

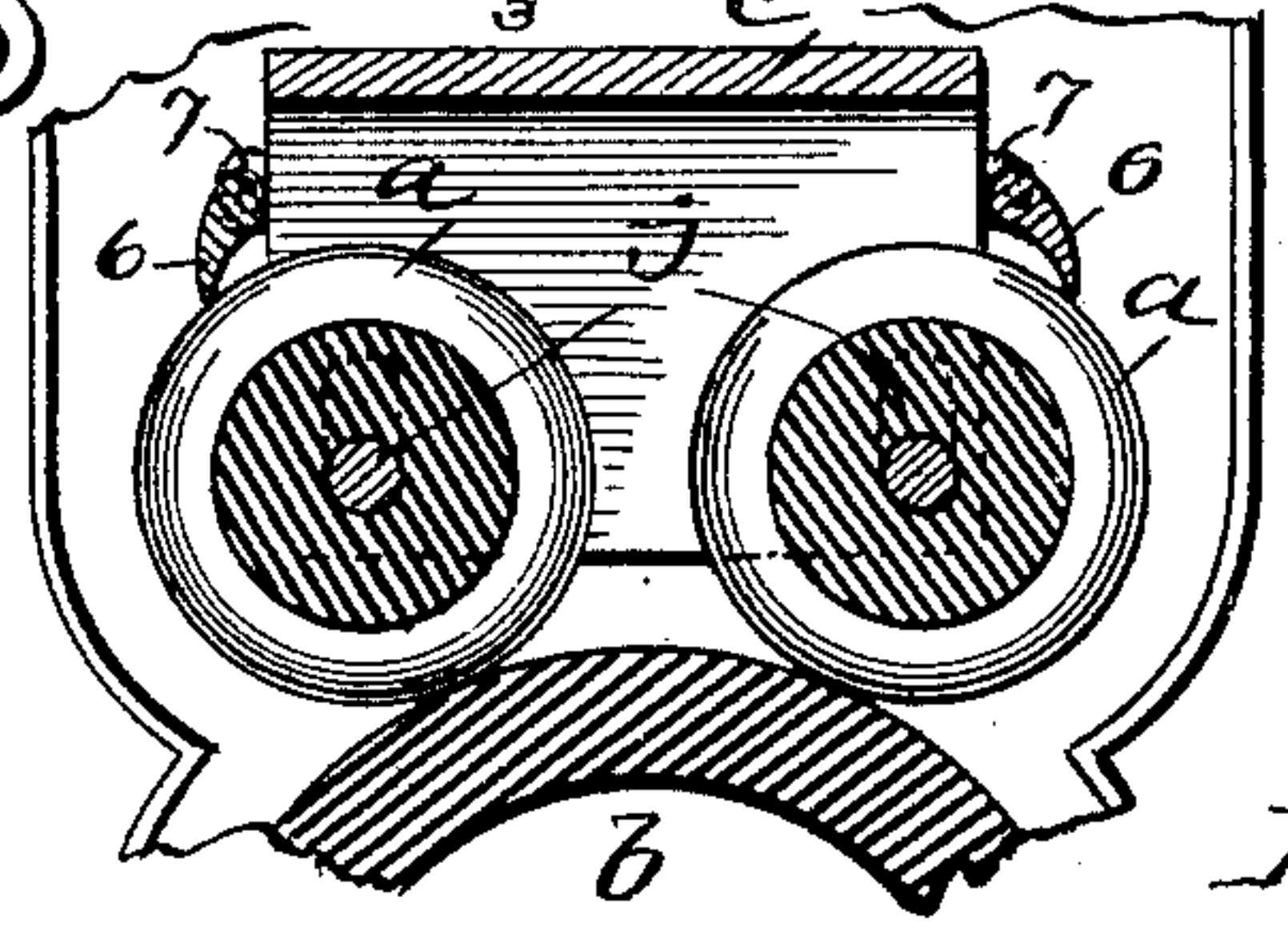
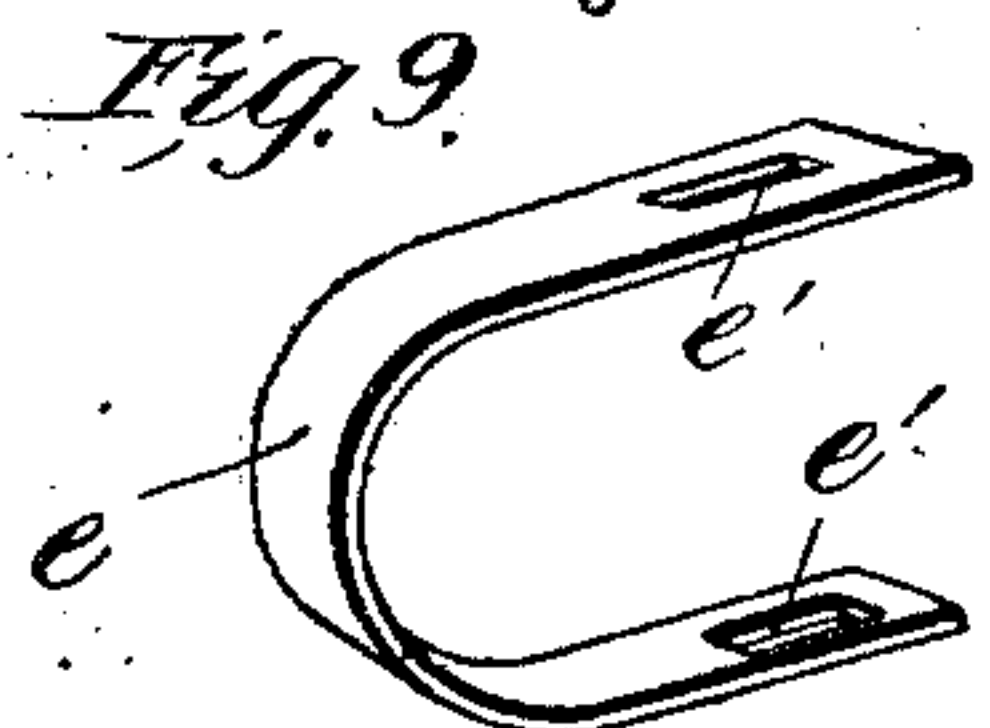
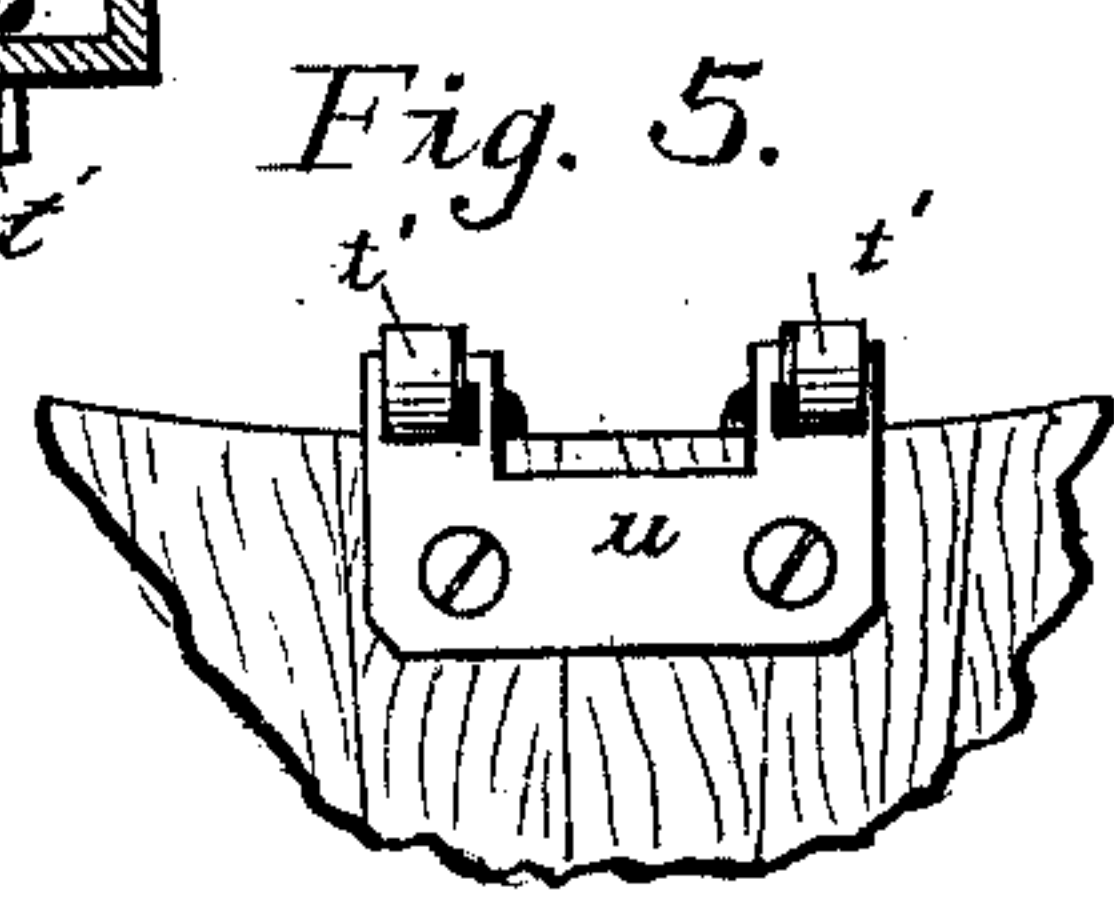
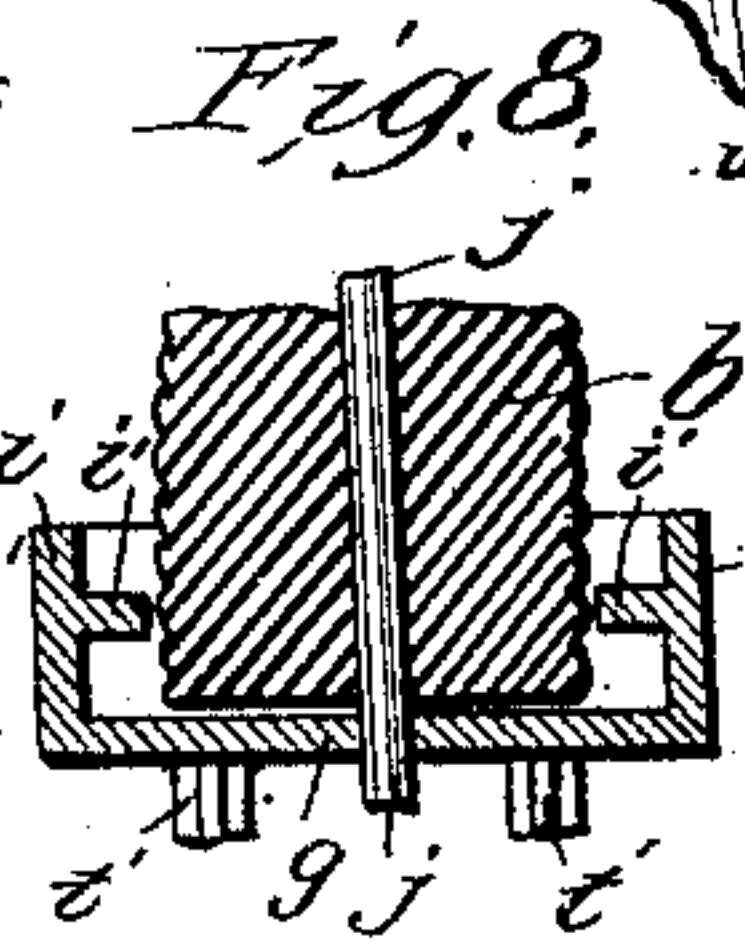
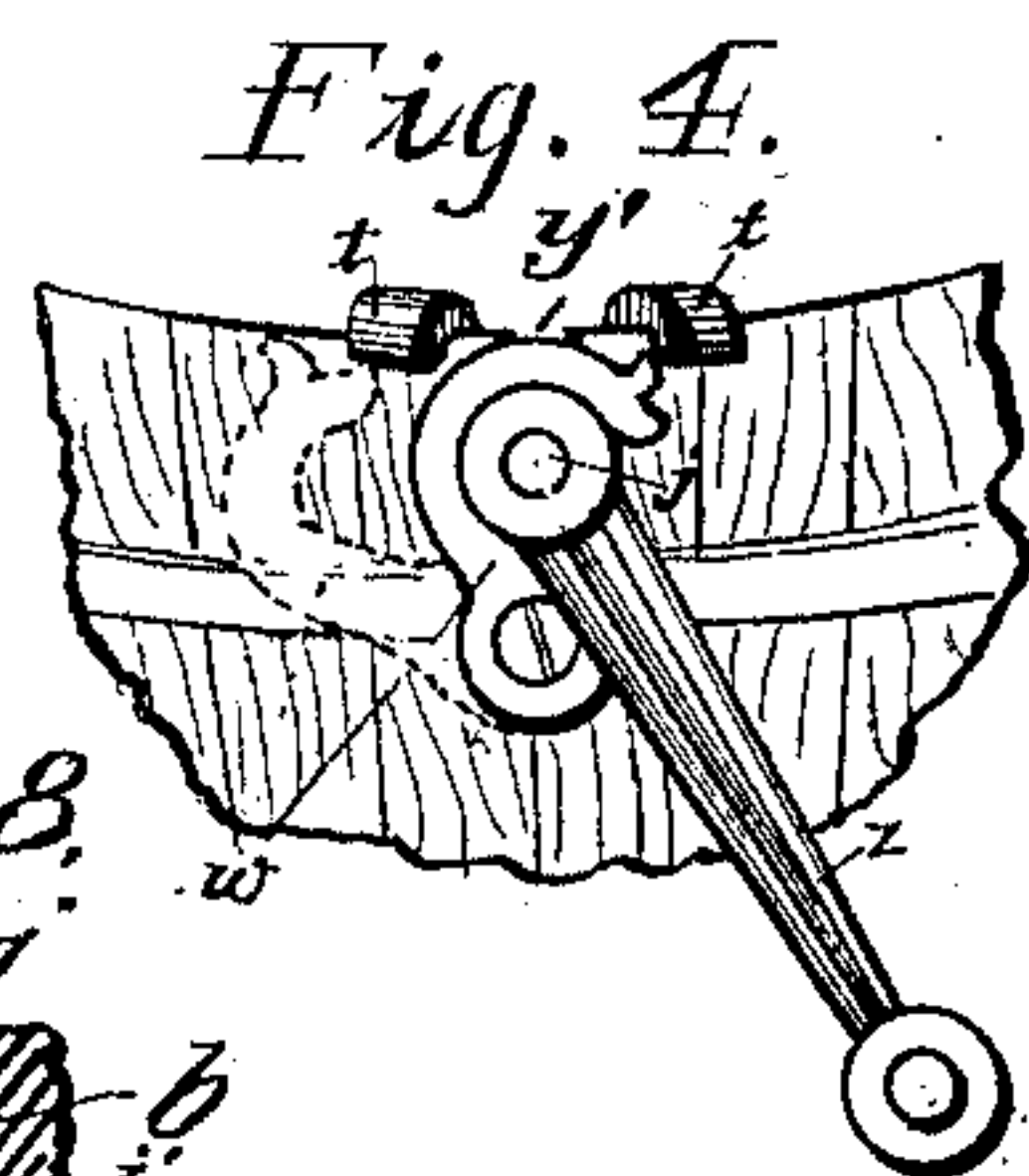
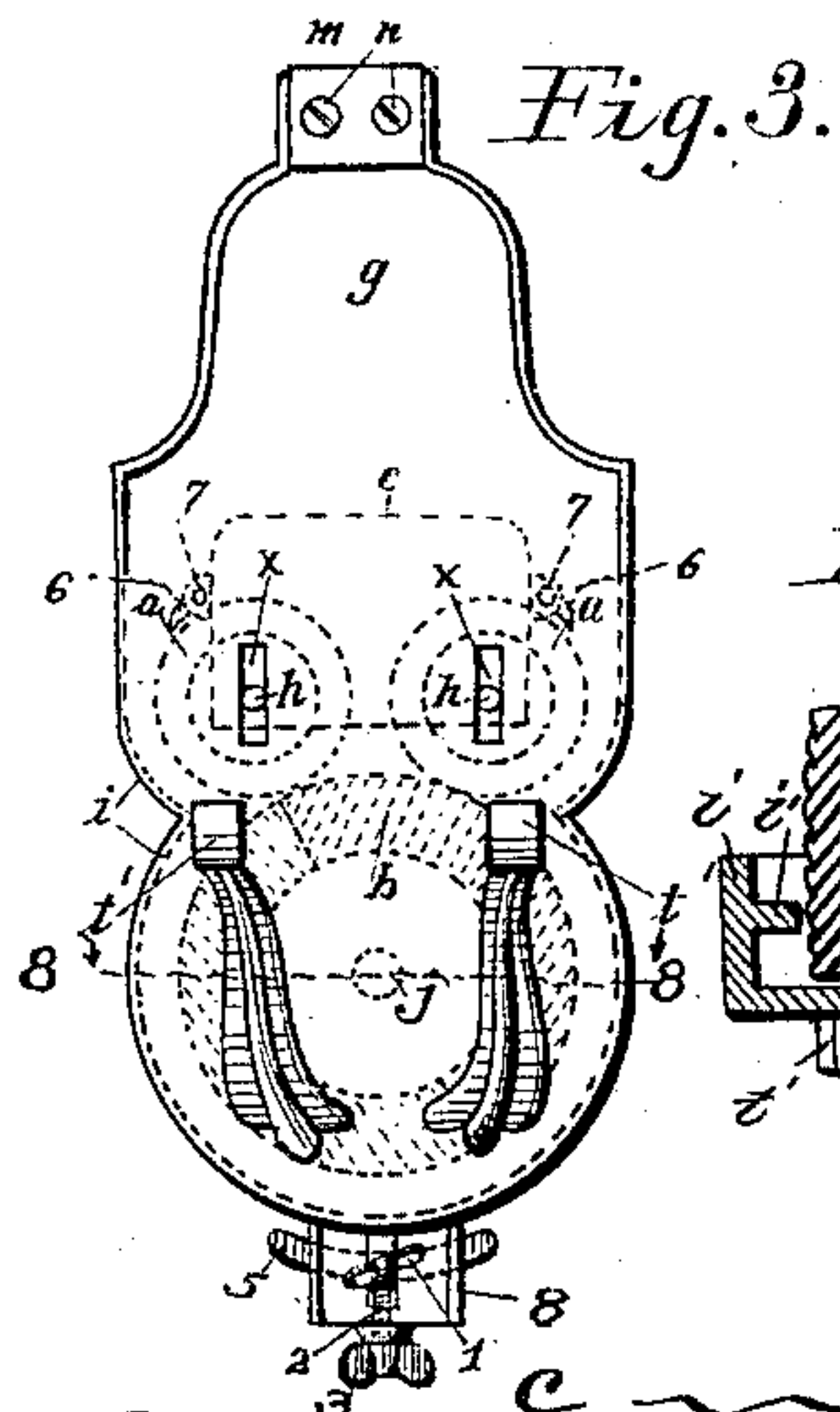
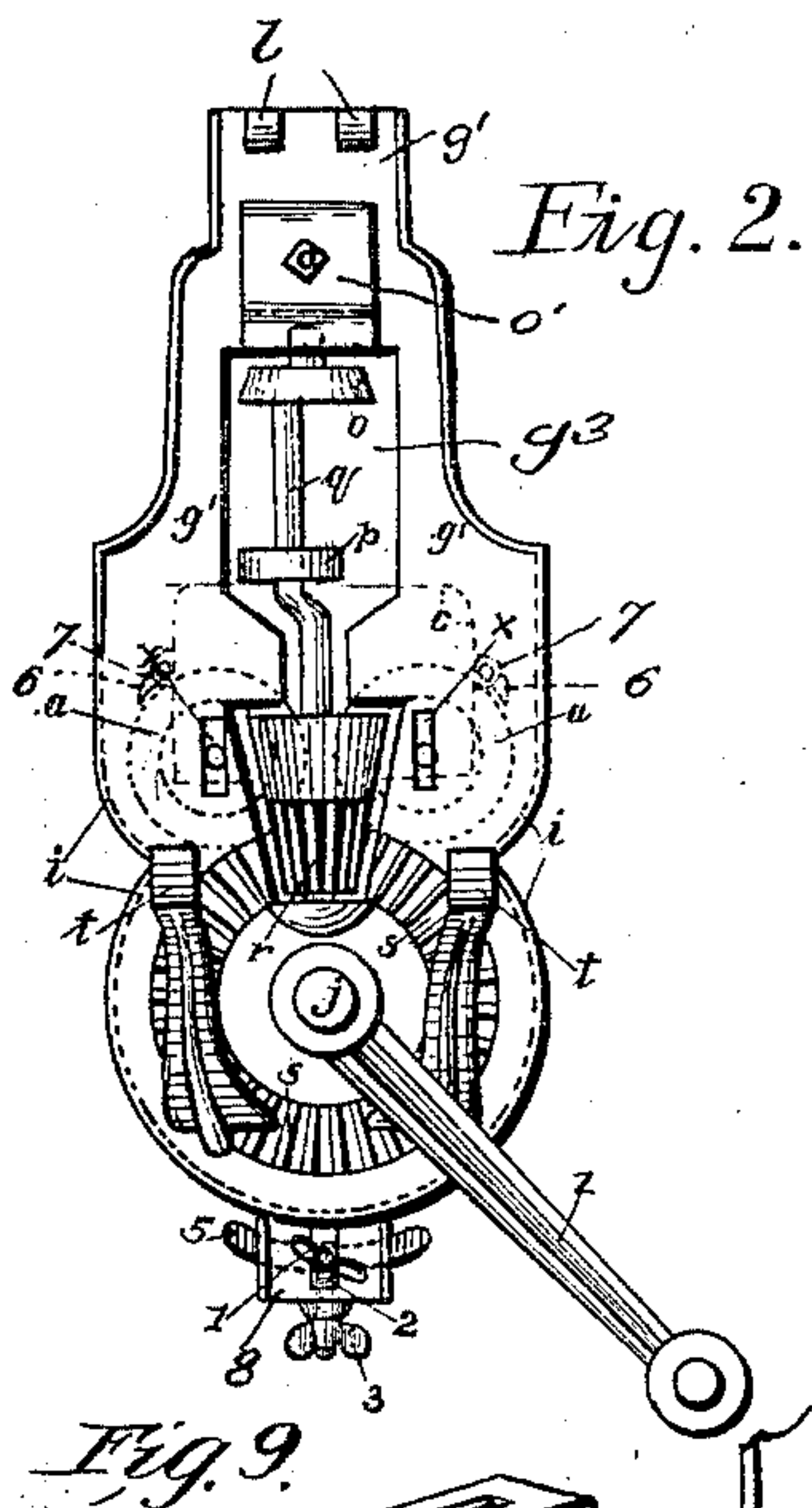
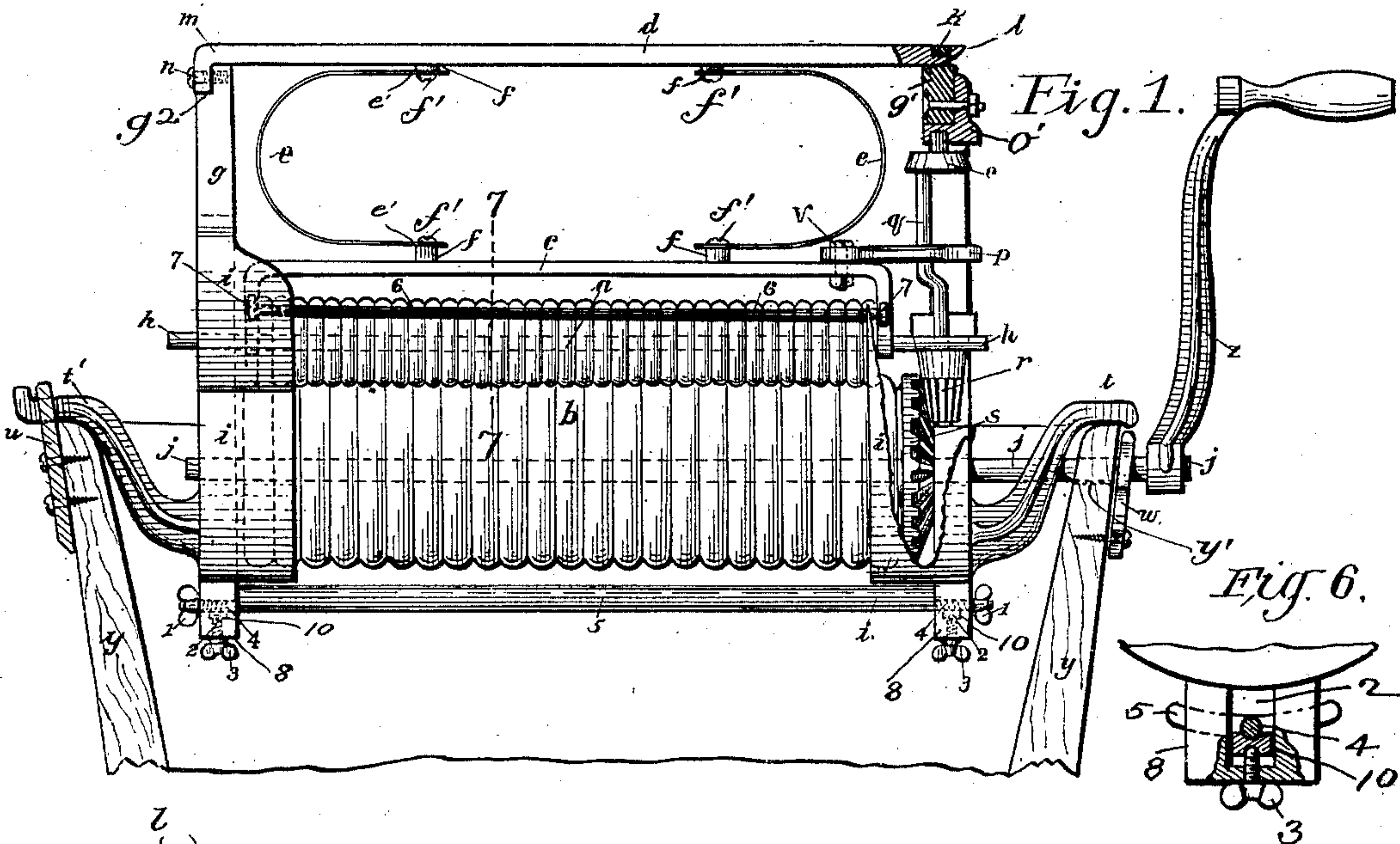
No. 711,407.

Patented Oct. 14, 1902.

H. J. LOCKHART.
WASHING MACHINE.

(Application filed Sept. 13, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

HORATIO J. LOCKHART, OF FOSTORIA, OHIO, ASSIGNOR OF TWO-THIRDS
TO CALVARY A. MORRIS AND BUDD W. OSBORN, OF TOLEDO, OHIO.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,407, dated October 14, 1902.

Application filed September 13, 1901. Serial No. 75,279. (No model.)

To all whom it may concern:

Be it known that I, HORATIO J. LOCKHART, of Fostoria, in the county of Seneca and State of Ohio, have invented a new and useful Improvement in Washing-Machines, of which the following is a specification.

My invention relates to improvements in washing-machines in which the articles to be washed are drawn between revolving rollers, one (or more) of which rollers has also a longitudinal reciprocating movement to accomplish the necessary rubbing of the goods to be washed and to secure an even and thorough rubbing of the same, and has for its object to produce a simple, compact, and efficient device to accomplish the results above specified and is designed as an improvement on the mechanism shown in patent granted to me April 3, 1888, and numbered 380,396.

My invention consists of such construction, combination, and operation of parts, as will be hereinafter shown and described, and pointed out in the claims.

In the drawings hereunto annexed, Figure 1 is a side elevation, partly in section. Fig. 2 is an end elevation of the operating end of the device. Fig. 3 is an end elevation of the opposite end of the device. Fig. 4 is a view showing ends of the supporting device and means for locking the shaft of the large roller in place. Fig. 5 is an outside view of a portion of the tub, showing the bracket for attaching the opposite end of the device to the tub. Fig. 6 is a detail section illustrating the adjusting-screw. Fig. 7 is a detail section on line 7 7 of Fig. 1. Fig. 8 is a sectional view taken on line 8 8 of Fig. 3. Fig. 9 is a detail view of one of the springs *e*.

The frame of the device is made of metal or wood and of suitable sizes and consists of two end uprights *g* and *g'*, connected at the top by the flat stay-bar *d* and a curved trough-shaped stay-bar 5 at bottom, as shown. The top cross or stay bar is bifurcated at one end, the bifurcations *l l* being made hook-shaped, said hooked-shaped portions being passed through slots *k k* in the upper end of upright *g'*. The opposite end of the bar *d* is provided with a downwardly-turned portion *m*, which rests on a shoulder *g²*, formed on the upper portion of upright *g*, and is se-

cured thereto by the screws *n n*. The upright *g'* is provided with the opening *g³*, within which is secured the upper-roller-reciprocating mechanism, as will be hereinafter fully described. In the uprights is journaled the large lower roller *b* by the axle or shaft *j*, one end of which extends through and beyond the upright *g'* and has secured to it the crank-handle *z*, by means of which said roller is revolved. The uprights are provided with the inwardly-projecting flanges *i i*, which are curved and ribbed on their inner faces, as at *i'*, said rib *i'* being adapted to closely surround but not bind upon the lower and upper rollers, whereby the goods being washed will be prevented from getting in between the curved flanges and the rollers and spreading around the ends of the same. To the outside of each upright is cast or secured hangers *t t* and *t' t'*, said hangers being curved outwardly at their upper ends, the ends of hangers *t t* having also downwardly-curved ends which embrace the upper edge of the washtub *Y* and the hangers *t' t'* having their ends turned upwardly, forming hook portions adapted to pass through and remain secured in slots formed in keeper *U*, secured to the tub diametrically opposite the point where hangers *t t* rest when the washer is in its operative position.

The curved trough-shaped lower stay-bar 5 is designed to be provided at each end with a reduced portion 4, which is screw-threaded, that passes through a vertical slot 2 in a lug or extension 8 at the lower end of each upright. On each reduced threaded end of the stay-bar 5 is a winged nut 1 to secure said cross or stay bar 5 in its properly-adjusted position close to the bottom roller *B* to prevent the goods from being carried downwardly and wrapping around the same.

Passing vertically into each lug or extension 8 from below is a set-screw 3, which is seated or socketed in a bearing-block 10, adapted to support the reduced ends of the stay-bar 5. The purpose of these set-screws and bearing-blocks is to provide means of adjustment for curved trough-shaped stay-bar 5 to or from the lower roller *b*, as may become necessary. The roller *b* is preferably provided with vertical corrugations, as

are also the two small rollers *a a*, which rest upon the large roller *b* and from which they receive their rotary motion by friction as they are pressed upon said roller *b* or the goods as they pass between the upper and lower rollers. Each of the rollers *a a* is provided at each end with journals *h h*, which pass through a metal yoke *c* and through vertical slots *x x* in each of the uprights.

The yoke *c* is composed of a plate having downwardly-turned end members, each of which is provided with journal-bearings to receive the journals or axles *h h* of the two upper rollers *a a*. Said downwardly-turned end members are also provided with lugs 7, which project outwardly from the side edges thereof, in which are pivotally secured the side guards 6 6, said guards being adapted to normally hug or press closely upon the upper rollers *a a* to prevent goods which might stick to said rollers from being carried upwardly and wrap around them. The metal yoke *c* spans between the two end uprights, but does not touch them, and has a longitudinal reciprocating movement and is kept in its proper path by the curved ribbed flanges *i i* and the journals *h h*, working in the slots *x x* of the uprights. Yoke *c* and the rollers *a a* carried thereby are designed to raise or lower in proportion to the thickness of the goods passing between rollers *a a* and *b*, and this result is attained by the following construction: Secured to the upper face of the yoke *c* are the short posts or lugs *f f*, to which are hinged or pivoted the lower ends of the bowed plate-springs *e e*, said springs being provided with slots *e'* at each end for adjusting the same, the upper ends of the spring being pivoted to posts or lugs *f f* on the under face of top cross-bar similar to those on the upper face of the yoke *c*. The springs *e e* are secured to the said lugs or posts *f f* by the screws *f' f'* screwing into the lugs. By this construction the springs may be swung in any direction.

Pivoted loosely to the yoke *c*, adjacent to one end thereof, is a link or pitman *p*, the outer end of which encircles the upright crank rod or shaft *q*. The vertical crank-shaft *q* is formed with a collar or disk *o* near its upper end instead of the usual bend, and the upper end of said shaft is journaled in the removable cap or journal-box *o'*, which is composed of a vertical and horizontal member adapted to fit and be secured to the upright *g'* at and within the upper part of the opening *g³* therein. This cap or journal-box is secured to the said upright *g'* by means of a bolt passing through the vertical portion of the cap and through the upright *g'* and fastened by a nut or other suitable means. The lower end of the crank rod or shaft has secured thereto a bevel-gear *r*, that meshes with a larger bevel-gear *s*, secured to the end of the large roller *b* when the same is revolved by the handle *z*.

In order to fasten the device to a washtub, I provide the uprights with the hangers *t t* and *t' t'*, as hereinbefore described, and the tub *y* with the keeper *u* and the slot *y'* opposite the said keeper. The hangers *t' t'* are first guided into the slots of keeper *u* and the other end of the device brought downwardly until the shaft *j*, carrying on its outer end the crank-handle *z*, drops in said slot *y'* and the ends of the hangers *t t* rest on the top edge of the tub. The hook *w* is then thrown over the projecting journal *j*, securely locking the same against upward movement.

The operation of the device is as follows: The clothes to be washed are run between the upper and lower rollers and the handle turned. Bevel-gear *S*, meshing with bevel-gear *r*, rotates, and through the medium of pitman *p* imparts a reciprocating movement to the yoke *C* and the upper rollers *A*, carried thereby. The friction of the goods passing between the upper and lower rollers causes the upper rollers to rotate. The springs *e e* allow for varying thickness of goods that may be washed, and said springs may be adjusted to regulate the tension thereof.

The guards 6 6, which are secured to the side lugs 7 7 of the yoke *c*, fit snugly the outside of the rollers *a a* near their upper portion, thus effectually preventing the clothes being carried up over the said rollers.

The corrugated rollers may be made of wood, glass, porcelain, aluminium, or any other suitable material. As the upper rollers have a reciprocating and at the same time a rotary motion, it will be understood that a thorough and effectual cleansing of the goods takes place. Should the lower roller shrink and cause a larger space between said roller and the bottom trough-shaped cross-bar 5 than is deemed desirable, such space can be materially lessened by first unscrewing the winged nuts 1 1 at each reduced end thereof, forcing the bearing-blocks 10 upwardly by means of the set-screws 3 3, and then screwing the winged nuts 1 1 tightly against the downwardly-extending lugs 8 8. By doing this the liability of goods being drawn in around the lower roller will be obviated.

Having thus fully described my invention, what I claim is—

1. A washing-machine comprising a frame provided with end uprights, lugs projecting downwardly therefrom, vertical slots in said lugs, bearing-blocks seated in said slots, an upper stay or cross bar, a lower trough-shaped stay or cross bar having its ends reduced and threaded and extended through said slots in the lugs and resting on said bearing-blocks, set-screws threaded through the bottom of said lugs and adapted to bear against the lower face of said bearing-blocks whereby the said lower stay or cross bar may be vertically adjusted, winged nuts on the reduced threaded ends of the lower cross-bar outside of the downwardly-projecting lugs, and adapted to

secure the said lower cross-bar in its adjusted position, and washing-rollers suitably held in the said frame.

2. A washing-machine comprising a frame
5 provided with end uprights, top and bottom cross-bars, a lower roller, a yoke, upper rollers carried thereby, springs provided with slots in each end and means passing through the slots for adjustably securing the springs
10 to said yoke and to the top cross-bar, and means substantially as set forth for rotating the lower roller and simultaneously imparting a recirculating motion to the yoke carrying the upper rollers.

15 3. A washing-machine comprising a frame

consisting of end uprights one of which is provided with openings through and near its upper end, the other upright having a shoulder at its upper end, top and bottom cross-bars, said top cross-bar having hooks at one
20 end adapted to enter and pass through the openings in one end upright, and also a downturned flange at its other end adapted to engage the shoulder of the other end upright and secured thereto, washing mechanism held
25 in said frame.

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