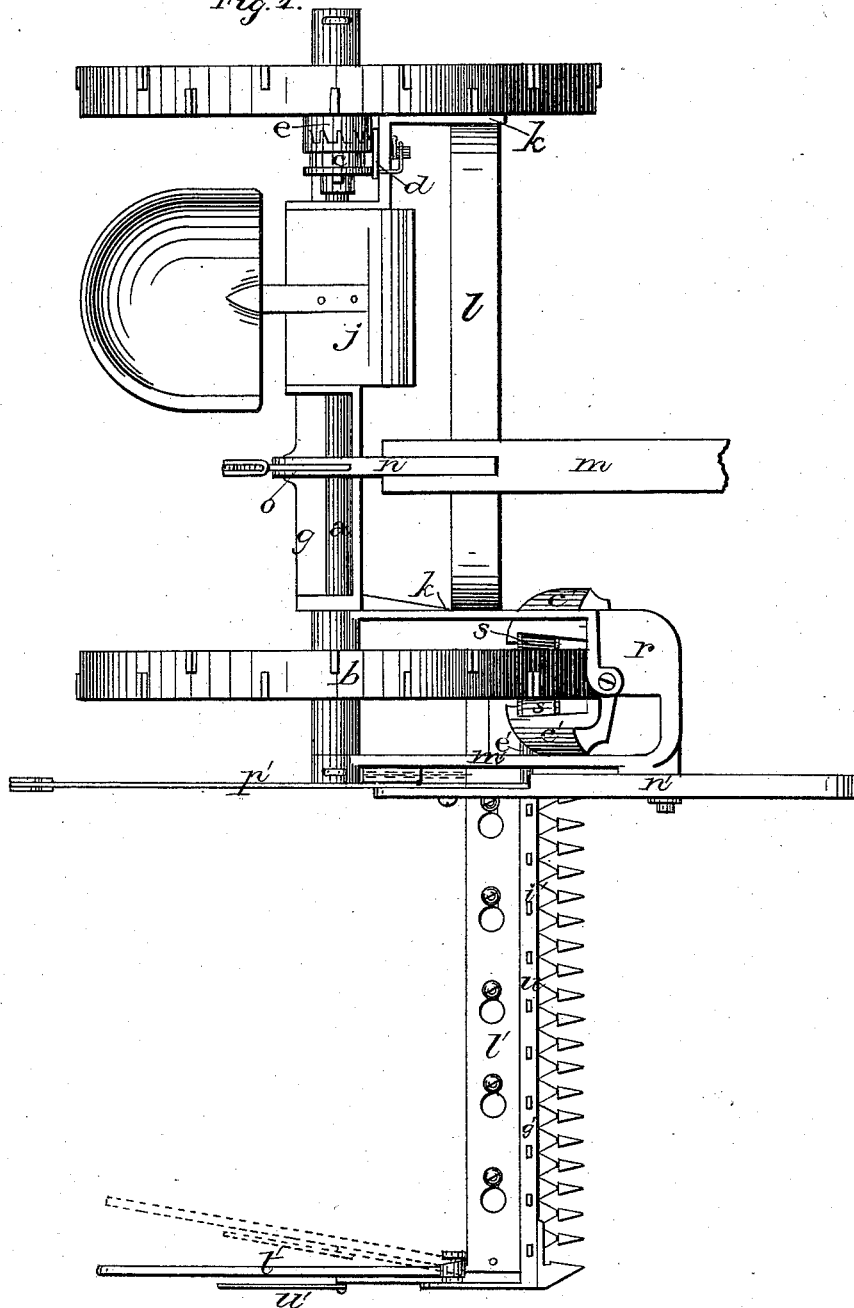


W. E. BUDD.  
Mowing-Machine.

No. 215,566.

Patented May 20, 1879.

Fig. 1.



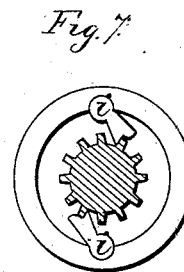
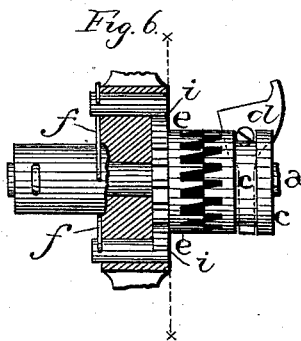
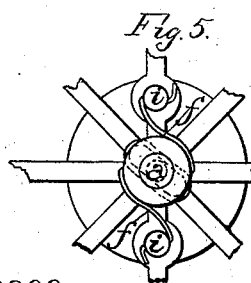
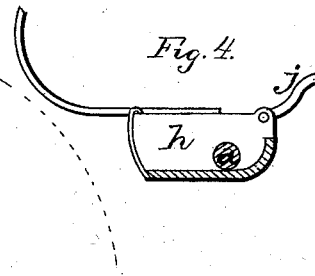
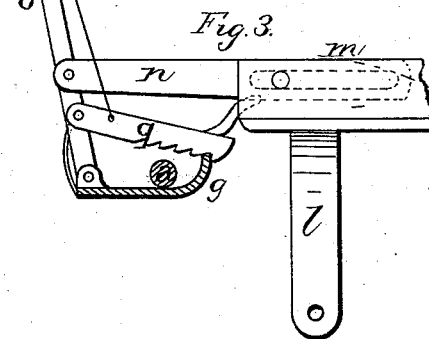
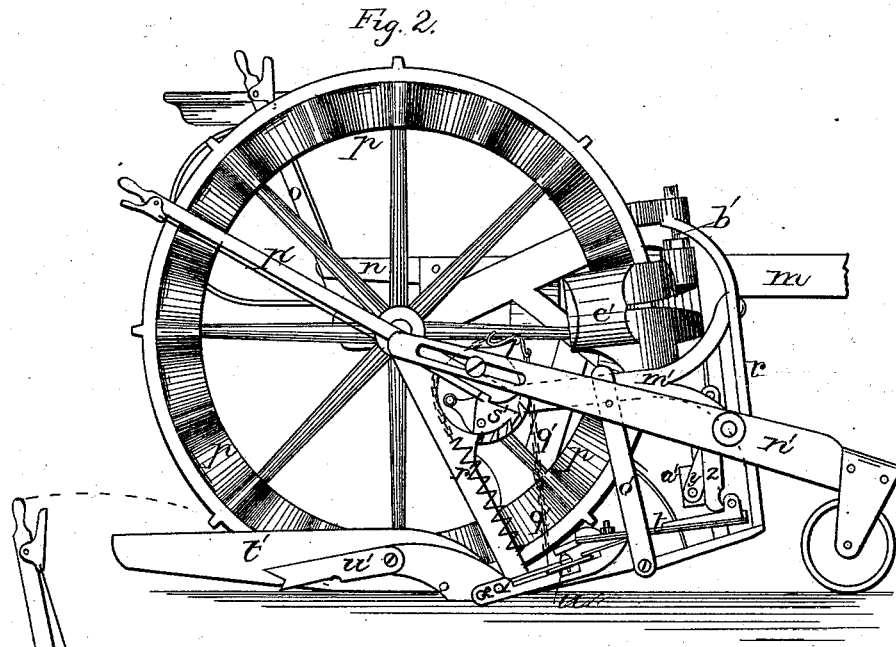
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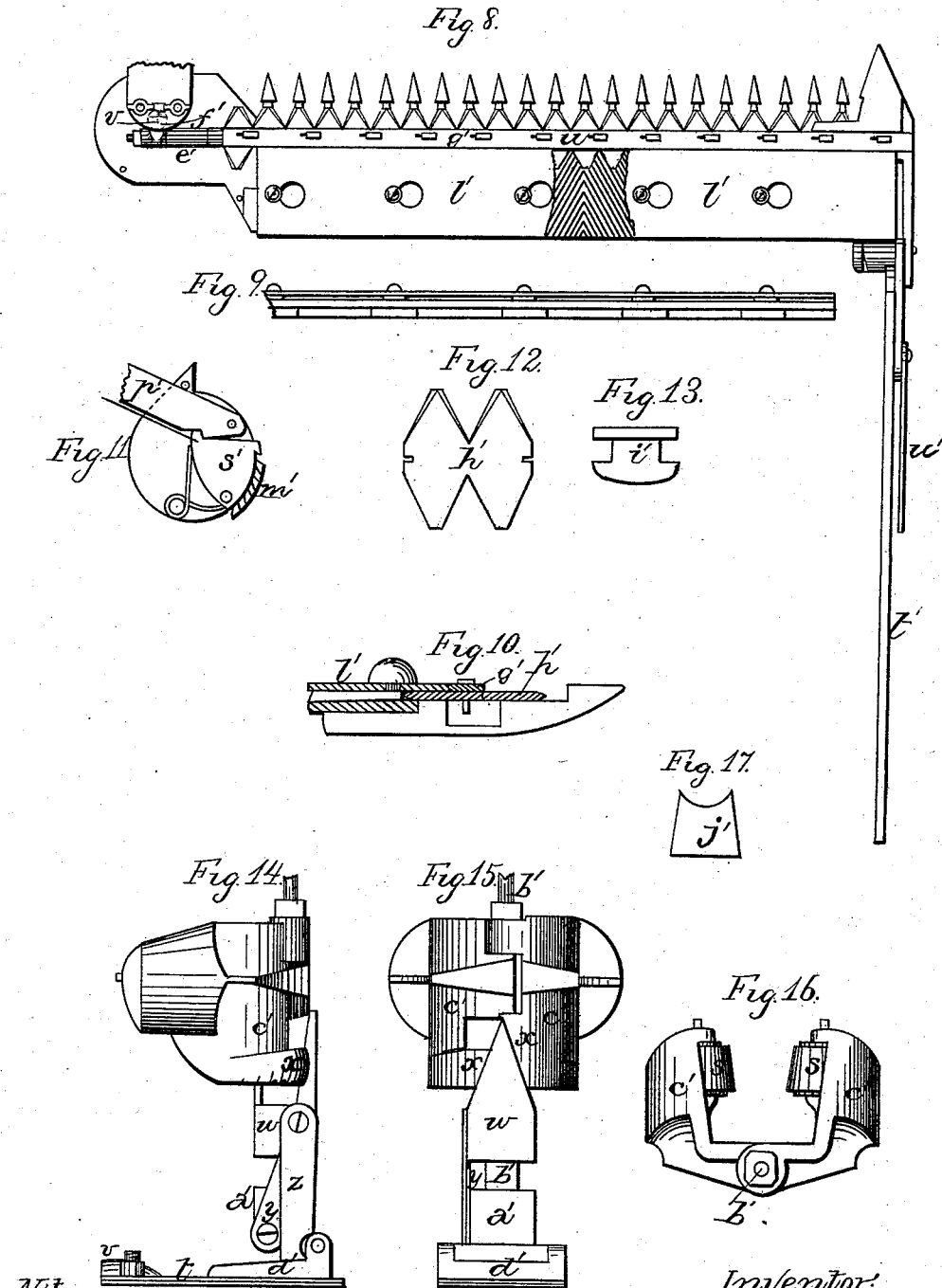


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# UNITED STATES PATENT OFFICE.

WILLIAM E. BUDD, OF CHATHAM, NEW JERSEY.

## IMPROVEMENT IN MOWING-MACHINES.

Specification forming part of Letters Patent No. **215,566**, dated May 20, 1879; application filed February 5, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM E. BUDD, of Chatham, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Mowing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in mowing-machines; and it consists in the arrangement and combination of parts that will be more fully described hereinafter.

Figure 1 is a plan view of my invention. Fig. 2 is a side elevation of the machine. Figs. 3 to 17, inclusive, are details of the various parts of my machine, shown on an enlarged scale.

*a* represents the axle of the machine, which has the right-hand driving-wheel *b* rigidly secured to it. The left-hand driving-wheel turns freely upon the axle, except where the grass is thick and heavy, and the condition of the ground requires the assistance of both wheels in driving the cutter-bar. In each end of the axle there is made a circumferential groove, and through each hub of the two wheels are made four holes. Through these holes is passed a wire, the wire being made to catch in the groove in the axle in such a manner as to prevent the journal of the wheels from moving laterally. This wire takes the place of the large linchpin, and as it cannot become loose, the wheels are more firmly and securely held in position than by any of the linchpins now in use. These pins serve not only to prevent the wheels from coming off the end of the axle, but also serve to prevent them from moving inwardly upon the axle as well.

Inside of the left-hand driving-wheel there is keyed upon the axle a clutch, *c*, which has connected to it a foot-piece, *d*, upon which the driver can place his foot and force the clutch toward the wheel, so as to engage it with a second clutch, *e*, loose upon the axle, and between the wheel and the clutch *c*. This loose clutch *e* has teeth formed upon each end, those upon the inner end serving to engage with

the fast clutch *c*, while those upon the outer end engage only with the two or more dogs *i* in the hub of the driving-wheel. These dogs *i* consist not only of the dog proper, which engages with the teeth of the ratchet, but of the journal or pivot, which projects outward through the wheel, and has a spring, *f*, connected with its outer end, so as to hold the dog always in contact with the ratchet.

By thus making the dog and its journal in a single piece they are not only cheapened and simplified in construction, but are at once ready to be applied to the wheel without any further work.

When the fast ratchet is not in gear with the loose one, *e*, the wheel and loose ratchet revolve idly together upon the shaft; but when the fast ratchet is in gear with the loose one, all three parts revolve around with the shaft. While the wheel is thus locked to the shaft by the ratchets, should it be desired to turn the machine around, the dogs or pawls will slip idly around over the teeth formed on the outer end of the loose ratchet *e*; but the moment the machine starts forward again these dogs engage with the ratchet, and again the wheel revolves with the shaft.

As soon as the driver releases the foot-plate *d*, a suitable spring throws it and the fast clutch back into its first position, so as to allow the wheel to revolve loosely round again.

Fastened upon the axle is a metallic frame, *g*, of the shape shown, and in one end of which is formed the tool-box *h*. This tool-box is covered by the foot-plate *j*, to which the spring of the driver's seat is fastened. By securing the driver's seat to the cover of this tool-box, the weight of the driver serves to hold the cover down, and thus prevent any noise or rattle of the cover.

In opening the box, the seat and its spring is tilted forward, and the weight of the seat serves to hold the lid up, and when the lid is closed the weight of the seat serves to keep it so.

Depending from the frame *g* on the axle are the two arms or projections *k*, which reach near to the ground, and have pivoted between their lower ends the curved pole-brace *l*, upon the top of which the tongue or pole *m* is rigidly secured. In the rear end of this tongue there

is cut a vertical mortise, and through the side of the tongue is passed a bolt, which passes through the slot in the front end of the connecting-rod *n*, which unites the rear end of the pole with a hand-lever, *o*, which is pivoted upon the metallic frame *g*.

Pivoted to the lever *o* is a ratchet, *q*, which catches over the top edge of the frame *g*, and thus holds the lever in any desired position.

As the connecting-rod *n* has a slot of considerable length in its front end, and as it is connected to the tongue only by the bolt which passes through the slot, whenever the machine passes over rough ground this slot allows the tongue to vibrate and work back and forth without the necessity of changing the lever every time a piece of rough ground is reached.

Connected with the ratchet there is the usual hand-catch, by means of which it can be disengaged at any moment, so as to allow the tongue to sink down. By forcing forward the lever *o*, the ratchet will be made to catch upon the frame, and thus will hold the finger-bar raised high above the ground, so as to pass over any obstructions that may be encountered.

The right-hand driving-wheel, which is made fast to the axle, has a spiral-shaped ring, *P*, formed upon its inner periphery, to give, while in continuous motion, a reciprocating motion to the cutter-bar. Fastened to the axle and to one of the dependent arms *k* is a shield, *r*, which not only covers the whole front edge of the right driving-wheel to any desired distance above the ground, but also contains the rollers *s*, which operate the cutter-bar. These rollers are secured upon a vertical shaft, which has a suitable arm or lever connected to its lower end, and to the rear end of this arm or lever *t* is secured the cutter-bar *u* by means of a ball-and-socket joint, *v*. Just below the two castings in which the two rollers are pivoted is a casting, *w*, which has a wedge-shaped projection upon its front side, so as to extend upward between the studs or projections *x* on the castings in which the rollers are pivoted. To this casting *w* is connected a lever, *z*, which is pivoted near its center upon the standard *y*, which projects upward from the casting *a'* on the lower end of the square shaft *b'*, to which the arm or lever *t* is secured. By raising the casting *w* upward by means of its lever the projection passes between the studs or projections on the front of the casting *e'*, in which it is pivoted, and thus forces the rollers toward each other, so as to cause the spiral-shaped ring *p* to set the rollers in motion as soon as the wheel starts. By depression of the attached end of this lever the casting *w* is drawn downward, so that its projection no longer forces the studs or projections *x* on the casting *e'* apart, and thus the rollers will move outward from each other to such a distance that when the wheel starts the spiral-shaped ring will not affect them. In this manner the machine can be thrown out of gear at any mo-

ment. Under the casting *w* on the shaft is another casting, *e'*, which is connected by means of a suitable pivot with the arm or lever *t*, by means of which the cutter-bar is operated. The inner end of the cutter-bar is swiveled in the head *e'*, so that the cutter-bar can be turned freely around for the purpose of presenting either one of its set of teeth for action, and upon this head is formed a ball, *f'*, which fits in the socket on the rear end of the arm or lever *t*. This socket is formed by an additional plate being clamped to the under side of the arm or lever by means of a suitable bolt and nuts; and in order to prevent the nuts from working loose there are made two or more arms or perforated catches on each nut, and these nuts, after having been tightened in position, are bound together by means of wires or other fastenings, so that they cannot work loose. As these wires will not allow them to turn around after they have been once fastened together, they will remain in that position until the wire is loosened or broken.

The bar *g'*, to which the sections *h'* are fastened, has a series of longitudinal slots cut through it, and passed through these slots are the flat rivets *i'*, which have a notch in each side. All of the sections *h'* are sharpened alike on both edges, so that when the cutting-edge of one side has become dull it is only necessary to turn over the whole cutter-bar and present the other edge for action. The slots in the rod to which the sections are fastened are made longitudinal, so as not to impair the strength of the bar any more than is necessary, and thus a much lighter rod or bar can be used.

In fastening the sections in place, the outer section is secured rigidly to the rod or bar, and then one of the flat rivets is passed through the slot in the bar, and the next section is put in place and moved tightly against the rivet, so that the small notch in the side of the section will catch in the notch in the side of the rivet, and thus section after section is put in place until the inner one is reached, which is next to the swiveled head on the bar. After all of the sections, with their rivets between them, have been placed upon the rod or bar, a nut is secured upon the extreme inner end of the bar inside of the swiveled head, and this nut crowds and fastens all of the sections rigidly in place. In order to remove any one of the sections, this nut must be unscrewed, and then the sections can be loosened from the bar or rod, so as to be removed one at a time. In securing the outer section rigidly to the bar, an oblong opening or slot is made in the bar, and then a flat tapering rivet, *j'*, having its upper end divided or notched, as shown, is passed through the bar and the section from the under side, and then the two sharp points or corners of the rivet are welded down in opposite directions, so as to catch over the upper surface of the section and hold it rigidly in place. By thus using a flat rivet instead

of the usual round ones, the section can be secured to the bar without having to make such a large opening through the bar for the passage of the rivet through it, and hence the bar will not be weakened to such an extent, and a much lighter bar can therefore be used, as already described.

By having the inner end of the bar swiveled, and having each section made alike on both edges, it will readily be seen that as soon as the cutter-bar begins to get dull on the edge that is then in operation it is only necessary to stop the machine, remove the movable clasp *l'*, turn the cutter-bar over so as to present the other edge, restore the movable clasp to position again, and the machine is again ready for operation.

Not only is much time saved in thus making the cutter-bar reversible, but the cutter-bar is made to last twice as long as where the sections are sharpened on one edge only.

Pivoted upon the brace *m'* of the shield is the wooden lever *n'*, which has a small wheel in its lower end, in the usual manner; also, pivoted to this lever is the supporting-arm *o'*, which serves to lock the bar and to raise and lower the finger-bar, as may be desired, for fallen or upright grass. The inner end of this lever is slotted, and through this slot is passed a bolt, which passes into the lever *p'*, for raising and lowering the finger-bar. This lever *p'* is pivoted upon the brace *m'*, and has connected to it at one corner the chain *q'*, which passes directly down to the finger-bar, and fastened to the same corner, but passing backward around the lever, is a second chain, which has connected to it a spring, *r'*, for assisting in pulling the lever back into position. This spring also serves to counterbalance the weight of the finger-bar, and to hold it upward from the ground at its outer end, so that the usual wheel for supporting it at its outer end can be dispensed with. The spring, it will be seen, thus performs the double function of assisting to pull the lever back when it is desired to catch it under the hub, and at the same time supports enough of the weight of the finger-bar to keep it from bearing too heavily upon the ground at its outer end. Upon this lever is a catch, *s'*, which catches in notches made on the brace *m'*, and thus holds the lever in any desired position. When the lever is drawn backward so as to hold the finger-bar raised upward at its outer end from the ground, the lever catches under the hub of the right-hand driving-wheel, and as soon as the lever is released from this hub it will move forward, allowing the finger-bar to descend at its outer end toward the ground until the catch catches in one of the notches on the brace *m'*, and while thus held by the lever the front end of the fingers will be tilted upward for the purpose of passing over rough and boggy ground. As the wooden lever carrying the wheel on its front end is connected directly to the lever *p'*, it is evident that every movement of the lever *p'* will operate also upon the wooden lever, and

thus cause it to raise the finger-bar more or less from the ground in a slanting or tilted-up position.

By thus connecting the wooden lever and the lever *p'* directly together I obviate the necessity of a separate lever to operate the guide-wheel, a separate lever to give a rocking motion to the finger-bar, and a separate lever to raise the outer end of the finger-bar directly up from the ground, and therefore combine three levers in one.

On the outer end of the finger-bar is pivoted a track-clearer, *t'*, constructed in the usual manner, but which has the inner side of its pivot-bearing beveled away, as shown, so that the pivot which passes through it can be changed from either one of the holes 1 or 2, according to the degree the clearer is to be inclined inward toward the machine. Where the pivot passes straight through from the inside to the hole 1 on the outside, the clearer will be inclined but very slightly inward; but where the pivot is changed to the hole 2, which hole is placed not only farther back but higher up, the clearer will be inclined inwardly at a very sharp angle.

Pivoted either to the outside of the track-clearer or to the end of the finger-bar, or to any other point near the outer end of the finger-bar, is a lifter, *w'*, which consists of a flat plate or rod having its lower end sharpened or pointed, so that it will quickly catch against the ground, and, as the machine is turning around or moving backward, will serve to raise the finger-bar upward from the ground sufficiently far to prevent it from catching against the ground and being either broken, twisted, or strained. By means of this lifter the finger-bar is automatically raised upward upon the slightest backward movement, and thus the driver is saved the trouble of constantly raising the finger-bar in turning or backing; and in case he should forget to do so, or the team should become unmanageable, the finger-bar will take care of itself as well as if it were constantly watched, and thus the driver is allowed both hands to manage his team instead of one.

The movable clasp *l'* is fastened to the top of the finger-bar by means of the slots through it, and the screws which have their heads projecting above the top of the finger-bar. The top of the finger-bar underneath this movable clasp is beveled away toward its rear end, or has blocks or plates placed upon its top, so as to raise the clasp a slight distance above it, and thus leave a sufficient space between them for any dirt or other substance which may get between them to work backward over the rear edge of the finger-bar, and thus be discharged upon the ground.

In the top of the finger-bar will be made a number of grooves which run diagonally across the top of the finger-bar, and thus assist in working the substances out.

Having thus described my invention, I claim—

1. The combination of the tongue *m* and its brace *l* with a slotted connecting-rod, *n*, and a lever, whereby the tongue will be allowed a certain play in passing over rough ground, substantially as specified.

2. The rollers *s'* and castings *c'*, pivoted upon a vertical shaft, in combination with the casting *w*, having a projection to pass in between the studs on the castings *c'*, substantially as specified.

3. The combination of the casting *w*, having a projection to pass in between the studs or projections on the castings *c'*, with the lever *z*, pivoted upon the standard *y* on the casting *a'*, substantially as shown.

4. The combination of the castings *c'*, carrying the rollers *s*, with the castings *w* and *a'*, and the lever *t*, secured to the lower end of the vertical shaft, substantially as described.

5. In combination with a cutter-bar, a swiveled head having a ball, *f'*, formed thereon, substantially as specified.

6. The hand-lever *p'*, in combination with the chain *q'* and wooden lever *n'*, the two levers being connected together, substantially as described.

7. The combination of the finger-bar with the movable clasp, there being left space between the two, and the surface of the finger-bar being grooved, so as to allow foreign substances to work their way out, substantially as shown.

8. A track-clearer, *t'*, having the inner side of its end beveled away, whereby it may be inclined inward at any desired angle, substantially as shown.

9. The track-clearer *t'*, having the inner side of its end beveled away, in combination with the finger-bar having the holes 1 2, whereby the pivot upon which the track-clearer turns may be so changed as to vary the angle of the track-clearer, substantially as described.

10. In combination with the track-clearer *t'*, an automatic lifter consisting of a pivoted rod or bar, *u'*, one end of which drags along the ground as the machine moves forward, substantially as set forth.

11. The combination of the track-clearer *t'* with a pivoted lifter, *u'*, having its ends so shaped as to catch in the ground when the machine is either turned around or backed, which lifter may be pivoted either to the track-clearer or to the finger-bar, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of February, 1879.

WILLIAM E. BUDD.

Witnesses:

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W. S. D. HAINES.