G. B. TURNER & J. A. VAUGHN.

GRAIN SEPARATOR.

No. 32,017. Patented Apr. 9, 1861.

Fig. 1.

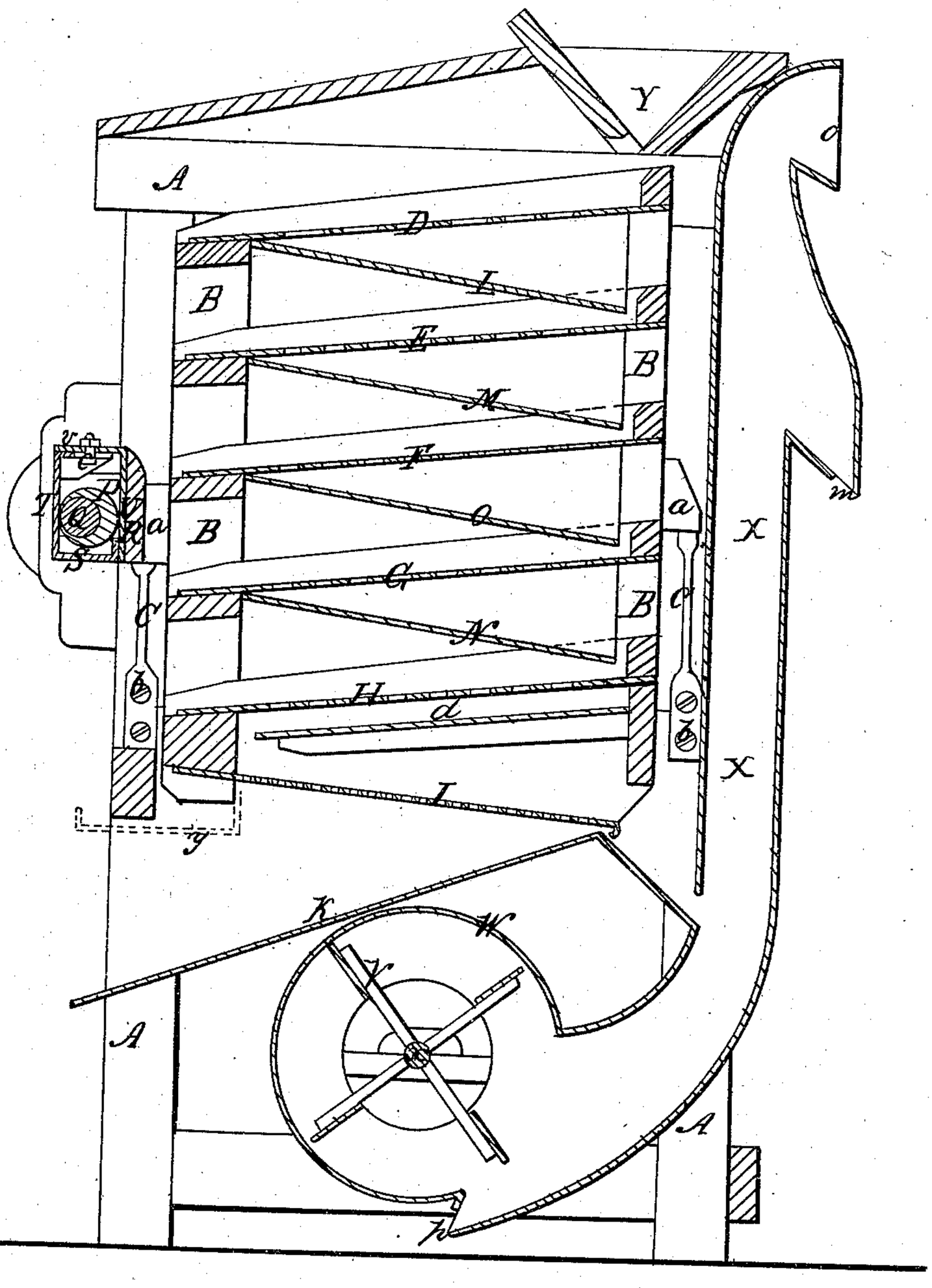


Fig 2.

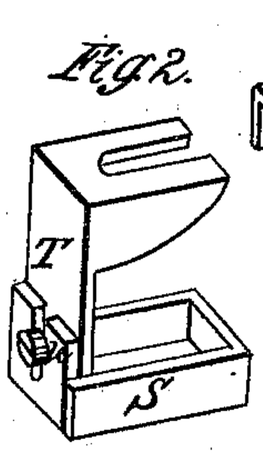
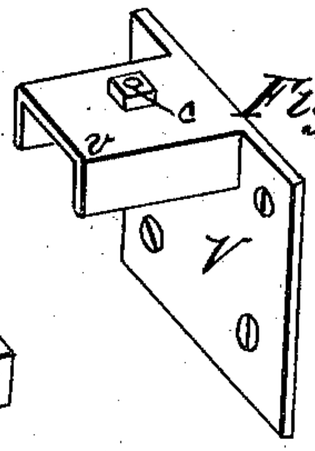


Fig. 3.



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UNITED STATES PATENT OFFICE.

G. B. TURNER AND JAS. A. VAUGHN, OF CUYAHOGA FALLS, OHIO.

GRAIN-SEPARATOR.

Specification of Letters Patent No. 32,017, dated April 9, 1861.

To all whom it may concern:

Be it known that we, GRANT B. TURNER and JAMES A. VAUGHN, of Cuyahoga Falls, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Grain-Separators; and we do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical section through said grain separator. Figs. 2 and 3 represent detached views of parts hereafter to be referred to.

Our invention relates to the combination of a series of screws inclined in one direction with a series of directing boards inclined in an opposite direction, a shake motion, fan blast and receiving boxes for the purpose of separating the grains from each other and from their impurities.

It also relates to the application of an eccentric and cam yoke of a peculiar construction and operation for the purpose of imparting a rapid shake motion to the screens without jarring them.

To enable others skilled in the art to make and use our invention we will proceed to describe its construction and operation.

A represents the frame of the machine, within this is hung the frame, B, it being supported on four spring rods C, or their equivalents the upper ends of which enter the brackets, *a*, of the frame, B, while their lower ends are secured to the frame A by means of the screws, *b*, or otherwise.

D, E, F, G, H, represent a series of graduated screens which are all inclined in the same direction; L, M, N, O, represent a corresponding series of directing boards underneath the screens the inclinations of which are opposite to that of the respective screens.

I, represents a cockle screen and, K, the cockle board on which the cockle and finer impurities run off.

The perforations in the screens D, E, F, G, H, are of such size as will allow the wheat to pass through, while oats, or other materials that are longer than the diameters of the holes, will pass over the screens, and be dropped at their lower edges, into receptacles that conduct them out of the machine, and those of the screen, I, will only permit the passage of the cockle, imperfect grain, and other small seed. The frame B, has a rapid vibrating motion imparted to it without a jar by the cam P, on the shaft, Q, which operates on the plate U, or plates U, T, on the cross bar R, of the frame B. To effect an easy but rapid operation of said cam but without sudden jar we apply a self oiling device to said cam which is as follows: The cup, S, is secured to the plate, T, by means of the set screw, *u*, and this plate, T, is slipped into the yoke, *v*, of the plate, U, it being held therein by the head of the bolt *c*. Oil or cotton soaked in oil is placed in the cup, S, and the cam at each revolution takes up a small quantity of said oil and is thus made self lubricating. The faces of the plates, T, U, may have rubber or leather fixed upon them against which the cam may work. This causes an easy motion without anything like a blow or jar.

The machine is further provided with a revolving short fan, V, working in the fan case, W, and with a blast trunk X, provided with suitable passages and apertures which will be more particularly referred to in the operation of the machine, which is as follows: Motion being given to the shaft, *x*, of the fan and to the shaft, Q, by suitable pulleys and belt, the grain is fed into the machine through the hopper, Y, and descends down on the first screen D, the holes of this screen being somewhat larger than the grain, the latter, with some coarser impurities, pass through it, while the greater part of the oats, and still coarser impurities, pass over its lower edge, and out of the machine, while the grain and some of the impurities which it contains pass down the first directing board L, which by the rapid vibrating motion of the frame B, causes the grain to pass down on the second riddle E, and discharging the grain on the upper end of the said riddle so as to cause it to pass over its entire surface; the holes of this riddle being just large enough to admit of the passage of the grain through them while oats and all coarser impurities pass over the lower edge of the riddle, the grain then passes over the second directing board M, down on the third riddle where going through the same operation as above described it passes successively through the riddles F, G, H and over the directing boards O, N, until passing through the screen H, the directing board, *d*, discharges the grain at the upper end of the screen, I, the perforations of which are so small as not to permit any grain to pass

through them, while the cockle, small seed and other small impurities can pass through them, and drop down on the inclined cockle board, K, by which they are discharged from the machine; the grain passes over the lower end of the screen I, into the blast trunk X, where it meets the blast of the fan V, which drives the dust and other light impurities up through the trunk, X, the heavier parts of which escape through the passage *m*, and the lighter ones through the passage, *o*, while the grain escapes through the passage *p*. By this construction and arrangement the impurities are mainly brought out of the machine, at one end of it while the cleaned grain comes out at the opposite ends, the arrangement of having all the screens through which the grain passes inclined in one direction permits them to be cleaned with facility as the attendant can clean all these screens from straw or chaff which accumulates in them from one side of the machine and without being compelled to change his position repeatedly, or by slides in the frame any one of the screens may be withdrawn from the machine. The shake motion which we give to the screen frame is peculiarly adapted to the separation of the oats from the wheat. We can run the cam shaft at four hundred or more revolutions per minute without turning the oats on the screen so as to cause it to enter the openings therein, while an ordinary crank motion at one half that speed will jar the oats so as to turn it and make it pass through said openings. We can also adjust the plates T, U, to each other, and to the cam, so that the extent of oscillation of the screen frame may be regulated at pleasure. The oil cup S is also made adjustable. The boxes or troughs for catching the oats, and conducting them away may be arranged in any convenient manner, for that purpose, as by dotted lines at *y*.

Having thus fully described the nature and object of our invention, what we claim therein as new and desire to secure by Letters Patent is,

1. The combination of the series of screens inclined in one direction, and the series of directing boards inclined in an opposite direction, with the receiving boxes, and fan blast and a shake motion substantially as, and for the purpose set forth.

2. As a device for giving a rapid shake motion to the riddles or screens, without jarring them, an eccentric and yoke, constructed, arranged, and operating as herein described and represented.

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Witnesses:
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