

W. N. Whiteley, Jr.

Harvester Rake.

N<sup>o</sup> 52351

Patented Jan. 30, 1866

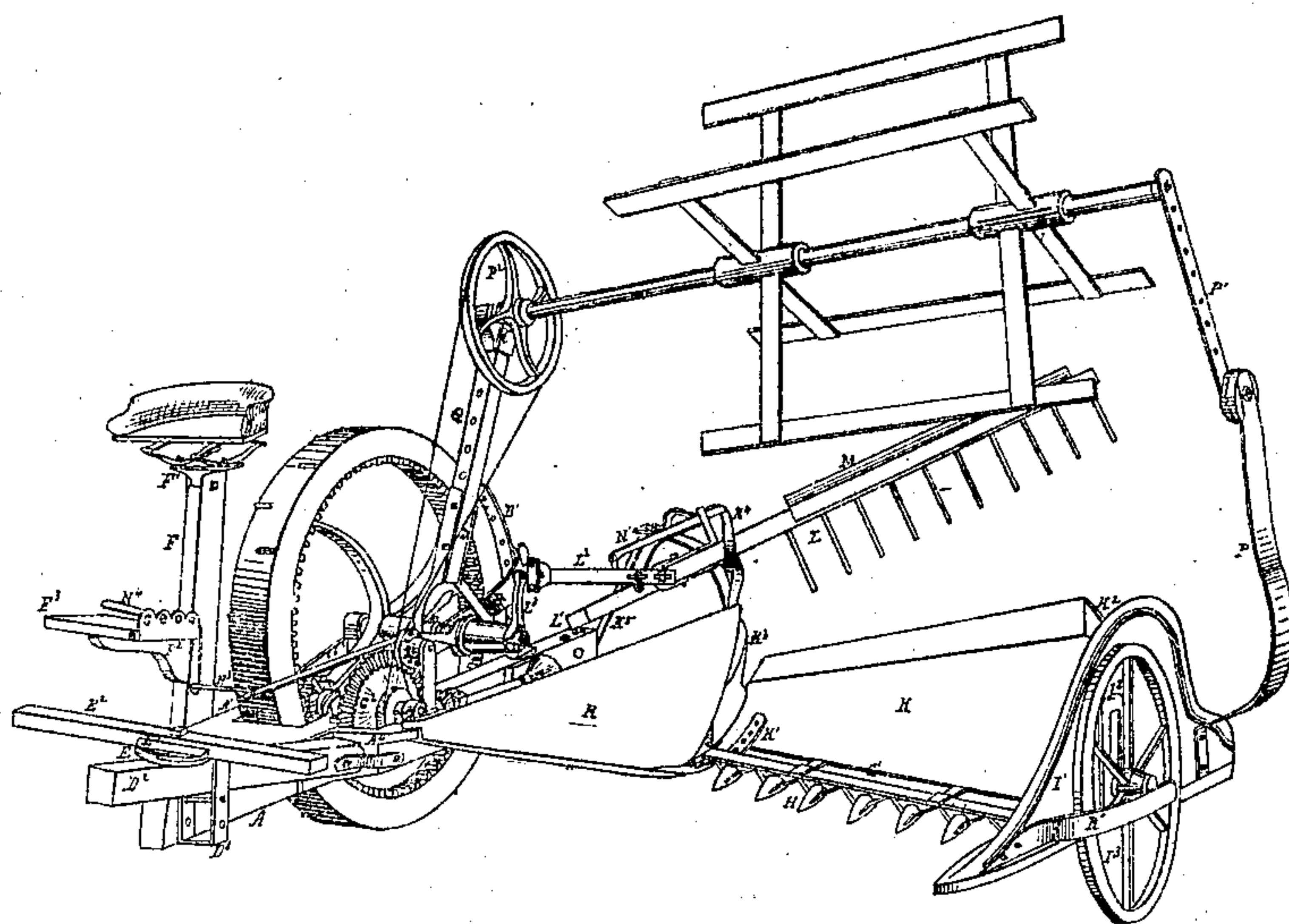


Fig. 4.

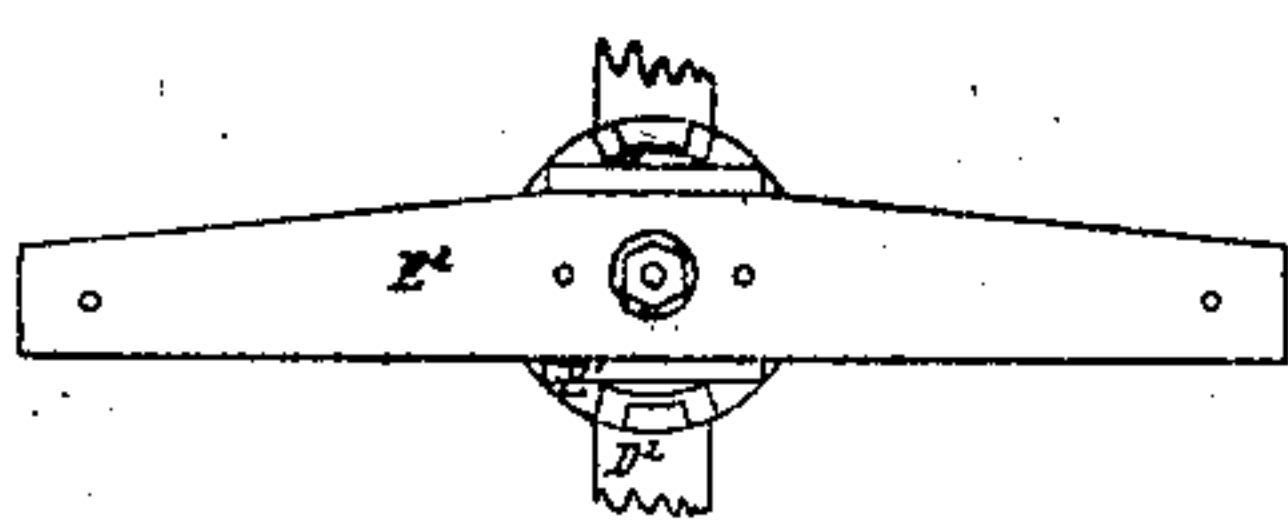


Fig. 8

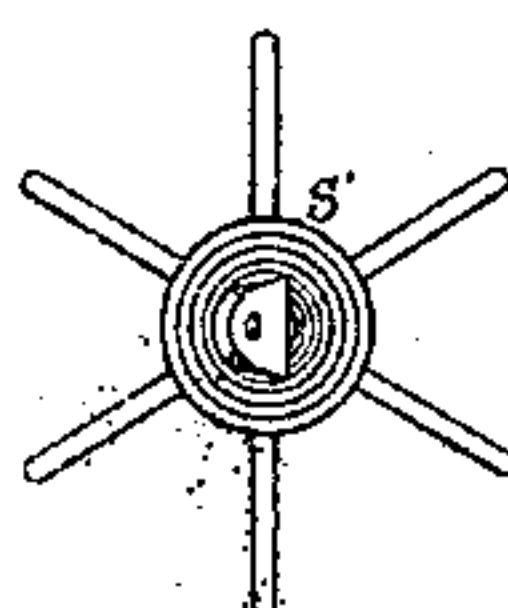


Fig. 7

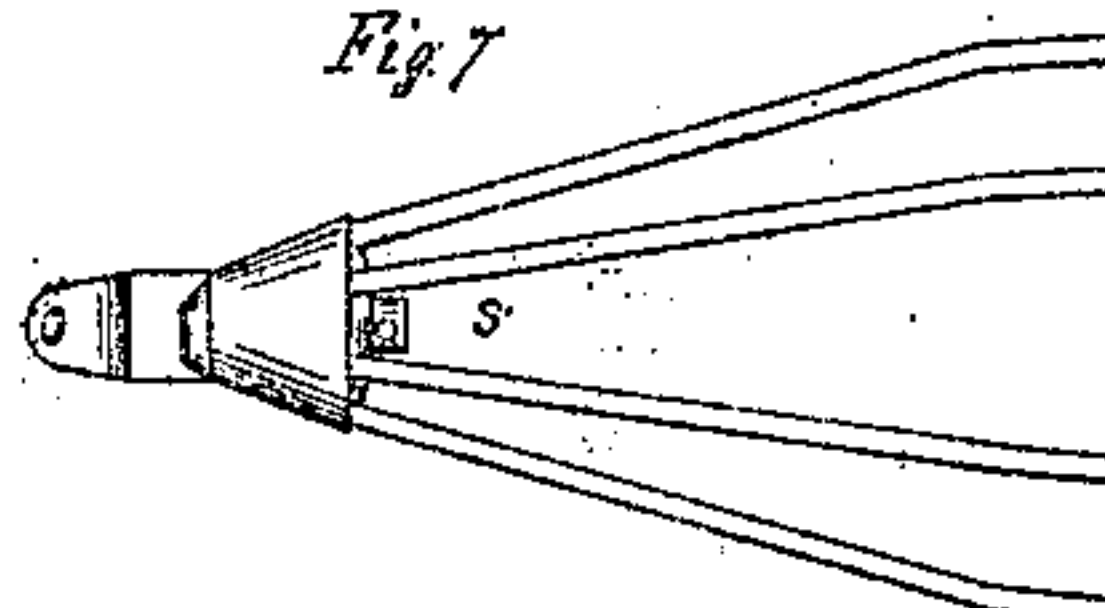


Fig. 5



Fig. 6

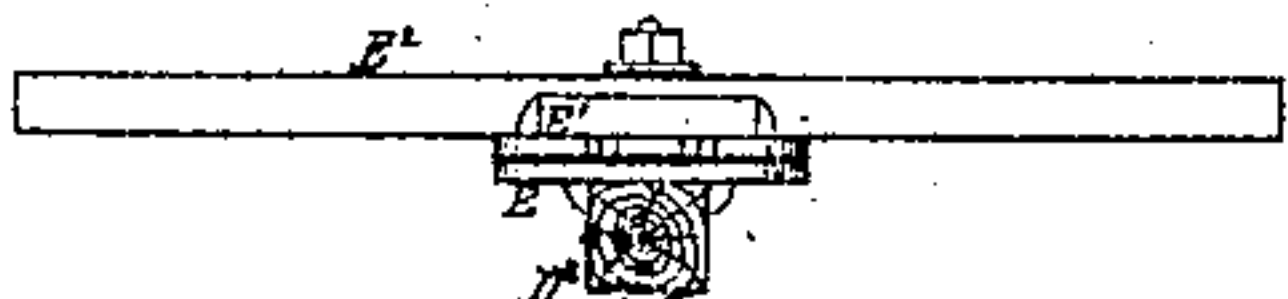


Fig. 3

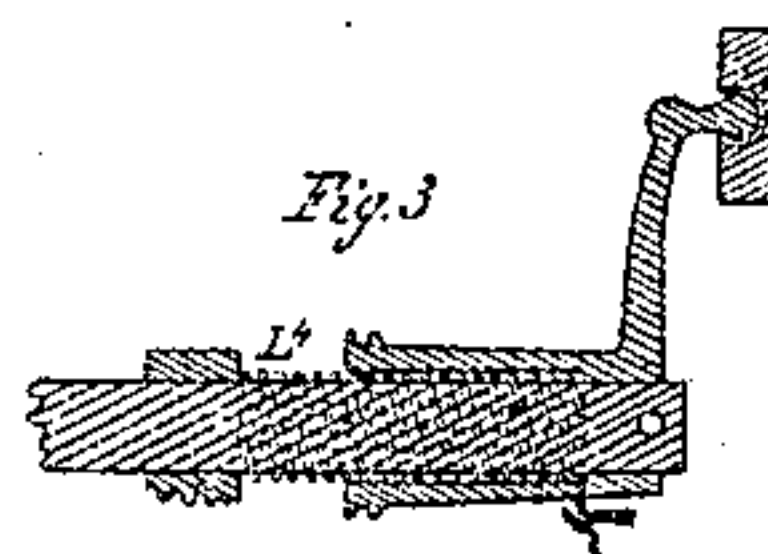
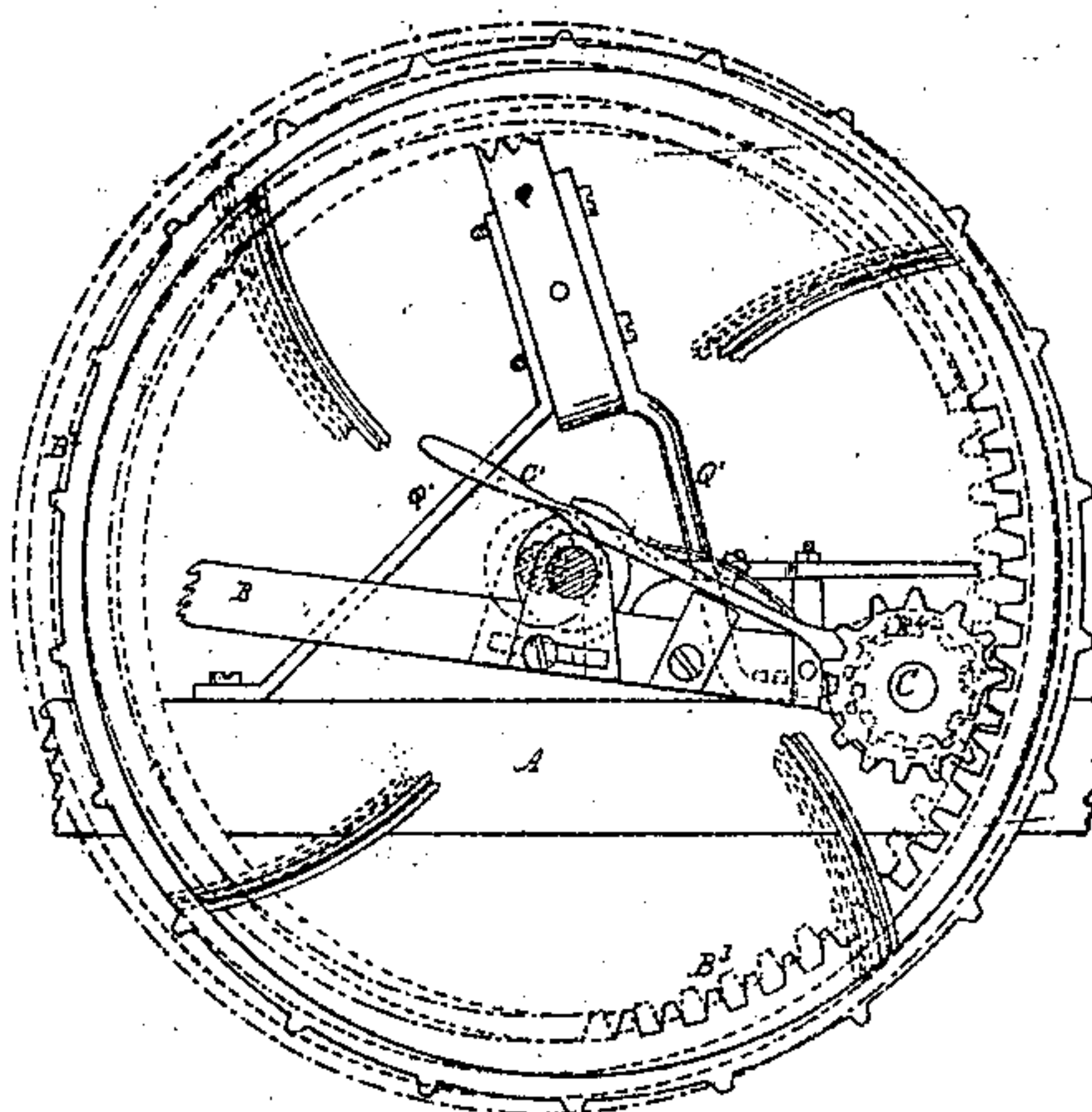


Fig. 2.



Witnesses  
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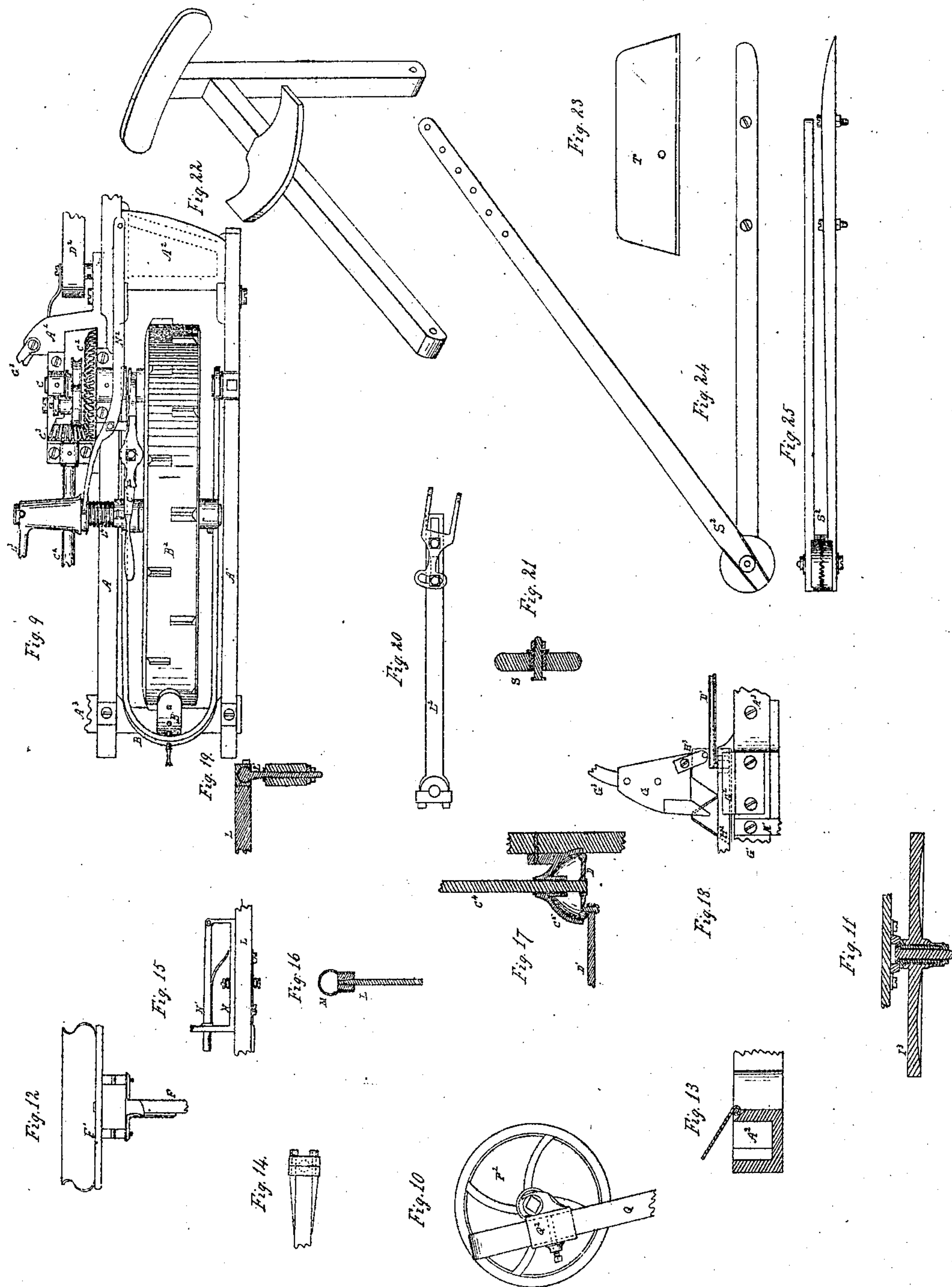
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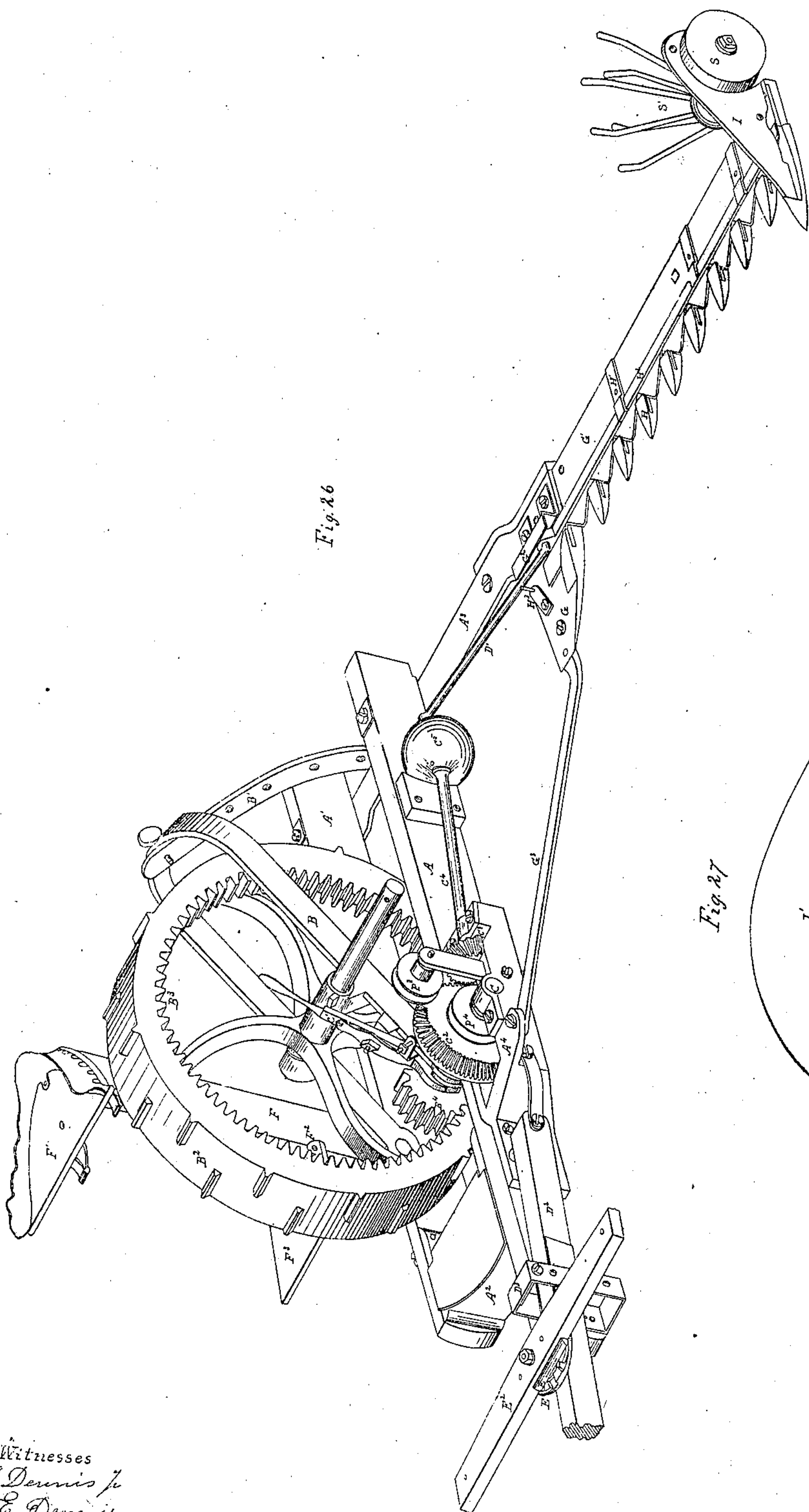
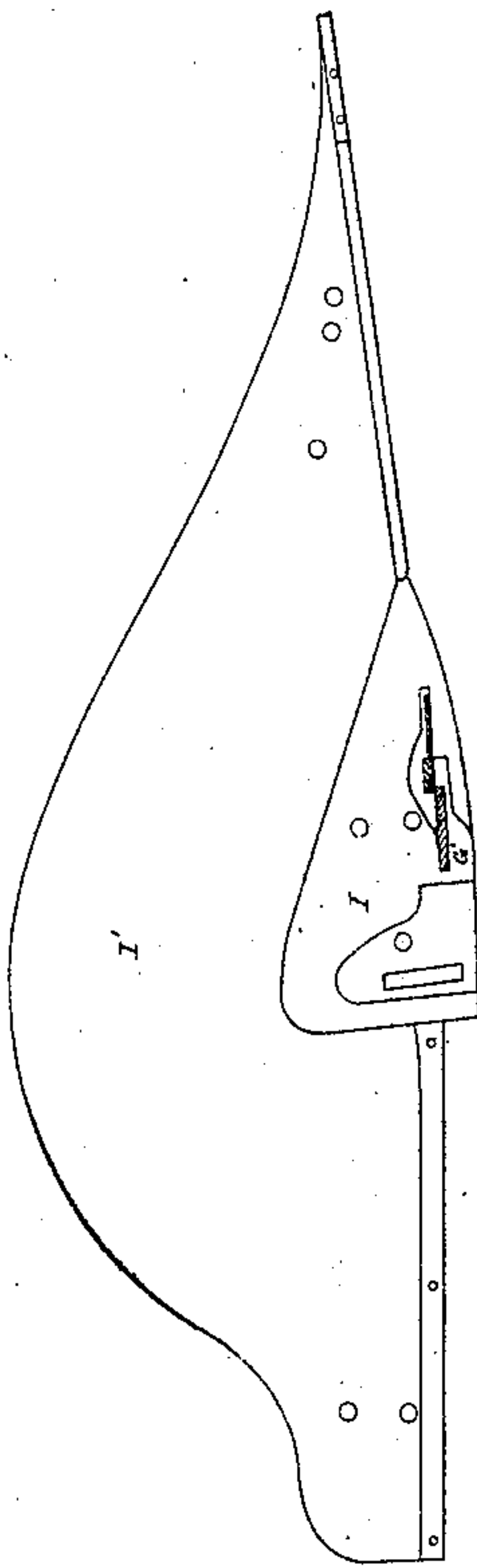


Fig. 26

Fig. 27



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# UNITED STATES PATENT OFFICE.

WILLIAM N. WHITELEY, OF SPRINGFIELD, OHIO.

## IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 52,351, dated January 30, 1866.

*To all whom it may concern:*

Be it known that I, WILLIAM N. WHITELEY, of Springfield, in Clarke county, and State of Ohio, have invented certain new and useful Improvements in Harvesting-Machines for Harvesting Grain, Grass, &c.; and I do hereby declare that the same are described and represented in the following specification and accompanying drawings.

My improvements belong to that class of harvesting-machines in which the finger-bar projects out from one side of the main frame, known as "side-draft" machines; and the object of my invention is to make a combined self and hand raking reaper and mower.

The nature of my invention consists in the improvements enumerated as follows, to wit: First, in connecting the fore ends of the side rails of the frame by means of a metal box, which serves for a tool-box; second, in a bracket with three arms to support the seat; third, in making the journal-box for the crank-shaft and hemispherical shield for the fly-wheel and crank in one and the same piece of casting; fourth, in supporting the reel-post by braces from the rail of the main frame, so that the shaft of the driving-wheel may be adjusted between them; fifth, in the peculiar construction of the pulley and journal at the end of the reel-shaft, in combination with a sliding box or hook for the journal to turn in; sixth, in arranging the spring which presses the rake-crank onto its clutch-pin inside of the hub of the crank; seventh, in combining with a ball-headed pivot and box working on the ball some straps to fasten the box to the rake-head; eighth, in a spring-latch of a peculiar construction, combined with a rake-bow for raising and dropping the rake; ninth, in a shield on the top of the rake to support the falling grain and make the rake slip out from under it with facility; tenth, in making the rear of the platform to incline upward, and curving the rake-guide so as to raise the rake over the inclined part of the platform; eleventh, in making the outer reel-standard to curve outward and upward, and connecting it to the reel-bearer by adjusting toothed plates.

To enable others skilled in the art to make and use my improvements, I will proceed to describe their construction and operation, referring to the accompanying drawings, in

which the same letters indicate like parts in each of the figures.

Figure 1 is a perspective drawing of a harvesting-machine with my improvements, ready for reaping, with a self-raking attachment. Fig. 2 shows the driving-wheel, its shaft, and movable box, adapting the wheel to different-sized pinions, in black and red lines. Fig. 3 is a section of the rake, crank-shaft, and spring. Figs. 4, 5, and 6 show the double-tree tongue and plates which limit the vibration of the double-tree; Figs. 7 and 8, side and end elevations of the trash-clearer. Fig. 9 shows the driving-wheel shaft and metal frame, main frame, combination-box, and gearing. Fig. 10 is the reel-pulley and adjustable journal box or hook. Fig. 11 is a section of the grain-wheel, spindle, bolt, and plate fastened to the divider. Fig. 12 is the seat and three-armed bracket. Fig. 13 is a section of the tool-box with the cover raised. Fig. 14 is a plan of the end of the rake-head. Fig. 15 is the spring-latch which raises the rake. Fig. 16 is a section of the rake and its shield. Fig. 17 is the journal-box of the crank-shaft, with the hemispherical shield for the fly-wheel and crank. Fig. 18 is a plan of the shoe with the parts connected to it and working on it. Fig. 19 is a section of the rake-head box and pivot on which it vibrates. Fig. 20 is the link which vibrates the rake. Fig. 21 is a section of the grass-wheel, spindle, &c. Fig. 22 is the hand-raker's stand. Fig. 23 is the hand-raker's foot-board; Figs. 24 and 25, reel-bearers. Fig. 26 shows the machine adapted to mowing, without the reaping or raking fixtures. Fig. 27 is the reaping-divider and outer shoe for mowing.

In the accompanying drawings, A A' are the side rails of the frame, connected in front by the metal box A<sup>2</sup> and at the rear by the connecting-bar A<sup>3</sup>, fastened to the under side of the rails. The metal box A<sup>2</sup> is provided with a lid and serves for a tool-box.

I make a combination-box, A<sup>4</sup>, in the form shown in Fig. 9, for the journals of the pinion-shaft and one journal of the crank-shaft, and fasten it to the side of the rail A.

I make a metal frame, B, and arrange one arm to vibrate on the box of the pinion-shaft and the other arm on a pivot fastened to the rail A', and fasten the journal-boxes of the shaft of the driving and carrying wheel to the



arms of the frame B, so that the height of the main frame may be adjusted on the wheel by vibrating the frame B and fastening it by a screw to the stand B', which projects up from the bar A<sup>3</sup> for that purpose.

The driving-wheel B<sup>2</sup> is provided with projections extending half-way across its tread and arranged alternately. The spokes of this wheel are only half as wide as the rim, to leave room on the inside of the rim for the internal gear B<sup>3</sup>, which drives the pinion B<sup>4</sup> to operate the cutters.

The shaft C of pinion B<sup>4</sup> always occupies the same position on the rail A, and when the pinions are changed to vary the speed of the cutters the boxes of the driving-wheel shaft are moved on the frame B, as shown in red and black lines in Fig. 2, the boxes of the driving-wheel shaft being furnished with slots for that purpose, as shown in said Fig. 2.

The pinion B<sup>4</sup> is fitted to turn freely on the shaft C, and has a groove around its hub for the shipper C', which traverses the pinion on to and off of its clutch-pin to lock it to and release it from the shaft.

The shipper C' vibrates on a stand fastened to the frame V, and drops into some notches in the top of the box of the driving-wheel shaft to hold the shipper in the desired position.

The shaft C turns the bevel-gear C<sup>2</sup>, which drives the pinion C<sup>3</sup> and crank-shaft C<sup>4</sup>, which is in a box on the box A<sup>4</sup> and in the box and hemispherical shield C<sup>5</sup>, fastened to the rail A.

The shaft C<sup>4</sup> turns the fly-wheel D, which turns in the shield and carries the crank-pin which operates the link D' to traverse the cutter-bar and cutters.

The tongue D<sup>2</sup> is hinged to the fore end of the box A<sup>4</sup> by a link and bolt, on which it vibrates, and the tongue is surrounded by the stirrup D<sup>3</sup>, fastened to the front end of the rail A, which stirrup D<sup>3</sup> is provided with a series of holes for pins to limit the vibration of the tongue, as desired.

The plate E is fastened to the top of the tongue, and is provided with lugs on its upper surface projecting into the scores in the plate E', which are wider than the lugs to allow the plate E' and double-tree E<sup>2</sup> fastened to it to vibrate to a limited extent, but not so as to let one of the animals in the team get far ahead of the other.

The post F for the driver's seat is fastened to the fore end of the rail A' by a bolt and flanged casting, which prevents it from vibrating.

The three-armed bracket shown in Fig. 12 is fastened to the top of the post F by its vertical arm, and the springs which support the seat F' are fastened to its horizontal arms, as shown in Fig. 1. The bracket F<sup>2</sup> is fastened to the post F and supports the foot-board F<sup>3</sup> for the driver.

An arm of the main shoe G is bolted to the connecting-bar A<sup>3</sup>, and the end of the finger-bar G' in a score in the shoe between the end

of the connecting-bar and the shoe, and the stand G<sup>2</sup> is put on top of the connecting-bar, finger-bar, and shoe, and the whole are bolted together, as shown in Fig. 18, making a strong connection. The fore end of the shoe is connected by the brace-rod G<sup>3</sup> to the box A<sup>4</sup>, as shown in Fig. 1.

The finger-bar G' is provided with grooved fingers H and brackets H', to hold the cutter-bar H<sup>2</sup> in position while it is traversed by the link D', which has a pivot projecting into the heel of the cutter-bar, which pivot is held in by the bracket H<sup>3</sup> fastened to the shoe. The stand G<sup>2</sup> projects over the heel of the cutter-bar and forms a groove between the stand and shoe for the heel of the cutter-bar to traverse in.

The shoe I, Figs. 26 and 27, is made in the form shown to surround the end of the finger-bar, and is fastened to it and provided with a slot for the end of the cutter-bar and cutter to traverse through it, against the side of which slot the cutter acts to cut the crop as against a guard-finger, and the rear of this slot is made so large as to leave an open space above and in rear of the cutter-bar for the escape of clogging matter, which, if retained, would bind the cutter-bar and prevent it from working freely. This shoe I, as above described, is in proper form for mowing, and is prepared for reaping by applying the divider I', which is made in the form shown and fastened to the outer side of the shoe I.

The bolts which fasten the divider to the shoe also fasten the stand I<sup>2</sup>, which carries the pivot of the grain-wheel I<sup>3</sup>, which carries the outer end of the finger-bar.

The platform K is made in the form shown, with its outer end fastened to the under side of the divider, which extends behind the finger-bar, and its inner end is fastened to the finger-bar by the plate K'. (Shown in the drawings.) The curved guide-board K<sup>2</sup> extends from the divider along the outer edge of the platform, and is fastened to it, to guide the grain as it is raked off the platform so far from the standing grain as to be out of the path of the team in cutting the next swath. The rear of the platform K inclines upward to raise the heads of grain and make the rake shoot them off upward and clear of the ground until the butts of the straw pass off the platform, so that the whole may fall together. This inclined part of the platform prevents the grain from shaking off of the platform in rough and hilly ground.

The rake arch or guide K<sup>3</sup> is made in the form shown, and fastened to the inner end of the platform and to the top of the stand by a bolt passing through the rake-bow K<sup>4</sup>, the arch, stand, and parts below the stand fastening the whole firmly together. The bow K<sup>4</sup> is arranged above the guide and is made in the form shown, and its rear end fastened to the rear of the guide, and both are supported by the brace K<sup>5</sup> from the rail A.

The rake L vibrates on the pivot L', fastened



to the rail A, which pivot is a ball, and the box on the end of the rake is a socket fitted to the ball, as shown in section, Fig. 19, so that the rake can rake and vibrate on the pivot as required.

The shield M is made of sheet metal bent in the form shown in Fig. 16, which is a section of the rake with the edges of the shield fastened to it. This shield extends up from the rake-head to support the falling grain when the rake falls onto the finger-bar, and the round smooth surface of the shield slips out from under the falling grain with facility as the rake moves to the rear of the platform.

The rake L is traversed by the link  $L^2$ , which connects it to the pin in the crank  $L^3$  on the shaft of the driving-wheel which turns it. The head of the crank-pin is a ball, and the box on the link is a socket, so that the link can rock and vibrate in working the rake.

The stand N is made in the form shown and fastened to the rake, and carries the spring-latch  $N'$ , which is hinged to one end of the stand and vibrates in an upright slot in the other end, and is pressed up by a spring fastened to the stand under it. This latch  $N'$  passes over the rake-bow  $K^4$  when the rake moves forward, and raises and carries the rake up and over the cut and falling grain. Then the latch passes off of the bow and the rake drops onto the rear of the finger-bar at the butts of the grain when the crank moves the rake back on the arch or guide and over the platform, moving the grain-heads forward, sidewise, and backward off the rear of the platform, and drops it so far from the standing grain that it is out of the path of the team in cutting the next swath. As the rake passes off of the rear of the platform it is raised up by the guide, and the teeth are lifted out of the gavel without tangling it. As the rake passed back the spring-latch was pressed down by the rear of the bow, and passed out from under it and was raised by the spring, so that as the rake moved forward the latch passed onto the bow and lifted the rake up, so that it is carried forward over the cut and falling grain, as before mentioned.

The crank  $L^3$  is fitted to turn and traverse on the shaft of the driving-wheel, and the scores in the outer end of the crank-hub are pressed onto the clutch-pin in the shaft by the coiled spring  $L^4$  on the shaft and inside of the hub of the crank, as shown in section, Fig. 3.

The inner end of the crank-hub has a groove around it for the shipper  $N^2$ , which vibrates on a stand fastened to the frame, and is connected by the link  $N^3$  to the bent lever  $N^4$ , which vibrates on a pivot fastened to the foot-board, so that the driver can depress the lever  $N^4$  with his foot and release the crank from the clutch-pin and stop the rake while it is held up by the bow until sufficient grain is gathered for a gavel, when the driver can raise his foot, and the coiled spring  $L^4$  will lock the crank to the shaft and traverse the rake to rake the gavel from the platform.

By this construction and arrangement the driver can stop the rake for a longer or shorter interval by depressing the lever with his foot, and allow sufficient grain to fall on the platform to form a gavel, and then let the rake rake the gavel off, and then stop it again, or he may let the rake operate continually.

The reel-standard P is fastened to the rear of the divider  $I'$ , and is bent outward as it extends upward to allow the cut grain to pass back off of the divider freely. This standard supports the reel-bearer  $P'$ , and both are provided with plates having teeth like crown-wheels, which are drawn together with a bolt, so that by loosening the bolt the position of teeth may be changed to adjust the height of the reel.

The reel-pulley  $P^2$  is made with a journal and perforated hub, in which the end of the reel-shaft is fastened by a bolt passing through the journal and screwed into the shaft. A band from the pulley  $P^2$  passes under the tightening-pulley  $P^3$  and around the pulley  $P^4$  on the pinion-shaft which drives the reel. The pulley  $P^3$  holds the band from the gearing, and its pivot is supported by a stand fastened to the box  $A^4$ .

The reel-standard Q is supported by the braces  $Q'$  fastened to the rail A.

The box or hook  $Q^2$ , which carries the journal of the reel, is made to surround the standard Q and fitted to traverse on it, and is held in its place by a set-screw.

The gathering-board R, which gathers and guides the grain to the cutters, is made in the form shown, and its fore end is fastened to the box  $A^4$  and its rear end to the shoe.

The fender-board  $R'$  is fastened to the outside of the divider to press the standing grain from the grain-wheel, and there is an adjustable rod arranged on the inside of the divider, opposite the fender, to gather the grain to the cutters.

To convert this reaping-machine into a mower, the divider, platform, self-raking attachment, and reel are removed, and the grass-wheel S, Fig. 21, and the revolving track-clearer  $S'$ , Figs. 7 and 8, are applied to the shoe, and the driver's seat is moved back on the frame, as shown in Fig. 26, and the small pinion applied to its shaft, as shown in red lines in Fig. 2, when the machine is ready for mowing; and the reel may be used in mowing by applying the double bearer  $S^2$  (shown in Fig. 24) to the outer shoe.

When the machine is to be used for reaping without the self-raking attachment, the foot-board T is fastened to the rail A, and the raker's stand  $T'$  is fastened to the rail A and to the reel-post, as shown in Fig. 29.

I believe I have described and represented my improvements in harvesting-machines so as to enable any person skilled in the art to make and use them without further invention or experiment.

I will now state what I desire to secure by Letters Patent.

I claim—



1. Connecting the fore ends of the rails of the main frame by means of a metal box, substantially as described, in which box the tools may be carried.

2. The three-armed bracket which supports the seat, substantially as shown and described.

3. Making the journal-box for the crank-shaft and hemispherical shield for the fly-wheel and crank in one and the same piece of casting.

4. Supporting the reel-post by the braces Q', substantially as shown and described, so that the main shaft may be adjusted between the braces.

5. The peculiar construction of the pulley and journal at the end of the reel-shaft, in combination with the sliding box or hook in which the journal turns.

6. Arranging the spring which presses the rake-crank onto its clutch-pin inside of the hub of the crank, as shown and described.

7. In combination with a ball-headed pivot

and box working on the ball, the straps on the box which fasten it to the rake-head.

8. The spring-latch N', in combination with the rake and rake-bow, for raising and dropping the rake.

9. The shield on the top of the rake, as shown and described, to support the falling grain and make the rake slip out from under it with facility.

10. Making the rear of the platform to incline upward, in combination with the curve in the rake-guide, which carries the rake over the inclined part of the platform.

11. Making the outer reel-standard to curve outward and upward, as shown and described, in combination with the toothed plates for adjusting the reel-bearer.

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