

THE FEED SHAFT

is located underneath the Hopper and extends the full length of the Drill, as shown by cut. It is of cold rolled iron, and is almost absolutely true, which cannot be said of the turned shafts ordinarily used. This shaft is driven, as before described, from the revolving axle **by the center gears**, and it, in turn, drives the grain distributors, grass seed sowers, etc. The Feed Shaft is moved back and forward, to the right or left, carrying with it the Fluted Feed Wheels, as described in connection with the feeding devices, on page 7, by the cut-off lever to the right of the grain box.

On the left hand end of the Feed Shaft are placed the wheels for driving the

GRASS SEED SOWER.

Which in the cut is located in front of the grain box. Some farmers prefer to sow the grass seed in front of the grain hoes and others in the rear. Our Grass Seed Sower is, therefore, so arranged that its position may be shifted from the front to the rear of the hopper, or *vice versa*, **by simply unscrewing two bolts**. It is but the work of a few moments and it operates with equal facility in either position. The Grass Seed Sower has a **positive force feed**, which is operated and adjusted very much on the same plan as the Grain feed, but is made on a reduced scale to adapt it to grass seed, flax seed and other fine grain. It will sow, with absolute regularity and evenness, any quantity of grass seed desired, from two to twenty-four quarts of clean seed per acre, and flax seed in any required quantities.

THE WHEELS

on all Buckeye Drills are made of the best seasoned material, have broad tires, are now devoid of all gearing, and are made to wear and last. The spokes are made of selected and thoroughly seasoned hickory, and the felloes of the best ash.

THE FRAMES AND BARS

are made of well seasoned ash and the Hopper Box of poplar. Steel, cold rolled iron and malleable iron are employed wherever they can be used to advantage. The workmanship, like the material, is the best to be had, so that every Buckeye Drill that leaves our works is ready for service.

THE LAND SURVEYOR

is also driven* from the revolving axle and is located under the Hopper near the left hand end, being attached to the Center Rail, where it is entirely out of the way. It registers accurately the number of acres sown, from one up to ten, and it registers only when the Drill is seeding, as the lifting bar throws it out of gear simultaneously with all the other parts. It commences to register again the instant the hoes are returned to the ground and the seeding is resumed.

THE LIFTING BAR

is located in the extreme rear of the machine, and may be readily operated by the driver. The one act of lifting the bar raises the hoes out of the ground, disconnects the Center Gear Wheels, thereby stopping the feed shaft and causing the grain distributors and grass seed sowers to cease operation, and hoists the surveyor from its connection with the driving axle. All the working parts of the Drill are thus thrown out of gear and to accomplish it all is but the work of a moment.

THE LEVER

for operating the hoes, that is for throwing them out of or into line, or what is known as a zigzag position, is located on the frame at the right hand side, within easy reach of the driver, and he can, without stopping the team, quickly throw the hoes into any position desired, which is a great convenience, particularly on trashy ground.

The driver, **without any trouble or without stopping the team**, can throw the whole machine out of or into gear, by hoisting or lowering the Lifting Bar, can change the quantity of either grain or grass seed to be sown, by simply moving the Index Finger in the rear or front of the Hopper, or he can change the position of the Hoes, as just described. It is the universal opinion of our customers that no other drill possesses **as many conveniences** as the Buckeye, and that no other drill is as easily operated and as readily understood. Its **great simplicity and many conveniences** espe-

cially commend it to the farmer. The cut shows our regular

PIN HOE CHAIN LIFT DRILL,

Which has proved so popular that the demand for it continues to grow each year. The cut also shows the position and style of the Drag Bars, which are very firm and durable and which hold the hoes properly in line.

THE HOES

have polished steel points and their depth in the ground is readily regulated by the operator, who must be governed in that important matter by the condition of the soil and ground and the other considerations which properly enter into the subject, all of which vary so much that no general rule can be safely laid down. But don't drill too deep.

The cast iron spouts, to which the rubber tubes are wired, can be readily taken off or put on, but no amount of agitation can shake them loose.

WHAT IT WILL DO.

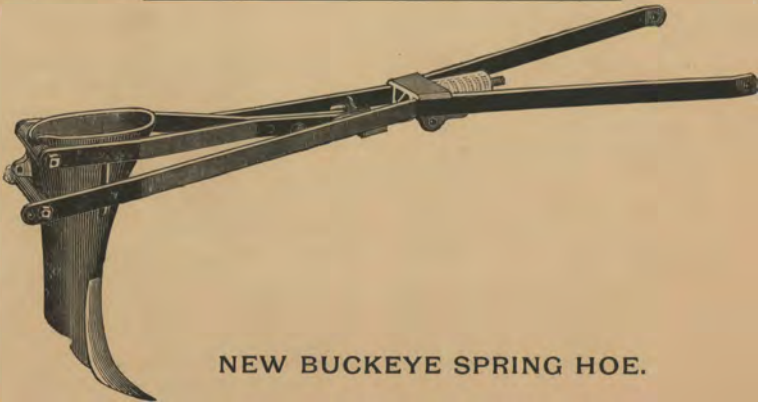
The Buckeye will drill or sow **wheat, rye, barley, oats, buckwheat, flaxseed, grass seed, timothy seed**, and all other kinds of either fine or coarse seed or grain, with a facility not equalled by any other drill.

The Drill is **perfectly balanced** and has no side draft whatever. Those who have used our Drills in connection with drills of other manufacture unite in agreeing that the Buckeye is much the easiest on the horses. As the machine is so nicely balanced there is no

weight or pressure on the horses' necks, a most important matter, as thousands of horses have been ruined in this way.

In concluding this description of the Buckeye Plain Drill, which we stated in the start would virtually include our other styles of machines also, we are again moved to say that the experience of a large portion of the American farming community, extending over a period of more than twenty five years, shows that there is **no drill in the world** which may be set up as the equal, all things considered, of the Buckeye. It has stood the test of years while it was steadily marching forward with confident step. No other drill, we are justified in saying, is capable of doing as great a variety of work, doing it as well and doing it as long. In fact its well known durability is one of its remarkable attributes. There are Buckeye Drills in use at the present time which have done constant and satisfactory service for their owners for more than a quarter of a century, and which are in good condition yet. Need anything more be said on that score? Nothing, certainly, unless it be that we now make them better than ever, which, however, is a fact.

To the prospective buyer for the coming season, therefore, we say, **get the Buckeye**, and you will have a machine that will please you from the first and that will delight you more and more the longer you use it. There is no mistake about this.



NEW BUCKEYE SPRING HOE.

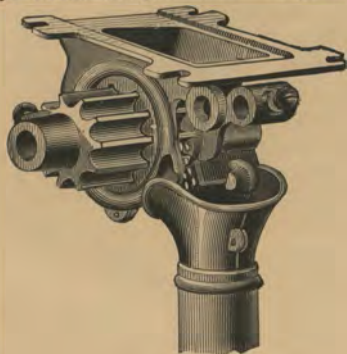
The majority of farmers prefer the regular Pin Hoe Drill as shown in the various cuts in this catalogue illustrating our machines. Some, however, want a Spring Hoe, and to those we supply our drills furnished with the Buckeye Spring Hoe, as exhibited above.

Our New Spring Hoe is so arranged that the Drag Bars pivot in the rear of the hoe and form braces to the side of the hoe to keep it from wobbling. The Spring enables the hoe to fold under when striking an obstruction, which prevents the breaking of the gum tubes. Almost all other Spring Hoes in the market pivot in front, but our customers prefer the arrangement shown above, because they have found it to possess advantages which other kinds do not have.

BUCKEYE POSITIVE FORCE FEED.

One of the main features which have given the Buckeye Drills such prestige throughout all grain and grass growing areas is its seeding devices. A good feed is **one of the essentials** of a successful drill, in fact, it is the most essential thing about a drill. The Buckeye has always been singularly fortunate in this respect and the eminent satisfaction farmers have uniformly had in operating our machines is due in large part to our feeding devices, which are simple, effective and reliable.

The small cut in this column shows the Buckeye Positive Force Feed, with which all Buckeye Drills are provided. A glance at it



Buckeye Positive Force Feed

will show the simplicity of its construction. It is not a **complicated piece of mechanism**, as is the ordinary feeding device to be found on the general run of drills. It does not easily get out of order and we rarely hear of any trouble whatever with its operation. With a little attention, now and then, on the part of the operator, it can be depended upon for a life time's successful service. It has been tried and approved and among drill feeds ranks as the "old reliable."

It can be depended upon under all circumstances to distribute the grain or grass seed with absolute uniformity and regularity, and in connection with our new Center Gear it insures an even flow of the grain and renders bunching or irregularity of sowing impossible.

The Cup is attached to the bottom of the hopper and the Fluted Feed, which telescopes into the former, is penetrated by the feed shaft to which it is firmly fastened. The Fluted Feed must, therefore, turn with the feed shaft, and as it turns the grain drops down through the orifice in the Cup and is carried around and discharged, in an even, steady flow, into the spout to which the rubber tube is attached. The Fluted Feed fills up the entire space in the Cup so that it is not possible for any grain to escape in any other way than by the **regular discharge**. It is a perfect Force Feed because the Fluted Feed Wheel which carries the seed, must revolve with the feed shaft, therefore, the distributors must always operate with the same force.

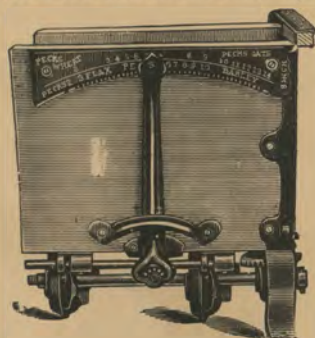
REGULATING THE QUANTITY.

The method of regulating the quantity to be sown per acre is such as to insure perfect accuracy, and the Buckeye will sow with the same certainty and accuracy, whether the team is going fast or slow, or whether going up hill or down hill, or whether passing over rough, hilly and uneven ground or smooth and level land. This is accomplished principally by our

CUT-OFF.

This Cut-off is attached to the cut-off rod which is operated by the lever on the dial plate, as shown by illustration below. Moving the dial finger, or index lever, shifts the cut-off rod either to the right or left as the case may be. The cut off forces the Fluted Feed to the left and cuts off the flow of grain by diminishing the discharge space.

The illustration of the Force Feed printed opposite shows the Fluted Feed forced to the left so far as to leave only a small discharge opening for the grain, say for very clean wheat or flax seed. When this **discharge opening** is to be enlarged, for sowing large grain, such as oats, a reverse movement of the cut-off rod, accomplished by reversing the dial finger, forces the Fluted Feed back through the Cup. The Fluted Feed does not itself move but the shaft (the feed shaft) to which it is firmly attached, does, being forced in one direction by the cut-off pressing against the Fluted Feed and in the other by the fork



Buckeye Feed Regulator.

on the cut-off rod, which prongs over the feed shaft, pressing against the other side of the Fluted Feed. The whole arrangement is **very simple and very effective**. The driver has but to look on the dial plate and set the finger at the quantity he wants sown and go ahead.

These cut-offs or gauges are all attached to the same rod, (the cut-off rod) so that the space in all the Cups is increased or diminished precisely the same, hence there **can be no variation** in the quantity of grain or grass seed sown by the different feeders. The quantity can be varied just as little or just as much as may be desired.

The New Buckeye Shoe Drill.

The new Buckeye Shoe Drill is correctly illustrated on the opposite page. This machine is provided with all the **latest improvements and conveniences** now to be found on the regular Plain Drill, including the new Center Gear, Ratchet Wheels, etc. In fact it is built substantially like the Plain Drill, having the same grain and grass seeding apparatus, known over almost the whole world as the Buckeye Positive Force Feed, the same general construction and the same general devices that impart such exceptional value to our regular and well known machines. The reader has but to turn back to pages 2, 4, 5, 6 and 7, to get a full and detailed description of all the features of this machine which are not specially treated herewith.

The illustration will give the reader a correct understanding of the Shoe feature, from which it derives its name, "Shoe Drill." The style, shape, character, position of the shoes, are all correctly shown; also the chain drag, which serves to drag the soil into the furrows when such an operation is necessary.

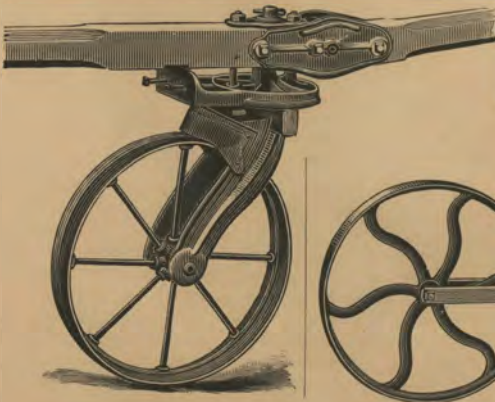
The Shoes are made of the very best steel and shaped just about the same as the shoes on a double corn planter, which are now extensively in use, and arranged with cast boots in the rear, through which rubber tubes extend to conduct the grain from the hopper to the ground, and with springs and pivot posts, which extend from the pressure or lifting bar to the drag bars, which

enables the operator to put any desired pressure on the Shoes.

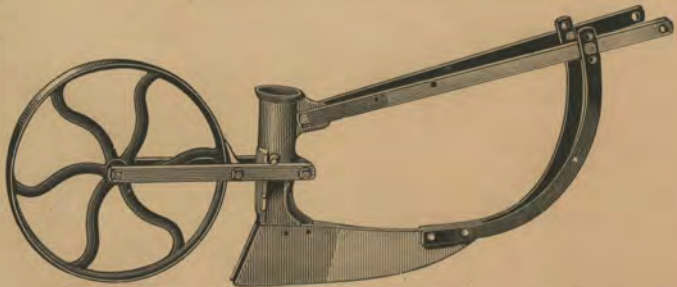
We have sold the Buckeye Shoe Drill to a great many farmers who preferred it to any other style or make of machine, and we are prepared to furnish it in any quantities desired. In those sections where the soil is light, sandy or loamy it may be used with great advantage, since with the regular machine there is always danger of covering the grain too deeply. But we do not recommend it for heavy clay.

All heavy soils, especially after rains, require the pointed tooth to sufficiently enter the ground to cover the grain, and, we repeat, we would recommend the Shoe Drill only for light, loamy or sandy soils, where, with the ordinary drill, there is a tendency to cover the grain too deeply. Grain should not be covered more than one or one and one-half inches deep. In some instances where clay soils were dry and well pulverized, the shoe would work all right, but the next season the soil may be so hard that the shoe would not be satisfactory. Therefore, for all heavy soils, we recommend the pointed hoe, with adjustable gauges to regulate the depth.

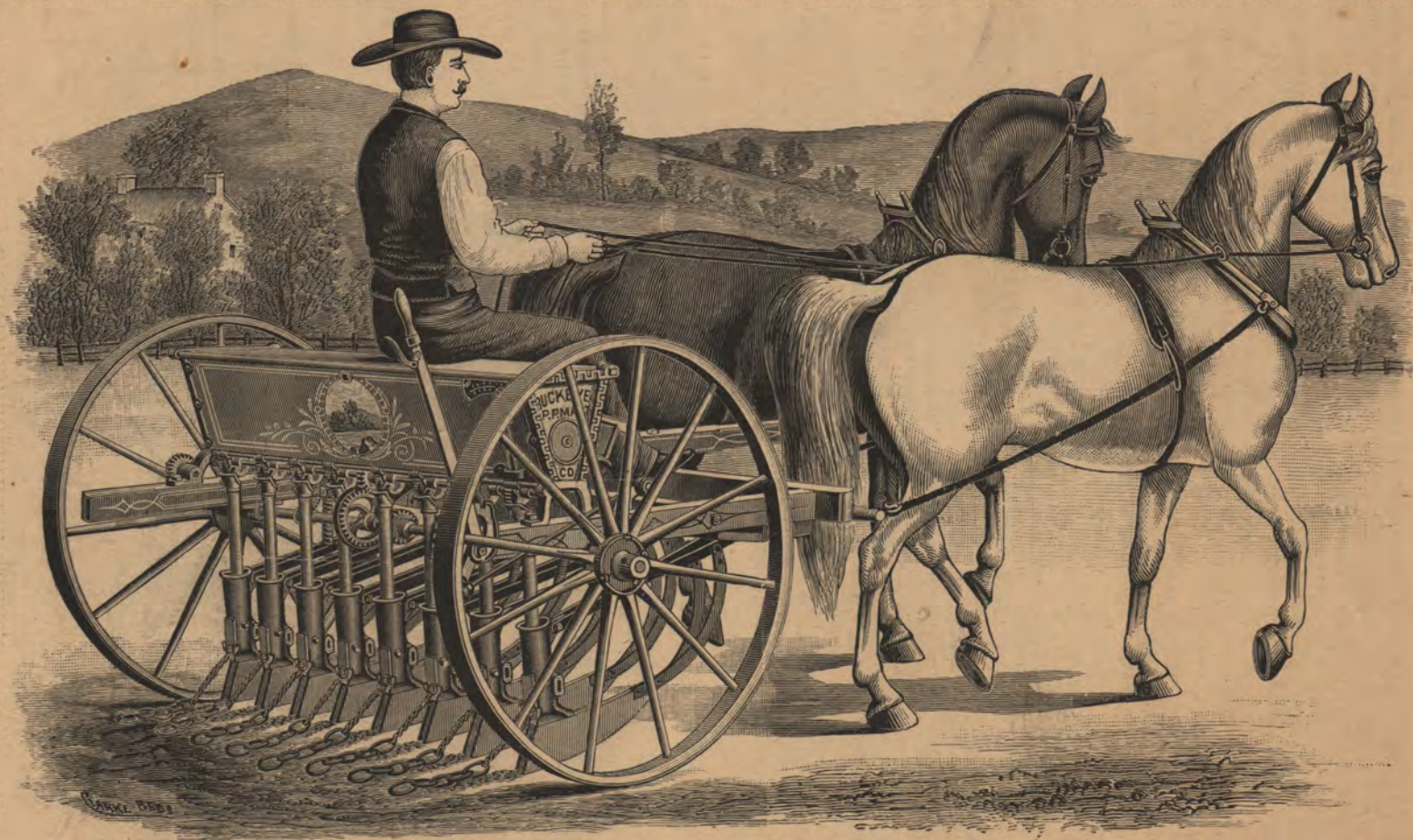
The Shoe Drill is unquestionably becoming quite popular and we are building more of them each year. We know just what kind of a machine is needed to do the work for which the Shoe Drill was provided and we confidently recommend the Buckeye because it is the best constructed and best planned Shoe Drill in the market.



Some farmers prefer to use a pressure wheel and coverer in connection with their Shoe Drills in place of the chain drag. The cut below shows our arrangement for that purpose, which is all that could be desired.



The cut to the left above shows our new Caster Wheel, which may be used in connection with any of the Buckeye Drills, or drills of other make, and which removes all weight from the team and does away entirely with the side lashing and jerking of the team. The device consists of an anti-friction Caster, which is attached beneath, and to the under side of the front beam and tongue of the machine, and upon this Caster rests the front weight of the drill.



THE NEW IMPROVED BUCKEYE SHOE DRILL.



The New Buckeye Front Spring Pressure Drill.

The above cut shows the new Buckeye Front Spring Pressure Drill, which is also provided with our new Center Gear, as shown, and Ratchet Wheels.

The Drill is substantially the same as our regular Plain Drill, as illustrated on page 3 and heretofore described, differing from it only in the Spring Pressure feature, which we have now placed **in the front of the machine**, changing it to that position from its former location in the rear. The present arrangement has all the advantages of the old plan and some additional conveniences besides, the chief among which is the fact that the operator can now **get directly at the hoes from the rear** and with his foot remove any weeds, grass or other litter accumulated about them.

This machine is provided with Iron Bars and Springs, as shown by cut, and they are so arranged and applied that any **desired amount of pressure** can be put on the hoes by means of the lever; or it can be used without any pressure if the operator wishes.

Our Spring Pressure Drills have been used quite extensively in some sections of the country where the farmers want that kind of a machine, and they have given very general satisfaction, and the additional conveniences

which the machine will have the coming season still more strongly commend it to the trade.

It is also supplied with gauges to regulate the depth of the hoes so that they will drill uniformly in depth whether at work in hard or soft ground. The Drag Bars are also arranged with a drop to let the hoes follow the unevenness of the ground.

A common fault in seeding is to allow the hoes to run too deeply. From one to one and a half and in no case more than two inches is as deep as grain should ever be covered. Complaints are sometimes made against drills, to the effect that they do not distribute the seed regularly, and in some cases the charges may be justly made, but the unevenness is more frequently caused by the grain being covered too deeply, much of the grain not coming up at all, while some that does come through the thick covering is sickly and feeble, and the failure to come up evenly is charged upon the drill.

With this drill the farmer has no difficulty in **regulating the depth** at which he wishes the hoes to run and to adjust the gauge is but the work of a moment. We are perfectly willing to guarantee this to be the best Spring Pressure Drill on the market.

THE NEW BUCKEYE Combined Grain and Fertilizer Drill.

The Buckeye Combined Drill is correctly illustrated on the succeeding page. This well known and highly prized machine is now in the sixth year of its successful sale and use, as now manufactured. During that time it has been steadily increasing in popularity among the intelligent and progressive farmers of the Eastern and Middle States. The demand for it has grown much faster than that which ordinarily follows the introduction of the most successful machines, and our **large resources for production** have been, during the last few seasons, severely taxed in order to furnish a sufficient quantity to supply the trade, which continued to come to us from constantly widening areas of country. The Buckeye Fertilizer Drill is now in successful operation throughout the entire Eastern States and has gone into use quite extensively in the Middle and some of the Western States. It is the only Fertilizer Drill in the market which gives to the farmer **uninterrupted satisfaction** in the sowing of his crops, and we believe it to be a fact that there are more of them in use than of all other makes combined.

After the long and oftentimes discouraging struggle against the difficulties which stood in the way of the production of a successful fertilizer sower, which we in common with other manufacturers went through, it may be inferred that it was a relief to us when, finally, we hit upon our present feed, the introduction of which terminated our troubles with the sowing of guano and all other fertilizing substances. Other manufacturers are still struggling with the problem, but the Buckeye emphatically has the "bulge" on all of them in its

GLASS FERTILIZER FEEDER.

The employment of glass in connection with the construction of a fertilizer feeding apparatus was a most happy conception, and the wonder is that it was not thought of long before we began to experiment with it.

One of the great difficulties connected with the successful operation of a fertilizer drill, and one, too, for which there apparently was no remedy, was the **corroding, rusting and clogging up of the feeders**. All farmers, who

operated drills, understood how impossible it was to prevent that. The feeders would rust in spite of everything that could be done, and then clogging-up and choking followed inevitably, the fertilizer being first worked into a sticky paste which packed and then obstructed or stopped the feeding.

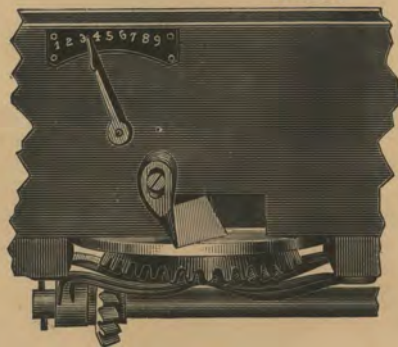
The Buckeye Glass Feeder does away with this difficulty entirely and with its use the tendency of the fertilizer to clog-up and choke or pack **is effectually stopped**.

It is a glass feeder and, unlike metal, which almost all other drills are obliged to use, it is not affected by **moisture or acids of any kind**.



No. 1.

No. 2.



No. 3.

The three illustrations, herewith printed, show the character, size, shape, position occupied, etc., of the Buckeye Fertilizer Glass Feeder. It consists of

A GLASS DISC OR FEEDER.

As shown in cut No. 1, which rests on a bevel gear in a metal frame, called "the spider," as shown in cut No. 2, the same being attached to the under side of the bottom of the fertilizer hopper. This bevel gear is operated by a bevel wheel on the fertilizer shaft and, rotating horizontally, **carries the Glass Disc around with it**. The whole device is shown in cut No. 3,



THE NEW IMPROVED BUCKEYE COMBINED DRILL AND FERTILIZER.

where it is seen projecting through an opening in the rear of the hopper, as provided for the purpose. It is furnished with a scraper as shown and a lever, working on an index plate on the rear of the hopper, within easy reach of the driver, which operates the Cut-off, whereby the quantity is regulated.

THE FERTILIZER SHAFT

is of cold rolled iron and the bevel cog wheel, that operates the feeder, is driven by it. The gearing that operates the fertilizer shaft is located on the left of the machine, at the end of the shaft. So also is the lever for connecting and disconnecting the fertilizer gears and the driver can, **in an instant and without stopping the team**, stop the sowing of the fertilizer or resume it again.

The Fertilizer and Grain Hoppers are combined into a **double hopper**, as shown by the cut. While the front one is feeding out the grain the rear one, the fertilizer box or apartment, is feeding out the fertilizer. Both grain and fertilizer pass down through the hoes and are deposited together in the ground. The fertilizer is always brought into view **before entering the hoes** and the operator can see just how the work is being done.

By our arrangement and location of feeder the fertilizer will only pass out of the hopper as it is carried out by the movement of the **ground wheels**. When they stop the flow of fertilizer or grain must necessarily cease. This is not true of those drills which have the opening in the bottom of the hopper and directly under the fertilizer. For if the fertilizer be dry and fine, as is often the case, it will run through like sand with but little or no agitation, hence it cannot be **distributed regularly**.

The agitator is worked by a Cam on the left end of the fertilizer shaft and its numerous points, **playing over the bottom** and around the Glass Discs, keep the fertilizer thoroughly loosened and shaken up.

The fertilizer hopper is lined both on sides and bottom with galvanized iron.

THE GRASS SEED SOWER

is located in front of the grain hopper, but if the operator desires to sow the grass seed in

rear of the hoes he can readily accomplish it by simply putting on the incline board upon which the grass seed falls, and is carried and dropped in the rear of the hoes.

In all other essential respects the Buckeye Combined Drill and Fertilizer is the same as our Plain Drill as described in the previous pages, (from 2 to 7) having the same **Center Gear**, the same **Clutch Wheels**, (by the use of which both ground wheels become drivers) the same **grain and grass seed feeding devices**, the same **cut-offs** and **quantity regulators**, the same **hoe shifting device**, the same **lifting bar and apparatus**, (by which all the gearing is disconnected from the driving axle simultaneously,) the same **land surveyor**, the same **drag bars, hoes, etc.**

The cut shows our regular Chain Lift Fertilizer Drill, but we also make a Spring Pressure Fertilizer Drill, which principle and construction are illustrated in the cut on page 10 and described in connection therewith. Parties ordering Fertilizer Drills and having preferences in the matter can be supplied with the style they most prefer, and they can also have either pin hoe or spring hoe machines.

The sowing of fertilizers has become such an important matter with the farmers of the older states that it is a source of profound satisfaction to us to be able, as we are, to furnish them a machine which will do this work thoroughly well. The Buckeye Combined Drill and Fertilizer sows all kinds of grain and all kinds of fertilizers in connection therewith, and any farmer can buy it with the full assurance that it will give him full satisfaction and cause him practically no trouble whatever.

We say to our farmer friends, therefore, what is the advantage to you of buying some other make of machine which at best is only experimental and with which you will have to take your chances, sharing in that respect the responsibilities of the manufacturer, when you can get the Buckeye, which has passed the experimental stage and which is a pronounced and undisputed success, at about the same price? Think of this, farmers, and we believe you will conclude to buy only the Buckeye.

The Buckeye Combined Drill, with its Glass Fertilizer Feed, is the only drill in the world that will successfully sow all kinds of fertilizers without the trouble caused by the corroding and rusting of the feeders and the clogging of the material.



THE NEW NO. 8½ BUCKEYE SUNBEAM, COMBINED RIDING AND WALKING CULTIVATOR.
Manufactured by P. P. Mast & Co.



THE NEW NO. 4 BUCKEYE SUNBEAM WALKING CULTIVATOR.
Manufactured by P. P. Mast & Co.

BUCKEYE AGRICULTURAL WORKS, P. P. MAST & CO., PROPRIETORS.



THE LARGEST GRAIN DRILL FACTORY IN THE WORLD, COVERING 25 ACRES.



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