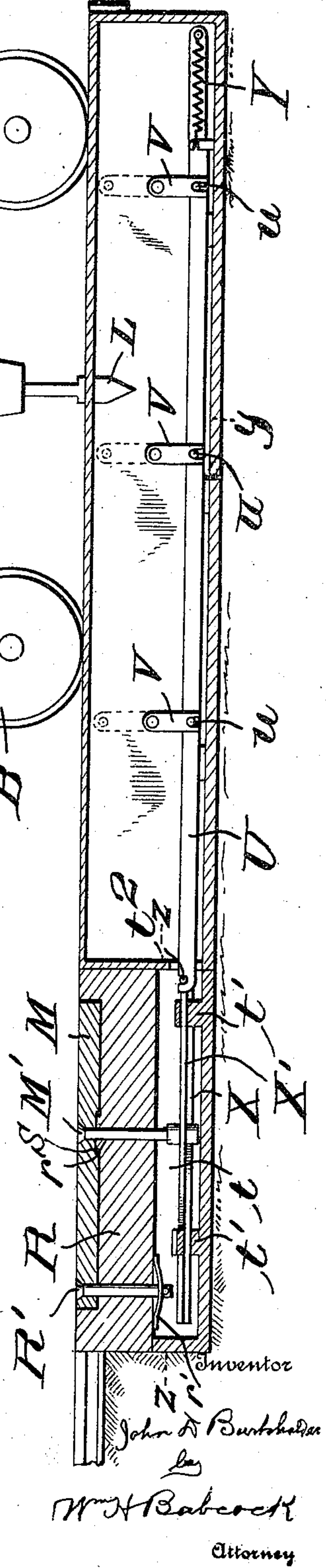
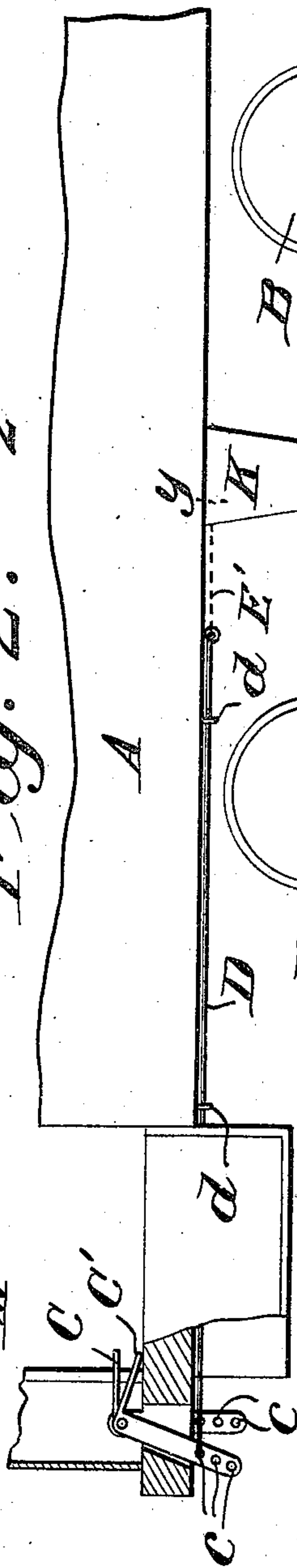
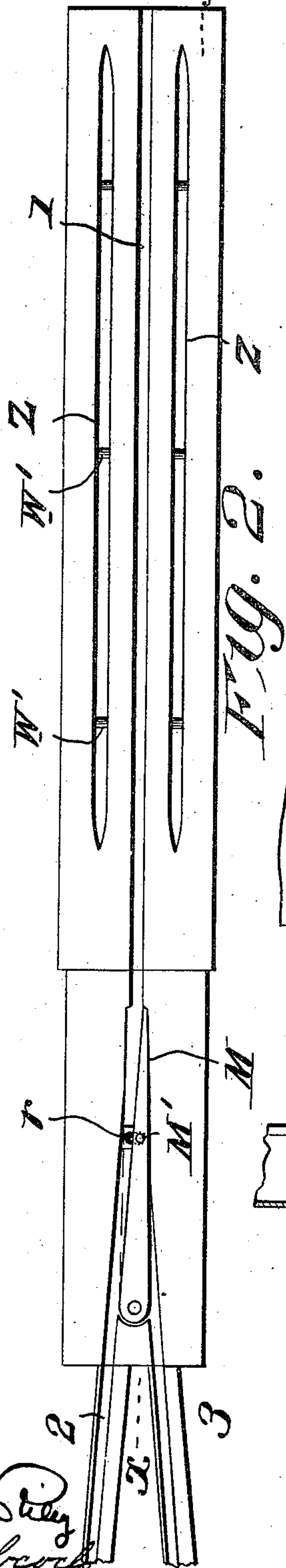
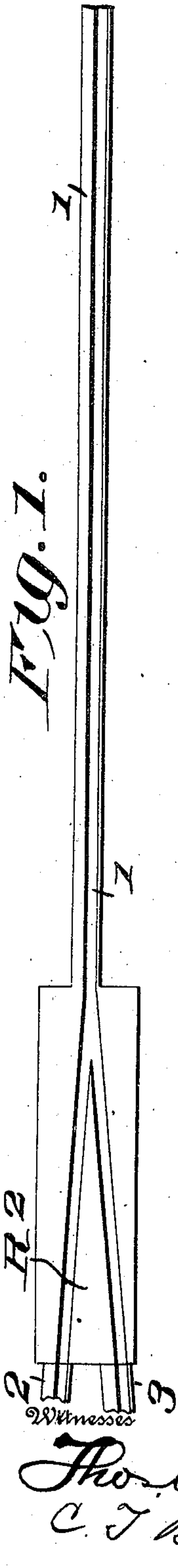


J. D. BURKHOLDER.
AUTOMATIC RAILWAY SWITCH.

APPLICATION FILED SEPT. 14, 1906.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

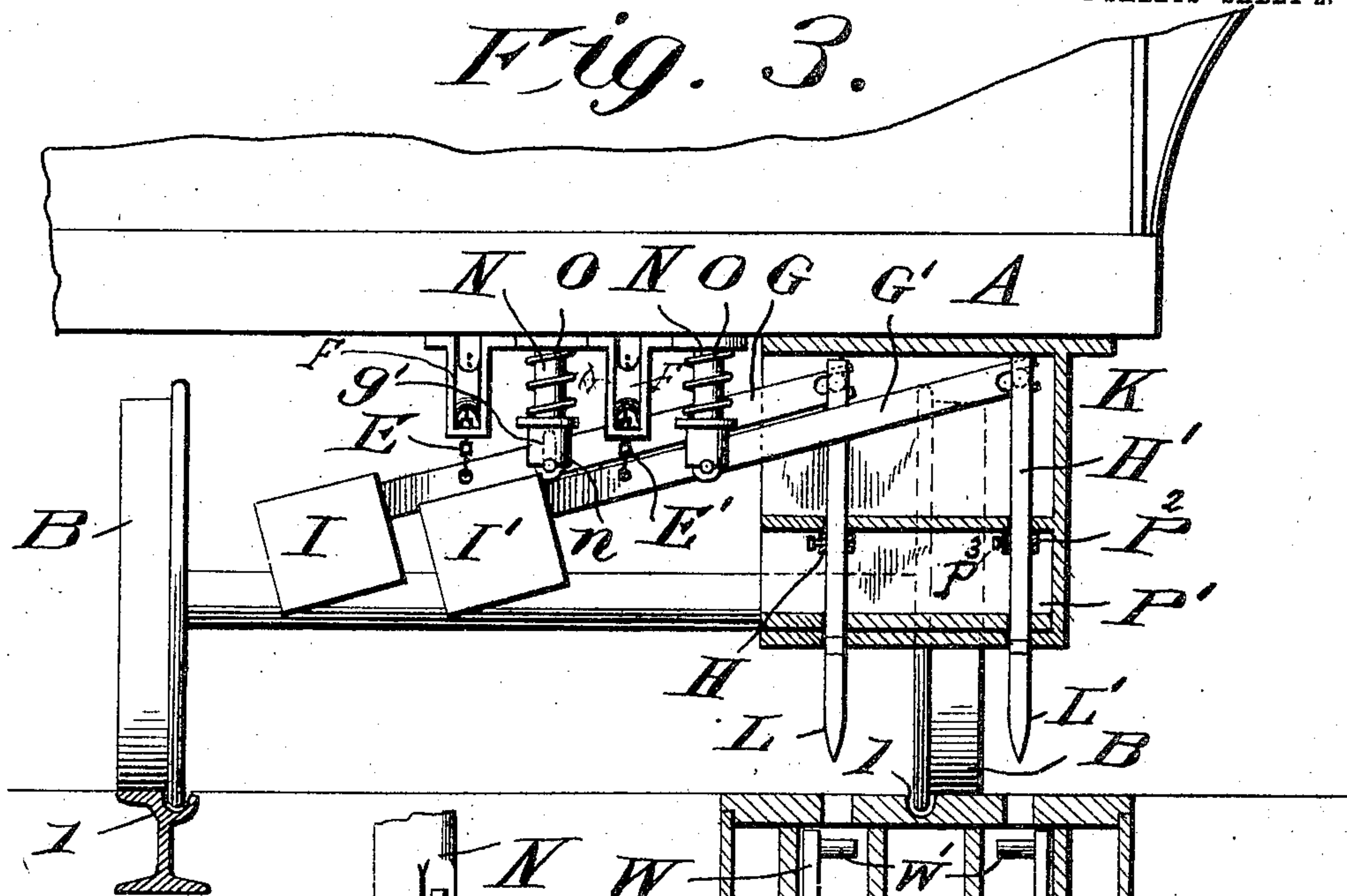
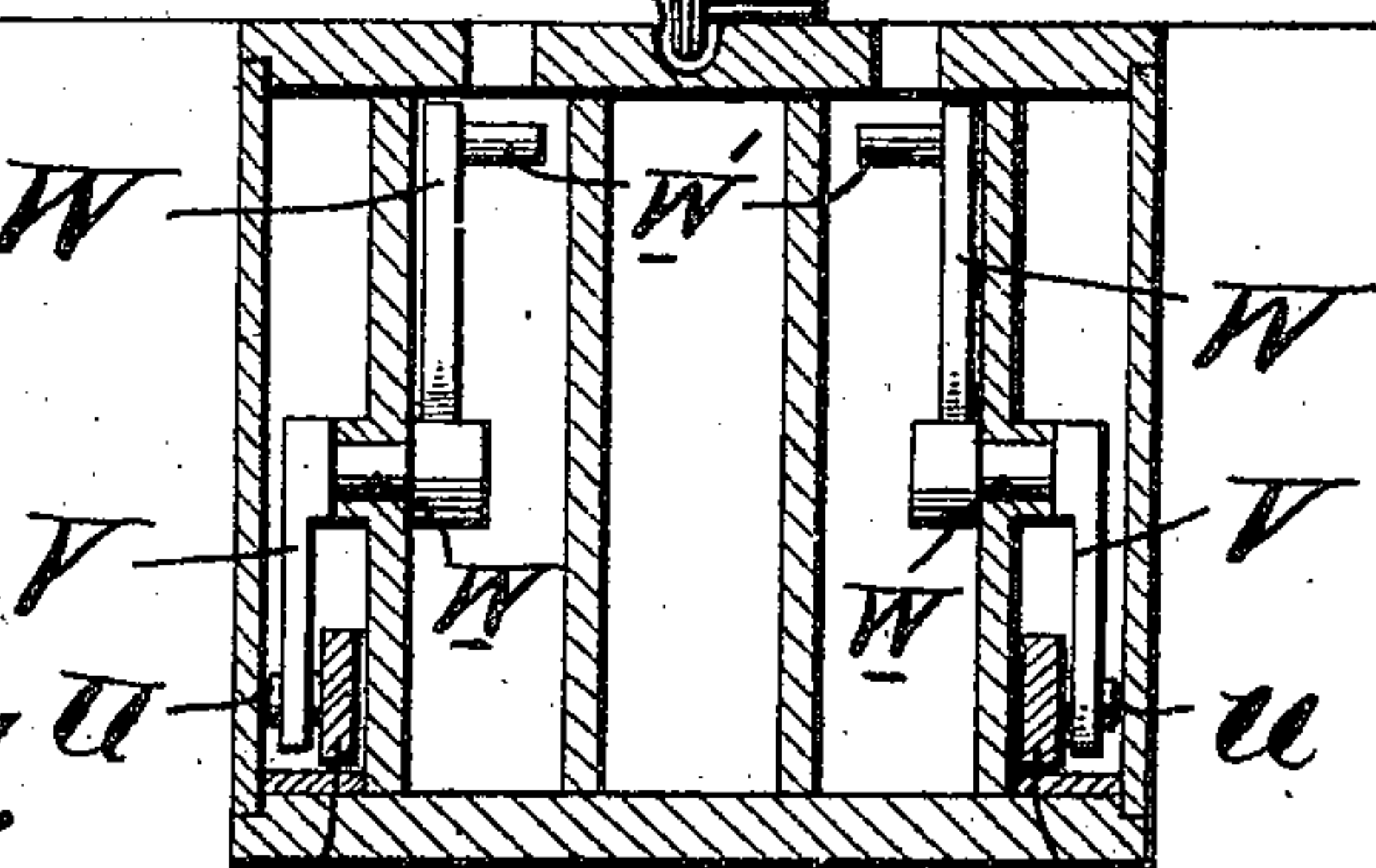


Fig. 6.



Fig. 4.

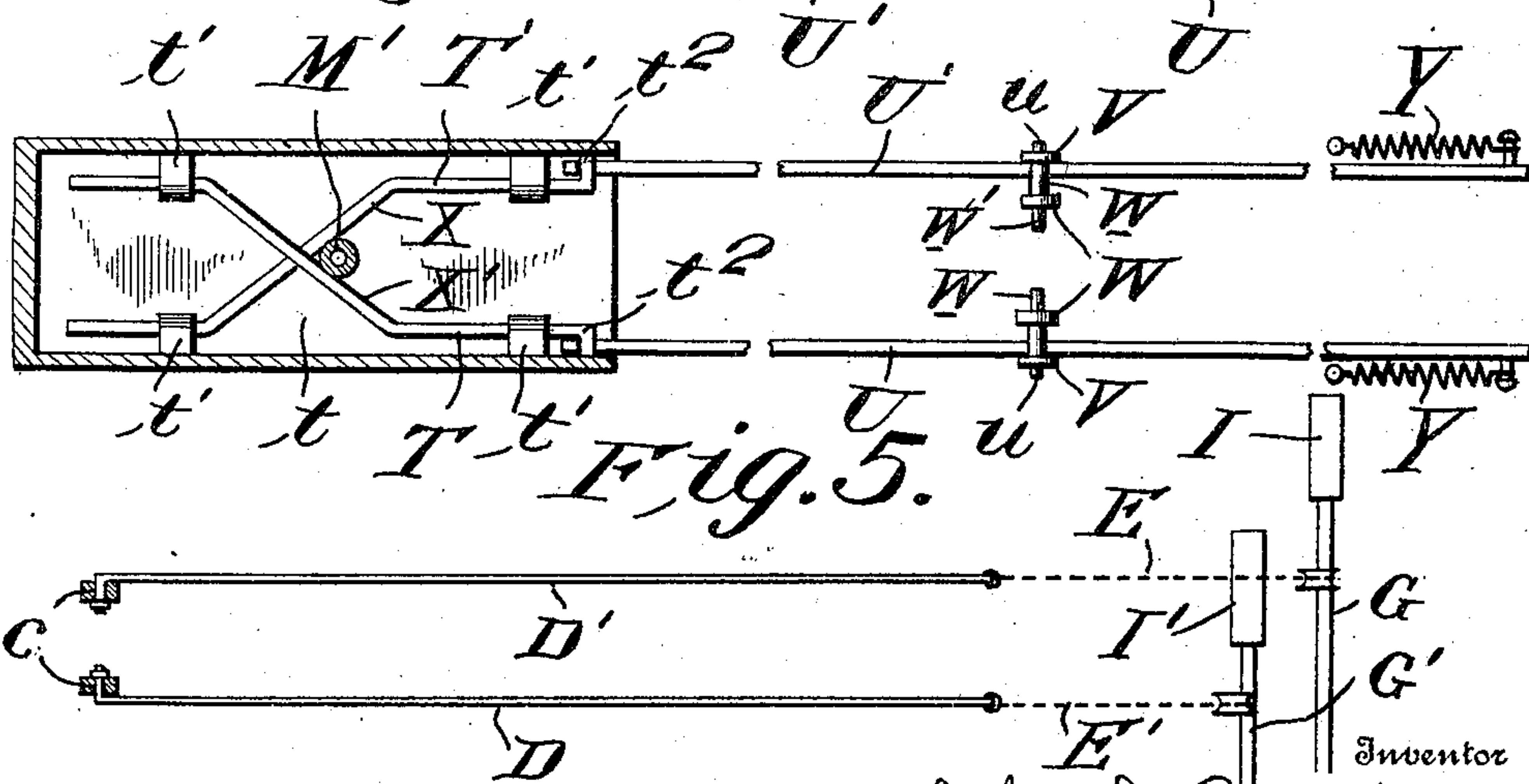


t' *M'* *T'* *t'* *t*² *U'* *V'*

X *X'*

t' *t* *T* *t'* *U*

Fig. 5.



John D. Burkholder Inventor

Witnesses

Thos. W. Tully
C. T. Babcock

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Wm H Babcock

Attorney

UNITED STATES PATENT OFFICE.

JOHN D. BURKHOLDER, OF LANCASTER, PENNSYLVANIA.

AUTOMATIC RAILWAY-SWITCH.

No. 846,906.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed September 14, 1906. Serial No. 334,568.

To all whom it may concern:

Be it known that I, JOHN D. BURKHOLDER, a citizen of Lancaster, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Railway-Switches; 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 automatic means for shifting switch-points operated from cars on the rails; and it consists in the construction and combination of parts hereinafter more particularly set forth and claimed.

In the accompanying drawings, Figure 1 represents a detail plan of the track embodying a part of my invention. Fig. 2 represents a longitudinal section on line $x x$ of Fig. 1, showing also a part of a car-body on the track provided with my actuating devices. Fig. 3 represents a transverse section of the same on the line $y y$, the car, its levers, and some auxiliary parts being shown in elevation. Fig. 4 represents a horizontal longitudinal section on the line $z z$ of Fig. 2, the rods, sliding bars, some proximate parts being shown in plan. Fig. 5 represents a plan view of the treadles, rods, and chains. Fig. 6 represents a detail view of the pins N.

A designates a car-body, and B its wheels. Pivoted treadles C C' of bell-crank form are arranged to be operated from the front part of the car and rise slightly above its floor, their longer arms extending down through longitudinal slots d therein. Rods or wires D D' extend from these arms rearward through guides d' to chains E E', which pass over pulleys F, being connected to the weighted arms of the levers G G', which are pivoted near their middle below the car and have vertically-sliding bars H H' on one end and counterbalance-weights I I' on the other. These bars move in guides within a protective housing K and carry at their lower ends beveled tappets L L', one of which moves the switch-point M to the right, the other to the left, as hereinafter described. Thus the pressure of the foot of the conductor or other operator on treadle C will depress tappet L through the pull on rod D and chain E, the tilting of lever G, and vertical downward movement of bar H. When his foot is removed, the weight I replaces all the other parts in their first position. In like manner

pressure on treadle C', operating corresponding parts D' E' H', forces down tappet L', and weight I' replaces this series of parts after removal of pressure.

To guard against injury by sudden jars, the pivot g of each lever G or G' is mounted in vertical bearing-slots g' , formed in downward bifurcations n of a stud or bracket N on the under side of the car-bottom and a spring O, surrounding said stud, bears through a collar O' on the said lever to hold said pivots normally in the lower ends of the said grooves, the said lever being free to rise between said bifurcations whenever the upward jar or pressure exceeds the force of said spring.

The guides for bars H H' before mentioned consist of a longitudinal partition P, within and fastened to the sides of K, and a stout plate or flat bar P' in the bottom of the said housing. Each of these plates is slotted for the passage of said bars and so is the integral bottom of the housing. The latter, as a whole, has the shape of a truncated V and is composed, preferably, of sheet metal. The downward play of each bar H or H' is regulated by a stop block or collar P², which is adjustably clamped thereon by screw P³ and will come in contact with plate P' at the predetermined limit of descent. The pivotal attachment of each bar H or H' to its lever G or G' is loose enough to prevent their binding. The lower arm of each treadle C or C' is provided with a vertical series of holes c for the connection of the rod or wire D or D' at different points on said arm, thus varying the leverage of the treadle in a familiar manner to take up slack in the wire or chain or allow for excessive tightening by changes of temperature or otherwise. Rods D D' may be dispensed with.

The switch-point M diverts the car from track 1 to track 2 or track 3, according to the position which is given it, as above stated. It is pivoted at the broader end, and in line with one of the rails of track 1 it is provided near its middle with a downwardly-extending stud or bolt M', passing through an opening or slot r in the frog R, allowing the necessary lateral play of the said switch-point. A spring r' on the under side of the said frog draws on the pivot-bolt R' of said switch-point, holding it securely in place, but allowing a slight upward yielding to prevent damage by jar or strain. A guard-plate or integral raised offset S surrounds this bolt and the said opening r to prevent water from enter-

ing the latter. In place of said guard-plate or offset S the integral material of the frog itself may sometimes be raised around this opening. In either case the under side of the switch-point is preferably recessed to afford room for said plate or raised offset, as shown. R² designates the point for the other rail.

In a space *t* under the said frog R a pair of bent rods T T' are arranged to move lengthwise in guides *t'* and provided with oppositely-inclined parts X X', which, as shown, preferably overlap each other, these inclined parts being arranged for contact with the stud M' protruding below the seat of the switch-point into space *t* and located between said parts. Thus when rod T on the right is drawn rearward the contact of its inclined part X forces the stud M' to the left, turning the switch-point on its pivot to its left position, and a similar pull on rod T' causes in the same way the shifting of the switch-point into its right position by the opposite action of its inclined part X on the said stud. The said rods T T' have their rearward ends bent outward at *t*² for convenience in connecting them to long bars U U', running parallel and proximate to the rails of straight track 1 in suitable channels and provided on the outside at intervals with lateral pins U, each of which is straddled by the bifurcated lower end of a downward arm V on a short transverse rock-shaft *w*, passing through the rail, which is in line with the point. The other end of the said shaft is provided with a raised arm W, having a lateral pin *w'*. The arms W of each side of the track are arranged in a longitudinal channel Z or Z', these two channels in one casting with said rail. So long as the treadles C C' are not depressed the car travels along the track without producing any effect; but when treadle C is depressed, the tappet L passes down into the channel Z and strikes presently against one of the pins *w'*, turning forward the upwardly-extending arm W and correspondingly turning backward the downwardly-extending arm V, so as to draw back the bar U and rod T, shifting the switch-point, as stated. Similarly the depression of treadle C' causes tappet L' to act on the pin *w'* of an arm W on the other side of the track, drawing on bar U' and rod T' to shift the switch-point in the other direction. Each shaft *w* and its lower arm V move as one piece with its longer raised arm W and lateral pin *w'*. The pin *u* prevents binding. A single set of parts W, *w*, *w'*, V, and *u* on each side of the track would be operative, but it is better to have a series of them, since the tappet may miss one, yet attain position for the next, also because it is possible to use one treadle on the first of the series of one side and the other treadle subsequently on another farther along in the series of the other side, if the need should arise. The arrow-point form of the tappets prevents

all risks from lowering one of them by accident directly on one of the pins *w'*, for one or the other of its faces must descend on said pin, sliding down beside the same, and merely moving it forward or backward, with corresponding motion of attached and corresponding parts, as hereinbefore described.

Each sliding bar U or U' is provided with a replacing-spring Y, which moves the said bar and the attached rod T or T' forward to their original position as soon as the pressure is withdrawn from the treadle operating the same. Such replacing does not affect the switch-point, which remains as it has been turned until the depression of the other treadle turns it back again, as explained.

Of course the treadles may be placed in any part of the car or on any other rolling-stock of an electric trolley-road or ordinary steam-railroad. The space *t* and channels Z Z', above described, may be provided in any kind of wooden or metal structures suitable to the purpose. The details of the mechanism may obviously be varied in divers ways without departing from my invention.

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

1. In automatic mechanism for operating railway-switches, the combination of a pair of treadles on a car with a pair of counter-weighted levers, connections between the same and depending, loosely-connected arms carried by said levers and terminating in pointed arrow-tappets adapted to engage and operate track devices connected to a switch-point for the purpose set forth.

2. In automatic mechanism for operating railway-switches, the combination of a pair of treadles on a car with a pair of counter-weighted lever connections between the same, tappet-carrying arms depending from said levers, vertically-movable pivots for said levers and springs holding the same down in their bearings with yielding pressure substantially as set forth.

3. In automatic mechanism for operating railway-switches, the combination of a pair of treadles on a car with a pair of counter-weighted levers, connections between the same, tappet-carrying arms depending from said levers, vertically-movable pivots for said levers, depending bifurcated studs or brackets, receiving the said levers between their bifurcations and the said pivots in vertical slots of said bifurcations, collars surrounding said studs or brackets and resting on said levers and springs bearing on said collars substantially as set forth.

4. In automatic mechanism, a switch-point pivoted for lateral motion and provided with a downwardly-extending stud, in combination with a pair of rods on opposite sides of said stud and having inclined parts,

which are adapted to be drawn against it to move the said point laterally in one direction or the other, longitudinally-movable bars, rocking devices arranged to engage and draw
5 said rods, and located in channels below the levels of the rails, and depending devices carried by a car and adapted to be lowered at will into said channels to engage such devices substantially as set forth.

10 5. In automatic mechanism for operating railway-switches, a switch-point pivoted for lateral motion, in combination with a pair of longitudinal rods, having inclined parts adapted to engage an attachment or part of
15 said point and turn said point in one direction or the other on its pivot, devices arranged on each side of the track, adapted to be struck by depending attachments of a car and provided with connections whereby they
20 thereupon draw on one rod or the other to shift the said switch-point as stated, and replacing-springs for said devices connections and rods substantially as set forth.

25 6. In automatic mechanism for operating railway-switches, a switch-point pivoted for lateral motion and provided with a downwardly-extending part, in combination with a pair of longitudinally-movable rods, having inclined parts on each side of the same and
30 adapted to move the said point in one direction or the other on its pivot when drawn against said part, longitudinally-movable bars, pro-

vided at intervals with lateral studs, transverse rock-shafts arranged at corresponding intervals and provided with depending slotted
35 arms that engage said studs also with raised arms carrying lateral pins, replacing-springs for said bars and the parts attached thereto and a pair of depressible tappets and their actuating devices carried by said car, said
40 tappets being arranged for contact with any of the raised arms on one side of the track or any of the raised arms on the other, according to the tappet lowered substantially as set forth.

45 7. A pivoted switch-point having a downwardly-extending stud, in combination with a frog or seat having an opening permitting the said stud to extend down through it and move laterally with said switch-point, a
50 raised plate or offset under said point, surrounding said stud and guarding said opening against the admission of water, and devices adapted to be actuated by a passing car, for shifting said switch-point on its pivot
55 from side to side substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN D. BURKHOLDER.

Witnesses:

EDW. R. NEITSHU,
O. C. MUTSCHLER.