

No. 771,563.

PATENTED OCT. 4, 1904.

W. M. McARTHUR.
TROLLEY CATCHER.

APPLICATION FILED MAY 16, 1904.

NO MODEL.

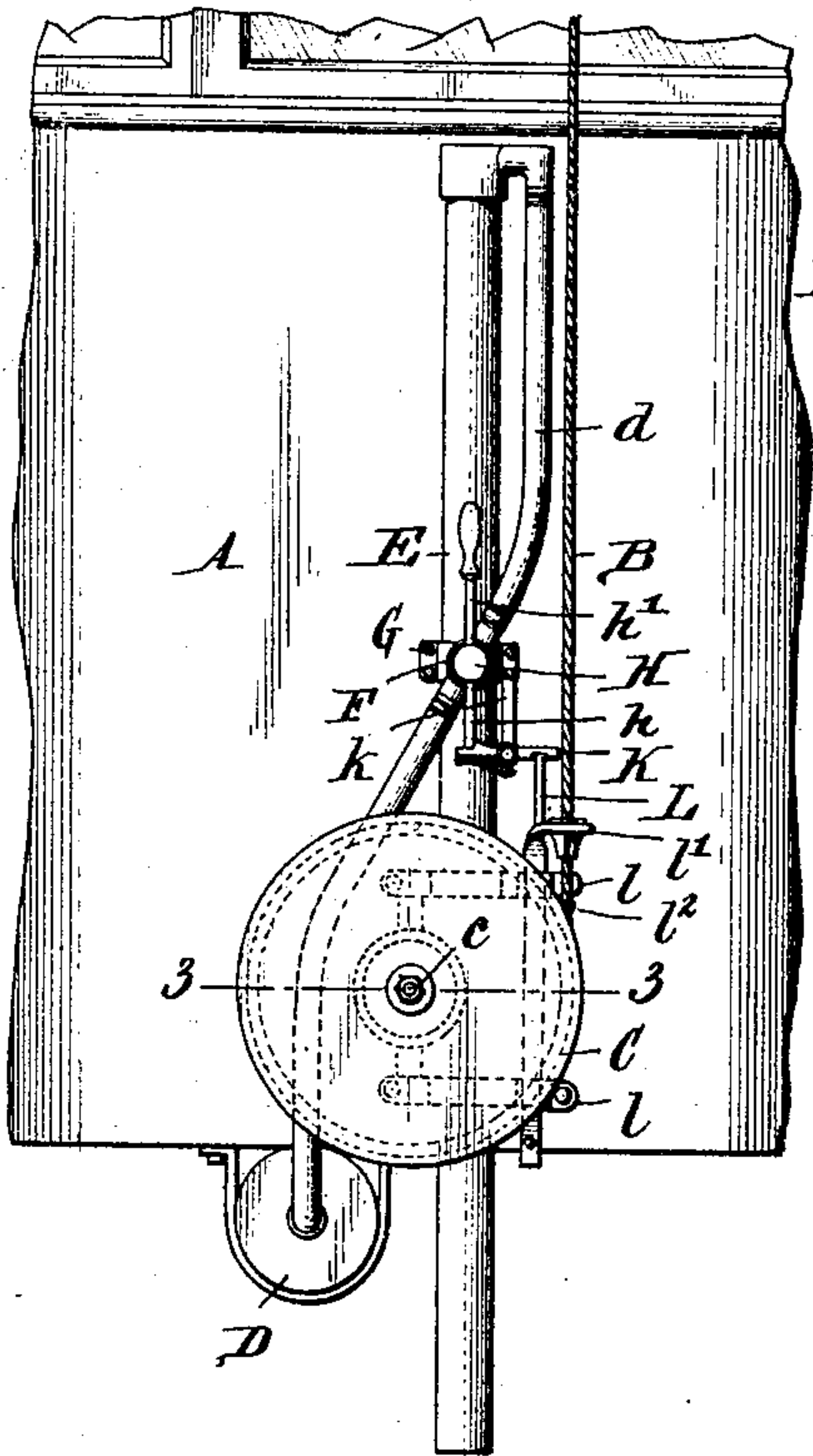


Fig. 1.

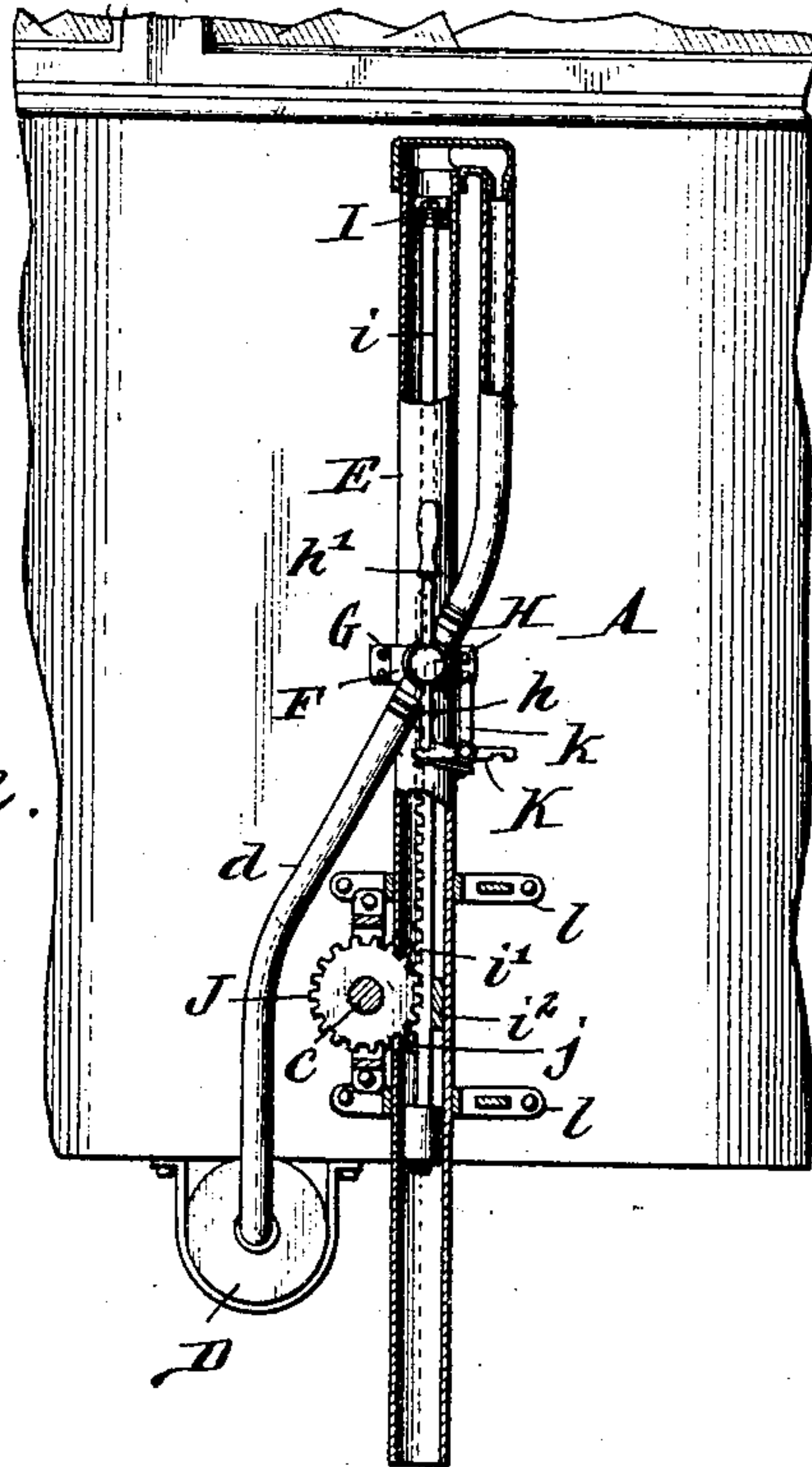


Fig. 2.

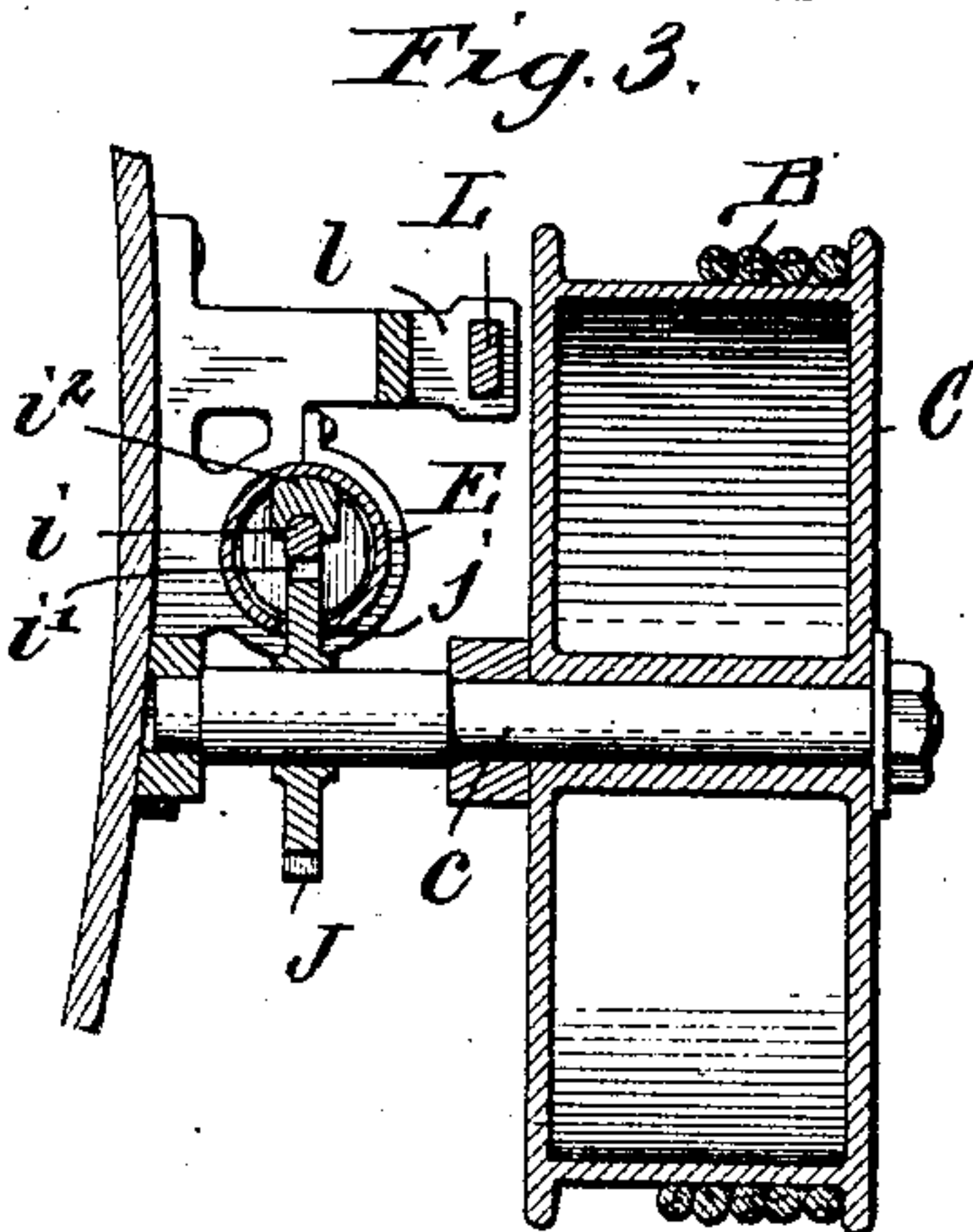


Fig. 3.

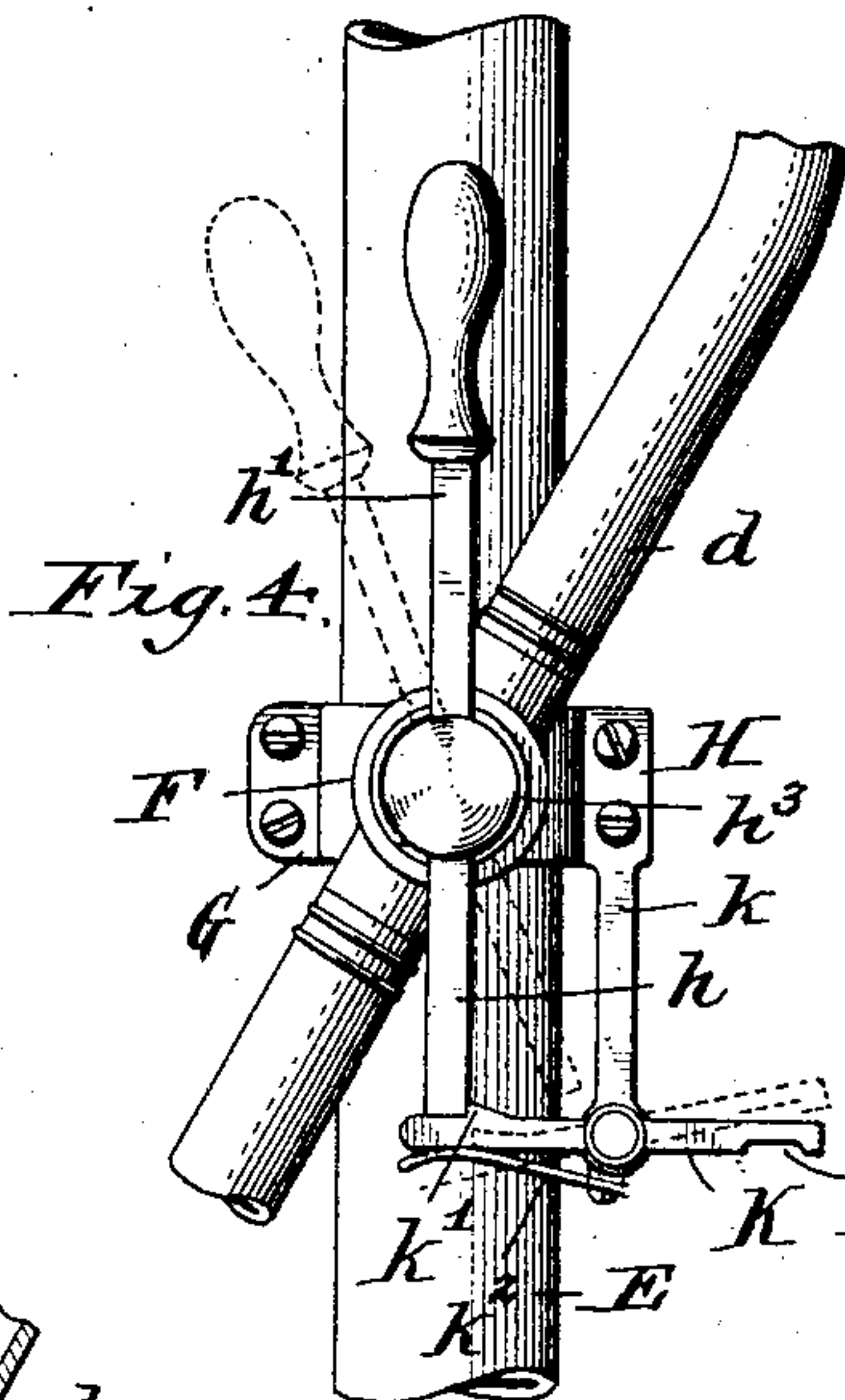


Fig. 4.

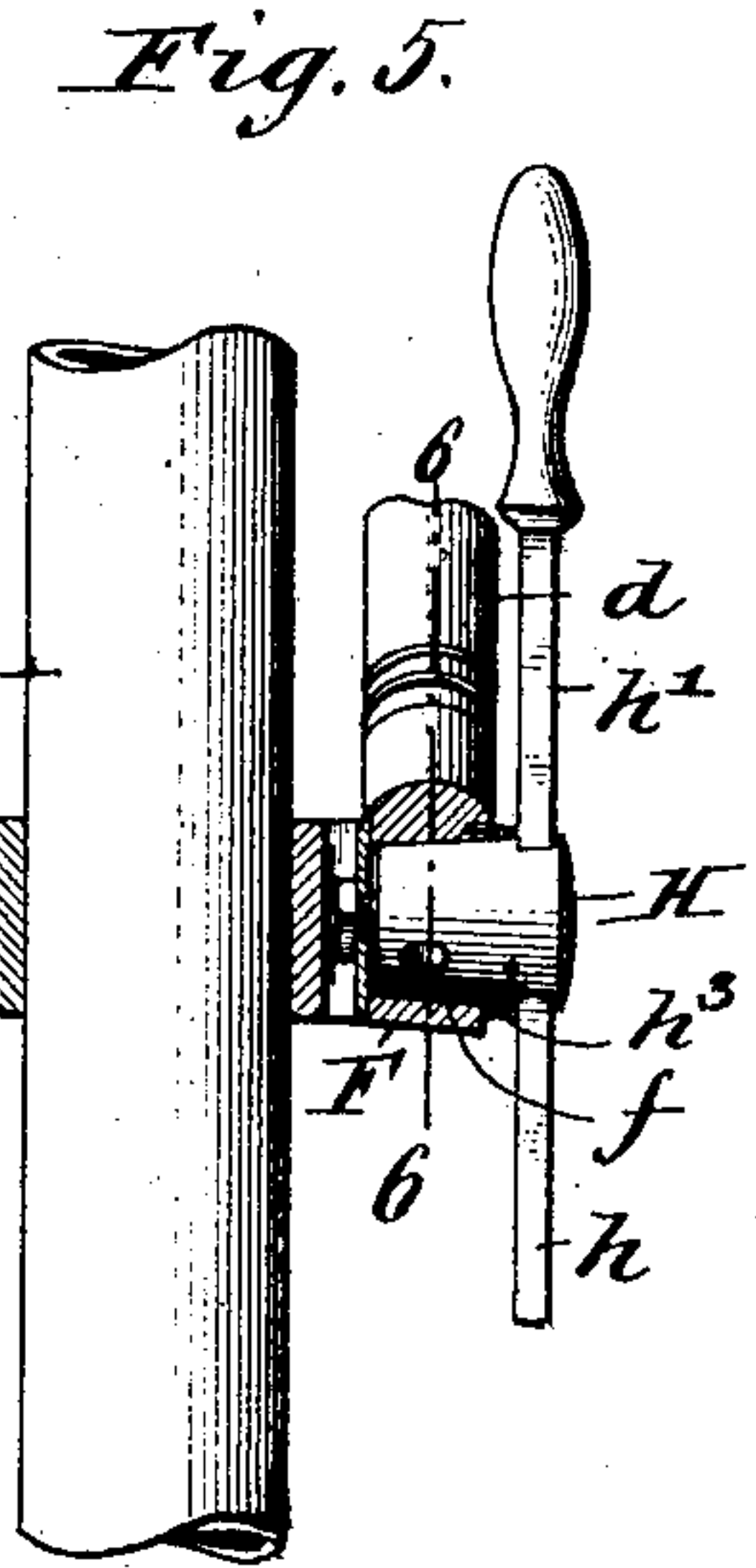


Fig. 5.

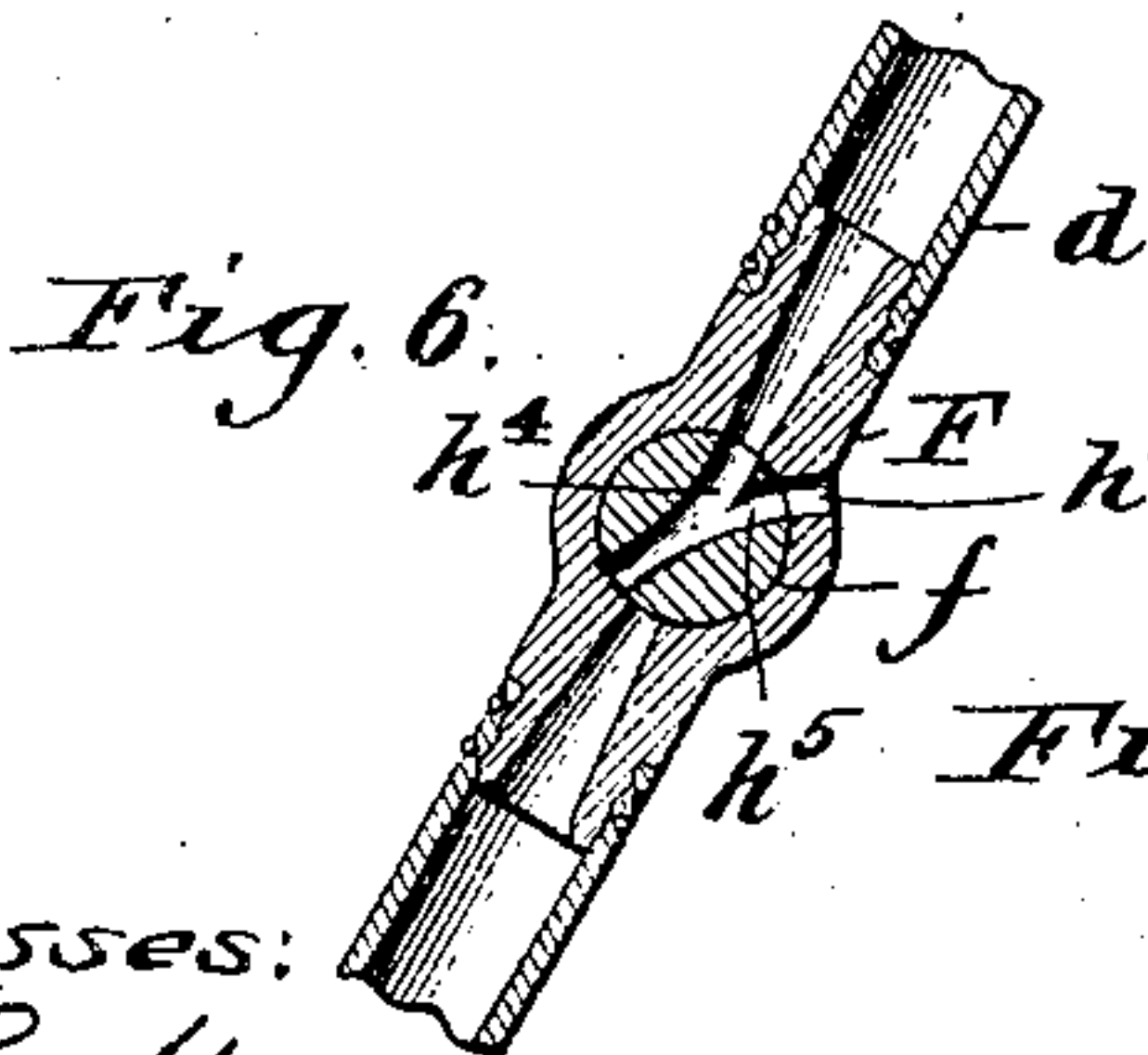


Fig. 6.

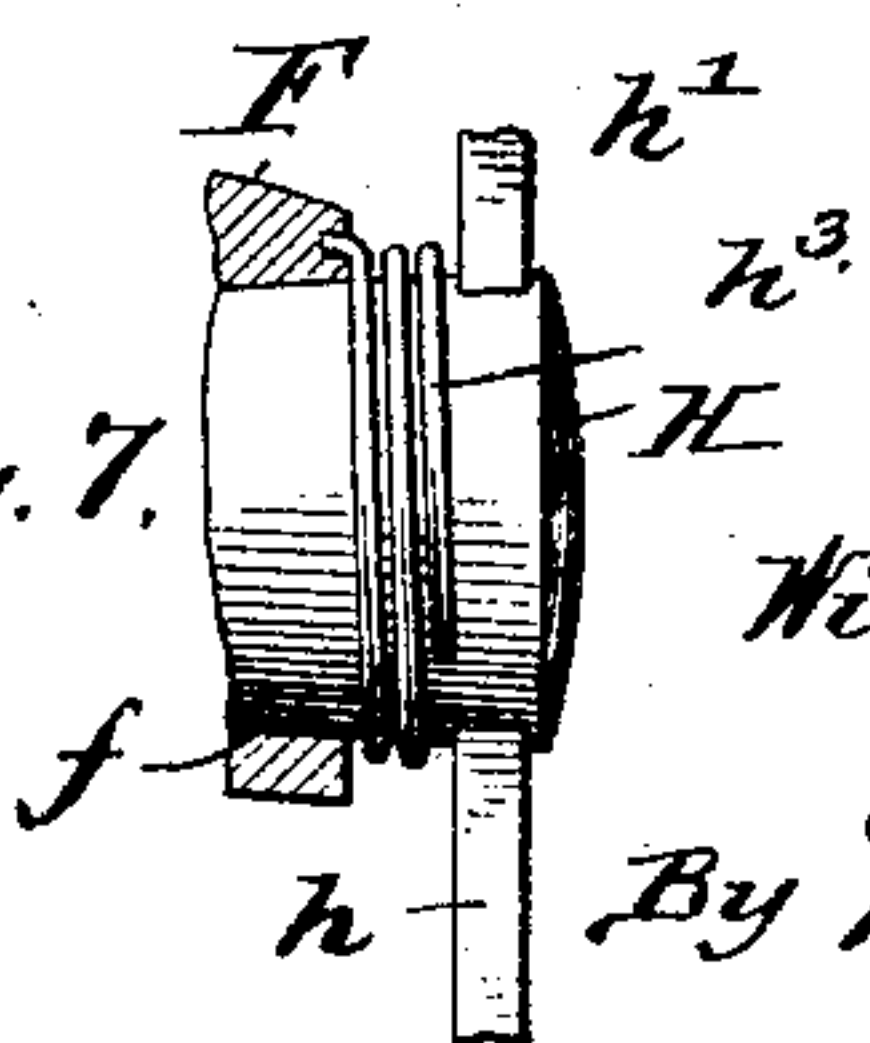


Fig. 7.

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UNITED STATES PATENT OFFICE.

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TROLLEY-CATCHER.

SPECIFICATION forming part of Letters Patent No. 771,563, dated October 4, 1904.

Application filed May 16, 1904. Serial No. 208,159. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. McARTHUR, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Trolley-Catchers, of which the following is a specification.

This invention relates to electric railways, and more particularly to that class of devices thereunder known as "trolley-catchers." Its object is to produce an improved article of this character which shall be rapid and effective in operation; and to this end the invention may be said to consist in the details of construction and arrangements of parts set forth in the following specification and more particularly illustrated in the drawings, wherein—

Figure 1 is a rear view of a portion of a car having the improved apparatus secured thereto. Fig. 2 is a similar view, the device being shown in sectional elevation. Fig. 3 is a horizontal section taken on line 3 3 of Fig. 1 on an enlarged scale. Fig. 4 is a view showing a portion of the air-cylinder and the valve and its controlling mechanism, whereby admission and ejection of air to and from the cylinder are controlled. Fig. 5 is a sectional elevation through the valve-chamber, showing the valve in elevation. Fig. 6 is a section taken on line 6 6, Fig. 5. Fig. 7 is a sectional elevation of a portion of the valve-chamber, showing the valve in elevation and the spiral spring controlling the valve.

The letter A indicates the rear of a car provided with my device, and B the depending trolley-rope.

C is the take-up, in this instance a drum rigidly mounted on shaft *c*, journaled in bearings on the car.

D is a source of fluid-supply, preferably compressed air, which is connected by means of the pipe *d* with the upper end of cylinder E. At the point where pipe *d* crosses cylinder E the former is provided with a removable section F, having a valve-seat *f* formed therein. Section F is secured to the cylinder by means of clamps G, the pipe and cylinder being thus rigidly secured to each other.

Within valve-seat *f* is located a turn-valve or

three-way cock H, having a depending arm *h* and a handle *h'*. The stem of the valve exterior to pipe *d* is encircled by a coiled spring *h*³, which tends to turn the valve and arm to the position indicated by dotted lines in Fig. 4. In Fig. 6 is illustrated the position of air-passages when the valve is held in its normal position against the tension of the spring. In this case the cylinder is in communication with the atmosphere by means of passage *h*⁴, branch *h*⁵, both within the cock, and port *h*⁶ in the valve-casing, while connection with the source is closed. When the valve is turned by the action of the spring to its dotted-line position, source D is in direct communication with the cylinder through passage *h*⁴ and branch *h*⁵ and connection with the atmosphere is cut off.

I shall now describe the means for holding valve H normally against the tension of its spring and the means for positively releasing said valve.

K is a latch pivoted intermediate its length to bracket *k* and having one end provided with an upwardly-projecting stop or shoulder *k'*, which engages with the lower end of arm *h*. Latch K is normally held with shoulder *k'* in engagement with the arm by a band-spring *k*², which presses upon the lower side of the latch immediately beneath the end of the arm. In its normal position latch K stands substantially perpendicular to arm *h*, and stop *k'* engages with the extreme end of the inner side to arm *h*, thereby opposing the action of spring *h*³. At its other end the latch is provided with a notch *k*³ on its lower surface, which is adapted to receive the upper end of trip L. The latter slides within brackets *l* on the rear of the car and is provided with a lateral extension *l'*, which embraces the trolley-rope. Any suitable means for causing the rope to actuate the trip only in an upward direction may be employed; but I have illustrated a button *l*² as being secured to the rope and adapted to raise the trip by engaging with the under side of lateral extension *l'*. It will be seen, therefore, that the latch is positively displaced or released by the action of the trolley-rope, leaving the valve and arm *h* absolutely free to turn under the action of spring *h*³, opening communica-

tion between the compressed-air tank and the cylinder. I consider this feature of considerable importance, as it is necessary to lower the trolley-pole immediately upon its becoming released from the wire.

I designate a piston operating within the cylinder and provided with a piston-rod i , having a rack i' formed in the lower end thereof. The piston-rod is guided by suitable brackets i'' within the cylinder, and its rack engages with a pinion J, mounted rigidly on shaft c and standing within a slot j in the side of the cylinder.

The operation of my invention is as follows:
 15 When the trolley-wheel becomes released from the wire, the trolley-pole flies upward, raising button l^2 , which in turn lifts the trip and positively releases the latch. The valve and arm h immediately swing to the position indicated by dotted lines in Fig. 4, and connection is opened between the source of liquid-supply and the cylinder. Air-pressure upon the upper surfaces of piston I depresses the latter, together with its piston-rod, and the rack i' , engaging with pinion J, turns the take-up drum, winding the trolley-rope thereon and depressing the trolley-pole. In order to replace the trolley-wheel upon the wire, the conductor turns the valve to its normal position by means of its handle and sets the latch and trip in their normal positions, as shown in Fig. 1, whereupon the cylinder is connected with the atmosphere and the compressed air is allowed to escape. This enables the spring controlling the trolley-pole to cause unwinding of the rope from the drum, thus allowing the pole to rise and be guided by the conductor into proper contact with the trolley-wire.

40 What is claimed as new is—

1. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a valve for admitting fluid to said cylinder, a latch engaging with said valve and adapted to hold it in one position, and a trip actuated by the trolley-rope and in engagement with said latch, said trip being adapted positively to displace said latch upon the rise of the trolley-rope.

2. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a spring-operated valve for admitting fluid to said cylinder, a latch engaging with said valve and adapted to hold it in one position, and a trip actuated by the trolley-rope and in engagement with said latch, said trip being adapted positively to displace said latch upon the rise of the trolley-rope.

3. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up, of a valve for

admitting fluid to said cylinder, a spring-latch engaging with said valve and adapted to hold it in one position, and a trip actuated by the trolley-rope and in engagement with said latch, said trip being adapted positively to displace said latch upon the rise of the trolley-rope.

4. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, a piston-rod having a rack formed thereon, and a pinion connected with said take-up and engaging with said rack; of a valve for admitting fluid to said cylinder, a latch engaging with said valve and adapted to hold it in one position, and a trip actuated by the trolley-rope and in engagement with said latch, said trip being adapted positively to displace said latch upon the rise of the trolley-rope.

5. In a device of the character described, the combination with the trolley-rope, a shaft, a winding-drum mounted rigidly thereon, a pinion also rigid with the shaft, a cylinder having a slot to receive said pinion, a piston in the cylinder, and a piston-rod having a rack formed thereon in engagement with said pinion; of a valve for admitting fluid to said cylinder, a latch engaging with said valve and adapted to hold it in one position, and a trip actuated by the trolley-rope and in engagement with said latch, said trip being adapted positively to displace said latch upon the rise of the trolley-rope.

6. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a valve for admitting fluid to the cylinder, an arm on said valve, means tending to turn the valve in one direction, a latch engaging with said arm, a spring operating to hold the latch normally in contact with the arm, and a trip actuated by the trolley-rope and in engagement with the latch, said trip being adapted to release the latch against the tension of the spring upon the rise of the rope.

7. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a valve for admitting fluid to the cylinder, means tending to turn the valve in one direction, a latch pivoted intermediate its length, means for holding one end of the latch normally in engagement with the arm, and a trip actuated by the trolley-rope and in engagement with the other end of the latch, said trip being adapted to release the latch against the tension of the spring upon the rise of the rope.

8. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a valve for admitting fluid to the cylinder, a depending arm on said valve, means tending to turn the

valve in one direction, a horizontal latch pivoted intermediate its length, a spring connected to said latch and operating to hold one end thereof in engagement with the lower
5 end of the arm, and an upright trip actuated by the trolley-rope and in engagement with the latch, said trip being adapted to release the latch against the tension of the spring upon the rise of the rope.

10 9. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a valve for admitting fluid to the cylinder, an arm on said
15 valve, means tending to turn the valve and arm in one direction, a pivot-latch normally standing substantially perpendicular to said arm and having a shoulder engaging with the end of the arm and opposing said spring,
20 and means actuated by the trolley-rope for positively removing the latch from engagement with the arm.

10. In a device of the character described, the combination with the trolley-rope, a take-
25 up, a cylinder, a piston therein, and connection between the piston and take-up; of a

spring-operated valve for admitting fluid to the cylinder, an arm on said valve, a pivoted latch normally standing substantially perpendicular to said arm and having a shoulder
30 engaging the end of the arm, a spring pressing against the latch immediately beneath the arm, and means actuated by the trolley-rope for releasing the latch against the tension of the opening.

11. In a device of the character described, the combination with the trolley-rope, a take-up, a cylinder, a piston therein, and connection between the piston and take-up; of a
40 valve for admitting fluid to the cylinder, a latch engaging with said valve and adapted to hold it in one position, and a trip embracing the trolley-rope and actuated thereby positively to displace said latch upon the rise
45 of the rope.

In witness whereof I have affixed my signature in presence of two subscribing witnesses.

WM. M. McARTHUR.

Witnesses:

M. SEWERT,
EMIL NEUHART.