

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **161,395**, dated March 30, 1875; application filed June 27, 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 drawings, making part of this specification, in which—

Figure 1 is a perspective view of the improved machine. Fig. 2 is a vertical transverse section through the same. Fig. 3 is a side elevation of one of the crank or eccentric stripper-shafts, and Fig. 4 a perspective view of one of the strippers detached.

Similar letters of reference denote corresponding parts wherever used.

The invention relates, first, to the construction of the support for the spring retaining-rods, which hold the grain down upon the face of the elevator-apron, said support being made in the form of a hollow cylinder of sufficient diameter to prevent the grain, as it is brought in by the reel, from being broken or carried in between the seat-plank and the cylinder, and thereby interfering with the action of the platform and elevator aprons.

The invention further relates to the means for removing or stripping the grain from the carrying-aprons at their delivery ends; and consists in a novel combination, with the platform-apron and elevator, of a series of stripper-cams or eccentric rods, actuated by crank-shafts, located at the delivery end of said platform and elevator aprons.

In the accompanying drawings, A represents the main ground and driving wheel; B, the main frame; B¹, the platform-frame; B², the elevator-frame; C, the outer end or divider board; C', the outer carrying-wheel; D, the tongue; E E', the platform and elevator-aprons, and F F' the overhanging seat-bars and seat-plank, all constructed in any usual or preferred manner.

The seat-plank F' has suspended from it, by means of flat bent springs, a hollow cylinder, G, made by preference of sheet metal, bent into cylindrical form, for the purpose of getting the desired size or diameter of cylinder, combining the necessary qualities of strength or stiffness with the least weight of material. In addition to the suspending-springs a, which

allow the cylinder to yield to accommodate the varying bulk of grain passing under it and between said cylinder and the elevator, adjusting-straps a' are employed, connected at their lower ends with the cylinder, the upper ends of said straps being provided with a series of perforations, any one of which may be made to engage with hooks or spurs b on the seat-plank, for holding the cylinder at the desired height. To the lower face of the cylinder G the lower ends of a series of rods or wires, g, are connected, said rods extending upward on lines parallel, or thereabout, with and overhanging the upper face of, the elevator-apron E', and forming yielding retaining-rods for holding the grain with a light, yielding pressure to the face of said apron. The cylinder is of a diameter sufficient to occupy a large proportion of the space between the elevating-apron and the seat-plank, enough space being left to accommodate the yielding movement referred to, and its outer side, projecting beyond the seat-plank, as shown, affords a smooth convex surface, sufficiently enlarged to prevent the grain brought in by the inner end of the rapidly-rotating reel from being broken thereon, and also from being carried in between the cylinder and seat plank, and thus made to obstruct the action of the elevator. Its smooth surface also permits the grain to drop or slide readily down upon the platform in proper shape for delivery to the elevator. At the inner or delivery end of the platform-apron, and intermediate between said apron and the elevator, is a crank cam-shaft, H, lying parallel with the apron-rollers, and provided with a number of cranks, arranged in series, being located at a distance in the circle described by them, of ninety to one hundred and eighty degrees, more or less, according to the number of series employed. Upon the cranks h are placed picker-rods I, by preference armed with a number of inwardly-pointing teeth, i, (see Figs. 2 and 4,) which take the grain from the platform-apron and move it inward within reach of the elevator. The inner ends of the rods I project through slots or perforations, at c, in the elevator-shield C², said slots or perforations guiding the rods in their reciprocating movement. A similar crank-shaft, with

eccentric stripper-rods, is arranged at the upper end of the elevator-apron for removing the grain therefrom, the free end of the rods working in slots or grooves in the inclined outer portion J of the shield, over and down which the grain passes to the receiver.

Instead of the wire teeth *i*, fine wire or bristles, forming a brush, may be employed.

The portions of these cam-shafts I intermediate between the cranks or eccentrics is covered by straps *v*, which prevent the straw from wrapping around the shaft, and also act as clearers or strippers to the teeth *i*, said teeth passing below the face of the straps after having removed the grain from the aprons, and, in the case of the upper shaft I', serve to extend the carrying-surface of the shield from the shield C² over the shaft H', and connect it with the shield J.

The grain-receiver consists of a flat table, K, mounted upon pivoted horizontal bars L, which overhang the hinged binders' stand M, and serve as a support for the outer side of the latter through pendent links *m*. Upon this table K is placed a number of transverse wedge-shaped blocks or strips, *k*, the larger or butt ends of which enter slots in the lower end of the shield J. These wedge-shaped strips serve to hold the grain slightly above the face of the table, and, inclining toward the binder, facilitate the operation of grasping the bundle, and moving it from under the falling grain, and toward the binder. The binders' table K' is also secured to the arms or bars L at their outer ends, and is located in the same horizontal plane with the receiving-table K, but sufficiently removed therefrom to afford space *k'* between it and the receiver K for the binders. A rear transverse arm or L of the table connects the rear end of the table with the receiver, and forms a table in rear of the binders, upon which the grain, or a portion thereof, may be bound when desired, thus adapting the machine where the grain is heavy, and it is found necessary to carry a third binder. N represents a retarding-rod, placed over the rear edge of the platform-apron, and secured at its outer end to the rear end of the divider-board C; or, instead of the rod, a cord or strap may be used, secured at its outer end, as above explained, and at its inner end to an arm or support connected with the platform-bar or other convenient point; the object of this rod or strap being to raise the heads of the grain slightly off the moving surface of the apron.

Owing to the greater weight of the heads of the grain and their barbed nature, they naturally adhere to the apron with greater tenacity than the butts, and this, in connection

with the fact that the butts frequently rest in contact with the stationary finger or forward platform-bar, which tends to retard their progress, causes the heads ordinarily to be moved faster than the butts, thereby presenting the grain obliquely to the elevating-apron. The wires N, placed at the rear of the apron, relieve this difficulty, and, when properly arranged, cause the grain to be delivered to the elevating-apron in the best possible shape for its action.

The bottom of the platform-frame underneath the apron is covered by a flooring, preferably of sheet metal, bent or turned up at the ends, and united to the divider-board C and shield C², which serve, in connection with the front and rear platform-frame bars, to which said flooring is fastened, to form a shallow box or receptacle for shattered grain, short heads, &c., and this box, being opened on top, except as covered by the platform-apron, enables the slats of the apron sweeping over said flooring to return such heads and grain to the upper face of the apron, where, becoming mingled with the long straw, they are carried forward therewith to the grain-receiver K, and either bound in with it, or permitted to drop into the binders' stand M, which also constitutes a receptacle for shattered grain.

Parts of the machine not hereinabove particularly described may be made in any usual or preferred manner.

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

1. The cylindrical shield G, suspended from the seat-plank, as described, and forming the support for the retaining-rods *g*, connected to its lower inner face, and leaving an unobstructed convex surface upon its outer or platform side, as and for the purpose set forth.
2. The toothed cams or rods I and crank or eccentric shaft H, in combination with the platform apron and elevator, substantially as and for the purpose set forth.
3. The crank or cam shaft H' and its stripper-rods I', arranged at the delivery end of the elevator-apron for removing the grain therefrom, as set forth.

4. The combination, with the cam or crank shafts H, of the stripping-rods I and the intermediate bent straps or wires *v*, arranged and operating as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 14th day of May, A. D. 1874.

JOHN H. ELWARD.

Witnesses:

H. N. FARNHAM, Jr.,
R. C. MOORE.