2 Sheets—Sheet 1.

J. H. ELWARD.

GRAIN-SEPARATOR.

No. 183,656. Patented Oct. 24, 1876.

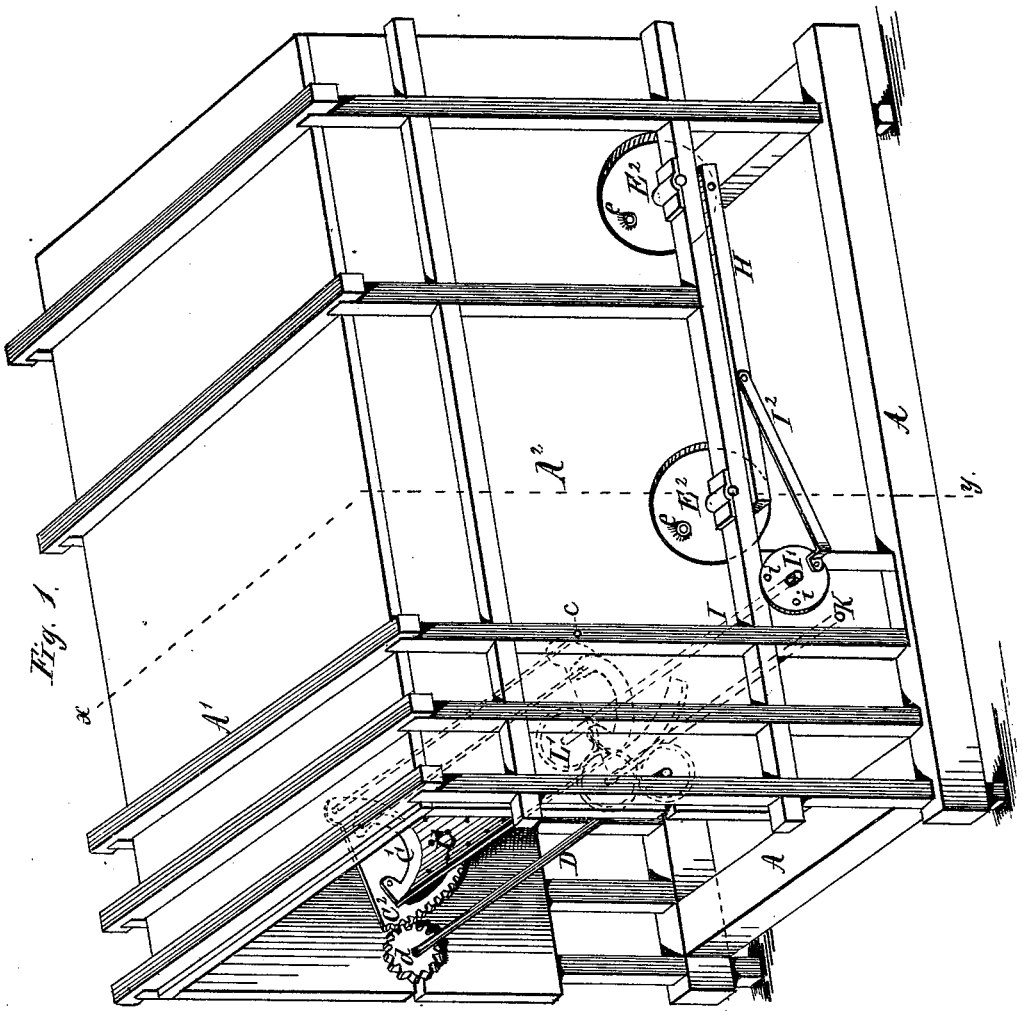

Fig. 1.

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Fig. 2.

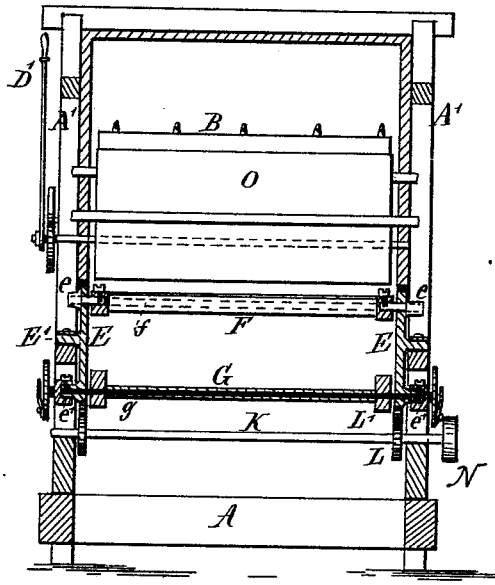
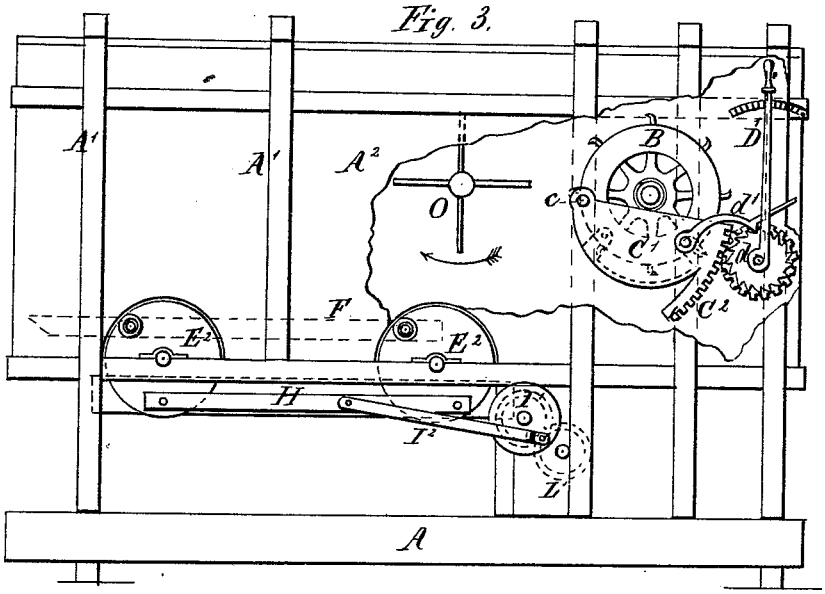
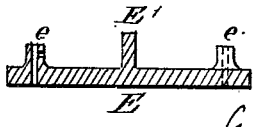


Fig. 3.





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UNITED STATES PATENT OFFICE.

JOHN H. ELWARD, OF ST. PAUL, ASSIGNOR TO SEYMOUR, SABIN & CO., OF STILLWATER, MINNESOTA.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **183,656**, dated October 24, 1876; application filed September 1, 1876.

To all whom it may concern:

Be it known that I, JOHN H. ELWARD, of St. Paul, in the county of Ramsey and State of Minnesota, have invented a certain new and useful Improvement in Grain Thrashing and Separating Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

Figure 1 is a perspective view. Fig. 2 is a transverse vertical section taken on line *x y*, Fig. 1; and Fig. 3 is a side view taken from the side opposite to that shown in Fig. 1.

A A^1 A^2 represent the frame-work and casing of the machine, which may be of any usual or approved construction, as shall be best adapted to support the operating device. B represents the thrashing-cylinder. C is the concave bed, the side pieces C^1 C^1 of which are pivoted to the frame at their rear ends, as indicated at *c*. The front end of each side piece C^1 is formed into a toothed segment, C^2, each segment being an arc of a circle, the center of which is one of the pivots *c*. D is a shaft, mounted in suitable bearings, and carrying near each end a toothed pinion, *d*, these pinions meshing with the toothed segments C^2 C^2 at the front end of the side piece of the concave C. D′ is a hand-lever, keyed or otherwise secured to one end of the rock-shaft D, the upper end of this lever being arranged within convenient reach of the operator when he is feeding grain to the machine. The upper end of this lever may be secured in any desired position by means of a notched rack or other equivalent locking device, or by a pawl and ratchet wheel on the shaft D, as indicated at *d′*, Fig. 3.

It will be readily seen that, by means of this construction, a person can, while engaged in feeding the machine, adjust the height of the concave relative to the cylinder without leaving his position, whenever the varying condition of the grain or other circumstance renders such adjustment desirable.

E E are rocking heads, having stub axles or journals E^1 projecting from one side, these stub-axles being mounted in suitable bearings in or upon the frame-work. These heads are arranged within the walls or sides of the machine, and have bearings *e e′* for a purpose which will soon be explained. F is the straw-carrier or separating table or platform of any usual or approved construction, which is adapted for the purpose. G is the grain-carrier or grain-table, which receives the grain, chaff, and loose heads, as this material falls through the straw-carrier F, and delivers it to the winnower. *f* and *g* are supporting-bars attached rigidly to the lower sides of the straw-carrier and the grain-table, respectively. Each of these bars has its ends shouldered and made to fit within the bearings *e e′* in the rocking heads, and to move freely therein, so that as these heads are oscillated, by means to be explained, the straw-carrier and grain-table have the desired motion imparted to them.

From an examination of the drawings it will be readily seen that, by means of the combination of the two tables with the rocking heads, one table being above the stub-axle and one table being below said axle in each head, I am enabled to mount the bars *f* and *g*, or either of them, loosely in bearings formed in the heads, and yet avoid the tendency to tip the heads over, and thus bind and wrench the bearings in the wheels and the boxes of the stub-axles, which would ensue if one table only were used in connection with said rocking heads. It is also apparent that the employment of stub-axles permits a greater range in the rise and fall of the tables (especially of the upper one) than could be had with shafts which ran through from the center of each head to the center of the opposite one, as my construction will permit the upper table to descend even below the centers of the rocking heads, which enable me to reduce the height of the machine.

One advantage which is derived from attaching the bars *f g* to their respective tables and mounting their ends loosely in the bearings *e e′* is this: These bearings can be oiled from the outside of the machine through holes E^2, cut in the casing. I have shown the holes circular in shape, but it is evident that they may be made in any other form which will admit of oil being readily introduced into the bearings *e e′*.

Upon each side of the machine there is a link, H, connecting the heads E. I is a shaft, carrying at each end a plate or disk, I^1, each disk having a number of holes, *i*, these holes varying in regard to their distances from the center of shaft I—that is, each plate may have one hole three inches from the center of the shaft; another hole three and a half inches from the center of the shaft; another four inches from the center, and so on. As each disk is connected with one of the rocking heads E, or, preferably, with one of the links or connecting-bars H, by a pitman, I^2, it will be seen that the rotation of the shaft I and disks I^1 I^1 will impart a rocking motion to the heads E E and tables F G. K is a second shaft, mounted in bearings on the frame and carrying a spur-gear, L, which engages with a corresponding spur-gear, L′, on shaft I. N is a band-pulley on shaft K, through which motion is communicated to the shaft K from the cylinder-shaft, or otherwise.

By the employment of a second shaft, K, and then operating the crank-shaft I, I am enabled to make a much more compact and effective construction, it being apparent that if I were to apply the band-pulley N to the shaft I it would be necessary to place one of the pitmen I^2 and its driving-plate or disk I^1 some three or four inches farther from the side of the machine than I now do, in order to make room for the pulley N between the disk and the side of the machine. This would necessitate the lengthening of the stub-axles or other connections between that pitman and the rocking head three or four inches, which would be objectionable on account of the additional strain which it would impose upon the bearings of the heads. Furthermore, the employment of this second shaft enables me to divide the strain of shaft I more equally between the bearings at each end than I could if band-pulley N were applied to one end of the shaft.

A beater, O, having blades each in one continuous piece, serves to deflect the straw from the thrashing-cylinder to the separating-table F.

I claim—

1. The combination, with the rocking heads E E, provided with stub-axles, and the bearings *e e′*, of the shafts I K, gears L L′, disks I^1, and pitman I^2, substantially as set forth.

2. The heads E, provided with the stub-axles E^1, in combination with the tables F G, connected to said head, respectively above and below their centers of oscillation, substantially as set forth.

3. The rocking heads E, provided with bearings *e e′*, in combination with the supporting-arms *f g*, one or both mounted in said bearings, so as to rotate or rock therein, substantially as set forth.

JOHN H. ELWARD.

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H. L. PILKINGTON.

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1,550 words.