

No. 815,829.

PATENTED MAR. 20, 1906.

A. HOLT.
GAGE.

APPLICATION FILED APR. 27, 1905.

2 SHEETS—SHEET 1.

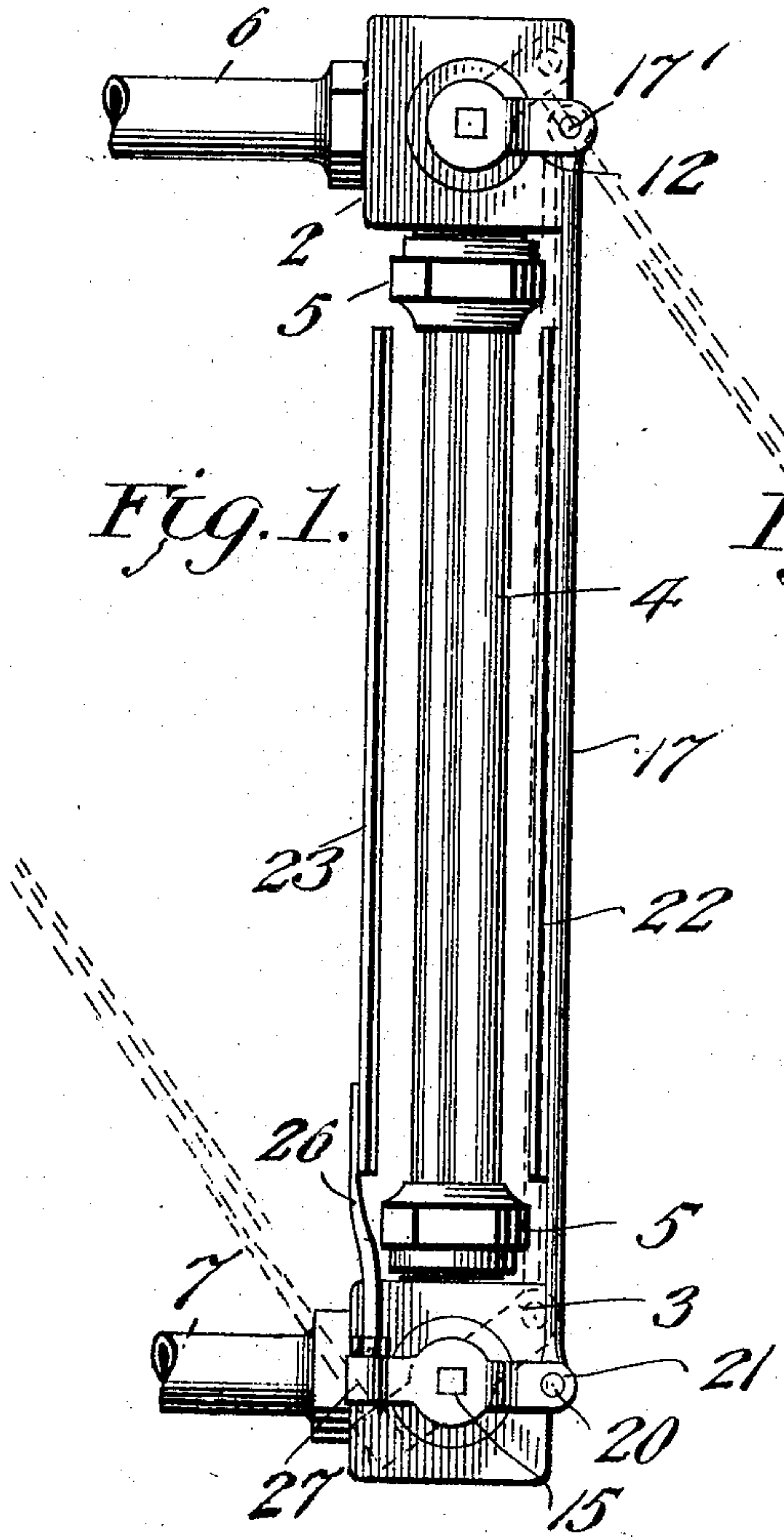


Fig. 1.

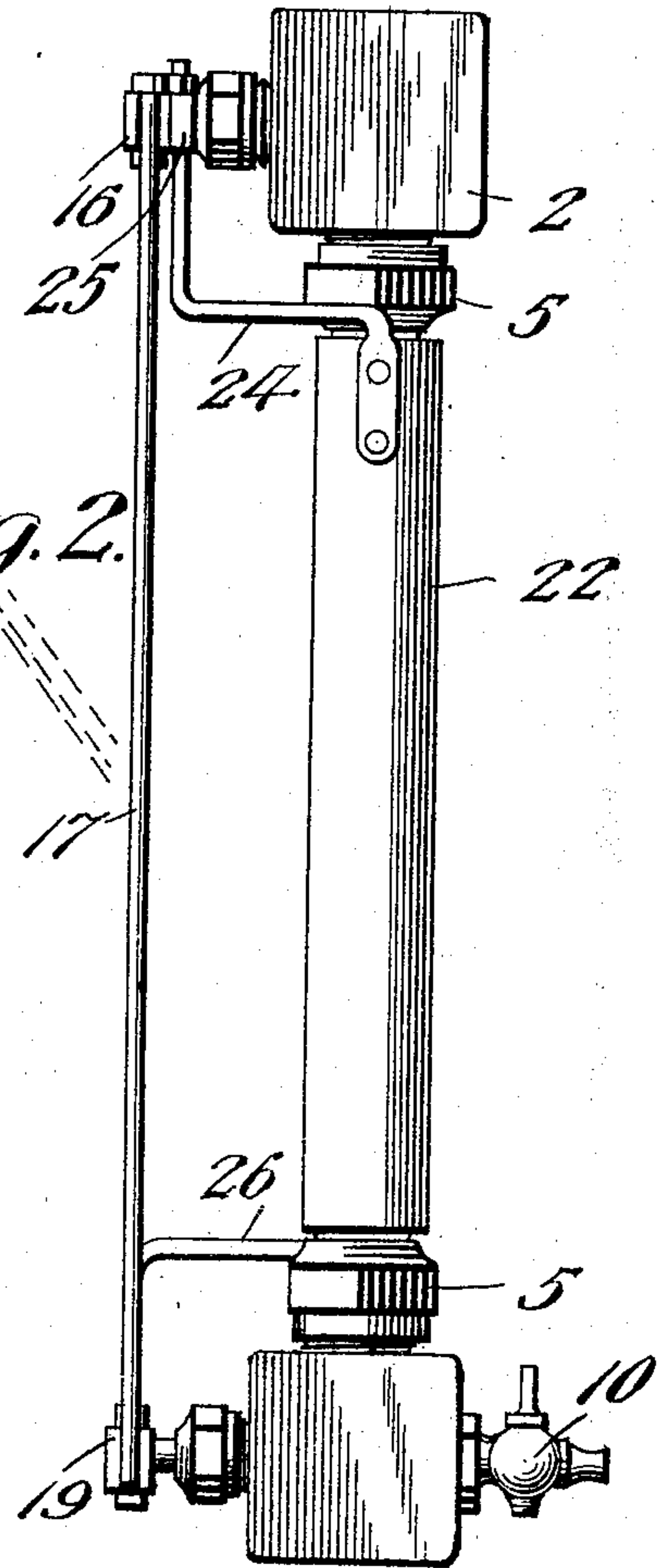


Fig. 2.

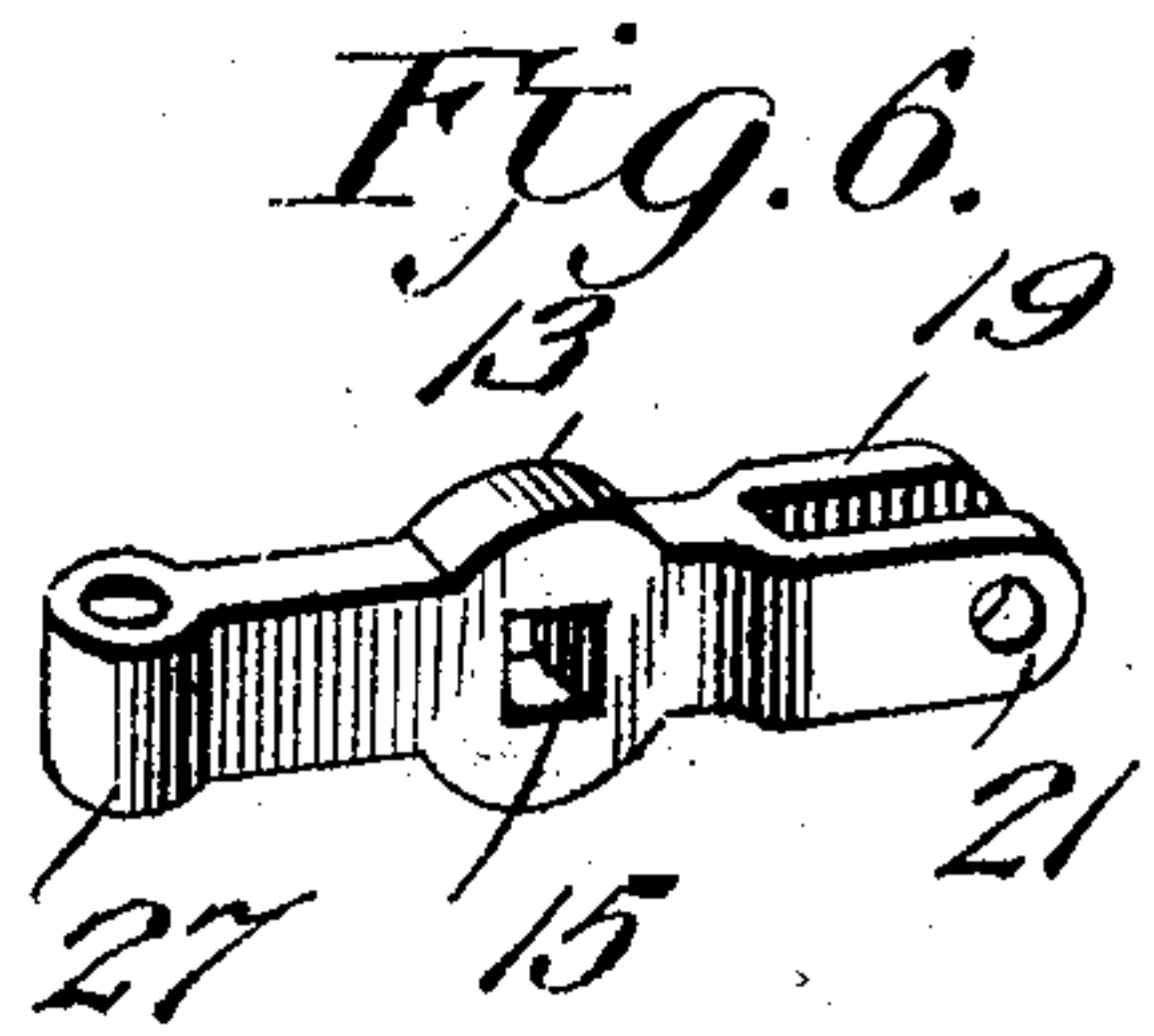


Fig. 6.

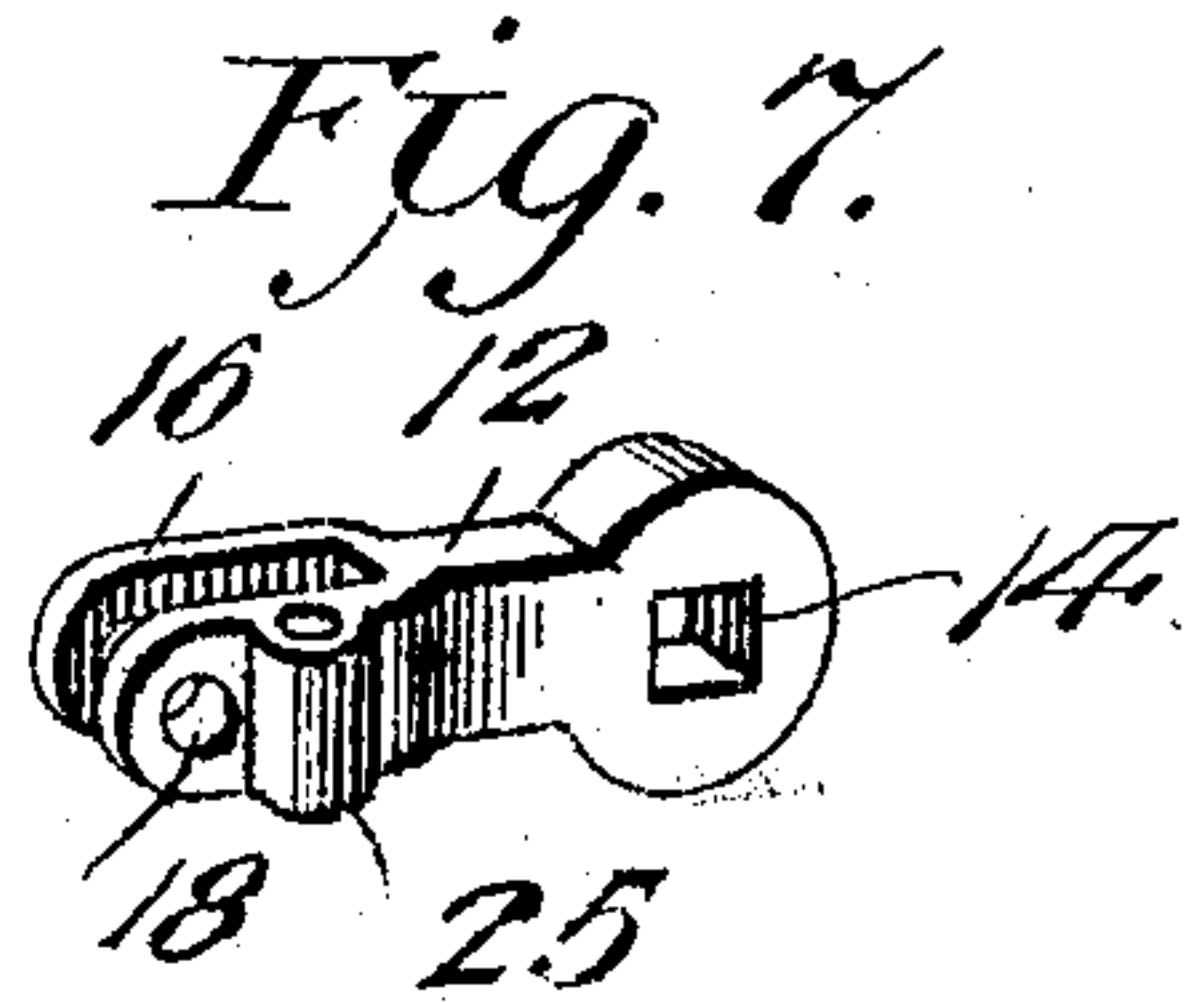


Fig. 7.

Witnesses

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2 SHEETS—SHEET 2.

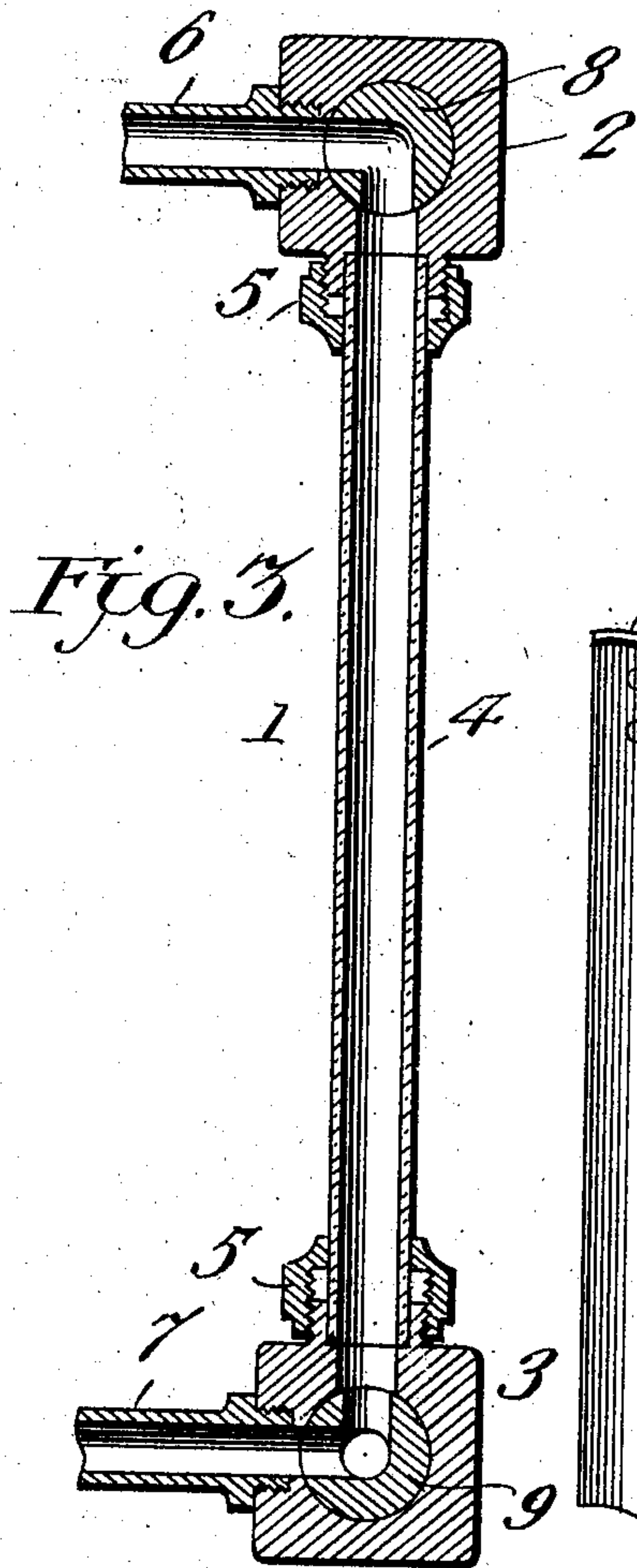


Fig. 3.

Fig. 5.

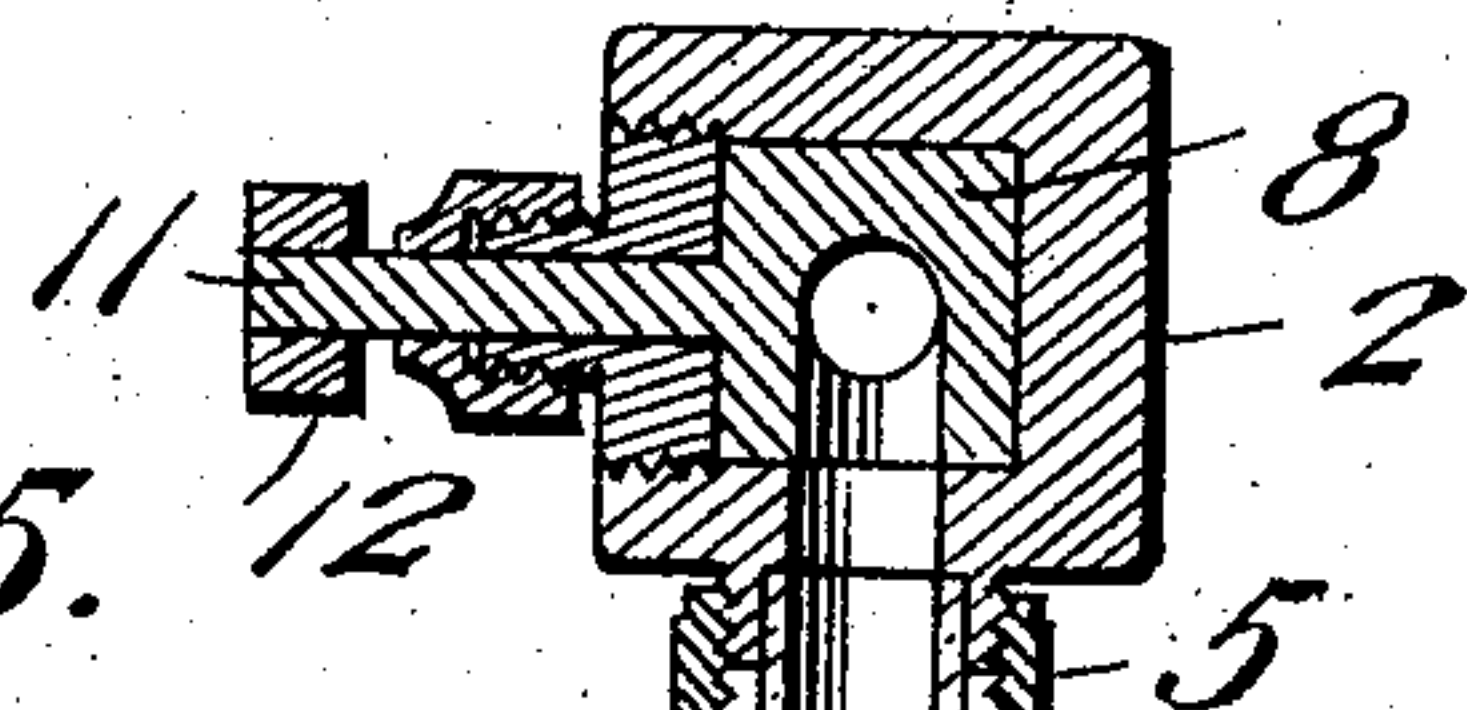


Fig. 4.

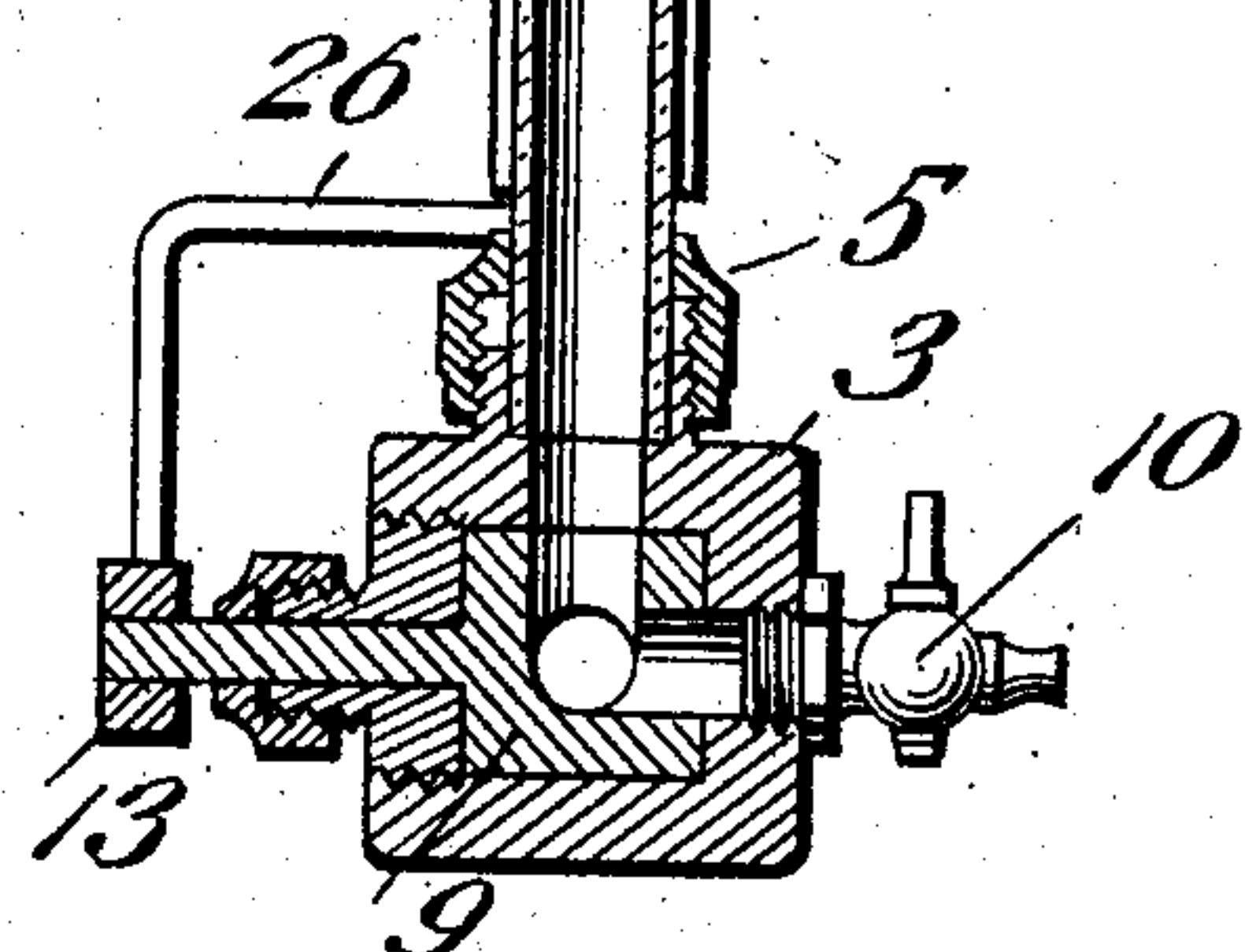
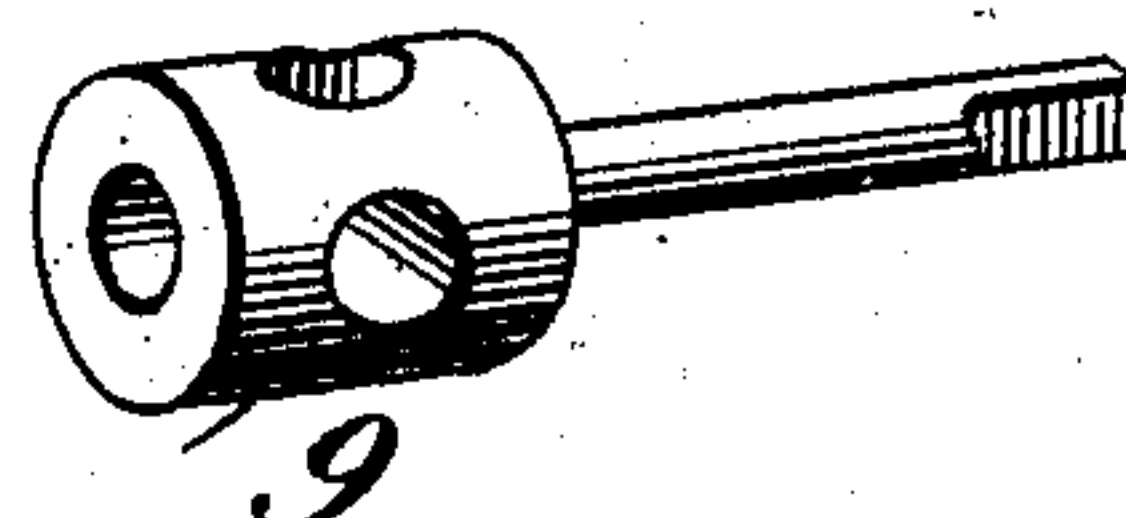
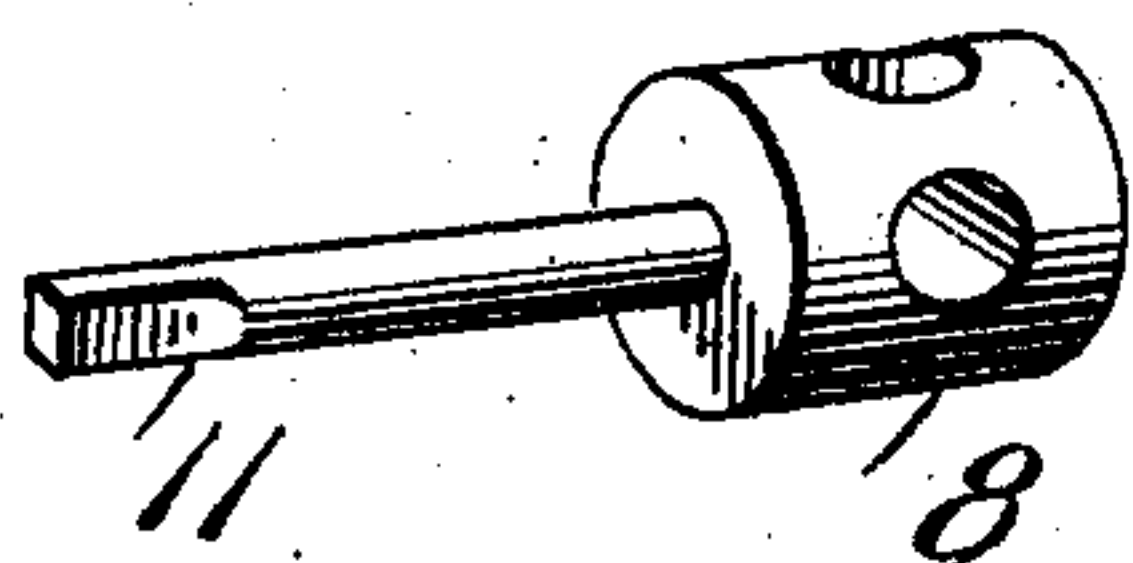


Fig. 9.



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UNITED STATES PATENT OFFICE.

ALFRED HOLT, OF CALIFORNIA, PENNSYLVANIA.

GAGE.

No. 815,829.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed April 27, 1905. Serial No. 257,721.

To all whom it may concern:

Be it known that I, ALFRED HOLT, a citizen of the United States, residing at California, in the county of Washington and State of Pennsylvania, have invented new and useful Improvements in Gages, of which the following is a specification.

This invention relates to certain new and useful improvements in water-gages for steam-boilers and other analogous receptacles in which steam or other gaseous pressure is produced through the vaporization or conversion into gas through heat or chemical action of a contained liquid.

Gages of this class are provided with transparent tubes, ordinarily made of glass and which are liable to burst under sudden variations in temperature or pressure, resulting in the escape of the confined steam or gas and water.

The object of my invention is to provide simple and effective means which will be operated upon the bursting of a gage-tube to close the valves of the gage, thus preventing loss of pressure and water and damage to the contents of the compartment in which the boiler or analogous generator is located. In case of gas-generators, such as acetylene-generators, the device will prevent the escape of gas and all liability of an explosion.

With this and other objects in view the invention consists of the features of construction, combination, and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a gage embodying my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a central vertical front-to-rear section through the gage. Fig. 4 is a central vertical transverse section through the gage. Fig. 5 is a detail view of one of the valve-closing plates or wings. Figs. 6 and 7 are detail views of the lower and upper rocker-arms, and Figs. 8 and 9 are detail views showing the construction of the valves.

The numeral 1 in the drawings designates a gage of ordinary construction, the same comprising upper and lower valve-casings 2 and 3 and an intermediate transparent gage-tube 4, the latter being in communication at its ends with said casing and having a fluid-tight connection therewith through the medium of the usual stuffing-boxes 5. The said valve-casings 2 and 3 communicate with

pipes or plug-fittings 6 and 7, which are intended to connect the same with the boiler or generator. In the two casings are rotary plug-valves 8 and 9, provided with suitable ports or passages, each valve being adapted in one position to open communication between the gage-tube and connecting boiler pipe or plug and in its other position to shut off communication between the same. The lower valve-casing is provided, as usual, with the drip and blow-off cock 10.

In carrying my invention into practice I provide the free ends of the stems of the valves with polygonal portions 11 for the application of rocker-arms 12 and 13 thereto, the arm 12 being provided at one end with a polygonal opening 14, by which it may be fitted upon the end of the stem of the valve 8, while the arm 13 is formed with a central polygonal opening 15, by which it may be fitted upon the polygonal end of the stem of the valve 9. Each of said arms is provided with a bifurcated end, the bifurcated end 16 of the arm 12 receiving the upper end of a rod 17, which is provided with pintles 17' to fit in openings 18 in the walls of the bifurcated portion 16, whereby the rod 17 is pivoted to the arm 12, as will be readily understood. The bifurcated end 19 of the arm 13 similarly receives the lower end of the rod 17, which is likewise provided with pintles 20, fitting in openings 21 in the side walls of the bifurcated portion 19, thus pivotally connecting the rod and said arm 13. The rod 17 thus forms a connection between the arms which adapts them to swing together and open and close the two valves 8 and 9 in unison.

Disposed upon opposite sides of the tube 4 are valve-operating plates or wings 22 and 23, consisting of comparatively long and narrow strips of metal or other suitable material slightly curved transversely to conform to the contour of the adjacent portions of the tube. The wing or plate 22 hangs pendent from and is supported by a substantially I-shaped crank-arm 24, suitably fastened to the upper end of the plate 22, thence extending laterally at right angles thereto and projecting upwardly, and fitted at its upper free end in a receiving eye or keeper 25, formed on one of the walls of the bifurcated portion 16 of the arm 12, the said upper end of the crank-arm being threaded to receive nuts, whereby it is held in engagement in the eye 25.

The plate 23 is supported at its lower end

by a similarly-shaped crank-arm 26, which extends laterally therefrom and then downward and is fitted at its free end in an eye or keeper 27, formed on the rocker-arm 13 at the opposite side of its pivotal connection from the bifurcation 19. The free end of the crank-arm 26 may be threaded and secured by nuts or other suitable fastening means to the eye 27.

The normal position of the parts is shown in full lines in Fig. 1, from which it will be seen that the wings or plates 22 and 23 extend longitudinally the full length of the tube 4 and are disposed in a plane parallel therewith. If from any cause the tube 4 should burst, the impact on the wings 22 and 23 of the shattered glass, as well as the pressure of the steam and water escaping from the tube, will force said wings outwardly in opposite directions, as shown by dotted lines in Fig. 1, thus rocking the arms 12 and 13, which will move synchronously through the action of the rod 17, thereby moving the valves 8 and 9 to closed position and preventing the further escape of water and steam or gas from the boiler or generator. By employing a pair of wings arranged and mounted as disposed in the present instance provision is made for closing the valves when the tube 4 bursts in any peculiar manner, as at some certain point along its length, without shattering the entire tube, and the wings further provide means whereby the valves may be manually operated to open and close them, as will be readily understood. By thus providing means for closing the valve when the tube bursts the escape of the gaseous pressure and water into the room or compartment in which the boiler or generator is located is prevented, and in case of the bursting of the gage upon an acetylene-generator the closing of the valves will also obviate the escape of gas and all liability of an ensuing explosion.

From the foregoing description, taken in

connection with the accompanying drawings, the construction and mode of operation of the invention will be understood without a further extended description.

Changes in the form, proportions, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. The combination with a gage-tube and valves for controlling communication between the same and a generator, of pressure plates or wings disposed adjacent to the tube and connected with the valves for closing said valves when the tube is shattered or bursts.

2. The combination with a gage-tube and valves controlling communication between the same and a generator, of rocker-arms connected to the valves, a connection between said rocker-arms to cause them to move in unison, pressure plates or wings disposed on opposite sides of the gage-tube, and operating connections between said plates or wings and the rocker-arms.

3. The combination with a gage-tube, and valves for controlling communication between the same and a generator, of rocker-arms connected to the valves, a connection between the rocker-arms to cause their movement in unison, and means operated directly by pressure from the fluid escaping from the tube for automatically actuating said arms when the tube is shattered or bursts, substantially as described.

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

ALFRED HOLT.

Witnesses:

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WM. BURTOFT.