

No. 829,734.

PATENTED AUG. 28, 1906.

P. POLNISCH.
BOTTLE WASHING MACHINE.

APPLICATION FILED SEPT. 28, 1905.

3 SHEETS—SHEET 1.

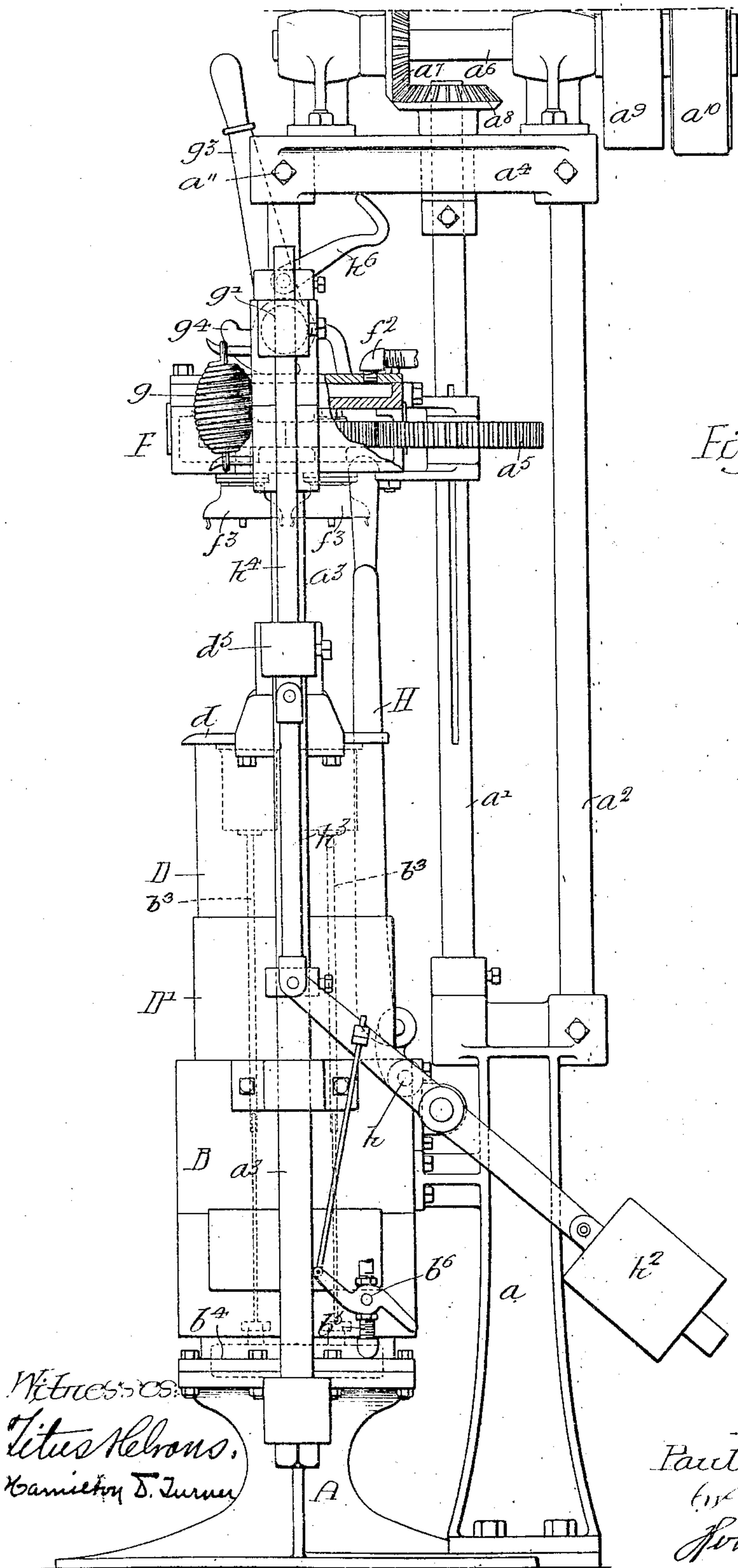


Fig. 1.

Witnesses:
Titus Kellogg,
Hamilton D. Turner

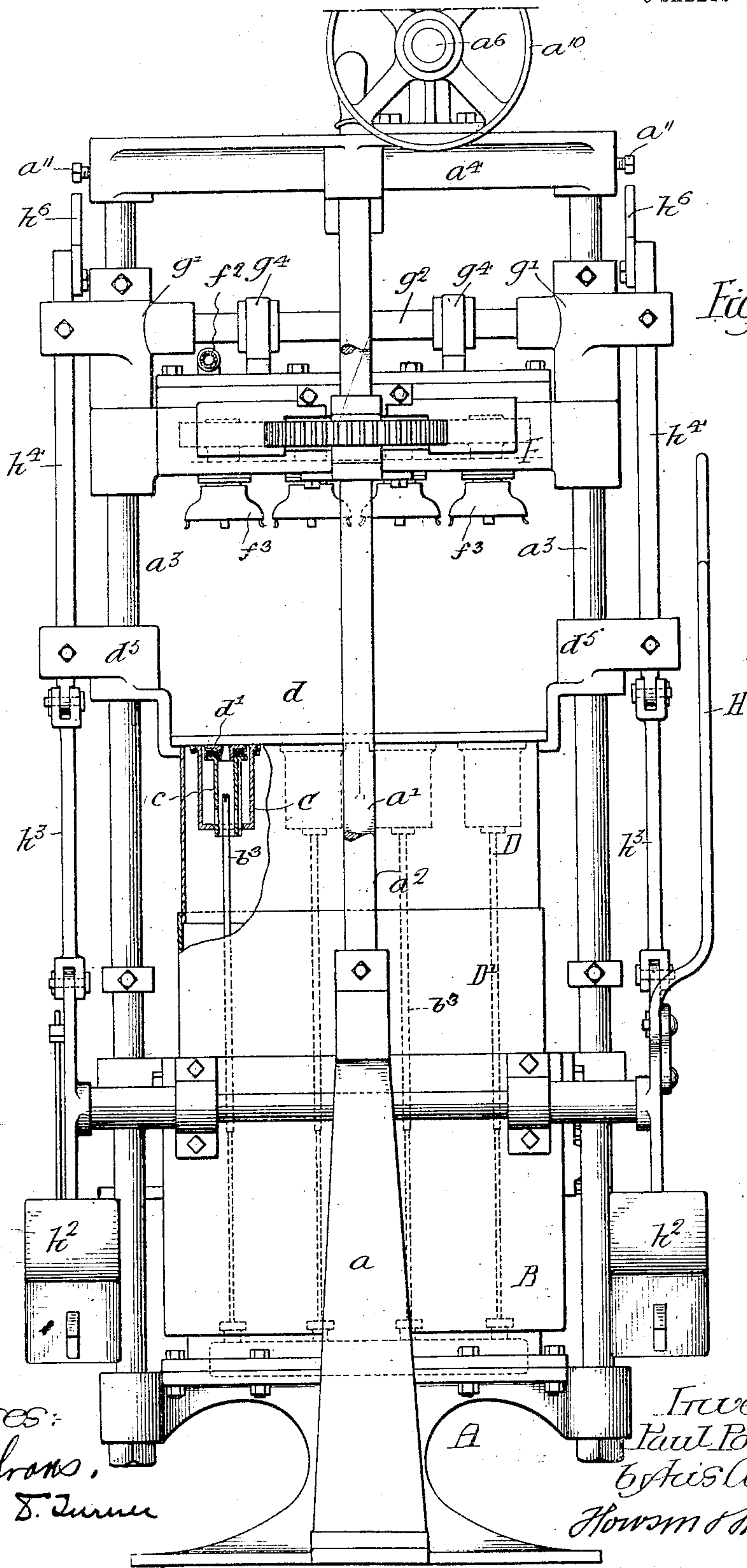
Inventor:
Paul Polnisch,
by his Attorneys
Jensen & Jensen

No. 829,734.

PATENTED AUG. 28, 1906

P. POLNISC.
BOTTLE WASHING MACHINE.
APPLICATION FILED SEPT. 28, 1905.

3 SHEETS—SHEET 2.



Witnesses:
Titus Helms,
Hamilton S. Turner

Inventor:
Paul Polnisch,
by his Attorneys
Howan & Howan

No. 829,734.

PATENTED AUG. 28, 1906.

P. POLNISCH.
BOTTLE WASHING MACHINE.

APPLICATION FILED SEPT. 28, 1905.

3 SHEETS—SHEET 3.

Fig. 3.

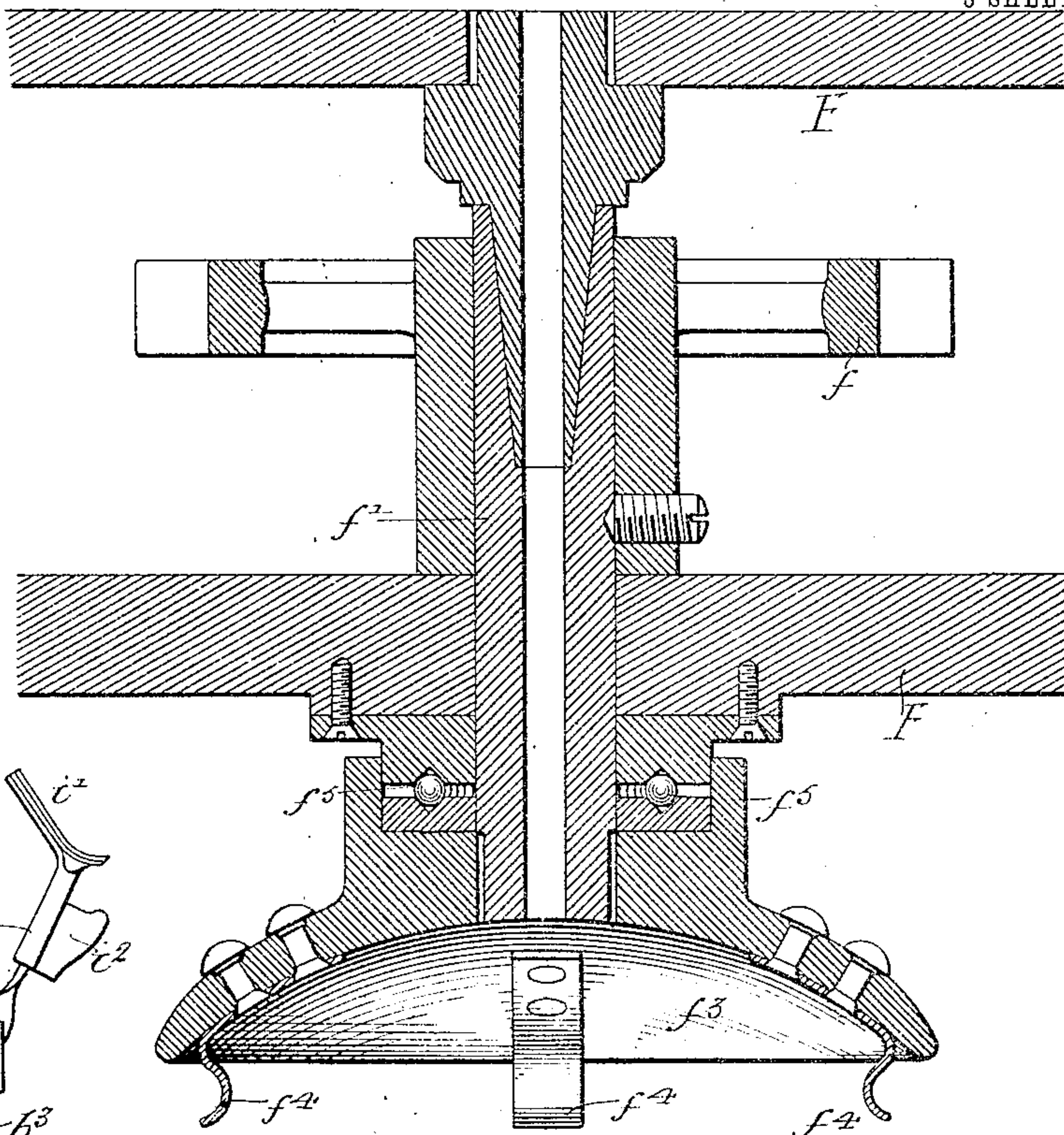


Fig. 5.

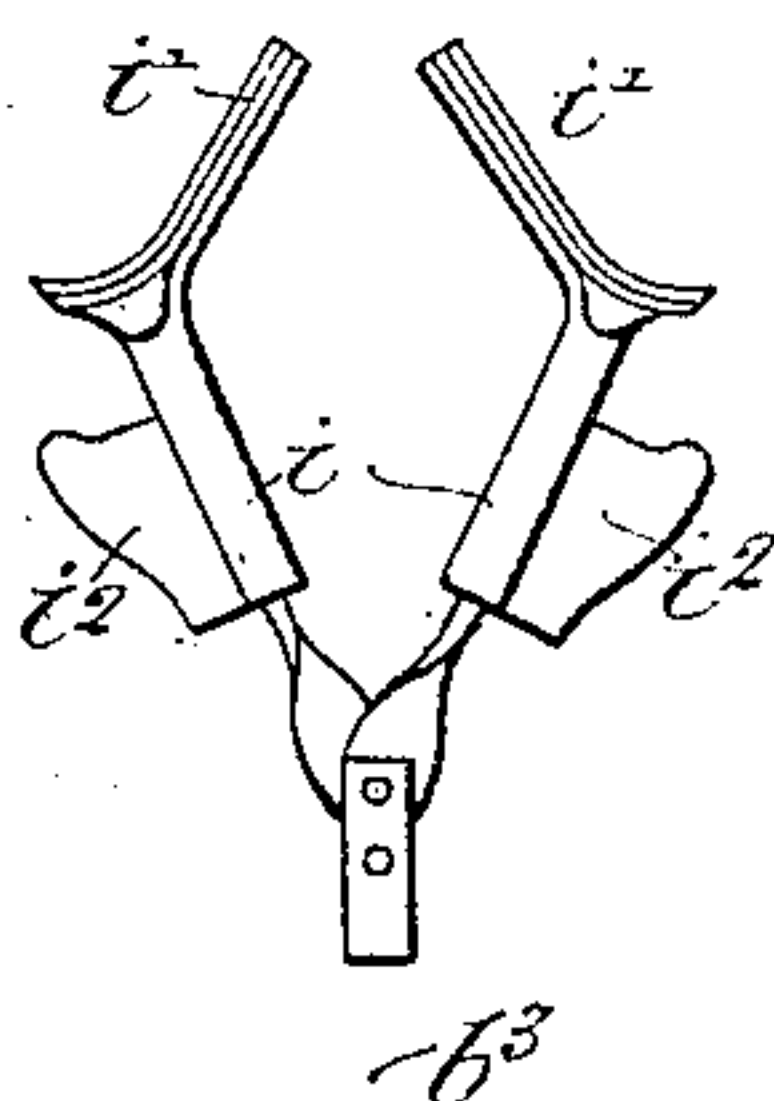


Fig. 4.

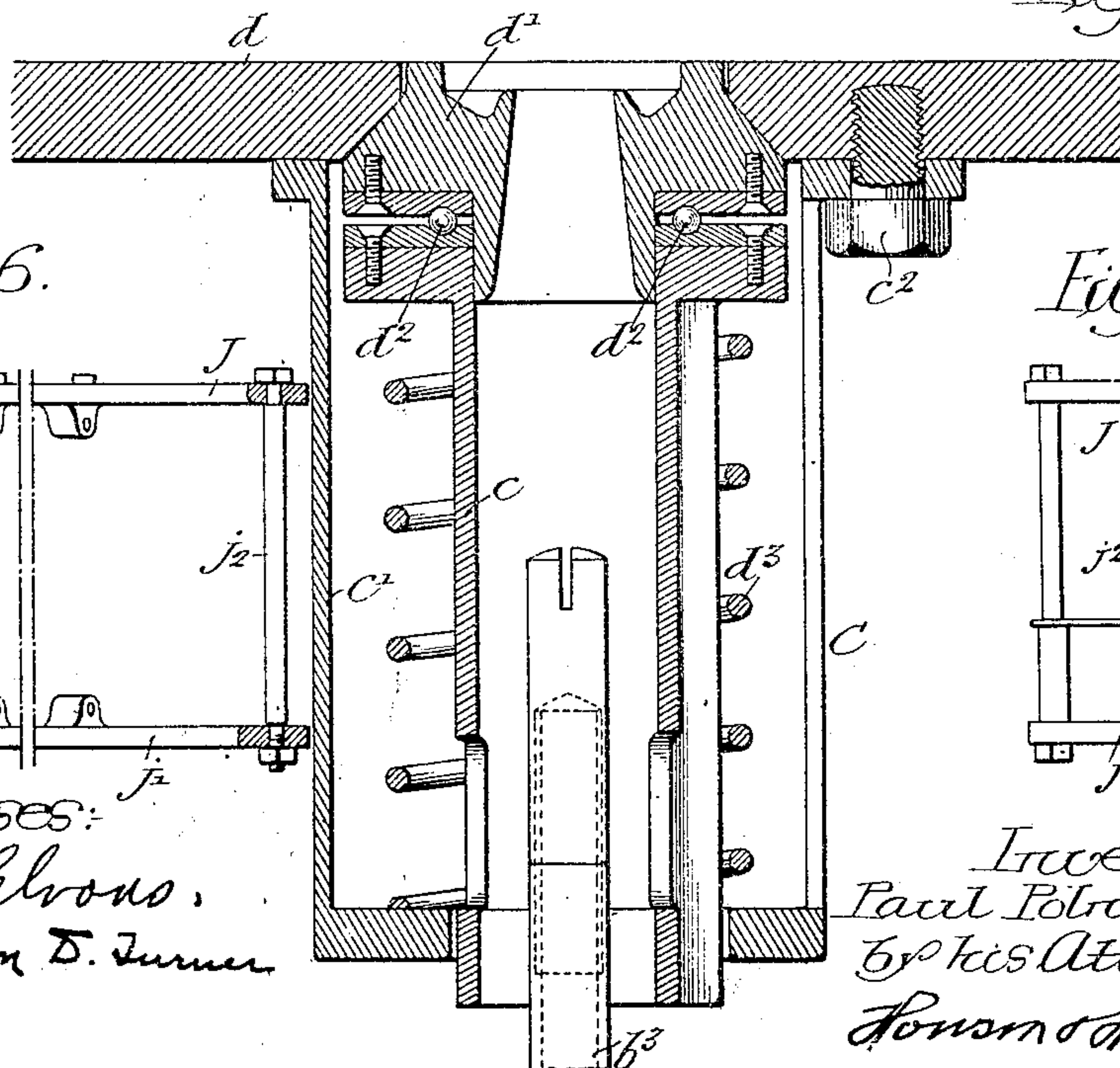


Fig. 6.

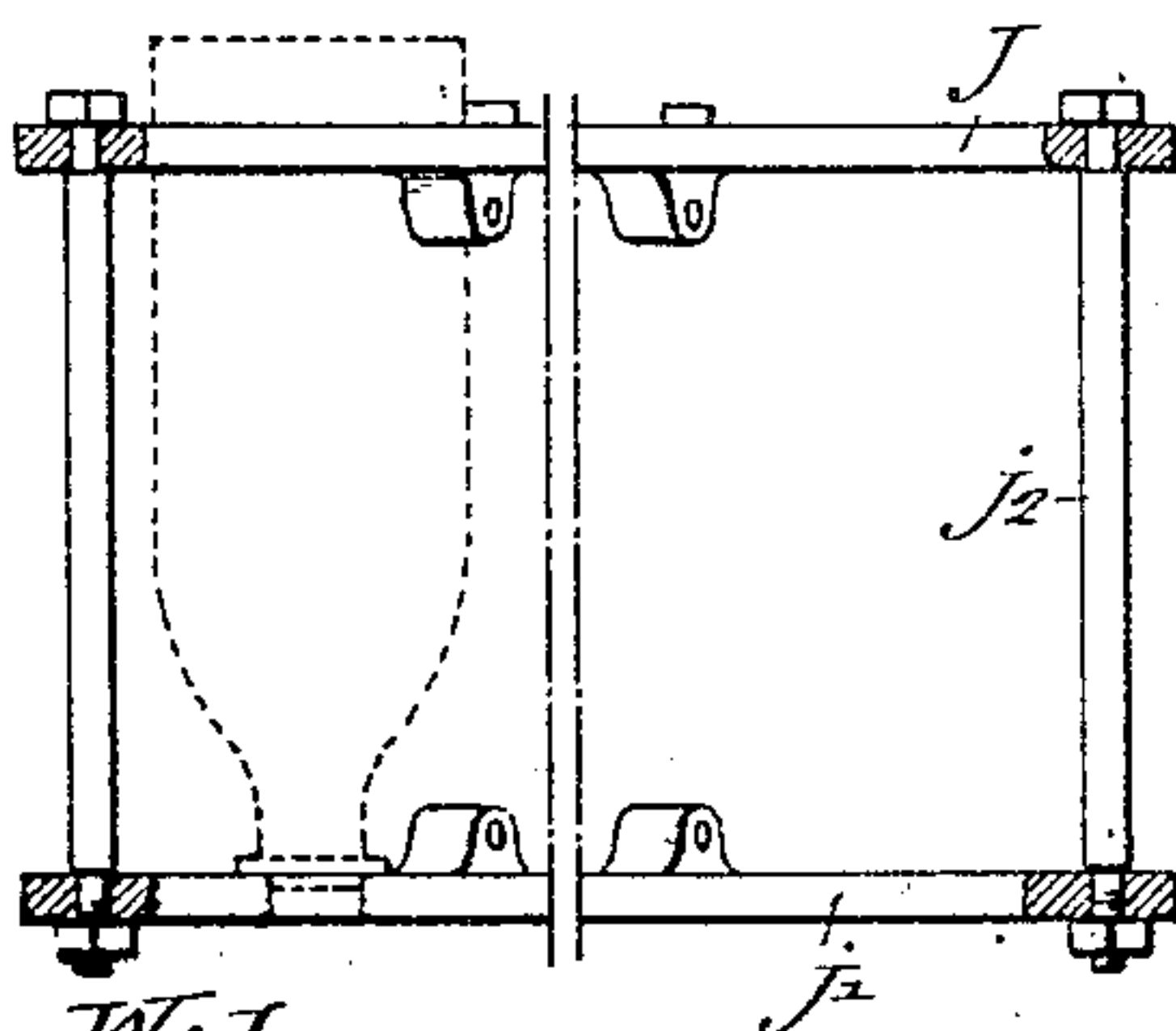
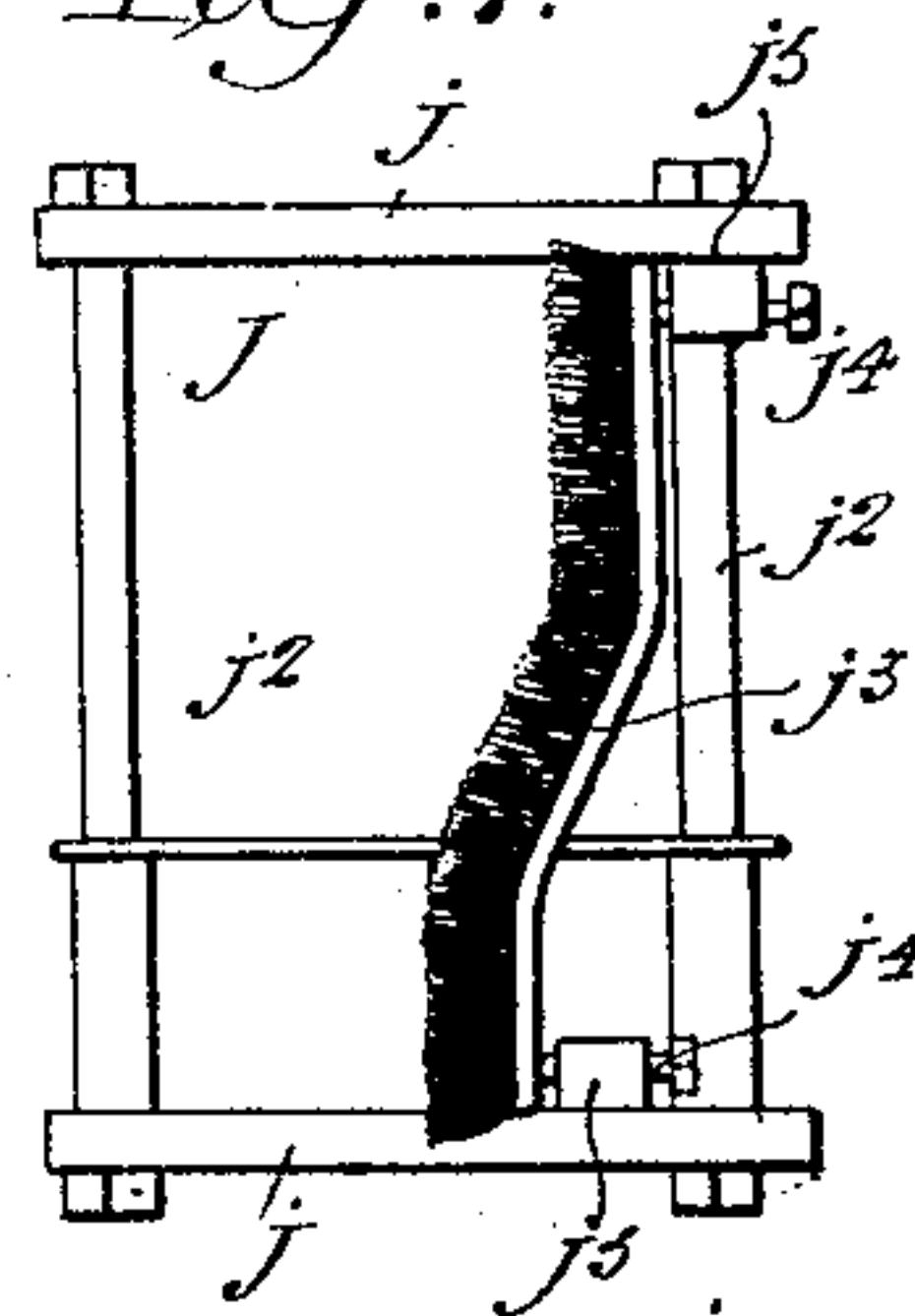


Fig. 7.



Witnesses:
Titus Helvans,
Hamilton D. Turner

Inventor:
Paul Polnisch,
by his Attorneys,
Lounsbury & Lounsbury

UNITED STATES PATENT OFFICE.

PAUL POLNISCH, OF PHILADELPHIA, PENNSYLVANIA.

BOTTLE-WASHING MACHINE.

No. 829,734.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed September 28, 1905. Serial No. 280,500.

To all whom it may concern:

Be it known that I, PAUL POLNISCH, a subject of the German Emperor, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Bottle-Washing Machines, of which the following is a specification.

One object of my invention is to provide a bottle-washing machine of an improved construction which shall be capable of simultaneously washing one or any number of bottles both inside and outside, said machine also including novel means for confining the waste water, so as to prevent its splashing beyond the limits of the machine. I further desire to provide a machine with washing means of such a nature that the cleansing of the bottles shall be accomplished more thoroughly, as well as more quickly, than has hitherto been the case. The above objects, as well as other advantageous features of construction, I secure as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved bottle-washing machine. Fig. 2 is a rear elevation of the machine shown in Fig. 1. Fig. 3 is an enlarged vertical section illustrating the detail construction of the upper bottle-holding device. Fig. 4 is a vertical section of the lower bottle-holding device. Fig. 5 is a side elevation of one of the brushes for cleaning the inside of a bottle. Fig. 6 is a side elevation, partly in section and without brushes, of the frame or basket for holding a series of bottles to be washed; and Fig. 7 is an end elevation of the device shown in Fig. 6, one of the brushes and the bracing-bar being shown in position.

In the above drawings, A represents the base of the framework on which my improved machine is carried, this being provided with a standard a , having a bearing for a counter-shaft a' and supporting a vertical strut a^2 . From each side of the front of the main frame two guide-rods a^3 extend upwardly and are united at their upper ends by a cross-frame a^4 , which extends rearwardly and is partially supported by the strut a^2 .

Carried on the top of the cross-frame a^4 are two bearings for the main shaft a^5 , which has fast and loose pulleys a^6 and a^{10} , as well as a beveled gear-wheel a^7 . A vertical bearing is carried by the cross-frame a^4 , and in this and the bearing on the standard a is mounted the vertically-extending shaft a' ,

which is provided with a beveled gear-wheel a^8 , meshing with the beveled gear a^7 on the main shaft a^5 .

A casing B is carried upon the lower part of the main frame A and has fixed to the bottom of its interior a series of vertical tubular spindles b^3 . A reservoir b^4 , formed under the casing B, is connected to the lower ends of these spindles and is also connected with a source of water-supply through a pipe b^5 , provided with a valve b^6 . The spindles b^3 extend for a suitable distance above the casing B within casings D and D', and each of them finally terminates within a tube c , forming part of the spring-supporting devices C for the lower ends of the bottles to be washed. Said supporting devices C are bolted to the under side of a plate d , forming the top of the uppermost casing D, which extends around all the spindles and telescopes with the second casing D'. This latter in turn telescopes with the lowermost casing B.

Each of the devices C consists of a hollow cylinder c' , held to the plate d by means of a bolt or bolts c^2 and having within it a tube c , which is concentric with the spindle b^3 . The upper end of each tube c is flanged to a diameter substantially equal to that of a flanged seat-piece d' , recessed to receive the mouth of a bottle and fitting in a suitable opening in the plate d . There is a hole through said seat-piece d' and ball-bearings d^2 between it and the flange of the tube c , this latter being pressed upwardly and said piece d' being normally retained in position in the plate d by means of a spring d^3 , confined between the lower end of the cylinder c' and the flange of said tube c .

A gear-wheel a^5 is splined to the shaft a' , being movable up and down the same, but forced by its spline to turn with it. This gear-wheel meshes with a series of pinions f , fixed to tubular spindles f' , rotatably supported, as shown in Fig. 3, in suitably-placed bearings in a frame F, movable upon the guide-bars a^3 , and the upper portion of this movable frame is constructed as a reservoir with which said spindles f' communicate, there being a water-supply pipe f^2 for said reservoir, as shown in Fig. 2. The lower end of each spindle f' has attached to it a bottle-holder f^3 , shaped to engage the bottom end of a bottle and provided with spring-clips f^4 . Ball-bearings f^5 are placed between each holder and bearing-plates carried on the lower face of the frame F, so that it will be

seen that revolution of the pinions f turns the spindles f' , and with them the bottle-holders f^3 .

The movable frame F is yieldingly connected by springs g to two sleeves g' , respectively mounted on the guide-bars a^3 , there being a shaft g^2 extending between and journaled in said sleeves, so as to form a transverse frame to which is keyed an operating-lever g^3 . Said shaft also has fixed to it two cams g^4 , placed and constructed to engage the upper surface of the movable frame F in such manner that when said lever is turned the frame F is moved downwardly relatively to the sleeves g' and against the action of the springs g .

A main operating-lever H is fixed to a transverse shaft h , to which there are also fixed lever-arms, each having at one end a weight h^2 and at the other end a link h^3 , whose opposite end is attached to the lower end of a bar h^4 . These two latter bars respectively connect the sleeves g' to the sleeves d^5 , which are fixed to and serve to support the casing D . The intermediate casing D' is hung from said first casing by means of an inwardly-projecting flange at its upper end engaging an outwardly-projecting flange on the lower edge of said first casing D . The upper ends of the connecting-bars h^4 carry hooks h^5 , so placed that they may be made to engage bolts a^{11} on the cross-frame a^4 in order to hold said rods and their attached parts in their elevated position while the lever g^3 is being operated in the manner hereinafter described, although it is to be understood that the weights h^2 are sufficient to normally maintain the casings D and D' , together with their attached parts, as well as the frame F and the sleeves g' , in their elevated positions without assistance.

Each of the spindles b^3 carries at its upper end two arms i , pivoted to it and to each other, and these arms have at their upper ends brushes i' , of rubber or other desired material, being in addition provided with projections i^2 , which also assist in the cleaning of the inside of a bottle. It will be understood that suitable outlets for water are provided in the upper ends of the spindles b^3 .

The machine illustrated and described is equipped for the simultaneous cleansing of eight bottles, and it is my intention to support such bottles in two baskets or frames J , each of which consists of a top plate j , a bottom plate j' , and bolts j^2 , by which said two plates are connected. In addition I fix on said basket a series of brushes j^3 , one for each bottle, and so shaped as to approximately conform to the outside surface thereof. These brushes are carried on screws j^4 , which pass through suitably-threaded lugs j^5 in the two plates of the frame, so as to permit said brushes to be adjusted so as to properly engage the surface of the bottles to be washed.

Under operating conditions water is supplied through the pipes b^5 and f^2 to the reservoirs b and f^5 , and two frames J , filled with a suitable number of bottles, are placed upon the plate d , after which the lever g^3 is pulled forward, so as to force the movable frame F down relatively to the sleeves g' , which are held in their proper positions by the hooks h^5 , having been put in engagement with their bolts a^{11} . The bottle-holders f^3 are thus each made to grip one of the bottles whose lower end or mouth is engaged by a seat-piece d' , the spring d^2 yielding so as to permit of each bottle being clamped tightly between its seat-piece and said holder f^3 . Power is now applied to the shaft a^6 , and the bottles are caused to turn on their vertical axes by the revolution of the spindles f' , preferably at about six hundred revolutions per minute. If the lever H be now operated, (the hooks h^5 being first released from their holding-bolts,) the two casings D and D' , together with the movable frame F and sleeves g' , are moved down, with the result that the brushes carried by the spindles b^3 are made to enter the various bottles, it being noted that the two pivoted arms carried by each spindle move outwardly under the action of gravity as soon as they enter a bottle, causing the brushes carried by them to engage and thoroughly cleanse every part of the interior thereof. By means of a well-known device the throwing of the lever H may be made to operate the valve b^6 , so that water is supplied to both reservoirs b^4 and f^5 and flows through the hollow spindles b^3 to the interior of the bottles, being also delivered through the spindles f' to the bottoms of the bottles, so as to flow over their exterior surfaces, and thereby assist the brushes j^3 to cleanse the same. After any desired number of oscillations of the lever H , which cause the inside brushes to reach all parts of the bottles, said lever is returned to its normal position, thereby cutting off the water-supply, after which the driving-belt is thrown onto the loose pulley. The lever g^3 is then returned to its vertical position, thereby permitting the springs g to raise the frame F toward the sleeves g' , releasing the bottles and the frame J , which may then be removed and replaced by another frame containing other bottles to be washed.

I claim as my invention—

1. A bottle-washing machine having a supporting-frame, mechanism movable on said frame for holding and washing a bottle, with a casing inclosing the lower portion of said mechanism, and made in a plurality of sections constructed to telescope one with another when said mechanism is moved on said frame, substantially as described.

2. A bottle-washing machine having mechanism for holding and washing a bottle, the same including a tubular spindle, a brush

carried by the spindle, means for supplying water to the spindle, a sectional telescoping casing surrounding the lower portion of said mechanism, and means for moving the bottle and part of said casing up and down relatively to the spindle, substantially as described.

3. A bottle-washing machine having a tubular spindle, a plate for the reception of the mouth of a bottle, a telescoping casing depending from the plate and surrounding the spindle, means for supplying water to the spindle, and means for moving the bottle and casing up and down relatively to the spindle, substantially as described.

4. In a bottle-washing machine, the combination of a supporting-frame, a second frame movably carried on said supporting-frame and having means for engaging one end of a bottle, a plate for engaging the opposite end of the bottle, a spindle, means for moving the second frame to clamp the bottle in position, other means for moving said second frame with the bottle-engaging plate to cause the spindle to be entered into the bottle, and a device for holding said bottle-engaging plate from moving downwardly when said second frame is moved to clamp a bottle in position, substantially as described.

5. The combination in a bottle-washing machine, of a supporting-frame having guide-bars, a second frame movable on said supporting-frame having means for engaging one end of a bottle, a plate having means for engaging the opposite end of the bottle, means for moving said plate on the guide-bars, a spindle having a brush and constructed to enter a bottle engaged by said plate when the latter is moved on said guide-bars, a structure consisting of connected sleeves yieldingly attached to the second frame and also connected to the plate, means for moving the second frame independently of the plate, other means for simultaneously moving said second frame and plate, with means for holding said plate and sleeves stationary when the second frame is moved independently thereof, substantially as described.

6. The combination in a bottle-washing machine, of a supporting-frame, two independent structures thereon for holding a bottle, of which one includes a spindle having a bottle-holder for turning the bottle on its longitudinal axis, means including a second spindle for washing the interior of the bottle, means for moving the said two structures to

cause the entrance of the second spindle into the bottle, with driving means for the first spindle including a device constructed to rotate the same irrespective of the position of the bottle-carrying structures on their supporting-frame, substantially as described.

7. The combination in a bottle-washing machine, of a supporting-frame, two structures thereon for supporting a bottle and movable relatively to each other, a brush-carrying spindle for cleaning the interior of the bottle, said bottle-supporting structures including a second spindle for turning the bottle about its longitudinal axis, a gear on said second spindle, a shaft substantially parallel to said spindle having splined on it a second gear meshing with said first gear, means for driving said shaft, and means for moving the bottle-supporting structures up and down to cause entrance of the first spindle into the bottle, substantially as described.

8. The combination in a bottle-washing machine, of a supporting-frame, a plate guided thereon having a weighted lever whereby it is maintained in a definite position, a second frame movable on the supporting-frame, a transverse frame guided on the supporting-frame and rigidly connected to said plate, a spring or springs connecting said transverse frame and the second frame, a lever having means for moving said second frame in opposition to the spring or springs to clamp a bottle between it and the plate, means for simultaneously moving the second frame and the plate, and means for simultaneously washing the inside and outside of a bottle clamped between the plate and said second frame, substantially as described.

9. The combination in a bottle-washing machine, of a supporting-frame, means for holding and turning a bottle, means for washing the interior of the bottle, a basket structure independent of the machine-frame constructed to support a bottle and having a brush placed to engage the exterior surface of such bottle, and means for supplying water to the exterior of the bottle, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL POLNISCH.

Witnesses:

WALTER CHISM,
JOS. H. KLEIN.