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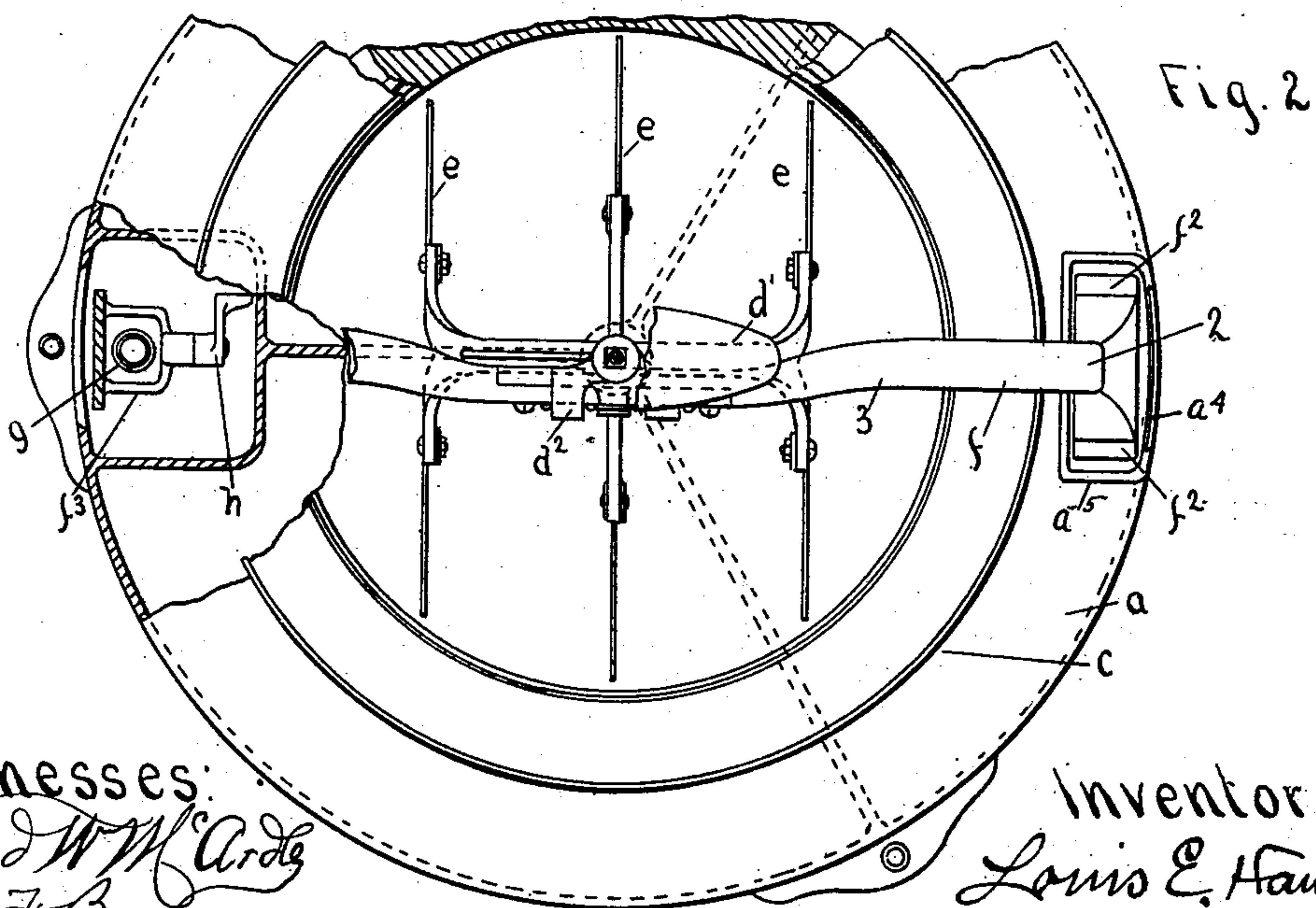
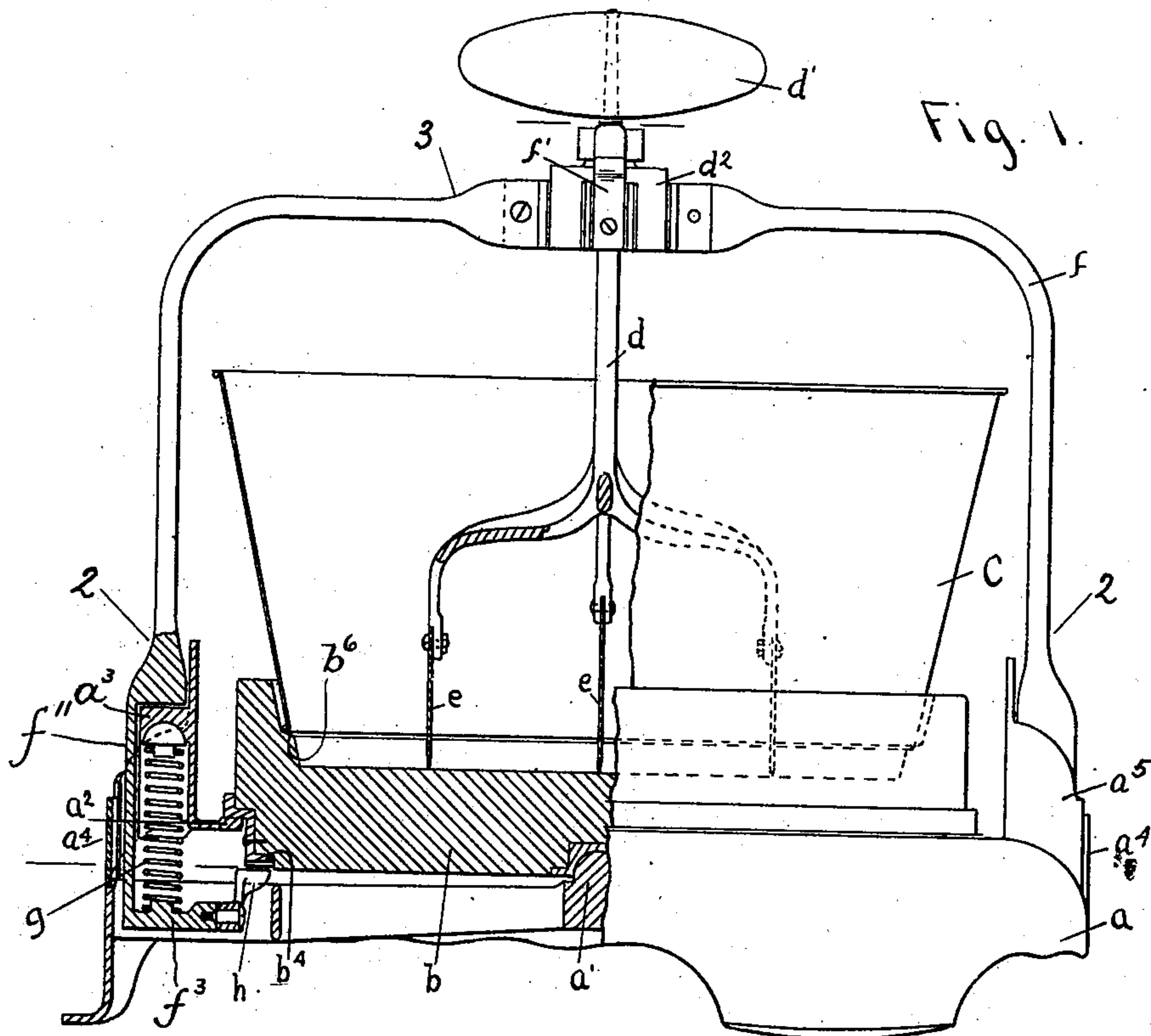
Patented Feb. 26, 1901.

L. E. HAWES.
CHOPPING MACHINE.

(No Model.)

(Application filed Oct. 15, 1897.)

3 Sheets—Sheet 1.



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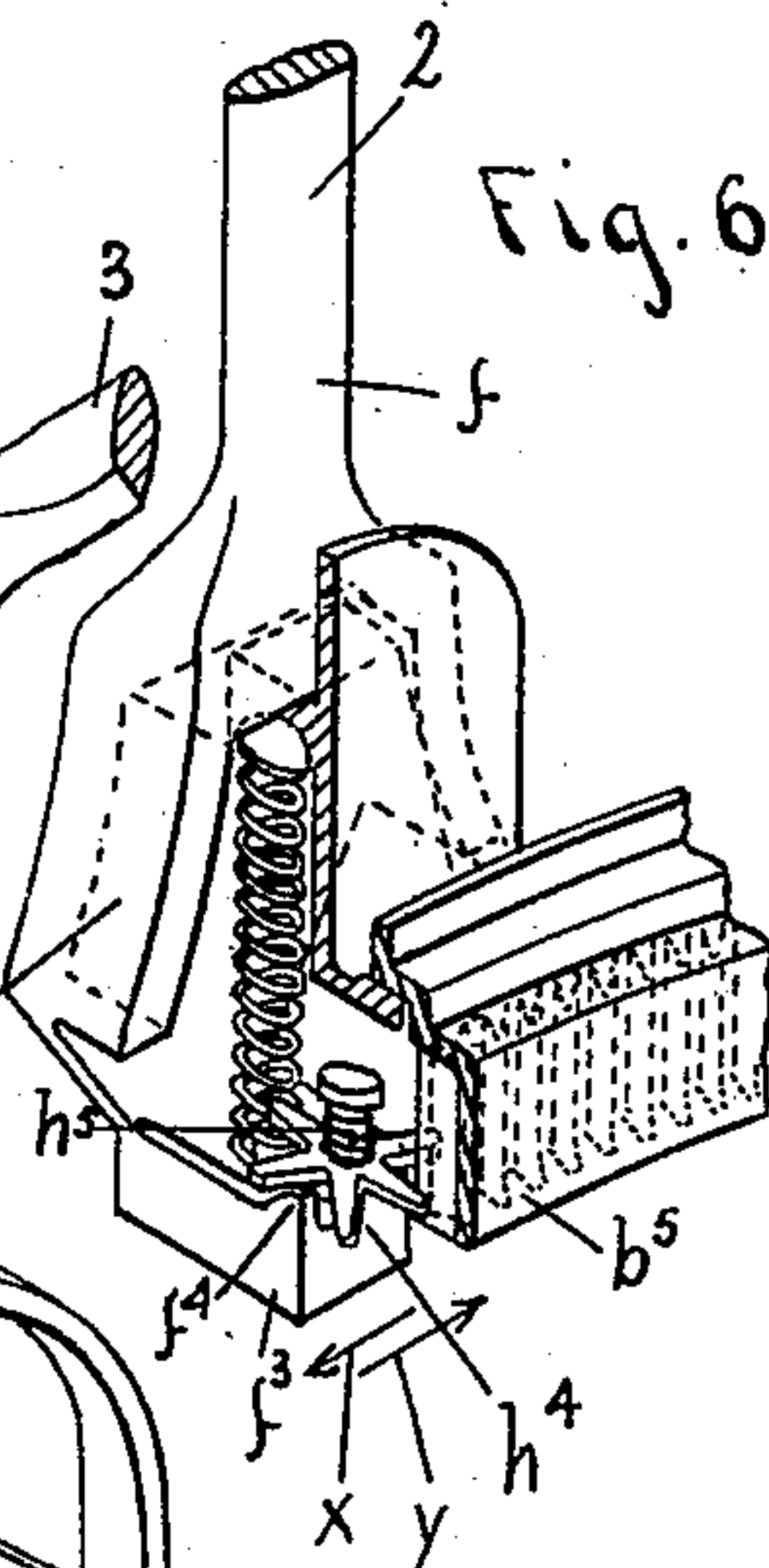
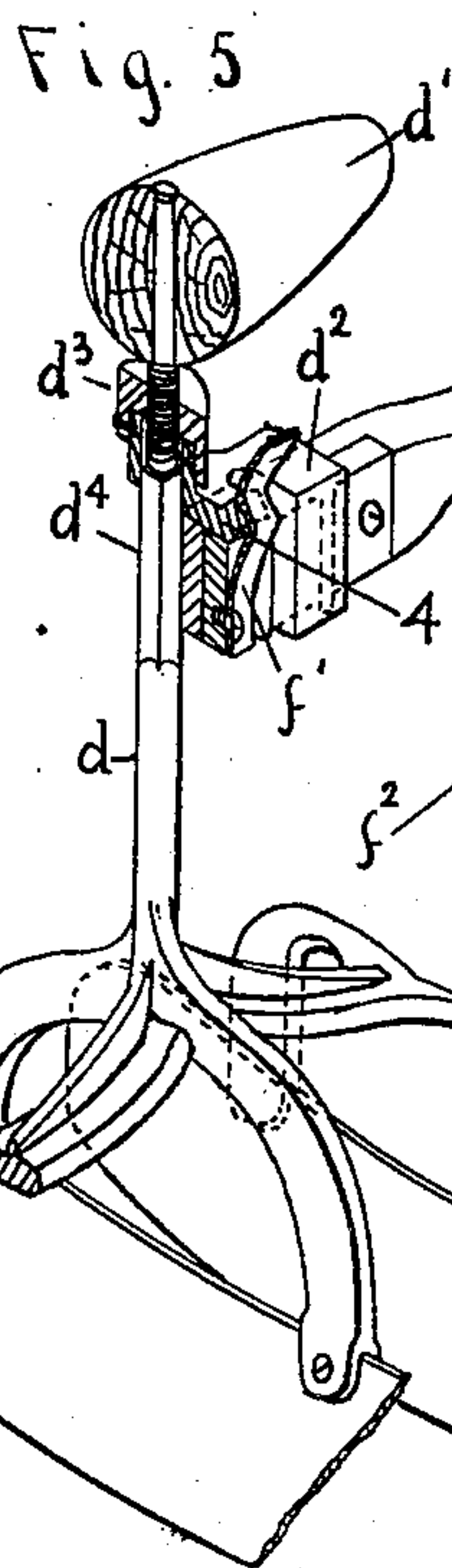
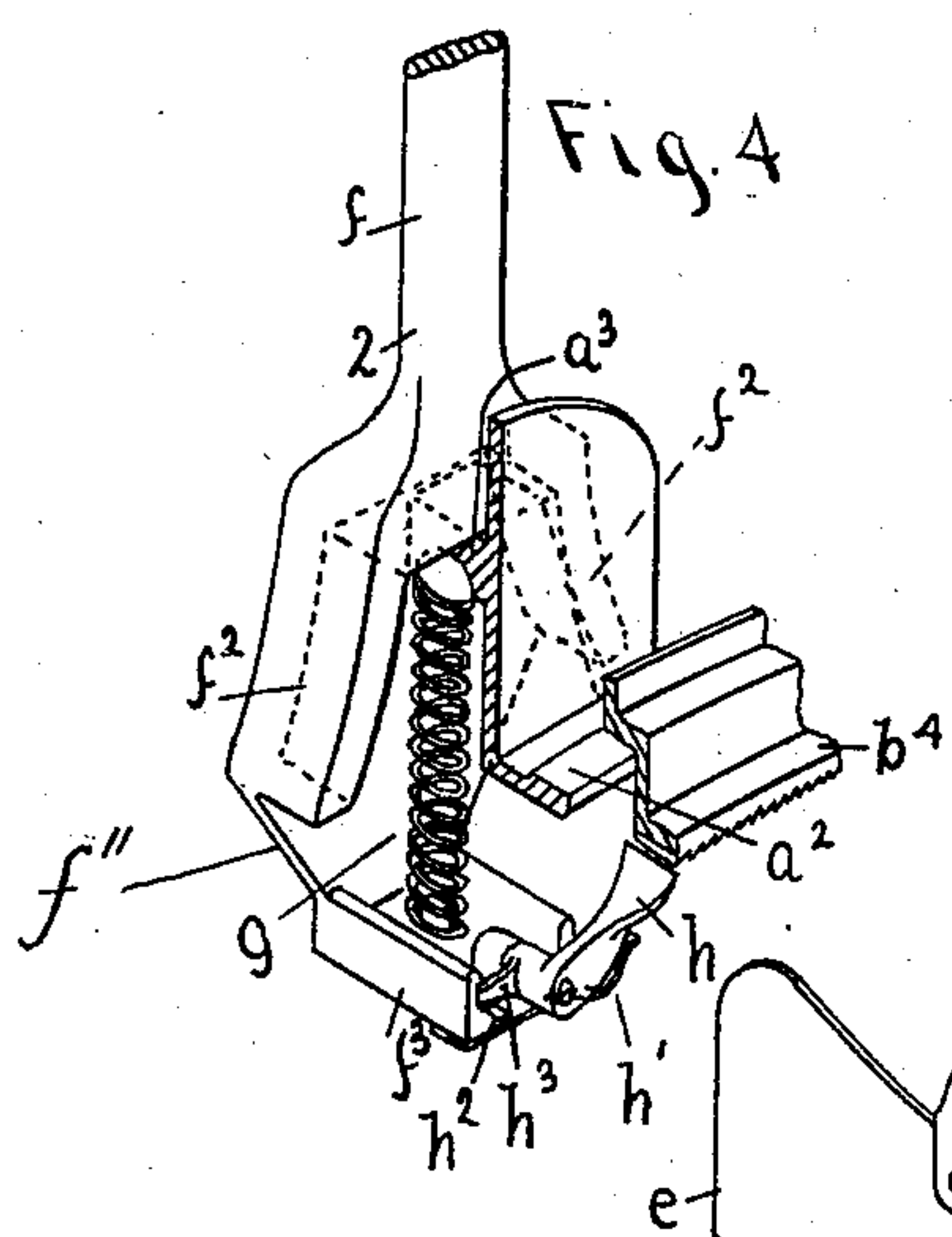
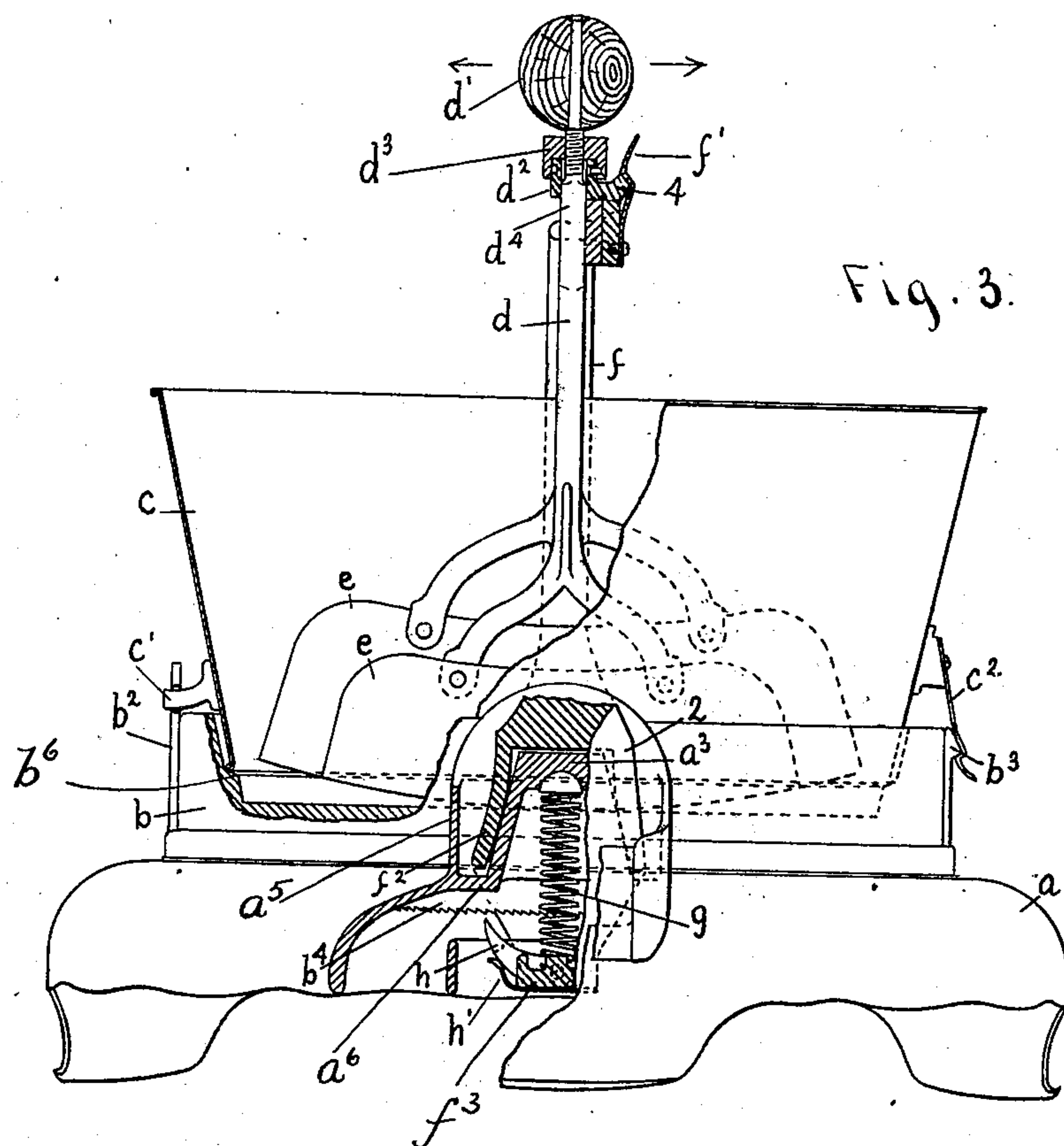
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3 Sheets—Sheet 2.



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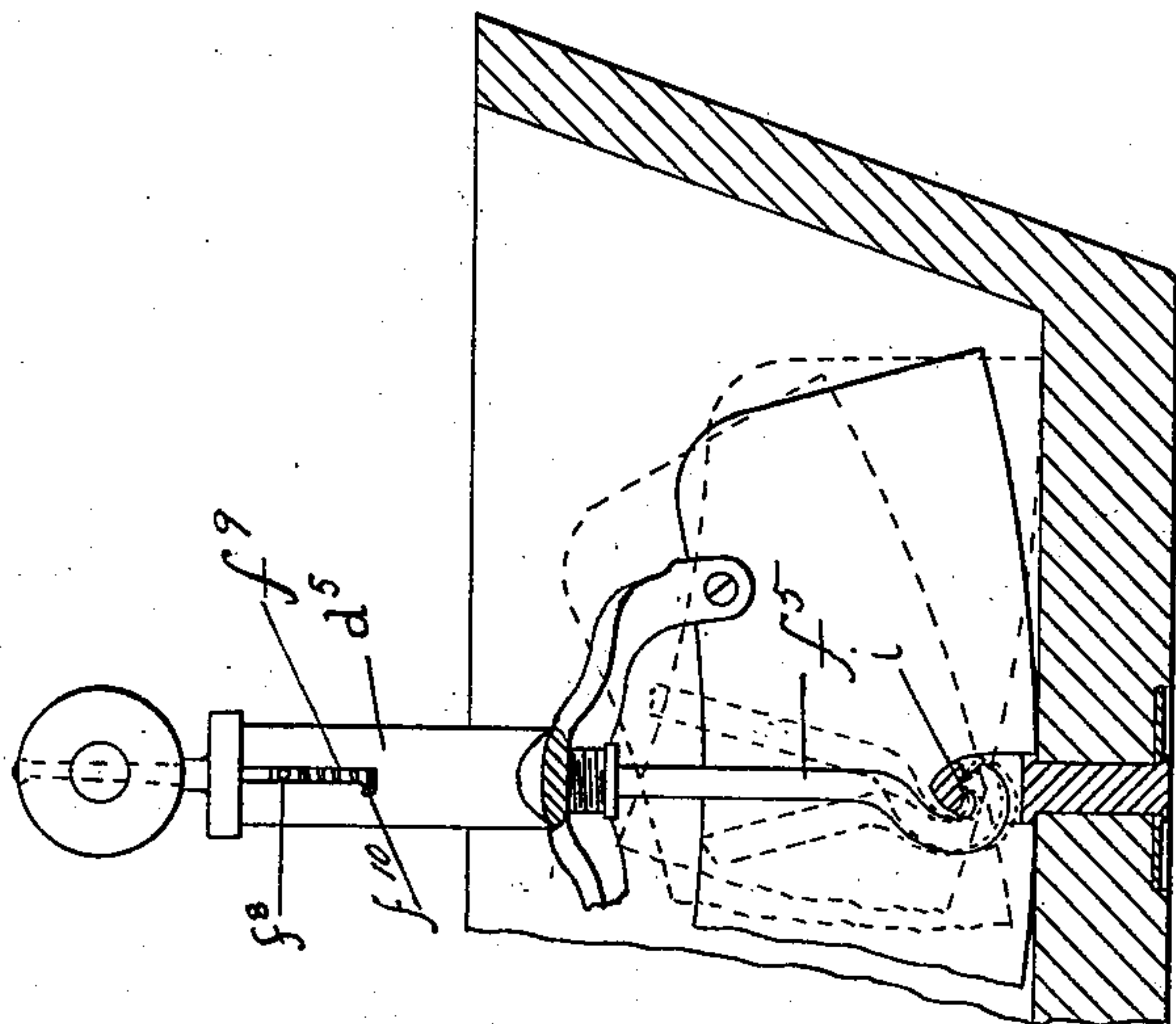
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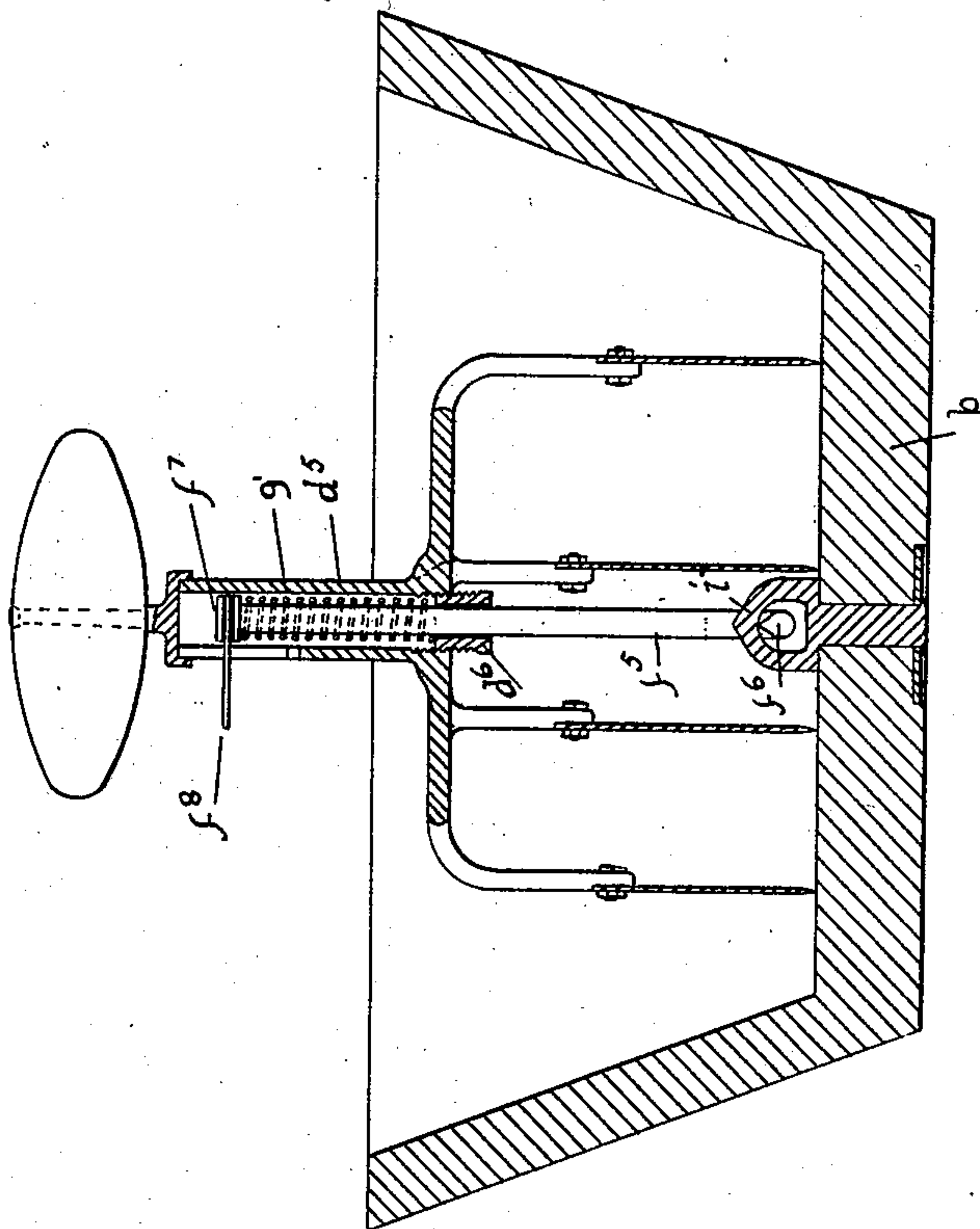
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(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

LOUIS E. HAWES, OF WAKEFIELD, MASSACHUSETTS.

CHOPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 668,774, dated February 26, 1901.

Application filed October 15, 1897. Serial No. 655,262. (No model.)

To all whom it may concern:

Be it known that I, LOUIS E. HAWES, of Wakefield, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Chopping-Machines, of which the following is a specification.

This invention has relation to machines for cutting, chopping, or mincing meat, vegetables, &c.; and it consists in certain novel features of construction and arrangement in chopping-machines, which I shall now proceed to describe and claim.

Of the accompanying drawings, forming a part of this application, Figure 1 represents a view, partly in front elevation and partly in vertical section, of a chopping-machine constructed in accordance with my invention. Fig. 2 represents a top plan view of the same partially broken away. Fig. 3 represents a side elevation with parts broken away and other parts in vertical section. Fig. 4 represents a detail perspective view of certain parts which will be hereinafter referred to. Fig. 5 represents a detail perspective view of the knife-carrier and knives, with parts broken away and other parts in section, showing connections of carrier with rock-frame and adjustment of knife-carrier. Fig. 6 represents a view similar to Fig. 4, showing a modification. Figs. 7 and 8 represent median vertical sections at right angles, showing a modification of my invention.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, and for the present to Figs. 1 to 5, inclusive, a designates a circular supporting-frame, in the center of which is an upwardly-projecting stud a' , forming a pivot on which revolves a base or block b , made of wood or other suitable material. The edges of the block slide on a circular track a^2 , attached to the frame, and the top of the block is hollowed or dished out, so as to form a shallow bowl, which I have here shown with a flat floor on which the knives operate, but which may be provided with a floor of curved or other conformation. The lower edges of a can or hopper c fit within the recess of the block b and rest on an annular beveled shoulder b^6 , formed on the

block. The can is secured to said block by means of a lug c' , which engages an apertured plate b^2 , and a spring-catch c^2 at the opposite side of the hopper, which engages a plate b^3 on the outside of the block, the block b and hopper c together constituting a removable tray.

d designates a knife-carrier provided at its upper end with a handle d' and having three forks or branches at its lower end, to which are affixed the three chopping-knives $e e$ by means of screw-bolts, rivets, or other suitable fastenings. The lower or cutting edges of the knives are curved to the arc of a circle, and the cutting or chopping motion is given to them by working the handle d' back and forth and causing the knives to roll or rock on the block b . The knife-carrier d is secured to a rock-frame f , consisting of two upright arms 2 2 and a cross bar or arm 3. To the latter is affixed the carrier d by means of a clamping-block d^2 , formed with legs or forks which fit over the bar 3. A spring-catch f' is provided on the bar 3 and an abutment 4 on the clamping-block, the said catch engaging the said abutment so as to lock the knife-carrier in place on the rock-frame, while at the same time rendering it readily removable therefrom, the disengagement being effected by merely forcing back the spring f' and lifting off the carrier. The knives may then be readily cleaned or sharpened. After the removal of the knives the tray may then be removed from the supporting-frame and easily cleansed, the separation of the hopper c from the block b rendering all parts accessible. The knife-carrier is made adjustable vertically by screw-threading its upper end and providing a revoluble nut d^3 to fit the screw-threaded portion. The nut embraces a circular head on the clamping-block d^2 , on which is a peripheral groove occupied by a screw pin or pins on the nut, so that said nut is revoluble, but not vertically movable, and when turned will cause the carrier to move vertically. The nut may be clamped in place by screwing up the pin against the bottom of the slot. The carrier d is prevented from rotating by being provided with a squared portion d^4 , which fits in a square socket in the clamping-block.

The rock-frame f is designed to guide and hold in position the chopping-knives ee . Its lower ends on either side of the hopper are accordingly provided with suitable guiding and retaining devices, which are or may be constructed as follows: On each side of the supporting-frame a is formed a single upwardly-projecting tooth a^3 , which is straddled by jaws $f^2 f^2$, formed on the lower end of the upright arm 2. The inner faces of said jaws, which contact with the tooth a^3 , are preferably involute curves on a pitch-circle which coincides with the curvature of the cutting edges of the knives ee , which roll on the block b . It will readily be seen, then, that the tooth a^3 corresponds to one tooth of a stationary rack and that the two jaws f^2 correspond to two teeth of a pinion which rolls on said rack, the circle of curvature of the knives being preferably the pitch-circle of the pinion and the face of the block b being preferably the pitch-line of the rack. Should the pitch-line of the rack lie above or below the circle of the knives or should the curve of the knives depart from the pitch-curve of the teeth f^2 for any cause, there will be a combined rolling and sliding motion of the knives.

The body of the tooth a^3 is hollowed out, and a spring g is interposed between the under side of said tooth and an inwardly-projecting lip or flange f^3 , formed on the lowermost extremity of the upright arm 2 of the rock-frame, the upper end of said spring being preferably provided with a ball-and-socket contact, as shown. The arrangement on each of the uprights 2 is the same, and a spring is provided for each. The tension of the spring g is downward, so that when the lower ends of the arms swing upwardly by reason of the reciprocation of the handle d' the springs are compressed. They therefore tend to maintain the rock-frame and knife-carrier in a vertical position and at the same time are so constructed as to allow the knives to yield when an obstruction, such as a bone, is encountered in the material which is being chopped.

The operating parts connected with the lower ends of each of the arms 2 are inclosed, as shown, in a surrounding box or casing a^5 , in the side of which is a removable plate a^4 . A plate or web f'' is also formed between the teeth $f^2 f^2$. This construction protects the hands of the operator in manipulating the machine.

The lower ends of the upright arms 2 in swinging have a certain amount of horizontal displacement which I utilize in revolving the chopping-block b by means of a pawl-and-ratchet device. The ratchet consists of a circular ring b^4 , affixed to the bottom edge of the block b and having teeth on its under face. On the projecting flange f^3 at the lower end of the arm 2 is pivoted a pawl h , which is pressed upwardly by a spring h' . Its up-

ward motion is limited by a pin h^2 on the flange f^3 engaging a lug h^3 on the pawl-hub, Fig. 4. It will be seen that the spring h' constitutes a yielding stop to hold the pawl in position when not engaged with the rack. Each time that the rock-frame and knife-carrier are moved to the right, Fig. 3, the lower end of the arm 2 is moved to the left and upwardly, so that the pawl h engages the ratchet b^4 and causes the block to revolve a certain distance. A single pawl may be employed, or both uprights of the rock-frame may be equipped with pawls, which work in opposite directions, so as to revolve the block on both the forward and backward strokes of the handle d' .

At the extremity of a full stroke of the rock-frame the lower end of the arm 2 strikes against a portion a^6 of the supporting-frame a , (see Fig. 3,) which constitutes a stop for the arm. A rubber or other buffer may, if desired, be placed at this point on the frame and at analogous points where the arms strike, or said buffer may be placed on the flanges f^3 at the lower ends of the arms.

Fig. 6 shows a modification of the block-revolving mechanism which I may employ instead of the above-described pawl-and-ratchet device. The modification consists in providing a circular rack b^5 on the edge of the revolving block b' , whose teeth are engaged by the teeth of a small pinion h^4 , loosely mounted on a vertical stud which is affixed to the flange f^3 . The pinion is adapted to slide vertically on its stud and is pressed downwardly by a spring h^5 . A beveled abutment f^4 is formed on the flange f^3 , over which the teeth of the pinion slide when the lower end of the arm 2 moves in the direction of the arrow x , the pinion sliding upwardly on its stud as its teeth pass the abutment. There is sufficient friction of the block b on its track to keep said block stationary when the pinion h^4 turns on its pivot. When, however, the arm 2 moves in the direction of the arrow y , a tooth of the pinion strikes against the vertical face of the abutment f^4 and prevents said pinion from turning. The rack and block b are therefore moved with the arm 2, so as to revolve the block. The revolution of the block b and hopper c with respect to the chopping-knives e brings different portions of material successively under the knives, and thus insures the thorough mincing of all the material contained in the hopper.

In Figs. 7 and 8 I have shown a modification of my invention in which the rock-frame consists of a central swinging rod f^5 , having on its lower end a hook f^6 , which takes under a loop i , which may be fixed, as shown, or swiveled in the center of the block b , and having on its upper end a head f^7 , occupying a socket in the upper portion of a knife-carrier d^5 . The block b becomes in this case the supporting-frame. A sleeve-nut d^6 is screwed into the lower end of the socket for purposes

of adjustment, and between said nut and the head f^7 is interposed a spring g' . The spring is compressed when the knife-carrier is rocked, the arrangement being equivalent in operation to that previously described. Four knives are shown in this latter construction instead of three. When it is desired to remove or insert the carrier d^5 , the rod f^5 is unhooked from or hooked to the loop i by depressing it against the spring g' , a small arm f^8 being provided for this purpose. The said arm is held in a groove in the head f^7 and projects laterally through a slot f^9 in the wall of the carrier-socket, a recess d^7 being provided at the lower end of the slot to temporarily hold the arm f^8 while inserting the hook in the loop. The chopping-block b may be revolved by hand or by any other suitable means, as desired, or the knife-carrier d^5 may be revolved about the rock-frame f^5 .

I have illustrated and described means for operating the chopping-machine directly by hand; but it is obvious that steam or other power or a different application of hand-power could be used to reciprocate the knives and run my improved chopper.

An important feature of the chopping-machine illustrated in Figs. 1 to 6, inclusive, is the convenient removability of its parts. By merely retracting the spring f' the knife-carrier d may be disengaged from the rock-frame f and removed. Then without disturbing the rock-frame the hopper or can c may be removed by disengaging its catch c^2 and withdrawing it by an upward and transverse movement, and lastly the block b may be lifted from its support and removed in a like manner, or the block and hopper may both be removed together and afterward separated, if desired.

Having thus explained the nature of my invention and described an embodiment of the same, although without having attempted to set forth all the ways in which it may be constructed or all the modes of its use, I declare that what I claim is—

1. A chopping-machine comprising a rotary block, a supporting-frame, a rock-frame carrying a gang of knives and engaged at its lower portion with the supporting-frame on either side of the block, a handle adapted to be grasped to operate the rock-frame and knives, means carried by the lower portion of said rock-frame for rotating the block, and means connected with the rock-frame for automatically returning said frame and knives to an intermediate position upon the release of the handle.

2. A chopping-machine comprising a rotary block, a gang of knives adapted to operate by a reciprocatory rolling motion on said block, a rock-frame carrying said knives, a ratchet connected with the block, and a pawl connected with the lower portion of the rock-frame, and adapted upon the reciprocation

of said rock-frame to engage the ratchet and rotate the block, that portion of the rock-frame to which the pawl is attached having a combined vertical and horizontal movement.

3. A chopping-machine comprising a supporting-frame, a rotary block, a rock-frame carrying a gang of knives and engaged at its lower portion with the supporting-frame on either side of the block, and means carried by the lower portion of said rock-frame for rotating the block.

4. A chopping-machine comprising a block, a gang of vertical knives, a knife-carrier supporting said knives, a rock-frame, and a clamping device for detachably securing the knife-carrier to the rock-frame, the said device comprising a clamping-block adjustably secured to the knife-carrier and having legs or forks adapted to fit over one of the bars of the rock-frame, a lug on said rock-frame, and a spring-catch on the clamping-block adapted to engage said lug and secure the block and knife-carrier to the rock-frame.

5. A chopping-machine comprising a supporting-frame, a rotary block, a rock-frame carrying a gang of knives and having portions extending downwardly on either side of the block, means for guiding said rock-frame on the supporting-frame, means on said rock-frame for rotating the block, and springs interposed between the supporting-frame and the lower portion of the rock-frame, the said springs being so disposed as to normally hold the knives in an intermediate position and to permit said knives and the rock-frame to yield when an obstruction is encountered.

6. A chopping-machine comprising a supporting-frame, a rotary block removably mounted thereon, a rock-frame engaged with the supporting-frame on opposite sides of the block and having upright side portions and a transverse top portion, the rock-frame being constructed to permit the removal of the block without disturbing said rock-frame, a gang of knives operating on the block, and a knife-carrier supporting said knives and removably secured to the rock-frame, the block being removable upon the removal of the knife-carrier from the rock-frame.

7. A chopping-machine comprising a supporting-frame, a rotary block mounted thereon, a hopper removably secured to the block, a rock-frame engaged with the supporting-frame on opposite sides of the block and having upright side portions and a transverse top portion, the rock-frame being constructed to permit the removal of the hopper from the block without disturbing said rock-frame, a gang of knives operating on the block, and a knife-carrier supporting said knives and removably secured to the rock-frame, the hopper being removable upon the removal of the knife-carrier from the rock-frame.

8. A chopping-machine comprising a block,

a rock-frame, a gang of knives, a knife-carrier supporting said knives, and a spring-clamp connecting the said knife-carrier and rock-frame and permitting the former to be readily attached to and removed from the latter.

In testimony whereof I have signed my

name to this specification, in the presence of two subscribing witnesses, this 12th day of October, A. D. 1897.

LOUIS E. HAWES.

Witnesses:

C. F. BROWN,

A. D. HARRISON.