

No. 702,593.

Patented June 17, 1902.

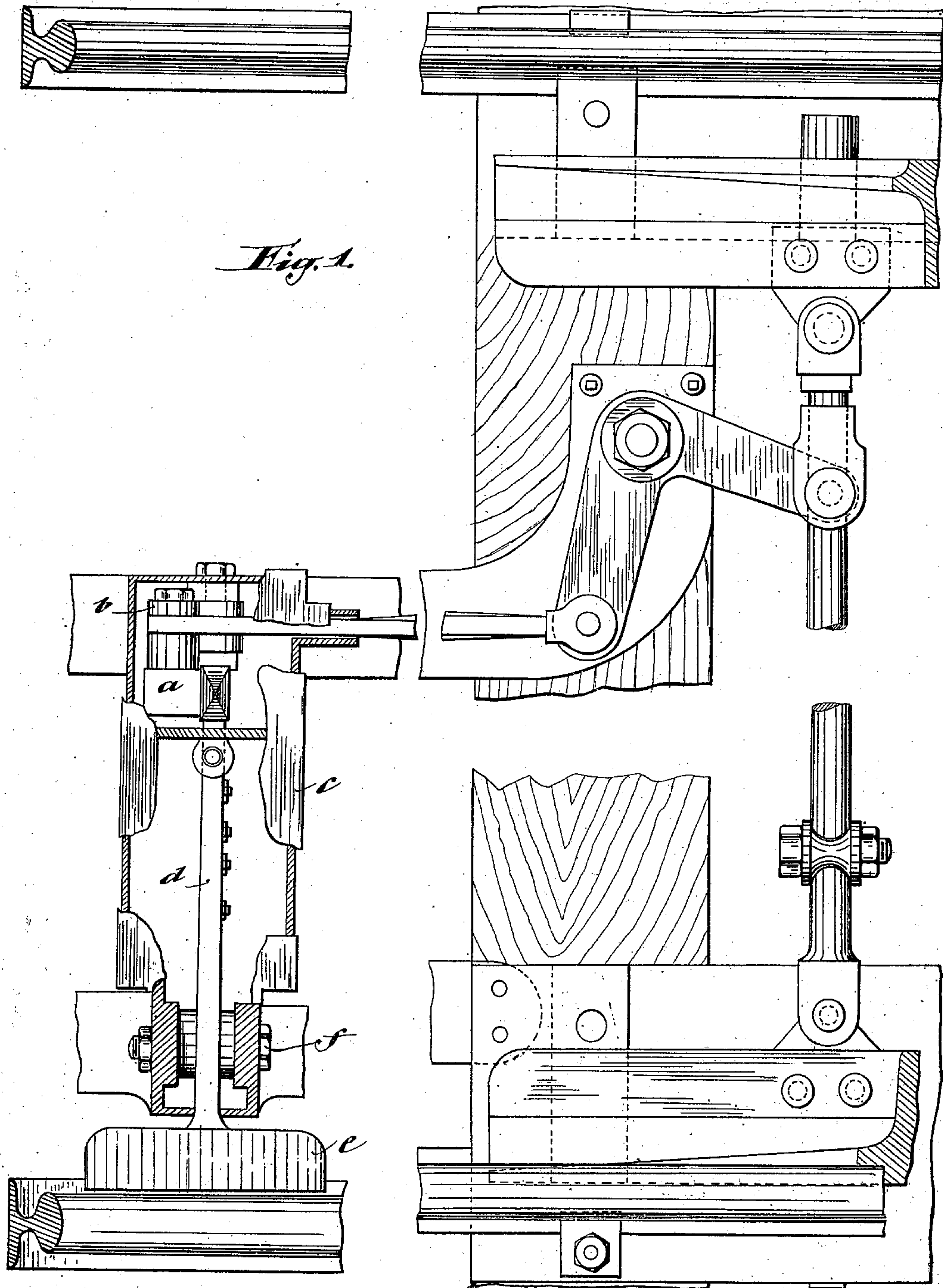
S. ROGOZEA.

SAFETY DEVICE FOR RAILWAY POINTS OR SWITCHES.

(Application filed Mar. 18, 1902.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses.

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By his attorney

*Edward P. Thompson*

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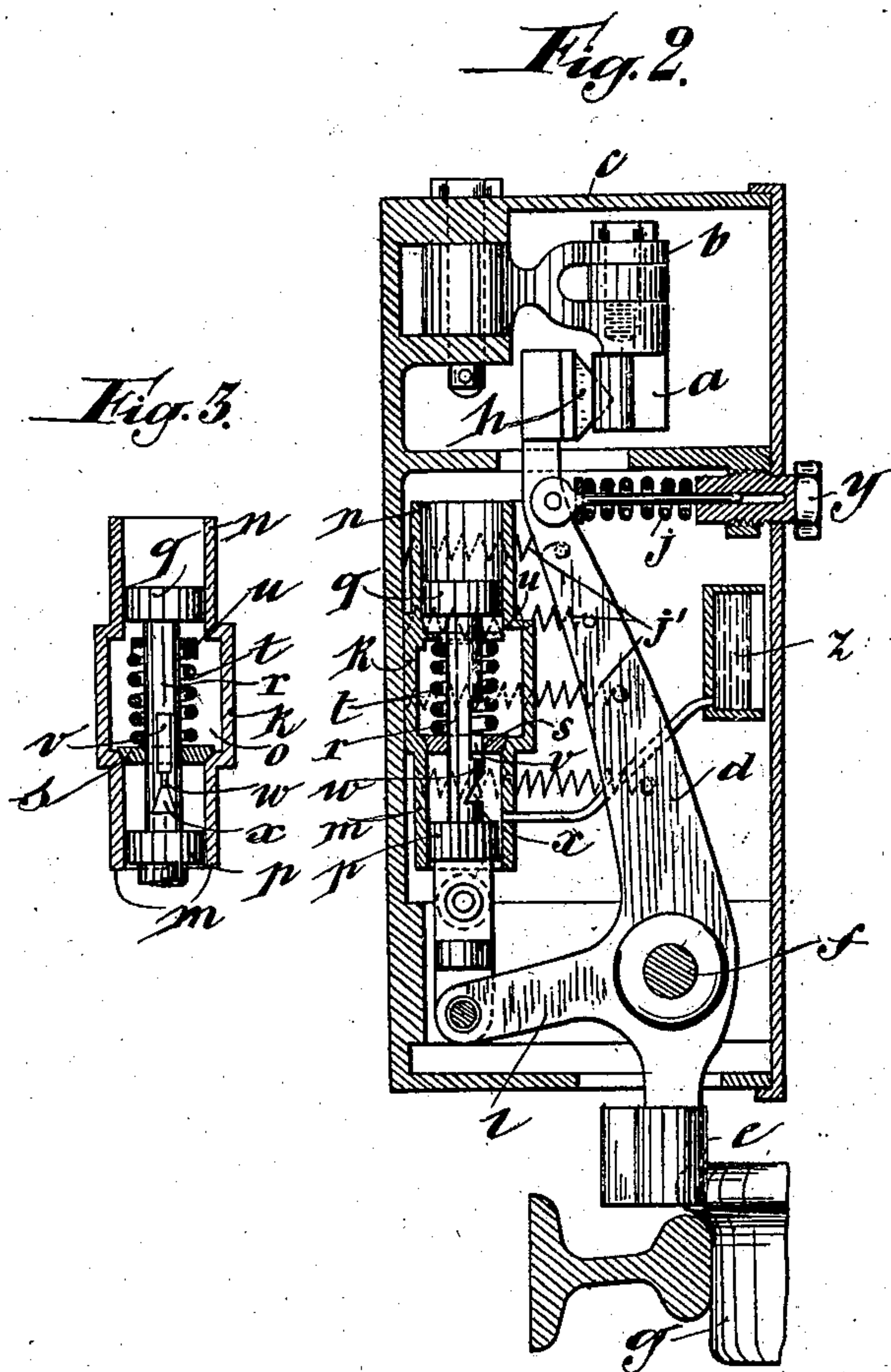
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3 Sheets—Sheet 2.



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Fig. 4.

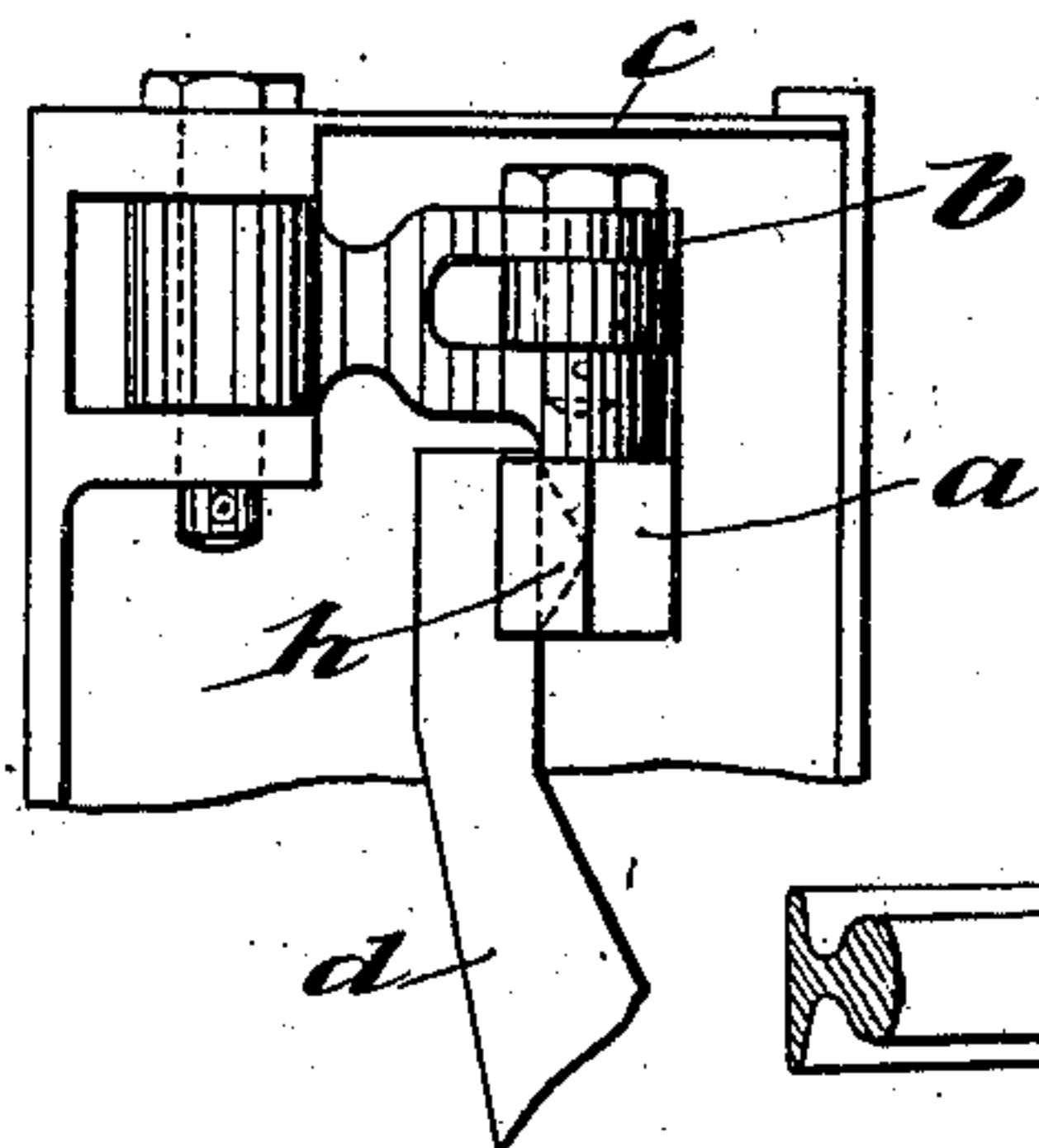


Fig. 5.

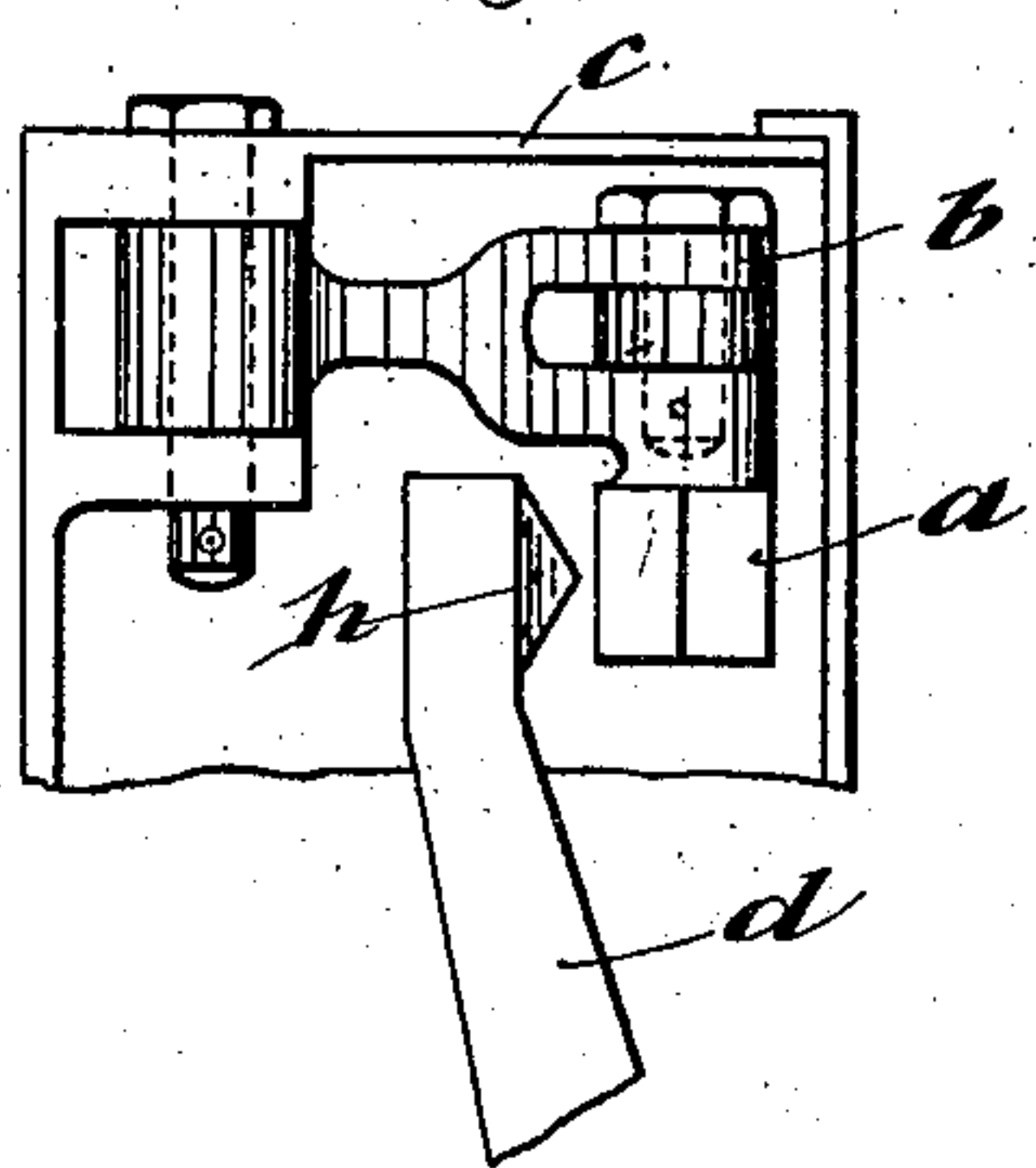


Fig. 6.

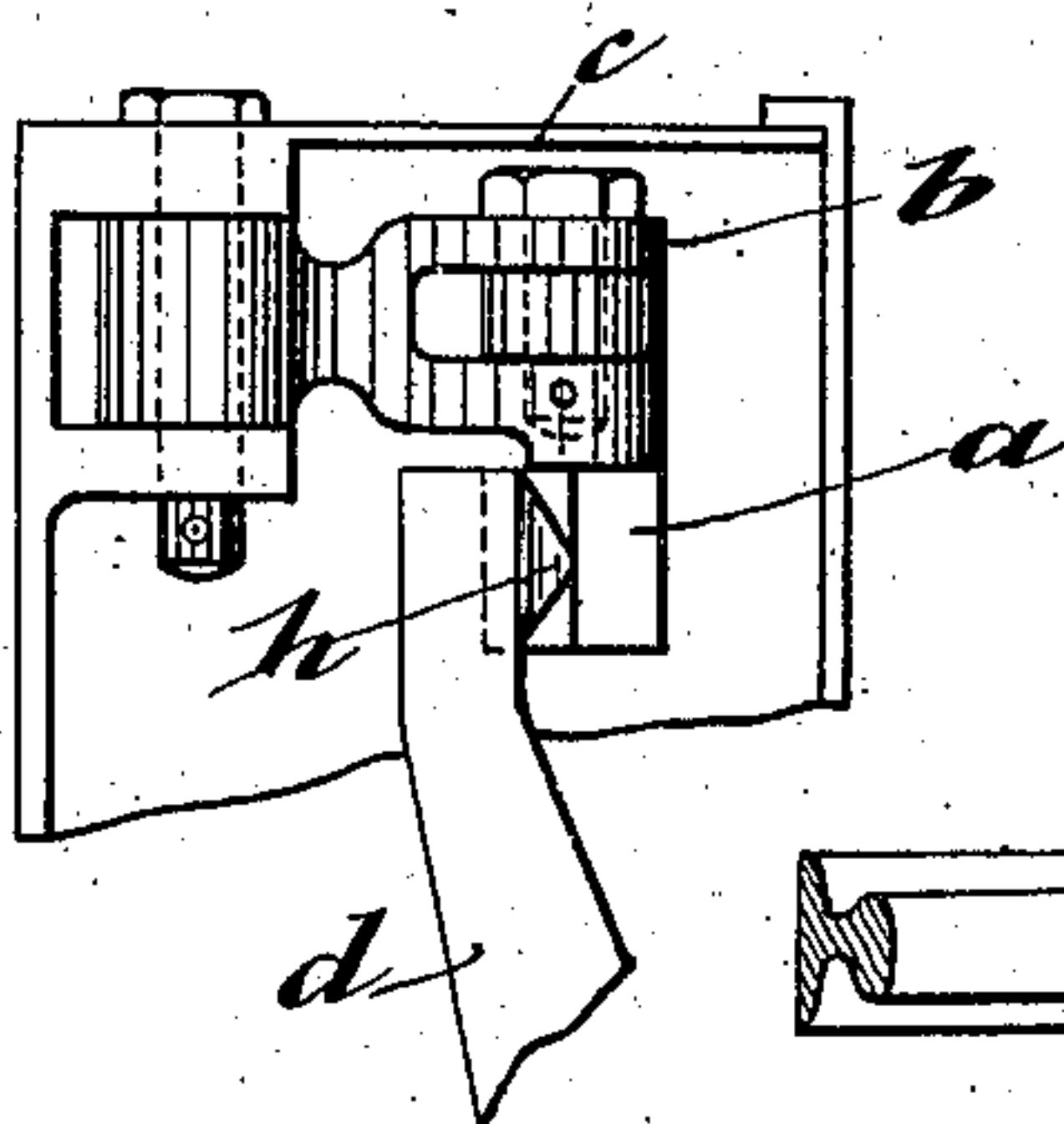
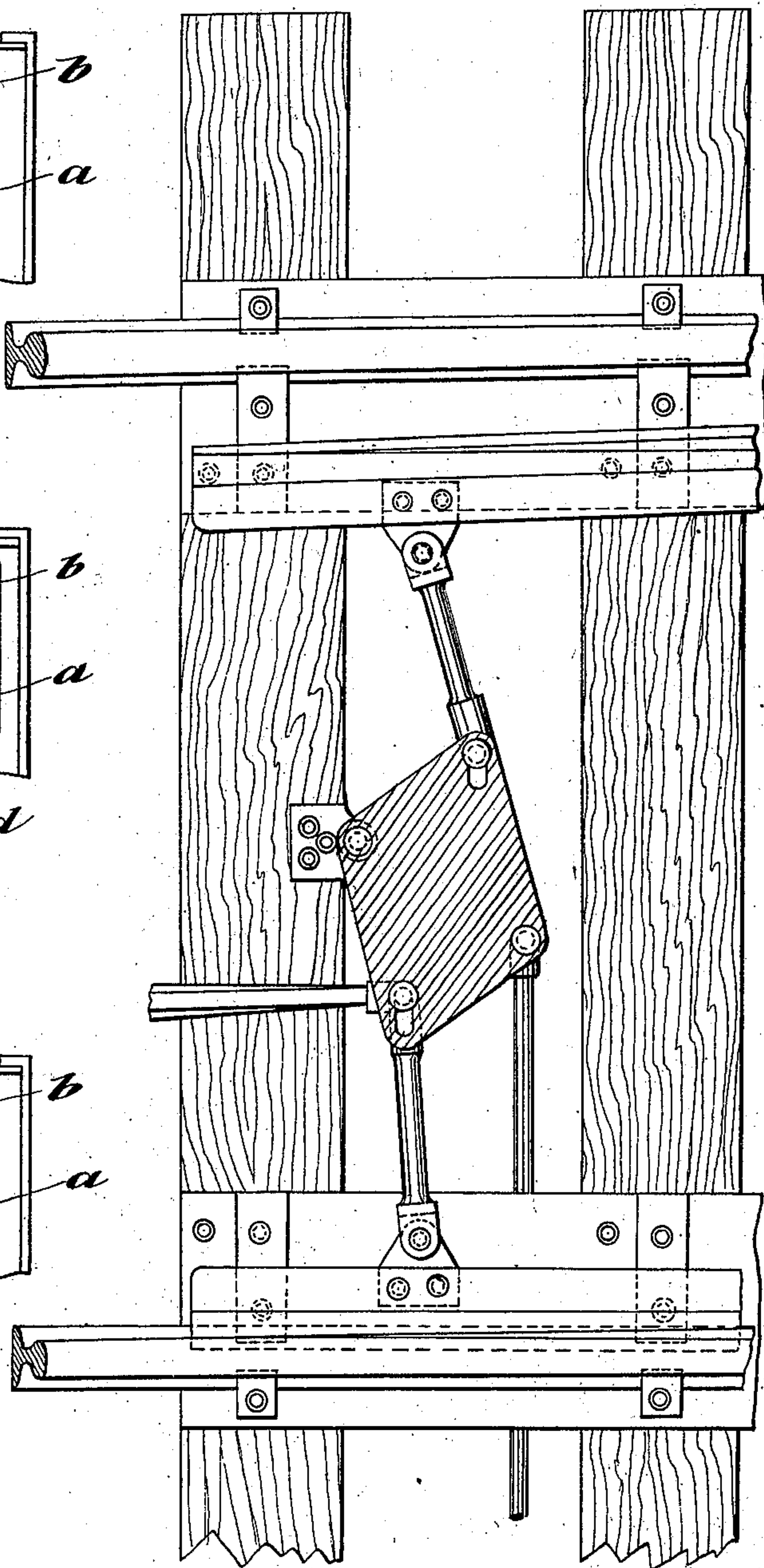


Fig. 7.



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# UNITED STATES PATENT OFFICE.

SAVA ROGOZEA, OF BRUSSELS, BELGIUM.

## SAFETY DEVICE FOR RAILWAY POINTS OR SWITCHES.

SPECIFICATION forming part of Letters Patent No. 702,593, dated June 17, 1902.

Application filed March 18, 1902. Serial No. 98,731. (No model.)

*To all whom it may concern:*

Be it known that I, SAVA ROGOZEA, technical engineer, a subject of the King of Roumania, residing in Brussels, in the Kingdom of Belgium, (whose full postal address is 110 Rue du Viaduc,) have invented certain new and useful Improvements in Safety Devices for Railway Points or Switches, (for which application has been made in Belgium, No. 158,449, dated August 27, 1901; in Germany, dated December 12, 1901; in England, No. 25,196, dated December 10, 1901; in Austria, dated December 16, 1901; in Russia, dated December 17, 1901; in Hungary, dated December 18, 1901; in France, dated February 27, 1902; in Switzerland, dated February 27, 1902; in Luxembourg, dated February 26, 1902; in Italy, dated February 28, 1902; in Sweden, dated February 27, 1902; in Norway, dated February 27, 1902, and in Denmark, dated February 27, 1902,) of which the following is a specification.

The present invention relates to a safety device for railway points or switches, the object of which is to prevent derailments, defective making up of trains, collisions of wagons, &c., which are frequently produced at the points.

The improved apparatus for this object is designed to act in such a way that when the points have been properly closed it locks them in this position before the passage of the first wheel of the train or wagon, while if they are improperly closed it first closes them and then keeps them closed, this closing of the points being also maintained by the apparatus itself during the complete passage of a wagon and a little while after said passage. The apparatus is formed by the combination of a pedal mechanism for closing the points and keeping them closed at the time of the passage of the first wheel over the pedal and a pump mechanism or hydraulic brake acting after the passage of said wheel and the succeeding wheels to retard the automatic rise of the pedal—that is to say, the disengagement or opening of the points, the duration of such opening being capable also of variation at will, according to the regulation of the apparatus.

In the accompanying drawings, Figure 1 is a plan view of a point provided with this im-

proved apparatus; Fig. 2, an elevation in longitudinal section of the casing for protecting the mechanism and of the mechanism contained therein; Fig. 3, a horizontal section of the pump for regulating the movement of the points. Figs. 4, 5, and 6 show, respectively, in elevation the position of the operating parts when the apparatus closes and locks the points to the left, to the right, and when the said apparatus is in repose—that is to say, is in a position to allow the points to move freely; while Fig. 7 shows the application of the apparatus to systems of points operated by an eccentric plate.

The manipulation of the points from the cabin or from an eccentric plate by ordinary means causes the displacement to right or left of the closing and engaging block or tongue *a*, which is mounted on an arm *b*, pivoting vertically in a protecting-box *c*, which arm is operated by the movements of the switch. The pedal *e*, which is adapted to be operated by the flange of a wheel *g*, is mounted upon the end of a lever *d*, which latter is partially inclosed in said protecting-box and is adapted to oscillate on a trunnion *f* when the pedal is actuated. The opposite end of this lever has an engaging head *h* of pyramidal or other suitable form on its upper side, the lateral faces of which head have an inclination corresponding to the faces of the engaging block or tongue *a*.

If the points are duly closed, the engaging head *h*, rising by the lowering of the pedal, will simply lock the engaging block or tongue *a* and prevent any premature movement of the points during the passage of the train, while if the tongue is not properly closed the engaging head *h* in rising will first actuate the tongue *a*, pushing it to one side or other in order to insure the complete closing of the points to right or left, and will then finally lock this tongue, as already stated and with the object set forth.

A little play in the attachment of the tongue *a* to the arm *b* allows said tongue to yield slightly to one side or the other in case the engaging head is just in front of it—that is to say, in case the points should be partly open—in order to allow of their being closed even where there is a dead-point. The points thus being closed and secured in position,



they must be maintained in this position during a certain time, and at any rate until the passage of the following wheel, which will act like the first wheel. For this object  
 5 the pump mechanism which regulates the releasing or progressive unlocking of the points acts in such a way that the engaging block or tongue *a* is caused to remain momentarily locked by the engaging head *h* after the  
 10 wheel has passed the pedal *e* and crossed the points. The unlocking of this tongue, which would be produced immediately by the rise of the pedal *e* under the action of a spring *j*, must thus be opposed and retarded by a re-  
 15 sistance the force of which is suitably calculated. For this object the rise of the pedal *e* is retarded by the action of a pump or hydraulic brake *k* of special construction, the piston-rod of which is connected with an arm  
 20 *l*, projecting from the lever *d* of the pedal, preferably at its trunnion-point.

The hydraulic brake *k* consists of a pump-body having two horizontal cylinders *m n*, arranged one behind the other and separated  
 25 by an intermediate box or casing *o*, cast on them. In the two cylinders *m n* pistons *p q* are mounted in tandem upon a common shaft *r*, and a conical valve *s*, sliding with slight friction on this shaft between the two pistons,  
 30 closes an orifice which leads from the foremost cylinder *m* into the intermediate box *o* under the action of a spring *t*, mounted in said box and supported against a fork or angle-piece *u* therein. The portion of the shaft  
 35 *r* on which the valve *s* may slide has three notches *v w x*, Figs. 2 and 3, of unequal depth cut therein, said notches forming passages of different section between the valve and the shaft.

40 The part of the pump-body (the intermediate box and parts of the cylinders) comprised between the two pistons *p* and *q* having been completely filled with liquid, (glycerin, for instance,) the working of the apparatus takes place as follows: When the  
 45 pedal is lowered by the passage of a wheel, the foremost piston *p* is pushed forward and forces the liquid from the cylinder *m* into the intermediate box *o*, while the other piston *q*  
 50 sucks into its cylinder *n* the liquid thus forced out of the first cylinder, the valve *s* opening, of course, to give passage to the liquid and the engaging head *h* simultaneously locking the tongue *a*, as shown in Figs. 4 and 6. The  
 55 foremost piston *p* having reached the end of its course after the passage of the wheel over the pedal, the valve *s* stands over the middle notch *w* in the shaft, in which position it closes afresh the orifices of the foremost cyl-  
 60 inder *m* under the action of the spring *t* in the intermediate box. The spring *j* of the tongue-supporting lever immediately comes into action and raises the pedal *e* in order to unlock the engaging block or tongue *a*; but  
 65 it must simultaneously return the pistons *p q* backward. The quantity of glycerin previously forced into the box *o* by the foremost

piston *p* thus returns into the foremost cylinder *m* first by the narrow passage *w* and then by the larger passage *v*. The return of  
 70 the pistons permitting of the unlocking of the engaging block or tongue is thus effected first very slowly and then more rapidly. By varying the pressure of the spring *j* of the  
 75 pedal-lever by means of an adjusting-screw *y* a more or less rapid unlocking of the tongue will of course be obtained. The progressive or beveled notch *x*, over which the valve *s*  
 80 comes when the piston *p* travels over a longer course than usual—for instance, during the passage of a somewhat-worn wheel, the flange of which depresses the pedal *e* to a greater  
 85 extent—allows of a momentarily more rapid return of the liquid into the cylinder *m*—that is to say, the duration of the releasing of the points is not appreciably increased in this case.

In order to compensate for losses of liquid in the cylinders, a reservoir *z* is employed, which is in communication with the cylinder  
 90 *m* by a tube entering the cylinder at a point which is just behind the rear end of the piston *p* when this latter is returned to the position of repose, the said piston being of sufficient length to allow of the feed-aperture re-  
 95 maining closed during the whole course.

I declare that what I claim is—

1. In a safety device for insuring the closing of switch-points before the passage of the wheels over said points, the combination of  
 100 a pivoted lever, a pedal on one end of said lever in such position as to be depressed by a portion of a wheel approaching the switch, a spring adapted to normally hold up said  
 105 pedal, a pyramidal head mounted on said lever, a block having an edge and two beveled faces adapted to be engaged by said pyramidal head, and means for connecting said block to the switch-points, whereby the throwing over  
 110 of said points to one side or other is insured before the wheel reaches the switch-points.

2. In a safety device for locking switch-points in a closed position and maintaining them closed until a predetermined time after the passage of the wheels, the combination  
 115 of a pivoted lever, means for resiliently holding up said lever, a pedal connected to said lever and adapted to be depressed by a wheel approaching the points, means connected to the switch and adapted to be operated upon  
 120 by said lever to lock the switch-points, an arm upon said lever, a rod attached to said arm, two pistons mounted upon said arm with a space between them, cylinders in which said pistons are adapted to operate, a box in  
 125 communication between said cylinders, a fluid between said pistons, a valve mounted to slide upon the rod in said box between said pistons, means for holding said valve normally  
 130 against the end of the foremost cylinder and notches in said rod, whereby the return of the fluid into the foremost cylinder is allowed to take place slowly, and the release of the switch-points is retarded.



3. In a safety device for insuring the closing of switch-points and for maintaining them closed until a predetermined time after the passage of a wheel over said points, the combination of a pivoted lever, means for resiliently holding up said lever, a pedal upon said lever adapted to be operated by a wheel approaching the points, a locking-head upon said lever, means connected with the switch  
5 adapted to be engaged by said head, a pair of fluid-pressure cylinders, pistons fitting in said cylinders, means for connecting said pistons to said lever, and means for permitting

the passage of the fluid out of one cylinder and for retarding the return of the fluid, 15 whereby the throwing over of the points in one direction or other is insured, and whereby the release of the point-locking device is retarded.

In witness whereof I have hereunto signed 20 my name, this 5th day of March, 1902, in the presence of two subscribing witnesses.

SAVA ROGOZEA.

Witnesses:

S. PARETTE,

GREGORY PHELAN.