2 Sheets--Sheet 1.

W. K. ALLEN.

Plow.

No. 165,652. Patented July 20, 1875.

Fig. 1.

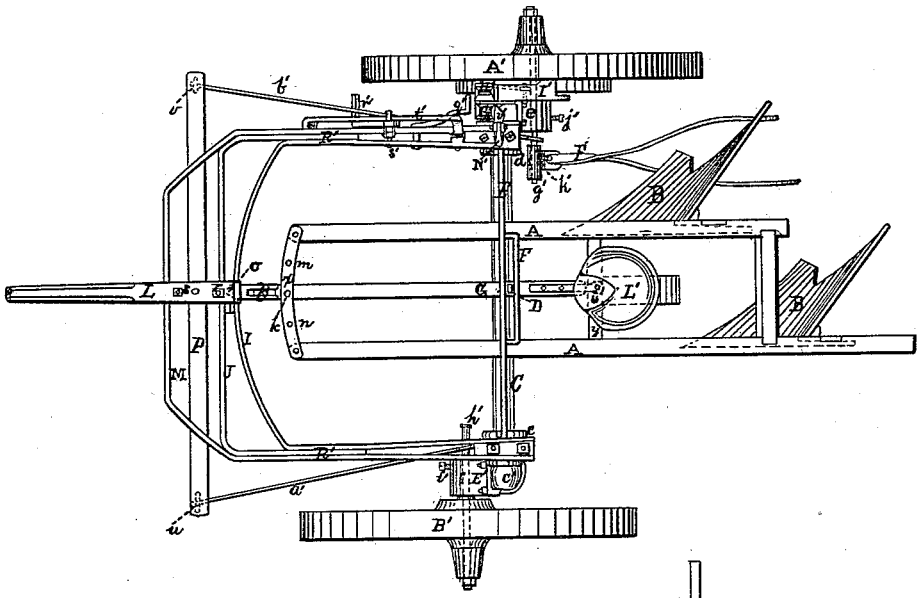
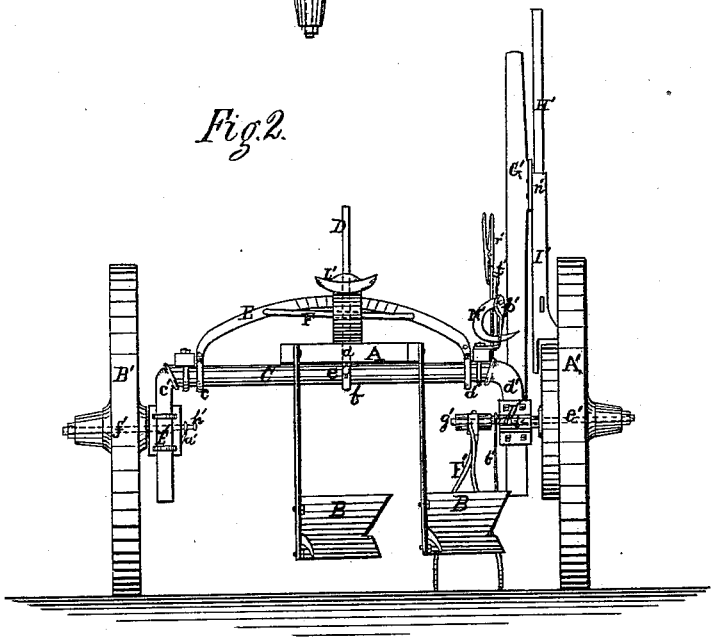


Fig. 2.



Witnesses.

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2 Sheets--Sheet 2.

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Fig. 3.

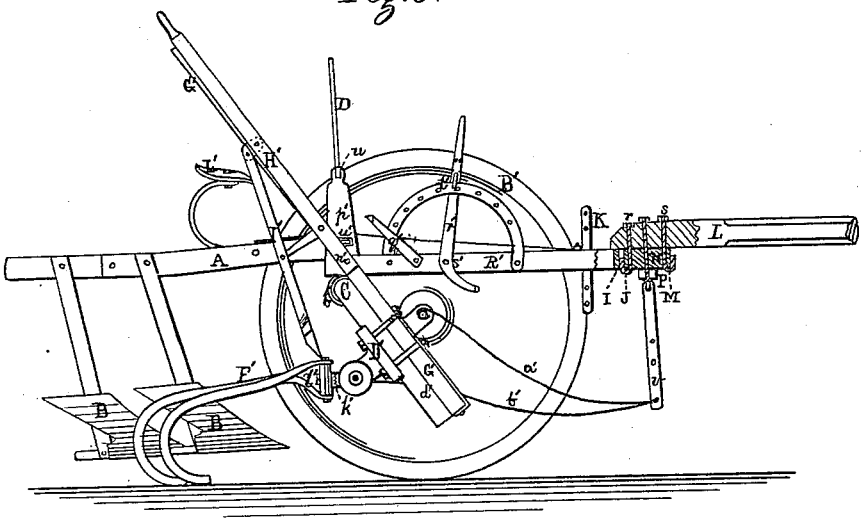
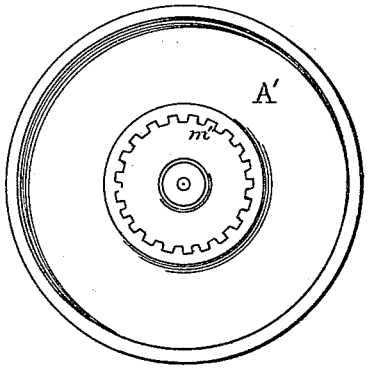


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM K. ALLEN, OF KANSAS CITY, MISSOURI, ASSIGNOR TO BENJAMIN F. HILL.

IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. **165,652**, dated July 20, 1875; application filed October 23, 1874.

To all whom it may concern:

Be it known that I, WILLIAM K. ALLEN, of Kansas City, county of Jackson, State of Missouri, have invented an Improved Plow, of which the following is a specification, reference being had to the accompanying drawings forming part of the same.

My invention relates to that class of plows mounted upon wheels, and consists chiefly in connecting the frame which carries the plowshares to the axle in such a manner that it will admit of three separate motions: a free horizontal motion by the swinging of the frame from side to side on the axle-shaft; also, a vertical motion by the swinging of the frame; and a tilting motion caused by rocking of the frame on a pivot attached to the axle.

Figure 1 is a plan of the plow embodying my invention, showing the frame which carries the plowshares in a position elevated above the ground. Fig. 2 is a rear-end elevation of the same in the same position. Fig. 3 is a side elevation of the machine, showing the right-hand wheel removed and the plowshares partly lowered. Fig. 4 is a view of the inner side of the right wheel, showing the cog device for operating a drill, the outer rim being formed to receive and be operated on by a suitable brake.

B B are the plowshares, which have a free horizontal motion from side to side by means of the frame A, to which they are attached, which swings in a horizontal plane upon the pivot *a* upon the bent axle-shaft C, and which also have a vertical motion by means of the rocking of the frame A upon the bent axle-shaft C by the clamp *b*, which grasps and works in a groove cut around the bent axle-shaft, and which also have a tilting motion by means of the lever D, which is pivoted upon the bent axle-shaft C at *e*, and passes through the middle beam G of the frame A, and which is pressed against the cross-bar E by the spring-bar F, which said cross-bar E is secured to and moved upon the bent axle-shaft C by means of the clamps *c* and *d*, and is provided with notches, into which a projection or catch on the lever D takes, and thus holds the frame A, and consequently the plowshares B B, at any desired angle. By means of these three motions a uniform depth of furrow is preserved, no matter how rough the ground which is being plowed, the plow penetrating the raised and the depressed portions of the ground to the same depth. Through these motions the plow enters the ground more speedily the desired depth, and may be raised or thrown to one side, and thus obstacles of all kinds be avoided. Moreover, in turning corners, or in turning the machine around by means of the free horizontal motion of the frame A, and consequently of the plowshares B B, all danger of breakage is avoided. By means of the tilting motion of the frame A the plowshares may be inclined at any angle, and the size, depth, and character of the furrow regulated by the operator as desired. The middle beam G of the frame A is pivoted at *i*, on the cross-beam *y*, and may be swung either to the right or left by withdrawing the pin *k* in its forward end, and fastening it again in either of the openings *m* or *n*, in the cross-bar *x*, and thus the rest of the frame A and the plowshares B B being swung or turned in the opposite direction, the plowshares will take more or less land and the width of the furrow be greater or less. Upon the forward end of the middle beam G is fixed a tongue piece or projection, *o*, which rests against the under side of the curved bar I, which forms part of the front of the frame of the machine, and which restrains the frame A from tilting up and backward, and also prevents the plowshares B B from taking too great a depth of ground. At the forward end of the middle beam G of the frame A the upright bar K is arranged so that a double whiffletree for a four-horse team may be attached thereto, one whiffletree being set on the upper end of the upright bar K, and the chains for the leaders being fastened at the lower end underneath. The tongue L may be moved to either side on the front of the machine by means of the adjustable clamps *r* and *s*, Fig. 3, which pass through the tongue L, the block N, and around the bars J and M, of the frame of the machine, respectively, and thus permit the operator to drive three horses abreast. When two horses are employed, as, for instance, when the machine is used as a cultivator only, the whiffle-

trees are fastened to the bars *u* and *v* depending from the evener P, and which are connected with the axles of the machine by the rods *a'* and *b'* attached to pins passing into the axles, so that the strain of the draft by the horses is directly upon the axles. The axle-shaft C is bent to form the legs *c'* and *d'*, Fig. 2, and the axle of the right-hand wheel A' is secured on the rear side of the leg *d'*, while the axle of the left-hand wheel B' is secured on the front side of the leg *c'* of the axle-shaft C, so that when the machine is adjusted for plowing the right-hand wheel A' will be lower than the left-hand wheel B', and will run in the furrow last ploughed, while the left-hand wheel B' will run on the unplowed ground, and the body of the machine still maintain a level and even position.

By means of the adjustable clamps D' and E', Fig. 2, which are employed to secure the axles upon the legs of the axle-shaft, the machine may be elevated or lowered upon the axles at pleasure, and the left-hand wheel B' may be reversed—that is to say, its axle may be removed from the front side of the leg *c'* of the axle-shaft, and readjusted on the rear side of the leg *c'*, the left-hand wheel B' being thus brought back and on a line with the right-hand wheel A', so that when a drill or a rake or a cutter is attached to the machine, the wheels will run evenly upon the ground, and the operation be properly performed; and, also, both wheels may be reversed—that is to say, the axle of the left-hand wheel B' may be adjusted on the rear side of the leg *c'* of the axle-shaft, and the axle of the right-hand wheel A' may be adjusted on the front side of the leg *d'* of the axle-shaft, and, by a proper alteration of the plowshares, a right-handed plow changed into a left-handed plow. The axles are made hollow, as shown at *e'* and *f'*, and through them into the center of the hubs pass the pins *g'* and *h'*, respectively, which are held in place by the set-screws *i'* and *j'*. To the pins *g'* and *h'* are attached the rods *a'* and *b'*, as before set forth, and to the pins *g'* and *h'* cultivators, such as shown at F', may be attached, which may be adjusted to any desired position by means of the clutch *k'* secured by the set-screw *l'*, and the cultivators being removed, a drill may be attached and operated by means of the cogs *m'* arranged on the inner side of the wheel A', shown in Fig. 4. G' is a lever, which is bound to the leg *d'* of the axle-shaft C by the clamp D', and by which the operator may swing the bent axle upward or downward, and thus elevate or lower the frame. H' is a lever, which is pivoted at *n'* upon the lever G', and operates the brake I'. N' is a latch, which is pivoted in the lock-piece *p'*, and which is arranged to fall into the slotted opening *w'* in the lock-piece, and, by being cut away at the rear side of its lower end, as shown at *v'*, it unlocks itself, when the lever G', by being brought forward to raise the frame, presses against it, and falling back into the slot *w'* behind the lever G', serves to lock the lever G' in an upright position, as shown in Fig. 2. *q'* is a stop-piece, which is bolted upon the frame-work of the machine, as shown in Fig. 3, and which serves to prevent the lever G' from passing too far forward. *r'* is a lever pivoted on the frame-work R' of the carriage-body of the machine at *s'*, and having an adjustable spring-lock attachment, *t'*, which serves to prevent the lever G' from passing too far backward. The lever G' and the brake-lever H', together with the latch N' and the adjustable spring-lock lever *r'*, are placed in front of the axle-shaft C, and within easy reach of the operator, who sits upon a seat, L'.

The carriage body R', to which the tongue is attached, and on which some parts of the machine are mounted, is preferably composed of flat bars of iron, bent into the forms represented in the drawings, and separated from each other a little distance to give additional strength to the structure, the rear ends of the said carriage-body R' being secured on either side to the axle-shaft C, as represented.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The frame A, carrying one or more plowshares, B, pivoted to the axle C, the cross-bar E, spring-bar F, and the pivoted hand-lever D, whereby the frame is capable of having either a horizontal, vertical, or tilting motion, substantially as and for the purpose set forth.

2. The combination of the middle beam G of the frame A, and the upright bar K, extending above and below the said beam, and provided with holes, as and for the purpose specified.

3. The lever G', the brake-lever H', the latch N', with its lock-piece *p'*, having the slotted opening *w'*, the stop-piece *q'*, and the lever *r'*, with its adjustable spring-lock attachment *t'* located in front of the axle-shaft C, combined, arranged, and operating as and for the purposes specified.

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Witnesses:
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