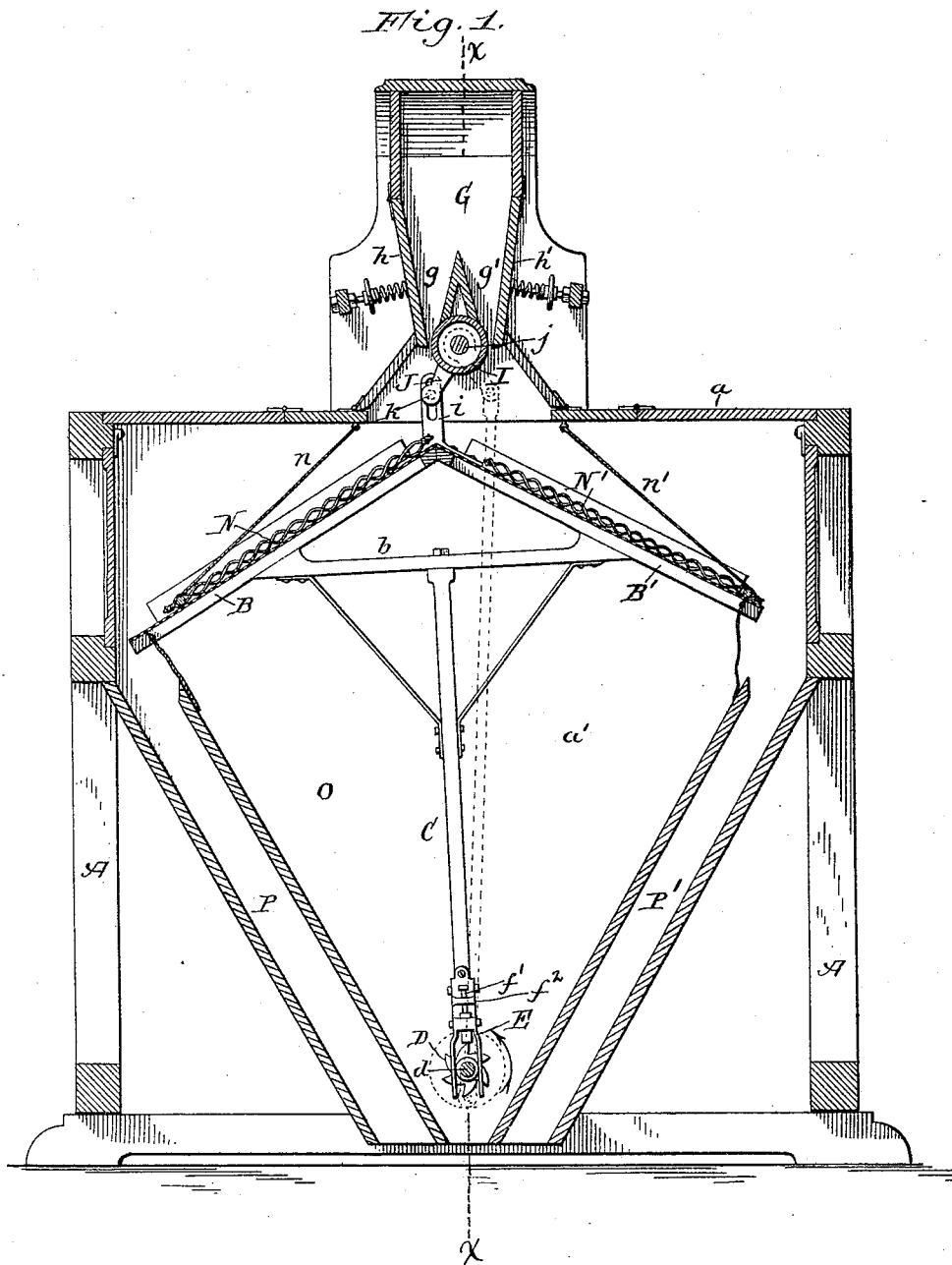


3 Sheets—Sheet 1.

No. 457,923.

Patented Aug. 18, 1891.



O. M. Morse Inventor.
By Wilhelm Honner
Attorneys

(No Model.)

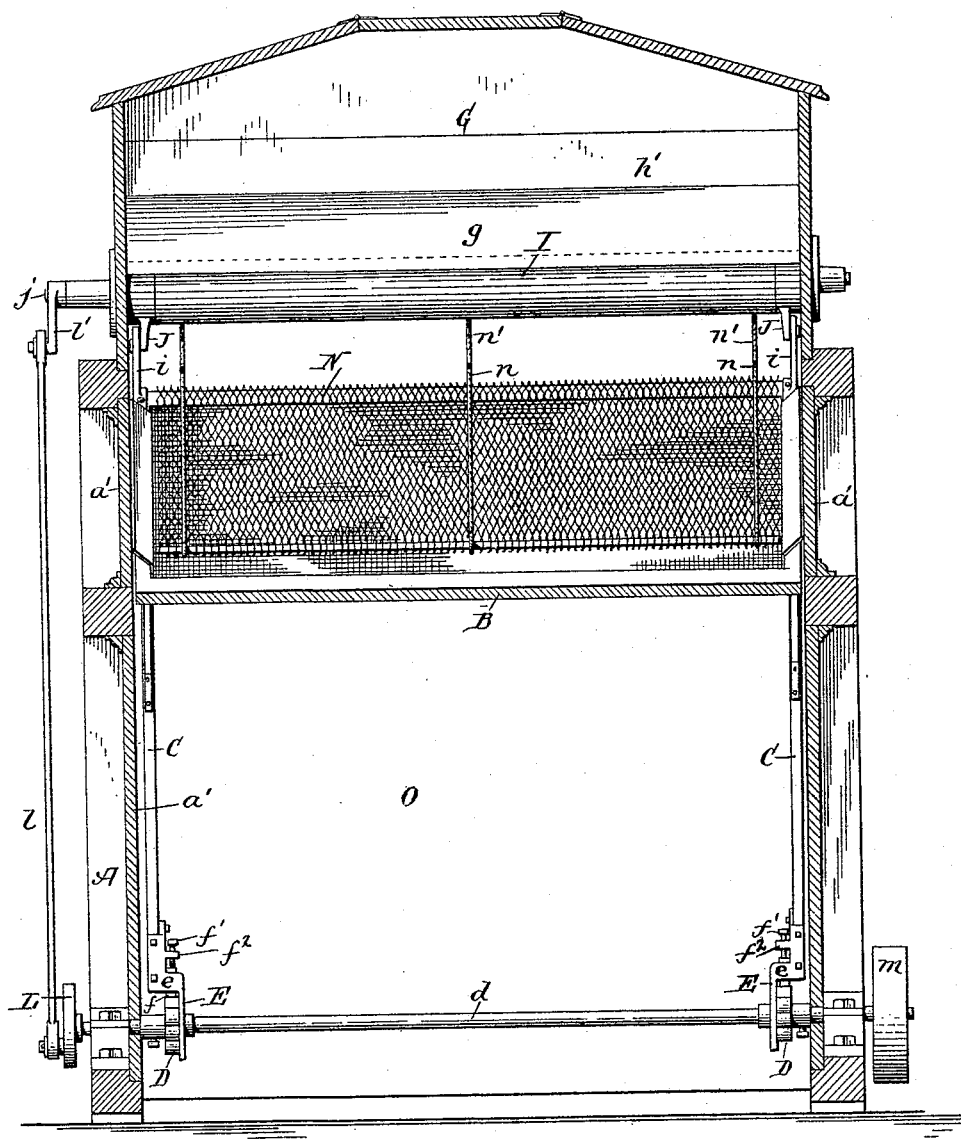
3 Sheets—Sheet 2.

O. M. MORSE.
FLOUR BOLT.

No. 457,923.

Patented Aug. 18, 1891.

Fig. 2.



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O. M. MORSE.
FLOUR BOLT.

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Fig. 3.

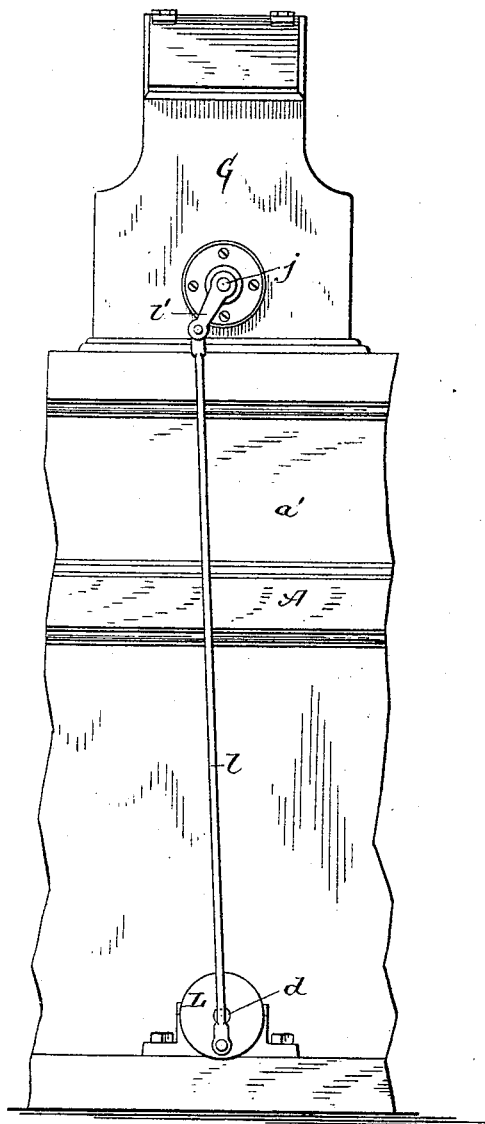


Fig. 4.

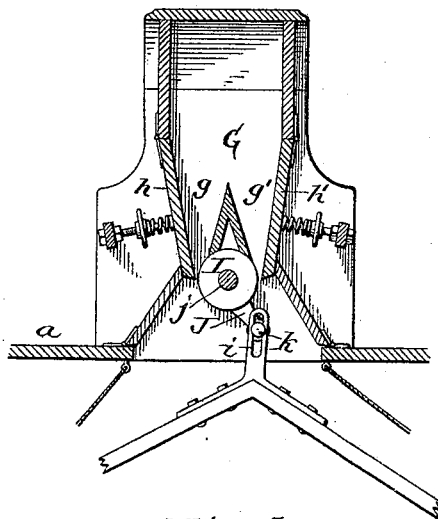


Fig. 5.

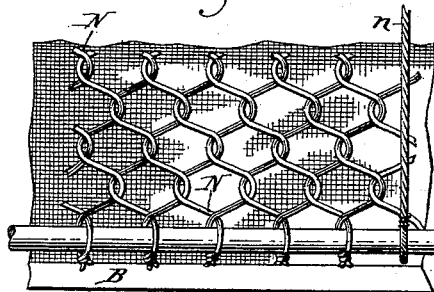
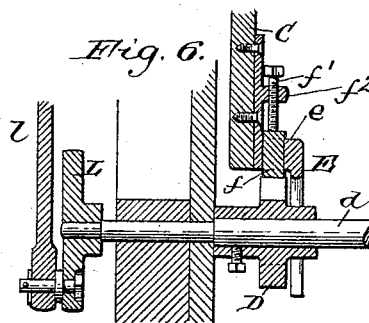


Fig. 6.



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UNITED STATES PATENT OFFICE.

ORVILLE M. MORSE, OF JACKSON, MICHIGAN, ASSIGNOR TO THE KNICKER-
BOCKER COMPANY.

FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 457,923, dated August 18, 1891.

Application filed December 13, 1888. Serial No. 293,496. (No model.)

To all whom it may concern:

Be it known that I, ORVILLE M. MORSE, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented new and useful Improvements in Flour-Bolts, of which the following is a specification.

This invention relates to that class of separating machines which are provided with inclined screens, and has the object to produce a simple and compact machine which makes the desired separation quickly upon a comparatively small screen-surface, and which is particularly suitable for use as a scalper in the separation of the breaks produced in the gradual reduction of grain by roller-mills. This object is attained by providing the machine with an intermittent feed, which delivers the material at intervals upon the screens, so that the material passes over the screens in batches or waves, each of which is thoroughly separated before the next batch or wave passes over the screen.

My invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of three sheets, Figure 1 is a sectional elevation of a flour-bolt provided with my improvements. Fig. 2 is a sectional elevation at right angles to Fig. 1 in line *xx*. Fig. 3 is a fragmentary end elevation of the machine. Fig. 4 is a cross-section through the feed-hopper and connecting parts. Fig. 5 is a fragmentary view of one of the screens and the cleaner resting thereon. Fig. 6 is a sectional elevation of the lower portion of the mechanism by which the screen is jarred.

Like letters of reference refer to like parts in the several figures.

A represents the stationary frame of the separator, and *a* the top and *a'* the sides of the casing secured thereto.

B B' represent two inclined screens arranged within the casing of the separator. These two screens are secured together at their heads or highest ends and slope in opposite directions, so as to receive the material to be separated near the center of the machine and discharge the tailings near both

sides of the machine. The frames of the screens B B' are connected near their ends by cross-bars *b b*.

C C represent uprights, which are secured with their upper ends to the cross-bars *b* and are supported at their lower ends on cam-wheels D D, by which the screens receive a vertical motion. These cam-wheels are secured to a horizontal shaft *d*, which is arranged in the lower part of the machine and rotated in the direction of the arrow, Fig. 1.

Each upright C is provided at its lower end with a downwardly-projecting bifurcated guide E, which straddles the shaft *d* on the inner side of the cam-wheel D and prevents lateral displacement of the lower end of the upright, while permitting it to rise and fall. The guide E is provided above the shaft with a horizontal neck *e*, (see Fig. 3,) connecting the bifurcated inner portion with the plate by which it is secured to the upright. In this neck is arranged a bearing-piece *f*, which rests upon the teeth of the cam-wheel, and which is made adjustable by a set-screw *f'*, bearing against the upper end of the bearing-piece and arranged in a threaded-lug *f''*, formed on the plate of the guide E.

G represents the feed-hopper arranged over the adjacent heads of the screens B B' and provided, preferably, with two throats *g g'*, adapted to deliver the material upon the heads of the screens. The outer sides of the throats are formed by adjustable feed-valves *h h'*.

I represents the feed-roller arranged in both throats of the feed-hopper and between the lower ends of the feed-valves. This feed-roller has an oscillating or back-and-forth movement, whereby the material is alternately discharged from these throats upon the heads of the screens.

i represents loops or links which are secured to both ends of the screen-frames at the ridge thereof, and which are connected with the feed-roller by arms J, secured to the shaft *j* of the feed-roller and having their pins *k* engaging in the slots of the loops or links *i*. The feed-roller shaft *j* is driven from the shaft *d* of the cam-wheels by a crank-wheel L on the shaft *d*, a connecting-rod *l*, and an arm *l'* on the feed-roller shaft, the arm *l'* being so much

longer than the radius of the crank-wheel that the rotary motion of the crank-wheel produces an oscillating motion of the feed-roller shaft. The shaft \bar{d} is provided with a pulley m , to which the power is applied. The cam-wheels D produce a rising-and-falling motion of the screens and the oscillating feed-roller produces at the same time an oscillating motion of the screens, so that the motion of the screens is a compound motion derived from these two sources. As the screens swing back and forth the material is intermittently discharged from the feed-hopper upon the head of each screen, and each batch or wave of material passes over the respective screen and is thoroughly separated by the same as the screen-surface is not encumbered with a heavy layer of material.

N N' represent cleaners constructed of interwoven wires or other light and flexible material, which rest upon the screens and are attached to the stationary frame of the machine by cords $n n'$ or other suitable means. These cleaners agitate the bolting-cloth by reason of the oscillatory movement of the screens, keep the meshes of the cloth clear, and at the same time distribute the material over the surfaces of the screens.

The fine material, which passes through the meshes of the screens, falls into a hopper O, and the coarse material, which is discharged over the tails of the screens, passes into chutes P P'.

I claim as my invention—

1. The combination, with two separating-screens, of a feed-hopper and an oscillating feed-roller, whereby the material is alternately delivered upon each screen, substantially as set forth.
2. The combination, with two separating-screens arranged with their heads adjacent to each other and inclined in opposite directions, of a feed-hopper and an oscillating feed-roller arranged over the adjacent heads of the screens, whereby the material is alternately delivered upon each screen, substantially as set forth.

3. The combination, with two separating-screens arranged with their heads adjacent to each other and inclined in opposite directions, of a feed-hopper having two throats arranged over the heads of the two screens, a feed-roller arranged in both throats, and means whereby an oscillating movement is imparted to the feed-roller, thereby delivering the material alternately upon the screen, substantially as set forth.

4. The combination, with the feed-hopper and the feed-roller, of two separating-screens arranged with their heads adjacent to each other underneath the feed-roller and oscillating transversely to the same, and arms connecting the screens with the feed-roller, whereby an oscillating movement is transmitted from the screens to the roller, substantially as set forth.

5. The combination, with a separating-screen, of a feed-hopper, an oscillating feed-roller connected with the separating-screen, whereby the screen is oscillated, and a cam-wheel whereby a rising-and-falling motion is imparted to the screen, substantially as set forth.

6. The combination, with the separating-screens provided with loops i , of a feed-hopper, an oscillating feed-roller provided with arms J, engaging with said loops, and rotating cam-wheels whereby the screens are raised and lowered, substantially as set forth.

7. The combination, with the separating-screens provided with loops i , of a feed-hopper, an oscillating feed-roller provided with arms J, engaging with said loops, rotating cam-wheels D, and uprights C, secured to the screens and provided with bifurcated guides E and bearing-pieces f , resting on the cam-wheels, substantially as set forth.

Witness my hand this 1st day of December, 1888.

ORVILLE M. MORSE.

Witnesses:

JNO. G. MUNDY,
SAM. H. CAMP.