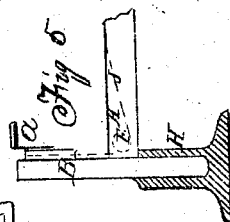
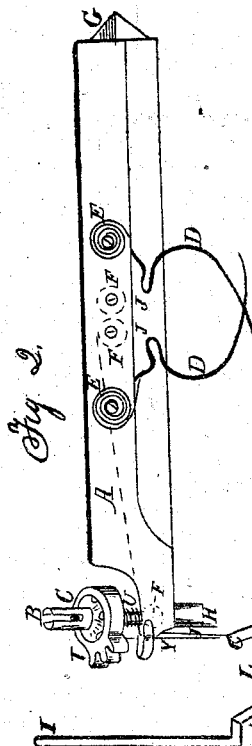
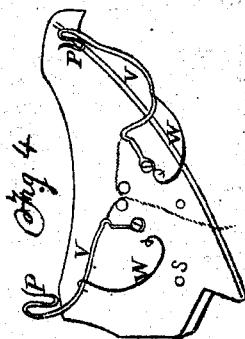
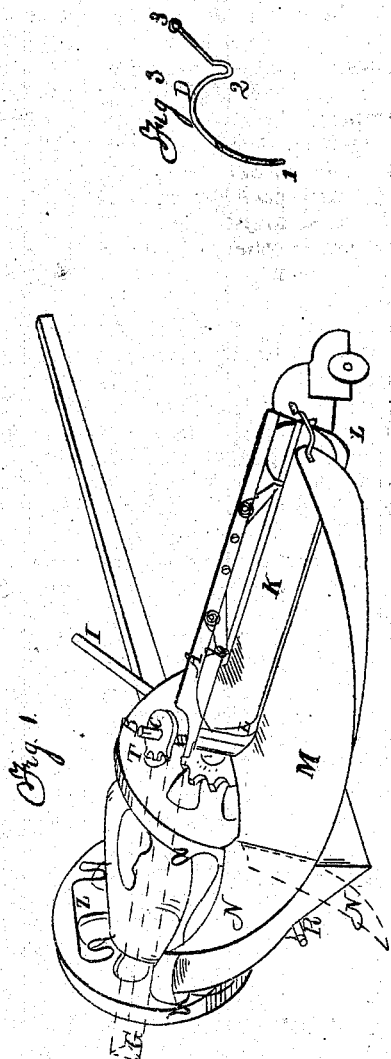


*T. S. Minniss,*  
*Grain Binder.*

*No. 107,703.*

*Patented. Sept. 27. 1870.*



*Witnesses*  
*Sarah L. Hotchkiss*  
*Rachel R. Minniss*

*Thos. S. Minniss*

# UNITED STATES PATENT OFFICE.

THOMAS S. MINNISS, OF MEADVILLE, PENNSYLVANIA.

## IMPROVEMENT IN GRAIN-BINDING ATTACHMENTS FOR HARVESTERS.

*Specification forming part of Letters Patent No. 107,703, dated September 27, 1870; antedated September 17, 1870.*

*To all whom it may concern:*

Be it known that I, THOMAS S. MINNISS, of Meadville, in the county of Crawford and State of Pennsylvania, have invented an improved method of taking grain from the platform of harvesters, swinging it to a higher point for ease and convenience to the binder, who sits or stands between the wheels at the rear of the machine, where, with his foot upon a treadle, he can throw up arms which carry a band from the bottom upward till it surrounds the sheaf, with its ends in convenient position to be grasped by the hands of the binder.

Figure 1 is a perspective view of a harvester with my improvement. Fig. 2 is a plan of the crane with its attachments and combinations for grasping and swinging the grain, detached from the frame which supports and the wheel which operates it. Fig. 3 is a detached hook or arm, with claw. Fig. 4 is an elevation, showing the band-bearer and its attachments, as seen at the rear of machine, left side. Fig. 5 is a transverse section of the socket H, with stem of the crane B, as well as a crank and pulley to be operated by hand, to contract the cord and swing the crane.

A is the arm, and B the stem, of the crane; and H, the socket in which the stem turns. C is a section of a cogged pinion, working with a sleeve on the stem, with the cogs at T just sufficient to give a quarter-turn to the crane when geared to the driving-wheel of the machine, and is held above said wheel by the spring U, coiled round B, till drawn into gear by the cord Y, operated by the lever I, when the advancing wheel will carry the arm to the rear, where, the cord being relaxed, the spring U throws it out of gear, when it is free to move back when pushed by the hand or elbow of the binder or driver. The stem B, being leaned forward, the arm, after being started, will swing back, or rather forward, by its own gravity. D D are the hooks or claws, that are made to operate inward by the cords J J J, over the pulleys F F F, attached to the lever I, or to the windlass A; but when the cords are relaxed the springs E E expand them outwardly. The springs E E are secured at or near the same point that the claws are hinged, so as to avoid friction on the shanks of D D. The claws on a six-foot arm should be two feet long—i. e., one foot from 1 to 2, and the

same from 2 to 3, Fig. 3, and then hinged just two feet from each end of the arm. The loops at the middle will just come together when drawn up to the pulleys F F. I would make the claws of one-fourth steel rod or of flat iron one-eighth by one-half inch, bent edgewise. It is important that the claws should work close together at the points, and being on a line at their shanks the pressure will be directly toward each other, and the hook part must be so straight at the point that when they pass each other the points will always be lowest, so as not to pierce the gavel when grasping it.

The arm A is made of wood or iron, and is firmly united with the stem B, at right angles. Said stem can be made of one and one-fourth inch gas-pipe. To protect the claws, strings, &c., from entanglement with the falling grain as the arm swings forward, I defend them with a piece of sheet metal bent to an acute angle, and fix it to the arm A, so that its sharp corner would divide the grain and hold that up which was falling till the arm passed from under it and let it fall on the platform. (See G, Fig. 2.)

In order that the claws may work freely when gathering the gavel, I slit the platform from side to side about twelve or fourteen inches back from the cutters, leaving a cleft six inches wide, through which the claws sweep as they are drawn inward; and to stiffen the platform, as well as to protect the points of the claws from the stubble, I drop a vertical flange, L, six or eight inches wide, from the hind end of K, and I unite M and K with strong iron straps X X, bent outward at each end, so as to clear the sweep of the claws when expanded. The rear part of the platform M and N is almost flat, and is curved from the cleft backward, to correspond with the sweep of the crane. The platform ascends as it runs back at an angle of twelve or fifteen degrees, and the stem of the crane is planted at right angles to its ascending surface, so that the arm is always at the same distance from it.

There must be an open space between the rear of the platform and binding-stand, so that the claws can freely expand when relaxed from the gavel.

To enable the gavel to be discharged in the rear of the wheels, I hinge about eighteen inches

of the rear point of the platform N, that it may be dropped down somewhat and form a sliding apron, on which the gavel, being discharged from the claws, will slide to the ground; but where it is desired to bind the grain at once, I secure the said apron on a line with the platform by a bar through a staple on the under side near the hinge, and then the gavel can be delivered directly to the binder. The binding apparatus consists in almost a duplicate of the grasping-claws inverted—*i. e.*, operating upward—except that the points are bent into loops or hooks, which, when expanded, lie below the platform, and on these loops (see P P, Fig. 4) the band is laid. When the gavel is swung over the band the binder presses the treadle R with his foot, which draws the cord Q, when the arms V V sweep round the gavel and bear the ends of the band with it, one of the loops being bent to the left and the other to the right. The ends of the band are thus brought into convenient position to be quickly seized, when the carrying-claws and the band-bearers may both be relaxed. The springs W W will jerk P P out of the way. E E will do the same with D D, when the operator has freedom to make his knot and tumble the sheaf to the ground; then give the crane a push, place another band, and so on continuously. At his right hand, within reach, is a buck or band-holder, Z, made of one-half-inch iron rod bent into the form of two V's, united together and fixed to the frame of the machine, to which, from time to time, as it is needed, an unbound sheaf is transferred to be used for bands.

When grain is to be discharged from the machine unbound, the band-bearers and their attachments may be detached and laid aside.

I fix the socket H firmly to the main frame of the machine, and I also hinge the lever I to the frame by a box at 4, Fig. 2, the handle of the lever being bent to make it convenient to the hand of the driver.

The cord Y, which draws the pinion T into gear with the cog-wheel on the side of the ground-wheel or driver, does not begin to draw till the lever has drawn the claws D D into the position seen in Fig. 2, at which point they begin to raise the gavel from the platform by their closing action; for it will not do to have the crane begin to swing till the claws have encircled the gavel clear of the platform.

The platform can be made of sheet-iron or any thin, light material, made stiff with ribs. It can be attached to the cutter-bar with a bolt at each end in front, and to a standard on the frame in the rear. I make the windlass a, in Fig. 5, so that just one turn would grasp the claws together, and then the crank will always be in the same position when taken hold of to turn, or when turned to swing round the crane.

I do not claim, broadly, the use of arms or talons to gather grain in gavels, sweeping from each side toward the center of the platform; neither do I claim the use of a crane to swing the gavel round perpendicular to the track of the machine, as this has been done by others; but

What I do claim is—

1. In combination with the harvester-platform K M, the crane A, claws D, springs E, cords J, and pulleys F, all constructed and operating substantially as described.

2. The combination of the arms V V, springs W W, cord Q, treadle R, and bearers P P, substantially in the manner and for the purpose set forth.

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Witnesses:

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