

S. BROICHGANS.
FIRE INDICATOR AND EXTINGUISHING SYSTEM.

No. 446,200.

Patented Feb. 10, 1891.

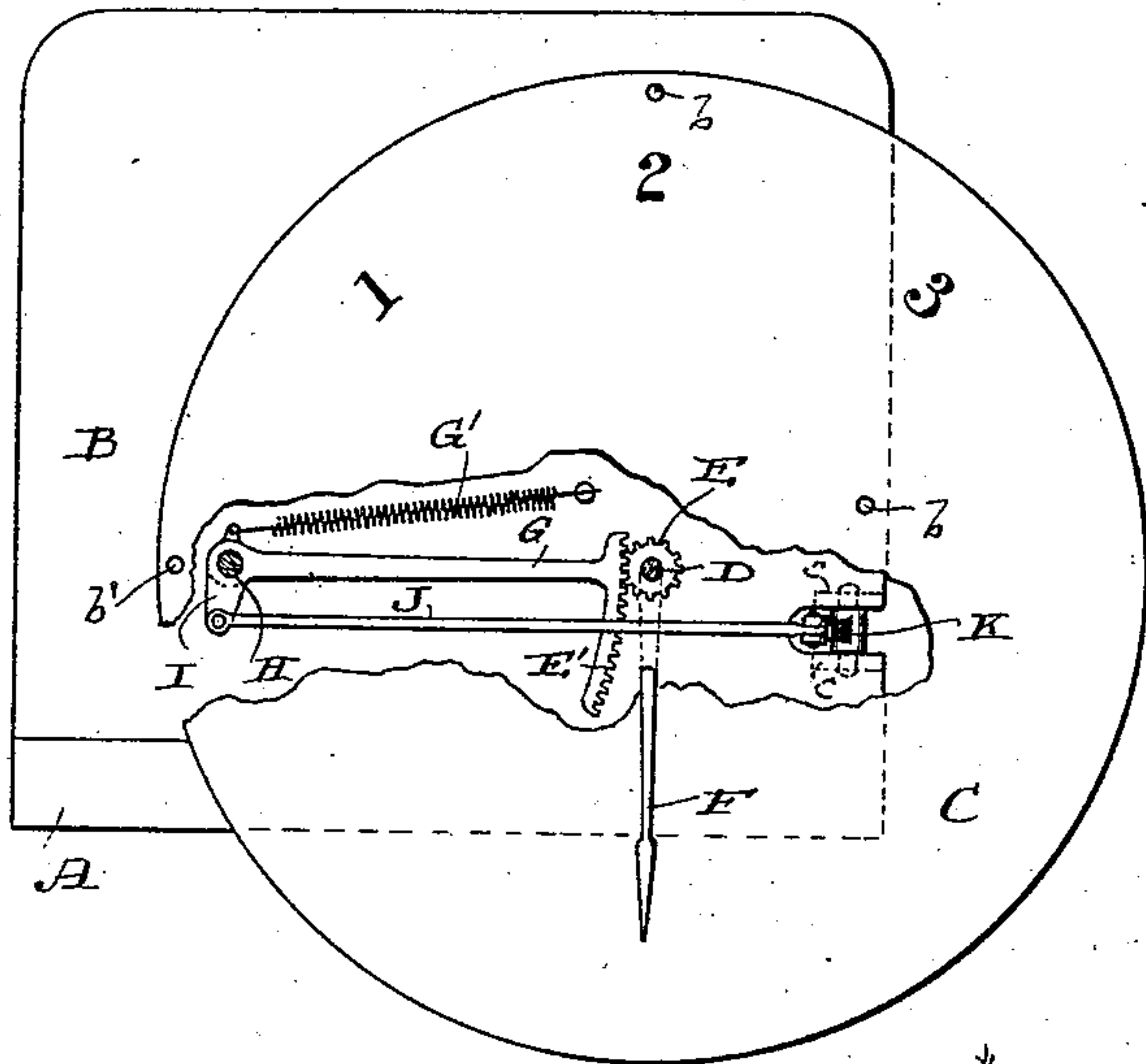


Fig. 2.

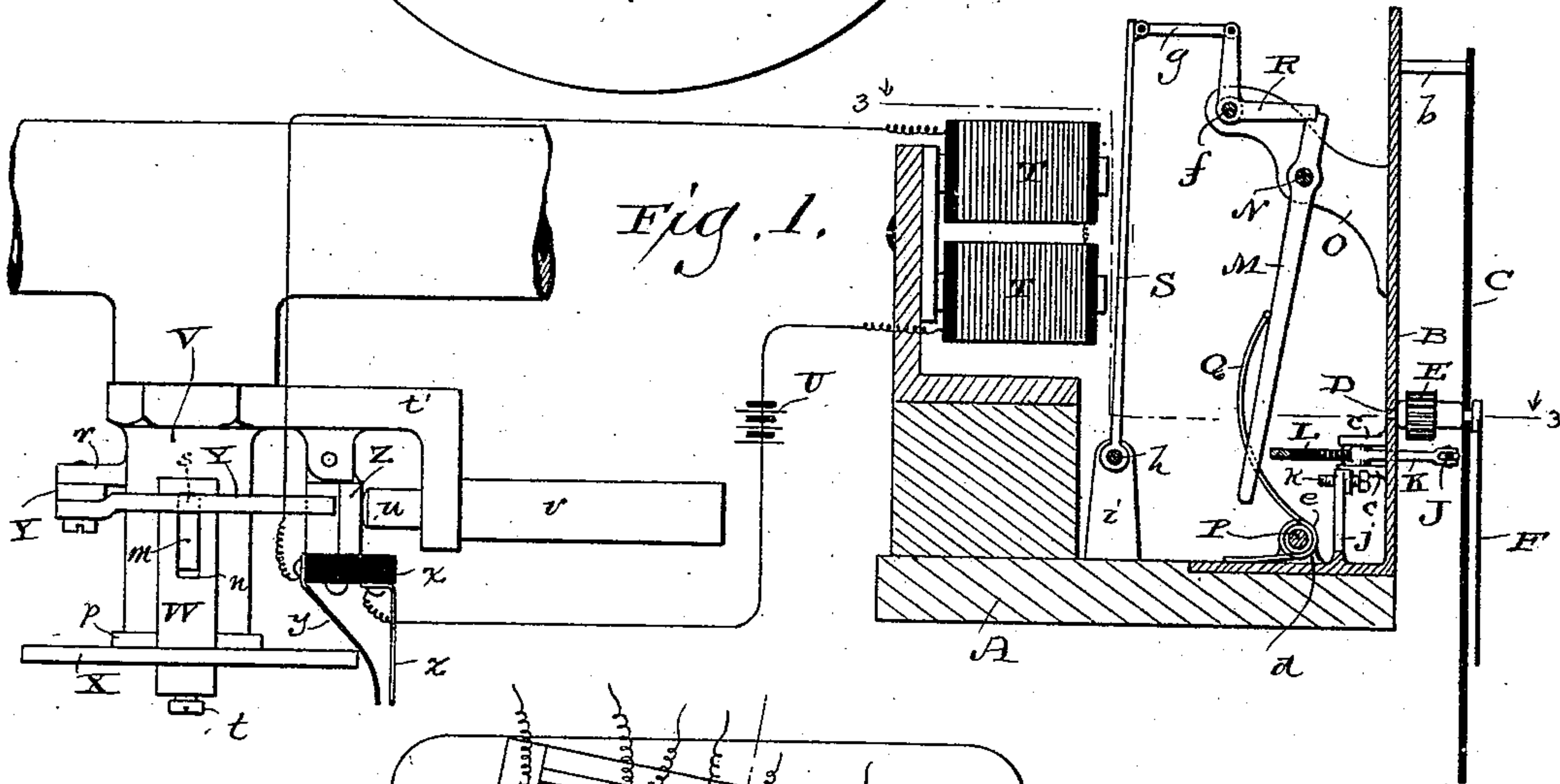


Fig. 1.

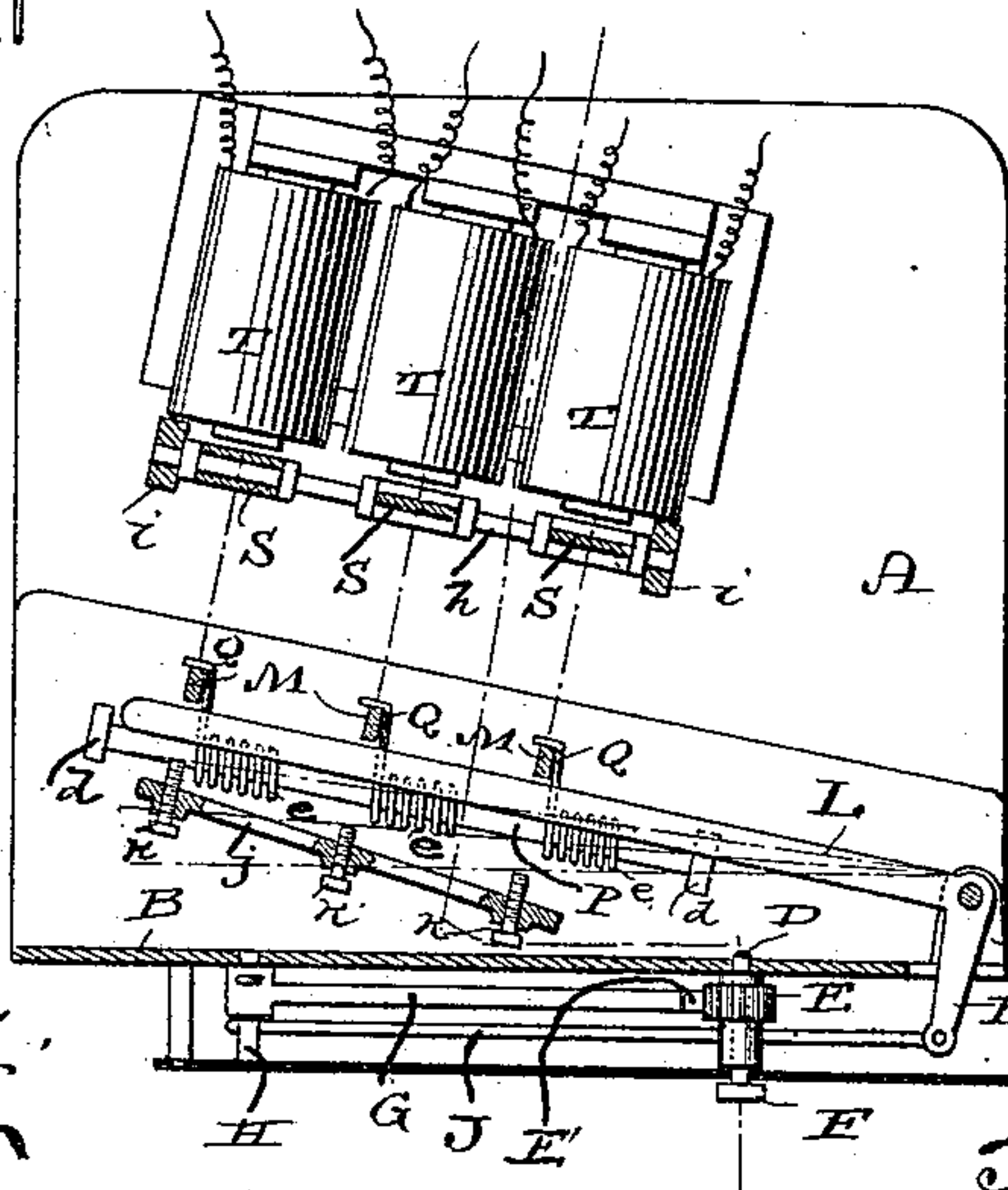


Fig. 3.

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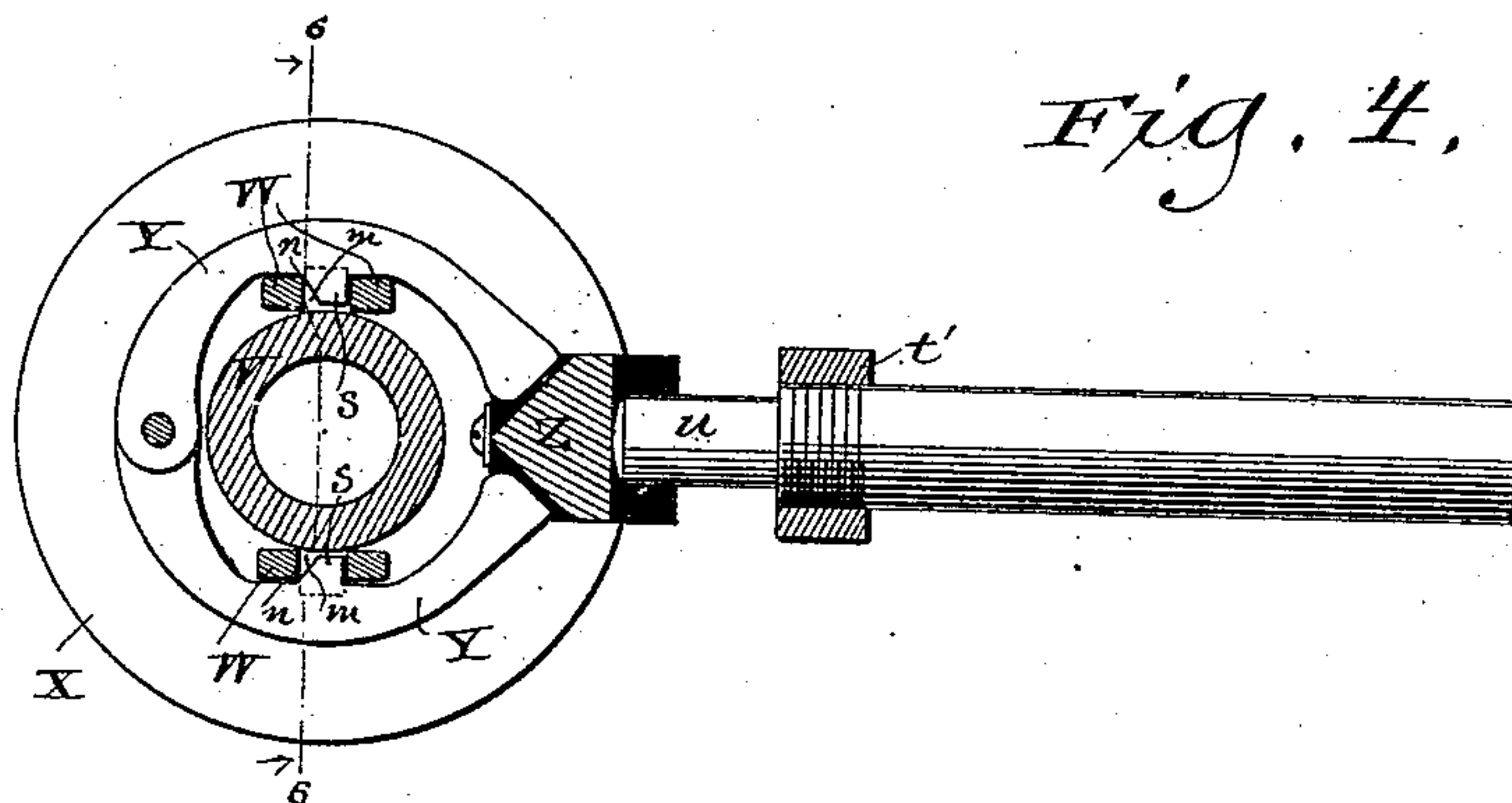


Fig. 4.

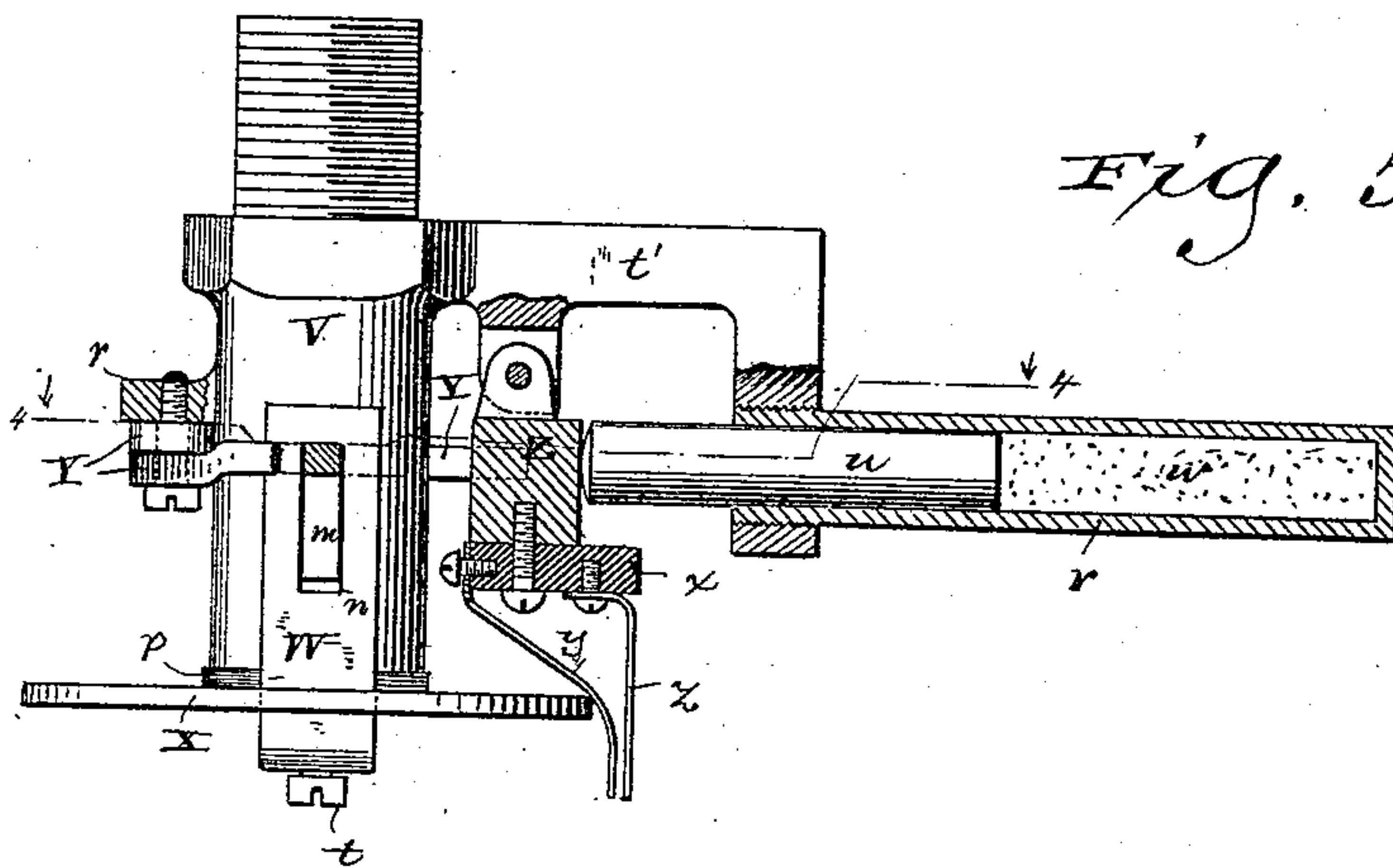
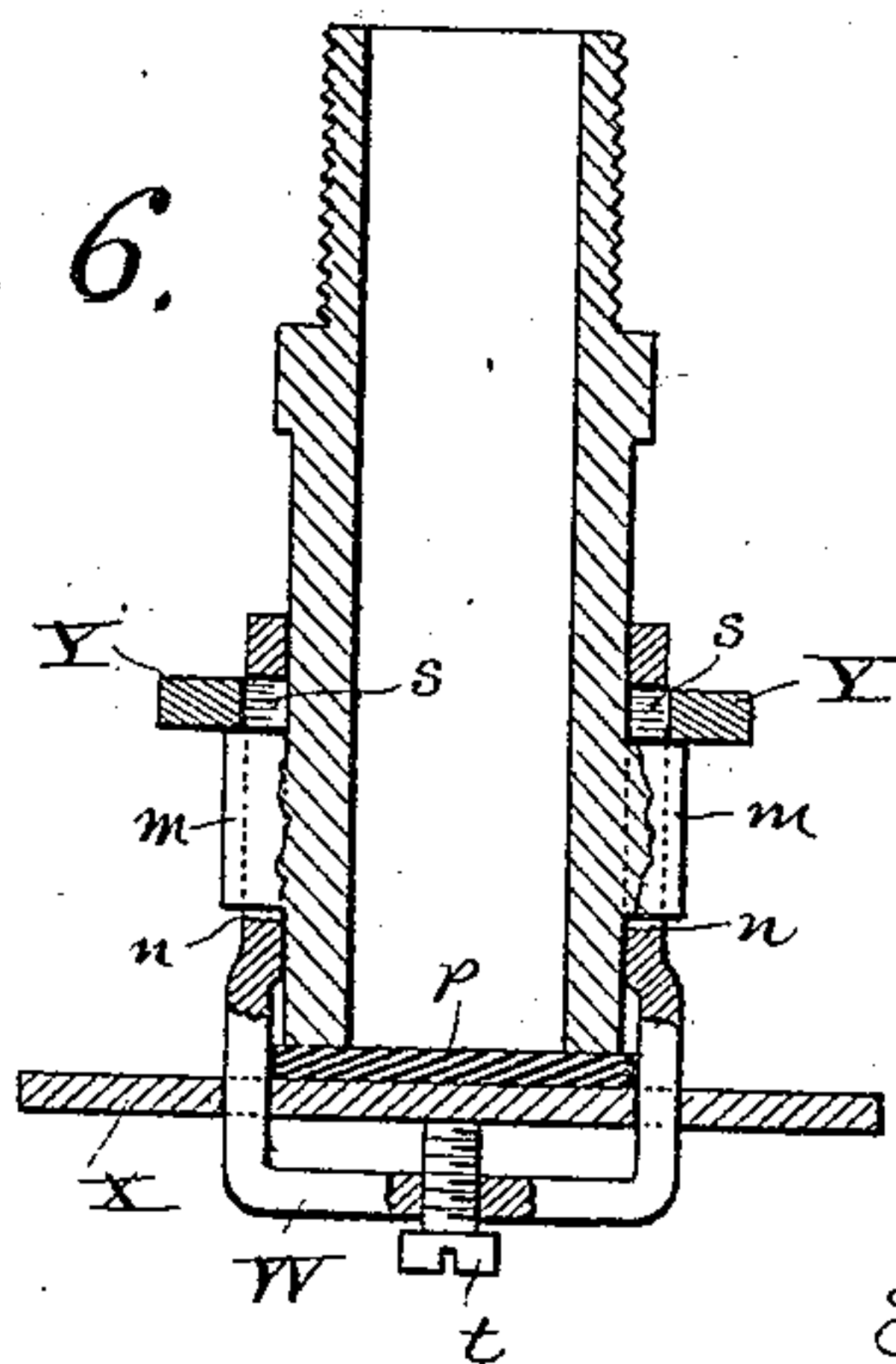


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

STEPHAN BROICHGANS, OF MILWAUKEE, WISCONSIN.

FIRE INDICATOR AND EXTINGUISHING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 446,200, dated February 10, 1891.

Application filed October 29, 1890. Serial No. 369,717. (No model.)

To all whom it may concern:

Be it known that I, STEPHAN BROICHGANS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Fire-Indicators and Extinguishing Systems; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a side elevation, partly in section, of my fire indicator and extinguishing mechanism; Fig. 2, a detail front elevation, partly broken away and illustrating the indicator mechanism; Fig. 3, a plan view, partly in section on line 3 3 of Fig. 1; Fig. 4, a plan view of the extinguisher mechanism, partly in horizontal section on line 4 4 of the succeeding figure; Fig. 5, a side elevation of said extinguisher mechanism, partly in section; and Fig. 6, a vertical transverse section on line 6 6 of Fig. 4.

Referring by letter to the drawings, A represents a base, to which is secured a right-angle plate B, connected to a dial C by means of one or more rods *b*, and said plate and dial are provided with bearings for an arbor D, that carries a pinion E and pointer F, the latter being on the outside of the aforesaid dial. The pinion E is in mesh with a segmental rack E' on one arm G of a bell-crank that is fast on an arbor H, the latter having its bearings in the plate and dial above described, said bell-crank being controlled by a spiral spring G', as shown in Fig. 1. The other arm I of the bell-crank has a link-connection J with an arm K, that forms a right-angle extension of a lever L, that has its bearings in brackets *c*, rearwardly extended from the plate B, and this lever is arranged in the path of a series of fingers M loose on a rod N that is supported in brackets O, also rearwardly extended from said plate.

The horizontal portion of the plate B, that rests on the base A, is provided with supports *d* for a rod P, on which is wound the coils *e* of a series of springs Q, that impinge against

the fingers M, above described. The upper ends of the fingers are notched to receive bell-crank latches R, arranged on a rod *f*, that is supported in the brackets O, and said latches are connected by means of links *g* with armatures S, loose on a rod *h*, that has its supports *i* on the base A, each armature being in opposition to an electro-magnet T, in circuit with a battery U, as clearly illustrated in Fig. 1. The horizontal portion of the plate B is also provided with a flange *j*, having screw-threaded openings arranged at intervals to engage set-screws *k*, that serve to limit the movement of the fingers M opposed thereto, whereby a variable throw of the lever L is obtained, and through the latter and the rack-and-pinion mechanism, having the link-connection therewith, the pointer F is actuated and rotated a predetermined distance around the adjacent dial.

In various stories of a building one or more sprinkler-heads are located and placed in circuit with the battery and one of the electro-magnets above described. The discharge-pipe V of each sprinkler-head is provided with lateral guide-lugs *m* for engagement with slots *n* in the sides of a rectangular yoke W, these sides of said yoke being passed up through openings in the disk X, the latter being provided with a washer *p*, opposed to the mouth of said discharge-pipe. Pivotaly connected to a bracket *r* on the discharge-pipe V, at right angles to the lugs *m*, are curved arms Y, that extend on opposite sides of said pipe and are provided with lugs *s* that normally engage the slots *n* in the yoke W, this engagement being above the guide-lugs *m* on the aforesaid pipe. By the construction and arrangement of parts just described, the disk X and its washer *p* are normally supported, a set-screw *t*, having its bearing in the yoke W, being employed to effect a positive adjustment of said disk and washer, whereby the latter is held tight against the force of water in the water-distributing system. The free ends of the arms Y are on opposite sides of a wedge-block Z, pivotaly connected to a bracket *t'*, extended from the discharge-pipe V in the path of a thermostat, the latter being shown as preferably comprising a plug *u*, having its bearing in a chamber *v*, that is

supported by said bracket and contains an expansible substance *w*, as best illustrated in Fig. 5.

Attached to the pivoted block Z is an insulator-bar *x*, provided with spring contact-plates *y z*, that form terminals of the electric circuit above described, one of these contact-plates being arranged to rest against the disk X and thus meet the other, when the plug *u* of the thermostat is operated to move the block Z on its pivot, whereby the circuit is closed.

In describing the operation of my fire indicator and extinguishing system I will assume that the sprinkler-head shown in the drawings is in the third story of a building. If a fire breaks out in this story, the thermostat will operate and cause the pivoted wedge-block to force the arms Y outward to bring their lugs *s* out of engagement with the slots *n* in the yoke, and thus the force of the water in the pipe V is exerted against the washer *p* to force the latter with its disk X away from the mouth of said pipe, said yoke sliding on its guides *m* to permit of this operation, after which said disk acts as a distributor for the water. As the operation just described takes place, the plates *y z* are brought into contact to close the electric circuit, and thus one of the electro-magnets T, corresponding to the story in which the fire is burning, is energized to attract its opposing armature S, and thereby operate the relative bell-crank latch R to bring the latter away from the spring-controlled finger M, with which it normally engages. The finger being released, its spring Q acts to force it over against the lever L, and thus the latter is actuated to operate the rack-and-pinion mechanism E E', whereby the pointer F is moved around the dial C until it arrives at the Fig. 3 or other designation for the story in which the fire is burning, further movement of the pointer being arrested by said finger coming into contact with its relative stop or set-screw *k*, and the spring G' pulling against said lever.

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

1. In a fire indicator and extinguisher system, a dial and pointer, the latter having its arbor provided with a pinion, a bell-crank provided with a rack in mesh with the pinion, a pivoted lever having an arm linked to the bell-crank, a series of spring-controlled fingers opposed to the lever, electrically-actuated latches for engagement with the fingers, and a stop arranged to limit the movement of each of said fingers, substantially as set forth.

2. In a fire indicator and extinguisher system, a dial and pointer, the latter having its arbor provided with a pinion, a spring-controlled bell-crank provided with a rack in mesh with the pinion, a pivoted lever having an arm linked to the bell-crank, a series of spring-controlled fingers opposed to the lever, electrically-actuated latches for engagement with the fingers, and a stop arranged to limit the movement of each of said fingers, substantially as set forth.

3. In a fire indicator and extinguisher system, a dial and pointer, the latter having its arbor provided with a pinion, a bell-crank provided with a rack in mesh with the pinion, a pivoted lever having an arm linked to the bell-crank, a series of spring-controlled fingers opposed to the lever, bell-crank latches for the fingers in opposition to the springs controlling the latter, armatures linked to the latches, electro-magnets in circuit with an electric battery and opposed to the armatures, and a distant thermally-actuated circuit-closing mechanism in circuit with each electro-magnet, substantially as set forth.

4. In a fire indicator and extinguisher system, a water-discharge pipe provided with lateral guide-lugs, a yoke provided with slots engaging the lugs, a closure for the pipe adjustable on the yoke, pivoted arms curved around opposite sides of said pipe and provided with lugs engaging the yoke-slots above the pipe-lugs, a pivoted wedge-block opposed to the free ends of the arms, and a thermostat for actuating said wedge-block, substantially as set forth.

5. In a fire indicator and extinguisher system, a water-discharge pipe provided with lateral guide-lugs, a yoke provided with slots engaging the lugs, a closure for the pipe adjustable on the yoke, pivoted arms curved around opposite sides of said pipe and provided with lugs engaging the yoke-slots above the pipe-lugs, a pivoted wedge-block opposed to the free ends of the arms, a thermostat for actuating the wedge-block, an electric circuit having terminals carried by said wedge-block in opposition to the pipe-closure and normally out of contact, and an electrically-controlled indicator mechanism in circuit with the aforesaid wedge-block, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

STEPHAN BROICHGANS.

Witnesses:

H. G. UNDERWOOD,
WM. KLUG.