J. H. ELWARD.

Harvester.

No. 161,396. Patented March 30, 1875.

Fig. 1.

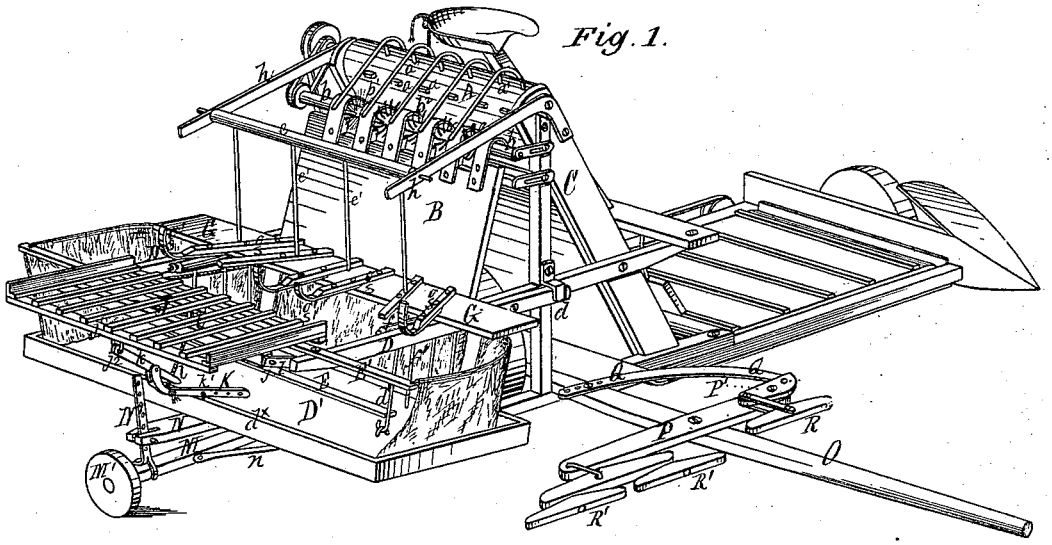
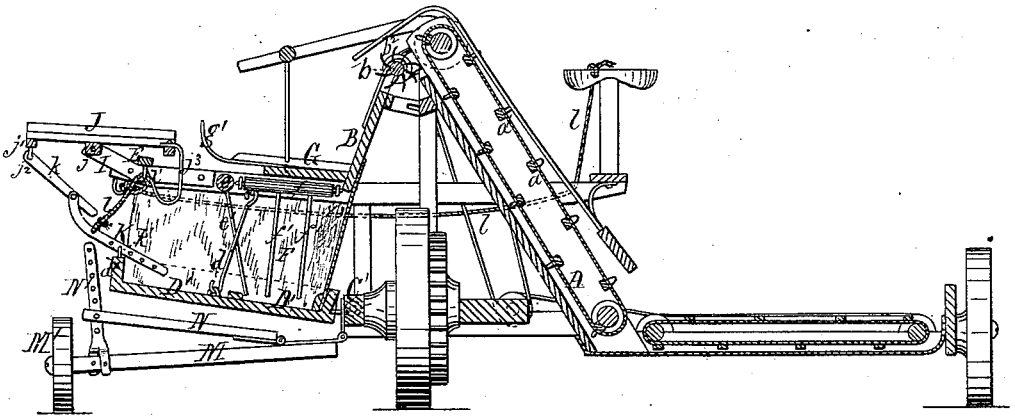


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN H. ELWARD, OF ST. PAUL, MINNESOTA.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **161,396**, dated March 30, 1875; application filed September 25, 1874.

To all whom it may concern:

Be it known that I, JOHN H. ELWARD, of St. Paul, county of Ramsey, State of Minnesota, have invented a new and useful Improvement in Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of a harvesting-machine, embracing my improvements, and Fig. 2 represents a vertical transverse section through the same.

Similar letters of reference denote corresponding parts in both figures.

The invention relates to a novel construction of the carrier or elevator apron, whereby the grain is prevented from adhering to the apron or becoming entangled with its slats or teeth at the point of discharge, and consists in attaching the usual transverse slats to the under or inner side of said apron instead of to the upper or outer face thereof, as is usually done, and causing the teeth, where teeth or notched slats are used, to project through perforations in the apron, as hereinafter set forth. The invention further relates to a novel construction and arrangement of dumping rack or table for carrying the bound bundles until a sufficient number have accumulated to form a shock, and consists in combining said rack, by a shaft outside the center of its width, with the pivoted overhanging binder's-platform bars, and operating or dumping the same by means of a locking foot lever, mounted on the pivoted binder's platform, whereby the whole is adapted to be readily folded for transportation, or removed, as the condition of the work may require.

The invention consists, lastly, in the employment of an adjustable wheel, mounted upon a transverse axle, which extends outward under the hinged binder's platform, but is independent of the same, except upon inclined or side-hill ground, where the machine would be liable to be tilted by the weight of the binders, when the said wheel receives the weight of the binders and prevents the tilting of the machine, as hereinafter set forth.

The machine, in its general construction and arrangement of parts, being identical with what has been described in former patents, particular reference and description need only be made to such parts as are deemed new, as follows:

In the construction of elevator or carrier-aprons, as heretofore ordinarily made in this class of machines, difficulty has been experienced in effecting the clean delivery of the grain and straw at the desired point of discharge, owing to the fact that in such aprons the transverse slats, whether with or without teeth, have heretofore been attached to the outer carrying-face of such aprons, and these, while essential to the positive forward and upward movement of the grain, afforded a lodgment for the grain and an obstruction to the clearing or stripping devices employed. This difficulty I remedy by attaching the slats to the inner face of the apron, where they effectually prevent its sagging; and where the notched slats or teeth are required for effecting the positive movement of the grain, these teeth are made to project through perforations cut in the apron A to receive them, as in the case of notched slats, as shown at *a;* or the teeth, as at a', are inserted from the outer face through the canvass. By this construction a smooth, even carrying-face of the apron, with all obstructions removed therefrom, is secured, and the stripping device, where such device is employed, may consist of a light brush, composed of a transverse shaft, *b*, arranged at the desired point of discharge of the grain, and provided with bristles b^1, small wire b^2, or other suitable material, which can be made to brush every portion of the face of the moving apron for removing the grain therefrom. The grain, after being discharged by the apron A, passes down over an inclined shield, B, into a receptacle on the binder's platform, constructed and arranged as follows: The upright elevator-frame C has pivoted to it, in front and rear, two overhanging bars, D, and underneath these bars, to the outer longitudinal main frame-bar C′, the inner edge of the binder's stand or platform D′ is hinged in such manner that it can be folded up into a vertical position for transportation. The overhanging bars D, which are prevented from dropping below a horizontal line, or a line parallel with the ground, by means of stirrups *d*, support

the outer side of the platform D′ by means of links d', as shown. Upon the outer ends of the pivoted bars D longitudinal bars E E′ are secured, against or upon which the binders rest while binding the grain. Underneath the inner one E′ of these bars is secured a longitudinal rocking-bar, e, mounted in pivotal bearings in the bars D, and provided with a number of rods, e', forming a rack, and at right angles to this rack-bar e e' similar rack-bars f f' are pivoted in lugs or ears on the inner faces of the bars D. The rods or teeth on these bars extend downward into contact with the surface of platform D′, or nearly so, forming three sides of a rack-receiver, F, into which the grain falls after being discharged from the elevator-apron, the inner side of this receiver being formed by a flexible apron of canvas or other suitable material, connected at its upper end with the shield B, and at its lower end with the inner side of the hinged platform. These rack-bars e f may be turned up with the teeth in a horizontal position, forming a table for receiving the grain, and upon which it may be bound as received; or they may be turned with the teeth in a vertical or inclined position, as shown, forming a large receptacle, in which the grain may accumulate in parts of the field where the grain is too heavy to be bound as fast as received to be emptied in passing over other portions of the field where the grain is light and is delivered less rapidly than the binders are able to dispose of it. Where the grain is light and can readily be bound by the binders as fast as cut, an elevated table, G, may be placed upon the overhanging pivoted bars D, for the reception of the grain, said table being provided with horizontal strips g, placed transversely to the board or table G, and on which the grain rests for facilitating the action of grasping the grain for binding. The outer ends of these strips project beyond the receiving-table, and any desired number of them may be provided with curved straps or hooks g', into which the grain can be drawn by the binders for compressing it into compact form for bundles, the projecting ends of the strips or bars g serving, if desired, as a support for the grain in the operation of binding. Where this form of receiving-table is used the longitudinal rack-bar e, not being required for use as above described, may be removed and suspended in overhanging straps h, secured to the upper end of the elevator-frame, and the pendent rods e' serve to prevent the grain as it escapes from the elevator from being thrown beyond the table G, and also to separate the accumulating gavel from that which has been withdrawn outside the wires for the purpose of binding. Instead of removing and using the rack-bar e e', pendent wires swiveled on a fixed rod may be used with the same result. The outer ends of the pivoted bars D have angular strap-plates I secured to them, to the outer ends of which a slatted rack or tray, J, is connected by a longitudinal shaft or pivot, located at j, outside the center of the width of said tray or rack, in such manner that the preponderance of weight shall be inside of the pivot for maintaining it in a horizontal or substantially horizontal position, as shown in the drawings, with its inner edge resting on the bar E. To the outer longitudinal bar j^1 of this dumping-rack the upper end of a pivoted link, k, is connected, said link being connected near its lower inner end with the outside bent end of a foot-lever, K, which is pivoted at or near its center, at k', to the outer guard $d^\times$. The inner end of the link k extends past its pivot slightly, so as to rest upon the lever K after the pivotal connection with said lever has passed a right line drawn between the pivotal points k' j^2, thus locking the toggle-link formed by link k and lever K against accidental displacement in either direction. When the desired number of gavels have accumulated to form a shock the tray J may be tilted for discharging its load by either one of the binders, who places his foot upon the inner end of lever K and presses down thereon, thus breaking the lock in the toggle-link brace to the tray and tilting the tray; or if the binders are too busy, or from any other cause it is desired that the tray shall be tilted by the driver, he is enabled to do this by means of a cord, l, connected with the lever K, near the toggle-joint, and, passing upward through a loop, l', attached to the lower face of bar E, midway of its length, thence rearward through a loop or around a pulley on the outer end of the rear overhanging bar D, and thence through suitable guides in rear of the elevator to the driver's seat, and by pulling upon which the driver breaks the lock-joint of the toggle-link brace and tilts the tray, which, when released, is caused, by the preponderance of weight on the inner side of its pivot, as explained, to resume its normal horizontal position for the reception of the bound grain. A cord or strap, j^3, prevents the table from being tilted so far that it would fail to return by its own gravity to its proper position for receiving the grain.

To the outer longitudinal frame-bar C′, about midway of its length, is hinged the inner end of an axle-bar, M, said bar extending outward, underneath, and beyond the binder's platform D′, and being supported by a carrying-wheel, M′, at its outer end. At or near the inner end of this bar M, upon its upper face, is secured a second bar or strap, N, hinged at its inner end, and adjustably connected at its outer end with a perforated standard, N′, connected to the axle-bar M. A hinged brace, n, connected with the bar N near its outer end, and extending inward and forward to the frame-bar C′, serves to hold the axle-bar N in a position at right angles to the path of the machine, or nearly so. Under ordinary conditions, and when the machine is working on level ground, no weight rests upon the wheel M′, which consequently runs lightly and easily over the ground; but when working upon the side-hill or uneven ground, where the

weight of the binders would cause the machine to tilt upon the drive-wheel as a fulcrum, and thereby lift the cutting apparatus off the ground, the weight of the binders and binders' platform will be caught upon the adjustable bar N, and thence transferred to the wheel M′.

The degree of vertical play of the axle-bar M for accommodating itself to the uneven surface of the ground without taking the weight of the platform, and binders may be regulated by the adjustment of the bar N upon the standard N′.

The tongue O of the machine is connected with the main frame by the usual horizontal pivot, providing for the adjustment of the height of the cutting apparatus.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the transverse slats or cleats with the inner face of the endless apron, with the teeth protruding on its working face, whereby said apron is made to present an unobstructed continuous surface to the action of the stripping device, as explained.

2. The dumping-tray J, in combination with the toggle-link or jointed locking brace or lever and link K *k*, arranged and operating substantially as described.

3. The hinged axle-bar M, wheel M′, hinged adjustable bar N, and standard N′, arranged and operating in the described relation to the binders' platform, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 15th day of June, A. D. 1874.

JOHN H. ELWARD.

Witnesses:

R. C. MOORE,

L. D. WILKES.