

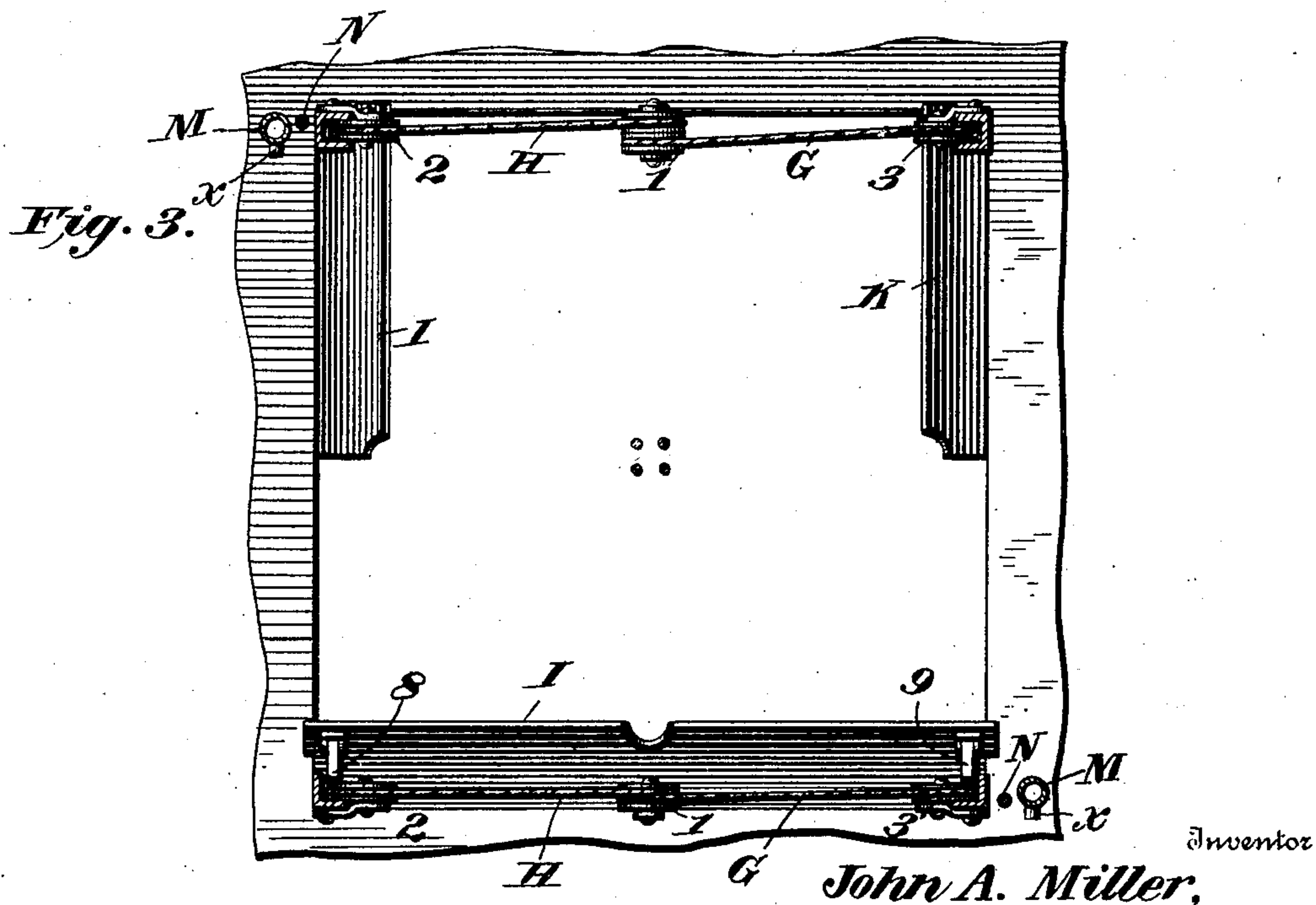
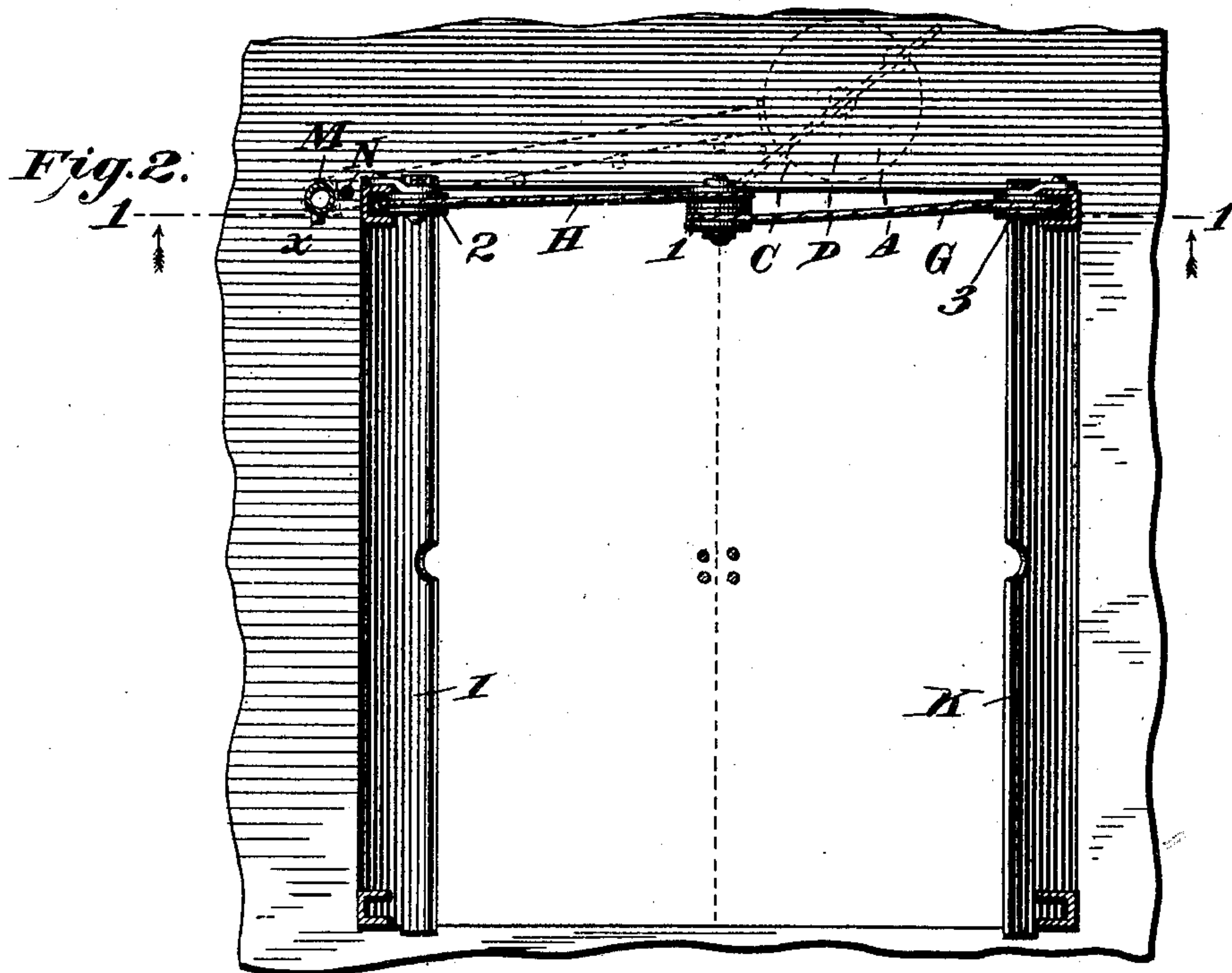


J. A. MILLER.  
CLOSURE CONTROLLING APPARATUS.

(Application filed June 15, 1901.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses

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No. 683,135.

Patented Sept. 24, 1901.

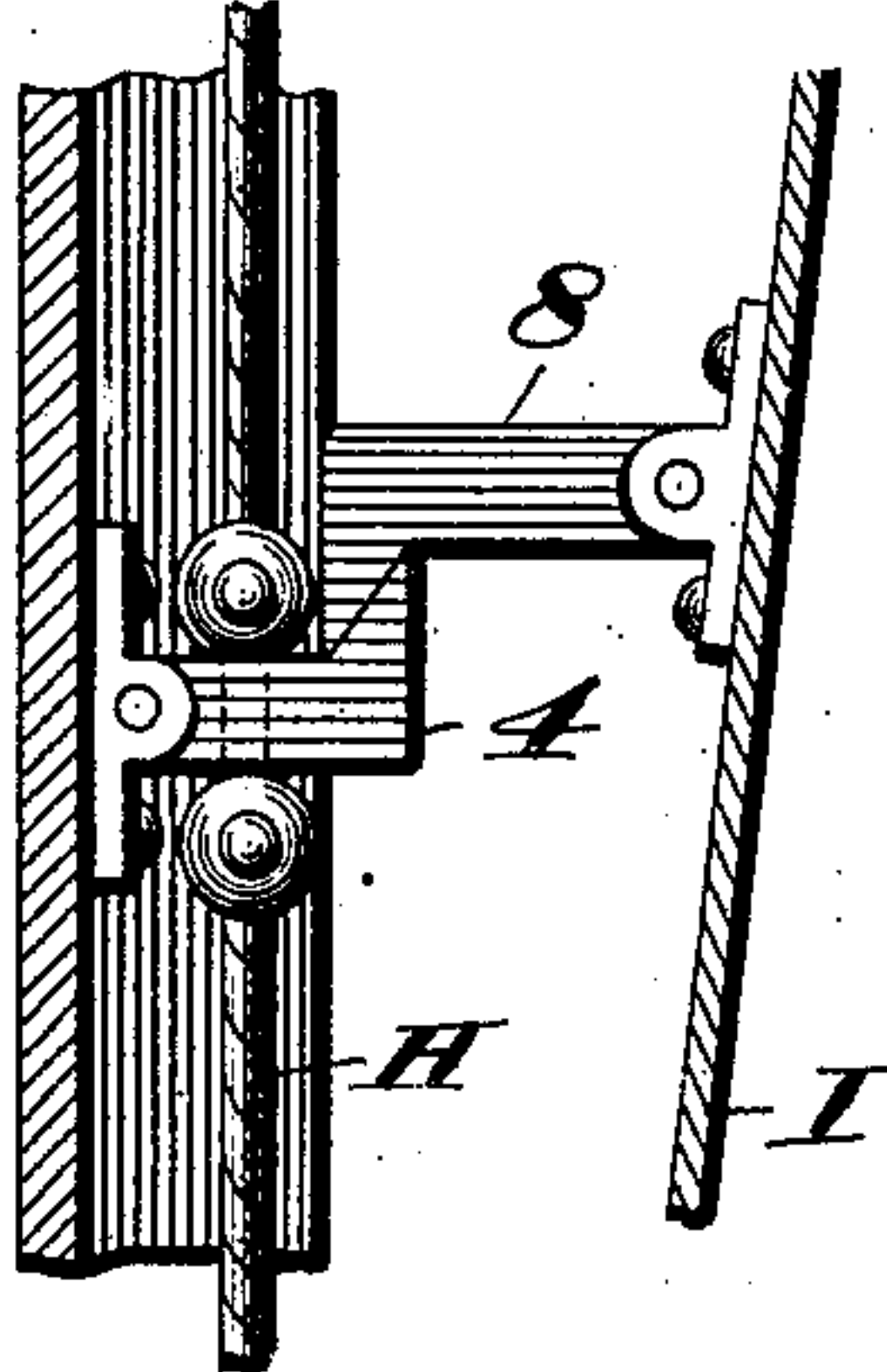
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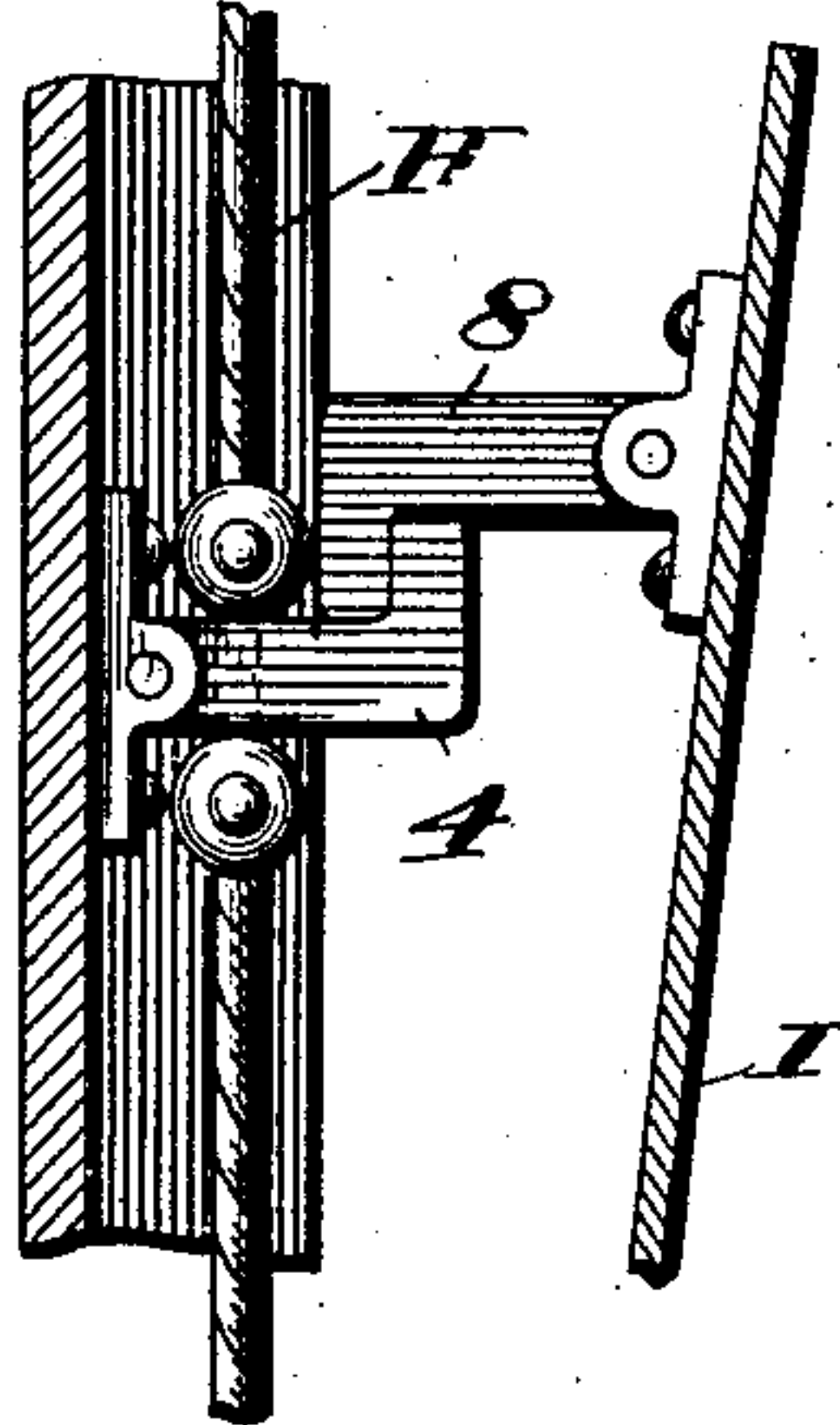
(No Model.)

3 Sheets—Sheet 3.

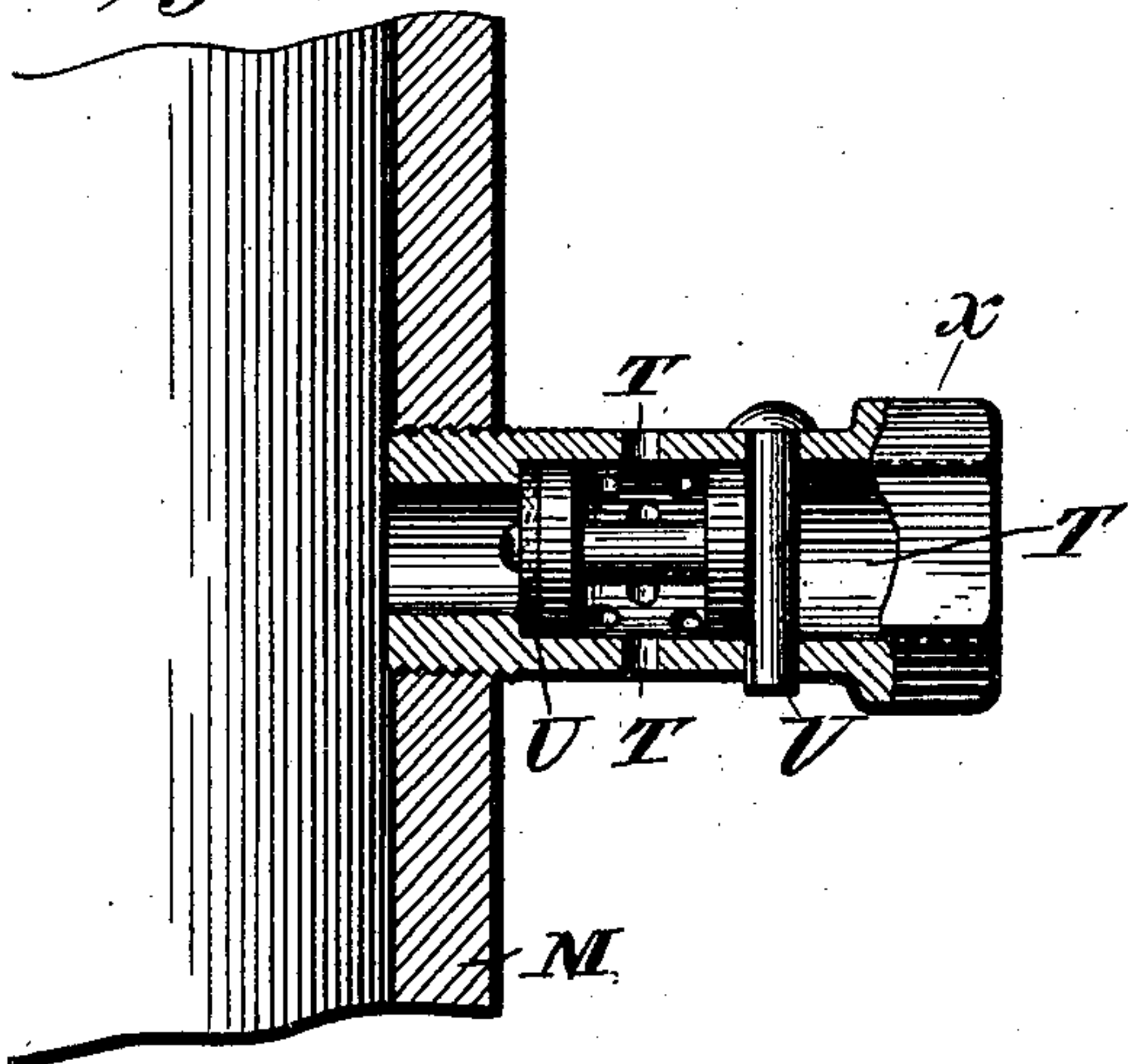
*Fig. 4.*



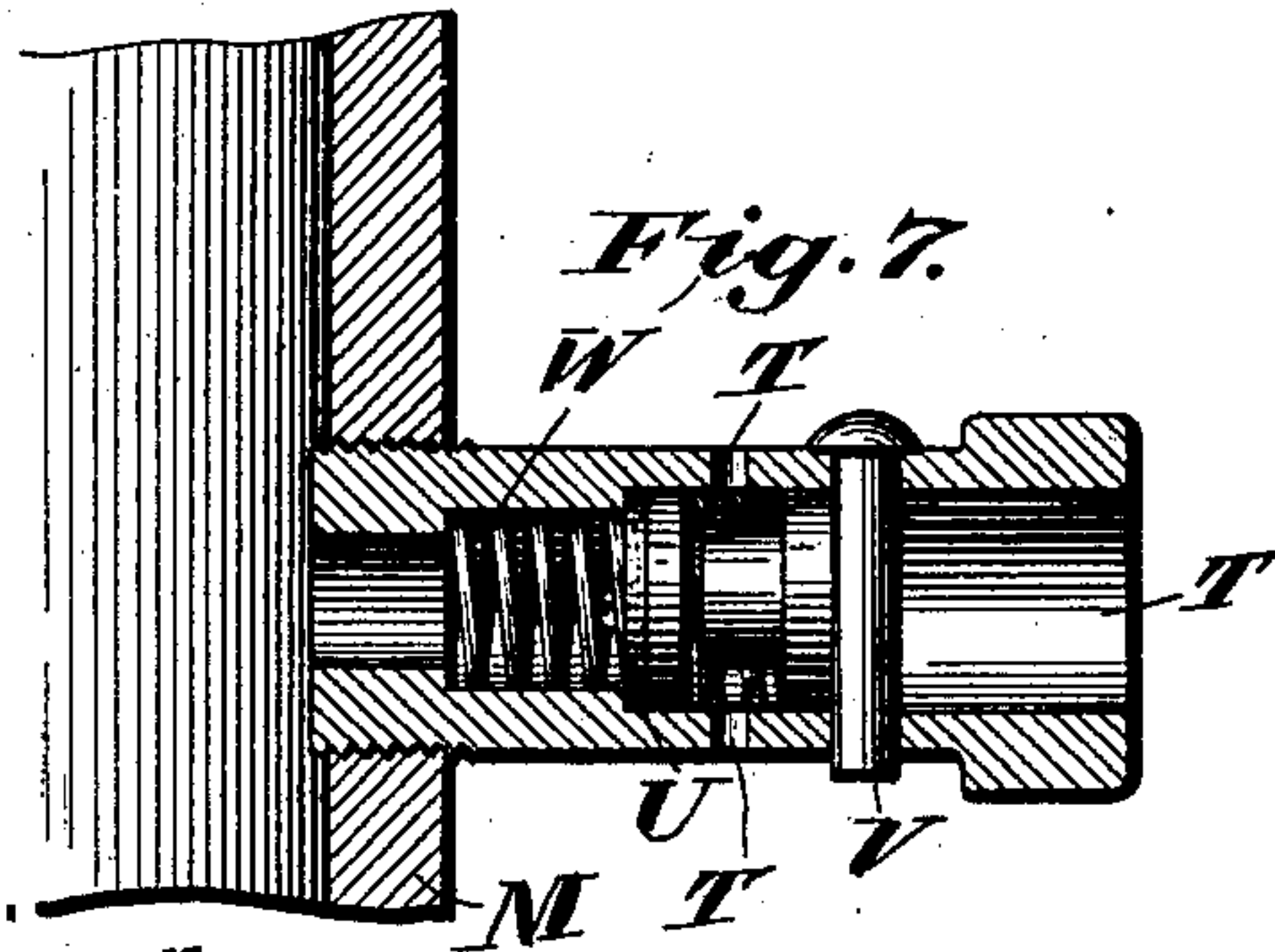
*Fig. 5.*



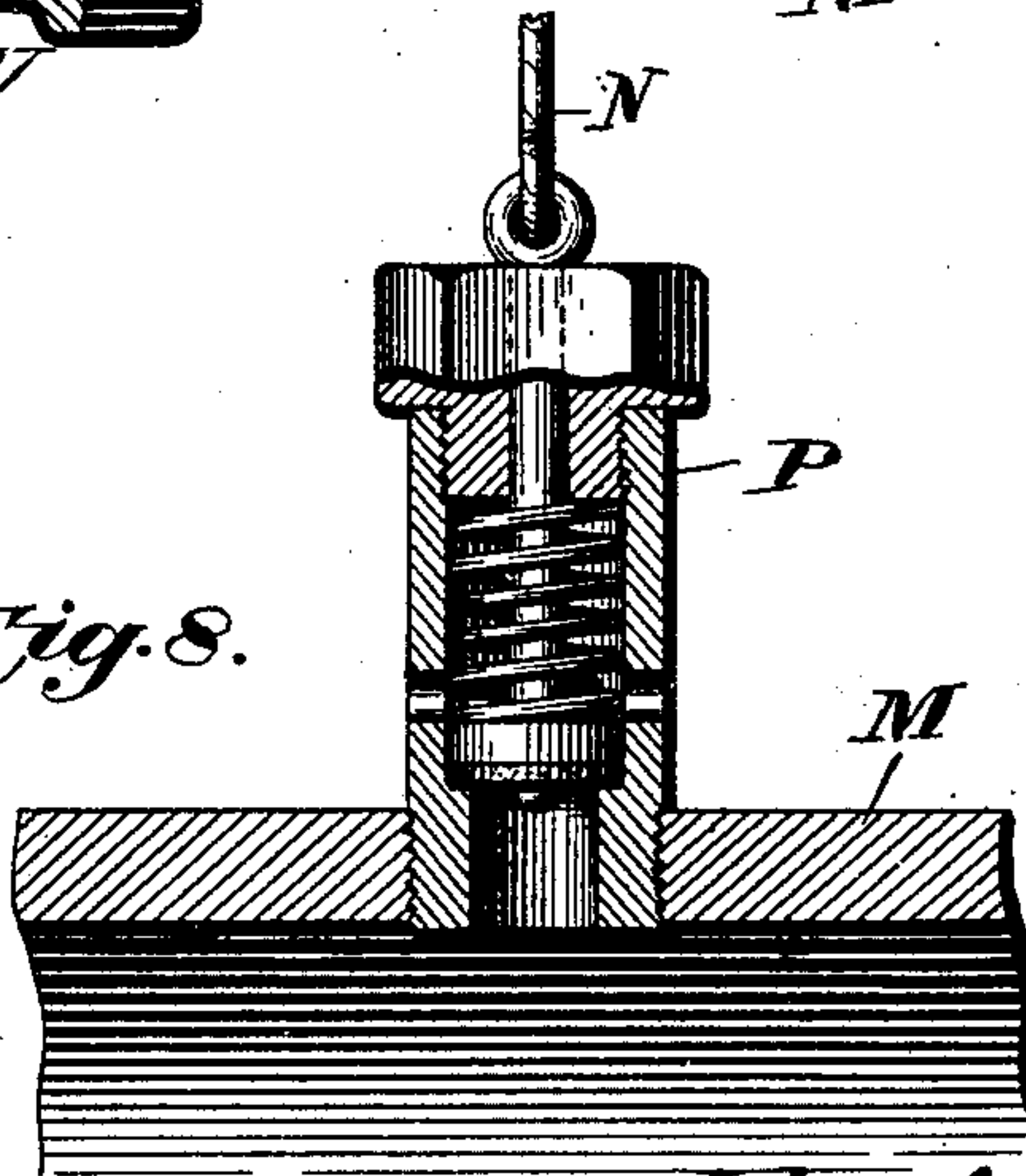
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

JOHN A. MILLER, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-THIRD TO WILLIAM H. COLEMAN AND WILLIAM M. WILSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

## CLOSURE-CONTROLLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 683,135, dated September 24, 1901.

Application filed June 15, 1901. Serial No. 64,669. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. MILLER, a citizen of the United States, residing at No. 918 North Gilmore street, in the city of Baltimore, State of Maryland, have invented a new and useful Improvement in Closure-Controlling Apparatus, of which the following is a specification.

My invention relates to mechanism for controlling fire-doors, safety-gates, and similar closures.

The object of my invention is to move these closures to a closed position by automatic means before a fire arising in the building can reach the elevator-shaft or apartment to which they are affixed and which they are designed to protect.

The invention consists, substantially, in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter described, as shown in the accompanying drawings, and as pointed out in the appended claims.

Reference is had to the accompanying drawings and to the various views and reference-signs appearing thereon, wherein—

Figure 1 is a view, partly in vertical section and partly in elevation, of the apparatus embodying my invention. Figs. 2 and 3 are top views showing the application of my invention respectively to two and three door systems of fire-doors, safety-gates, or similar closures. Figs. 4 and 5 are detail views of closures embodying features of my invention. Figs. 6 and 7 are detail views of fuse-plugs. Fig. 8 represents a detail view of a valve and mechanism for operating the same which embodies a feature of my invention.

Similar reference-signs refer to similar parts throughout the several drawings.

In the drawings I have illustrated a construction wherein my invention is applied to operating fire-doors for elevator-shafts. I desire it to be distinctly understood, however, that my invention is of general application and is adapted for use in various other constructions—as, for instance, in operating safety-gates, doors, skylights, &c.

In the drawings, A is a fluid-cylinder or

air-tank, placed in the basement of the building directly beneath the elevator-shaft, containing the piston B, the rod of which extends above A and has fitted to it by a bolt or rivet the lever C, operating upon the fulcrum D. On one end of said lever is placed the weight E, which by means of graduations upon the lever may be placed at any distance from D. The ropes or cables G and H are attached to the other arm of the lever, and after respectively passing over the pulleys 1 and 2 and 1 and 3, (1 being a double pulley,) suspended at the top of the elevator-shaft in the manner indicated in the drawings, pass through and are fastened to the hooks 4 and 5 (see Figs. 4 and 5) and at their lower extremities are attached to the weights 6 and 7.

4 and 5 operate on hinges substantially as shown in the drawings.

I and K are the fire-doors, opening and closing upon hinges at the floor-level and fitted with the hooks 8 and 9, so that when the doors are open they will be held in place against the sides of the elevator-shaft by the interlocking of the hooks 4 and 8 and 5 and 9.

L represents a water or air pipe emptying into and supplying the pressure in A.

M represents an exhaust-pipe, which is from one and one-half to three times the size of L, which may be extended to any part of the building and which is extended to each floor of the building containing the fire-doors. M is fitted throughout its entire extent with fuse-plugs  $x$ ,  $x$ , and  $x$ , of some inflammable material or easily-fusible combination of metals. Figs. 6 and 7 represent detail views of fuse-plugs adapted for use in connection with my invention, the diameters of which are greater than the diameter of L. The outlets of the exhaust-pipe being first closed, water or air is forced into the cylinder or air-tank A through the pipe L until the pressure forces the piston B down into the position indicated in Fig. 1, thus drawing taut the ropes or cables G and H, which support the hooks 4 and 5 in a horizontal position and which, in conjunction with the hooks 8 and 9, hold the fire-doors I and K open and against the sides of the ele-



vator-shaft, as illustrated in Fig. 1. A fire breaking out in any portion of the building will before it can reach the elevator-shaft encounter the exhaust-pipe M and ignite or blow out one or more of the said fuse-plugs. The burning or blowing out of the fuse-plugs opens the drainage-pipe and releases the pressure upon the piston B. The weight E reverses the lever C, thus slackening the ropes or cables G and H. The weights 6 and 7 take up this slack, causing the hooks 4 and 5 to drop, releasing the contact between hooks 4 and 8 and 5 and 9 and removing the support from the doors I and K, which, owing to their position, as illustrated in Figs. 1, 4, and 5, must close, thus cutting off all draft from the elevator-shaft and preventing the fire from ascending said elevator-shaft. If the construction of the elevator-shaft is such that gravity will not be sufficient to close the doors when the closures are in an open position, springs of suitable strength may be adjusted either to the doors or to the side of the elevator-shaft for the purpose of closing the doors when the closures are in an open position.

N is a safety-rope controlling the valve P and is extended outside the elevator-shaft to each floor of the building. A pull at the rope N releases the valve P and causes the same results substantially as the burning out of a fuse-plug. Nothing is herein claimed for the valve and operating mechanism except in the use to which they are applied.

Fig. 6 is a vertical section of a fuse-plug which may be used in connection with my invention.

T represents the openings in the fuse-plug, which permit the flow of fluid or escape of air.

U represents a washer which prevents the water or air from reaching the opening.

V is a pin driven through the plug in the manner indicated, which, besides supporting the washer in position, is made of inflammable material or a combination of easily-fusible metals. When V is burned out or melted, the pressure of the fluid or air will throw out the washer and permit the fluid or air to escape through T, as and for the purposes above set forth. Fig. 7 represents a fuse-plug similar in every respect to the one just described, with the exception that the pressure of the fluid or air is augmented by the spring W, fitted beneath the washer in a compressed position. Both of the above-described fuse-plugs are intended to be screwed into the exhaust-pipe in the manner indicated in the drawings.

Many variations and changes in the arrangement, location, and detail of construction of parts may be made by any person skilled in the art without departing from the spirit of my invention. I do not desire, therefore, to be understood as limiting myself to the exact details shown; but,

Having now fully ascertained the object and nature of my invention, its principles of

operation, and a form of mechanism embodying the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus of the class described, a series of closures, a fluid-cylinder with piston, lever and fulcrum attachment substantially as described, connections by rope or cable between one arm of the lever and each of the closures, a supply-pipe and an exhaust-pipe for said cylinder or air-tank said exhaust-pipe being fitted with fuse-plugs, and a system of weights as and for the purposes above set forth.

2. In an apparatus of the class described, a series of closures, means for releasing and maintaining the same in position, comprising a fluid-cylinder with piston, lever and fulcrum attachment, rope or cable connections between one arm of said lever and each of the closures, a supply and an exhaust pipe for said cylinder, a valve on said exhaust-pipe which may be opened by hand, and connections between said valve and each floor of the building as and for the purposes set forth.

3. In an apparatus of the class described, a series of closures, a fluid-cylinder provided with piston, lever and fulcrum attachment, connections between one arm of the lever and each of the closures whereby when the pressure in said tank or cylinder is reduced said closures are simultaneously moved to a closed position as and for the purposes above set forth.

4. In an apparatus of the class described, a series of closures, a fluid-cylinder provided with a piston to which is attached one arm of a lever operating on a fulcrum and to the other arm of which lever is fitted a weight, means for normally maintaining said lever at one limit of its stroke, connections between the piston-arm of said lever and each of said closures whereby they are maintained in open position when said lever is in its normal position, and means for permitting said lever to move to the other limit of its stroke thereby releasing said closures as and for the purposes set forth.

5. In an apparatus of the class described, a series of closures, a fluid-cylinder provided with a piston which is attached to one arm of a lever operating on a fulcrum to the other arm of which lever is attached a weight, said piston being attached to the arm of the lever in such a way as to control it, connections between the piston-arm of said lever and each of the closures, devices for forcing air or fluid into said cylinder to maintain said lever at that limit of its travel which holds the closures open and devices for opening the exhaust-pipe of said fluid-cylinder, whereby said lever is permitted to move to the other limit of its travel thereby releasing said connections and permitting said closures to move to a closed position as and for the purposes set forth.

6. In a fire-door apparatus for elevator-



shafts, a series of closures arranged at different landings, a fluid-cylinder with piston and lever attachment substantially as described, connections between the lever attachment and each of the closures, hydraulic or pneumatic means for normally maintaining the lever at one limit of its travel and automatic means for moving said lever to the

other limit of its travel thus opening said closures as and for the purpose set forth. 10

In witness whereof I have hereunto set my hand this 12th day of June, 1901.

JOHN A. MILLER.

In presence of—

FRANK J. ROWELL,

W. J. SHEETZ.