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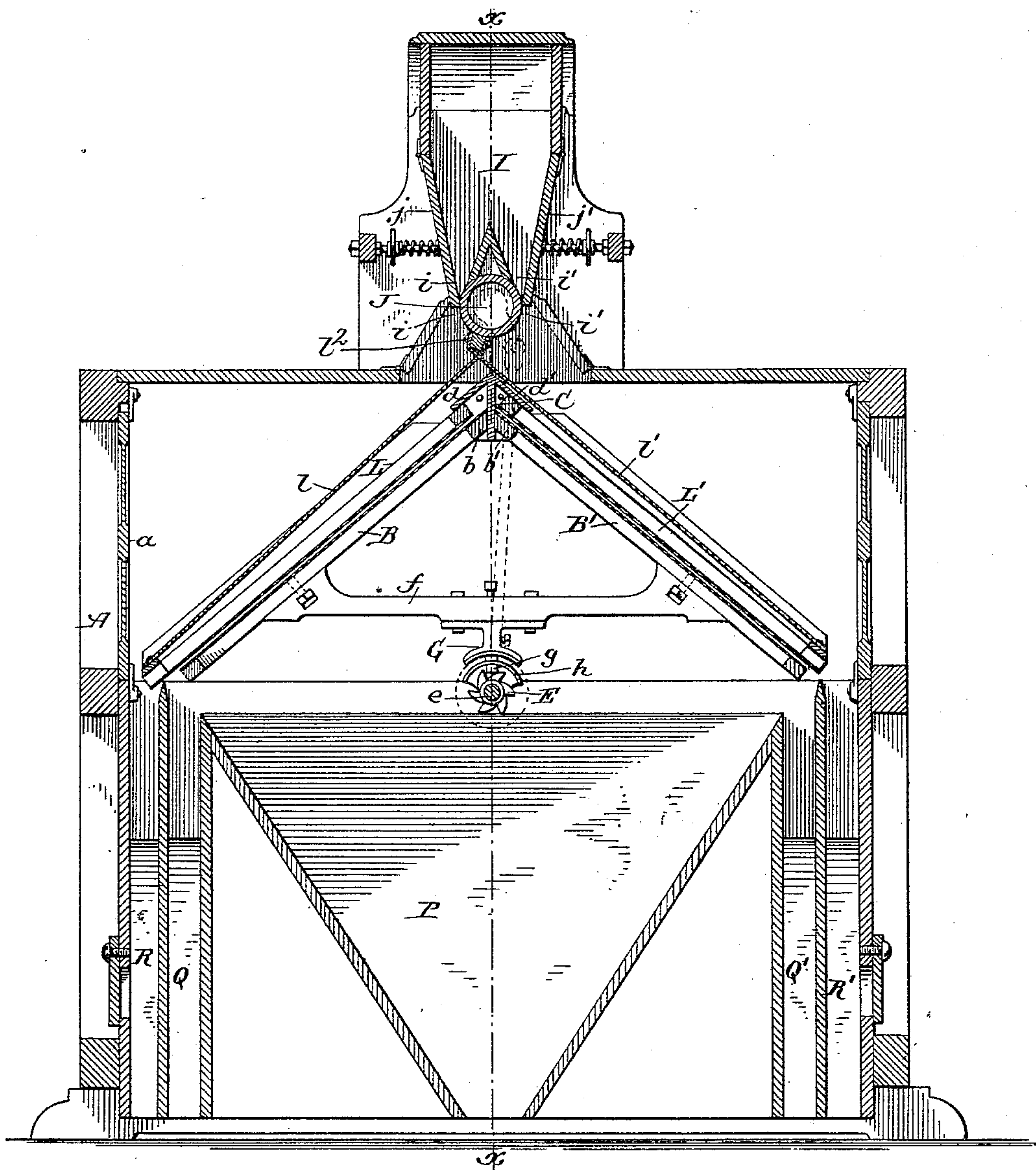
3 Sheets—Sheet 1.

O. M. MORSE.
FLOUR BOLT.

No. 458,305.

Patented Aug. 25, 1891.

Fig. 1.



Witnesses:
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Lois L. Wade.

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By Wilhelm Bonnet
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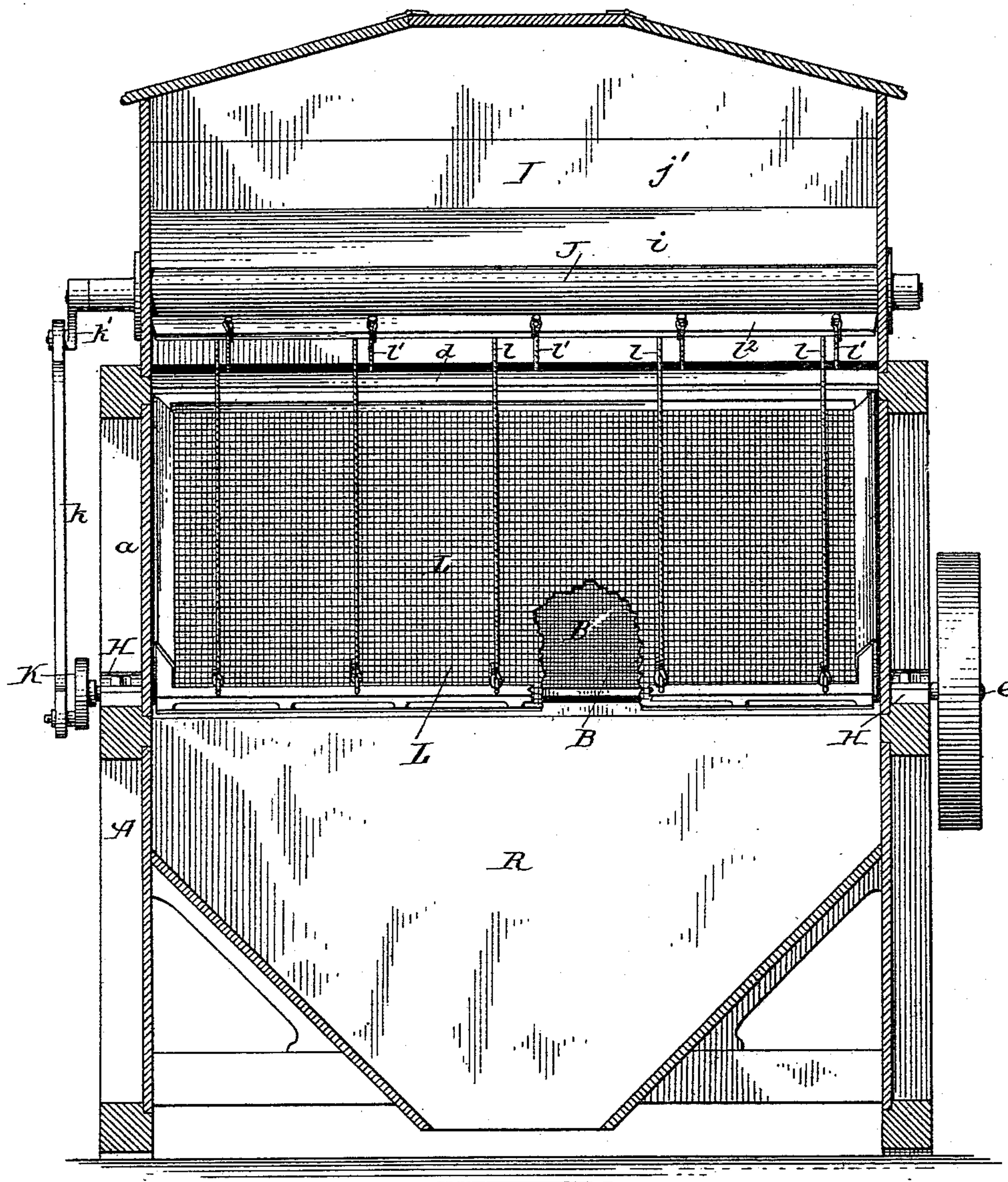
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3 Sheets—Sheet 2.

O. M. MORSE.
FLOUR BOLT.

No. 458,305.

Fig. 2. Patented Aug. 25, 1891.



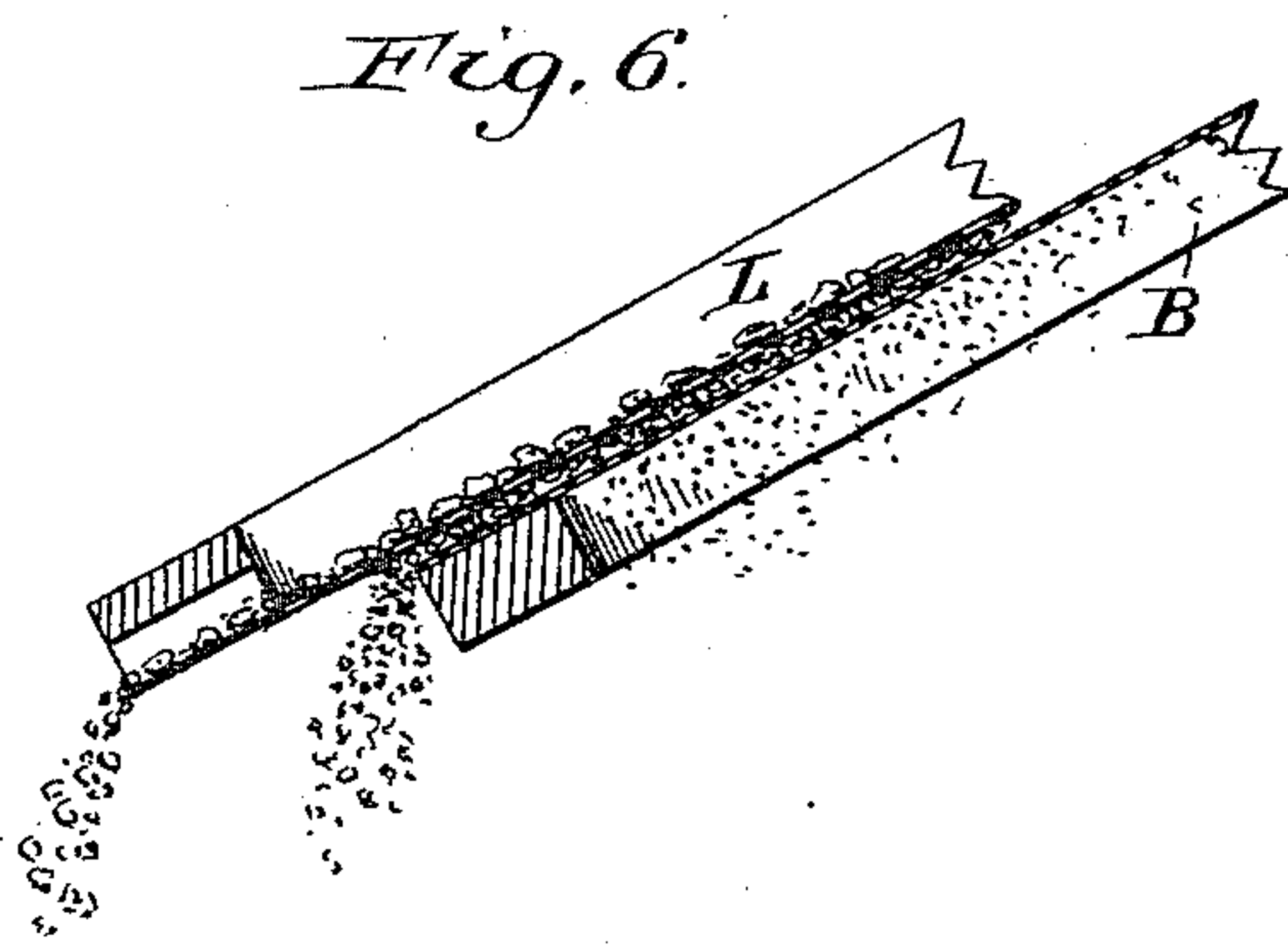
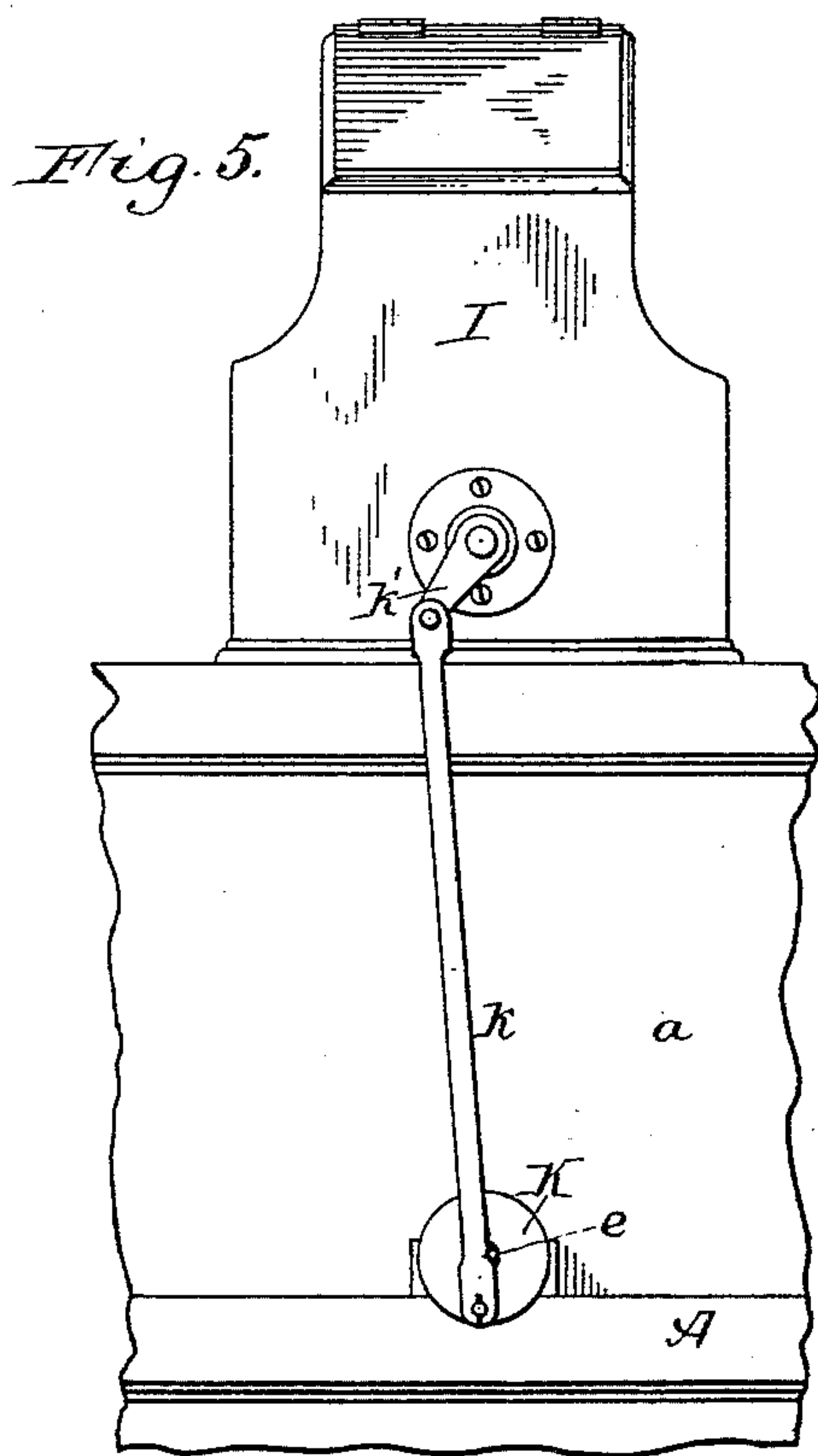
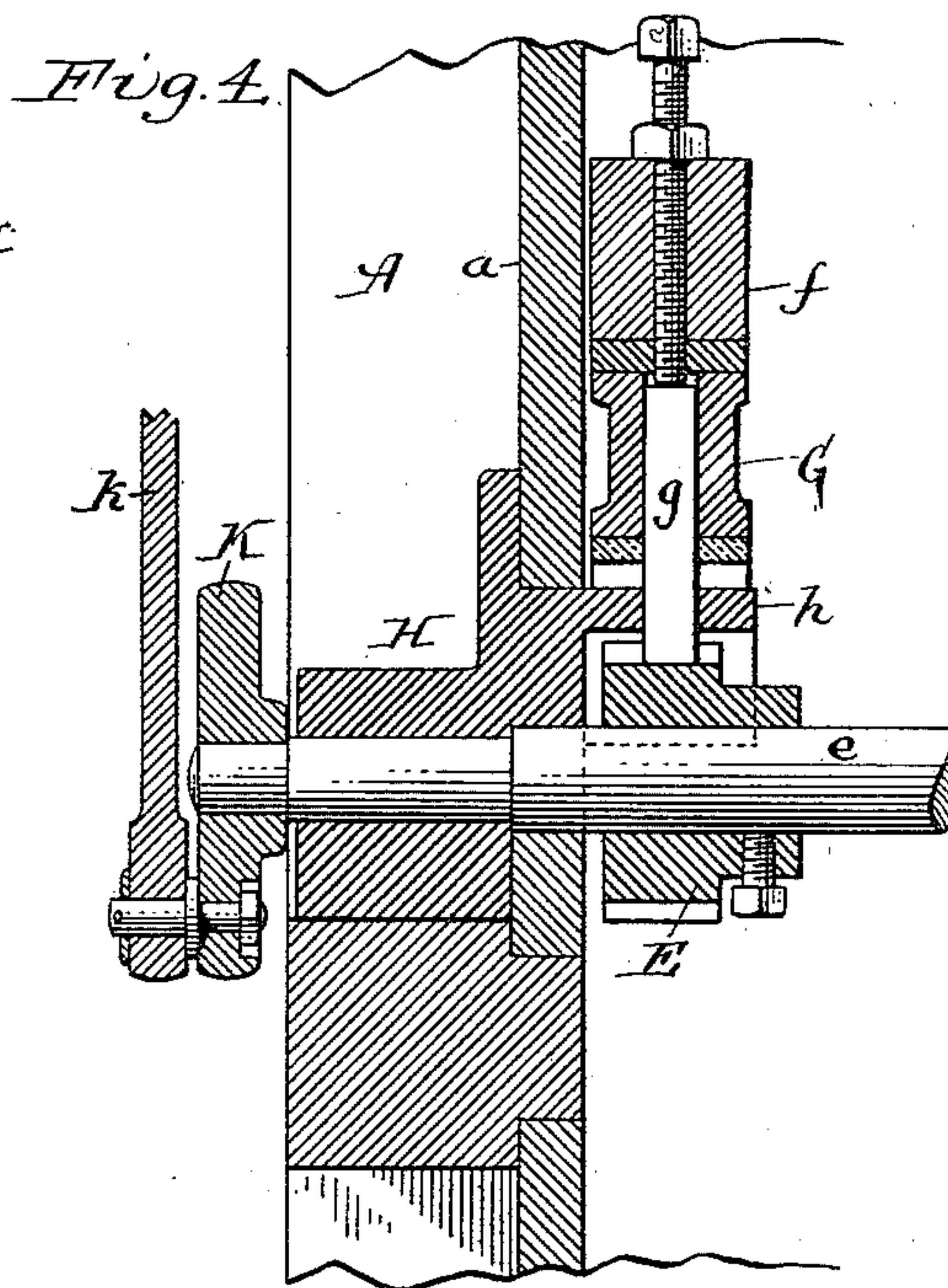
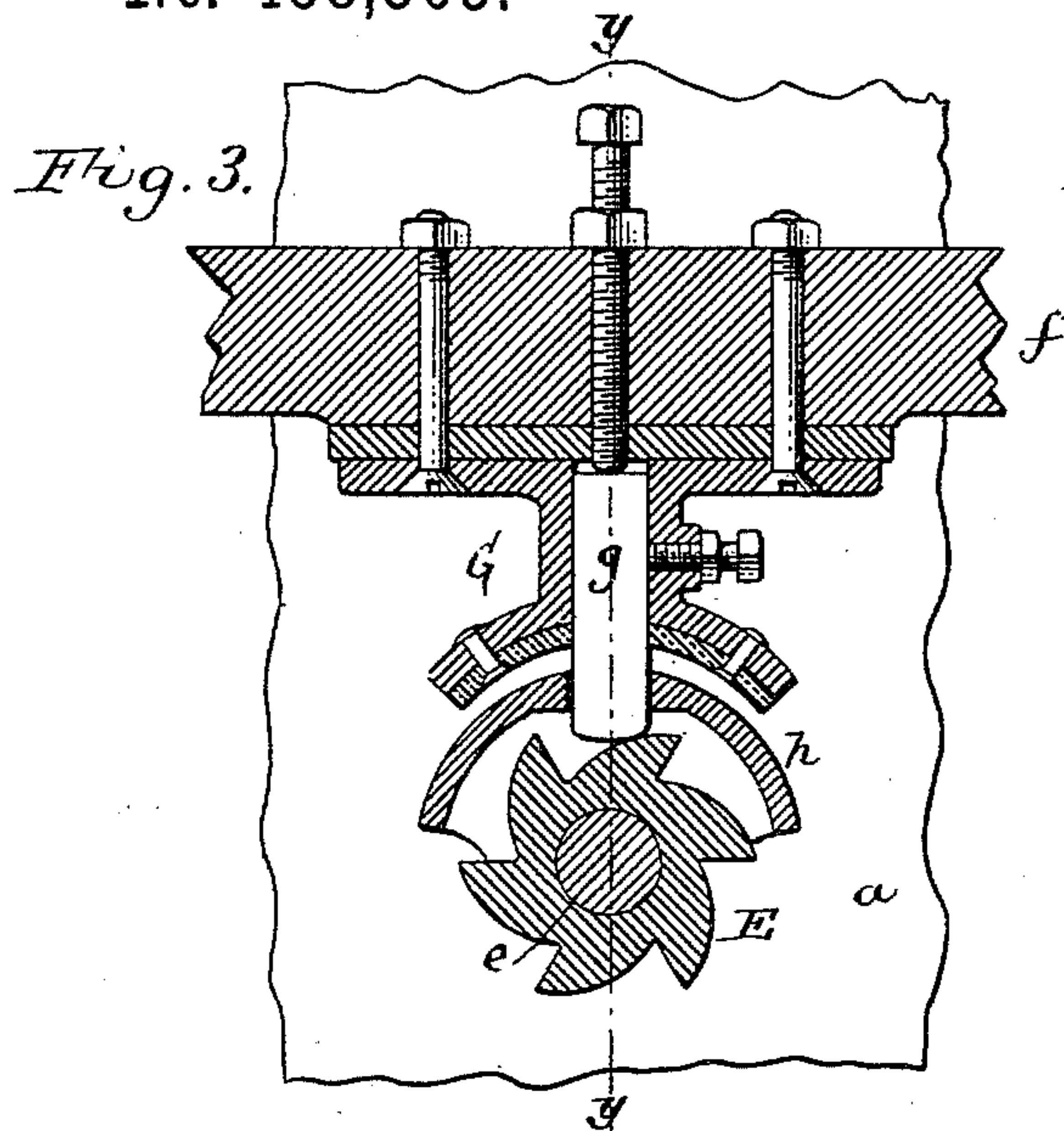
Thos. L. Popp.
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FLOUR BOLT.

No. 458,305.

Patented Aug. 25, 1891.



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UNITED STATES PATENT OFFICE.

ORVILLE M. MORSE, OF JACKSON, MICHIGAN, ASSIGNOR TO THE KNICKERBOCKER COMPANY.

FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 458,305, dated August 25, 1891.

Application filed December 13, 1888. Serial No. 293,497. (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 flour-bolts which are provided with shaking inclined screens, and has for its object to produce a flour-bolt which is suitable for dusting and grading middlings or freeing the middlings from the flour which is commingled therewith or which adheres thereto. In dusting or grading middlings it is important to avoid harsh treatment of the middlings, as it tends to the production of more flour by the abrasion or comminution of the middlings, and it is also important to keep the layer of material on the bolting-surface very thin, in order to enable the flour to reach the bolting-cloth and pass through the same, while it is further necessary to keep the meshes of the bolting-cloth clear, which is always a difficult matter when flour is bolted through flat screens.

The object of my invention is to produce a machine which will meet these requirements; and 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 $x x$. Fig. 3 is a sectional elevation of the jarring device of the screens. Fig. 4 is a sectional elevation at right angles to Fig. 3 in line $y y$. Fig. 5 is a fragmentary end view of the machine. Fig. 6 is a longitudinal section of the lower portions of the screens.

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

A represents the frame of the machine provided with a casing a .

B B' represent two inclined screens arranged within the casing a . These screens are arranged with their heads or highest ends adjacent to each other and slope in different

directions. The top cross-pieces $b b'$ of the screen-frames are secured to opposite sides of an intermediate upright strip C, provided at its upper end with inclined covers $d d'$, which project over the upper portions of the screens. The latter receive a vertical shaking motion by cam-wheels E, which are secured to a horizontal shaft e . The screens are provided with cross-pieces f , which connect the lower portions of the two screen-frames and which rest upon the cam-wheels E by means of shoes G, having adjustable bearing-pieces g , which bear upon the teeth of the cam-wheels. These bearing-pieces slide vertically in inwardly-projecting shields h , formed on the journal-bearings H, in which the cam-shaft e rotates.

I represents the feed-hopper arranged over the highest portion of the screens and provided, preferably, with two throats $i i'$, through which the material is discharged upon the head portions of the two screens. J represents the feed-roller arranged in the throats $i i'$ of the feed-hopper. The outer portions of the throats are formed by adjustable valves or gates $j j'$. The feed-roller receives an oscillating motion from the cam-shaft e by a crank-wheel K, secured to the shaft e , a connecting-rod k , and an arm k' , secured to the feed-roller, the arm k' being so much longer than the radius of the crank-wheel that the rotary motion of the crank-wheel produces an oscillating motion in the feed-roller.

L L' represent floating screens, which rest loosely upon the screens B B', and which serve to keep the meshes of the screens B B' clear and at the same time effect a separation of the bran and other coarse material from the middlings. These floating screens are clothed with cloth of such coarse mesh that the middlings and flour pass through these screens while the bran escapes over the tails of the same. The lower screens B B' are so clothed as to permit only the flour to pass through, while the middlings escape over their tails. The floating screens L L' are connected by cords $l l'$ with a rib l^2 on the oscillating feed-roller, whereby they are caused to move up and down on the screens B B'. The middlings and flour, which pass through the

upper screens L L', form a layer of material on the lower screens B B', on which the upper screens float. The movement of the upper screens over this layer of material causes a sufficient agitation of the material and of the lower bolting-surface to keep the meshes of the latter clear and cause the material to be rapidly bolted, while the action is not so harsh as to cause the formation of new flour from the middlings. The clearing action of the screens is supplemented by the jarring which the screens receive from the cam-wheels. The oscillating feed-roller delivers the material alternately upon the heads of the screens, so that the material passes in batches or waves over the same, whereby the clearing of the screens is greatly facilitated. The inclined covers *d d'*, which project over the head portions of the screens, prevent the material from falling directly from the feed-roller upon the lower screens. The flour, which passes through the lower screens B B', passes into a hopper P; the middlings, which escape over the tails of the lower screens, pass into chutes Q Q', and the bran and other coarse material, which escape over the tails of the floating screens, pass into chutes R R'.

I do not wish to claim in this application

the oscillating feed-roller in connection with the screens, broadly, as that is made the subject-matter of an application for patent, Serial No. 293,496, filed by me of even date herewith.

I claim as my invention—

1. The combination, with a shaking screen, of a floating screen clothed with cloth of coarser mesh than the shaking screen and resting loosely on the shaking screen and the material flowing over the same, substantially as set forth.

2. The combination, with a shaking screen, of a floating screen clothed with cloth of coarser mesh than the shaking screen and resting loosely on the shaking screen and the material flowing over the same, a feed-hopper, a feed-roller having an oscillating motion, and means whereby said feed-roller is connected with the floating screen and the latter is moved on the shaking screen, substantially as set forth.

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

ORVILLE M. MORSE.

Witnesses:

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