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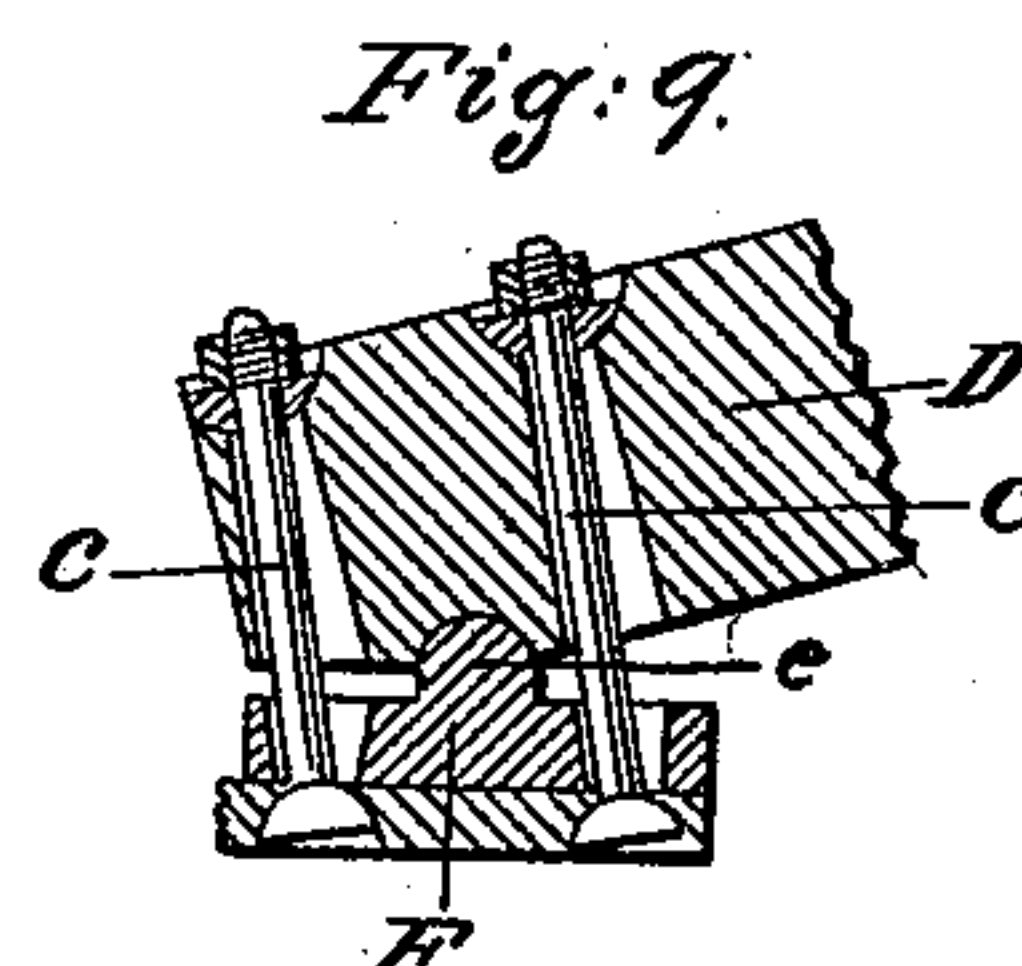
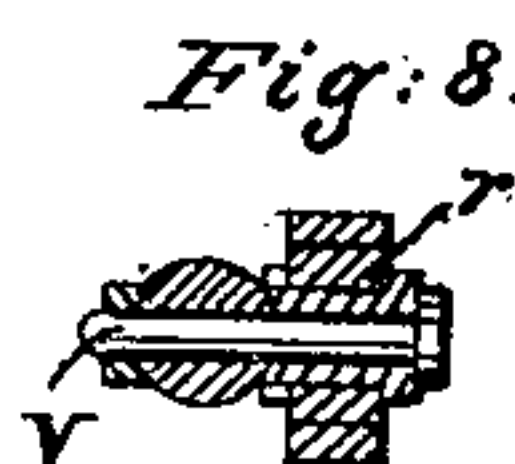
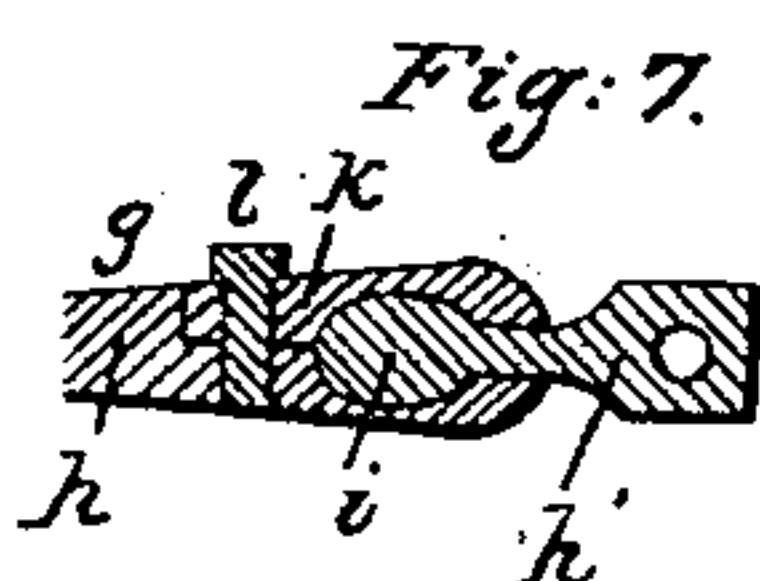
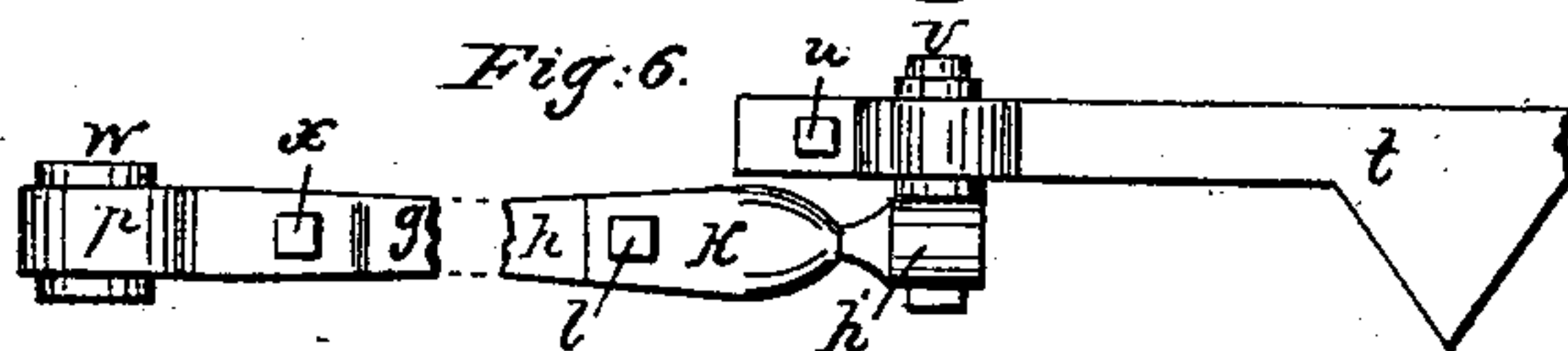
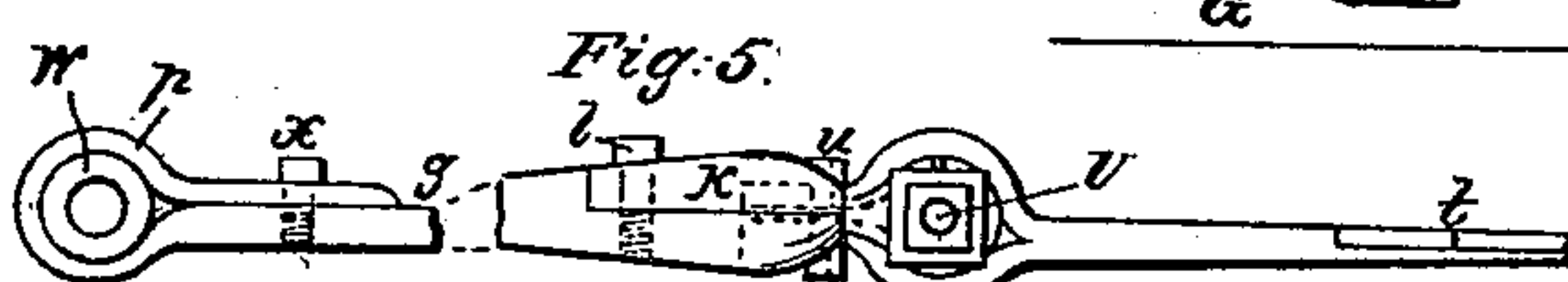
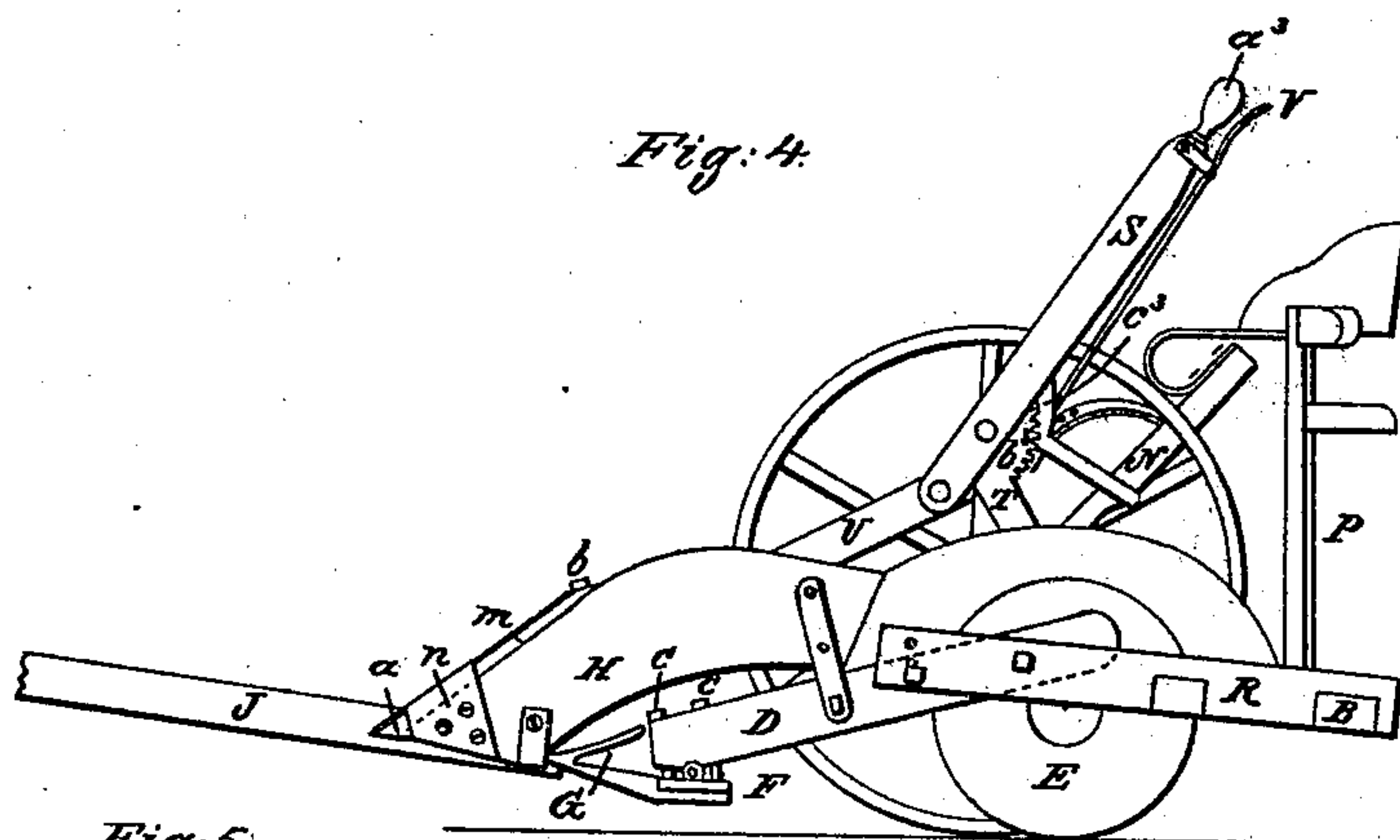
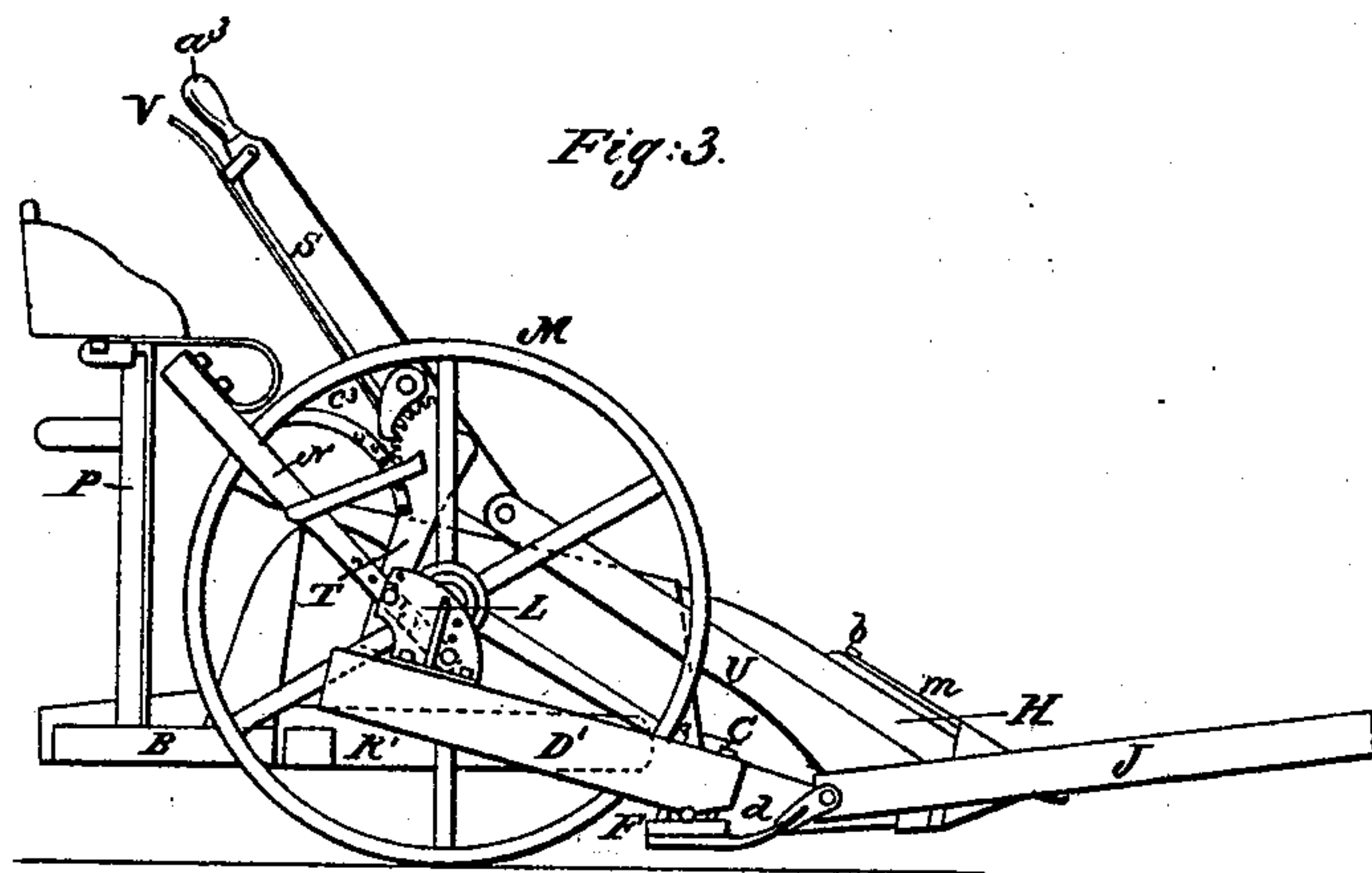
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Harvester.

No. 44,084.

Patented Sept. 6, 1864.



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UNITED STATES PATENT OFFICE.

DANIEL L. EMERSON, OF ROCKPORT, ILLINOIS.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 44,084, dated September 6, 1864.

To all whom it may concern:

Be it known that I, DANIEL L. EMERSON, of Rockport, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Harvesting-Machines; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan of such portions of a combined machine as are affected by my improvements, the remaining parts being omitted for the purpose of rendering the drawing more simple. Fig. 2 represents a plan of the same with the platform removed and the track-clearer in place. Fig. 3 represents an elevation of the stubble side of the same. Fig. 4 represents an elevation of the grain side of the same. Fig. 5 represents a front view of a portion of the sickle and the connecting-rod therefor, and Fig. 6 represents a front view of the same. Fig. 7 represents a vertical longitudinal section of a part of the connecting-rod, and Fig. 8 represents a transverse section through the joint thereof. Fig. 9 represents a transverse section of a portion of the finger-beam and the adjacent part of the frame. The last five figures are drawn upon a larger scale than the first four.

My invention consists of a number of parts or improvements, all of which are embodied in the combined harvesting-machine, parts of which are represented in the accompanying drawings.

The first part of my invention consists in combining the track-clearer used at the grain end of the finger-beam when cutting grass with a wheel so arranged relatively to the track-clearer that it shall roll upon the cut grass delivered by the track-clearer, thereby insuring its withdrawal from the finger-beam, and also laying it flat upon the ground, so that it may not fall back (after being acted upon by the track-clearer) and be in the way at the next round of the machine. The wheel when so combined I term a "grass-wheel."

The second part of my invention relates to the divider, and its object is to enable the acting point thereof to be lowered when the cutting apparatus is raised from the ground, so that, although the divider is secured to the cutting apparatus and is raised when the latter is raised to leave a higher stubble, the point of

the divider may nevertheless be set to run sufficiently near the ground to insure the proper raising and division of the grain. This part of my invention consists of the combination of the divider with an inclined sliding bar, whose front end forms the point of the divider and may be depressed (by sliding the bar forward) when the divider is raised.

The third part of my invention has reference to the joint between the connecting-rod and the sickle. This joint as usually constructed speedily becomes loose and shakily by the wear of the joint-pin and the eye in which it turns, and the play permitted thereby causes great jar and vibration. The third part of my invention provides a ready means of rebushing the eye in which the joint-pin operates, so that the farmer who uses the machine can replace a worn bush by a new one, and that wood or rawhide may be used as the material for the bush. This part of my invention consists of the combination of the sickle with a clasp-eye of proper size and form to hold a removable bush in which the joint-pin can turn.

The object of the fourth part of my invention is to furnish a ready means for rebushing the end of the connecting-rod which works upon the crank-pin of the sickle, so that a bush of wood or rawhide may be used, and may be replaced, when worn out, by the farmer; and it consists of the combination of the body of the connecting-rod with a clasp-eye of the proper size and form to receive and hold a removable bush in which the crank-pin may turn.

The fifth part of my invention relates to the portion of the frame of the machine which is at the gearing end of the finger-beam, and consists of the combination of the two beams or braces at the opposite sides of the driving-wheel by a rigid axle, on which the driving-wheel runs, so that the necessity of connecting said beams in the rear of the driving-wheel is dispensed with and the driving-axle becomes a material part of the frame.

The sixth part of my invention consists in forming the socket which sustains the standard of the driver's seat at the end of and in one piece with the axle of the driving-wheel, so that the said socket forms the butt of the driving-wheel axle, by which it is secured to the frame of the machine.

The object of the seventh part of my invention is to permit the position of the rear of the

raking-platform of a harvesting machine relatively to the frame of the machine to be changed, so that, although the said frame is tipped to raise or lower the cutting apparatus, the rear of the platform may be set at the most convenient distance from the ground for the discharge of the grain by the raker. This part of my invention consists in the combination of the back beam of the machine (or its equivalent for carrying the rear of the raking-platform) with the side pieces of the frame by means of radius-bars, which may be turned up or down to change the position of the back beam and the rear of the raking-platform relatively to the frame of the machine.

The object of the eighth part of the invention is to enable the machine to be readily tipped on the axles of its running-wheels to raise and lower the cutting apparatus when obstacles are encountered; and it consists in the combination of the main frame and the draft-bar, hinged thereto by means of what I term a "compound lever," the construction of which will be hereinafter fully described.

The machine, parts of which are represented in the accompanying drawings, may be used either to reap grain or to mow. In the former case it is used with the parts in the positions they are represented in Fig. 1, with the raking-platform A and the back beam, B, that supports it in place. In the latter case it is used without the platform and back beam, and with a track-clearer, C, at the grain end of the finger-beam, as represented at Fig. 2.

The track-clearer consists of a triangular piece of wood, which is pivoted at its front end to the adjacent brace D, and is inclined to the direction in which the machine is drawn forward, so as to move the cut grass laterally.

In order that the machine may embody the first part of my invention, a running-wheel, E, is connected with the machine, and is so arranged relatively to the rear end of the track-clearer, as shown at Fig. 2, that it runs upon the grass acted upon thereby, thus pressing it down to the ground, where it is left in the track of the machine, which passes forward from it. This wheel, so arranged, constitutes the grass-wheel. The axle of the wheel E is secured to a bar or brace, D, which projects from the finger-beam F, and is rigidly secured at its front end thereto, so that when the finger-beam is raised from the ground the wheel E supports its grain end, which is maintained in position by the resistance which the finger-beam opposes to twisting.

The divider is situated at the grain end of the finger-beam, and consists mainly of a shoe, G, which is used alone when the machine is employed to mow, and of a removable divider, H, which is superimposed upon the shoe when the machine is employed to reap.

In order that the machine may embody the second part of my invention, the point *a* of the divider is formed upon the front end of a bar, *m*, which is constructed to slide upon the inclined upper edge of the divider through a

guide, *n*, and is secured at its rear end to the divider by means of a screw-bolt, *b*. The slide-bar thus constructed can be slid through the guide after withdrawing the bolt *b*, so that the point of the bar may be depressed when the body of the divider is raised by raising the cutting apparatus, and the bar may be secured in its new position by inserting the screw-bolt into one of a series of holes made in the divider to receive it. As the point of the slide-bar is the acting point of the divider, this construction affords a ready means of adjusting the position of the point of the divider to its work. If deemed best, the bar and the adjacent part of the divider on which it rests may be curved, in which case the point may be made to slope at about the same angle with the ground, although the divider be raised or lowered by tipping the machine.

The finger-beam F of the machine is connected at its grain end with the brace D and at its opposite end with the beams D' D², which form a substantial part of the frame of the machine, and the machine is supported upon the main running or driving wheel M and the grass-wheel E, so that it can be tipped to raise or lower the finger-beam F. Those portions of the finger-beam which are applied to the brace D and beams D' D² are each provided with a longitudinal projection, *e*, which fits into a corresponding notch formed in the adjacent end of the beam or brace, and the under side of said end is beveled in opposite directions from the notch, so that the finger-beam may be rocked upon said longitudinal projections as an axle to change its transverse inclination to the beams and brace.

The finger-beam is secured to the adjacent end of each beam and brace by two screw-bolts, *c c*, one of which is in front of the projection *e*, while the other is behind it, so that the finger-beam may be rocked by slackening one and screwing up the other, both being screwed tight when the finger-beam is adjusted to the desired position. As the finger-beam is made fast to the two shoes *d d'*, which hold the draft-bar or tongue J, and as one of these shoes has a cheek, *f*, which overlaps the adjacent beam D² of the frame and is secured to it by a bolt, the bolt-hole in said cheek is made in the form of a circular slot to permit the cheek to move on the beam D² when it is rocked with the finger-beam.

The sickle *t* of the machine is of the usual scalloped variety, and operates in connection with slotted fingers *s s*, through which it vibrates. The sickle is driven by means of a crank-pin secured to a revolving shaft, which is mounted in pillow-blocks secured to the beam or bed D' of the frame, motion being communicated from the revolving crank-pin to the sickle by the connecting-rod *g*. As the fingers *s s* are secured rigidly to the finger-beam F, the sickle, which slides in them, is caused to rock or partially turn upon a longitudinal axis when the inclination of the fingers to the frame of the machine is varied by the adjust-

ment of the finger-beam, and consequently the sickle end of the connecting-rod will be turned relatively to the opposite end, which is held by the crank-pin. In order to permit the turning of the sickle end of the connecting-rod without the twisting of the material of the rod, the rod is composed of two parts, h and h' , one of which has a head, i , formed upon it, which is received in a corresponding socket in the other part, h , so that the head can turn in the socket, but cannot escape longitudinally from it. Hence the one member, h' , of the rod can turn upon the other to accommodate itself to the change in the position of the sickle with which it is connected. I prefer to make the head i in the form of an elliptic spindle, as this form tends to prevent the longitudinal bending of the rod; but it may be made in the form of a ball. In either case the socket in which it lies is formed in two pieces, one of which is the body of the rod, while the other is a cap, k , which is secured to the body of the rod by a screw-bolt, l , which may be screwed up to compensate wear or to clamp the two members of the rod rigidly together after they have been turned to their proper relative positions.

The joint between the connecting-rod and the sickle is made by an eye upon the sickle and a joint-pin, v , secured to the adjacent end of the connecting-rod g .

In order that the machine may embody the third part of my invention, the eye upon the sickle is made a clasp-eye, as shown at Figs. 5 and 6, its two sides being connected by a screw-bolt, u , and it is of sufficient size to admit a bush, r , which can be gripped fast by screwing up the clasp-bolt u . I prefer to make this bush of wood or of rawhide, with a slit at one part (generally at the top) of its circumference, so that as it wears away by contact with the joint-pin it may be contracted by screwing up the clasp-bolt u . When the bush is entirely worn away or breaks it may be replaced at a trifling expense by a new one, made by the farmer, the clasp being slacked to permit the old one to be removed and the new one to be inserted.

In order that the machine may embody the fourth part of my invention, the end of the connecting-rod g which works upon the crank-pin is also formed into a clasp-eye, p , to receive a removable bush, w , which can be replaced in the same manner as that at the sickle. This clasp-eye is made by forming the end of the connecting-rod into a strap, which is bent back upon itself and secured by a clasp-bolt, x .

In order that the machine may embody the fifth part of my invention, the driving-wheel axle K is secured rigidly at one end to the bed or beam D' at one side of the driving-wheel M , and the other end of the axle is secured to the beam D^2 at the other side of the driving-wheel. The axle thus forms the rear connection between the two beams of the frame, while the finger-beam F forms the front con-

nection of these beams. The driving-wheel axle thus becomes an integral part of the frame of the machine, and dispenses with the necessity of a connecting timber or beam in the rear of the driving-wheel, and with the necessity of extending the beams D' D^2 back to such a rear beam. The machine is thus made lighter and stronger than the ordinary frames in which the axle does not form part of the frame.

In order that the machine may embody the sixth part of my invention, the butt L of the driving-wheel axle is formed into a socket to receive the lower end of the seat-standard, so that the same set of bolts secure both axle and seat to the frame of the machine, and the driving-wheel axle forms both axle and socket for the seat. As the connecting-bolts of the seat-standard socket thus secure the driving-wheel axle, and vice versa, this mode of combining the parts is attended with considerably greater rigidity and strength than could be obtained with the same weight if the driving-wheel axle and socket were separate pieces. The socket is formed by the two cheek-pieces $z z$, which are perforated transversely to receive two bolts, which are passed through holes in the seat-standard N . There is a series of holes in the cheeks for each bolt, and a series of holes is also made in the seat-standard, so that by shifting the bolts to different holes the seat-standard may be either tipped forward or backward or moved longitudinally, and the seat at the top of the standard may be either raised or lowered, or may be moved backward or forward on the machine; or one of each of these two kinds of adjustments may be made simultaneously.

When the machine is arranged to reap, the grain falling from the sickle is received upon a raking-platform, A , from which it is discharged at intervals by a raker placed at the raker's stand P . The front side of the raking-platform is sustained by the finger-beam F , and its rear is sustained by a back beam, B , to which the raker's stand P is secured. The ends of this back beam are firmly secured to two radius-bars, $R R'$, one of these bars, R , being pivoted on a bolt that passes through the rear of the brace D at the grain end of the finger-beam and the other to the beam D^2 in the vicinity of the driving-wheel M . The front ends of the radius-bars project forward of the pivot-bolts, and each is perforated with holes, through which a bolt is passed that also passes through the brace or beam to which the radius-bar is pivoted, so that by shifting the bolt from one hole to another the radius-bar may be turned upon its pivot to raise or lower the back beam, and consequently to raise or lower the rear of the platform and the raker's stand. Hence when the machine is tipped forward to lower the cutting apparatus the rear of the platform and raker's stand may be lowered by adjusting the radius-bars so as to be at the most convenient distance from the ground for raking, instead of being of necessity raised, as they would be if the back beam were immovably secured to the remainder

of the frame. On the other hand, when the machine is tipped back to raised the finger-beam the rear of the platform may be turned up by adjusting the radius-bars to keep it at the proper distance from the ground. When the machine is used to mow the platform is removed. The back beam and its appurtenances are also easily removed by taking out the bolts which secure the radius-bars to the beam D^2 and brace D. The track-clearer C is then applied, as shown in Fig. 2.

In order that the main frame may be readily tipped to raise or lower the cutting apparatus, the frame of the machine and the draft-bar J are connected by what I term a "compound lever." This lever is composed of the hand-lever S, the link T, and the arm U, which are connected by pivots. The hand-lever S is pivoted at its lower end to the rigid arm U, which extends back from the draft-bar J, and its upper end is formed into a handle, a^3 , to which the hand of the driver is applied. The link T is pivoted at its upper end to the hand-lever S and at its lower end to the main frame. The upper extremity of the link has the form of a segment of a toothed wheel, b^3 , and a spring-catch, c^3 , is pivoted to the hand-lever S in a proper position to engage with the teeth of this segment and secure the parts in any position in which they may be set by the movement of the hand-lever, thereby securing the finger-beam and cutting apparatus in any desired position.

In order that the catch may be disengaged with facility, it is connected by a rod with a handle, V, pivoted to the upper end of the hand-lever S, so that the catch may be disengaged by the pressure of the hand which seizes the hand-lever.

Having thus described the application of my

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

1. The combination of a track-clearer with a grass-wheel arranged relatively to the track-clearer, substantially as described.

2. The combination of the divider with an inclined sliding bar, so that the acting front end of the divider can be depressed by moving said bar, substantially as set forth.

3. The combination of the sickle with a clasp-eye to hold a removable bush, the whole operating substantially as set forth.

4. The combination of the connecting-rod of the sickle with a clasp-eye to hold a removable bush, substantially as set forth.

5. The combination of the two beams of the frame of a harvester at the opposite sides of the main driving-wheel by means of the driving-wheel axle, which is rigidly secured to both, the combination operating substantially as set forth, so that the necessity of a connecting-piece in the rear of the driving-axle is dispensed with.

6. A driving-wheel axle constructed in one piece with the socket of the standard of the driver's seat, substantially as set forth.

7. The combination of the back beam (or its equivalent for supporting the rear of the platform of a harvester) with the frame of the machine by means of radius-bars, the whole operating substantially as set forth.

8. The combination of the main frame, draft-bar, and compound lever, the whole operating substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

DANIEL L. EMERSON.

Witnesses:

J. G. MANLOVE,
CHAS. PRYSE.