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J. GARRARD
Harvesters.

No. 206,102. **Patented July 16, 1878.**

Fig., 1.

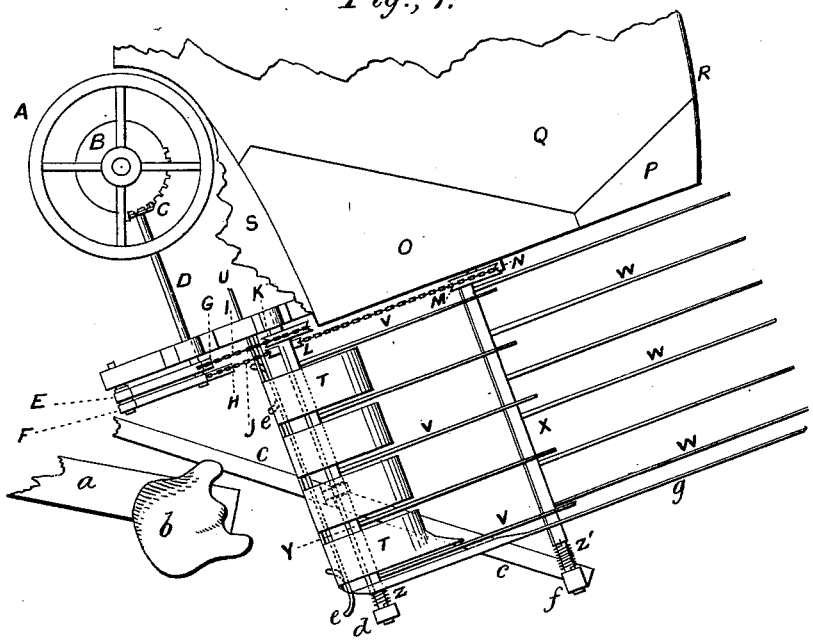
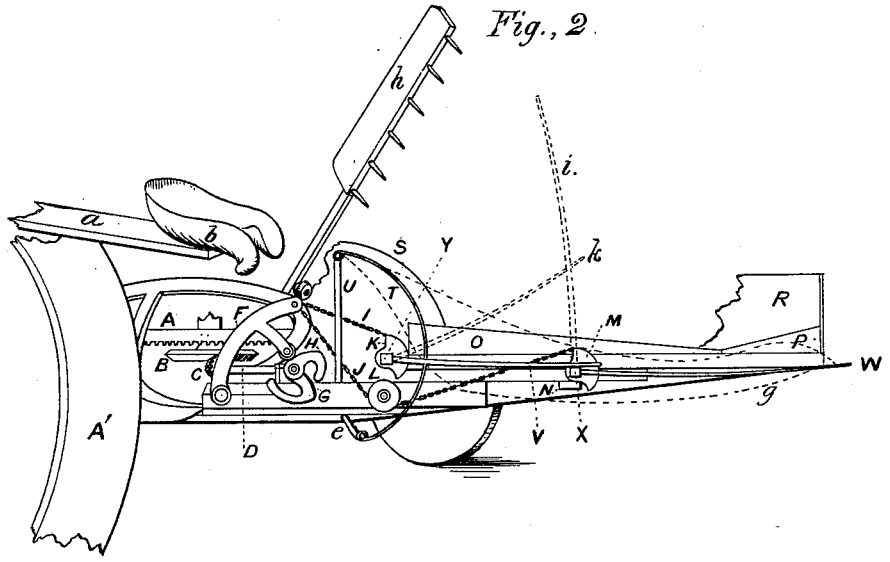


Fig., 2.



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2 Sheets—Sheet 2

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No. 206,102. **Patented July 16, 1878.**

Fig., 3.

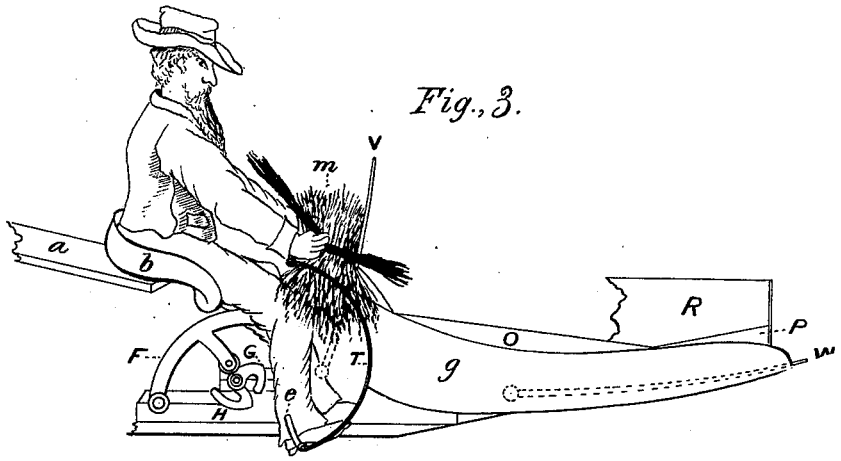


Fig., 4.

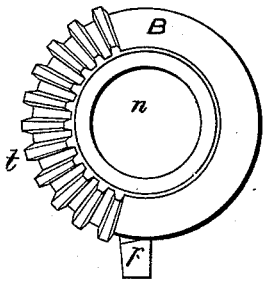


Fig., 5

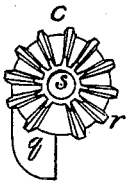


Fig., 6.

Fig., 7.

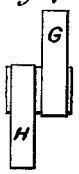


Fig., 8.

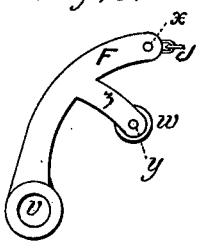


Fig., 9.

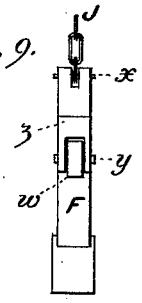


Fig., 10.

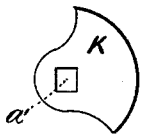


Fig., 11.

Fig., 12.

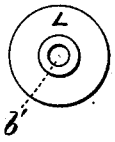
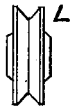


Fig., 13.



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UNITED STATES PATENT OFFICE.

JEPTHA GARRARD, OF CINCINNATI, OHIO.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **206,702**, dated July 16, 1878; application filed August 17, 1877.

To all whom it may concern:

Be it known that I, JEPTHA GARRARD, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Hand Binding Attachments for Reaping-Machines, of which the following is a specification:

My present invention relates to an improved means of gathering the grain cut by a harvesting-machine and presenting it to be bound by a person who rides on the machine.

Referring to the drawings, Figure 1 is a plan view of the invention; Fig. 2, semi-sectional side elevation; Fig. 3, side elevation, showing man in seat; Fig. 4, plan of large mutilated or driving gear; Fig. 5, plan of small mutilated gear; Fig. 6, view of lifting-cams G and H, and Fig. 7 side view of the same. Fig. 8 is a side view of lifting-levers. Fig. 9 is an edge view of either E or F. Fig. 10 is a side view of quadrant-pulley. Fig. 11 is an edge view of the same. Fig. 12 is a side view of guide-pulley for chain. Fig. 13 is an edge view of the same.

A′, section of reaper driving-wheel; A, gear to revolving rake-head; B, mutilated driving-gear; C, small pinion mutilated gear; D, shaft; E F, lifting-levers; G H, lifting-cams; I, chain connecting with G and K; K M, quadrant-pulleys to vibrating platform; L, guide-pulleys to chain J; J, chain connecting F and M; N, stop-piece; O P, risers attached to platform; Q, portion of platform of reaper using sweep-rake; R, guard on rear platform; S, shield on reaper-platform; T, slotted shield on vibrating platform; U, standard supporting top of shield T; V W, vibrating division; X Y, shafts of vibrating platform; Z, spring on end of shaft Y; Z′, spring on end of shaft X; *a*, projecting piece for binder's seat; *b*, binder's seat; *c*, frame-piece for support; *d*, bearing for shaft Y; *e*, stirrups for feet of binder; *f*, bearing for shaft X; *g*, guard of vibrating platform; *h*, revolving rake. *m* represents grain partially elevated; *n*, hole in B for shaft; *p*, projecting lug on gear B; *q*, projecting lug on gear C; *r*, teeth on gear C; *s*, hole in C; *t*, teeth on B; *u*, hole in G and H for shaft D; *w*, roller in projection of F; *v*, hole in F for stud-pin; *x*, pin for holding chain in F; *y*, pin for roller *w* of F; *z*, projecting piece of F; *a′*, hole for shaft of vibrating platform; *b′*, hole for stud-pin in pulley.

Operation of the machine: The rake of the reaper to which the improvement is attached sweeps the cut grain from the reaper-platform, a portion of which is shown at Q in Fig. 1, onto the vibrating platform of the attachment, consisting of two vibrating divisions, V and W. The outer or rear vibrating division W then rises, actuated by cam H, lever F, and chain J, and immediately the second or inner vibrating division rises, actuated by cam G and lever E in such relations to the first that the ends of bars or fingers constituting it project through the bars or fingers of first vibrating division, and continue to do so until the first division has passed a vertical line and leans somewhat toward the front of the machine. The rear or first vibrating division then, after a momentary hold, (held up by hold on cam H,) goes back and down to its first position, actuated by spring Z′ on shaft X, and the second vibrating division continues to rise until it is upright or nearly so. After a short stay (held by hold on cam G) it falls, actuated by its spring Z on its shaft Y, and the vibrating platform is ready for another operation.

The cams and levers that actuate the vibrating platform are moved as follows: A, Fig. 1, represents the revolving rake-head of an ordinary reel-rake. To the hub of this is attached firmly a mutilated gear, B, Figs. 4 and 1, revolving with A, having on a portion of it face-teeth *t*, and on its rim projecting lug *p*. *n* is a hole in the center, by which it is fitted onto the hub of A. The face of B, where there are no teeth, is smoothly beveled. A pinion, C, Fig. 5, is keyed to a shaft, D, Figs. 1 and 2, to which the actuating-cams are also keyed. Pinion C has the same number of teeth *r* as driver B, and a similar lug, *q*. It has also one tooth-space without a tooth. These gear-wheels are put into position so that the space on C leaves the tooth on either side to constitute a bearing-surface on the smooth beveled surface of B, while the rake-head and B are making a part of their revolution—that part of it which causes the rake to sweep the cut grain off the reaper-platform onto the vibrating platform of the attachment at the proper

time for lifting the vibrating platform. The lug *p* engages the lug *q*, and the driver B and pinion C are brought into mesh. C then makes a full revolution while B is completing its revolution, so that cam-shaft D makes a full revolution during one part of a revolution of the rake's head and rake, and is at rest during a part of such rake-revolution. By this mutilated gear the vibrating platform is more rapidly moved than would be possible if the gear B and C were one to one. The cams raise the levers to the required height, hold them as long as may be required, then pass under them, and the levers drop to first position by gravity, assisted by springs or vibrating platform. The operation of the vibrating platform results in bringing the cut grain in good condition for binding to the one binding, the first division serving to gather the grain, and, as it does not elevate it, the grain, by gravity, falls straight onto the second division, which elevates it up the slotted shield T, the first division serving, meanwhile, to retain the grain as long as may be desired.

It will be seen that the main platform, being interposed between the cutter-bar and the vibrating gaveling-platform, acts as a cut-off on which the grain accumulates during the motion of the vibrating fingers, and from which it is pushed in bunches heads first on and transversely to the vibrating fingers while the latter are at rest.

The slotted elevating-shield is not continued beyond the point at which the second vibrating division is upright. The grain is therefore thrown directly into the arms and lap of the one binding. The slots are wide enough to permit the free play of the second division. The binder takes the straw for the band while the grain is yet on the reaper-platform, makes his band while the vibrating platform is operated, and is ready to seize the bundle as soon as the second vibrating division is upright. (Fig. 3 shows man, with band prepared, waiting to seize the grain as soon as division V shall be upright.) The binding is then done on his lap, and in the ordinary way. If the binder is not in his seat the grain is either thrown upon the ground or slips back upon the attachment platform. The guard *g* serves to prevent the grain being thrown beyond the vibrating platform by action of the rake or inclination of the reaper, and may be of any required height. The rear vibrating division may extend beyond the reaper-platform to the rear, for the purpose of receiving the grain that does not fall fairly on the reaper-platform, and would otherwise fall upon the ground.

I have found it best in practice to attach the vibrating platform to the reaper at a lower level than the delivery-edge of the reaper-platform, in order that there may be a fall from reaper to vibrating platform. The drawing shows one means of adding to the height of the fall by means of risers O and P on reaper-platform. The riser is not of my invention. It has also been found that the form of platform shown is convenient and efficient, though the bars or fingers constituting the platform may be wider and more or less in number.

As stated in the description of operation, the bars of one division project, during a portion of the action, through the bars of the other. The same result would be obtained if the bars moved in sufficient proximity only to prevent the grain dropping between the divisions.

I am aware that it has long been proposed to use vibrating gaveling-fingers, lying, when at rest, within a recessed bed or platform, and that such fingers have been arranged in various ways with relation to the cutter-bar. I am also aware that it has been proposed to employ vibrating fingers working in a skeleton frame as the reaper-platform, so as to constitute a harvester-dropper. My invention differs essentially from the above in that the grain is forwarded to my gaveling-platform intermittingly, heads on, and transversely to the fingers, and the greatest facility is afforded to the binder in taking up the successive gavels from the open platform of widely-separated fingers, which it is difficult to do from a close platform. A close platform, in connection with vibrating gaveling-fingers, has also been found impracticable by reason of its great liability to become clogged by grain falling behind the fingers when they are elevated.

Having thus described my invention, the following is what I claim as new and desire to secure by Letters Patent:

1. The combination of a vibrating platform, consisting of two or more consecutively-acting sections, W V, the inclined slotted guard T, and a seat or support, *b*, for the binder, located facing and in close proximity to the guard T, so as to bring the binder's lap in position to receive the grain, as described.

2. The combination of a supplemental platform, composed entirely of vibrating fingers, with a main platform, upon which the grain accumulates in the intervals of motion of the supplemental platform, and from which it is delivered heads foremost upon and transversely to said vibrating fingers in their intervals of rest.

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