

(No Model.)

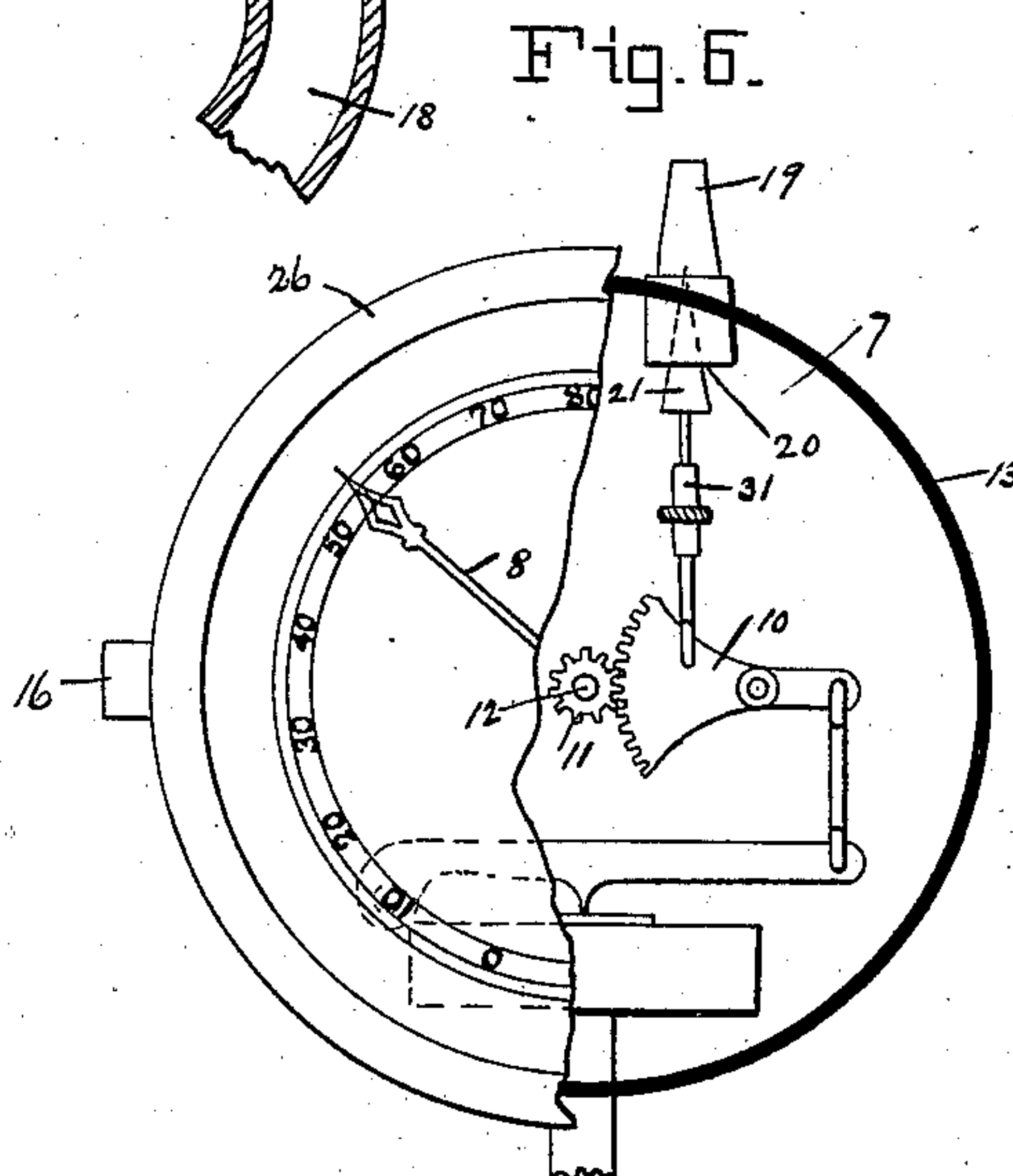
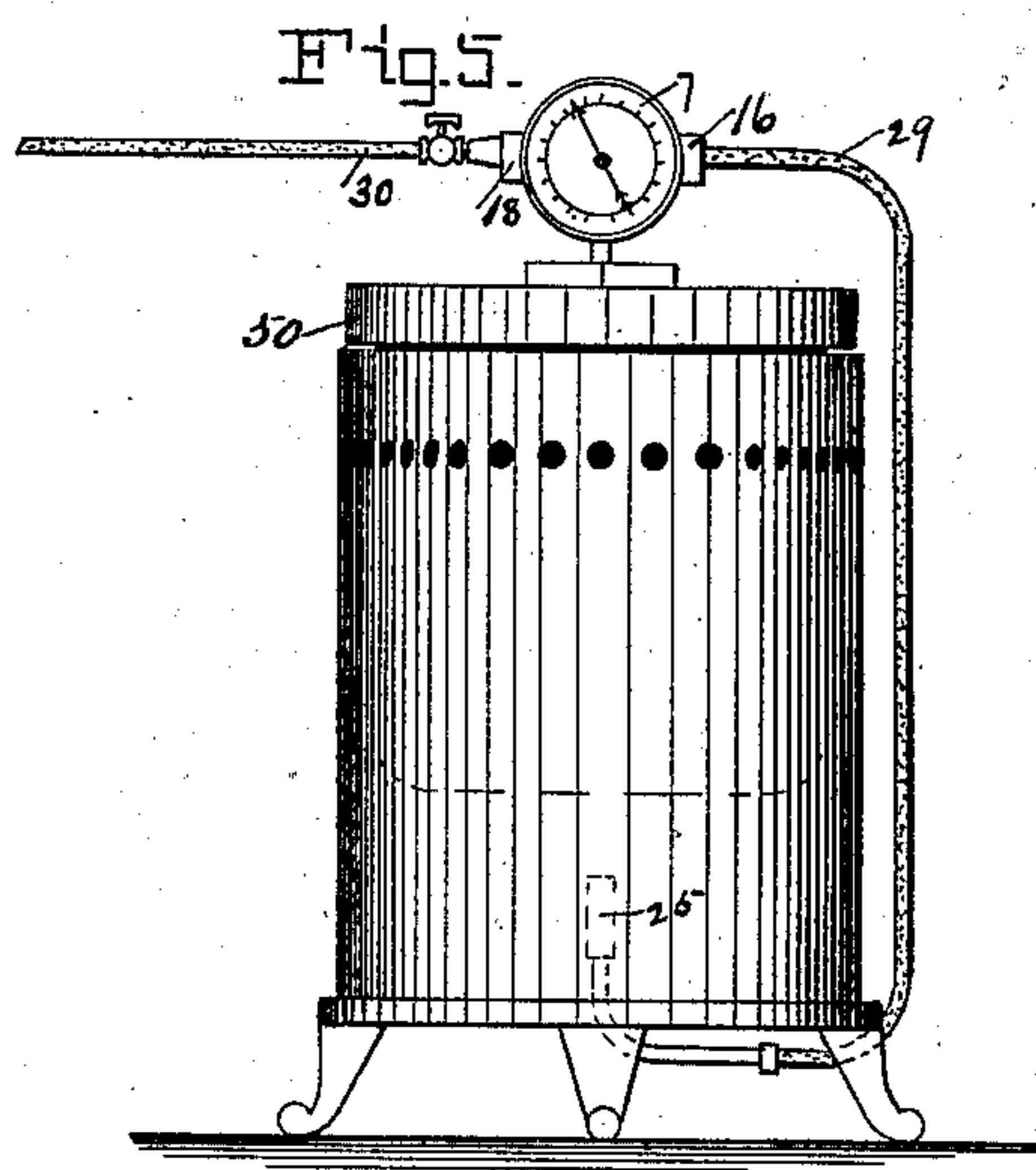
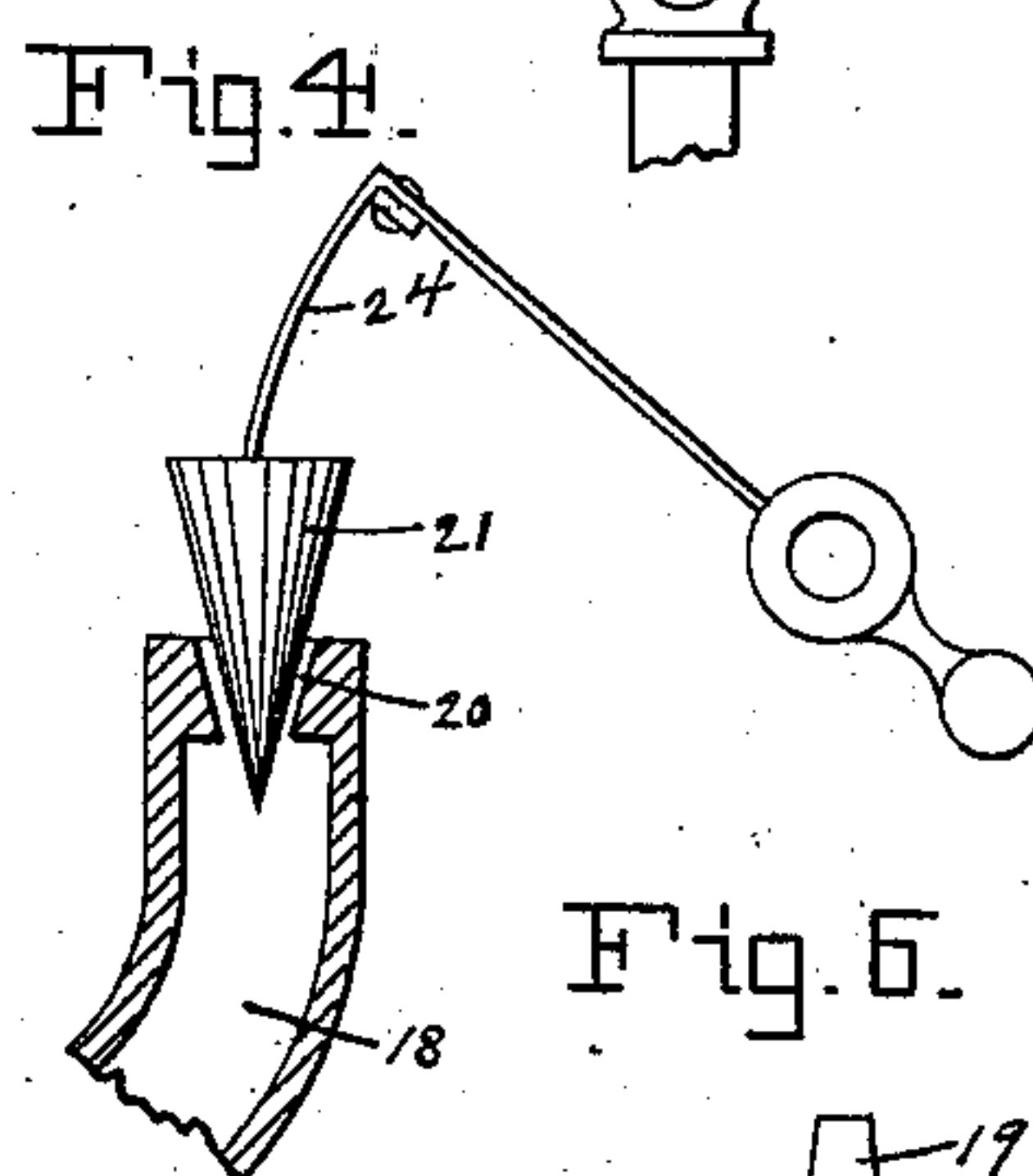
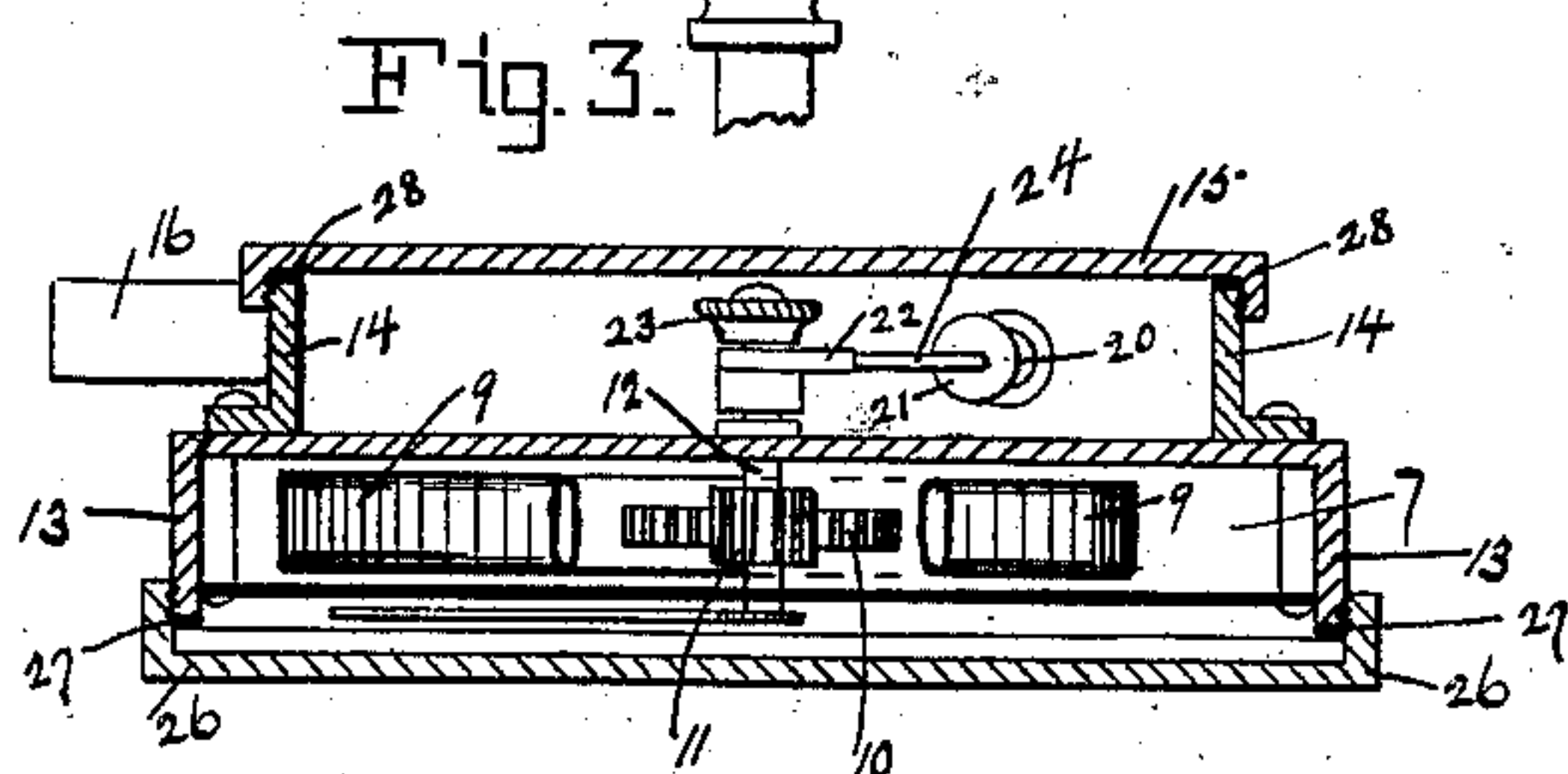
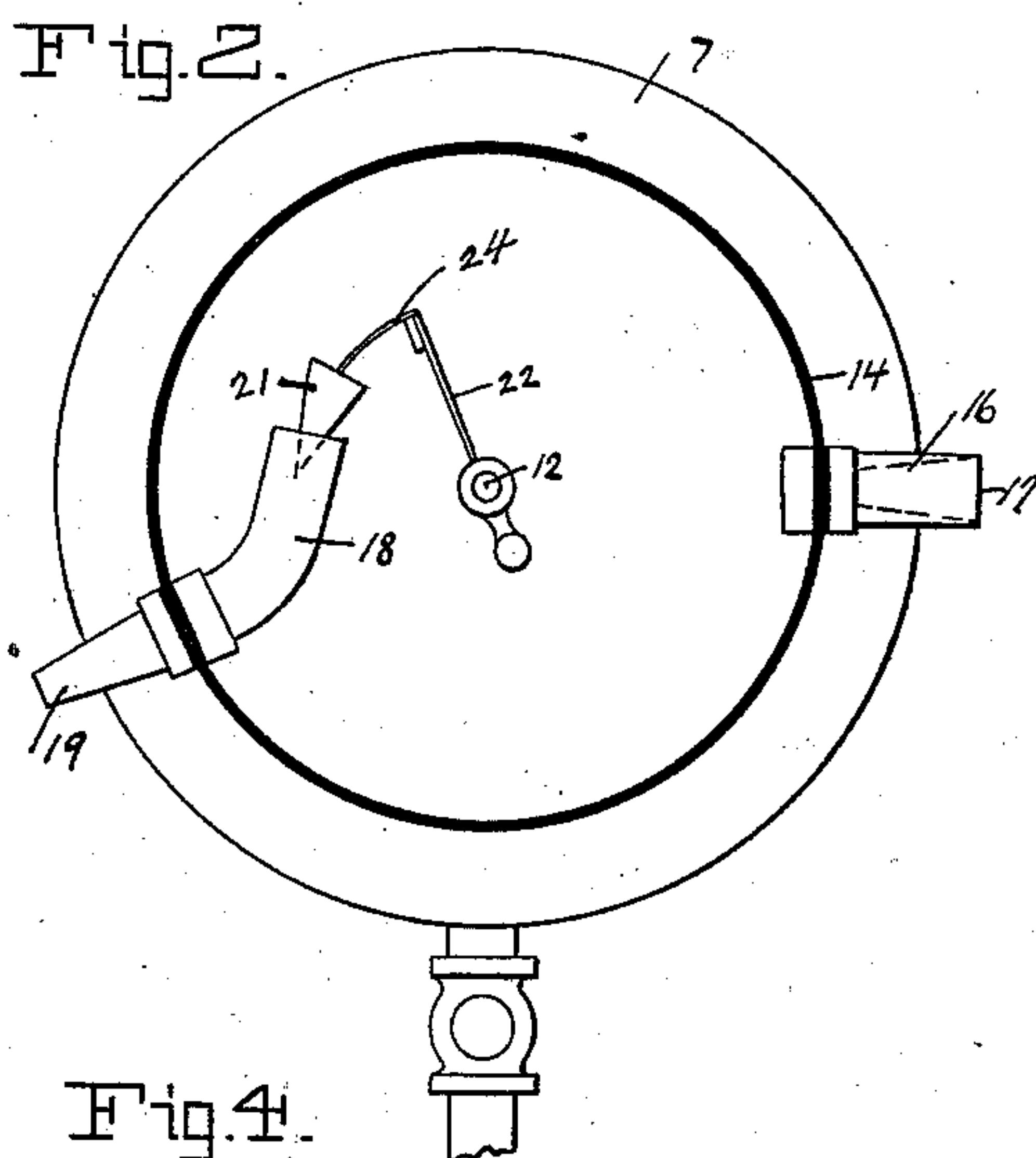
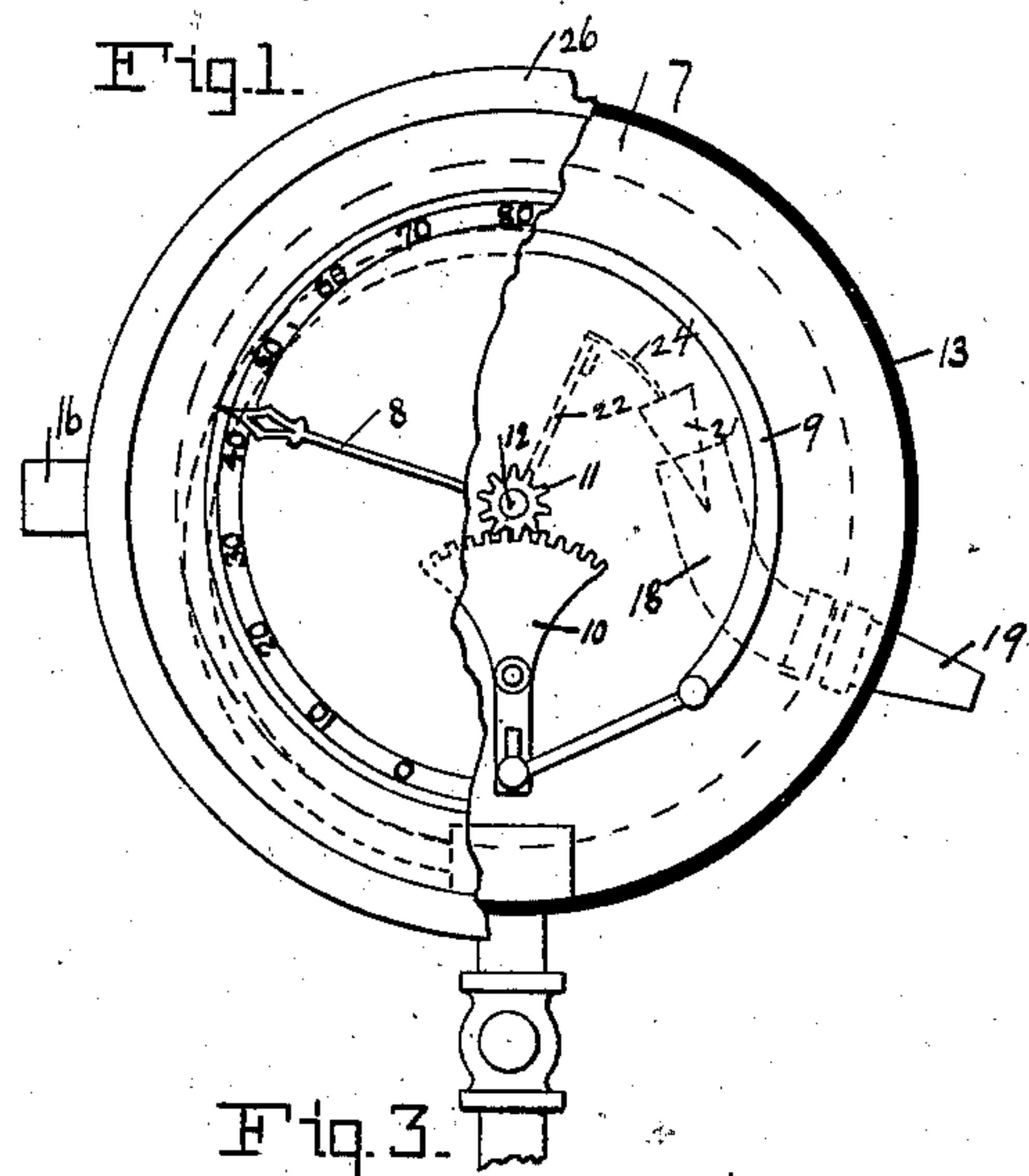
2 Sheets—Sheet 1.

W. B. MANN.

PRESSURE GAGE ATTACHMENT FOR AUTOMATICALLY CONTROLLING
GAS SUPPLY.

No. 373,078.

Patented Nov. 15, 1887.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

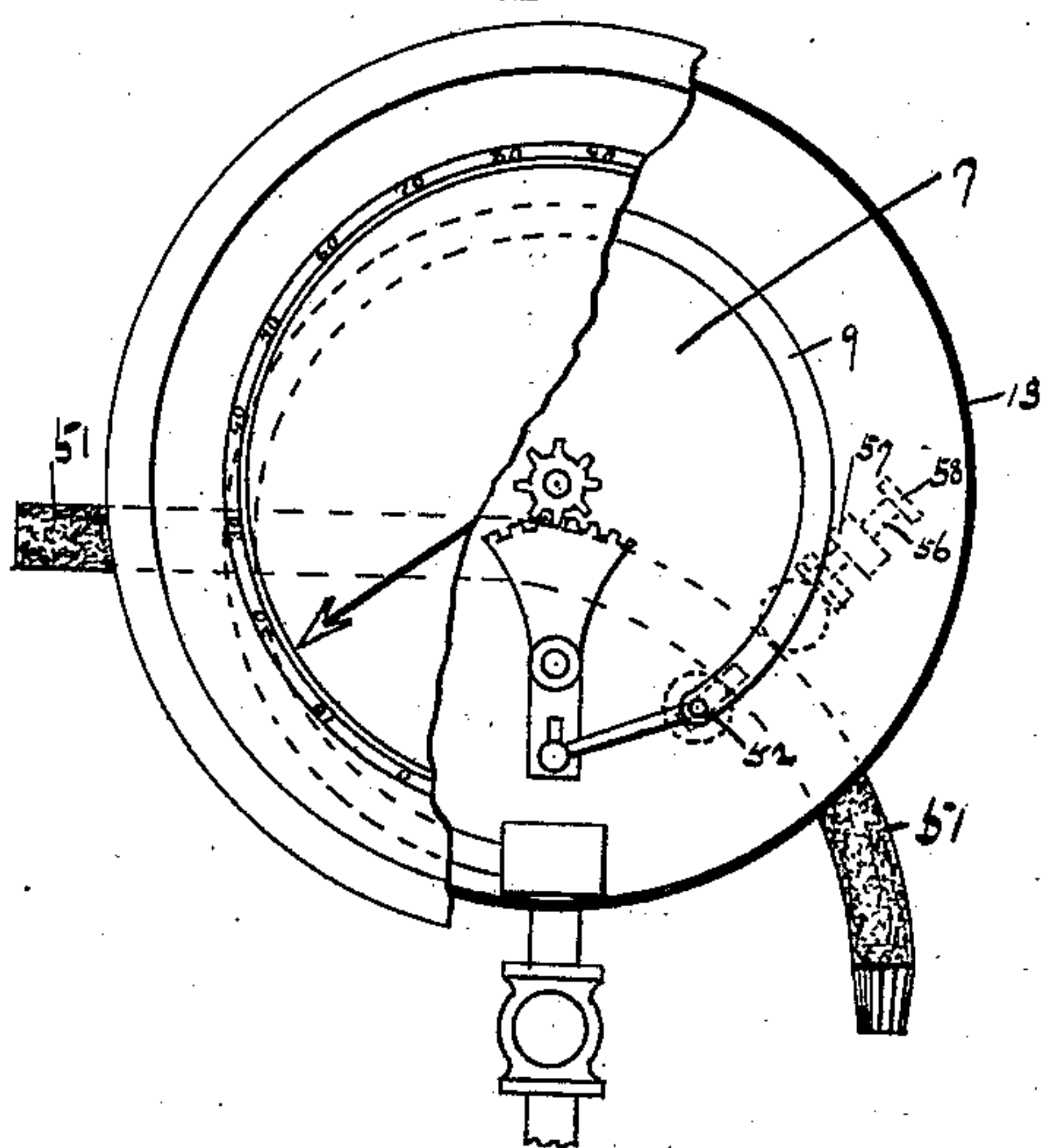


Fig. 8.

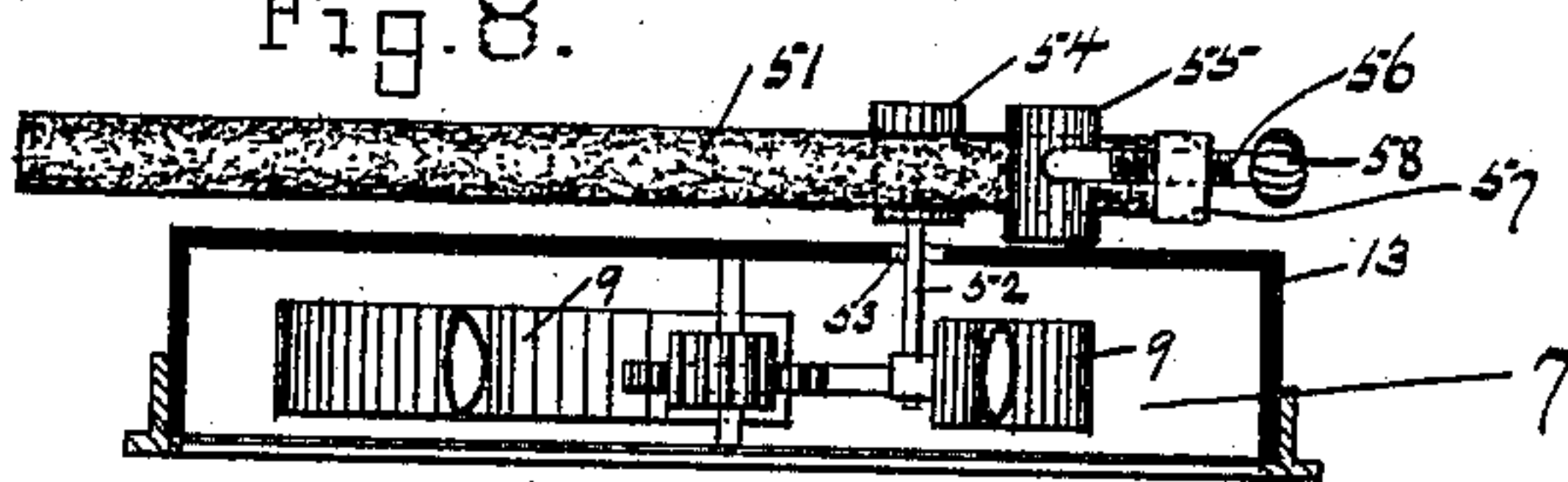
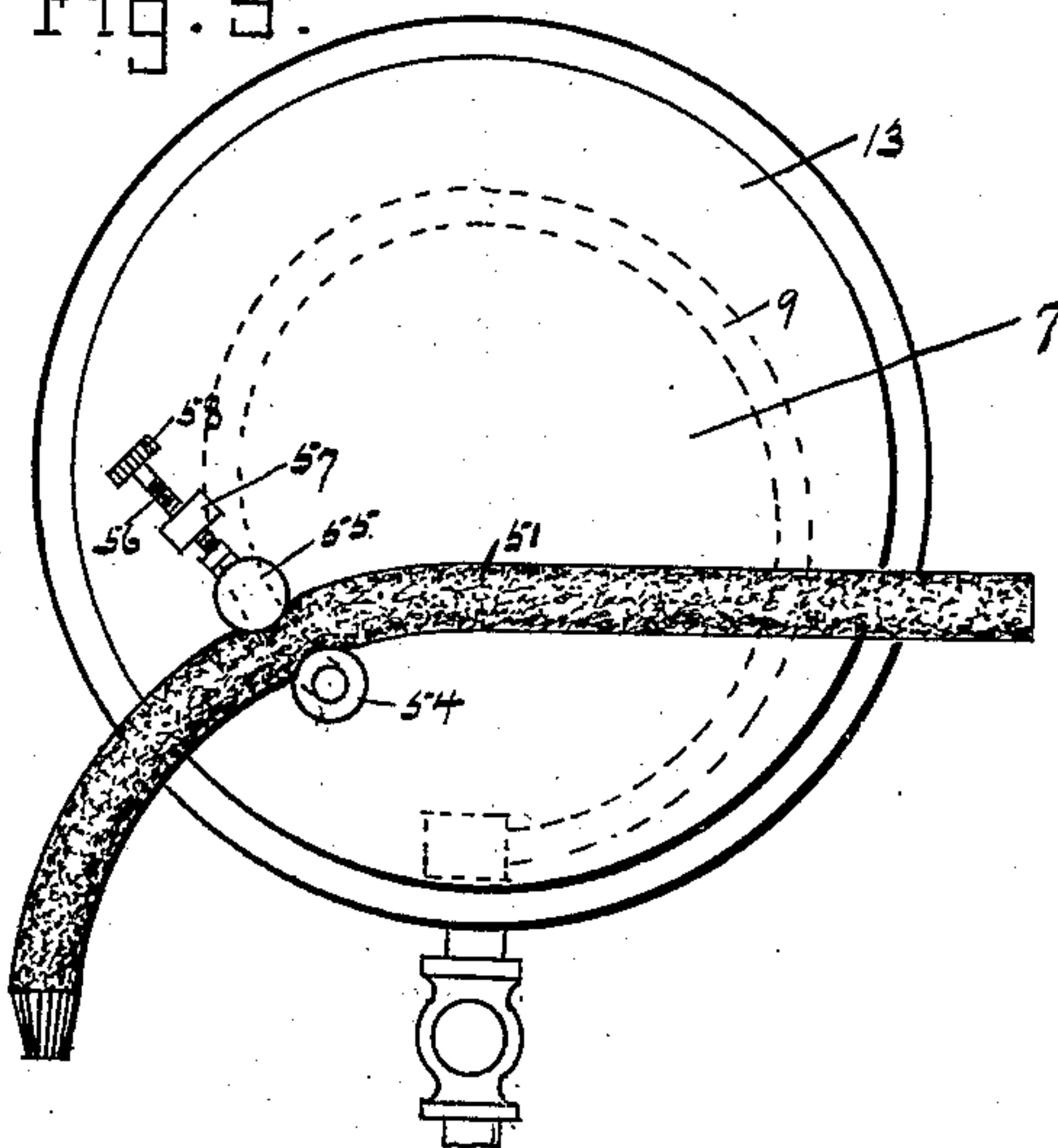


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM B. MANN, OF BALTIMORE, MARYLAND.

PRESSURE-GAGE ATTACHMENT FOR AUTOMATICALLY CONTROLLING GAS-SUPPLY.

SPECIFICATION forming part of Letters Patent No. 373,078, dated November 15, 1887.

Application filed April 5, 1887. Serial No. 233,785. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. MANN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Pressure-Gage Attachments for Automatically Controlling Gas Supply; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in attachments to steam-gages which are used in connection with steam or other power-generators wherein the necessary heat to produce the power is derived from a gas-flame, and wherein the supply of gas to the gas-heating device is controlled by the pressure-gage attachment, and whereby a uniform pressure is maintained in the generator, as the slightest movement of the gage in either direction will admit more or lessen the supply of gas to the burner, thus increasing or lessening the intensity of the flame and limiting the fluctuations of the pressure within the generator. The attachment is so constructed and connected with the gage that the gas-controlling device may be set to hold the pressure at any desired point, easy access to the mechanism for this purpose being provided.

In the further description of my invention reference is had to the accompanying drawings, in which—

Figure 1 is a front elevation of the gage with a portion of the face removed. Fig. 2 is a back view of the gage, showing the gas-controlling mechanism. Fig. 3 is a plan of the device, partly in section. Fig. 4 is a detailed view of the valve and seat of the gas-controlling device. Fig. 5 is a view in full of the device attached to a steam-generator. Fig. 6 shows a modification of the device. Fig. 7 is a modification, partly in section, showing how the gage may be employed to compress the gas-supply tube. Fig. 8 is a plan in section through Fig. 7. Fig. 9 is a back view of the gage in

full, showing the clamping device with the supply-tube therebetween.

The same figures refer to the same or similar parts throughout the several views.

The figure 7 denotes the steam-gage, which is here represented in the form commonly known as the "single bent tube," wherein motion is given to the index 8, and the pressure indicated by the movement of the free end of the bent tube 9 in its effort to straighten from the pressure within, the sector 10, and the pinion 11 on the arbor 12, to which is attached the index 8, moving in unison with the said free end of the bent tube 9. In the construction of the gage precaution is taken to make the gage-case 13 air-tight, which may be done by placing under the screw-cap 26 the gasket 27. On the back of the gage-case 13 is secured the additional case, 14, which incloses air-tight the mechanism of the gas-controlling device, and which is provided with the air-tight cap 15 and the gasket 28, the said cap 15 being screwed to the case 14, whereby it may be readily removed or replaced for examination or adjustment of the mechanism therein. On one side of the case 14 is attached the tube 16, its end forming the socket 17, that the gas-tube 29 may be secured thereto and connection made with the burner 25. On the other side of the case 14 is the tube 18, which bends upward in the case in the form represented in Fig. 2, the outer end terminating in the male coupling 19, whereto the gas-hose 30 is attached to supply the necessary gas, and the end inside the case 14 terminating in the valve-seat 20, in which fits air-tight the cone-valve 21, which controls the quantity of gas passing through the gage.

In order to attach the gas-controlling device that it may be operated by the movement of the gage, the arbor 12 thereof is extended through the back of the gage-case 13 sufficiently far to attach to the end of the arbor 12 the auxiliary arm 22, which is secured thereat by the lock-nut 23, or any of the devices in common use for securing the said arm 22 to the arbor 12, whereby its position on the said arbor may be readily changed for adjustment to suit any pressure it may be desired to main-

tain. Secured to the end of the auxiliary arm 22 by means of the spring 24, so as to permit a vibrating movement, is the cone-valve 21, which in its circumferential movement encounters and enters its seat 20 and lessens the supply of gas entering therethrough, or, if the movement be carried sufficiently far, this opening will be closed and the communication with the gas-supply shut off, the spring 24 being provided to admit the valve 21 to squarely seat itself.

In Fig. 6 a modification of the device is represented, wherein a different character of gage is used and the additional case 14 and the mechanism therein dispensed with, movement to the cone-valve 21 being derived direct from the sector 10 or any moving part of the gage, and the tube 18, with its seat 20, and the tube 16 formed a part of the casing 13 of the gage, the right-and-left nut 31 being provided for adjustability. This modification, however, will not admit of the adjustability of the device wherein the auxiliary arm is employed, as will be seen in describing the manner of operating.

An additional modification is shown in Figs. 7, 8, and 9, whereby the gas-supply may be controlled in the gas-supply tube 51 without the use of a cock or valve. In this modification the bent tube 9 is employed, which is provided at its free end with the projecting pin 52, that projects through the back of the gage-case 13 and is free to move in the slot 53 therein. On the end of the pin 52, outside of the gage-case 13, is fixed the clamp or presser 54, which, being attached to the pin 52, will move in unison with the free end of the bent tube 9. Above this clamp 54 is the clamp 55, which has swiveled to it the spindle 56, which works in the nut 57, that is secured to the back of the gage-case 13, the milled head 58 being provided on the end of the spindle 56, for conveniently turning, whereby the distance between the clamp 54 and the clamp 55 may be increased or diminished and the gas-tube 51, which is placed therebetween, contracted, sooner or later, sufficiently to shut off the gas-supply by the movement of the bent tube 9 when the pressure is reached which it is desired to maintain. This clamp 55 may be fixed rigidly to the gage-case 13. This, however, will not permit of adjustability of this clamp, and will not permit a variation of the point at which the gas-supply is cut off, and I prefer to use the adjustable attachment.

The manner of operating is as follows: In Fig. 5 a dental vulcanizer, 50, is shown, to which is attached this device, and for which it is specially designed. The tube 30, being connected with the coupling 18, supplies the necessary gas, which, when the cone-valve 21 is open, will pass through the gage and out through the tube 16 and rubber tube 29 to the burner 25, the case of the gage 13 and additional case 14 being made air-tight to hold the

gas therein. In order to adjust the gas-controlling device to maintain a uniform pressure, the auxiliary arm 22 is secured to the arbor 12 by means of the lock-nut 23 in such relative position with the index 8 that when the arbor 12 will have reached a point which indicates, by the index 8 the pressure to be maintained the cone-valve 21 will have entered its seat 20, and the supply of gas passing through the gage to the burner 25 will be diminished, and the intensity of the flame and the increase of pressure lessened accordingly, the cone-valve 21 moving in and out of the seat 20 as the pressure increases or decreases, and controlling the supply of gas to the burner 25 in unison therewith, whereby the fluctuations of pressure in the generator 50 will be confined within narrow limits. It will be further seen from the construction of the device that it may be adjusted to suit any range of pressure to which the gage is adapted, from zero to the highest point on the gage, as the auxiliary arm 22 may be secured to the arbor 12 in such relative position with the index 8 that the cone-valve 21 will enter its seat 20 when the index 8 has reached that point which indicates the pressure to be maintained. The modification shown in Fig. 6 will not admit of this range of adjusting, as the sector 10, from which the cone-valve 21 derives its motion, has not the extent of movement which is derived from the use of the auxiliary arm 22. The additional case 14 may be dispensed with, however, and the auxiliary arm 22 attached to the arbor 12 without its being extended, the one gage-case 13 being constructed so as to inclose all the mechanism of the gas-controlling device, provision being made at the back of the gage for convenient access to the interior. The socket 17 and the male coupling 19 are provided on the gage that the gage may be thrown out of the circuit, and the two parts of the gas-tube joined and the gas carried direct to the burner that the said burner may be used for any ordinary purpose.

Having described my invention and the manner of operating, what I claim, and desire to secure by United States Letters Patent, is—

1. In a device for regulating the flow or pressure of fluids, the combination of the pressure-indicating gage 7, consisting of the case 13, the hollow bent tube 9, and the necessary gearing, index, and dial for indicating the pressure, the clamp 54, connected to the free end of the said bent tube 9 by means of the pin 52, which projects through the case 13 and moves freely in the slot 53 therein, a clamp, 55, secured to the case 13, and the gas-supply tube 51, for the purpose set forth.

2. In a device for regulating the flow or pressure of fluids, the combination of the pressure-indicating gage 7, consisting of the case 13, the hollow bent tube 9, and the necessary gearing, index, and dial for indicating

the pressure, the clamp 54, connected to the free end of the said bent tube 9 by means of the pin 52, which projects through the case 13 and moves freely in the slot 53 therein, 5 and a clamp, 55, provided with the threaded spindle 56 and nut 57, whereby the said clamp 55 may be moved toward or from the clamp 54, for the purpose set forth.

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

WILLIAM B. MANN.

Witnesses:

WM. L. BAILIE,
JNO. T. MADDOX.