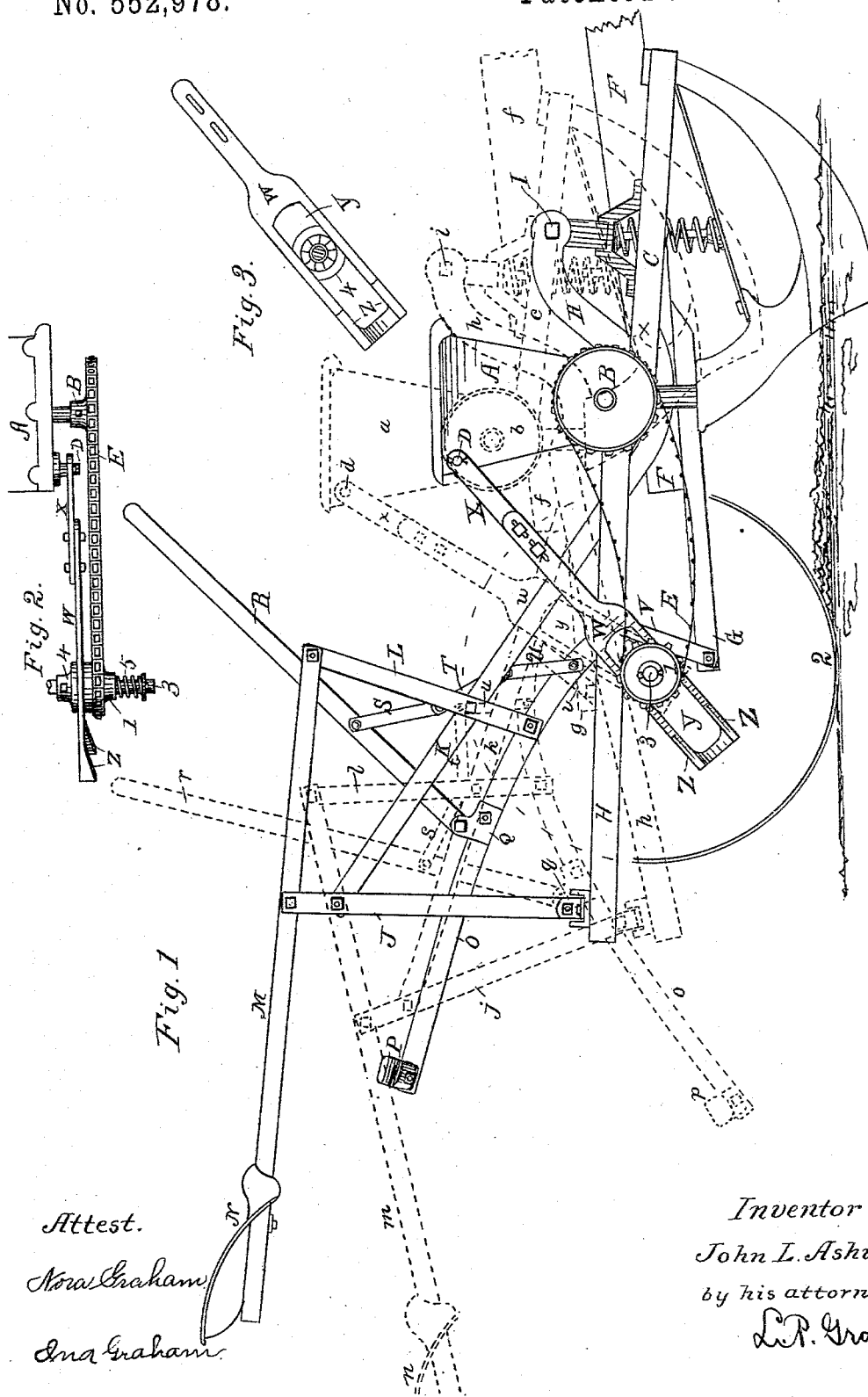


(No Model.)

J. L. ASHURST.
PRESS DRILL.

No. 552,978.

Patented Jan. 14, 1896.



Attest.

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Inventor
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UNITED STATES PATENT OFFICE.

JOHN L. ASHURST, OF HAVANA, ASSIGNOR TO LEWIS B. ASHURST, OF
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PRESS-DRILL.

SPECIFICATION forming part of Letters Patent No. 552,978, dated January 14, 1896.

Application filed August 22, 1895. Serial No. 560,109. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. ASHURST, of Havana, in the county of Mason and State of Illinois, have invented certain new and useful Improvements in Press-Drills, of which the following is a specification.

This invention relates in part to mechanism for automatically shifting drill-clutches and in part to mechanism for lifting the runner-frames. It is applicable to any drill that has a wheel-frame adapted to drive the planting mechanism and carry the runner-frame, it is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of a drill embodying my invention. Fig. 2 is a plan of details relating to the clutch and its shifting mechanism. Fig. 3 is a side view of the clutch-shifting bar in connection with one of the clutch members.

The parts of the drill that are relatively immovable in the act of raising the runner-frame are designated by numerals, as follows: 3 is the wheel-shaft, or one of them. 2 indicates a press-wheel, with a set of which each wheel-shaft is provided. 1 is a sprocket-wheel on an end of the shaft of the press-wheels, which also constitutes one of the clutch members used to disconnect the planting-shaft from the wheel-shaft when the runners are raised clear of the ground. 4 is a clutch member fixed on shaft 3, and 5 is a spring that resists motion of wheel 1 away from member 4. These features have a definite correlation with certain parts that move with relation to the wheel-shaft in the act of raising the runner-frame, and their specific peculiarities will be pointed out after such moving parts have been described.

As the parts that move in act of raising and lowering the runner-frame are each shown in two positions—one by solid lines and one by broken lines—I have, to avoid ambiguity, used a capital letter to designate a part shown in solid lines, and applied the same letter in lower-case to same part in the position indicated by broken lines. For instance, A is the seed-box in one position and *a* is the same element in a different position. The solid lines show the correlation of parts when

the runners are in the ground. The broken lines show the runners raised, and other parts in the positions they naturally assume when the runners are raised.

As before stated, A designates the seed-box.

B is a sprocket-wheel on the seed-delivering shaft of the seed-box.

C is a bar of the runner-frame.

D is a pin projecting laterally from the upper rear corner of an end of the seed-box.

E is a chain that connects wheel 1 with wheel B and provides means whereby the planting-shaft may be driven by the rotation of the shaft of the press-wheels.

F is the tongue.

G is a bar rigidly connected with the tongue and extended rearward therefrom—in other words, a rearward extension of the tongue proper.

H is a bar of the wheel-frame, which connects pivotally with the runner-frame at I, or, so far as this invention is concerned, at any other desirable point.

J is one of a pair of supporting-bars that are hinged to the wheel-frame in rear of the wheels and extend upward approximately vertically.

K is a brace-bar that connects with the tongue at about the position indicated by X on bar C and with bars J near the upper ends thereof.

Bar L extends up and down, though not, in this instance, at least, in vertical lines, and it connects above its lower end with brace-bar K. Seat-bar M connects at its front end with bar L, and it extends rearward past the upper ends of bars J, with which it also connects. It carries a seat, as N, at or near its rear end, and the seat is preferably slidable on the bar. A foot-lever O is swung from the lower end of bar L, it has a foot-rest or treadle P on its rear end, and it connects at its front end with tongue extension G by means of link V. A block Q fastened onto the foot-lever back of the pivot thereof provides a pivotal point of connection for the lower end of hand-lever R, which hand-lever rests ordinarily in about the position shown in solid lines. A flexible connection, composed, in this instance, of links S, T and U, extends from the hand-lever at a point above the pivot thereof to foot-lever O at a point

in front of its pivot. A bar W is slotted at Y to fit over the diminished circumference of clutch-collar 4, as shown in Fig. 3, and it has lateral inclines, as Z, at its lower end. Bar X is connected with bar W in a manner providing for longitudinal adjustment, in this instance by bolts extending through slots, and it is pivotally connected at its upper end with pin D on box A.

The sides of the slotted portion of bar W rest between flanges of the clutch members, and the inclines are employed to move the loose member away from the fast member and disconnect the clutch. The sprocket-wheel 1 and the collar 4 have teeth in their opposing surfaces which are held in engagement by spring 5, and the rotation of the wheel-shaft is usually imparted to the seed-shaft through the clutch, the chain E and the wheel B. The upper end of the clutch-shifting bar is connected with the highest and most rearward part of the planting-frame—namely, the rear upper corner of an end of the seed-box—and in consequence the clutch-shifting bar stands so nearly vertical that the box in rising exerts a pretty direct pull away from the clutch and develops much more longitudinal motion in the bar than is required to shift the clutch. This is permitted by the length of the slot in the bar, and the shifting-inclines are placed at the lower end of the bar in order that the final rising motion only may affect the clutch. This provision permits the runners to rise and fall freely in act of planting without disturbing the clutch, and utilizes the rising motion that occurs after the runners are clear of the ground, or at least too high to plant, to throw the clutch out of engagement. To make this more clear the raising of the runners may be divided into two continuous movements, one of which carries the runners to the surface of the ground, and the other of which elevates them still farther a distance sufficient to provide clearance in turning, &c. The first-described operation may be performed without bringing the clutch-shifting inclines into operation, and so there is no danger of the seed-shaft stopping its rotation so long as the runners are in operative contact with the ground.

The importance of the location of the clutch-shifting bar's connection with the planting-frame will be understood when it is considered that the wheel-frame and the planting-frame are in the same horizontal plane, generally speaking; that the planting-frame is pivotally connected with the front end of the wheel-frame, and that in act of rising the planting-frame as a whole describes an arc of a circle with the wheel-shaft for a center; but the tongue holds the runner-frame in an approximately horizontal position, and consequently the parts higher than the hinged connection between the two frames are carried away from the wheel-shaft as the runner-frame rises, while those lower are carried toward said shaft. The end of the tongue

forms a pivot on which the runner-frame swings as it rises, and so the farther to the rear the greater the rise. Moreover, the farther to the rear of the runner-frame the clutch-bar connection is located the nearer it is in vertical alignment with the wheel-shaft and clutch and the more nearly the clutch-bar will be moved in the direction of its length. With this explanation it will be seen that the position of the connection of the clutch-bar with the planting or runner frame, of which the seed-box constitutes a part, is of first importance in providing an automatic clutch-shifter that will not disengage the clutch so long as the runners are in planting relation to the ground.

The inclines are one on each side of the slot in order that they may not cramp the sprocket-wheel on the shaft in sliding it away from the collar, and in this instance they are both on the one face of the bar. They may, however, be placed on the opposite face of the bar, or be partly on one face and partly on the other, without materially altering their operation or in any way affecting the principle of the invention. The bar is made longitudinally extensible so that the inclines may be adjusted to operate on the clutch at the precise point in the rise of the runner-frame that the required effect demands.

With the exception of the foot-lever O and the hand-lever R, each member of the lifting-frame is preferably composed of two parallel bars bolted together and to the conjoining member in a manner to form pivots. This peculiarity of construction supplies a stiff, strong, and comparatively light frame, very desirable, but not entirely essential, to my invention. The lifting-frame is located at the transverse center of the drill in line with tongue extension G, and said extension swings between sections of the wheel-shaft. The flexible connection S T U, which may be a common chain, enables the foot-lever to lift independent of the hand-lever, and any form of joint that effects this result while imparting the lift motion of the hand-lever to the foot-lever may be substituted for the flexible connection. In other words, it is necessary to certain features of this part of my invention that the hand-lever may swing forward, but not backward, independent of the foot-lever in the act of raising the runner-frame.

The described peculiarities of the lifting-frame enables the foot-lever to be used without moving the hand-lever, or the hand-lever to be used without applying foot-pressure, or both hand and foot pressure to be applied at once. It also gives the weight of the driver increased leverage without unduly extending the seat-frame behind the wheels, and thereby lightens the labor of the hand or foot, or both.

A man of ordinary strength and weight may raise the runners of a drill of ordinary size by means of foot-power, leaving both hands free to manage the team. A weaker,

lighter man or an unusually wide drill may require the greater leverage of the hand-lever, while a boy will need to use both the foot-lever and the hand-lever.

5 In the position shown by broken lines in the drawings the runner-frame has been raised without using the hand-lever. When the hand-lever is employed it swings toward the seat, where it may engage a catch between
10 bars M and hold the runners raised.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

15 1. A press drill having a clutch on the wheel shaft, and a clutch-shifter connected with the upper, rear edge of the seed box in a manner permitting play of the clutch-shifter during the earlier rising and later falling motion of the seed frame with relation to the wheel
20 frame, substantially as set forth.

2. A press drill having a clutch on the wheel shaft, a bar having a play-permitting slot, such bar being interposed between flanges of the clutch members and connected with the
25 planting frame, and inclines on the bar at the

end of the slot farthest from the planting frame, substantially as set forth.

3. A lifting frame for press drills comprising a vertical support carried on the rear end of the wheel frame, a brace bar connecting the
30 upper end of the vertical support with the planting frame, a stay bar connected with the brace bar between the ends thereof and extended above and below the said brace bar, a seat bar connected with the upper end of
35 the stay bar and with the upper end of the vertical support, a foot lever connected with the lower end of the stay bar and with a rearward extension of the planting frame, and a hand lever connected with the foot lever by
40 means of a joint that is stiff as to back motion of the hand lever and hinged as to forward motion, the other connections being pivotal, substantially as set forth.

In testimony whereof I sign my name in
45 the presence of two subscribing witnesses.

JOHN L. ASHURST.

Attest:

JOHN W. PITMAN,
LEVI P. GRAHAM.