

No. 735,633.

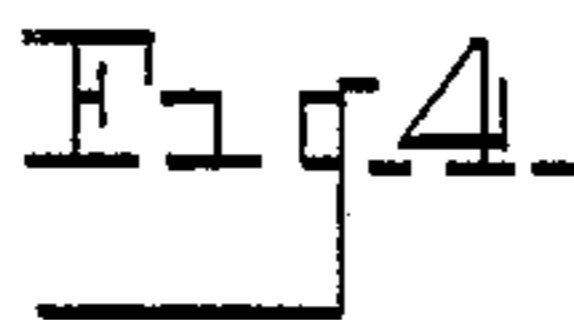
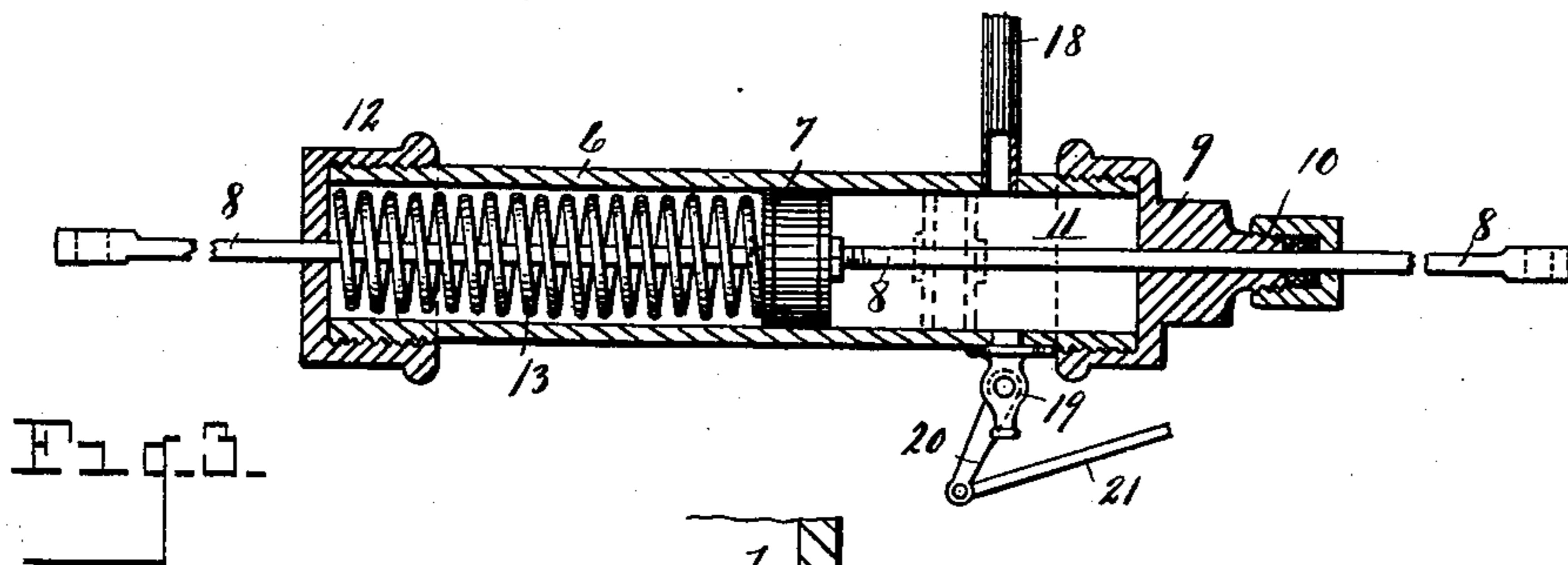
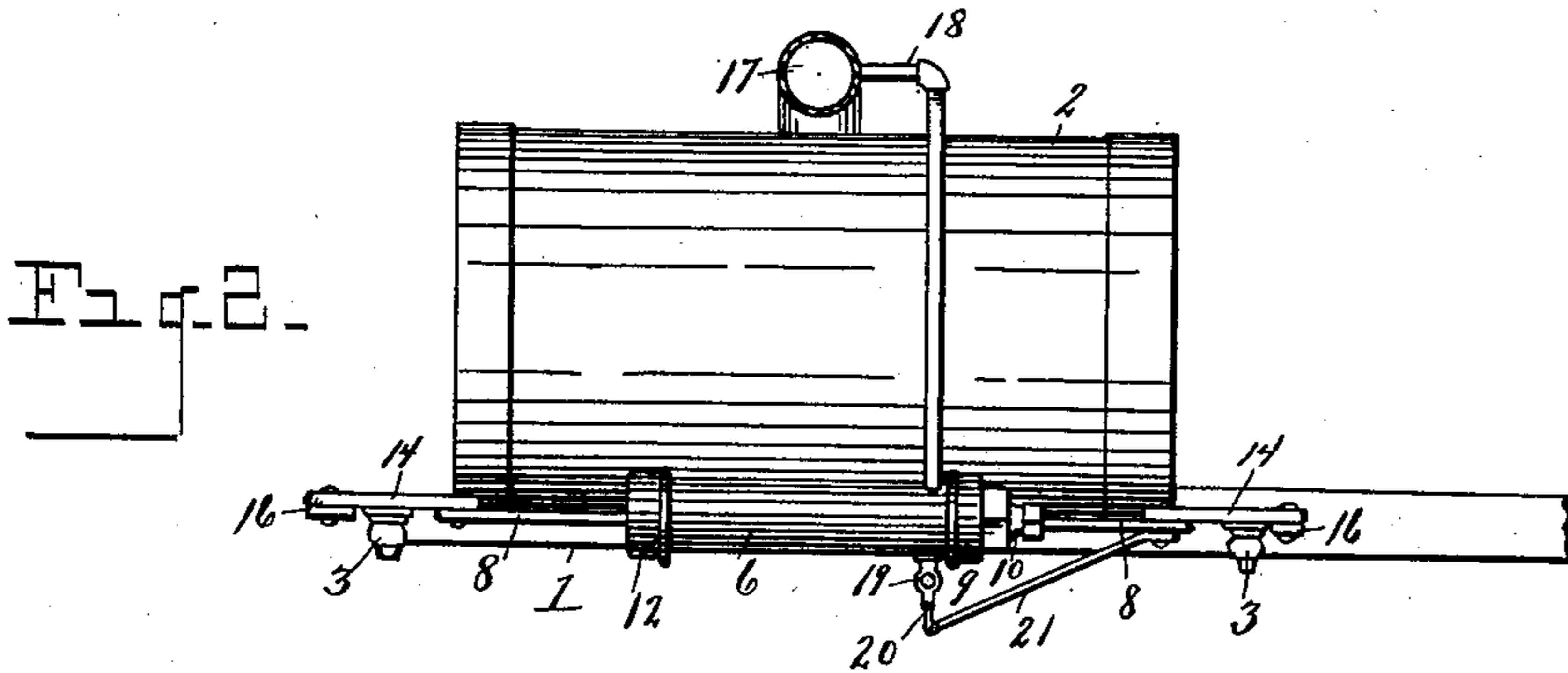
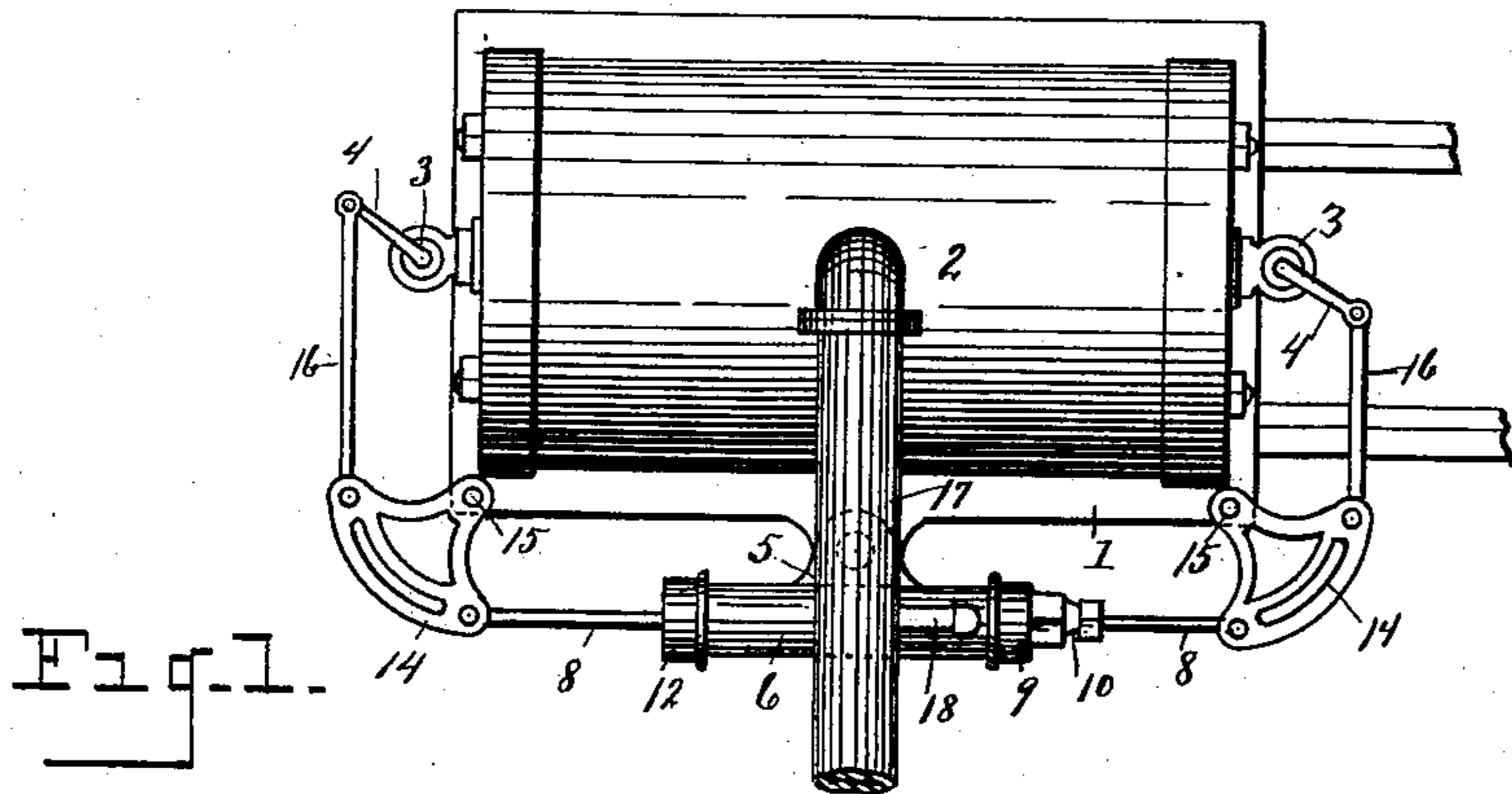
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O. WEITZEL.

AUTOMATIC COCK OPERATING DEVICE FOR STEAM ENGINES.

APPLICATION FILED JAN. 23, 1901.

NO MODEL.



WITNESSES.

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AUTOMATIC COCK-OPERATING DEVICE FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 735,633, dated August 4, 1903.

Application filed January 23, 1901. Serial No. 44,354. (No model.)

To all whom it may concern:

Be it known that I, OSCAR WEITZEL, a citizen of the Dominion of Canada, residing at Thamesville, in the county of Kent, Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Cock-Operating Devices for Steam-Engines; 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to an automatic device for operating the steam-cocks of steam-engine cylinders; and it consists in the construction and arrangement of parts hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to provide simple and efficient means for automatically operating the steam-cocks of the cylinder, so as to prevent an accumulation therein of water of condensation and obviate the danger of freezing and of other possible injury to the cylinder by the presence within it of a quantity of water; also, obviating the danger of burning the hands by a manual manipulation of said cocks.

The above object is attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a steam-engine cylinder, showing the application of my invention thereto. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is an enlarged longitudinal section through the auxiliary cylinder adapted to actuate the steam-cocks of the main cylinder. Fig. 4 is an enlarged detail in section, showing the connection between the steam-cock and interior of the main cylinder through the head thereof.

Referring to the characters of reference, 1 designates a portion of the engine-bed, upon which the main cylinder 2 is mounted. Located in the opposite ends of said cylinder are the steam-cocks 3, which afford means of draining from the cylinder the accumulated water of condensation, as is well understood

in the art, said valves or plug-cocks being adapted to be operated by the handles 4.

Mounted upon the engine-bed through the medium of a projecting bracket 5 or otherwise suitably located is a small auxiliary cylinder 6, having a reciprocatory piston 7 therein, mounted upon a piston-rod 8, whose opposite ends extend through the opposite ends of said cylinder. Upon one end of said cylinder is a screw-cap 9, having a stuffing-box 10, through which said piston-rod passes. Within said cylinder, between the piston and the cap 9, is a steam-chamber 11. Upon the opposite end of the auxiliary cylinder 6 is a screw-cap 12, adapted to confine a coiled spring 13 between it and the piston 7. Said spring occupies one end of the auxiliary cylinder and environs one end of the piston-rod, which projects therefrom.

Attached to the opposite ends of the piston-rod 8 are the bell-crank levers 14, which are pivoted at 15 to the engine-bed or other suitable support and are pivotally coupled, by means of the connecting-rods 16, to the handles 4 of the plug-cocks 3.

The main steam-pipe 17 communicates with the cylinder 2 in the ordinary manner. Tapped into said main steam-pipe is a smaller steam-pipe 18, which communicates with the steam-chamber 11 in the auxiliary cylinder 6.

When the engine is not running, the force of the spring 13 moves the piston 7 longitudinally in the cylinder 6 and operates the piston-rod 8 to open the plug-cocks 3 through the medium of the interposed levers and connecting-rods, so that any accumulated water may drain from the cylinder. Upon the opening of the throttle in starting the engine steam will occupy the main steam-pipe and the smaller pipe 18, through which it will flow to the steam-chamber 11 in the auxiliary cylinder. The pressure of the steam in said cylinder will overcome the resistance of the spring 13 and move the piston 7 longitudinally in said cylinder to operate the piston-rod 8 and actuate the connected levers 14 to close the plug-cocks 3. The presence of steam in the chamber 11 of the auxiliary cylinder will maintain said plug-cocks closed; but as soon as the steam is shut off from the

main steam-pipe 17 by the closing of the throttle said spring 13 will actuate the piston 7 and open the plug-cocks 3.

To provide for the escape of any water of condensation which may collect in the chamber 11 of the auxiliary cylinder, a drip-cock 19 is provided, which communicates with said chamber and has an operative lever 20, connected by a rod 21 with the piston 7, whereby upon the return of the piston 7 through the action of the spring 17 said cock will be opened to allow of the escape of the water of condensation from said chamber.

It will now be understood that the operation of the device is entirely automatic and that upon the opening and closing of the throttle the cocks in the ends of the cylinder are simultaneously actuated to close them when steam is supplied to the cylinder and to open when steam is cut off therefrom.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for the purpose set forth, the combination with a steam-cylinder having steam-cocks, a main steam-pipe connected with said cylinder and an auxiliary cylinder connected with said steam-pipe, a movable piston in said auxiliary cylinder adapted to be actuated by the pressure of the steam in the main steam-pipe, a piston-rod connected with the piston of said auxiliary cylinder and

adapted to move therewith and means connecting said piston-rod with the steam-cocks of the main cylinder.

2. In a device for the purpose set forth, the combination of a main cylinder having a plug-cock in the end thereof, a main steam-pipe connected with said cylinder, means connected with said plug-cock, adapted by its actuation to open and close said cock, said cock-actuating means communicating with the main steam-pipe and adapted to be automatically actuated by a variation of pressure therein.

3. In a device for the purpose set forth, the combination with a main steam-cylinder having steam-cocks, of an auxiliary steam-cylinder having a steam-chamber in one end and a spring in the opposite end, a cylinder-cock in said auxiliary cylinder, a piston-rod passing through the auxiliary cylinder and carrying a piston lying against said spring in said chamber, a pipe connecting said steam-chamber with the main steam-pipe and means connecting said piston-rod with the cylinder-cocks of both cylinders.

In testimony whereof I sign this specification in the presence of two witnesses.

OSCAR WEITZEL.

Witnesses:

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