2 Sheets. Sheet 1.

W. N. Whiteley,

Harvesters.

No. 52,349. Patented Jan. 30. 1866.

Fig. 1.

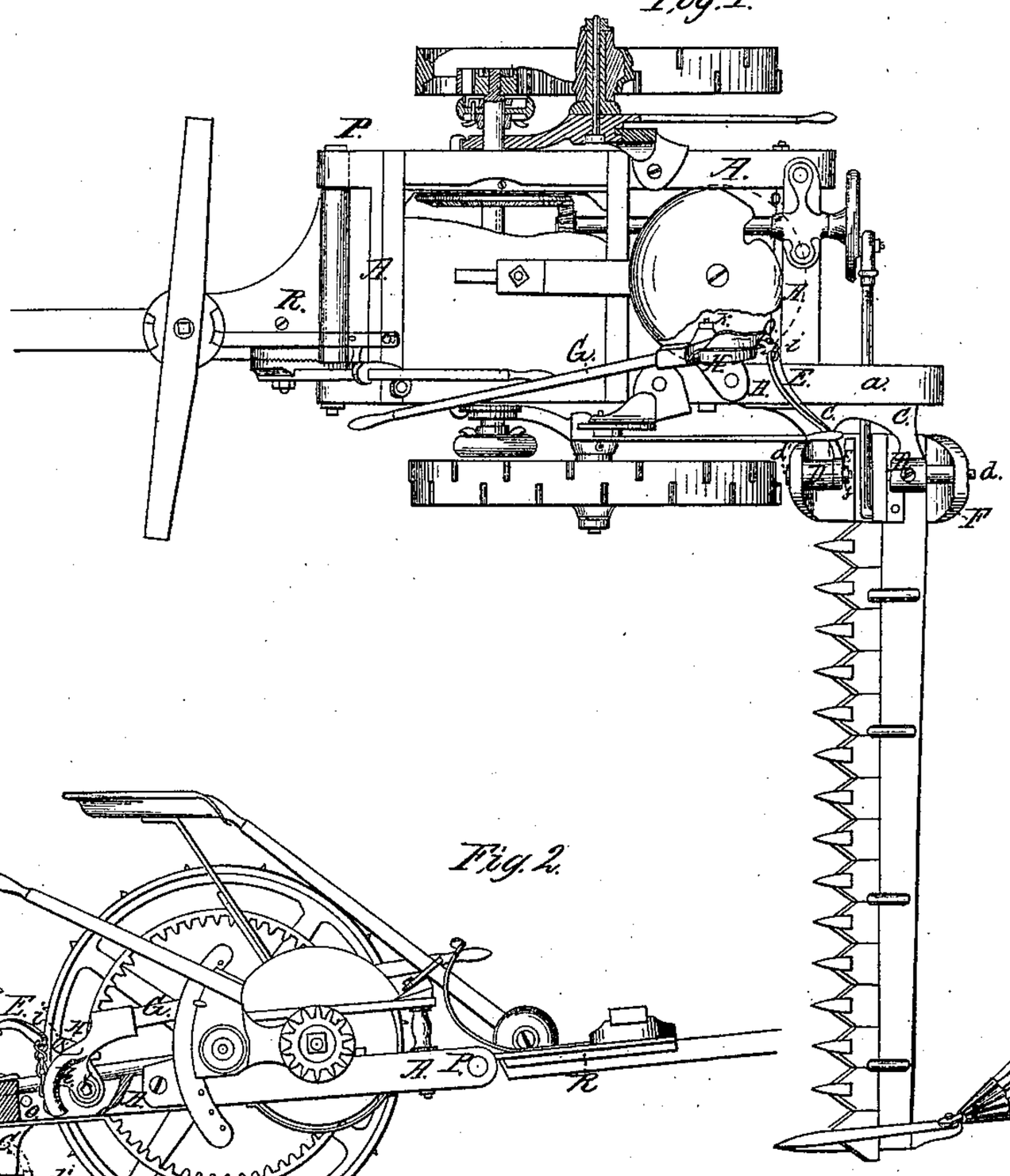


Fig. 2.

Fig. 5.

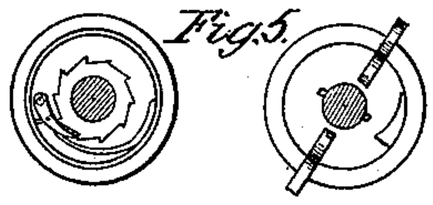


Fig. 3.

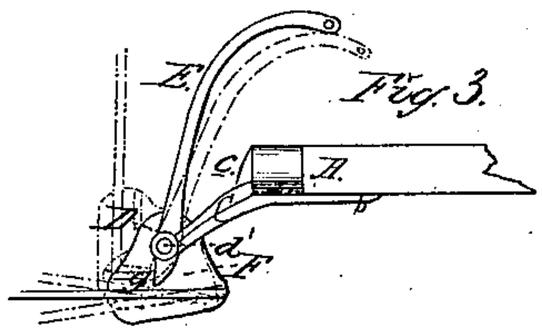
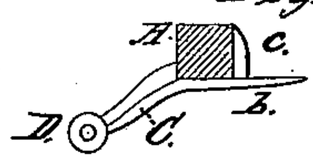


Fig. 4.



Inventor.
W. N. Whiteley Jr.
By his Atty
R. W. O'Smith.

2 Sheets. Sheet 2.

W. N. Whiteley,

Harvesters.

No. 52,349. Patented Jan. 30. 1866.

Fig. 6.

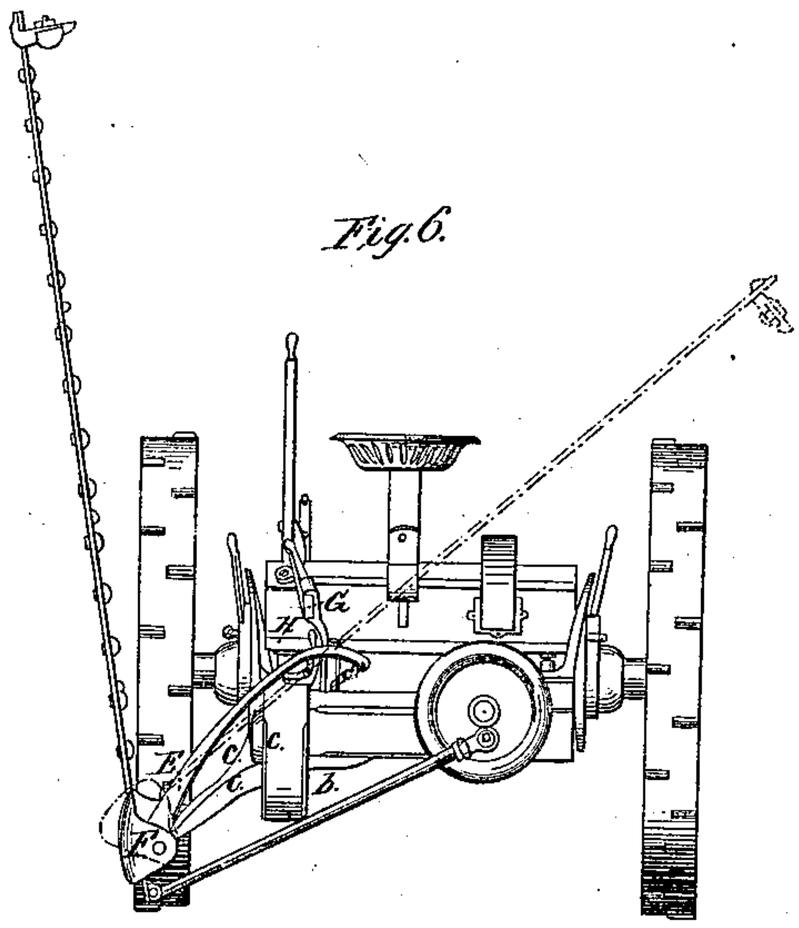


Fig. 7.

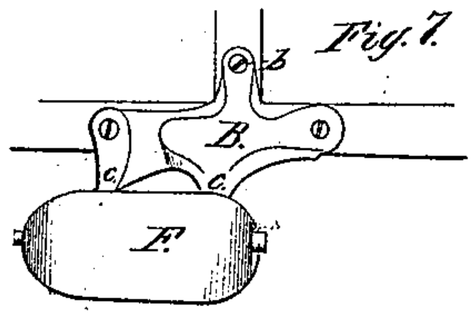


Fig. 8.

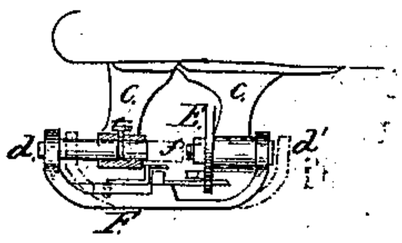


Fig. 9.

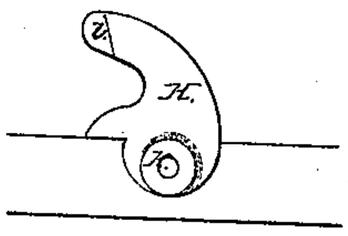


Fig. 10.

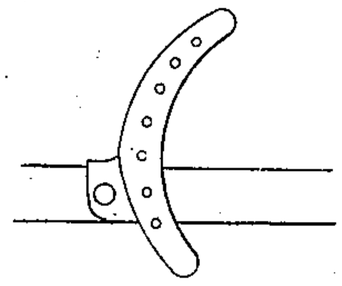


Fig. 11.

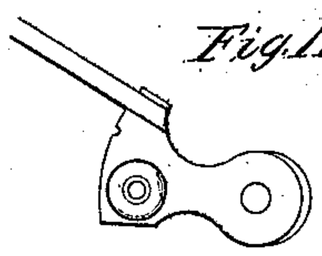


Fig. 12.

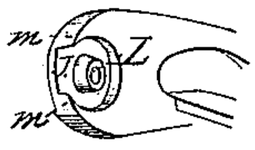
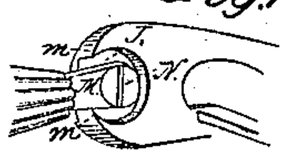


Fig. 13.



Inventor:
W. N. Whiteley Jr.
By his atty
R. D. Smith

UNITED STATES PATENT OFFICE.

WILLIAM N. WHITELEY, JR., OF SPRINGFIELD, OHIO.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **52,349**, dated January 30, 1866.

To all whom it may concern:

Be it known that I, WILLIAM N. WHITELEY, Jr., of Springfield, in the county of Clarke and State of Ohio, have invented a new and useful Improvement in Harvesters; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of my machine. Fig. 2 is an elevation of the outer side of the same, the outer bearing-wheel being removed. Fig. 3 is a section of the inner shoe, showing the connection and operation of the lever by which the outer end of the cutting apparatus may be raised from th ground. Fig. 4 is an elevation of the bracket, showing the vertical flange placed on the inner side of the side bar of the frame. Fig. 5 shows the ratchet and pawl and the cam-plat) by which the driving-wheels are thrown in or out of gear with the mechanism which drives the cutters. Fig. 6 is a rear elevation of my m chine, showing the position of the cutting apparatus when the pitman may be unhooked from the cutter-bar, and also the position of the cutting apparatus when folded over the main frame for transportation. Fig. 7 is a bottom plan of the inner shoe and bracket connecting the sam to the main frame. Fig. 8 is a sectional elevation of the inner shoe and bracket, showing the manner of attaching and detaching said shoe. F g. 9 is an elevation of the guide and stop-plate for the hand-lever which raises the outer end of the cutting apparatus. Figs. 10 and 11 are elevations of the curved standard and sector-plate by which the bearing-wheel is attached to the main frame and by which the height of said frame from the ground is regulated. Figs. 12 and 13 are perspective views of the outer shoe, showing the manner of attaching the track-clearer thereto.

The nature of my invention consists, first, in an improved manner of constructing and attaching the inner shoe, s) that it may be attached or removed by the simple loosening of a single screw; second, in the manner of connecting the track-clearer to the outer shoe, so that there shall be no projection to catch the cut grass, and also that the strain of drawing the track-clearer shall not come upon the bolt which secures it, and so that the track-clearer cannot hang vertically from the outer shoe when the cutting apparatus is folded, and thus be liable to catch and be broken by the driving-wheel; third, in the peculiar construction and attachment of the lifting-lever, so that the cutting apparatus may be permitted to rise and fall with the undulations of the ground, or may be raised slightly or entirely folded over the main frame without any change or substitution of parts, in connection with constructing the cutting apparatus and its attachments so as to permit the pitman to be unhooked and the cutters withdrawn without the removal or loosening of pin, screw, or spring.

That others may understand the construction and operation of my invention, I will more particularly describe it.

Figs. 5, 9, and 10 are not concerned in this application.

A A is the main frame of the machine, constructed in a rectangular form, and with that side piece which is toward the cutting apparatus or inner side of the frame projected backward from the rear of the frame, as shown at *a*, Fig. 1. To this extended part the cutting apparatus is attached, and I am thus enabled to use a shorter frame than would otherwise be possible, and also to secure other advantages hereinafter to be mentioned.

In order to attach the cutting apparatus firmly to the frame A, I construct a metallic plate, B, fitted to the lower side of the side piece, *a*, provided with a wing, *b*, extending laterally from B and lying beneath the rear cross-piece of the frame, as seen in Fig. 6. This strengthens that corner of the frame materially, and when taken in connection with the frame, as described in my application "B," filed herewith, it will be found to render the frame A very rigid. In order to render the attachment of the plate B still more secure, I provide also a vertical flange, *c*, which extends upward along the outer or inner edge of the side piece, *a*, about covering its entire width, so that the bolt O may pass through it and thus bind it and the rear end of the frame securely together. From the position of the plate B and the direction of the forces tending to displace it, it will be observed that the vertical flange *c* is of prime necessity to secure stability of these parts. These forces act upon the cutter-bar in the line of its forward movement, and the resultant strain upon the plate B tends toward a lateral movement of the same, and this tendency brings a shearing strain upon the vertical bolts which secure it to the frame. A shearing strain will either

fracture the bolt or the sides of the bolt-hole will yield and the bolt become loose. But if the vertical flange be used the same tendency to lateral movement does not result in a shearing, but in an endwise strain upon the horizontal bolt O, whether the same be used to bind the rear of the frame together, as shown, or not, and whether the vertical flange *c* be interior or exterior. Without the vertical flange, then, it will be perceived that the front end of the bracket must always tend to draw away from the frame, and the shearing strain upon the vertical bolt must inevitably loosen that end of the bracket, while, if a vertical flange be used there cannot be any such strain, nor can that end of the bracket ever get loose without an immediate adjustment being possible by tightening the nut at the end of the horizontal bolt.

From the outer edge of plate B project the two arms C C, each having at its outer end a cylindrical head, D D, Figs. 1, 2, 3, and 7. These cylindrical heads have coincident axes, and said axes are parallel with the line of the forward movement of the machine. Through their centers, in a line with the axes, are drilled holes, and into these holes are fitted the bolts *d d'*. The bolt *d* has at its outer end a shoulder, and is secured in place by the set-screw *e*. When said set-screw is loosened the bolt may be withdrawn inward so as to release the shoe, as will more fully appear hereinafter. The bolt *d'* is rigidly secured, its outer end projecting a short distance, and its inner end provided with a thread and nut, *f*, which secures upon said inner end the lever E, wichh moves upon it as a fulcrum.

The shoe F is of ordinary construction. Its front and rear ends are curved upward, as shown in Fig. 2, for the purpose of secure and easy attachment to the main frame, as well as to enable it to run easily forward and backward over the stubble or grass. The cutting apparatus is attached in the ordinary manner. The shoe F is connected or disconnected with great facility by the set-screw *e* and bolt *d*. The operation is clearly shown in Fig. 7, where it is seen that by loosening the set-screw *e* the bolt *d* may be slipped endwise and inward, as shown by the red lines. It is thus slipped entirely away from the rear bearing of the shoe F, which may then be disconnected from the bolt *d'* by simply removing it from the projected end of that bolt. This operation is so obvious and well understood that it needs no further elaboration. The shoe and cutting apparatus may be replaced and connected in the same simple and efficacious manner.

The lever E serves to raise the outer end of the cutting apparatus while the machine is in operation to pass it over any obstruction in its road. It is a curved lever, its upper end being bent over the main frame of the machine, so as to be readily connected by a chain or cord to the hand-lever G, by which it is operated. Its lower end projects below its fulcrum—the bolt *d'*—and rests against a shoulder, *g*, on the upper side of the shoe F, as shown in Fig. 3. From this it will appear evident that if the upper end of E be pressed downward and inward, the lower end of the same will move outward and upward and push the shoe in the same direction, for they both move upon the same axis; and if the shoe F moves upon its bearings outward and upward the outer end of the cutting apparatus will partake of the same motions in a magnified degree. If the lever G be thrown down upon the main frame, as shown in Fig. 2, so that there will be no strain upon the lever E, then the outer end of the cutting apparatus will float over the undulations of the ground, as shown by red and blue lines in Fig. 3.

As before stated, the upper end of the lever E is connected to the hand-lever G by a flexible connection, as a chain. For convenience of attachment and use, the lower or rear end of the hand-lever G is composed of an arc of metal, concave on its edge, concentric to the fulcrum-pin upon which the lever moves. This arc is shown at *h*, Fig. 2. By it, as is well known, the leverage will be uniform. In order to steady the movement of the hand-lever G up and down, as well as to provide a stop by which it may be held in an elevated position, if it should be desirable to maintain the outer end of the cutting apparatus away from the ground for any length of time, I provide a standard, H, Figs. 1, 5, and 8. This standard I curve, as shown, so that the top is bent slightly backward, and, as a stop for the hand-lever G to hold the outer end of the cutting apparatus above the ground when raised up, I make a shoulder, *i*, at its upper end by cutting away a portion of its inner side. At the lower end of the standard H, I provide two flanges—one horizontal, the other vertical—to embrace the upper and inner sides of the side bar, *a*. Through the vertical flange passes the bolt *k*, which forms the fulcrum of the hand-lever G. The horizontal flange may also be secured by a bolt or screw, as shown in Fig. 1.

At the outer end of the cutting apparatus, and attached to the outer shoe, is a pronged revolving track-clearer. As heretofore constructed, the bolt and head connecting the track-clearer to the shoe has been allowed to project from the surface of the shoe, as shown in Fig. 1. This method has appeared objectionable for the reason that some of the cut grass will get into the joint of this connection and clog its oscillatory motion, and when the cutting apparatus is folded over upon the machine the track-clearer will hang vertically, and be liable to catch the bearing-wheel and be broken. To remedy this evil and to remove the strain of drawing the track-clearer over the ground, I construct the circular recess J, Figs. 11 and 12. In the center of this recess the stud L is left in solid metal, and through its center is the bolt-hole for the bolt, which secures the track-clearer to the shoe. The head M of the track-clearer is fitted over

the stud L, so that when in position it does not rise above the surface of the vertical portion of the shoe, and all the grass which falls in that direction will pass freely and unobstructedly upon the revolving portion of the track-clearer. A round-headed bolt, N, may be used to retain the head M in place upon the stud L; and when the outer shoe is raised from the ground by the lever G and E, or when completely folded over for transportation, the edges *m m*, Figs. 11 and 12, form stops, allowing the track-clearer but a limited lateral motion, so that when the outer shoe is raised a little distance from the ground the track-clearer rests upon the lowermost of these shoulders, and as the outer shoe continues to rise the track-clearer is also raised from the ground. When, as is commonly the case, the track-clearer may swing freely, it not only drags uselessly upon the ground when the outer shoe is a little elevated, but when the cutting apparatus is folded over for transportation there is constant liability that it will swing against the driving-wheel and be broken. As will appear obvious, neither of these difficulties can occur with my present arrangement.

The bolts P and O bind the front and rear ends of the main frame A together. The bolt O, passing through the vertical flange *c* of the bracket-plate B, effectually prevents the side strain of the cutting apparatus from loosening or drawing away the bracket from its seat. The bolt P passes through lugs or apertures otherwise provided in the tongue-plate R, so that it serves to secure the tongue to the machine and transmit the moving power.

The mode of attaching the shoe and cutting apparatus has been described already. When they have been properly secured, by raising the cutting apparatus into the position shown in Fig. 5 the cutter-bar may be suffered to run out far enough to expose the eye, as is shown in said figure, and then the pitman may be hooked into the said eye, and as the cutting apparatus is lowered to the ground again, or is folded over into the position shown by red lines in Fig. 5, the cutter-bar will be drawn back again by said motion of the cutting apparatus in conjunction with the pitman, for it will be observed that when the cutting apparatus is either extended on the ground or is folded over upon the machine for transportation the pitman cannot be withdrawn far enough to free the eye of the cutter-bar from the guides between which it and the pitman-head runs. This is in consequence of the fact that the line of motion of the pitman so nearly coincides with the line of motion of the cutters in either of the positions named, and it is only when the cutters are raised up so as to be at nearly right angles with the pitman that the cutter-bar can be sufficiently withdrawn to allow the pitman to be hooked or unhooked.

This arrangement of parts is found to be excellent, for, no pins, screws, latches, or springs being required to keep the cutter-bar from being withdrawn too far, it follows that no trouble can arise from the loss or derangement of any of these; but the principal advantage is experienced in the facility with which the cutters may be removed and replaced when requiring to be sharpened, as will in some fields occur many times per day. At such times the removal of pins, keys, nuts, or screws is always annoying and inconvenient.

In practice the pressure of the fingers upon the cutter-bar while folding the cutting apparatus will be sufficient to prevent the cutters running out of place, and if the inner shoe be resting upon the ground while the cutting apparatus is being folded (as is commonly the case) not even this precaution will be necessary.

The lever E, being permanently attached to the bracket, as shown, it is not affected by any change of position of the cutting apparatus and inner shoe, and, as shown in Fig. 3, the cutting apparatus may rise and fall in regard to the level of the machine, or it may be raised up and folded over upon the frame without in any way disturbing said lever, which only comes into use when it is desired to raise the outer end of the cutting apparatus, at which time by pressing downward the upper end of the said lever the outer end of the cutting apparatus will be raised up.

This latter motion of the cutting apparatus and lever E, I consider it most convenient to produce through the medium of the hand-lever G by having its forward end lifted up by the attendant. It sometimes happens that it is required to maintain the cutting apparatus in this position during some little time—as, for instance, in driving across the end of the field, &c.—when it manifestly would be inconvenient to so hold it with the hand. I therefore provide the stop *i*, which may be caused to hold the lever G in its elevated position as long as desired.

The operation of the track-clearer has been sufficiently described heretofore.

It will be observed by reference to Fig. 1 that the tongue is so arranged as to be very near the inner or left-hand side bar of the machine. The effect of this arrangement is to cause the draft of the machine to be communicated through said inner side piece to the cutting apparatus, which is attached firmly to the rear end thereof.

There is, in consequence of this arrangement, no strain upon the joints of the frame of the machine and no tendency to twist the frame out of square, for the effect is to bring the strain of the draft upon a continuous straight timber, and there is therefore no necessity for diagonal braces, and the general weight of the bulk and main frame may be reduced.

Among the advantages of my method may be mentioned simplicity and cheapness of construction, lightness and easy draft, facility of handling and adjustment in the field, and, from its simplicity of construction, non-liability to derangement.

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

1. In combination with the track-clearer of a mowing-machine, the stud L and shoulders *m m*, or their equivalents, for the purpose set forth.

2. In combination with the shoe F, the sliding bolt *d*, for the purpose of rendering the shoe and cutting apparatus easy of attachment and detachment, substantially as described.

3. The combination or arrangement of the shoe F, sliding pin *d*, bracket C C B, and lever E, substantially as described, so that the cutting apparatus may be attached or detached, may fall slightly below or rise slightly above the line of level with the machine, or be entirely folded over upon the machine, and so that the pitman can only be unhooked from the cutter-bar when the cutting apparatus stands nearly vertical.

WM. N. WHITELEY, JR.

Witnesses:

R. D. O. SMITH,

A. S. H. SMITH.