

(No Model.)

2 Sheets—Sheet 1.

L. A. ENZINGER.
BOTTLE WASHING MACHINE.

No. 491,414.

Patented Feb. 7, 1893.

Fig. 4.

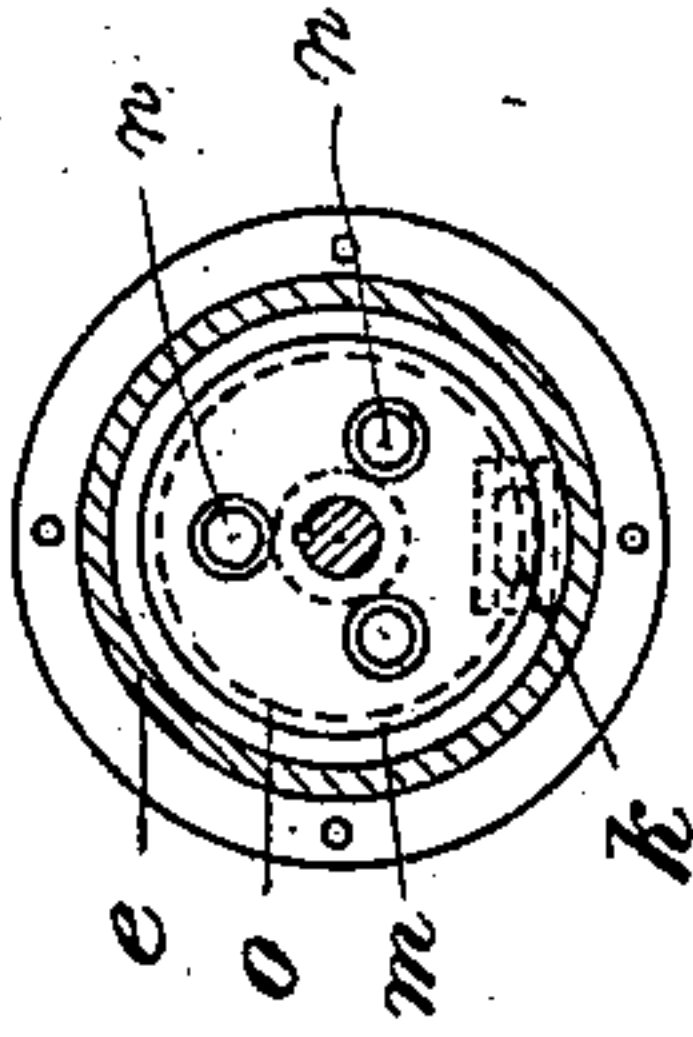


Fig. 2.

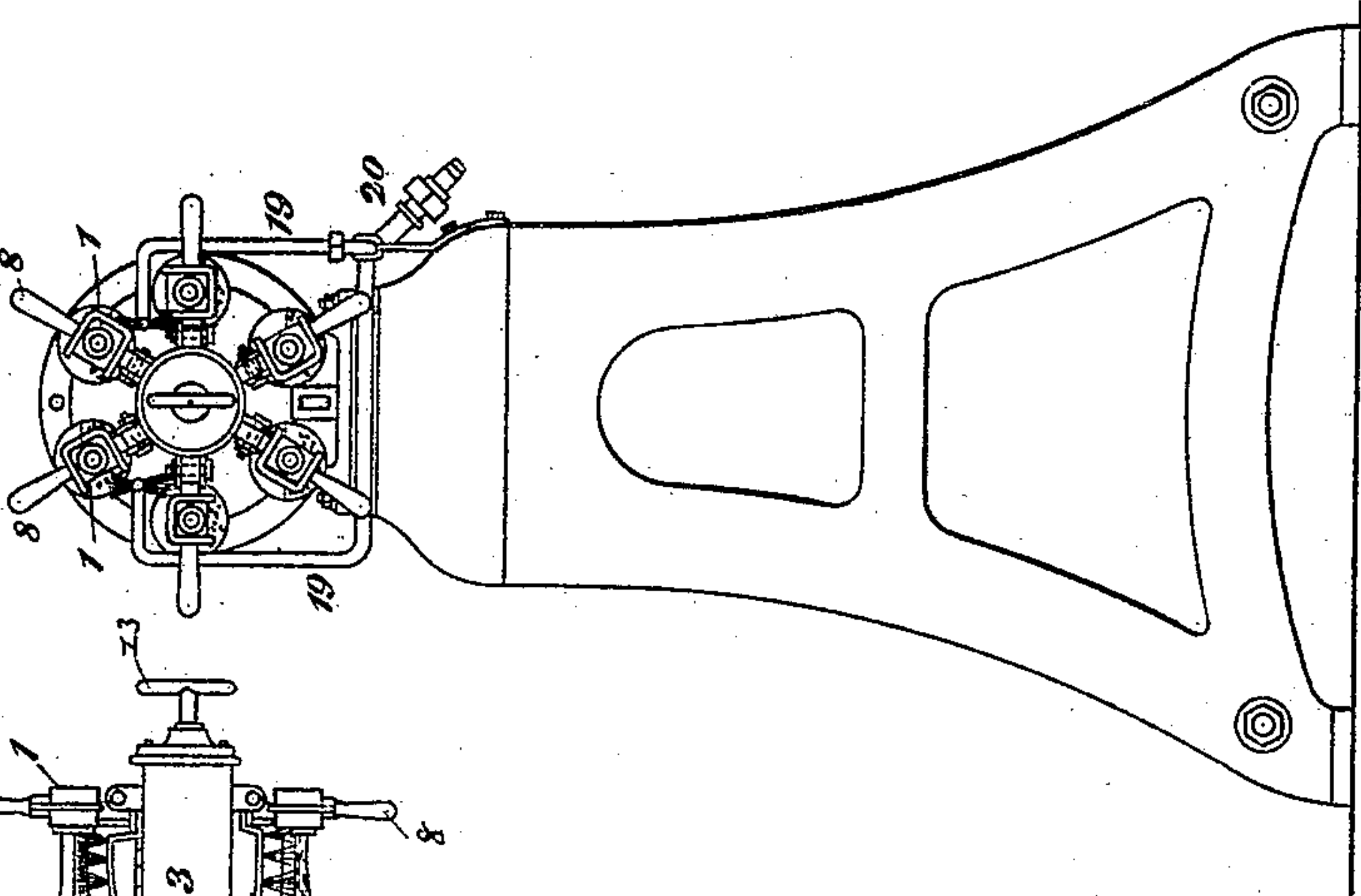


Fig. 3.

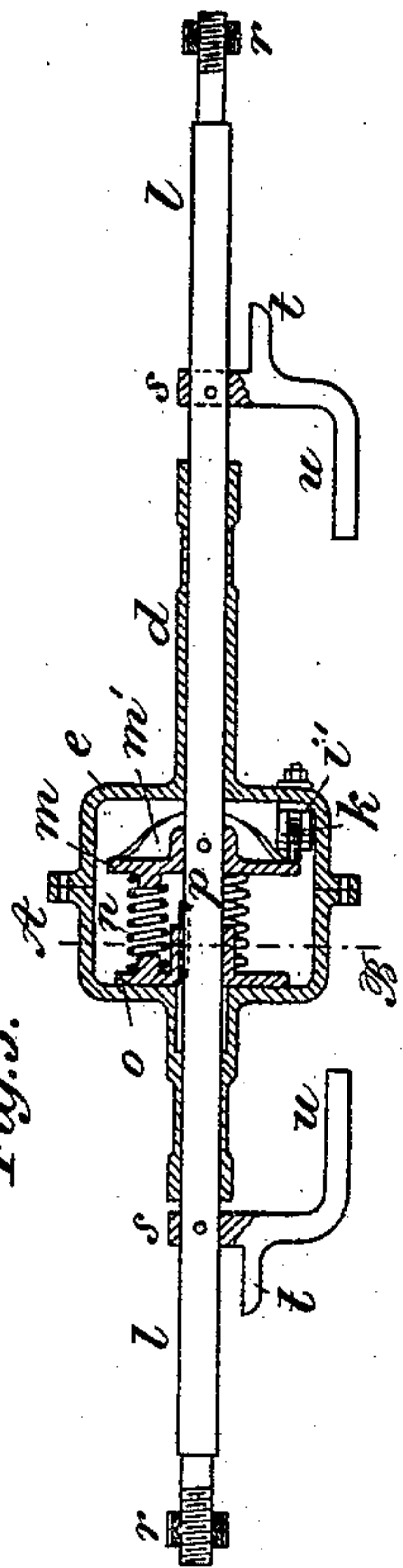
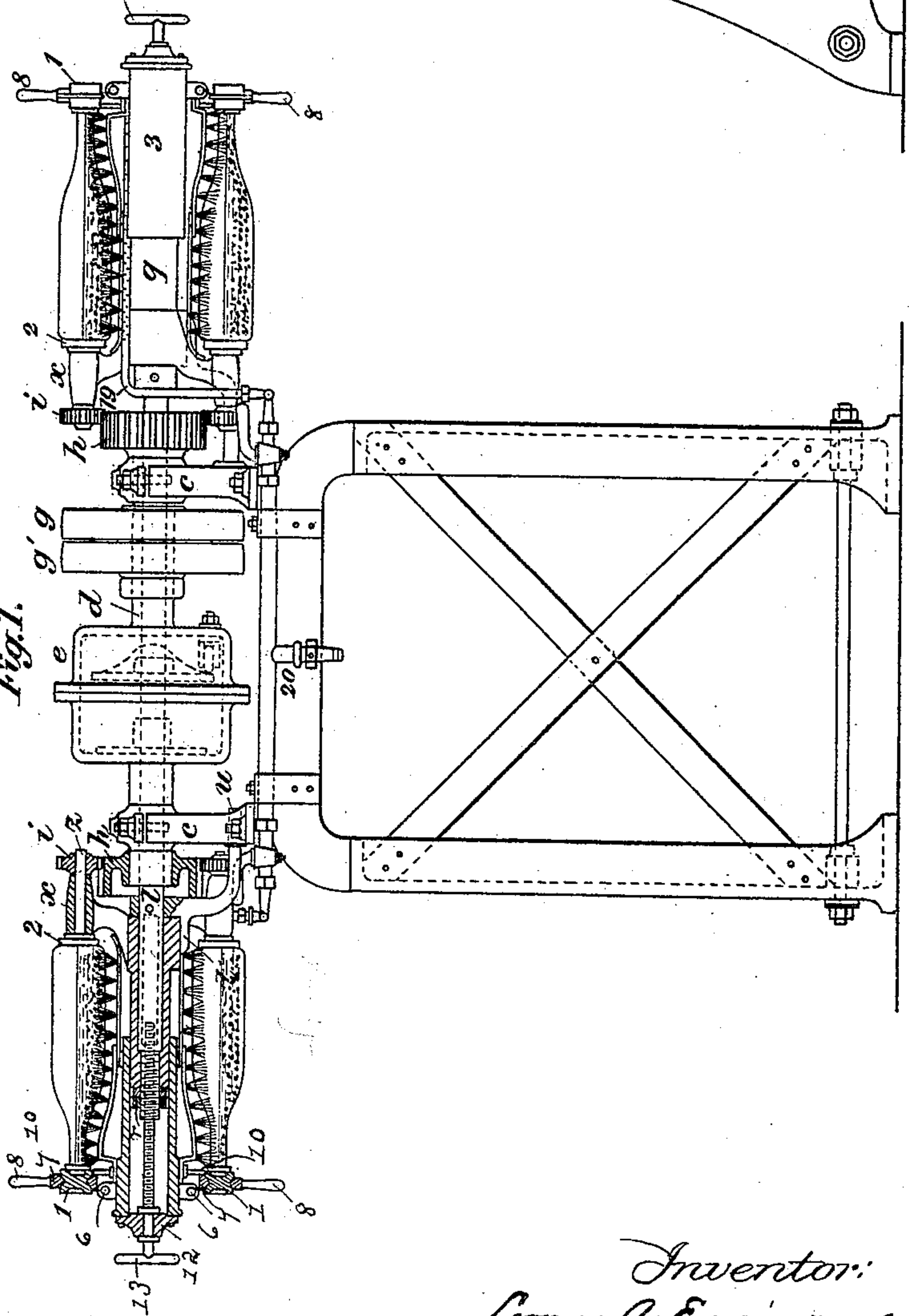


Fig. 1.



Attest
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Fig. 6.

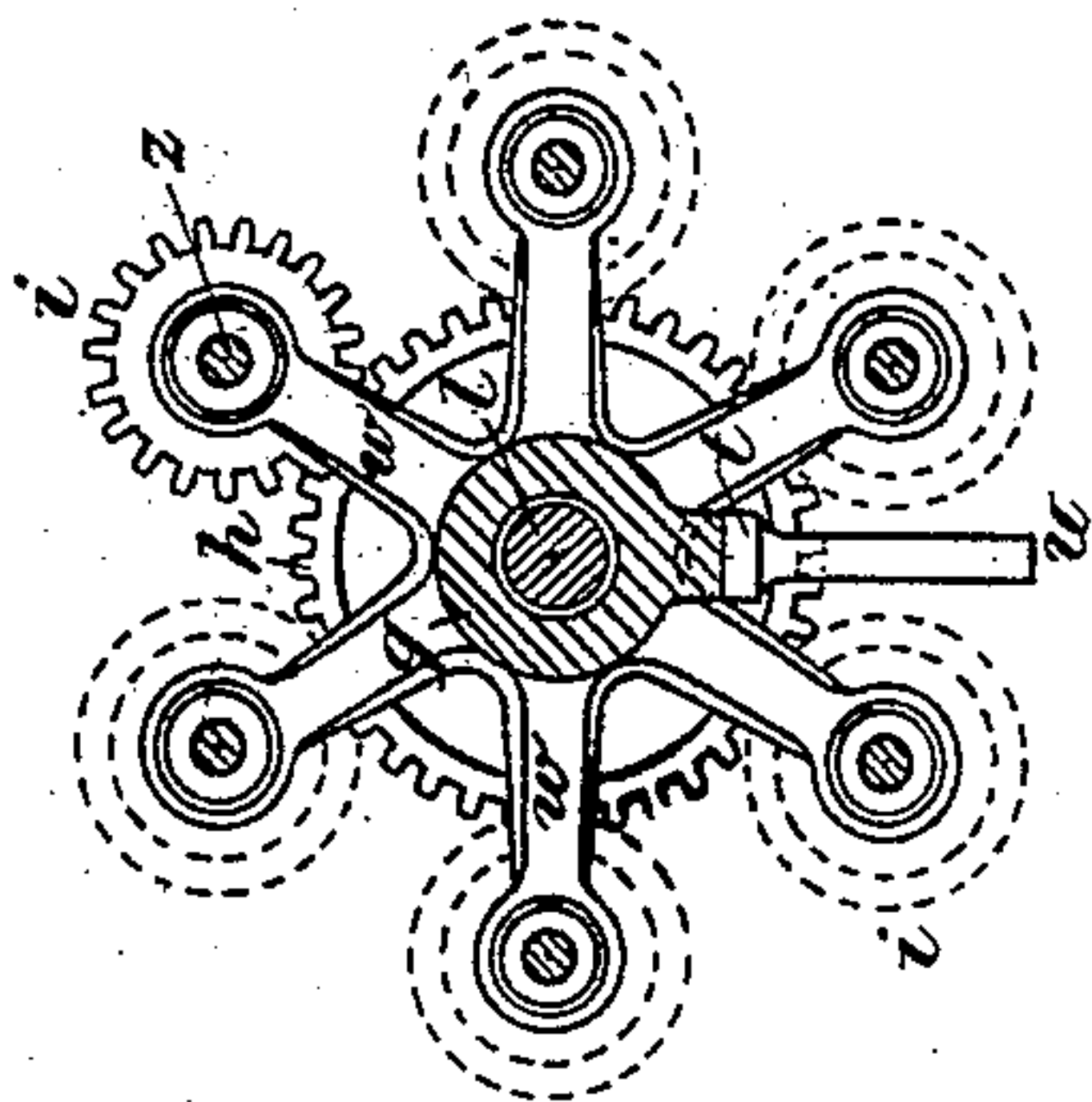


Fig. 8.

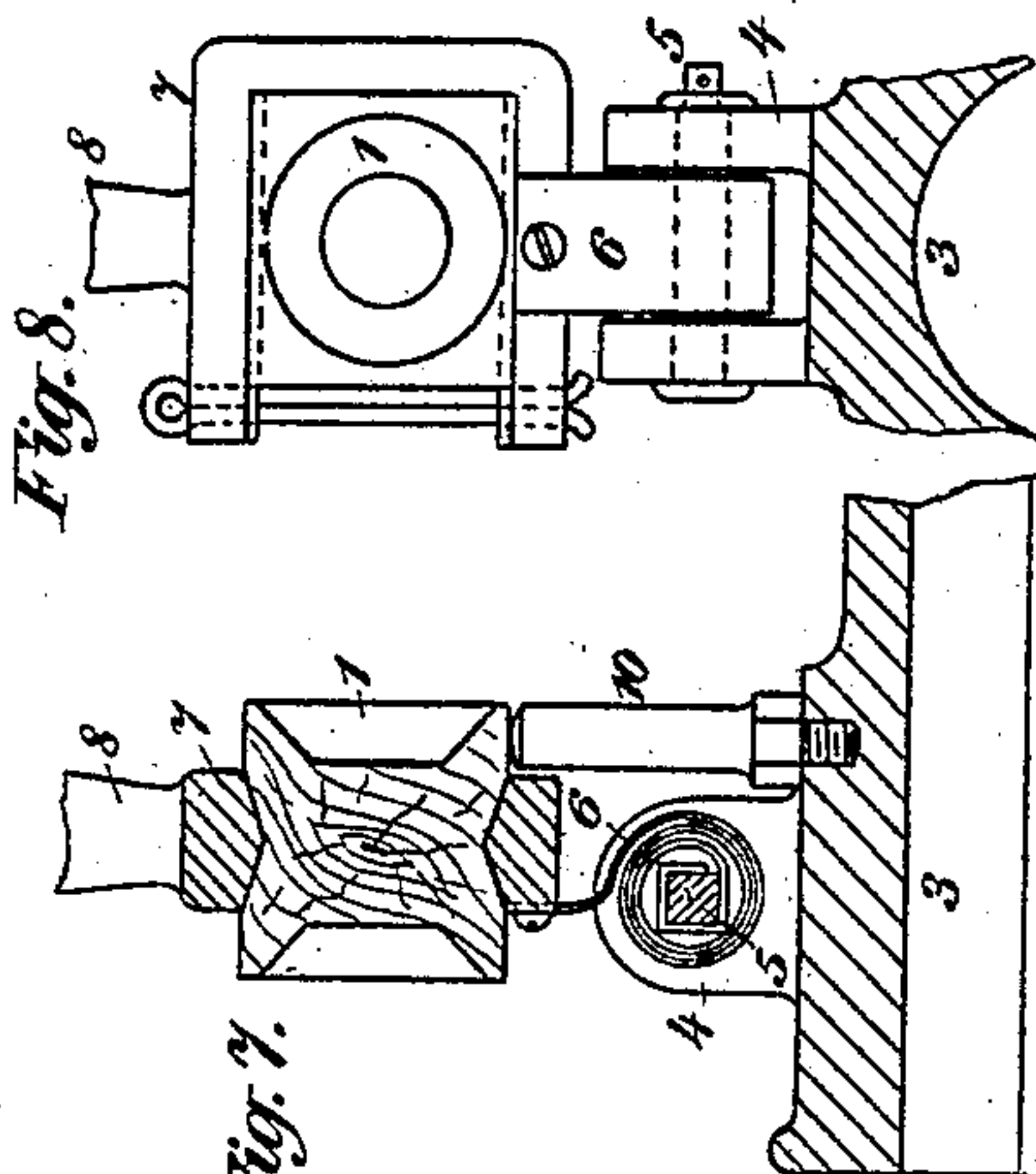


Fig. 7.

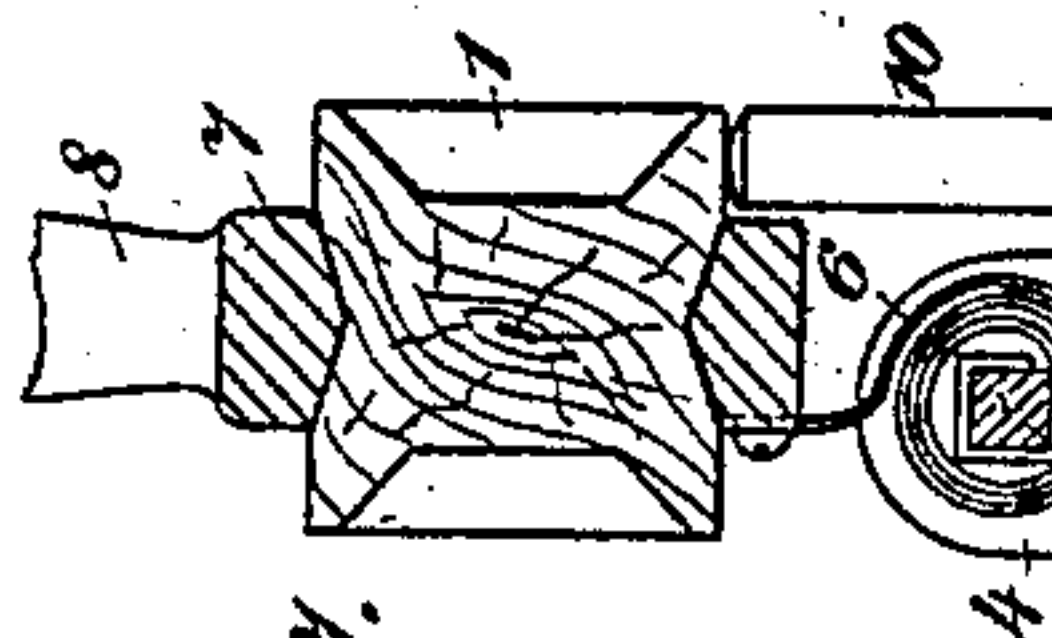


Fig. 5.

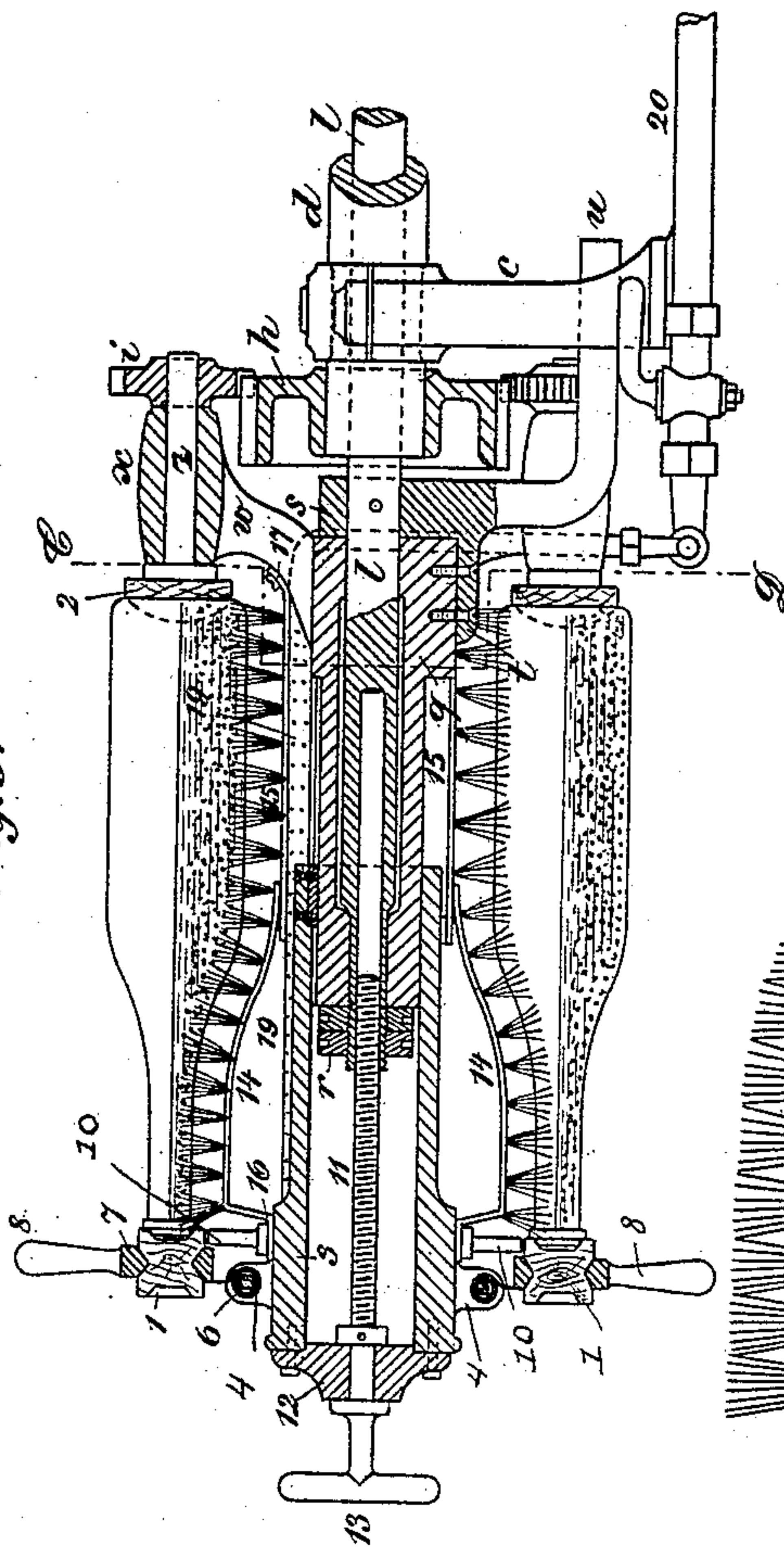


Fig. 9.

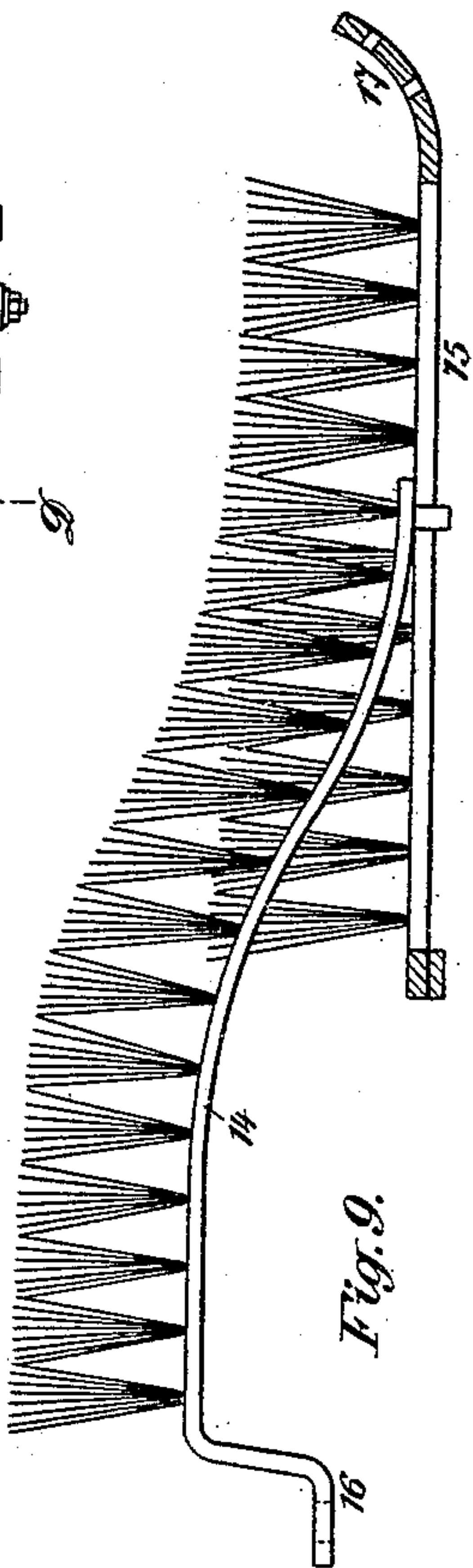
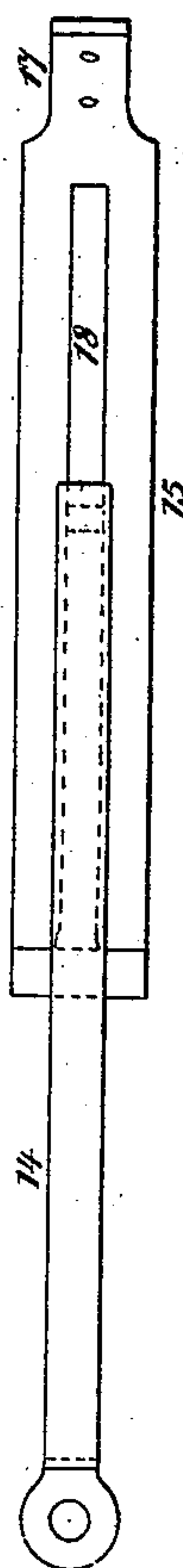


Fig. 10.



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UNITED STATES PATENT OFFICE.

LORENZ ADALBERT ENZINGER, OF WORMS, GERMANY.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 491,414, dated February 7, 1893.

Application filed June 15, 1891. Serial No. 396,330. (No model.) Patented in Germany October 29, 1890, No. 56,829, and in France November 7, 1890, No. 209,360.

To all whom it may concern:

Be it known that I, LORENZ ADALBERT ENZINGER, a subject of the Grand Duke of Hesse, residing at Worms, Grand Duchy of Hesse, Germany, have invented new and useful Improvements in Bottle-Washing Machines, (for which I have obtained Letters Patent in France, dated November 7, 1890, No. 209,360, and in Germany, dated October 29, 1890, No. 56,829,) whereof the following is a specification.

My invention relates to a machine for washing bottles outside by means of brushes and jets of water, and inside by granular materials and water, and the improvements consist in the particular construction and combination of the parts employed for holding the bottles in the machine, for imparting to the same rotative as well as longitudinal reciprocating motion, and for adjusting the bottle-holding devices and the brushes to bottles of different lengths.

In the annexed drawings Figure 1 is a side elevation, partly in section, of a machine carried out according to my invention and having two operative heads. Fig. 2 is an end view of the machine; Fig. 3 a longitudinal sectional view of a part of the machine; Fig. 4 a transverse section on line A B Fig. 3; Fig. 5 a longitudinal sectional elevation of one of the heads of the machine drawn to a larger scale, and Fig. 6 a transverse sectional view on the broken line C D, Fig. 5. Figs. 7 and 8 are respectively a side and end view of the clamping device; Fig. 9 is an enlarged view of the brushes used in cleaning the outside of the bottle, and Fig. 10 is a top view of the same, the bristles being removed.

The bottles to be washed are placed each between a wooden disk 2, Figs. 1 and 5, and a clamping device, illustrated in detail by Figs. 7 and 8, and also shown in Figs. 1 and 5. The disk 2 is bulbed to pass into the hollow bottom of the bottle, and it is fixed to a rotating axle z . The clamping device consists in a wooden block 1, having a conical recess serving as bearing for the mouth of the bottle to rotate in, the said block being secured in a metal frame 7, Figs. 5, 7, 8 fixed to a volute-spring 6, which in turn is fastened by means of a square pin 5, Figs. 7, 8 to lugs 4 integral with the pawl 3 of the machine.

When a bottle is to be put into its place for washing, the block-carrying frame 7 is swung outward by means of the handle 8, the bottle is placed with its bottom on disk 2 and inserted with its mouth into the recess of block 1, while the latter is allowed to be pressed against the bottle by spring 6, the bottle being then in the state to be rotated and shaken lengthwise. In order to keep the frame 7 in upright position when block 1 is not engaged by a bottle, a stop constituted by pin 10, Fig. 7 is provided for.

Each of the axles z carrying a disk 2, rotates in a sleeve x , integral with an arm w , Figs. 5, 6, radiating from a long boss or tube q , which is slipped on a rod l and fastened thereto by nuts r , pressing the tube endwise against the ring s , fixed to the rod by a pin; in addition thereto the tube is attached by screws to an arm t formed on ring s . On the tube q is placed another tube, 3, being the aforesaid part to which the clamping device is attached. This tube, 3, is provided with means for shifting it lengthwise relatively to tube q , in order to allow the distance between the disk 2 and the clamping-block 1 to be adjusted to the varying length of the bottles to be washed, the said means consisting in the screw-spindle 11, mounted rotatively in the cover 12 of tube 3 and working in screw-threads cut into a bore in the end of rod l ; the rotation of tube 3 on tube q being prevented by a feather and groove. The spindle 11 is turned by means of the handle 13.

The axles z are rotated by pinions i gearing with a wheel h , keyed on the end of a hollow shaft d , which is mounted in bearings c , Figs. 1 and 5, and provided with a driving pulley g , Fig. 1, and a loose pulley g' , the rotation of the axles z being transmitted to the bottles by the friction between the latter and the disks 2. On the other hand longitudinal reciprocating, or shaking, motion is imparted to the bottles by means in connection with the rod l and shaft d , and represented in Figs. 3 and 4. These means are as follows. The shaft d is made in two parts, the united ends whereof form a housing e . Within this housing the rod l , passing lengthwise through the shaft d , is provided with a cam-disk m fixed to the rod and having on one of its end sur-

faces one or more cams m' , one of said cams being shown in Fig. 3 and the other in dotted lines Fig. 1 while opposite to these cams there is a roller k , pivoted in a bracket i' , secured to the housing e . Opposite to the other side of disk m is placed the disk o , arranged to slide on a feather p in rod l , and bearing against the contiguous inner wall of housing e , and between the disks m and o are inserted springs n , which push disk m with its cams m' against the roller k . When, under these conditions, shaft d rotates, the roller k , co-operating with the cams m' , will cause the rod l to be shifted lengthwise to and fro, the rotation of the rod being prevented by arms u projecting from the aforesaid rings s and freely sliding in guides formed by holes in the bearings c , so as not to hinder the longitudinal motion of the rod. Of this motion all the parts attached to the rod partake, and ultimately it is transmitted to the bottles with the effect of producing the shaking movement requisite for cleaning the bottles inside by means of the granular material and water, put into the same previous to their being placed in the machine. While this reciprocating motion is going on, the teeth of pinions i slide between those of wheel h the latter being made broad enough as that the pinions may always remain in gear with the wheel.

The brushes whereby the rotating bottles are cleaned outside are composed of two parts, 14, 15, Figs. 5, 9, 10, fixed respectively at 16 to the adjustable tube 3, and at 17 to the arm w on tube q , the part 14 having a stud engaging in a slit 18 cut into part 15. With this arrangement the bent brush-part 14, serving to scour the bottle-necks, is pushed inward whenever tube 3 is adjusted for bottles of inferior length, and vice-versa, the said brush-part being thus always caused to assume the proper position relatively to the bottle-neck and no change of brushes being required.

The water necessary for the washing operation is supplied through pipe 20 and the perforated pipes 19.

I claim as my invention:

1. In a bottle-washing machine, the combination of the hollow rotative shaft d , bearings for the same, the rod l passing loose through said shaft and having an arm u parallel thereto, a guide in which the arm slides,

mechanism in connection with shaft d and rod l whereby longitudinal reciprocating motion of the rod is derived from the rotation of the shaft, sleeves x carried by rod l , axles z rotating in sleeves x and having each a pinion i and disk 2, the latter fitting to the bottom of a bottle, spur-wheel h keyed on shaft d and gearing with pinions i , and spring-pressed bottle-clamping devices, carried by rod l and having blocks 1 provided with recesses for the mouths of the bottles to rotate in, substantially as described.

2. In a bottle-washing machine, the combination of the rod l , sleeves x carried by the same, spindles z mounted in said sleeves and having disks 2, means for rotating the spindles z , tube 3 carried by rod l and capable of sliding lengthwise thereto, spring-pressed bottle-clamping devices mounted on tube 3 and having blocks 1 with recesses for the mouths of the bottles to rotate in, and an adjusting-mechanism whereby the tube 3 can be shifted relatively to rod l , substantially as specified.

3. In a bottle-washing machine, the combination of the rod l , the tube 3 carried by rod l and capable of sliding lengthwise thereto, means for holding the bottles in the machine and for rotating them, brushes composed of two parts 14, 15, adapted to slide lengthwise to each other, the brush-parts 15 being secured to rod l , while the parts 14 are attached to tube 3, and an adjusting-mechanism whereby the tube 3 can be shifted relatively to rod l , substantially as described.

4. In a bottle-washing machine, the combination of the hollow rotating shaft d composed of two united parts forming together a housing e , the rod l passing through the shaft d , means for preventing the rod from rotating without hindering its longitudinal motion, and a mechanism placed inside of the said housing and through the medium whereof longitudinal reciprocating motion is imparted to the rod l by the rotation of the shaft d , substantially as specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LORENZ ADALBERT ENZINGER.

Witnesses:

ALVESTO S. HOGUE,
JEAN GRUND.