

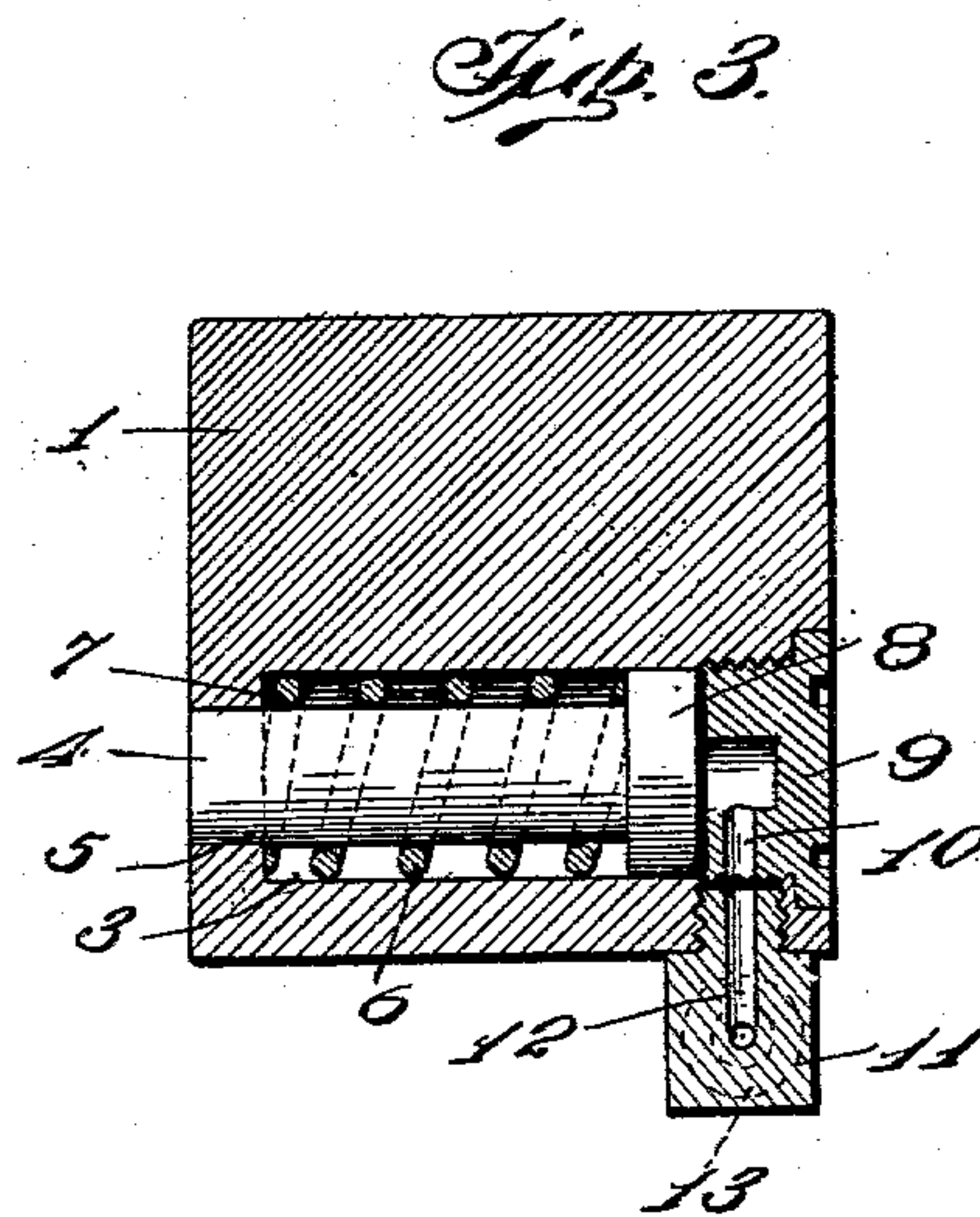
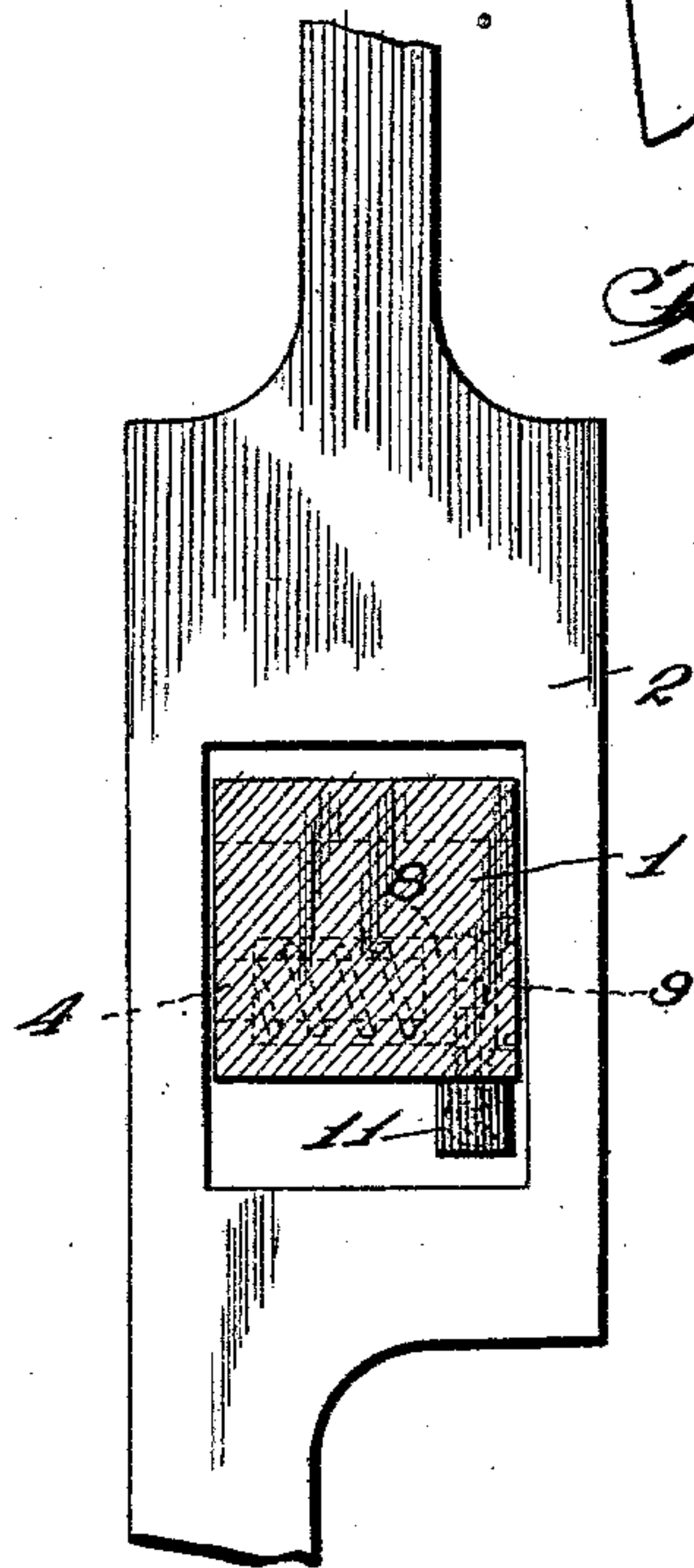
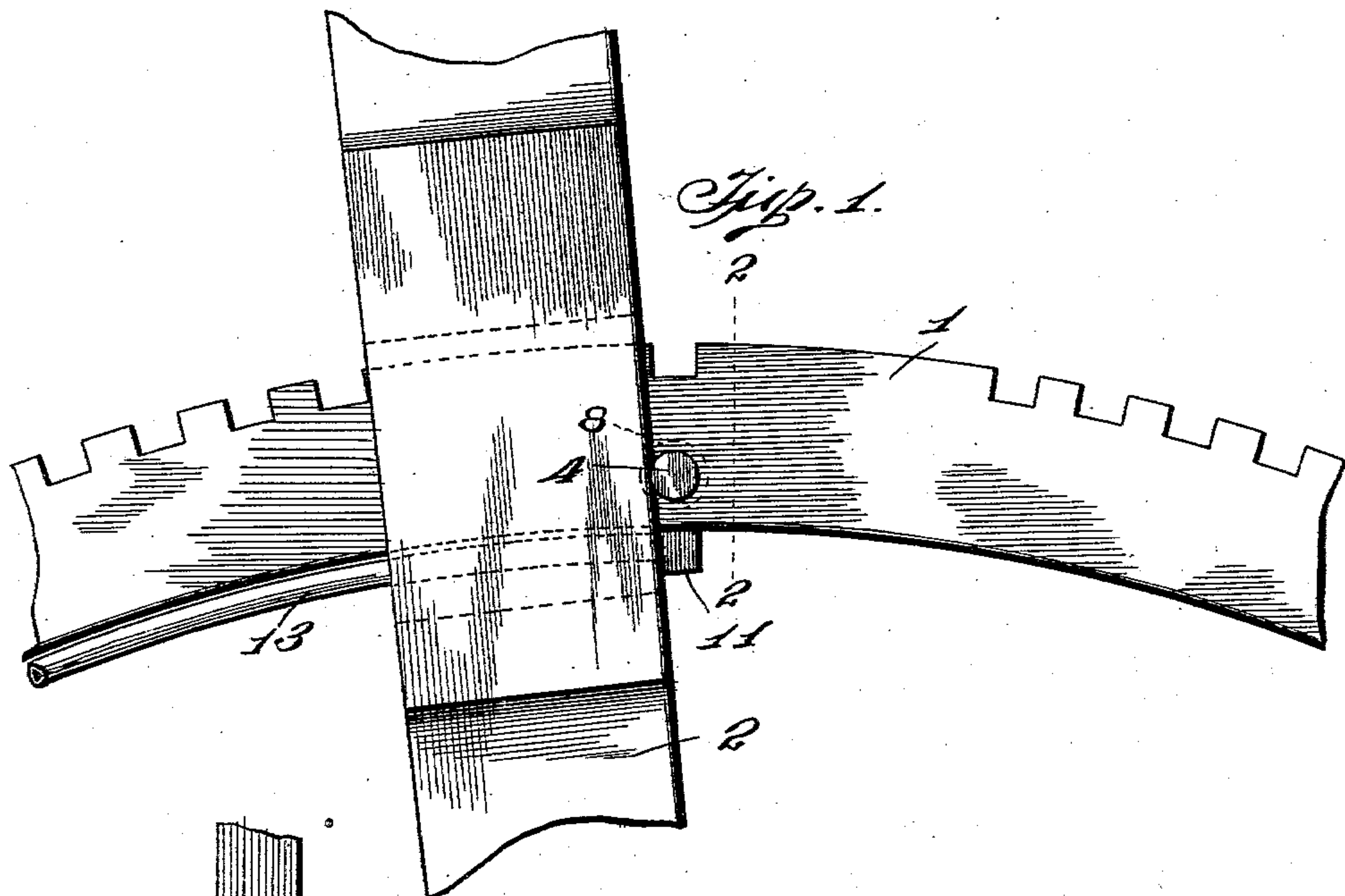
No. 743,913.

PATENTED NOV. 10, 1903.

W. R. McKEEN, JR.  
LEVER CONTROLLING MECHANISM.

APPLICATION FILED APR. 10, 1903.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

WILLIAM R. McKEEN, JR., OF OMAHA, NEBRASKA.

## LEVER-CONTROLLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 743,913, dated November 10, 1903.

Application filed April 10, 1903. Serial No. 152,040. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. McKEEN, Jr., a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Lever-Controlling Mechanism; and I do hereby 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.

This invention relates to improvements for mechanism for controlling the reversal of a locomotive and automatically preventing throwing of the reversing-lever while a heavy service or an emergency application is on.

The object in view is the provision of means for automatically preventing the sliding of the locomotive drive-wheels.

With this and further objects in view the invention consists, in combination with the quadrant of a locomotive and a pressure-controlling lever, of a piston within the quadrant and means for throwing the same into the path of movement of said lever.

It further consists, in combination with pressure-controlling means, of means for automatically preventing reversal thereof.

It also consists in certain other novel constructions, combination, and arrangements of parts, as will be hereinafter fully described, and specifically claimed.

In the accompanying drawings, Figure 1 represents a view in side elevation of an engine reverse quadrant and lever embodying the features of the present invention, parts being broken away to save space. Fig. 2 represents a transverse vertical sectional view taken on the plane of line 2 2 of Fig. 1. Fig. 3 represents a transverse vertical section through the quadrant and the cylinder, the parts being shown on an enlarged scale.

As is well known in practice, it is seriously objectionable to effect a sliding of the drivers of the locomotive through too sudden an application of the brakes and reversal of the pressure within the cylinders. I have therefore designed the mechanism disclosed in the accompanying drawings for preventing such action automatically, and the embodiment of the invention as disclosed in the drawings consists of any suitable and well-known form

of quadrant 1, inclosed by the steam-pressure-controlling lever 2, which is, as is well known in the art, designed to be swung to one end of the quadrant for opening the steam-supply and driving the engine in one direction and moved to the opposite end of the quadrant for driving the machine in an opposite direction, the maximum of pressure being applied at the time the lever reaches the end of the quadrant and no pressure being permitted to enter the cylinders at the time the lever is positioned centrally of the quadrant. A preferably cylindrical cavity 3 is formed in the quadrant 1, at approximately the center thereof, and arranged within said cavity the suitable plunger 4, which has its free end lying flush with the vertical plane of the side of the quadrant 1, said end extending through the preferably reduced aperture 5, formed in the quadrant and extending from the end of cavity 3 to the outside thereof. The plunger 4 is surrounded by a coil-spring 6, which engages the annular shoulder 7, formed at the end of the cavity 3, and at its opposite end engages the piston-head 8, fixed to the corresponding end of plunger 4. A cap or plug 9 is threaded into the otherwise open end of cavity 3 and is formed with a passage-way 10, communicating with the cavity 3 and opening directly in front of the piston 8. An L-plug 11, formed with a bore 12, is threaded into the under face of the quadrant 1, with its bore communicating with the passage 10. A tube 13 extends to and communicates with the outer end of the bore 12, and the passage 10 is always equal in degree to that within the driving brake-cylinders of the locomotive to which the present improved apparatus is applied.

The spring 6 may be any suitable type and is of capacity sufficient for resisting a pressure of proper degree for braking the drivers of a locomotive without preventing sliding of the same. Say, for instance, a pressure greater than twenty pounds will brake the drivers to too great a degree. Then that pressure will overcome the resistance of the spring 6, permitting actuating of the piston 8 and plunger 4 through the pressure introduced through the passage-way 10, whereby the free end of the plunger 4 is caused to move beyond the vertical plane of the side



of the quadrant 1 and into the path of movement of the lever 2, thus preventing the lever from moving past the central portion of said quadrant until the pressure within the driving brake-cylinder is dropped to twenty pounds or to that pressure which the spring 6 is designed to overcome. When the pressure is thus reduced, the plunger 4 automatically recedes and the lever 2 may be moved to the reversed position upon the quadrant. It will thus be apparent that the cavity 3 forms the functions of a cylinder, although, of course, it may be formed of any transverse contour.

From the foregoing it will be observed that when making an emergency or other quick stop the application of pressure cannot be made sufficient to slide the wheels while at the same time reversing the engine, the preventing of reversal being accomplished automatically.

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

1. In a mechanism of the class described, the combination with a quadrant, and pressure-controlling means, of means carried within the quadrant for automatically preventing reversal thereof, substantially as described.

2. In a mechanism of the class described, the combination with a quadrant, of a pressure-controlling lever, and means carried within the quadrant for automatically engaging said lever for preventing reversal thereof, substantially as described.

3. In a mechanism of the class described, the combination with a quadrant and a pressure-controlling lever, of a plunger carried within the quadrant, and means also carried within the quadrant for automatically moving the plunger into the path of movement of said lever, substantially as described.

4. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant, a cylinder formed within the walls of the quadrant, a piston operating therein, and means actuated by said piston for automatically preventing reversal of said lever, substantially as described.

5. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant formed with a cavity, a piston within the same, means for actuating said piston, and a device actuated by the piston for preventing reversal of said lever, substantially as described.

6. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant, and pressure-actuated

means carried within the same for preventing reversal of said lever, substantially as described.

7. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant formed with a cavity, a piston within said cavity, pressure-supply means for said piston, and means actuated by said piston for preventing reversal of said lever, substantially as described.

8. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant formed with a cavity therein, a piston within said cavity, a plunger connected with said piston and extending through the walls of said quadrant and pressure-supply means for said piston for automatically actuating the same and moving said plunger into the path of said lever, substantially as described.

9. In a mechanism of the class described, the combination with a quadrant, a pressure-supply lever inclosing the same, and means within the quadrant for preventing reversal of said lever, substantially as described.

10. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant formed with a cavity, a plunger within said cavity normally extending to the plane of the side of said quadrant, a piston carried by said plunger, a spring normally retracting said plunger, and pressure-supply means for actuating said piston and projecting the plunger, substantially as described.

11. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant inclosed thereby, a plunger carried by said quadrant and movable transversely thereof, and means for automatically shifting said plunger into the path of said lever, substantially as described.

12. In a mechanism of the class described, the combination with a pressure-controlling lever, of a quadrant formed with a cavity, a piston within the same, a plug threaded into the end of said cavity and formed with a communicating passage-way, means for communicating pressure to said passage-way for actuating said plunger, and means carried by the plunger for preventing reversal of said lever, substantially as described.

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

WILLIAM R. MCKEEN, JR.

Witnesses:

CHARLES L. DUNDLY,  
W. H. CHAMBERS.