

(No Model.)

2 Sheets—Sheet 1.

J. A. ANDERSON.  
COLLAR FOLDING MACHINE.

No. 572,239.

Patented Dec. 1, 1896.

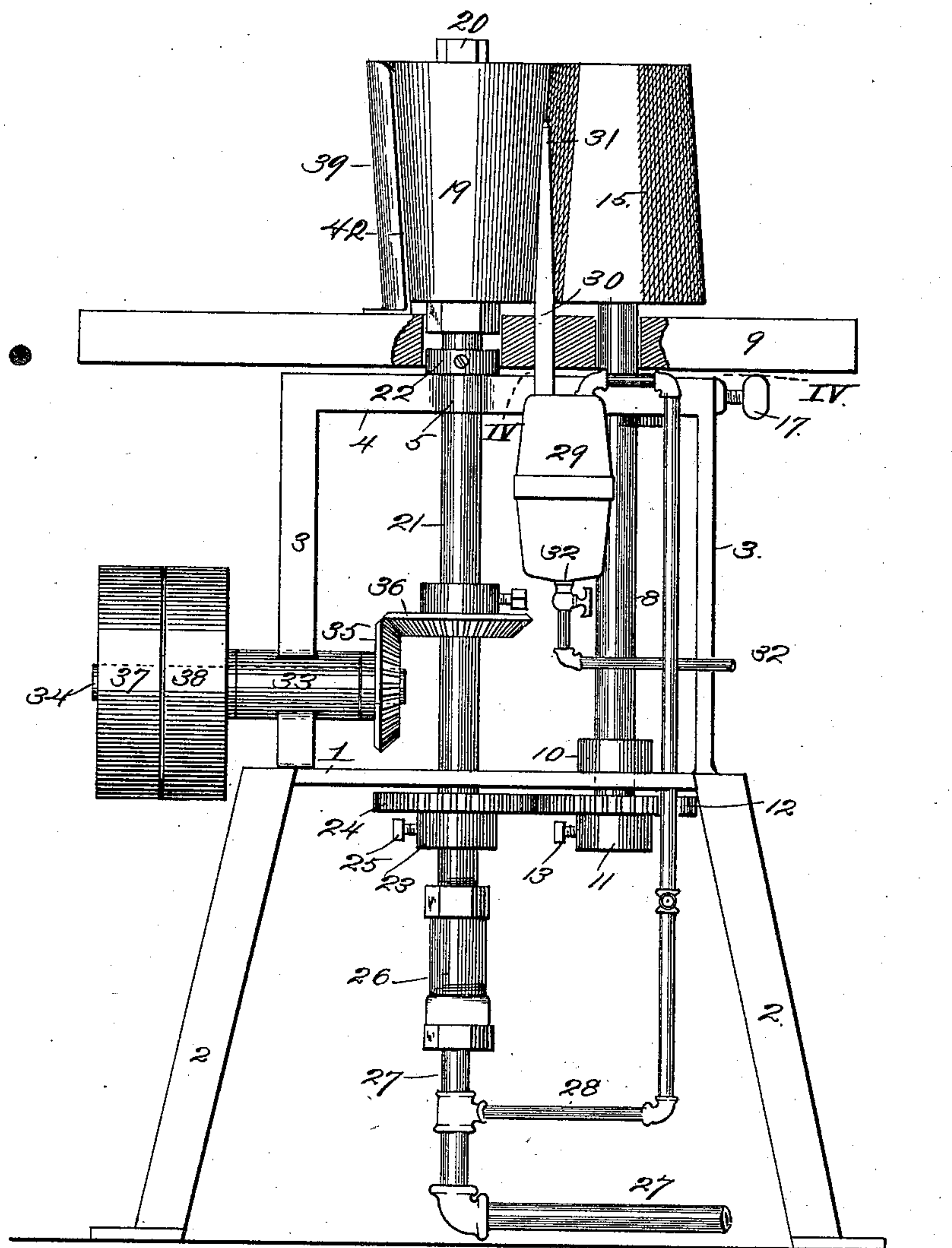


Fig. 1.

Witnesses:

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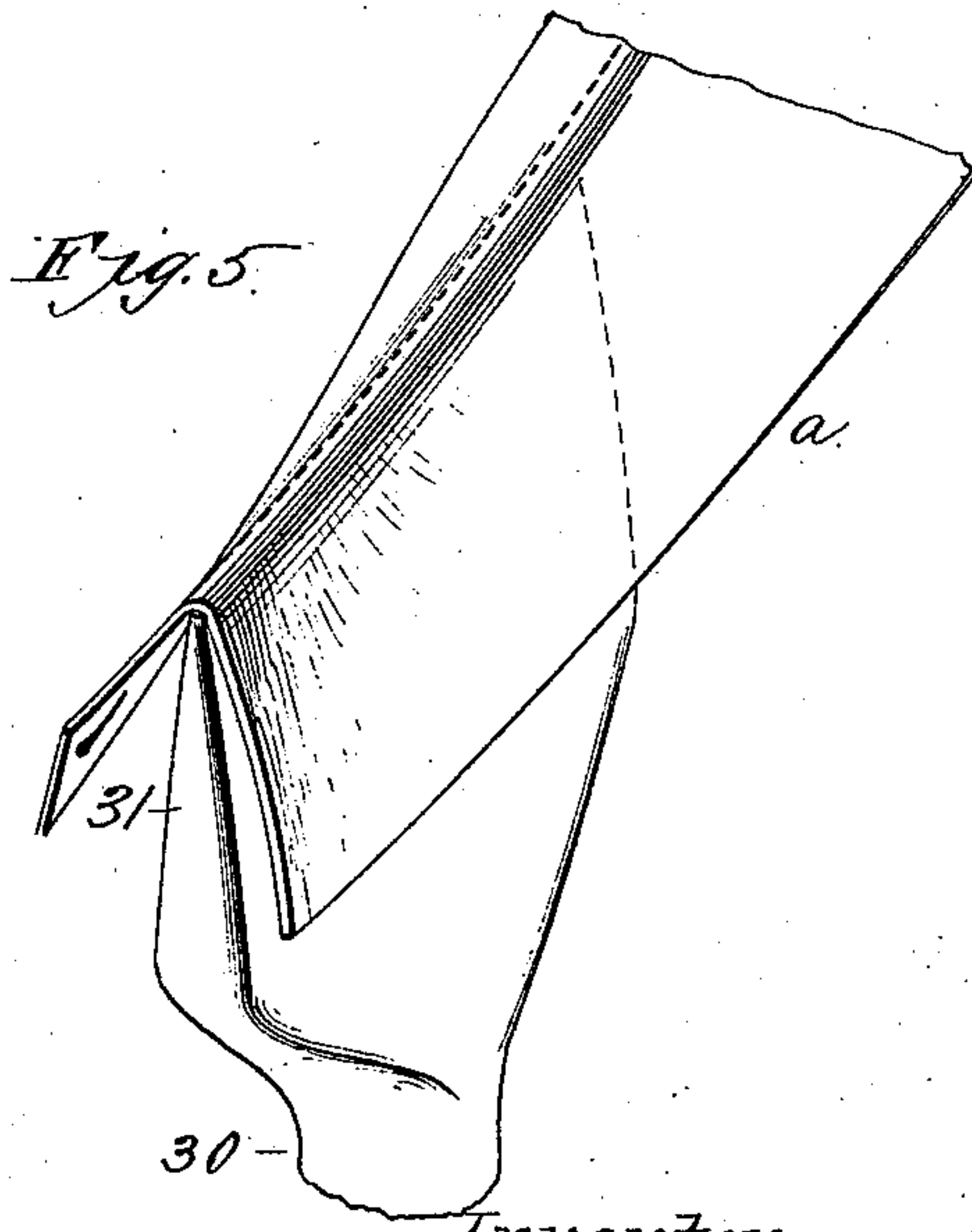
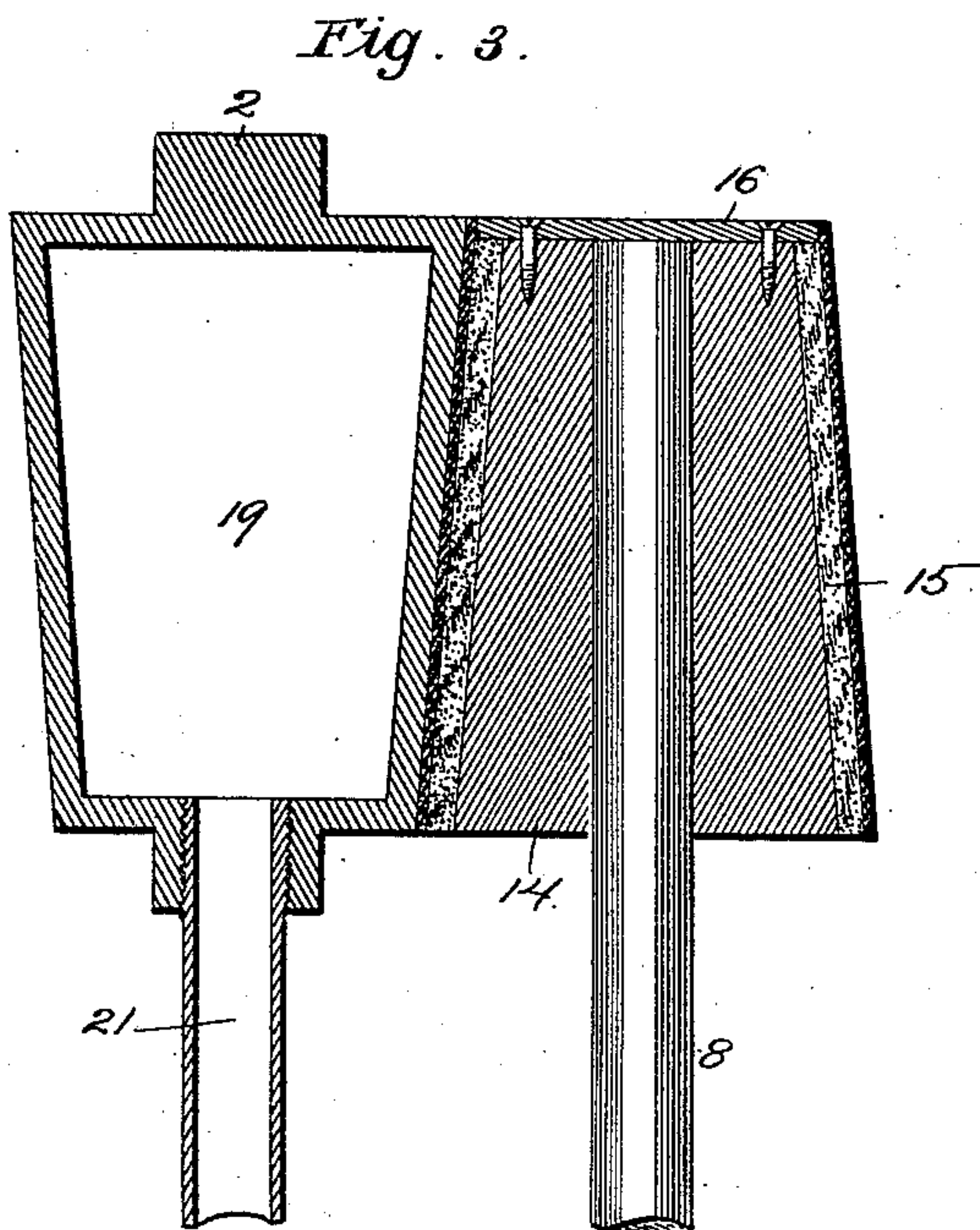
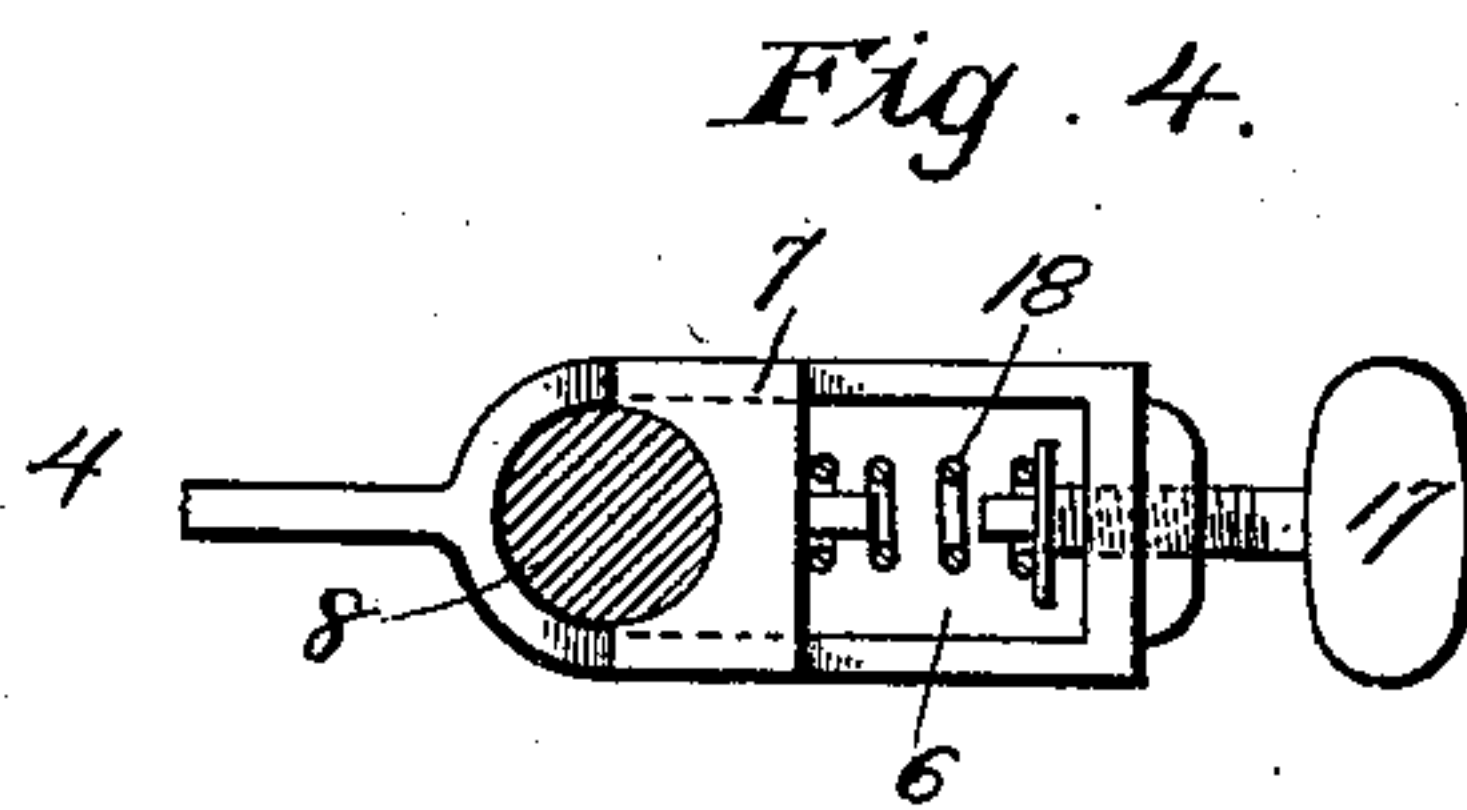
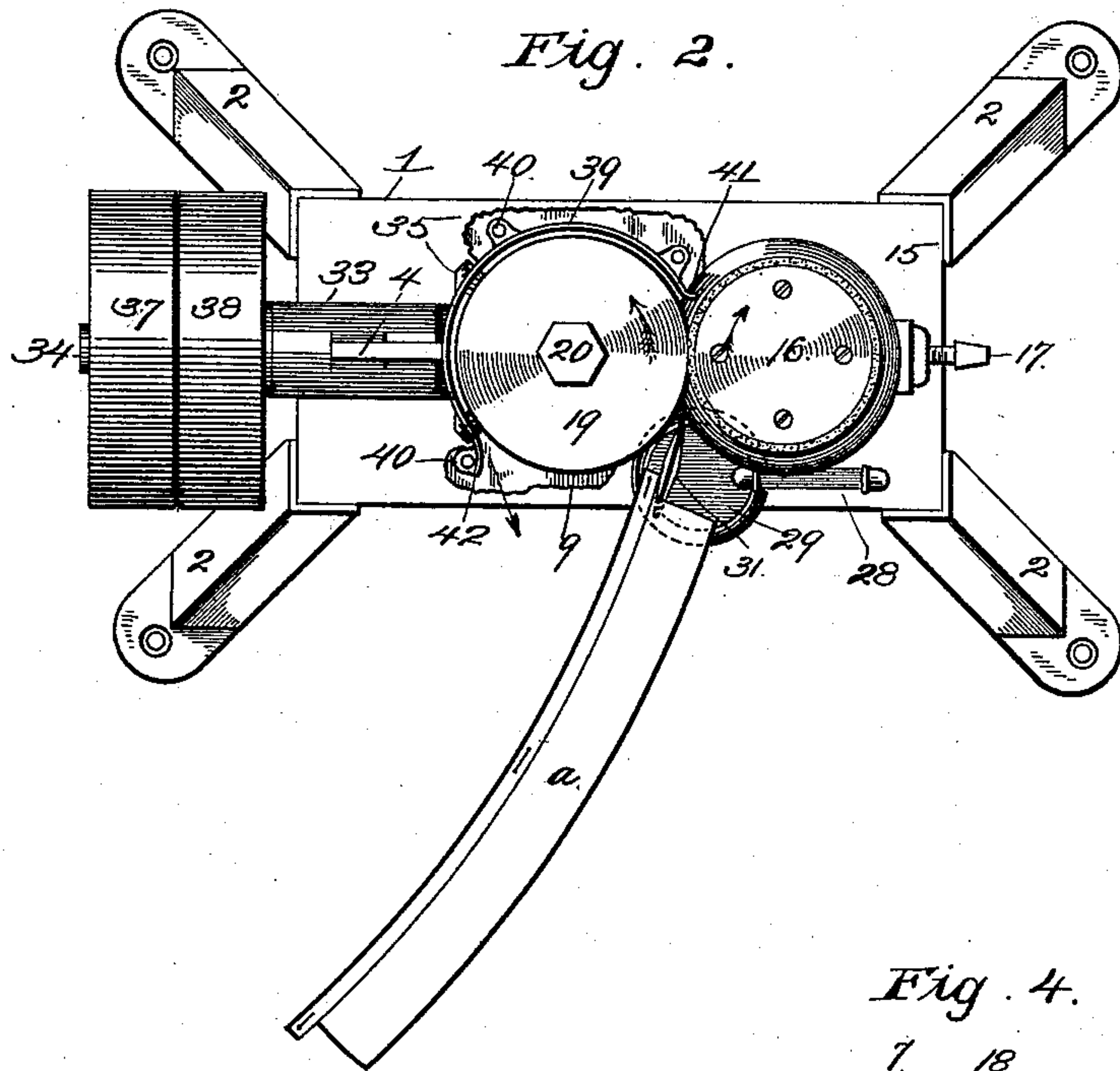
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2 Sheets—Sheet 2.

J. A. ANDERSON.  
COLLAR FOLDING MACHINE.

No. 572,239.

Patented Dec. 1, 1896.



Witnesses:

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Inventor

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# UNITED STATES PATENT OFFICE.

JAMES A. ANDERSON, OF KANSAS CITY, MISSOURI.

## COLLAR-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,239, dated December 1, 1896.

Application filed May 11, 1896. Serial No. 590,991. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES A. ANDERSON, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Collar-Folding Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to machines for folding turn-down collars; and it consists in certain novel and peculiar features of construction and combinations of parts, which will hereinafter be described and claimed.

The object of the invention is to produce a machine of this character which is simple, strong, durable, and inexpensive of construction and positive and reliable in action.

Other objects of the invention will hereinafter appear, and be pointed out particularly in the claim.

Referring to said drawings, Figure 1 represents a front view of a turn-down-collar-folding machine embodying my invention. Fig. 2 represents a plan view of the same with the collar-table broken away. Fig. 3 represents an enlarged vertical section of the folding cylinders or cones. Fig. 4 represents a horizontal section taken on the line IV IV of Fig. 1. Fig. 5 represents in perspective a steaming device for rendering the collars flexible at their fold-lines, and also represents a collar arranged in operative position relative thereto and just before it enters between the folding cylinders or cones.

In said drawings, 1 designates a table, which is supported by means of legs 2, which may be bolted to the floor of a room, or said table may be supported in any other suitable manner.

3 designates uprights, forming a part of or secured to the table, which are connected at their upper ends by means of a cross-bar 4, which cross-bar is provided near its middle with an enlargement to form a bearing 5 and with a longitudinal slot 6, which is semicylindrical at its inner end.

7 designates a bearing-block, which is slidably mounted in said slot, and at its inner side is provided with a vertical semicircular groove, which, acting in conjunction with the semicylindrical end of the said slot, forms a

bearing for the vertical shaft 8, which shaft projects at its upper end loosely through the collar-table 9, so as to allow of a limited adjustment therein, and its lower end is journaled in an opening in the table 1, and is provided above said table with a rigid collar or enlargement 10 and below it with a collar 11, cast integrally with a cog-wheel 12 and secured rigidly upon said shaft by a set-screw 13. Mounted rigidly upon the upper end of said shaft is a cone 14, of wood or other suitable material, around which is a layer of felt, cloth, or equivalent material 15, and secured upon the upper end of the cone and overlapping the felt or cloth, so as to prevent its working upwardly and becoming disconnected from the cone, is a plate 16, as shown clearly in Fig. 3.

17 designates a set-screw which extends through the bar 4 inwardly of the slot 6, and 18 a spiral spring which is mounted upon the inner end of said set-screw and upon a pin projecting from the bearing-block 7, and exerts pressure upon the latter to hold it firmly and reliably against the shaft 8. The object in providing this yielding pressure against said shaft is to permit the same, or rather the cone at its upper end, to yield to any irregularities in the surface of the collar being folded and also to permit said pressure to be regulated—that is, increased or diminished, as desired.

19 designates an inverted hollow cone of about the same diameter as the cone 14 and constructed of metal or equivalent material. It is provided at its upper end with an angular head 20, whereby it may be screwed on and off the upper end of the tubular shaft 21, journaled near its upper end in the bearing of the bar 4 and near its lower end in the table 1 and extending vertically. To prevent any downward movement of the said shaft, the collar 22 is fixed upon it and rests upon the bar 4. Below the table it carries a collar 23, cast integrally with the cog-wheel 24, which engages the cog-wheel 12, and a set-screw 25, carried by said collar 23, impinges upon the shaft 21, whereby the rotation of the shaft causes a corresponding rotation of the cog-wheel 24. Below said collar said shaft is connected by the swivel-coupling 26 with the



stand or supply pipe 27, which pipe is connected to any suitable steam supply, and is also connected by means of the valve-controlled pipe 28 with a casing 29, arranged, preferably, below the table 9 and provided with an upwardly-projecting pipe 30, which extends through said table and terminates in a flattened portion with a long and narrow discharge-nozzle 31. This discharge-nozzle is arranged opposite to the meeting line or conjunction of said cones, and is curved sufficiently to correspond to the curved seam-line or neckband of the collar, and the bevel of the cones also corresponds in degree to the curved seam-line of the collar—that is to say, the cones are beveled in such degree that the curved turn-down collar in passing between them will travel in a direction about at right angles to the meeting line of said beveled surfaces, so that it will be ironed smoothly from end to end and will not be creased or twisted, as would be the case if a turn-down collar were passed between a pair of perfectly cylindrical rollers or between a pair which were not beveled to correspond to the curve of the collar. This seam-line, which occurs at the upper edge of the neckband, is the line upon which the collar is turned down or folded.

The casing 29 is provided at its lower end with a valve-controlled discharge-pipe 32 for the escape of the condensation of the steam. The upright 3 at the opposite side of the shaft 21 from the shaft 8 is provided or formed integrally with an elongated bearing-sleeve 33, in which is journaled the short shaft 34, and mounted rigidly upon the inner end of said shaft is a beveled gear 35, meshing with a similar beveled gear 36, mounted upon the shaft 21, and mounted upon the outer end of said shaft 34 is a fast and loose pulley 37 and 38, respectively, for engagement with and to receive motion from a drive-belt. (Not shown.)

When collars are to be folded with this apparatus, steam is permitted to pass up through the pipes 27 28 and the shaft 21 and enters the casing 29 and escapes from the nozzle 31 of the same in a thin narrow stream. Steam also enters and heats to the requisite degree the hollow cone 19. The machine is now set in operation, and the shafts 8 and 21 are rotated in the direction indicated by the arrows, Fig. 2, through the medium of the connecting-gear.

To now fold the turn-down collar, which has previously been ironed in the customary manner, it is advanced toward the folding-cones and mounted relative to the discharge-nozzle 31, as illustrated in Fig. 2, the operator grasping it at its front end at opposite sides of said nozzle, pressing it at the seam-line down upon said nozzle to permit the steam issuing therefrom to moisten and thereby render it flexible along such line and permit the operator, by pressing at the op-

posite sides of the same, to fold it down to the position shown in Fig. 5, in which position it is fed between said cones, which fold the parts flatly against each other and feed it around the hollow cone, owing to the fact that the concave side of the curve of said collar is disposed toward the hollow cone 19, the operator pressing it down upon the narrow steam-nozzle in order to render it flexible on the required line as it is drawn through by said cones. In order to dry the collar quickly and to cause it to assume a circular form approximately in its finished state, I employ the curved guide-plate 39, which is arranged concentrically relative to the cone 19, and is secured, as at 40, upon the table 9. At its receiving end, as at 41, it is flared in order to positively and reliably guide the collar as it emerges from between the cones in the proper direction, and at its discharge end it is also preferably flared, as at 42, to facilitate its extraction from the space between the cone and the guide-plate. By this arrangement it is obvious that the collar is held snugly in contact with the heated cone 19 for more than half of its circumference, so that it is thoroughly dried by the time it emerges from between the same and the guide-plate, and its circular form thereby given is established.

In order to prevent any possible danger of cracking or injuring the collar at the fold-line, it is first rendered flexible by the application of steam, as hereinbefore set forth; but to insure absolutely that the pressure upon the collar between the cones shall not be injurious one of them is preferably covered, as hereinbefore explained, with a yielding material, such as cloth or equivalent material, which makes the turn slightly rounded instead of sharp. Any irregularities in the thickness of the collar are accommodated in its passage by reason of the fact that the spring 18 will yield.

Thus it will be seen that I have produced a turn-down-collar-folding machine which is positive and reliable in operation and which will not injure the collar in the slightest degree. The slight play or movement of the shaft 8 at its upper end will not affect the operative relation existing between the cog-wheels 12 and 24. The steaming appliance is precisely the same as that for which I have an application pending at the present time, which was filed June 20, 1895, Serial No. 553,421, and to it no claim is made *per se*. In this connection the discharge-nozzle is made slightly curved to correspond to the curvature of the turn-down collar instead of being straight, as illustrated in said application.

It is obvious, of course, that slight changes may be made in the detail construction, arrangement, or form of the parts without departing from the spirit and scope or sacrificing any of the advantages of my invention.



Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

5 The combination with a pair of rotating cones inverted with respect to each other, of a discharge-nozzle curved to correspond in degree to the curvature of the neckband of a collar, and adapted to discharge a long and

narrow stream of steam, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES A. ANDERSON.

Witnesses:

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G. Y. THORPE.