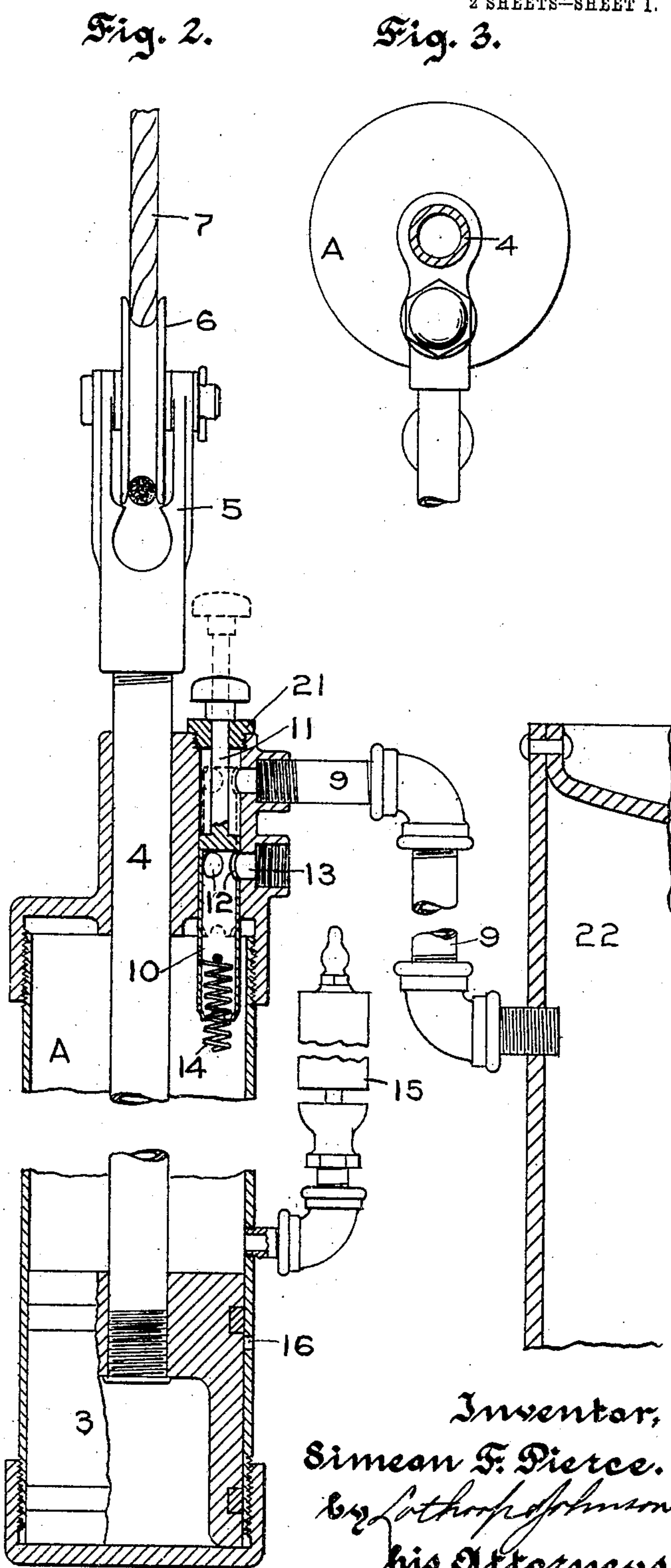
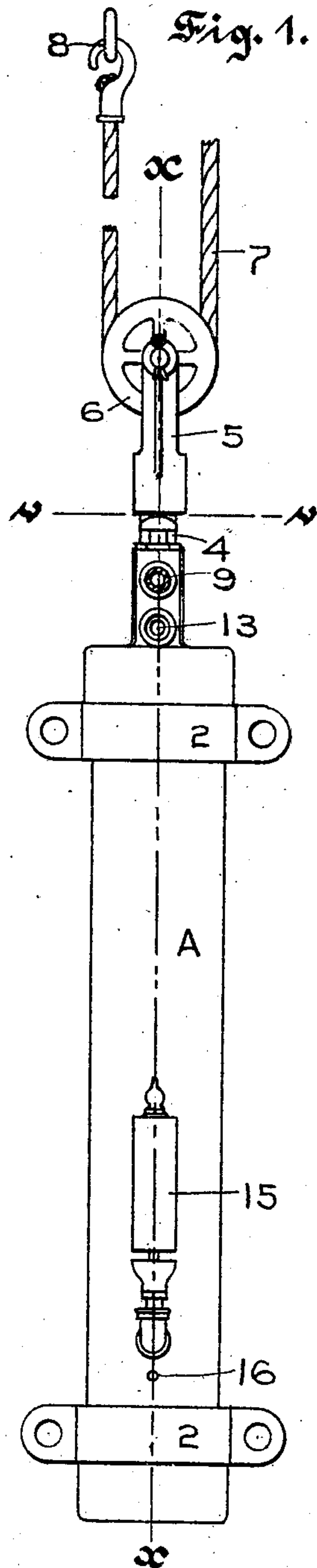


No. 814,075.

PATENTED MAR. 6, 1906.

S. F. PIERCE.
TROLLEY CATCHER.
APPLICATION FILED JUNE 5, 1905.

2 SHEETS—SHEET 1.



Witnesses,
W. H. Palmer.
Emily F. Otis

Inventor,
Simeon F. Pierce.
by *Lotthrop Johnson*
his Attorneys.

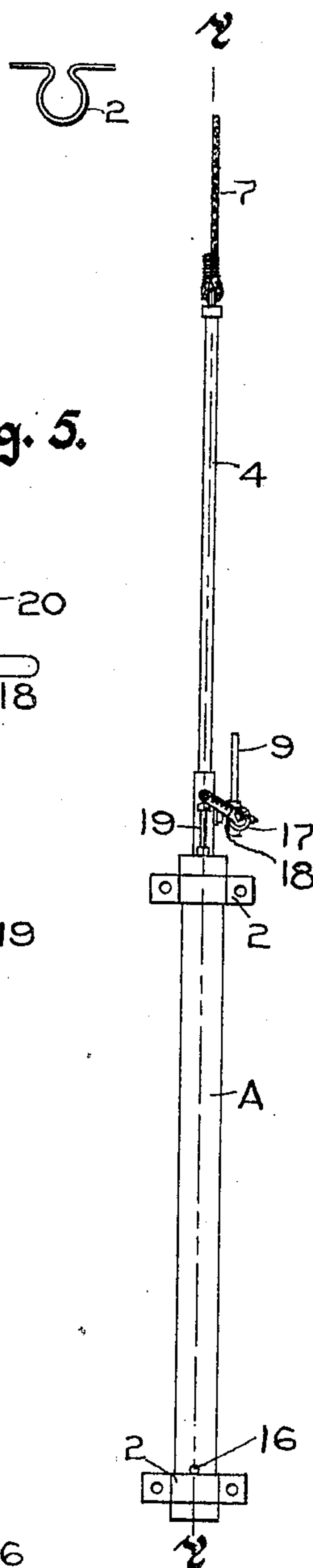
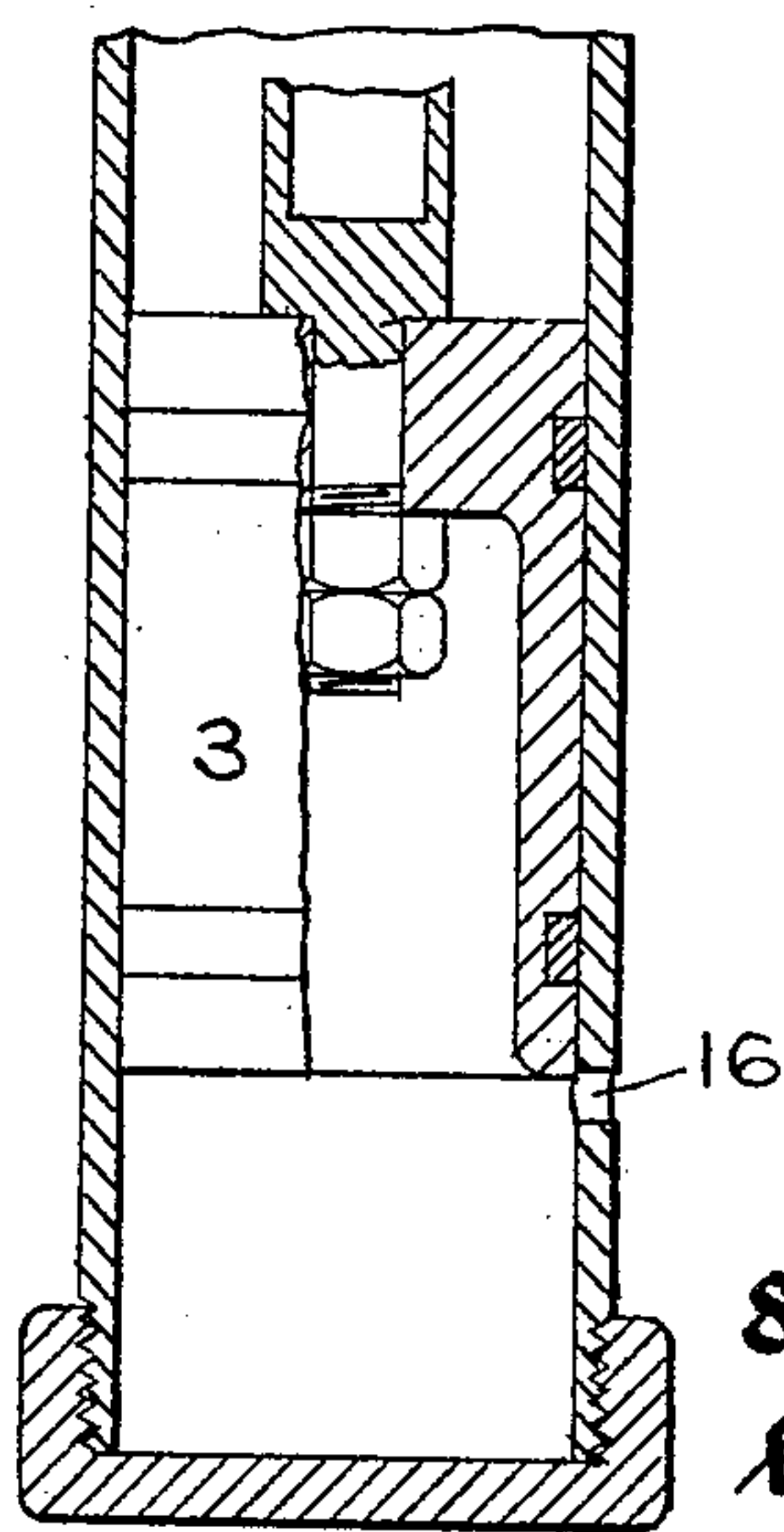
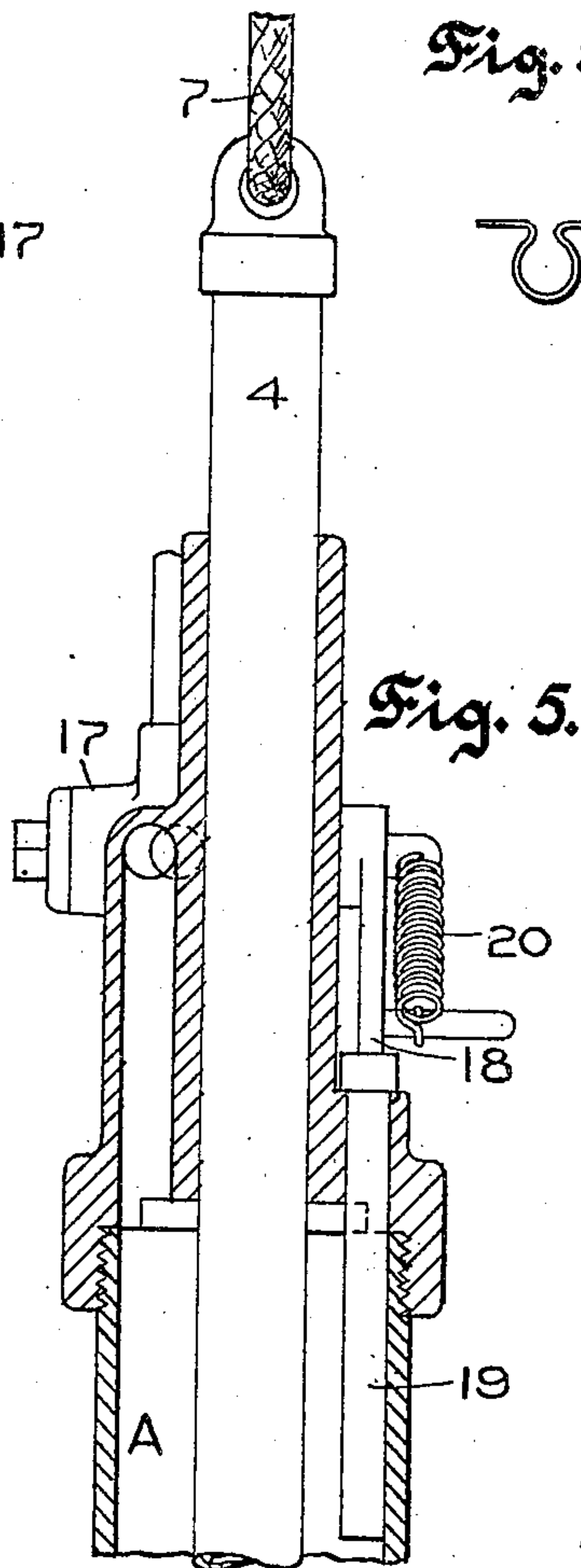
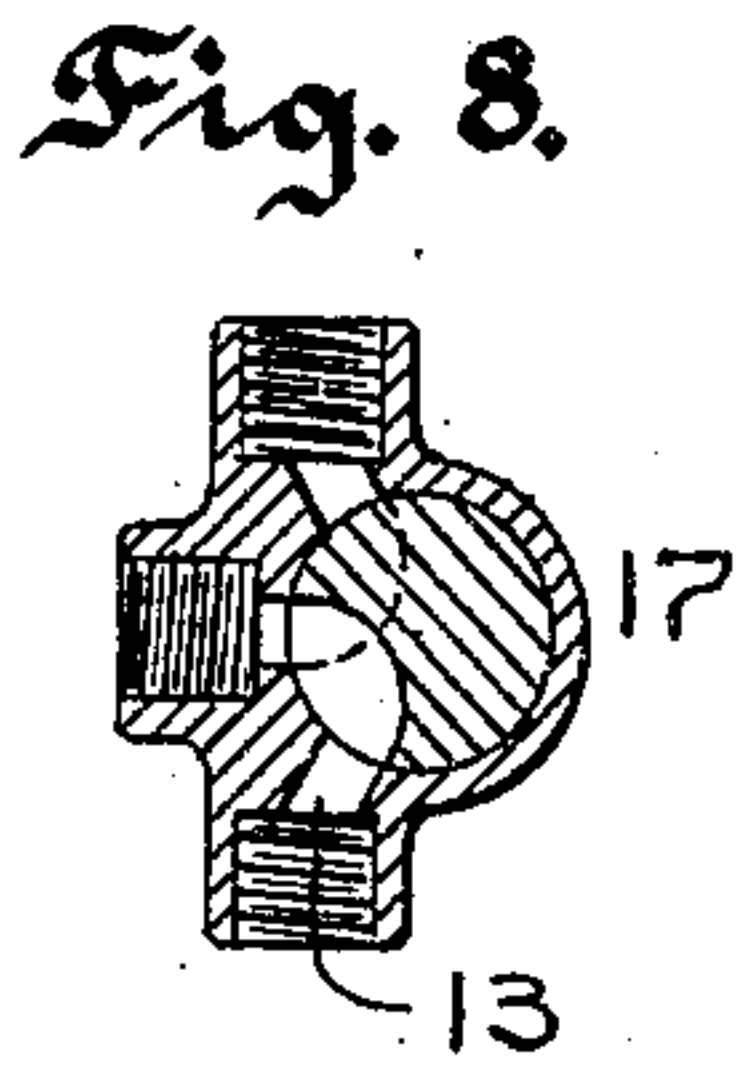
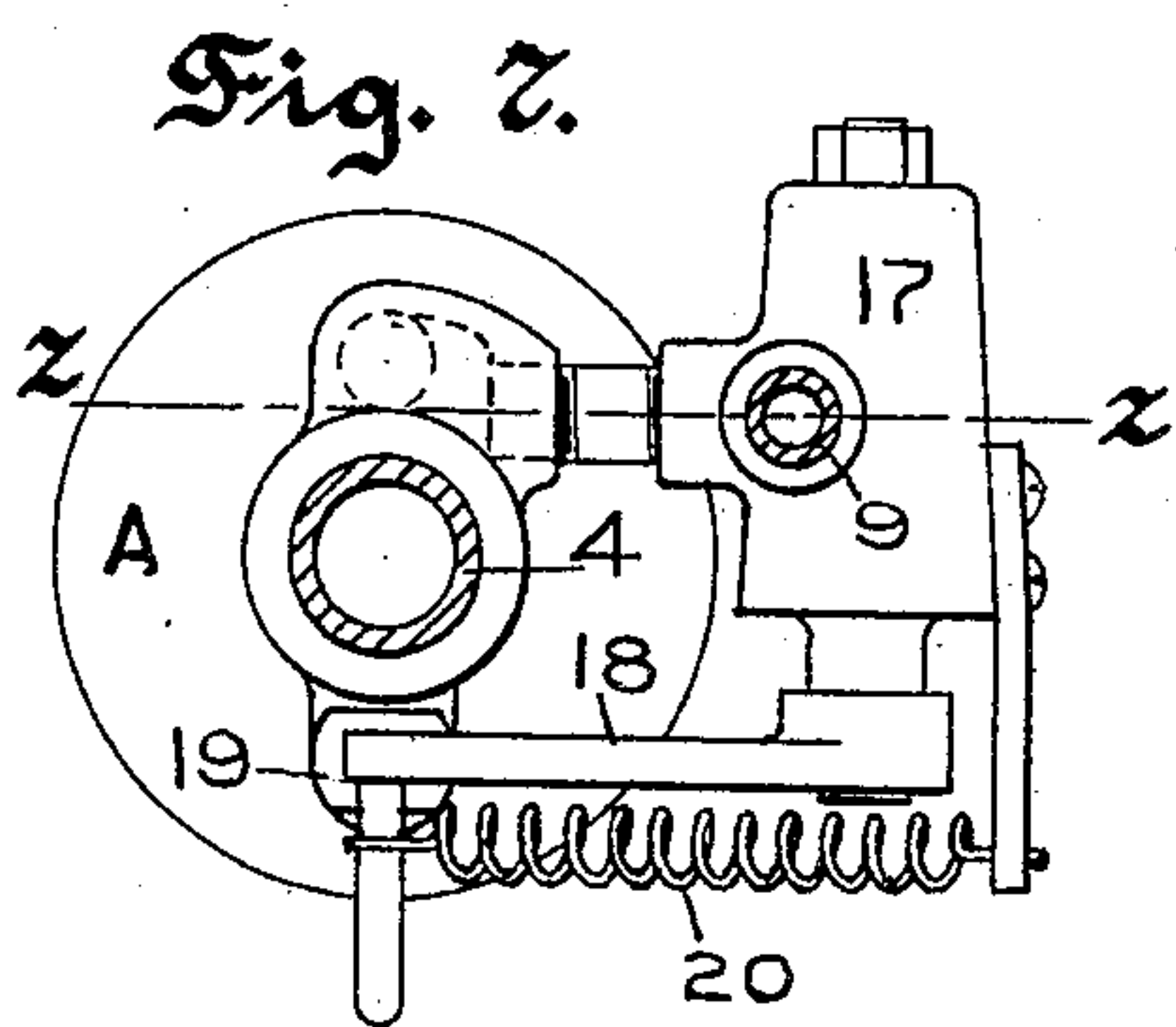
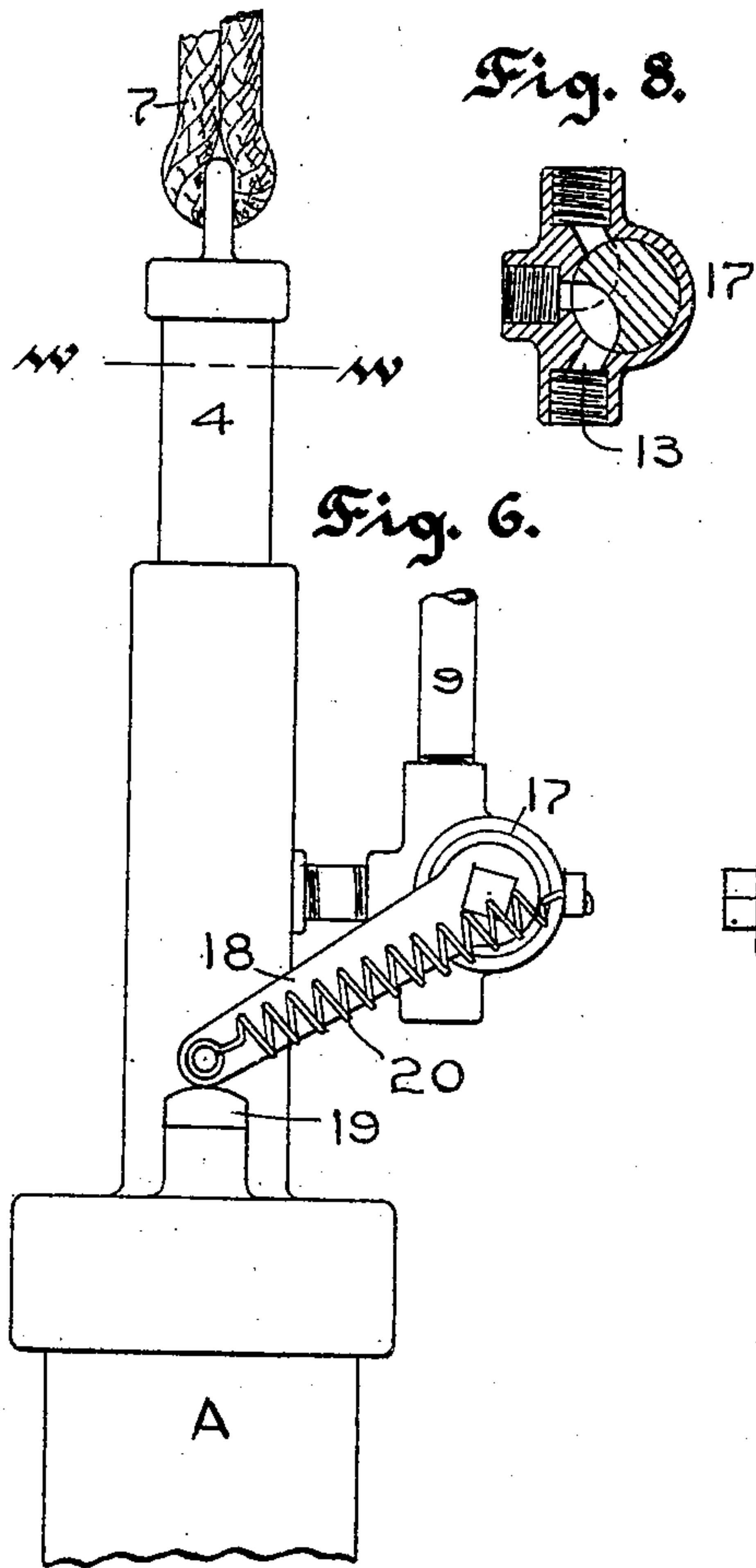
No. 814,075.

PATENTED MAR. 6, 1906.

S. F. PIERCE.
TROLLEY CATCHER.

APPLICATION FILED JUNE 5, 1905.

2 SHEETS—SHEET 2.



Witnesses,
W. H. Palmer.
Emily F. Otis

Inventor,
Simeon F. Pierce.
by *Lothrop Johnson*
his Attorneys

UNITED STATES PATENT OFFICE.

SIMEON F. PIERCE, OF ST. PAUL, MINNESOTA.

TROLLEY-CATCHER.

No. 814,075.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed June 5, 1905. Serial No. 263,750.

To all whom it may concern:

Be it known that I, SIMEON F. PIERCE, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Trolley-Catchers, of which the following is a specification.

My invention relates to improvements in trolley-catchers, its object being to provide a device operated by air-pressure for bringing the trolley-pole back below the wire when the same has slipped therefrom, and thus preventing the trolley-pole striking overhead cross-wires.

To this end my invention consists in the features of construction and combination hereinafter particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of my improved device. Fig. 2 is a section on line *xx* of Fig. 1. Fig. 3 is a section on line *vv* of Fig. 1. Fig. 4 is an elevation of a modified construction. Fig. 5 is a section on line *yy* of Fig. 4. Fig. 6 is an enlarged elevation of a portion of the device. Fig. 7 is a section on line *ww* of Fig. 6. Fig. 8 is a detail of the valve on line *zz* of Fig. 7, and Fig. 9 is a detail of the supporting-bracket.

In the drawings, A represents a cylinder adapted to be suitably attached to the rear of the car, as by means of brackets 2. Within the cylinder is arranged a piston 3, provided with a piston-rod 4, extending through the upper end of the cylinder. Carried by the upper end of the piston-rod is a bracket 5, supporting a sheave 6, over which runs a trolley-rope 7. As shown in Fig. 1, one end of the trolley-rope has hook-support 8 from a suitable point on the car, the opposite end of the rope passing to the trolley-pole (not shown) in the ordinary manner. Compressed air is admitted to the cylinder from an air-tank 22 through the pipe 9. Interposed between the pipe 9 and the interior of the cylinder is a slidable valve 10, provided with a valve-stem 11, extending through a stuffing-box 21 in the wall of the cylinder. The valve 10 is provided with ports 12, adapted to register with the end of the inlet air-pipe 9 or with the exhaust-port 13, depending upon the position of the valve. In the outlet end of the valve 10 is arranged a spring 14, with which the piston makes contact in the operation of the device, as hereinafter set forth. A suitable air-whistle 15 is connected with one side of the cylinder. The cylinder is pro-

vided with a suitable equalizing-port 16 in its lower end.

The operation of the device is as follows: With the valve 11 in the position shown in Fig. 2 air is cut off from the cylinder and the trolley-rope is held taut by the combined weight of the piston and piston-rod. In case the trolley slips from the wire and is carried by its spring above the wire the pull upon the trolley-rope will carry the piston against the spring 14 in the end of the valve, raising said valve to the dotted-line position shown in Fig. 2. This will allow the air to pass through the pipe 9 into the cylinder carrying the piston and connected parts down to extreme lowest position. As air passes into the cylinder part of it escaping through the whistle 15 will sound an alarm. The conductor then by forcing the valve 11 back to full-line position will shut off the inlet of air and allow the air in the cylinder to pass through the outlet-port 13, releasing the pressure from above the piston, allowing the trolley-rope to be manipulated to put the trolley back into engagement with the wire, the combined weight of the piston and piston-rod carrying such parts back to normal position. As the piston descends the air below the piston will escape through the port 16 until the piston passes said port, when the remaining air below will serve as a cushion for the piston.

In the modified construction shown in Figs. 4 to 9 the trolley-rope is directly connected with the top of the piston-rod. In this form a three-way valve 17 is interposed between the inlet air-pipe and the cylinder and between the cylinder and outlet-port 13. The valve carries an arm 18, the free end of which stands above a pin 19, slidably supported by the cylinder and extending into the chamber of the same, the arm 18 being provided with a suitable restraining-spring 20. In this form the raising of the piston and piston-rod by the displacement of the trolley carries the piston against the pin 19, causing said pin 19 to turn said arm 18 to turn the three-way valve into position connecting the air-supply with the cylinder. The inflow of air into the cylinder will, as in the preferred form, carry the piston downwardly in the cylinder to bring the trolley below the wire. It will thus be evident that in both the constructions shown the slipping of the trolley from and above the wire will cause the connected piston to be actuated by the compressed air to draw the trolley back below the wire and out

of the way of cross-wires, &c., and will hold the trolley in such lowered position until the air-pressure is released by the operator through the medium of the hand-valve.

5 Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a trolley-rope, a cylinder, a piston within said cylinder, a piston-rod connecting said piston and rope, an inlet-pipe, valve mechanism interposed between said inlet-pipe and cylinder in position to be actuated by the travel of the piston in one direction to connect said inlet-pipe with said cylinder, and means allowing said valve to be manually operated to connect said cylinder with the outer air to release the contained pressure.

2. In combination with a trolley-rope, a cylinder, a piston within said cylinder, a piston-rod connecting said piston and rope, an inlet-pipe, valve mechanism interposed between said inlet-pipe and cylinder in position to be actuated by the travel of the piston in one direction to connect said inlet-pipe with said cylinder, and to be actuated by hand to connect said cylinder with the outer air for the purposes set forth.

3. In combination with a trolley-rope, a cylinder, a piston within said cylinder, a piston-rod connecting said piston and rope, an inlet-pipe, a slidable valve interposed between said inlet-pipe and cylinder and between said cylinder and the outer air, said valve being so constructed and arranged as to be actuated by the travel of the piston in one direction to connect the inlet-pipe with the cylinder, and to be actuated by hand to connect the cylinder with the outer air, for the purpose set forth.

4. In combination with a trolley-rope, a cylinder, a piston within said cylinder, a piston-rod connecting said piston and rope, an inlet-pipe, a slidable valve interposed between said inlet-pipe and cylinder, an actuating-handle carried by said valve outside of said cylinder, an impact-spring carried by the inner end of said valve whereby said valve will be actuated by the movement of the piston in one direction to connect the cylinder with said inlet-port to allow air to be forced into said cylinder and may be actuated by hand to connect said cylinder with the outer air to relieve the pressure therein.

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

SIMEON F. PIERCE.

Witnesses:

H. S. JOHNSON,
EMILY F. OTIS.