

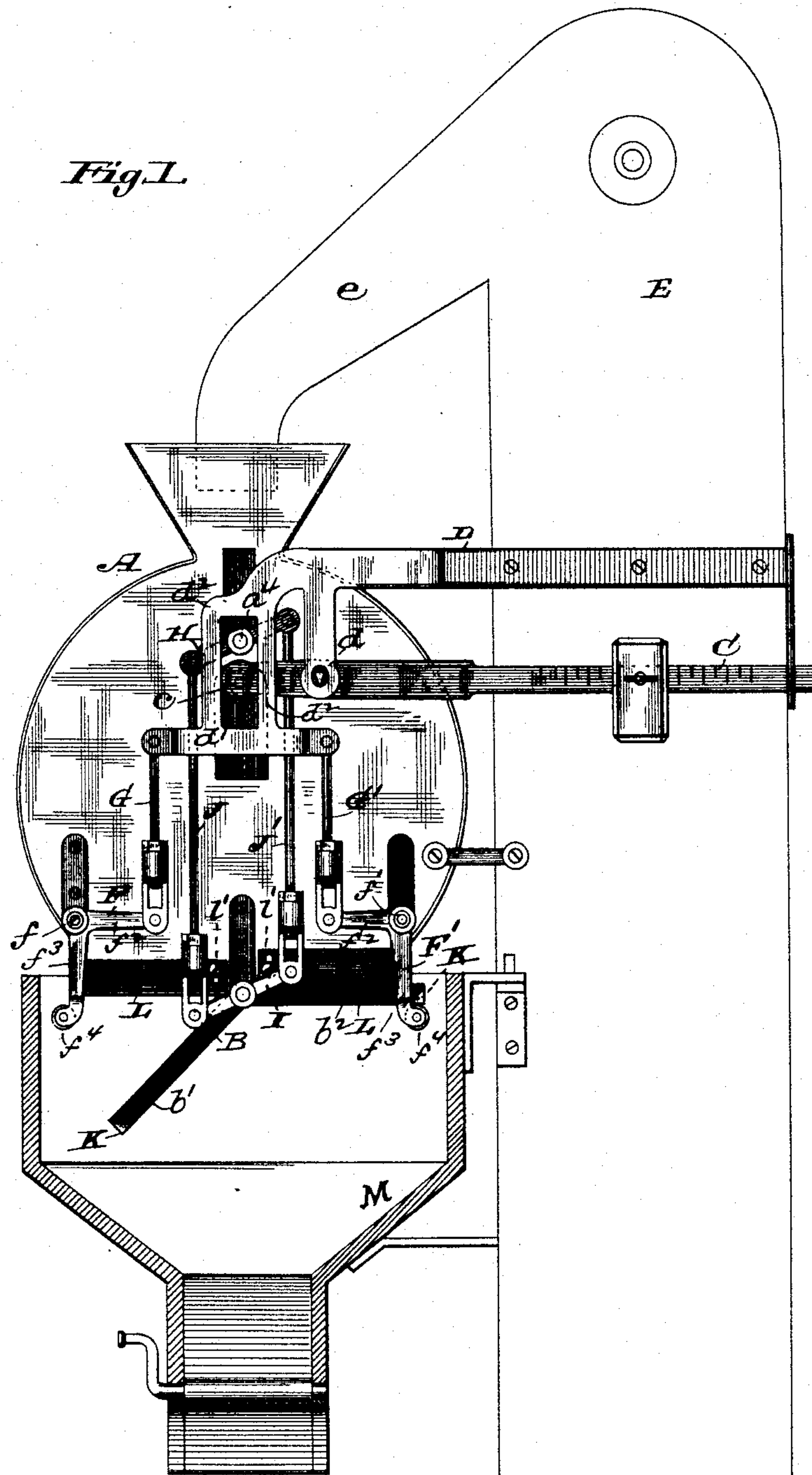
(No Model.)

2 Sheets—Sheet 1.

K. H. SCHAPER.  
AUTOMATIC GRAIN SCALE.

No. 410,857.

Patented Sept. 10, 1889.



Attest:  
J. M. Sanford  
G. M. Hinchman Jr.

Inventor:  
Kasper H. Schaper  
by C. Moody  
tw. atty

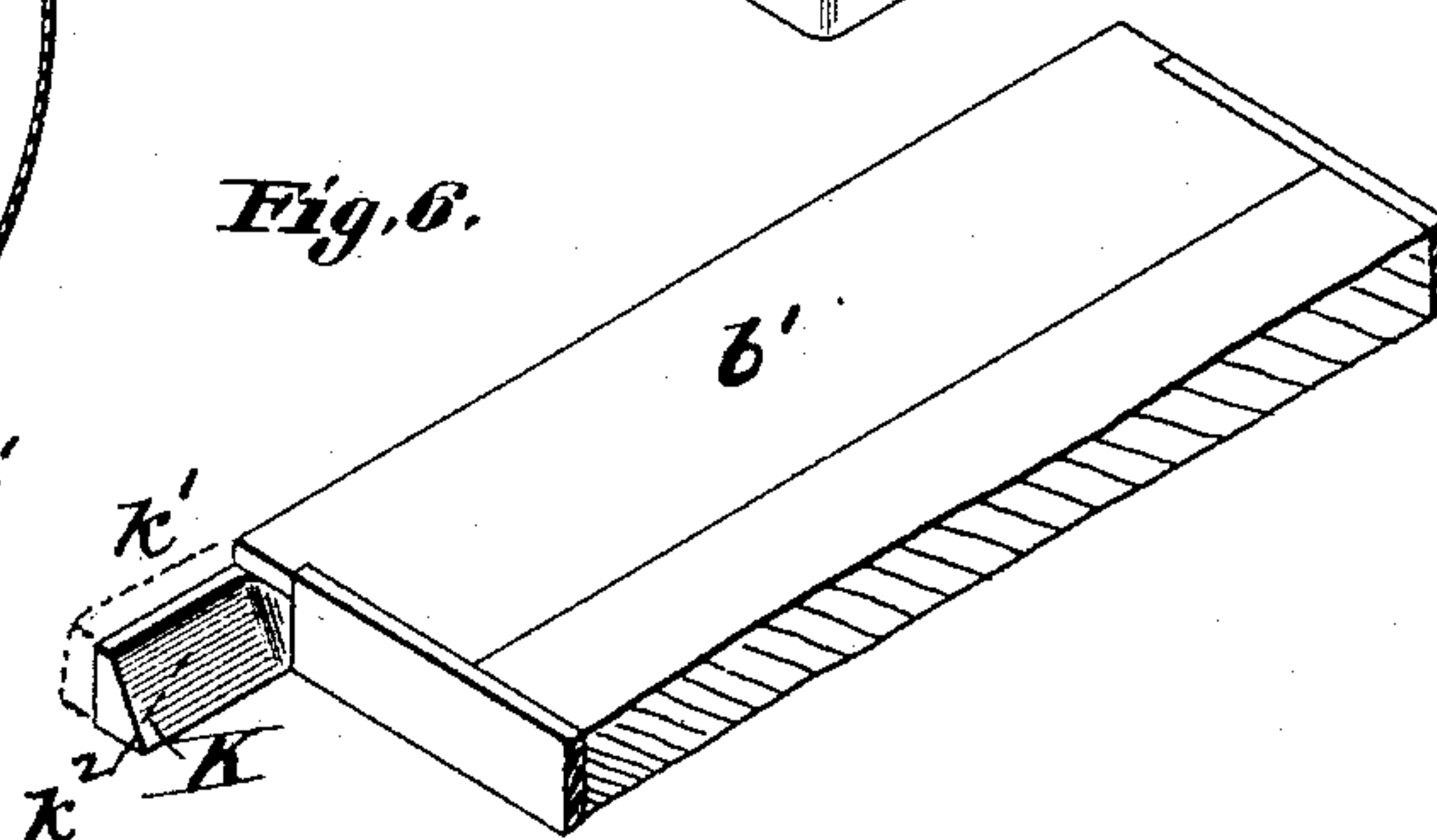
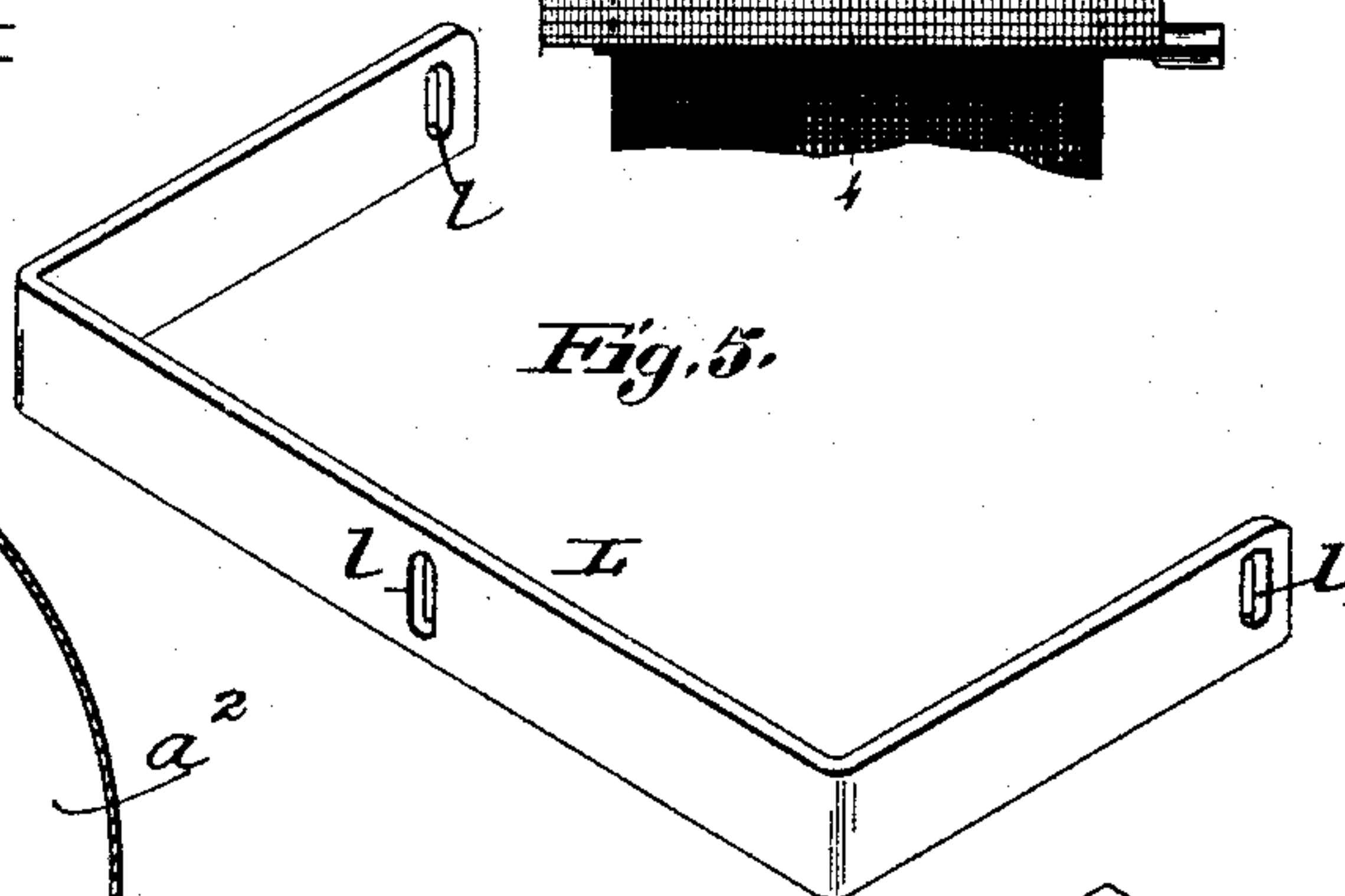
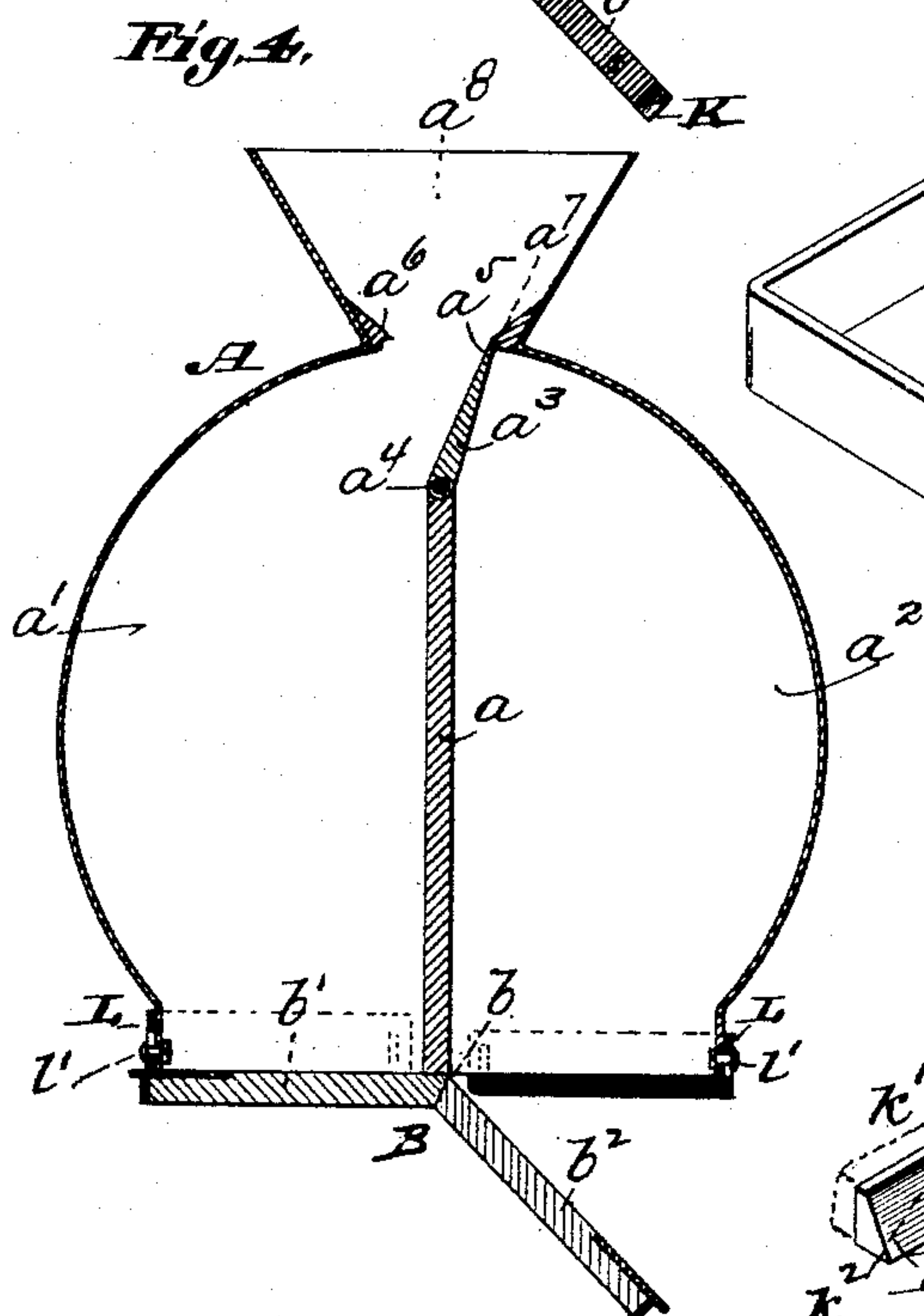
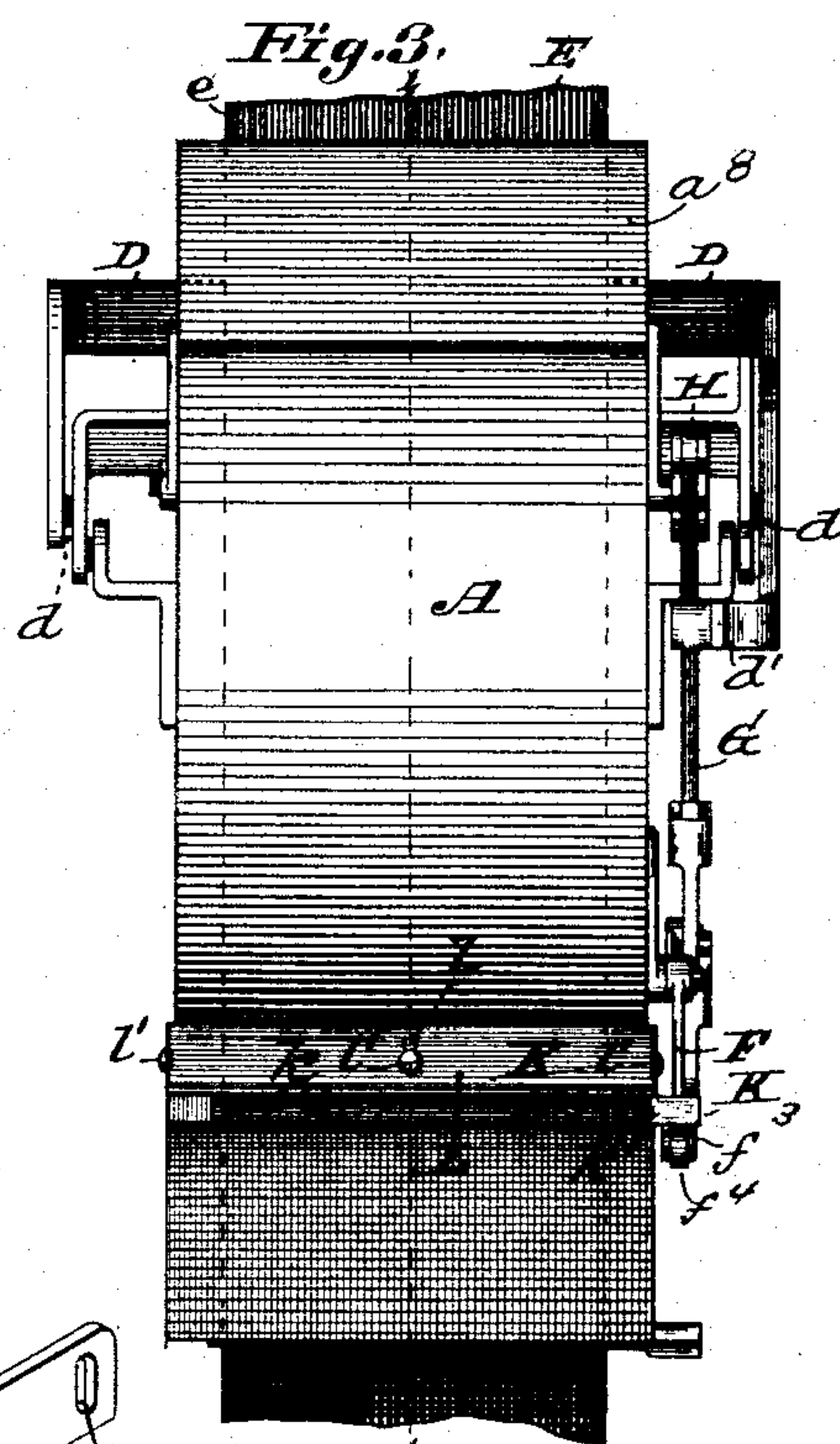
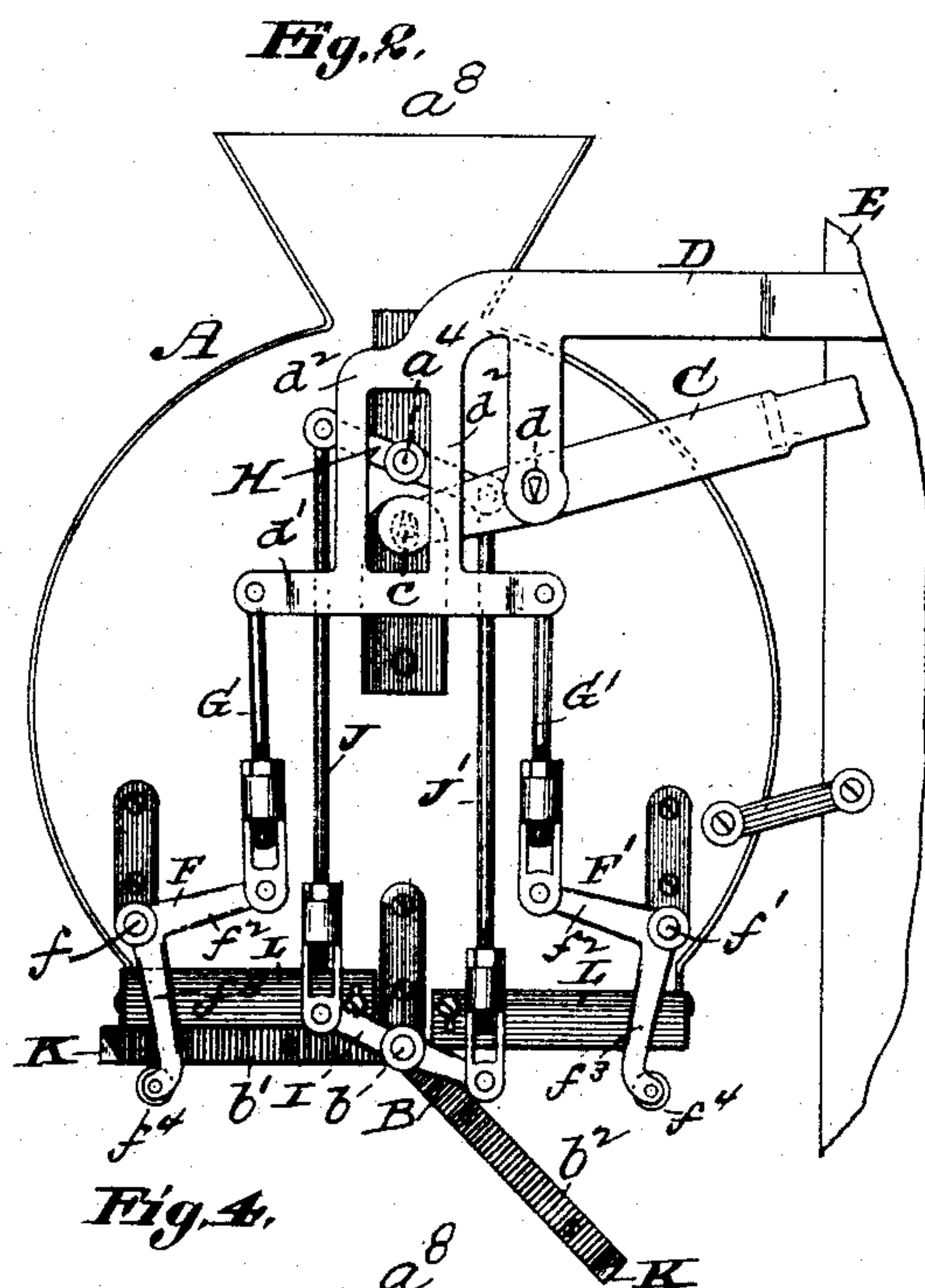
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# UNITED STATES PATENT OFFICE.

KASPER H. SCHAPER, OF LINN'S MILLS, MISSOURI.

## AUTOMATIC GRAIN-SCALE.

SPECIFICATION forming part of Letters Patent No. 410,857, dated September 10, 1889.

Application filed May 17, 1889. Serial No. 311,163. (No model.)

*To all whom it may concern:*

Be it known that I, KASPER H. SCHAPER, of Linn's Mills, Lincoln county, Missouri, (post-office address Wright's City, Missouri,) have made a new and useful Improvement in Grain-Scales, of which the following is a full, clear, and exact description.

The present construction is analogous to an improvement in grain-scales patented to me September 21, 1886, and numbered 349,457. A weighing-hopper having two compartments, into which alternately the grain is fed and weighed and thence discharged, and provided with an automatic valve to direct the entering grain first into one and then into the other of the compartments, and also with an automatic door to deliver the grain first from one and then from the other of the compartments, is employed, substantially as in the original construction; and the present improvement consists, mainly, in the door-latching mechanism and in the means for guarding the joint between the door and the lower end of the compartment, substantially as hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a view showing the improved scale in side elevation and attached to the elevator of a thrasher, and showing the sub-hopper beneath the scale in vertical section. The scale is elevated and the scale-beam horizontal. Fig. 2 is a view analogous to that of Fig. 1, but showing the scale depressed, the scale-beam tilted, and the door in a different position. Fig. 3 is an end elevation of the scale, including above a portion of the elevator-spout, and beneath the sub-hopper; Fig. 4, a vertical section of the hopper on the line 4 4 of Fig. 3; Fig. 5, a view in perspective of the guard, and Fig. 6 a view in perspective showing the outer portion of one of the door parts. The last two views are upon an enlarged scale.

The same letters of reference denote the same parts.

A, Figs. 1, 2, 3, and 4, represents the weighing-hopper. The vertical cross-partition  $a$  divides it into the compartments  $a'$ ,  $a^2$ , and  $a^3$ .  $a^4$  represents the valve attached to the shaft  $a^5$  and adapted to be turned to and fro to cause

its edge  $a^5$  to seat alternately at  $a^6$  and  $a^7$ , Fig. 4, and thus cause the grain entering the weighing-hopper through its inlet  $a^8$  to be directed first into the compartment  $a'$  and then into the compartment  $a^2$ , and then into the compartment  $a'$  again, and so on.

B represents the door at the bottom of the weighing-hopper, whose function it is to discharge the contents of the compartments alternately. The door may be termed a "two-part" one, being hinged at its center  $b$  to the weighing-hopper at the center thereof, and constructed, substantially as shown, with its parts  $b'$  and  $b^2$  arranged angularly to each other, and so that when one part  $b'$  is adjusted to close a compartment  $a'$  the other part  $b^2$  is adjusted to open the other compartment  $a^2$ .

C represents the scale-beam, upon which, at the point  $c$ , the weighing-hopper is hung. The scale-beam in turn is poised upon any suitable bearing. In the present instance the arm D is employed. As the present grain-scale is frequently employed to weigh the grain as it comes from a thrasher, the arm D is shown secured to the elevator E of a thrasher, and the elevator-spout  $e$  is adapted to deliver the grain into the weighing-hopper inlet  $a^8$ . The arm D at its outer end is forked, as shown in Fig. 3, to receive the weighing-hopper. The scale-beam at its outer end is also forked. The bearings of the scale-beam are at  $d$   $d$  in the arm D. The movement of the weighing-hopper and of the other movable parts connected with the device is indicated by the two positions shown, respectively, in Figs. 1 and 2.

As thus far described the construction is substantially similar to the one above referred to.

The door-latching mechanism is as follows: F F' represent bell-crank levers pivoted to the weighing-hopper at  $f$   $f'$ , respectively. By means of the rods G G', respectively, the arms  $f^2$  of the bell-crank levers are connected with a cross-bar  $d'$ , which, by means of the intermediate extensions  $d^2$ , is attached to the main part of the arm D. By this means, when the weighing-hopper is moved vertically, the bell-cranks are turned on their respective pivots. When the weighing-hopper is ele-



vated—as when the hopper-compartment is not yet sufficiently filled with grain to cause the weighing-hopper to drop—the bell-cranks are adjusted, as in Fig. 1, to bring their arms  $f^3$  into position to latch the door B; and when the weighing-hopper is depressed—as when the hopper-compartment is sufficiently filled with grain to be weighed—the bell-cranks are adjusted, as in Fig. 2, to unlatch the door B.

As the door parts  $b'$   $b^2$  are relatively arranged as shown, but one of them can be and is latched at a time; hence, although the two bell-cranks in Fig. 1 are adjusted to latch the door parts, but one  $b^2$  of the door parts is in position to be latched, and the other door part is opened; and, on the other hand, although the two bell-cranks in Fig. 2 are adjusted to unlatch the door parts, one  $b'$  of the door parts is in position to be latched. As the weighing-hopper begins to drop, the bell-cranks begin to unlatch the door, and as the weighing-hopper begins to rise the bell-cranks begin to turn backward into the position to latch the door. Meanwhile the door movement is effected as follows: H represent an arm attached to the shaft  $a^4$ , which, within the weighing-hopper, is provided with the valve  $a^3$ .

I represents an arm fastened to the shaft  $b$ , to which the door B is also fastened. Rods J J' connect the arms H I, substantially as shown. By this means the movement of the door B is communicated to the valve  $a^3$ , and as soon as the desired weight of grain has been received into a hopper-compartment the weighing-hopper drops, the door is unlatched, and the door and door-shaft  $b$  turn in the bearing of said shaft, and the valve  $a^3$  turns to close the entrance to that hopper-compartment whose bottom is opened. The opening of the hopper-compartment is thus effected promptly and surely and the stream of grain flowing into the weighing-hopper properly diverted from one compartment thereof to the other.

To enable the bell-crank arm  $f^3$  to co-operate with the door part, a spring-catch K is employed. This part is shown more distinctly in Figs. 3 and 6. At its inner end  $k$  it is fastened to the door part, and its outer end  $k'$ , which projects beyond the side of the door part and is beveled at  $k^2$ , as shown, is free to be sprung away from the outer edge of the door part, as indicated by the broken lines in Fig. 6. As the door part closes, the

beveled end  $k^2$  encounters the bell-crank arm  $f^3$ , or rather the roller  $f^4$  at the end of said arm, and the catch K is thereby sprung outward sufficiently to pass the roller, after which the catch closes against the door part and is supported by the roller, substantially as shown in Fig. 1. When the weighing-hopper drops, the roller  $f^4$  swings sufficiently inward to let the catch K pass it.

The remaining feature of the improved construction is the means for closing the joint around the door part, so that no grain shall escape when the door part is closed. L represents a strip shaped to fit around the lower end of the hopper-compartment, and to rest upon the door part, substantially as shown. It is slotted vertically at various places  $l l l$ , to enable the strip or "guard," as it may be termed, to be within certain limits raised and lowered upon the studs  $l'$ , which are used to attach the guard to the weighing-hopper. Its operation is as follows: If the door part in closing comes directly against the under edge of the weighing-hopper, the guard is raised upon the studs; but if the door part does not fit closely the guard drops upon the door part and closes the joint.

In Figs. 1 and 3 a sub-hopper M is shown beneath the weighing-hopper, to receive the grain coming from the weighing-hopper.

I claim—

1. The combination of the weighing-hopper, the scale-beam, the arm D, the bell-crank levers, the rods G G', the cross-bar  $d'$ , and the pivoted door B, substantially as described.
2. The combination of the weighing-hopper, the pivoted two-part door, the bell-crank levers, the spring-catches, and the guards, substantially as described.
3. The combination of the weighing-hopper, the arm D, the scale-beam, the pivoted two-part bottom, the spring-catches, the bell-crank levers, the rods G G', the cross-bar  $d'$ , and the guards, substantially as described.
4. The combination of the weighing-hopper, the arm D, the scale-beam, the pivoted two-part bottom, the spring-catches, the bell-cranks, the rods G G', the cross-bar  $d'$ , the guards, the bars H I, the rods J J', and the valve  $a^3$ , substantially as described.

Witness my hand this 10th day of May, 1889.

KASPER H. SCHAPER.

Witnesses:

CHAS. MARTIN,  
W. R. YOUNG.