

(No Model.)

3 Sheets—Sheet 1.

D. CARPENTER.
FANNING MILL.

No. 282,050.

Patented July 31, 1883.

Fig. 1.

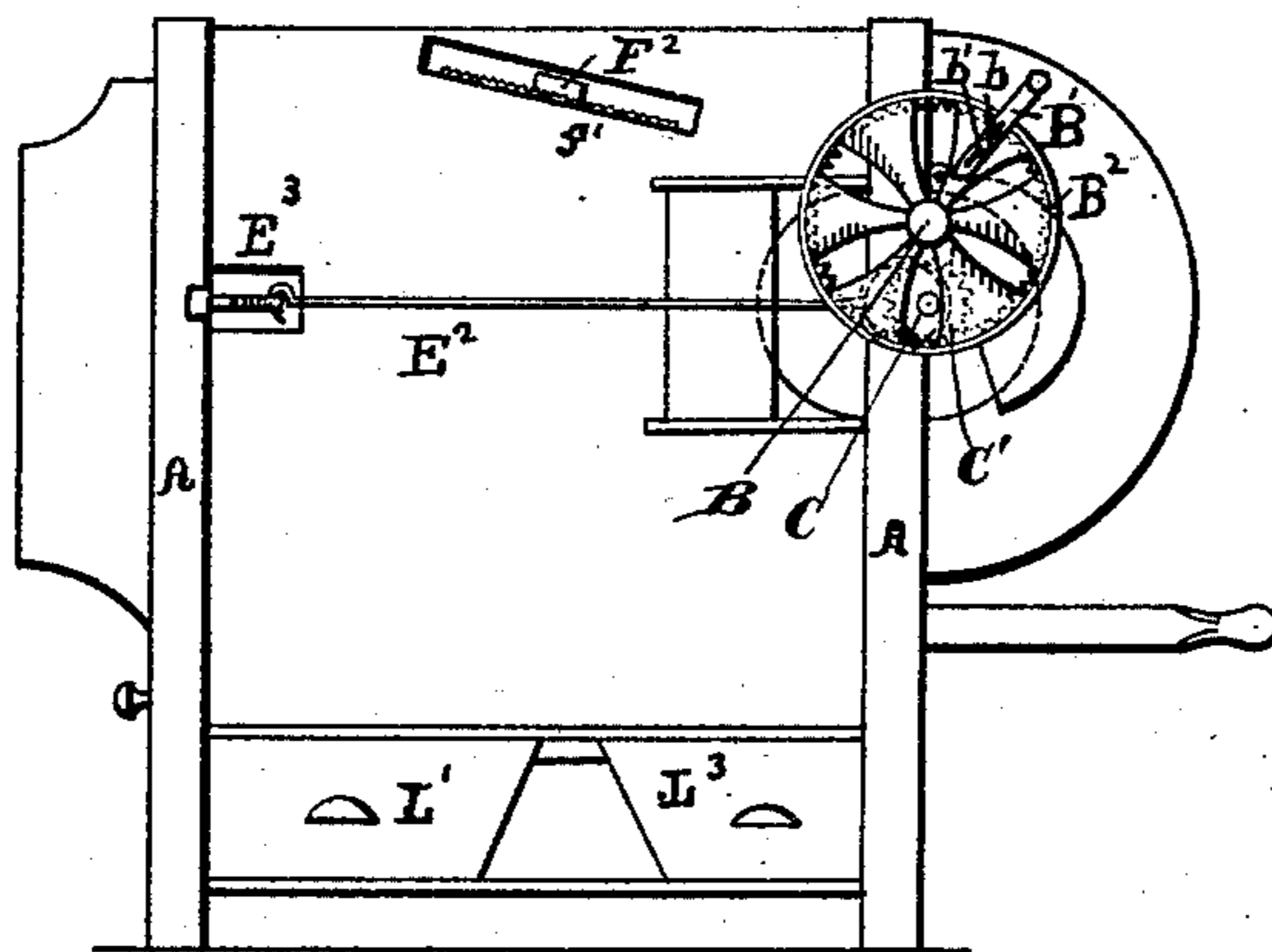


Fig. 2.

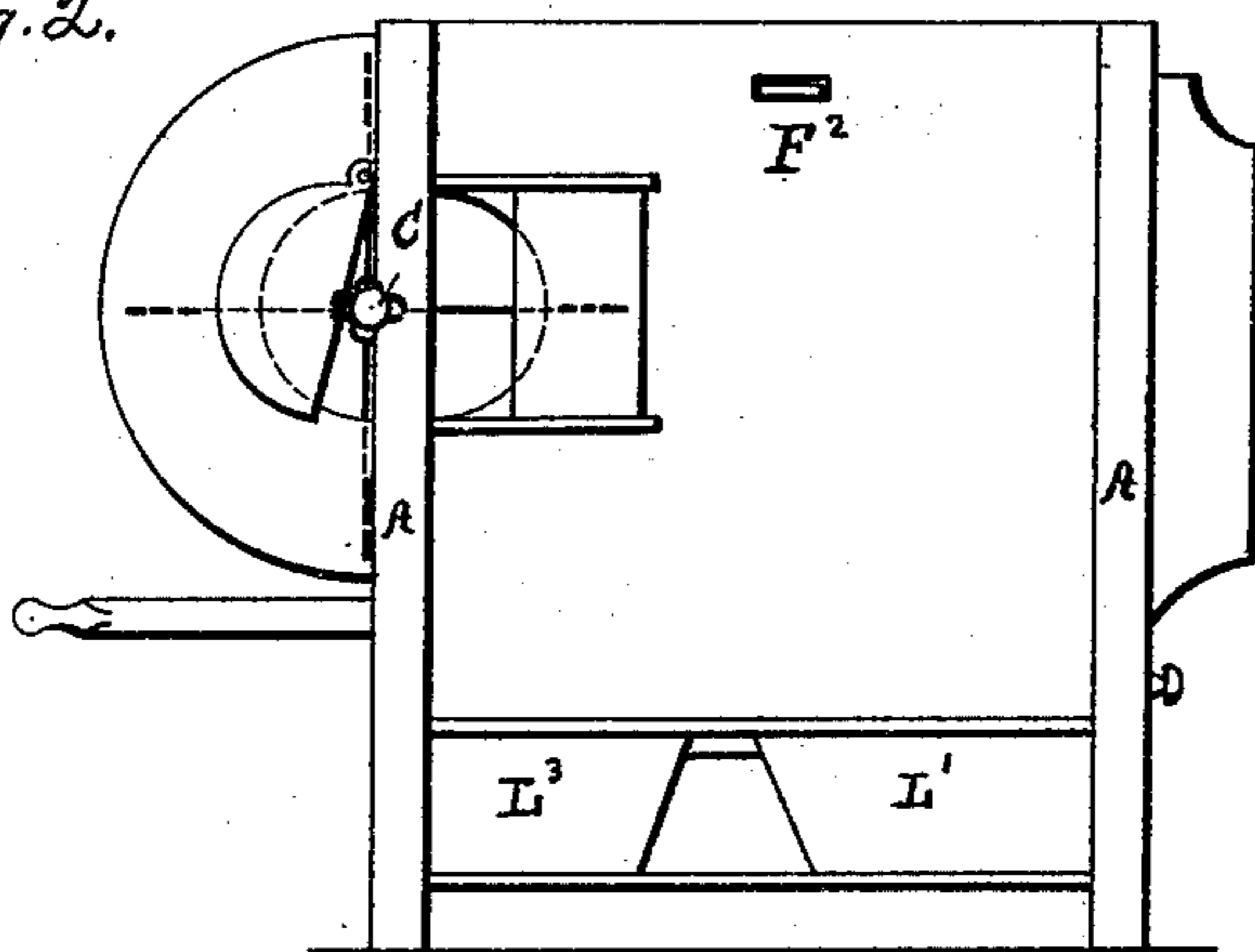
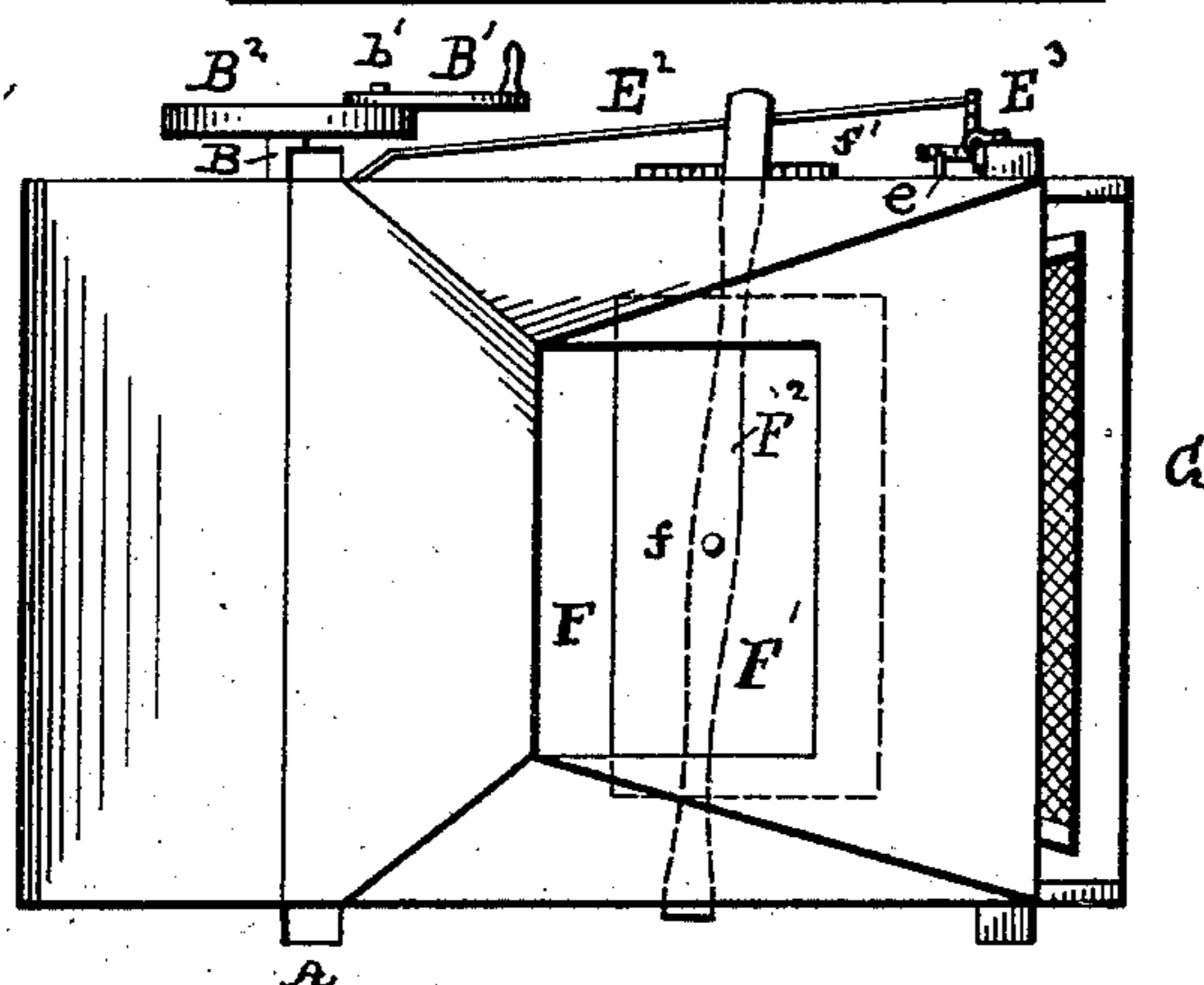


Fig. 3.



WITNESSES

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Fig. 4.

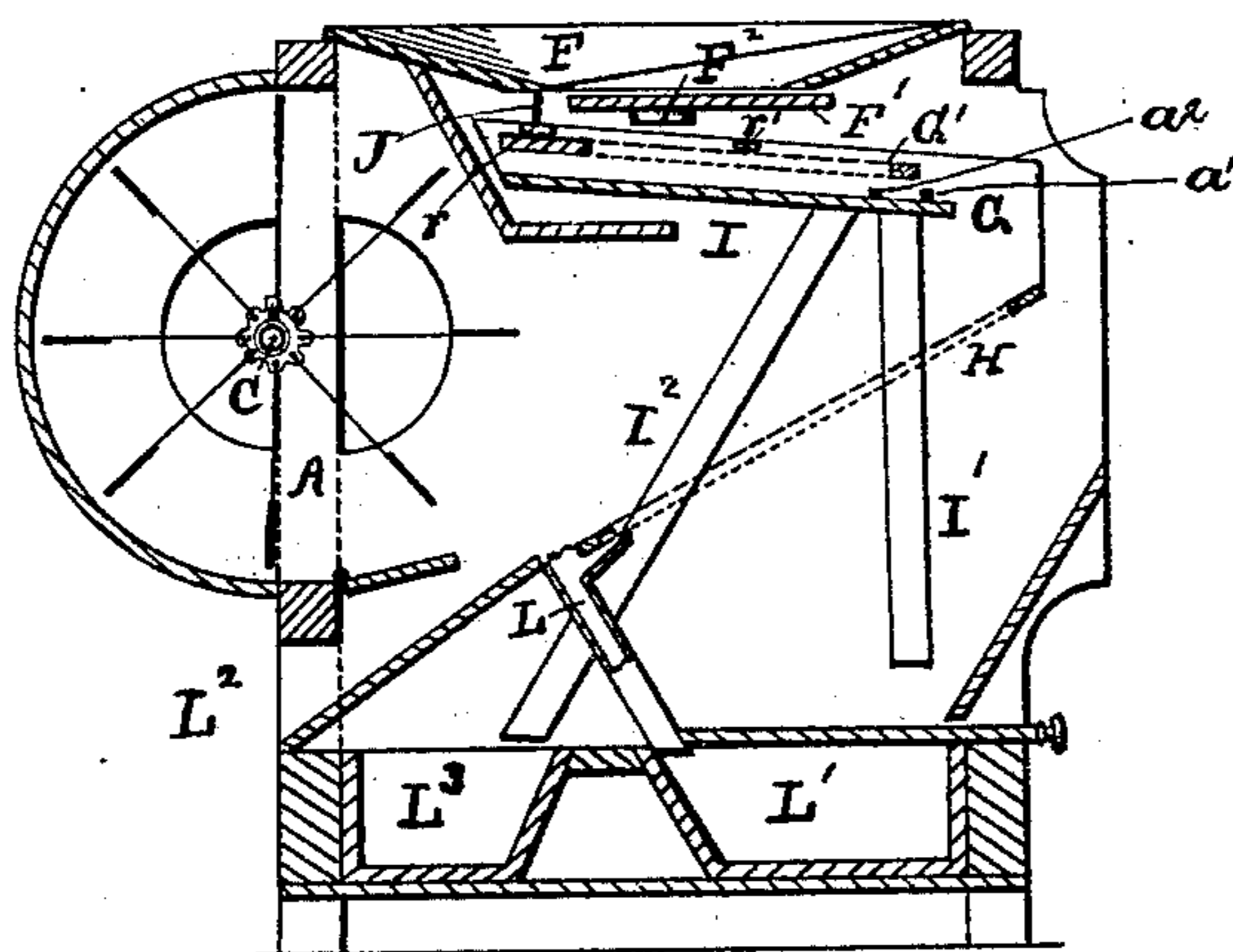


Fig. 5.

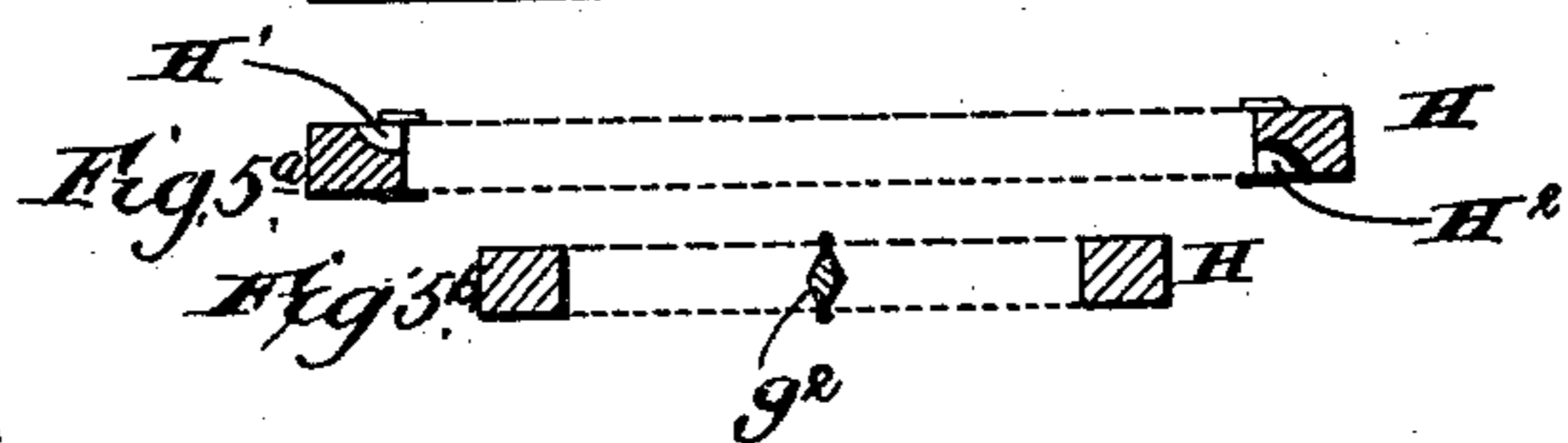
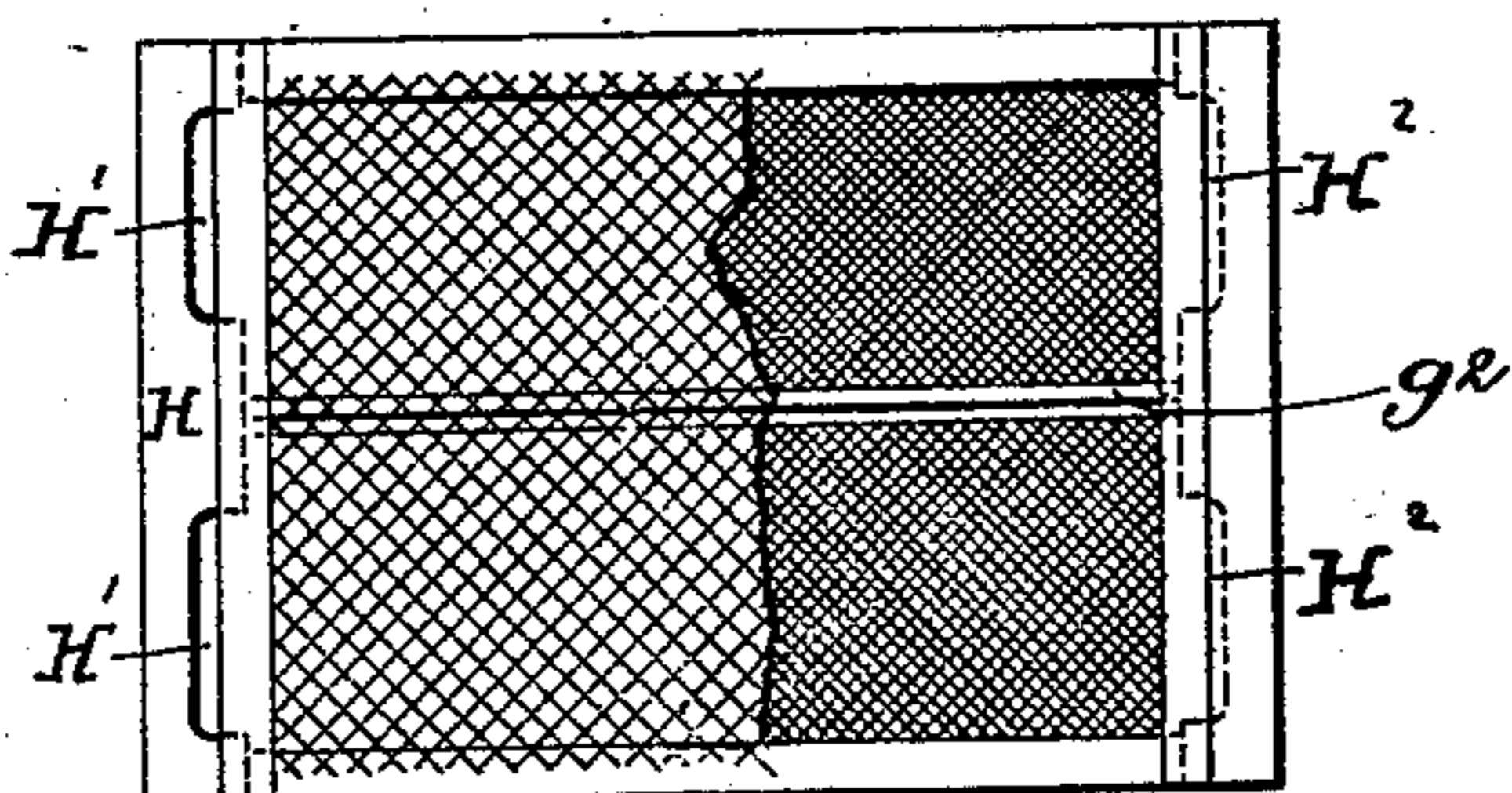
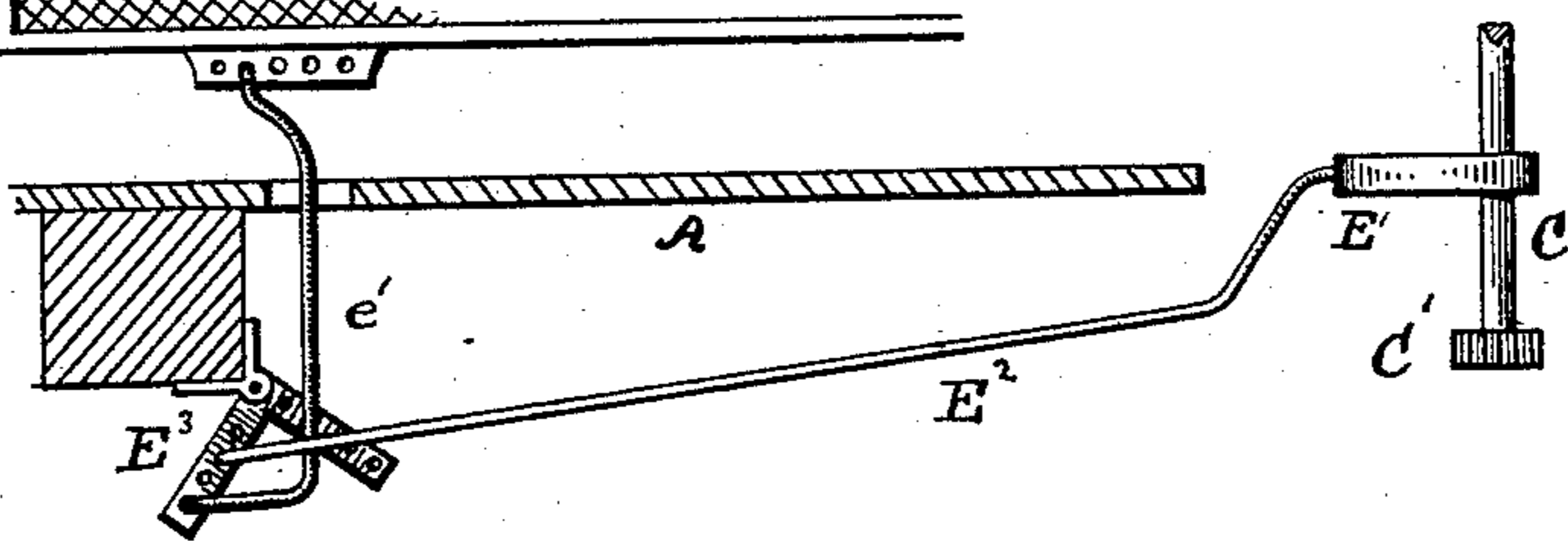


Fig. 6.



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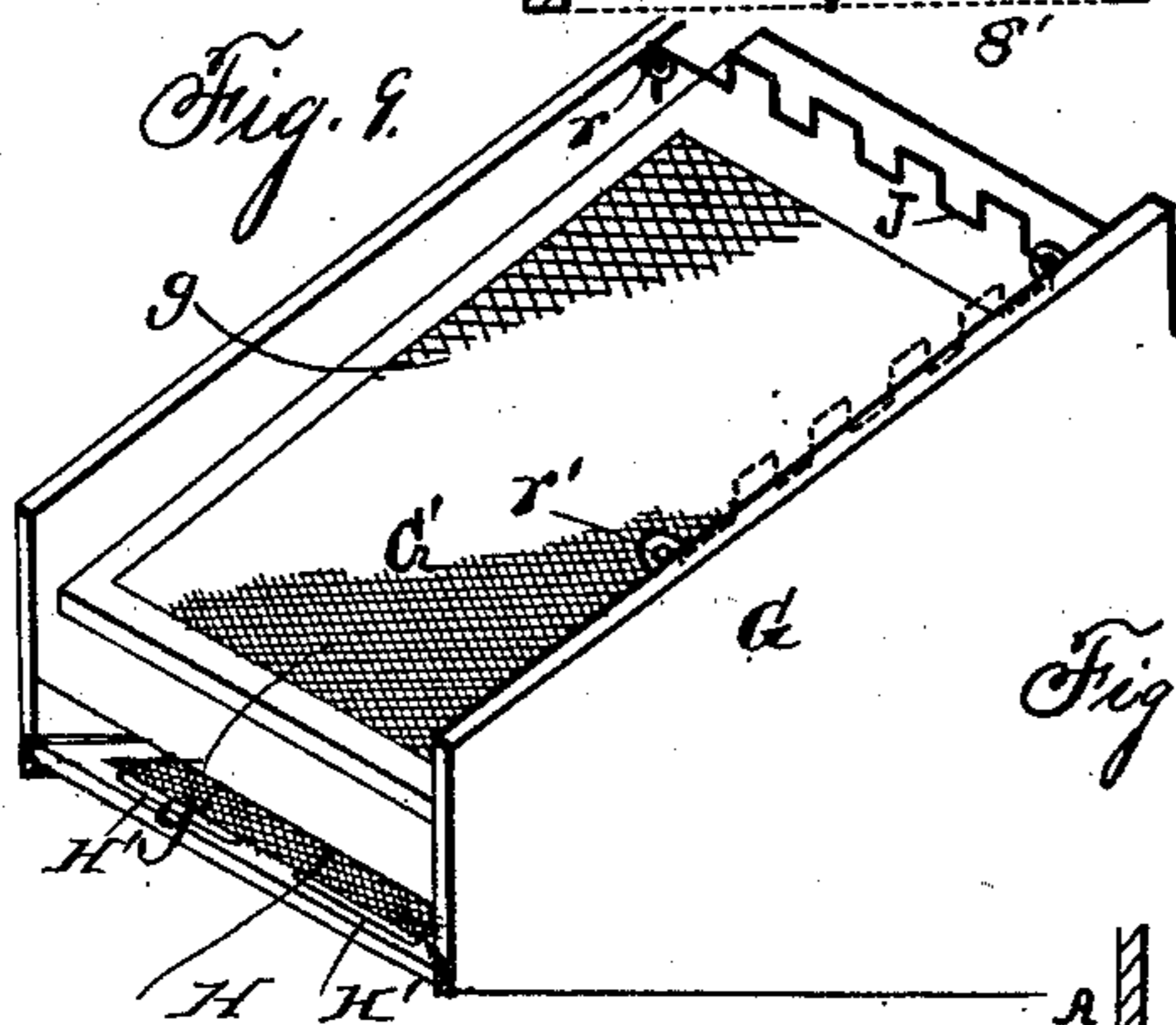
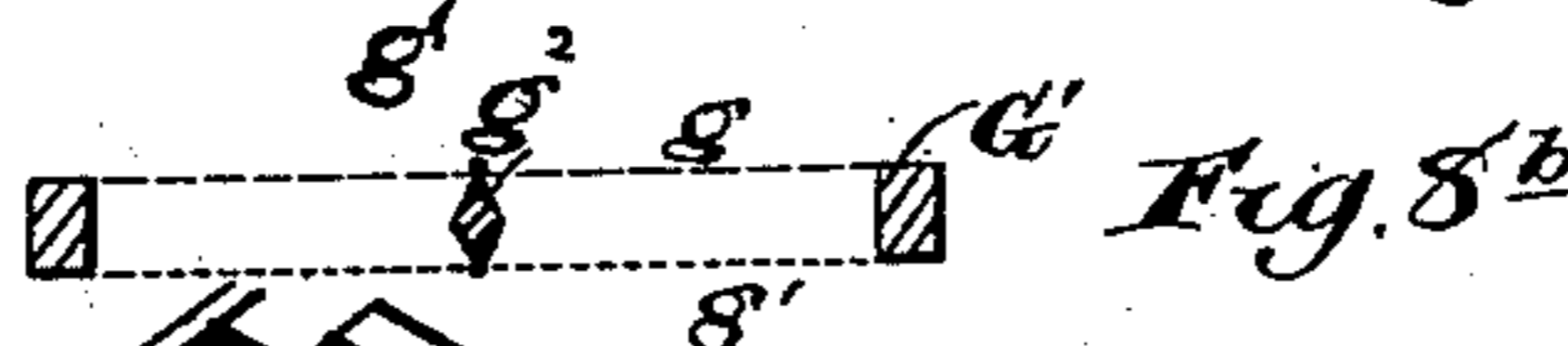
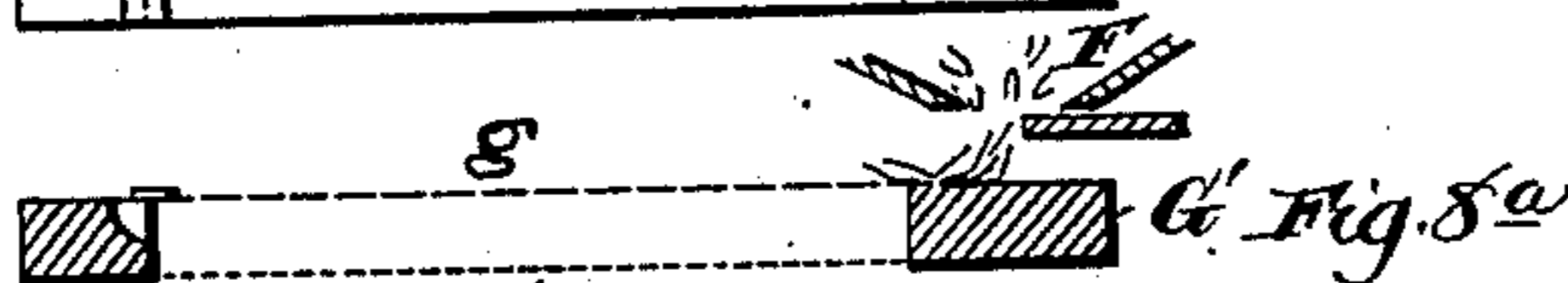
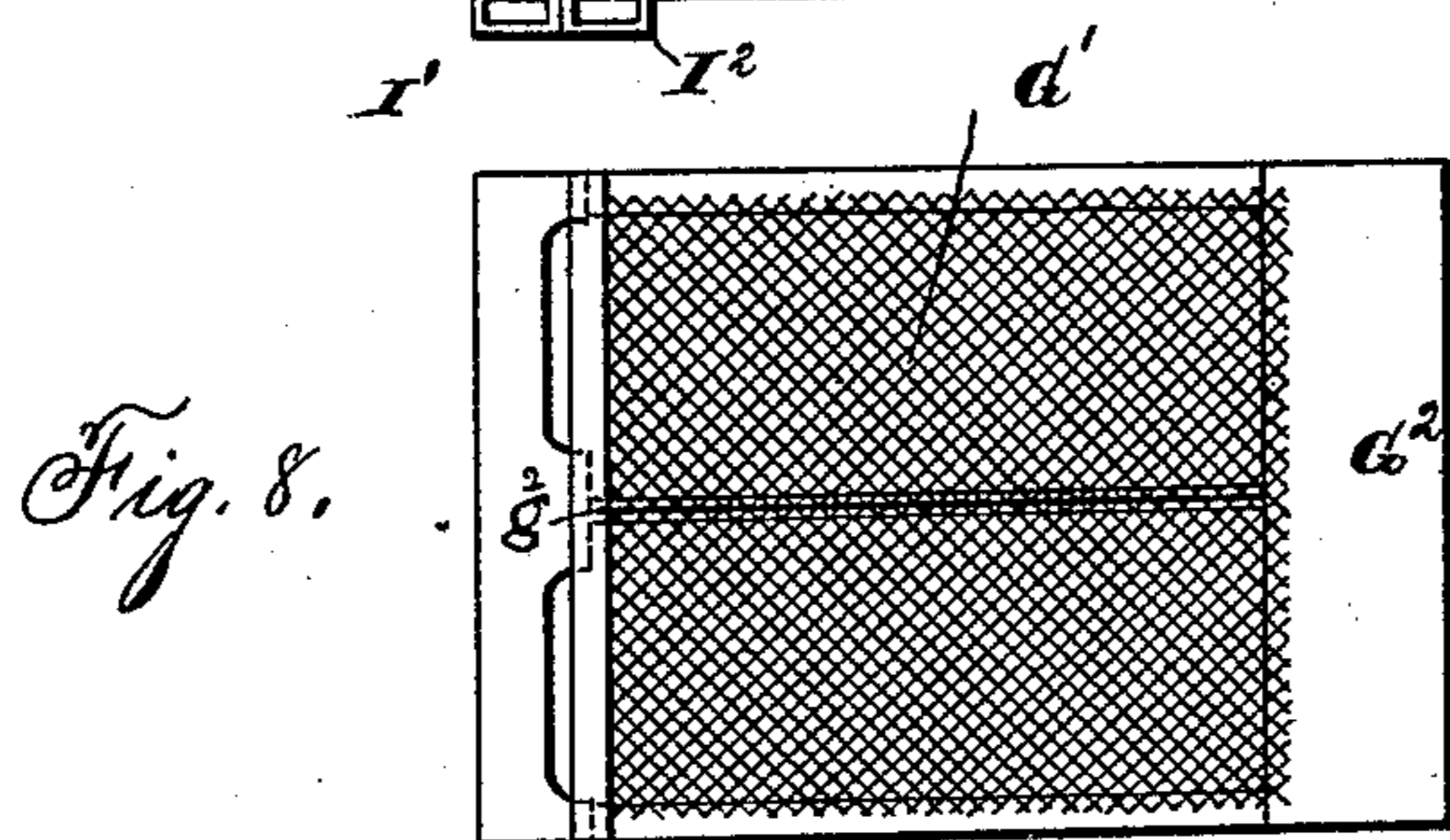
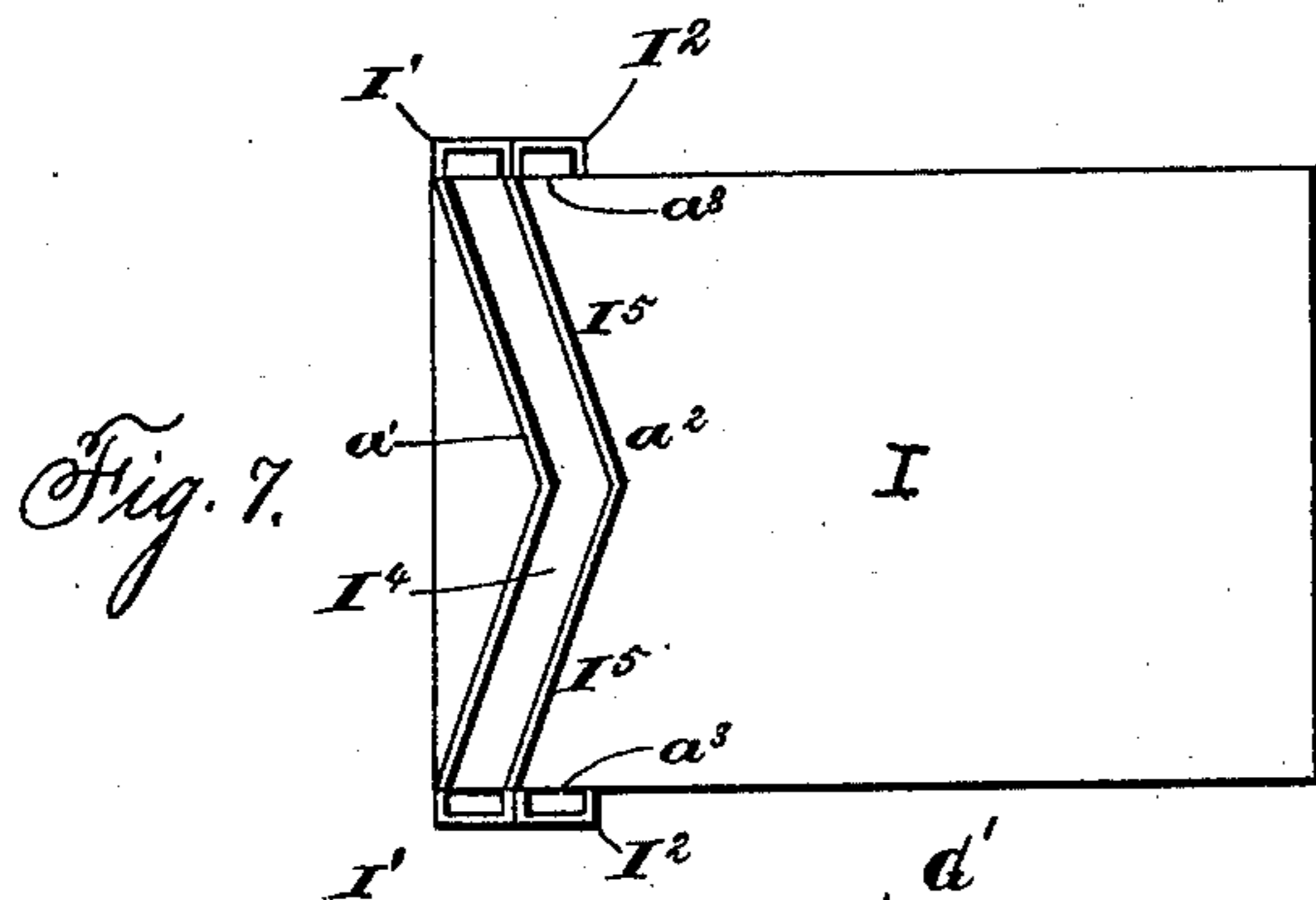
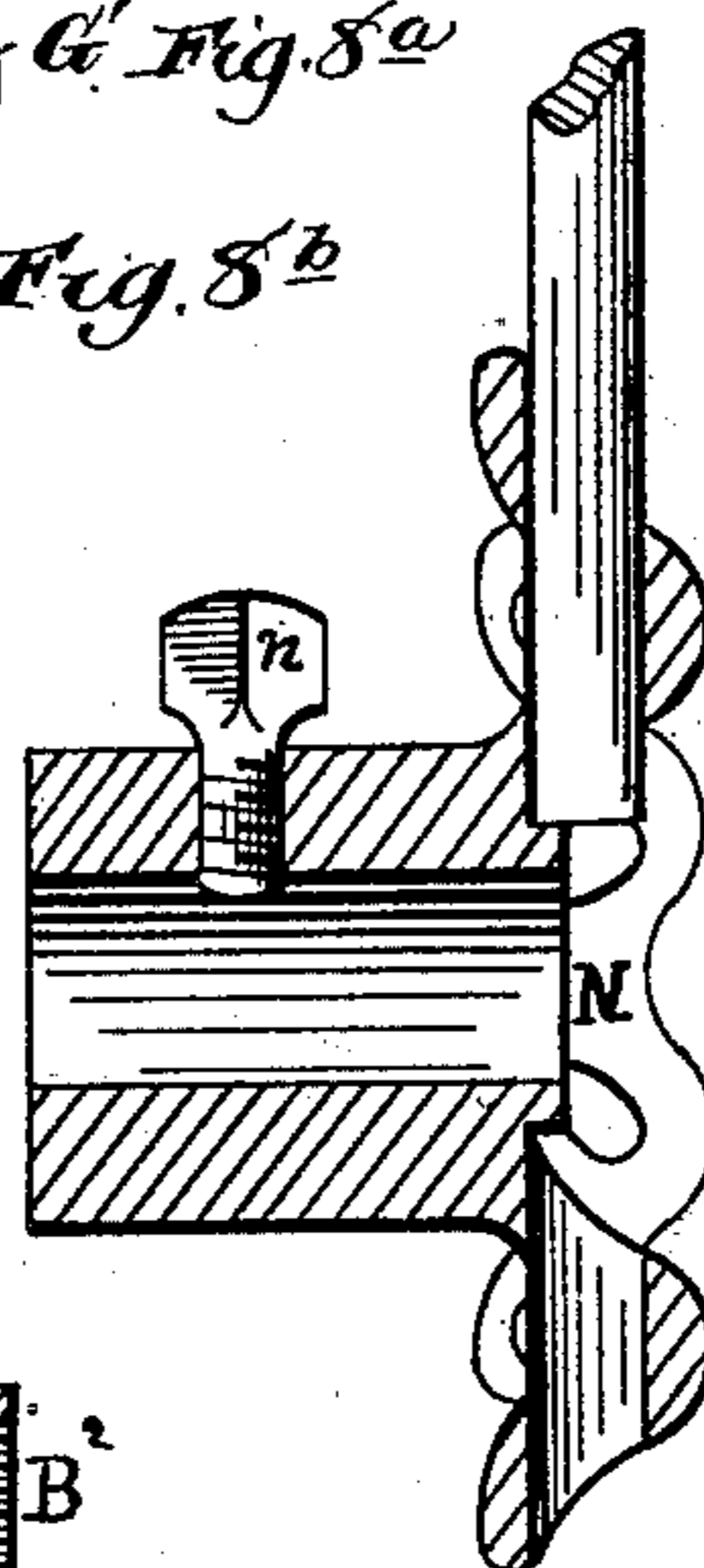


Fig. 10.



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UNITED STATES PATENT OFFICE.

DELOS CARPENTER, OF ORION, MICHIGAN.

FANNING-MILL.

SPECIFICATION forming part of Letters Patent No. 282,050, dated July 31, 1883.

Application filed February 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, DELOS CARPENTER, of Orion, county of Oakland, State of Michigan, have invented a new and useful Improvement in Fanning-Mills; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

The present invention relates to that class of fanning-mills in which shaking-screens are employed; and the object of the invention is to provide means for insuring a perfect and regular discharge from the feed-hopper by means of an agitator carried by the upper screen-shoe, and arranged in a novel manner to provide a lower screen having two screen-surfaces of different mesh and adapted to be reversed and inverted to present either screen-surface to the incoming grain and cause the discharge of the latter through openings in the end bars of the screen-frame; to provide a double screen which is composed of a frame having a central longitudinal bar provided with beveled top and bottom edges, and the screen-surfaces secured to said frame and supporting-bar, and to employ a chess-board having two channels which discharge the timothy and cockle into chutes or upright spouts leading to separate receptacles located within the base of the mill, all as will be hereinafter more fully described, and then set forth in the claims.

In the drawings, Figure 1 is an elevation taken on the power side of the mill. Fig. 2 is an elevation of the opposite side. Fig. 3 is a plan view of the mill. Fig. 4 is a longitudinal section of the same. Fig. 5 is a top view of the doubled screen. Figs. 5^a and 5^b are sections of the double screen. Fig. 6 is a detail view illustrating the operation of a double shaker. Fig. 7 is a detail view of the chess-board. Fig. 8 is a detail view of the first screen below the hopper. Figs. 8^a and 8^b are sections of said screen. Fig. 9 is a perspective view illustrating the screen-shoe, upper screen, and movable agitator, and means for holding the lower screen in the shoe, so as to adapt it to be reversed or inverted. Fig. 10 is a view of

the fan and driving-gearing. Fig. 11 is a detail view of the fan-wheel, hub, and connection.

In the drawings, A is the fanning-mill frame. B is its drive-shaft, power being applied through the medium of a crank-handle, B', on the wheel B². The handle B' is made adjustable by means of a slot and set-screw, b b', so as to be lengthened or shortened to suit the desires of the operator. The wheel B² has a gear upon the inside of its periphery, which meshes with a pinion, C', on the fan-shaft C. Upon the face of the shaft is also an eccentric, E, which is embraced by an eccentric-strap, E', and that in turn is connected to a pitman or connecting-rod, E², which transmits the motion to the bell-crank E³, which agitates the shoe. The connection of the bell-crank with the shoe may be by a shortened link or arm, e, in which case the shoe will be given a motion corresponding directly to that of the bell-crank, or, as I term it, a "single motion." When, however, in operating upon certain grain, it is desired to have a quicker and more rapid vibration of the shoe, I employ a bent link or arm, e', which I design to make as an attachment, so that it may be readily put in instead of the bar e. This arm e' is of such length that it will project outward from the shoe to a point beyond but in line with the pivotal point of the bell-crank, and said arm is attached to the bell-crank beyond said pivotal point, the construction being such that as the bell-crank is moved by the pitman E² this arm e' will be carried alternately forward and back beyond the center of the bell-crank, and as it passes the center in either direction it forces the shoe toward the opposite side of the machine, thus giving it two motions or vibrations for every stroke of the bell-crank. The distance through which the shoe is vibrated is determined by shifting the point of connection of the pitman with the arm of the bell-crank nearer to or farther from the center of the bell-crank.

F is the hopper. F' is a sliding gate, which regulates the throat of the hopper. This gate is employed for varying the feed or discharge from the hopper, and is provided with a lever, F², fulcrumed at its extremity opposite the

handle by simply passing that extremity through a slot inside of the machine. It is pivoted to the sliding gate at f , so that by grasping the handle the gate is easily slid in or out, and is held in position by the engagement of a detent on the lever with the rack f' on the side of the machine. By thus passing the end of the lever through the side of the machine, as explained, that end of the lever opposite the handle is adapted to move in the slot to permit the swinging movements of the lever without liability of binding the gate in its ways.

G represents the shoe. G' represents its upper doublescreen, or that one which is the first beneath the hopper. This screen G' consists of an upper screen, g , and a lower screen, g' , of different mesh, the lower screen being the finest. A supporting-strip, g^2 , is arranged centrally between these two screens, and is provided with a beveled upper edge, so as to occupy as little screen space as possible and afford merely room for tacking the upper screen along this line to the slat. By this means the screens are held properly apart and both are permitted to operate in a normal manner. The lower edge of the slat is beveled the same as the upper edge, so as to occupy as little screen space as possible, yet permitting the lower screen to be tacked to it. To prevent straw and small sticks from thrusting themselves into the meshes of the screen, I locate at the head of this screen, along that portion which is beneath the feeding-throat, a surface, preferably of tin or sheet metal, against which the straw and sticks will impinge and be deflected off horizontally, so as to pass over the screen without projecting through the meshes. Instead, however, of employing such a surface of tin or sheet metal, I may simply widen that portion of the frame which is adjacent to the head of the screen, so that the frame of the screen may itself project beneath the throat of the hopper and serve to deflect the straw and sticks, as explained.

H represents what I term the "seed and market screen." It is like the one just described—the double screen—and similarly supported by an intermediate slat. The fabrics composing the screening-surfaces of the screen are of coarse and fine mesh, respectively, and when the former is at the top the small or market wheat passes through such coarse fabric upon the fine fabric below, and thence passes out through the orifice H' into a suitable channel, L , and thence down to its seed-box L' , while the seed-wheat would pass on over the top fabric, and thence to the floor at L^2 . When, however, it is desired to gather or collect solely market-wheat, it is customary to take out this screen, turn it end for end, and invert it. In order to permit the screen to be reversed and inverted, it is detachably secured to the shoe G by fitting it in grooves or ways made in its inner walls, as is shown in Fig. 9. It has usually been presumed that in

this condition whatever would pass through the uppermost finer fabric would surely pass through the lower and coarser fabric. I have discovered, however, in handling such apparatus that this is not the case, but that the smaller and imperfect seed passing through the upper and finer fabric is very liable to clog up between the two fabrics, and so impair the operation of the screen. To overcome this difficulty, I locate, in addition to the openings H' , similar openings, H^2 , at the opposite end of the screen, so that, instead of thus clogging up between the screens, the seed will find a discharge through these openings. Heretofore the double screens of this character have only been provided with the discharge-openings H' at one end, reliance having been placed entirely upon the coarseness of the lower screen when it was inverted and turned end for end. My improvement in this respect consists in providing similar openings, H^2 , at the opposite ends of these screens.

The chess-board I is located directly under the double screen G' , and at its discharge end is provided with a transverse channel, I^4 , formed by projecting strips $a' a^2$. The ends of the channel connect with the upper open ends of the spouts or chutes I' , located at opposite sides of the machine and adjacent to the side edges of the chess-board. The rear strip, a^2 , forms a channel, I^5 , which communicates at the points a^3 with the upper open ends of spouts or chutes I^2 , located at opposite sides of the machine, adjacent to the side edges of the chess-board. The spouts or chutes I' lead to the receptacle or drawer L' , while the spouts or chutes I^2 lead to the receptacle or drawer L^3 . By these means the timothy, cockle, and imperfect grain passing through the coarse upper fabric of the screen G' are caught by the fine lower fabric thereof, the timothy passing through the same upon the chess-board, while the cockle, being of larger size, passes down the lower fabric and out through openings at the tail of the screen, which delivers it to the transverse channel I^4 of the chess-board, whereby it is delivered to the spouts or chutes I' . The timothy passes by the channel I^5 to the spouts or chutes I^2 , and thus the cockle and timothy are respectively conveyed to the separate receptacles $L' L^3$, which latter are located in the base of the machine and form a part thereof.

An agitator, J , located on the shoe G , is for the purpose of keeping the throat of the hopper clear. This agitator is pivoted at one end on the shoe, and its other end can be conveniently detached, so that the agitator can be swung around on its pivoted end, as shown in Fig. 9, whenever it is not desired to have the agitator act on the material in the hopper-throat, as when coarse material is to be operated on and a wide open throat is required.

N represents a hub, which is held upon the fan-shaft by a set-screw, n , and has sockets for receiving the arms of the fan-blades M .

The agitator, as shown in Fig. 9, consists of a zigzag or cranked rod, the ends of which are bent in downward directions, so as to fit into seats in the screen-shoe or into eyes or staples r on the inner faces of the side walls of said shoe. In practice this agitator can be moved into the position shown in dotted lines without stopping the mill, and retained in such position by a seat or staple, r' , which receives the outer end of the agitator.

Having thus described my invention, what I claim is—

1. In a fanning-mill, the combination of a feed-hopper, the screen-shoe having seats in its side walls, the cranked agitator-rod J, having end projections or pintles fitted in said seats and adapted to be retained by the same in a position transversely to the shoe and in the throat of the feed-hopper, and a retaining device for holding the agitator alongside of or parallel with one of the side walls of said shoe, substantially as described.

2. In a fanning-mill, the combination of the reversible and invertible lower screen, H, provided with upper and lower screen-surfaces of

different mesh, and having discharge-openings H' and H^2 in its end bars, with the screen-shoe adapted to receive the screen and hold it with either screen-surface uppermost, substantially as described.

3. In a fanning-mill, the double screen, consisting of a frame having a central longitudinal supporting slat or bar provided with beveled top and bottom edges, and the screen-surfaces secured to the frame and supporting-bar, substantially as described.

4. In a fanning-mill, the combination of the separate receptacles L' and L^3 , located within the base of the mill, and the upright spouts or chutes I' and I^2 , with the chess-board I, having channels I^4 and I^5 , communicating, respectively, at their ends with the upper ends of the spouts or chutes, substantially as described.

In testimony whereof I sign this specification in presence of two witnesses.

DELOS CARPENTER.

Witnesses:

N. S. WRIGHT,
WILLIAM F. FORD.