

A. L. DAWSON.
PORTABLE FOUNTAIN SYRINGE.
APPLICATION FILED JULY 16, 1909.

962,999.

Patented June 28, 1910.

Fig. 1.

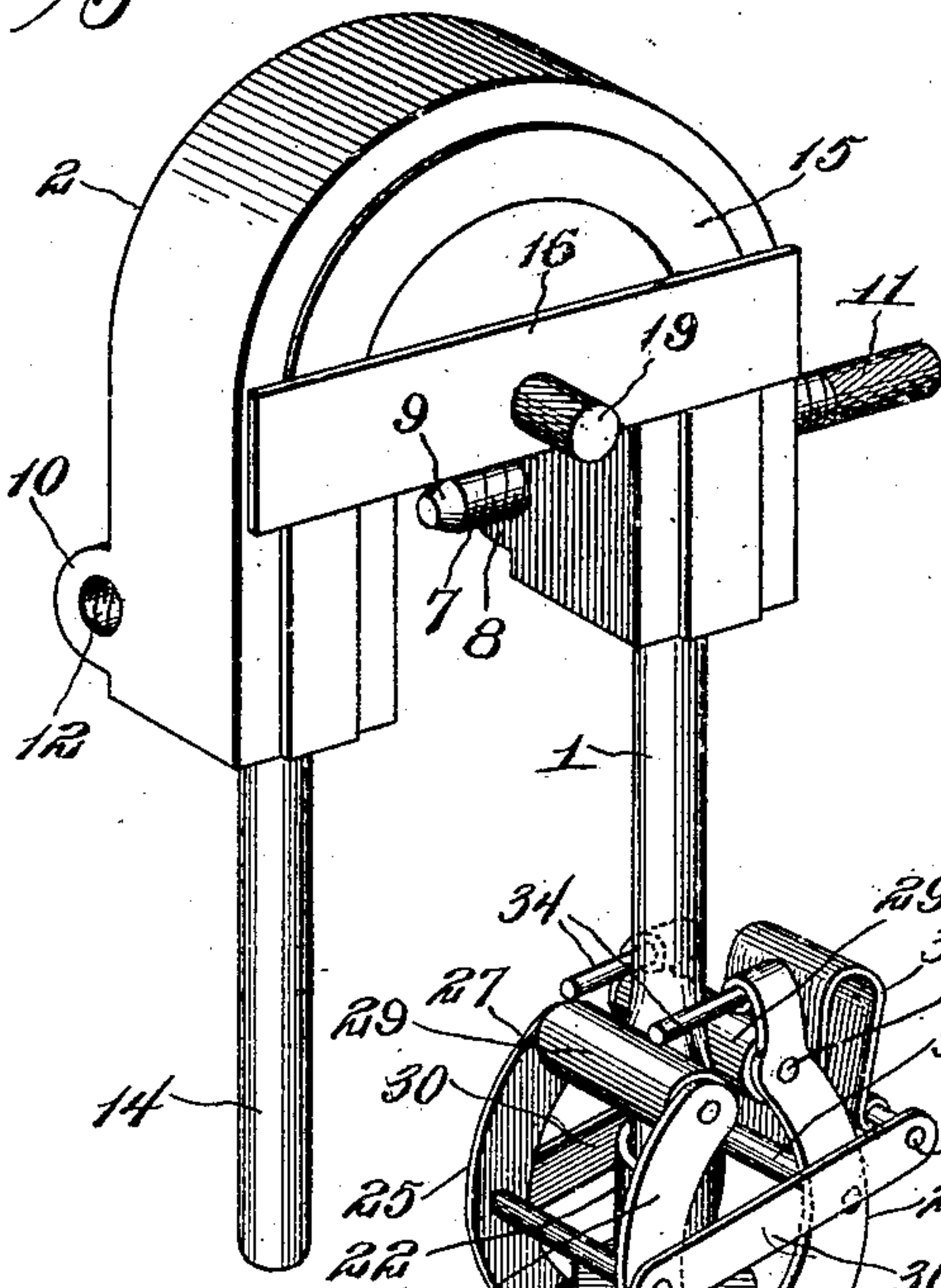


Fig. 5.

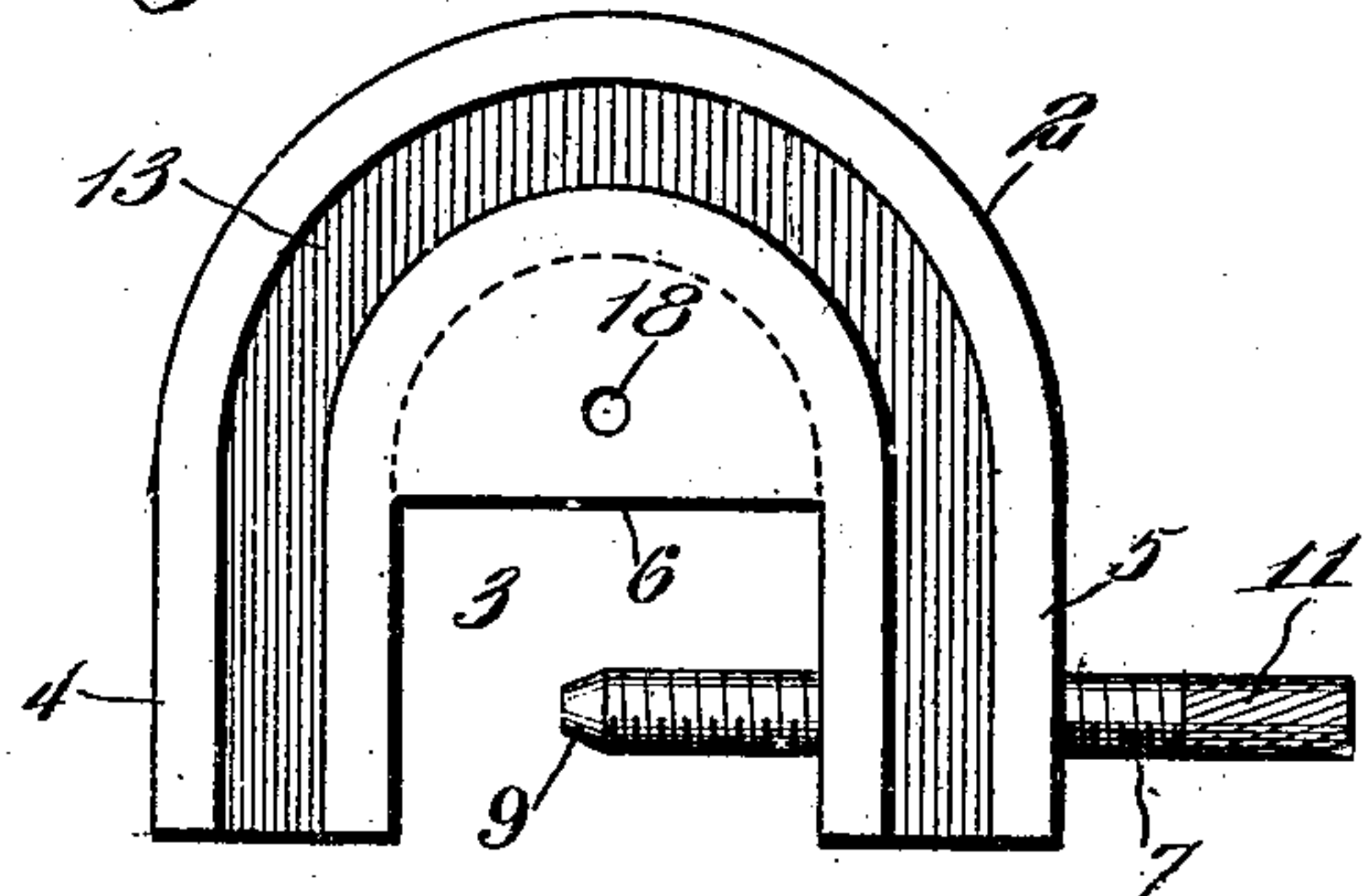


Fig. 4.

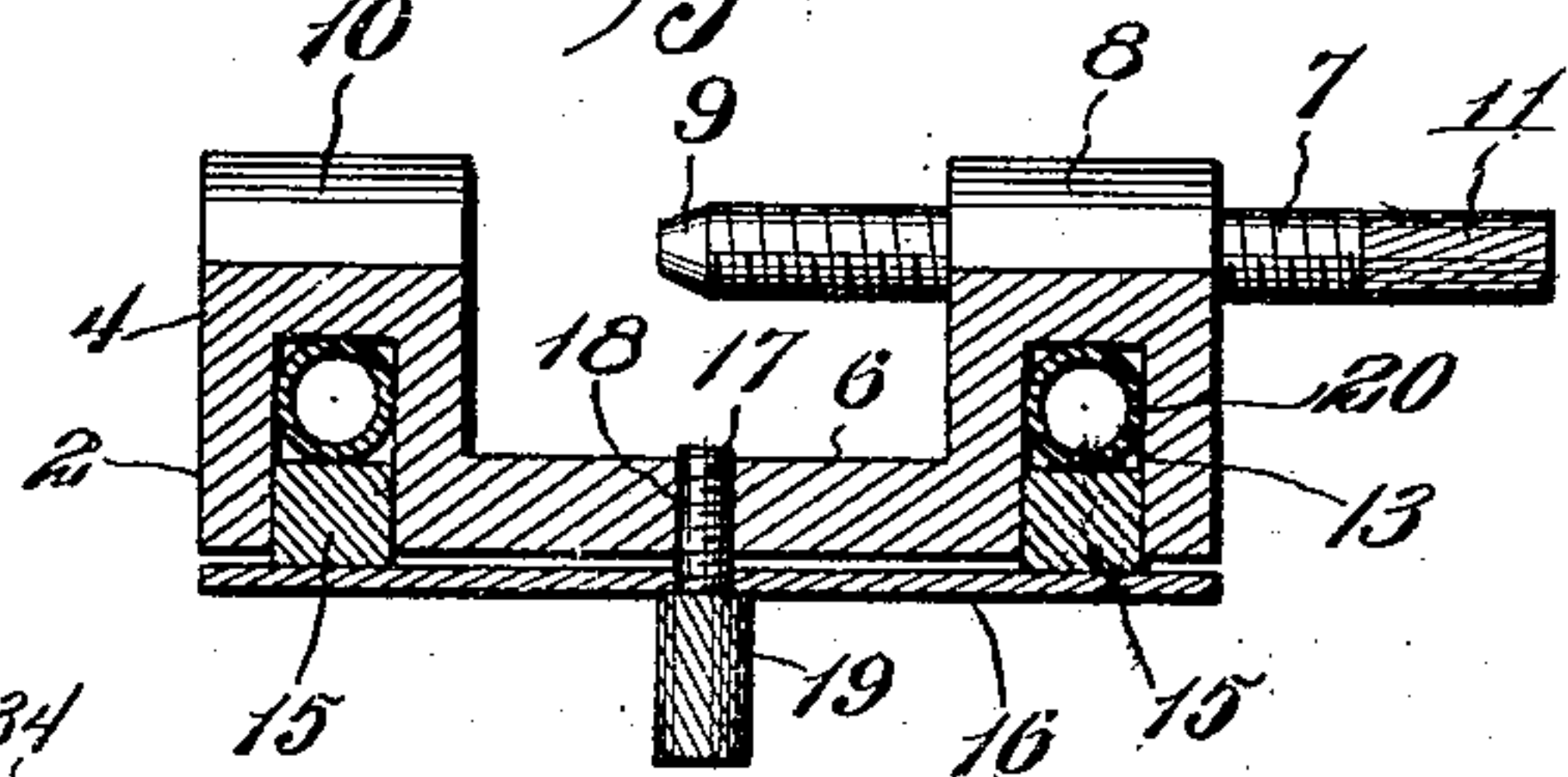


Fig. 6.

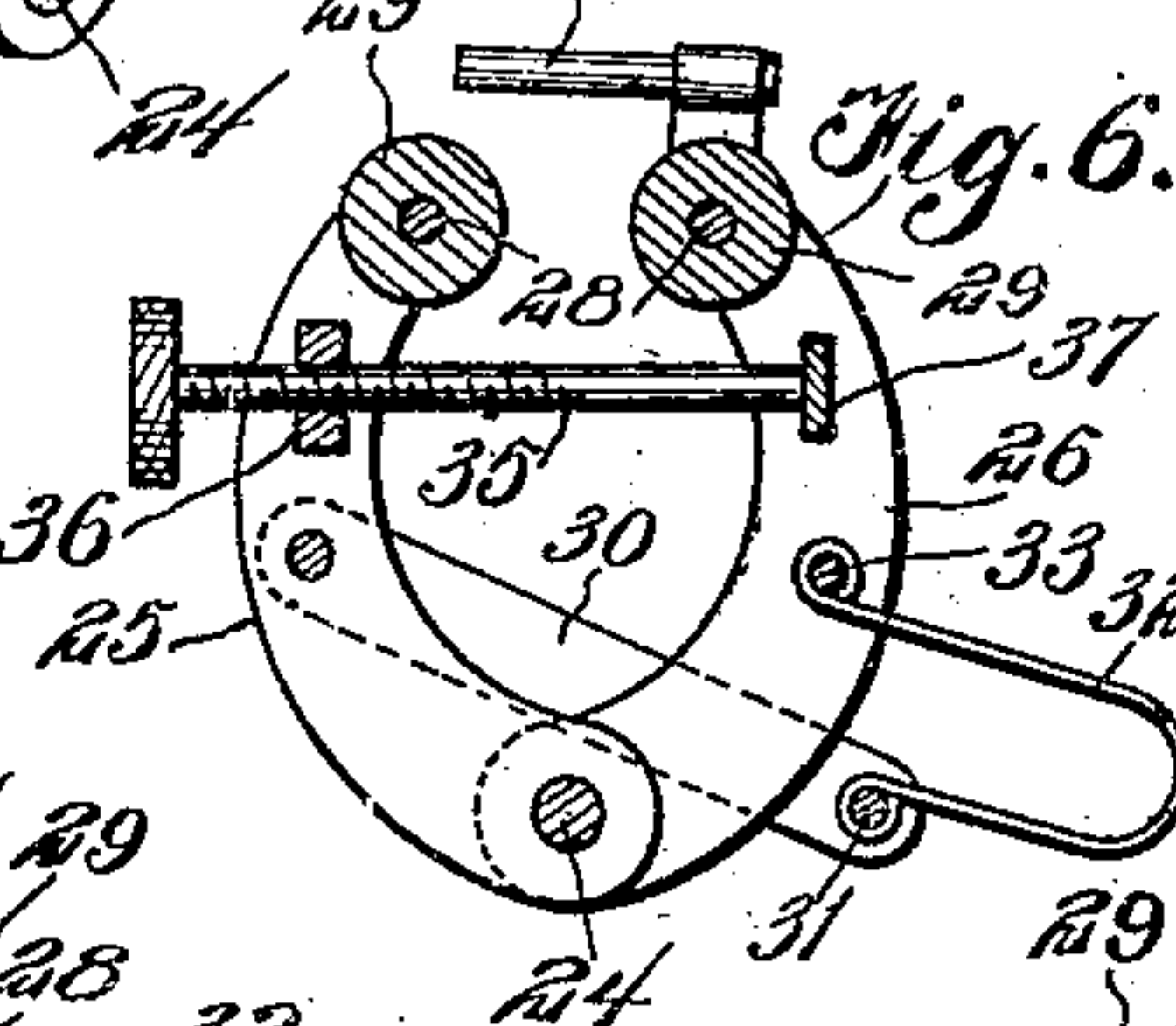


Fig. 2.

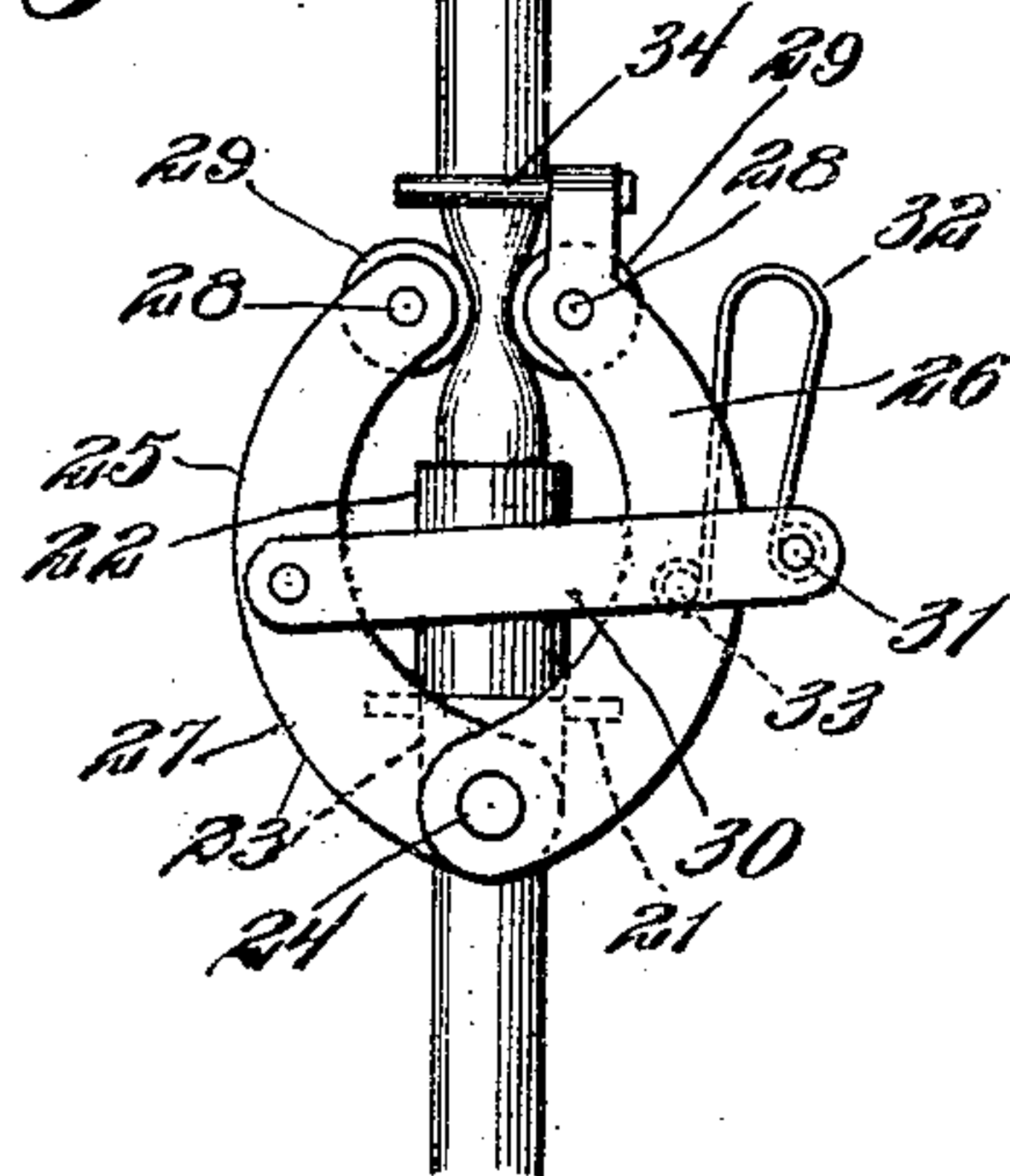
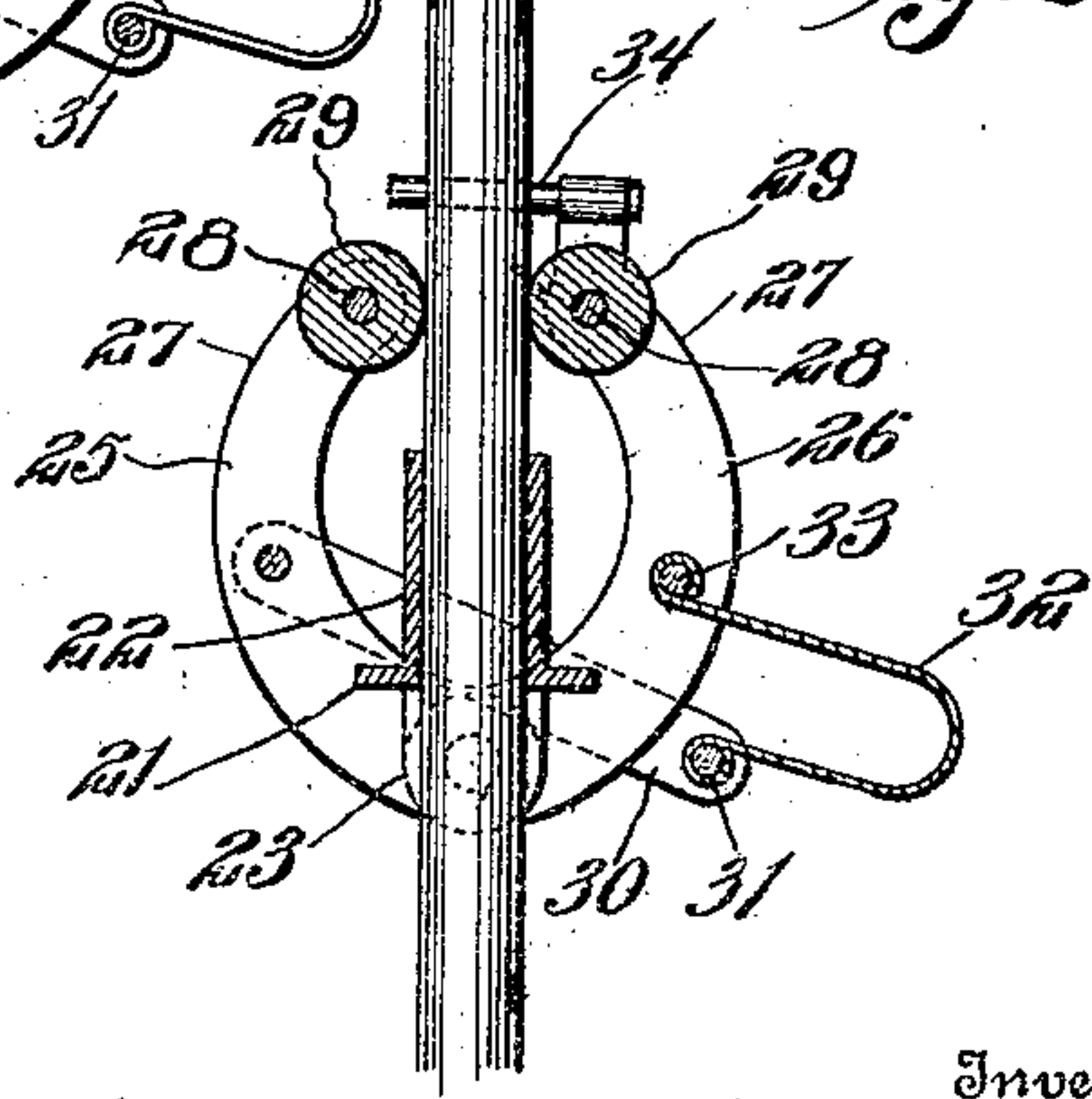


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PORTABLE FOUNTAIN-SYRINGE.

962,999.

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To all whom it may concern:

Be it known that I, ARTEMAS L. DAWSON, a citizen of the United States, residing at Devall Bluff, in the county of Prairie and State of Arkansas, have invented new and useful Improvements in Portable Fountain-Syringes, of which the following is a specification.

This invention relates to a portable fountain syringe, the main object of the invention being to provide a syringe of this character which may be compactly arranged for storage or transportation and used in connection with any ordinary type of open vessel as a font.

A further object of the invention is to provide a hanger for supporting the device from the rim edge of the vessel, which support is adapted to be securely clamped in position, to permit ready and convenient adjustment of the flow tube to regulate the length of the induction or suction end of said tube as occasion requires, and is provided with means to regulate the flow of fluid through the tube.

A still further object of the invention is to provide a siphon starter for starting the flow of liquid in a simple and effective manner, which device is adapted in action to yieldingly compress the tube and compensate for any irregularities in thickness thereof which may exist, so that it may be operated without resistance from or injury to the tube, and which may be effectually employed upon tubes varying in diameter to a greater or less extent.

Figure 1 is a perspective view of a portable syringe embodying my invention, showing only a portion of the siphon tube. Fig. 2 is a side elevation of the siphon starter as arranged for operation upon the tube. Fig. 3 is a similar view showing the starter in section. Fig. 4 is a horizontal transverse section through the supporting bracket. Fig. 5 is a face view of the same with the hose clamp removed. Fig. 6 is a sectional view of the starter showing a modification.

Referring to the drawing, 1 designates a siphon tube of rubber or other suitable flexible material. This tube is adapted to be supported upon the rim of any suitable open vessel by a U-shaped bracket or hanger 2. The rim edge of the wall of the vessel is designed to fit within the receiving space of the bracket and to be straddled by the

arms 4 and 5 thereof, the body portion of the bracket forming a saddle 6 to rest upon said edge, by which the bracket may have sufficient bearing to be supported firmly in position. In order to secure the bracket upon the walls of vessels which vary in size, a clamping screw 7 is provided, which screw passes transversely of the bracket through a threaded passage in a boss 8 formed on the rear face of the arm 5 and has an inner engaging end 9 arranged in alinement with a similar boss 10 formed on the arm 4, by which the wall of the vessel may be clamped between said arms and bosses. The outer end of the screw is knurled or serrated to provide a roughened finger piece 11 by which it may be conveniently turned in and out to clamp or release the bracket. If desired, the boss 10 may be provided with a threaded passage 12 similar to the passage in the boss 8 to receive the inner portion of the screw to permit the latter to be screwed inward to its fullest extent so that its outer end will project but slightly beyond the arm 5 to adapt the bracket to be packed in a minimum amount of space for storage or transit. This counterpart construction of the two bosses 8 and 10 will also adapt the screw to be reversed or applied for use upon either arm for the convenience of a right or left-handed person in applying and releasing the bracket, and also to adapt the bracket to face inwardly or outwardly as occasion may require in the use of the syringe.

The bracket is formed with a U-shaped channel 13 for the passage therethrough of the tube 1, which channel extends through its body portion and arms and opens at its ends through the latter. The channel also opens through the outer side or face of the bracket, so that a portion of the tube may be doubled or arranged in U-form and readily slipped into and out of the channel, enabling the tube to be arranged in the form of a siphon and adjusted to regulate the effective length of its induction or suction end 14. A U-shaped clamping member 15 is provided to fit within and close the open side of the channel and bear upon the inclosed portion of the tube to clamp the same in position and contract such portion of the tube to a greater or less extent to regulate the flow of the douche or solution therethrough when the syringe is in use. The clamping member is adjustably retained

in position by a bearing or clamping plate 16 extending transversely across the front of the bracket and terminally bearing against the outer faces of the sides of the clamping member. The central portion of this plate is apertured for the passage of a holding and adjusting screw 17 which enters a threaded opening 18 in the body of the bracket. The outer end of this screw is in the form of a knurled finger piece 19 of enlarged diameter and which provides at its inner end a shoulder to bear against the spring plate. By the adjustment of this screw the pressure of the plate upon the clamping member 15 may be varied to cause said clamping member to clamp the inclosed portion of the tube with sufficient friction to hold it from slipping. Upon removing the screw, the spring plate and clamping member may be detached to permit removal of the tube, so that the latter may be adjusted in an obvious manner to regulate the length of the suction end 14, by which the latter may be caused to depend to a greater or less depth into the font or vessel, according to the depth of the vessel or the amount of the liquid contained therein.

Arranged upon the longer or discharge portion 20 of the tube 1 is a device for compressing and expelling the air therefrom and establishing a suction or siphon action to start the flow of liquid through the tube. This device comprises a body portion or bracket 21 carrying a guide tube or sleeve 22 for the passage of the siphon tube and to slidably mount the siphon starter thereon. The bracket 22 is provided with parallel ears 23 supporting pins 24 on which are pivotally mounted oppositely disposed cooperating clamping members or jaws 25 and 26. Each of these clamping members or jaws consists of a pair of spaced segmental arms or plates 27 pivotally mounted at their outer or lower ends upon the pins 24 and provided at their inner or upper free ends with apertures for the reception of a transverse pin 28 on which is revolubly mounted a pressure roller 29, the pressure rollers of the two jaws thus constructed being arranged to bear upon opposite sides of the siphon tube 1 in advance of the upper end of the guide tube 22, which extends between the central portions of the jaws. Oppositely disposed links 30 are pivoted at one end to the arms of the jaw 25 and extend at their opposite ends beyond the arms of the jaw 26. The latter named ends of the links are connected by a pin 31, to which is secured one end of a U-shaped lever 32, the opposite end of which is secured to a cross pin 33 fixed to and extending between the arms of the jaw 26. This lever is formed of a doubled strip of spring metal, having its bight portion projecting to form a finger

piece, by which said lever may be swung outwardly and inwardly to correspondingly swing the links to adjust the jaws relatively to each other, whereby they may be opened and closed to move the rollers 29 out of engagement with the tube 1 or to throw them into engagement therewith and lock the jaws simultaneously in clamping position.

It will be understood from the foregoing description that through this yielding pressure of the rollers upon the siphon tube 1, the starting device may be slid longitudinally on the tube in either direction. Hence when the jaws are closed, the rollers will compress the tube 1 sufficiently to prevent passage of air or liquid therethrough, but not sufficiently tight to prevent longitudinal movement of the starter along said tube. When, therefore, the apparatus is arranged for use with the suction end 14 of the tube submerged in the liquid contained in the vessel and the starting device is moved outwardly from the supporting bracket along the discharge end 20 of the tube, the air in such portion of the tube will be expelled and create a partial vacuum therein, whereby a siphonic action will be instituted to produce a flow of the liquid, which will discharge through the eduction end of the tube upon the opening of the jaws of the starting device and consequent relaxation of pressure of the rollers 29 upon the tube.

The relative arrangement of the guide tube 22 and rollers 29 adapts the starter to be moved with equal facility in either direction on the siphon tube, and the free end of the tube 2 2 terminates sufficiently close to the rollers to prevent lateral deflection of the tube 1 while the starter is being adjusted along the same, the guide tube keeping the siphon tube in contact with the central portions of the roller. In order to prevent deflection of the siphon tube outwardly beyond the ends of the rollers when the starter is adjusted inwardly or toward the bracket, the roller carrying ends of one of the jaws are provided with a guide in the form of spaced pins or their equivalent 34 arranged in a direction transversely of the rollers to center the siphon tube between them.

In practice, the channel 13 of the bracket is made of a width sufficient to accommodate rubber tubes 1 which vary to some extent generally in diameter. The object of employing the lever 32 of the starting device and constructing and applying the same as described, is to yieldably connect the jaws 25 and 26 so that they may have pivoted motion when closed to permit the rollers 29 to have an in and out motion, when the starter is moved along the tube, to compensate for variations in the thickness of the walls of the tube. By this means the pressure of the rollers will always keep the siphon tube closed against the passage of liquid or air

when the jaws are closed, while at the same time preventing any abnormally thickened portion of the siphon tube binding between and holding the starting device against sliding movement. Also when the old tube is worn out and a new one of the proper bore and thickness of wall cannot be obtained, a tube of differing bore and wall thickness can be readily used. When the fluid is to be forced into some cavity—for example, into that of an abscess—and it would be inconvenient to use a tube long enough to permit the elevation of the font vessel to a height sufficient to produce the needed pressure; or when the height of the rooms would not permit the elevation of the font to the needed height, then any needed force may be applied to the liquid contents of the tube by closing the starter, upon the tube, at a point on the pipe, at some distance from that end of the tube, which is connected to or inserted into the cavity, and then sliding the closed starter along the tube, toward the inserted end. It is evident that the fluid contents, in advance of the moving starter, will be forced out of the tube and into the cavity into which the tube is inserted. In case it is desired to pump the injected fluid alternately out of the cavity and into it again, it is clear that a reciprocating sliding movement of the closed starter upon the tube will alternately pump the fluid from the cavity, and return it thereto. It is often desirable to examine the character of the contents of a cavity in order to decide as to the proper fluid or solution to be used in the subsequent washing or disinfection of the cavity. For this use a suitable tubular exploring needle is attached to the end of the tube, the needle inserted into the cavity, the opened starter slid along the tube till close to the exploring needle and the starter then closed down on the tube. It is evident that, by sliding the closed starter along the tube in a direction away from the needle, a portion or all of the contents of the cavity will be drawn into the needle and connected tube. Upon the withdrawal of the needle from the cavity its contents may be readily ejected for examination, by a reverse motion of the closed starter along the tube.

In Fig. 6 I have shown a screw 35 mounted in a threaded opening in a cross piece 36 extending between the arms of one of the jaws and impinging at its free end against a cross piece 37 extending between the arms of the other jaw. By means of this screw the jaws may be held open to a greater or less extent against the resistance of the spring lever, so that the pressure of the rollers on the siphon tube may be regulated to diminish the flow of liquid through the tube to any degree desired.

A syringe constructed in accordance with my invention dispenses with the use of the bulky and troublesome sack and enables any

open vessel, from a cup, pitcher or smaller vessel to one the size of a washtub, to be used, as convenience or circumstances may require or demand. It will be apparent that the device may be easily and conveniently folded in close compass for storage or transportation and thoroughly cleansed when necessary, as all of its parts may be disassembled so that all surfaces may be reached.

I claim:—

1. A syringe comprising a saddle bracket having a channel opening through one side thereof, a flexible siphon tube having a looped portion extending through said channel and insertible and removable through the open side thereof, and a closure for said open side of the channel adapted to engage and hold the inclosed portion of the tube against endwise movement.

2. A syringe comprising a saddle bracket having a channel opening through one side thereof, means for clamping the bracket upon a receptacle, a flexible siphon tube having a looped portion extending through said channel and insertible and removable through the open side thereof, and a closure for said open side of the channel adapted to engage and hold the inclosed portion of the tube against endwise movement.

3. A syringe comprising a saddle bracket having a channel opening through one of the faces thereof and provided upon the reverse faces of its arms with lugs, a clamping screw mounted upon one of said lugs, a flexible siphon tube having a looped portion extending through said channel and insertible and removable through the open side thereof, and a closure for said open side of the channel adapted to engage and hold the inclosed portion of the tube against endwise movement.

4. A syringe comprising a supporting bracket having a U-shaped channel open at one side, a flexible siphon tube having a looped portion extending through said channel and insertible and removable through the open side thereof, and a closure for said open side of the channel adapted to engage and hold the inclosed portion of the tube against endwise movement.

5. A syringe comprising a supporting bracket having a U-shaped channel open at one side, a flexible siphon tube having a looped portion extending through said channel and insertible and removable through said open side, a U-shaped closure for the open side of the channel adapted to engage and hold the inclosed portion of the tube against endwise movement, and means for retaining said closure in position.

6. A syringe comprising a supporting bracket provided with a channel, a siphon tube having a portion extending through the channel and laterally removable therefrom, and a removable closure for the channel.

7. A syringe comprising a supporting bracket having a channel open at one side and provided with alined supporting lugs arranged on the reverse side thereof from
 5 the open side of the channel, a clamping screw carried by one of the lugs, a closure for the open side of the channel, and means for retaining the closure in position.

8. A syringe comprising a U-shaped sup-
 10 porting bracket having a correspondingly shaped channel opening through one face thereof, clamping means upon the bracket, a siphon tube extending through said channel, a U-shaped closure for the open side of
 15 the channel, a clamping strip engaging said closure to retain it in position, and means adjustably securing said clamping strip to the bracket.

9. A portable fountain syringe compris-
 20 ing a siphon tube, means for supporting the same upon a receptacle, and a siphon starter upon the eduction portion of the tube, said starter comprising pivotally mounted jaws provided with devices to engage and com-
 25 press the tube, means connecting said jaws for a relative yielding movement, and a guide tube arranged between the jaws and terminating adjacent said engaging devices.

10. A portable fountain syringe compris-
 30 ing a siphon tube, means for supporting the same upon a receptacle, a pair of pivoted jaws slidably mounted upon the eduction portion of the tube and provided with en-
 35 gaging members to compress the tube, means for yieldingly maintaining the jaws in closed position, and guides for maintaining the tube on a line between the engaging members, one of said guides extending lon-
 40 gitudinally between said jaws.

11. A portable fountain syringe compris-
 45 ing a siphon tube, means for supporting the same upon a receptacle, pivotally mounted spring actuated jaws slidably engaging the eduction end of the tube and provided with
 50 pressure rollers to engage the same, and guiding means extending longitudinally between the jaws for preventing displacement of the tube from between said rollers.

12. A portable fountain syringe compris-
 55 ing a siphon tube, means for supporting the same upon a receptacle, pivotally mounted spring pressed jaws slidably engaging the eduction end of the tube and provided with
 60 pressure rollers to bear upon the same, and a guide tube inclosing the siphon tube between the jaws to prevent displacement of said siphon tube from between said rollers.

13. A portable fountain syringe compris-
 65 ing a siphon tube, means for supporting the same upon a receptacle, spring actuated jaws slidably engaging the eduction end of said tube and having pressure rollers to bear upon the same, a guide tube inclosing the siphon tube on a line between the pivoted
 70 ends of the jaws and the rollers, and guid-

ing means for the siphon tube on the oppo-
 site side of the rollers from said guide tube.

14. A portable fountain syringe compris-
 75 ing a siphon tube, means for supporting the same upon a receptacle, a guide member slidably engaging the eduction end of the tube, a pair of spring actuated jaws pivoted to said guide member and provided with
 80 pressure rollers to bear upon the tube, links connected with one of said jaws, and an operating lever connected with the links and other jaw and adapted when in jaw closing
 85 position to maintain a yielding pressure on said jaws.

15. A portable fountain syringe compris-
 90 ing a siphon tube, means for supporting the same upon a receptacle, a guide member slidably engaging the eduction end of the tube, jaws pivotally mounted thereon and provided with pressure rollers to engage the
 95 tube, links connected with one of the jaws, and a lever comprising a folded strip of spring metal, connected with said links and with the other jaw for opening and closing
 100 said jaws, and adapted when in jaw closing position to exert a yielding pressure on the rollers.

16. A fountain syringe comprising a si-
 105 phon tube, means for supporting the same upon a receptacle, a pair of pivoted jaws slidably mounted upon the eduction end of the tube and provided with pressure rollers to bear upon the same, an operating lever
 110 pivotally connected with the jaws and adapted to exert a yielding pressure thereon to permit a relative yielding movement of the rollers, and means for spacing the rollers in opposition to such pressure.

17. A fountain syringe comprising a si-
 115 phon tube, a bracket slidably mounted upon the tube, a pair of spring actuated jaws pivoted to the bracket and provided with portions to bear upon the siphon tube, and a guide tube extending from the bracket be-
 120 tween the jaws to a point adjacent said bearing portions.

18. A fountain syringe embodying a si-
 125 phon tube, a bracket slidably mounted on the tube, jaws pivotally mounted on the bracket and provided with bearing portions to engage the tube, a guide tube extending from said bracket between the jaws to a point adjacent said bearing portions, and a
 130 spring actuated connection between the jaws, said connection serving as a means for closing the jaws and also as a means for opening the jaws.

19. A fountain syringe embodying a si-
 135 phon tube, a bracket slidably mounted thereon, pivoted jaws mounted on the bracket and provided with bearing portions to engage the tube, spring actuated means for opening and closing the jaws, a guide tube
 140 extending from the bracket longitudinally between the jaws to a point adjacent said

bearing portions, and spaced guides upon one of said jaws extending transversely of said bearing portions.

5 20. A fountain syringe comprising a siphon tube, a bracket slidably mounted thereon, jaws pivotally mounted upon the bracket and provided with bearing portions to engage the tube, a guide tube extending longitudinally from the bracket between the jaws
10 to a point adjacent said bearing portions, links connected with one of the jaws and extending beyond the other jaw, and a U-shaped lever formed of spring metal pivotally connecting the latter named jaw and
15 links.

21. A fountain syringe including a siphon tube, a pair of pivotally connected jaws slidably engaging the tube and provided with bearing portions to compress the same, guiding means for retaining the tube between said bearing portions spring actuated means for opening and closing the jaws, and adjustable means for regulating the closing movement of the jaws.

In testimony whereof I affix my signature 25 in presence of two witnesses.

ARTEMAS L. DAWSON.

Witnesses:

JOHN L. FLETCHER,
C. C. HINES.