

No. 770,569.

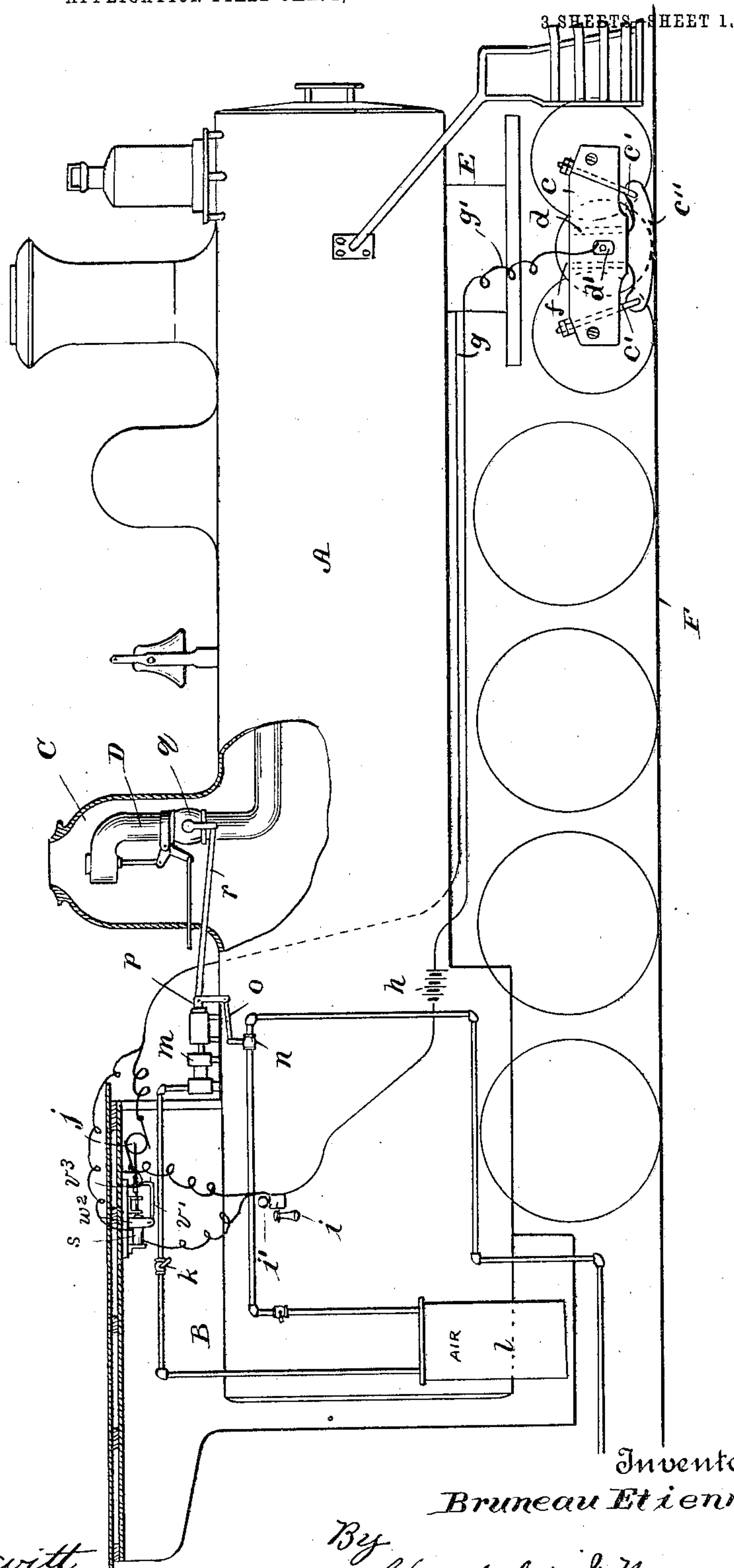
PATENTED SEPT. 20, 1904.

B. ETIENNE.  
RAILROAD SAFETY SIGNAL DEVICE.

APPLICATION FILED JAN. 2, 1904.

NO MODEL.

Fig. 1.



Witnesses

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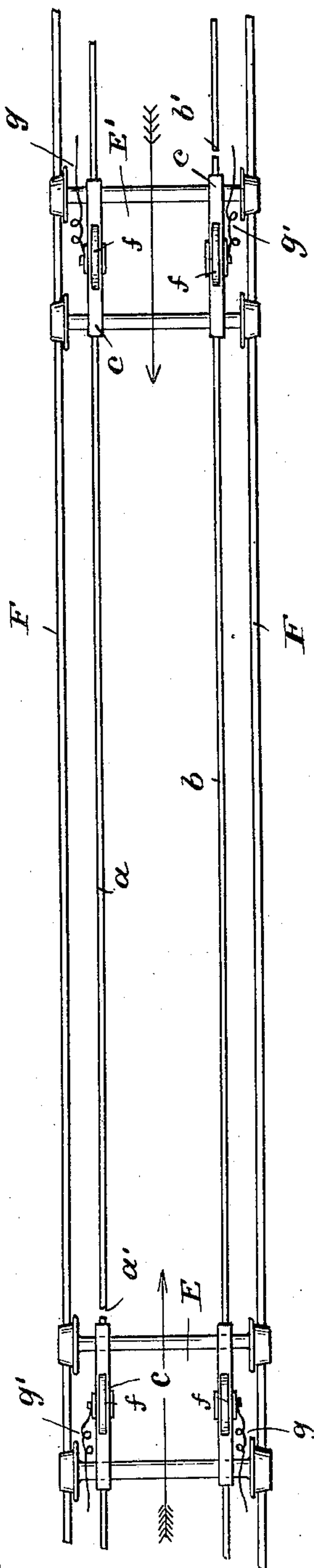
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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Fig. 5.

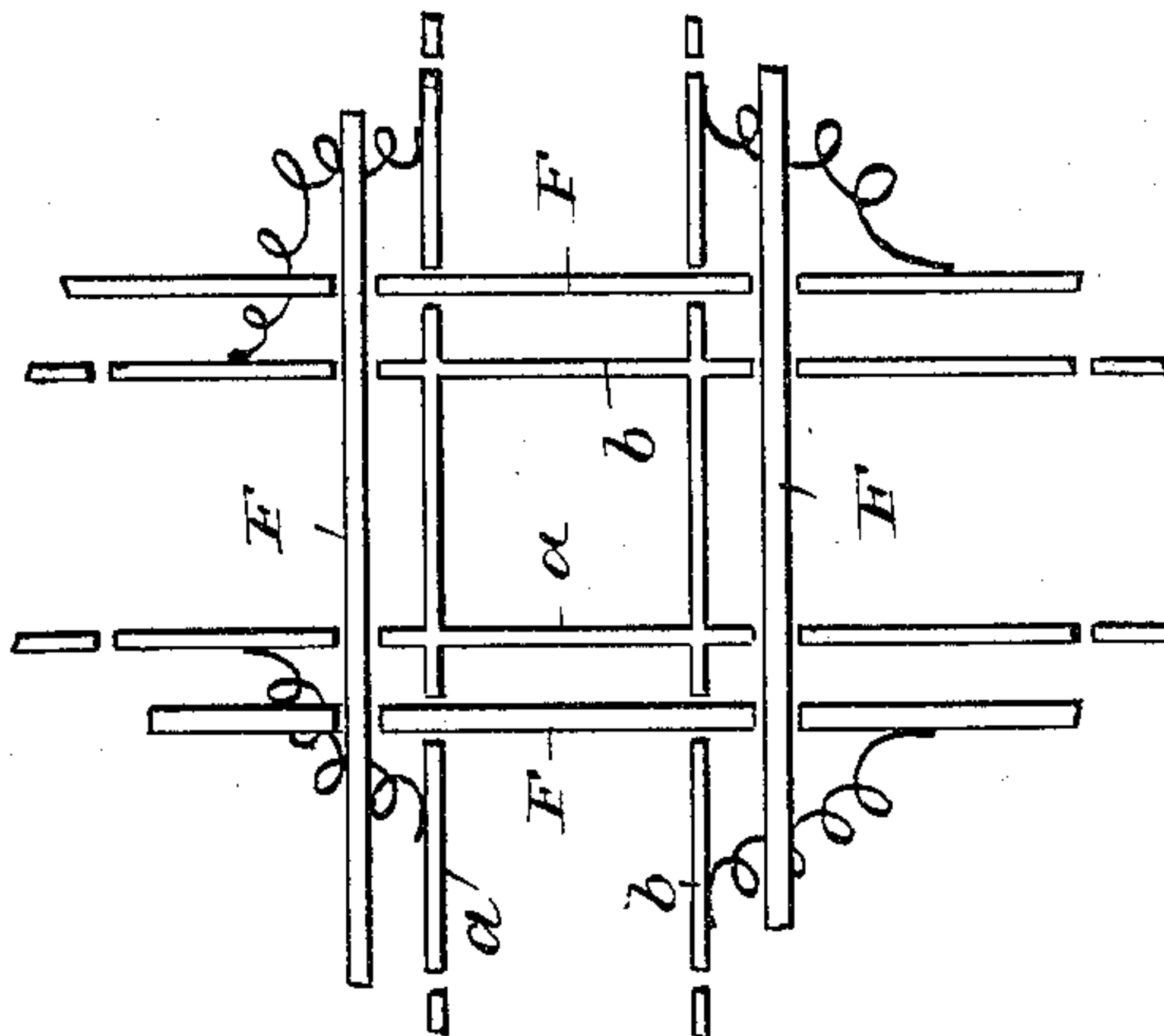


Fig. 4.

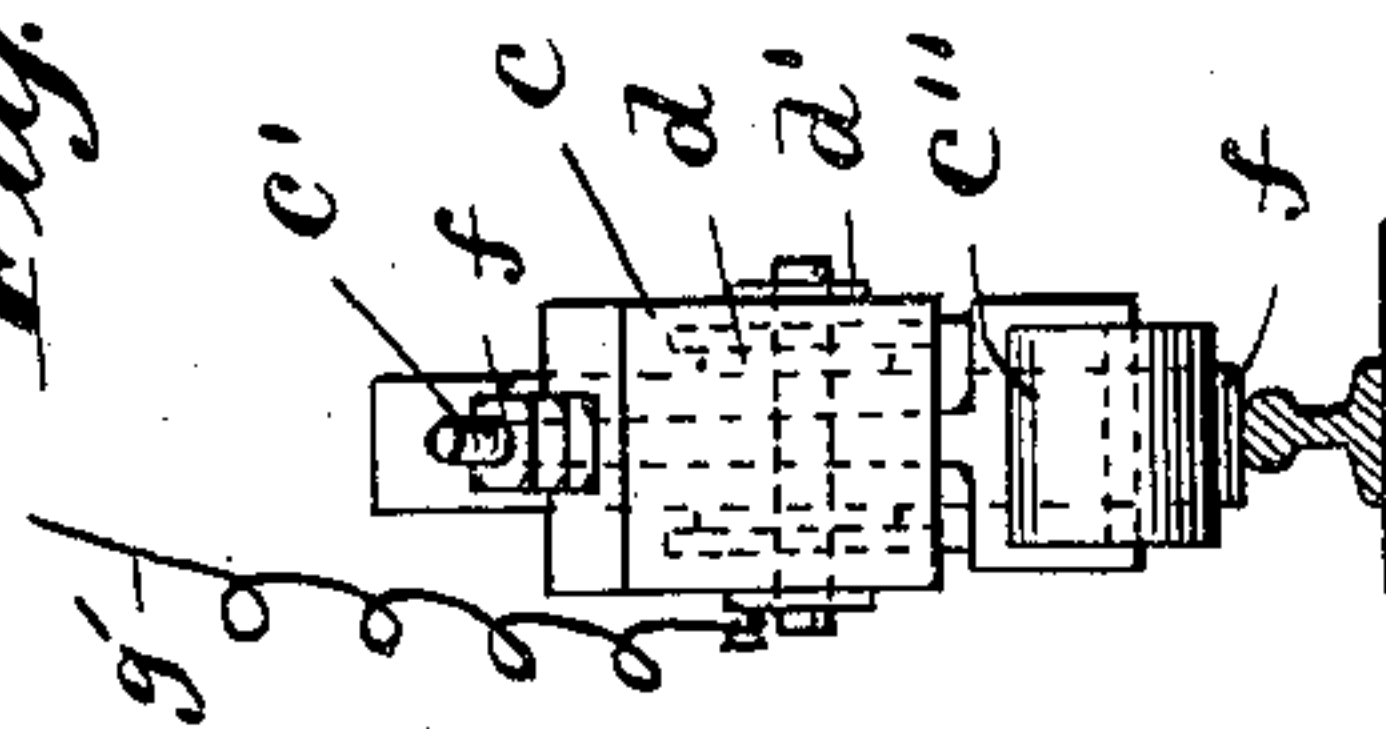
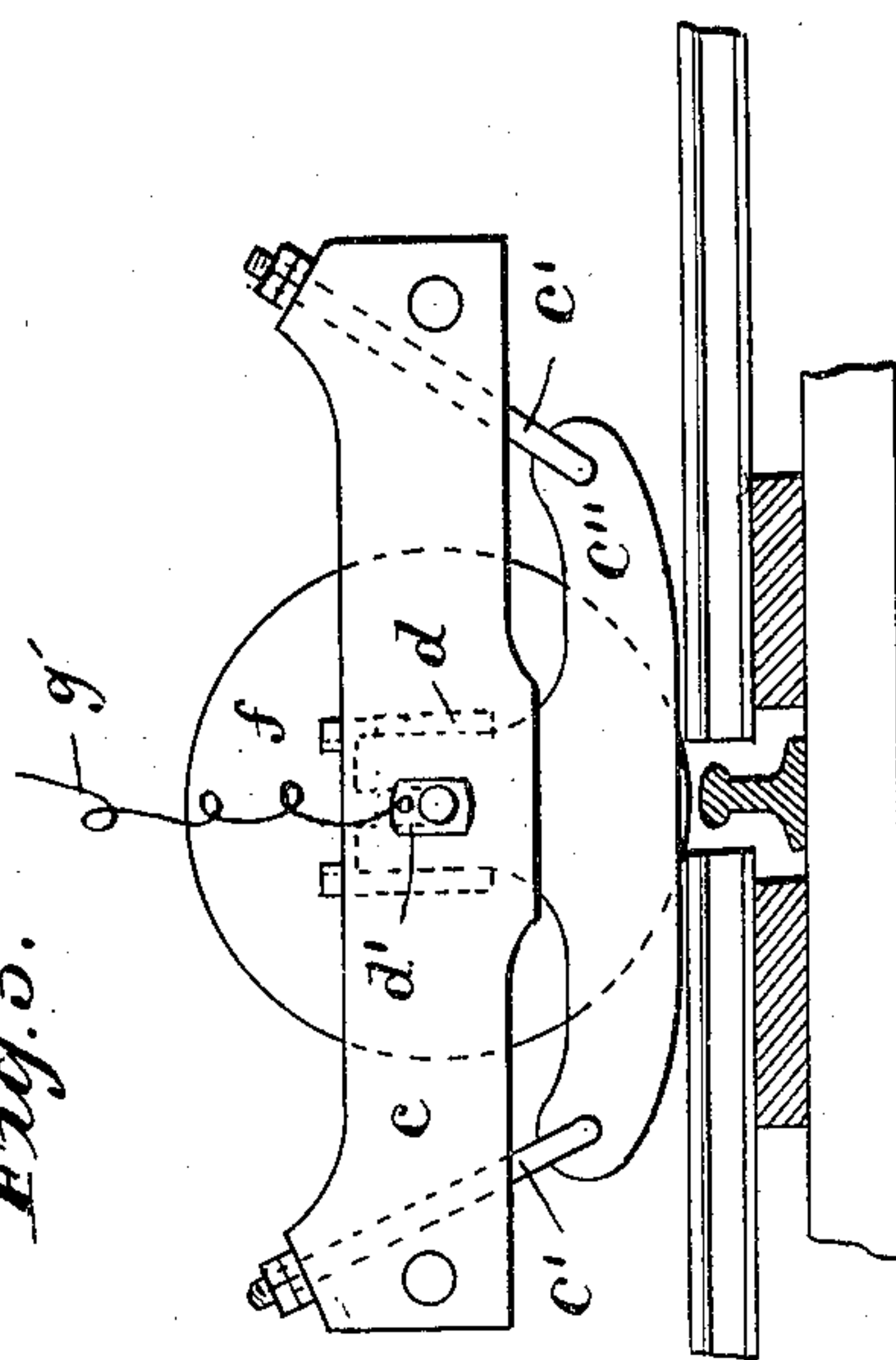


Fig. 3.



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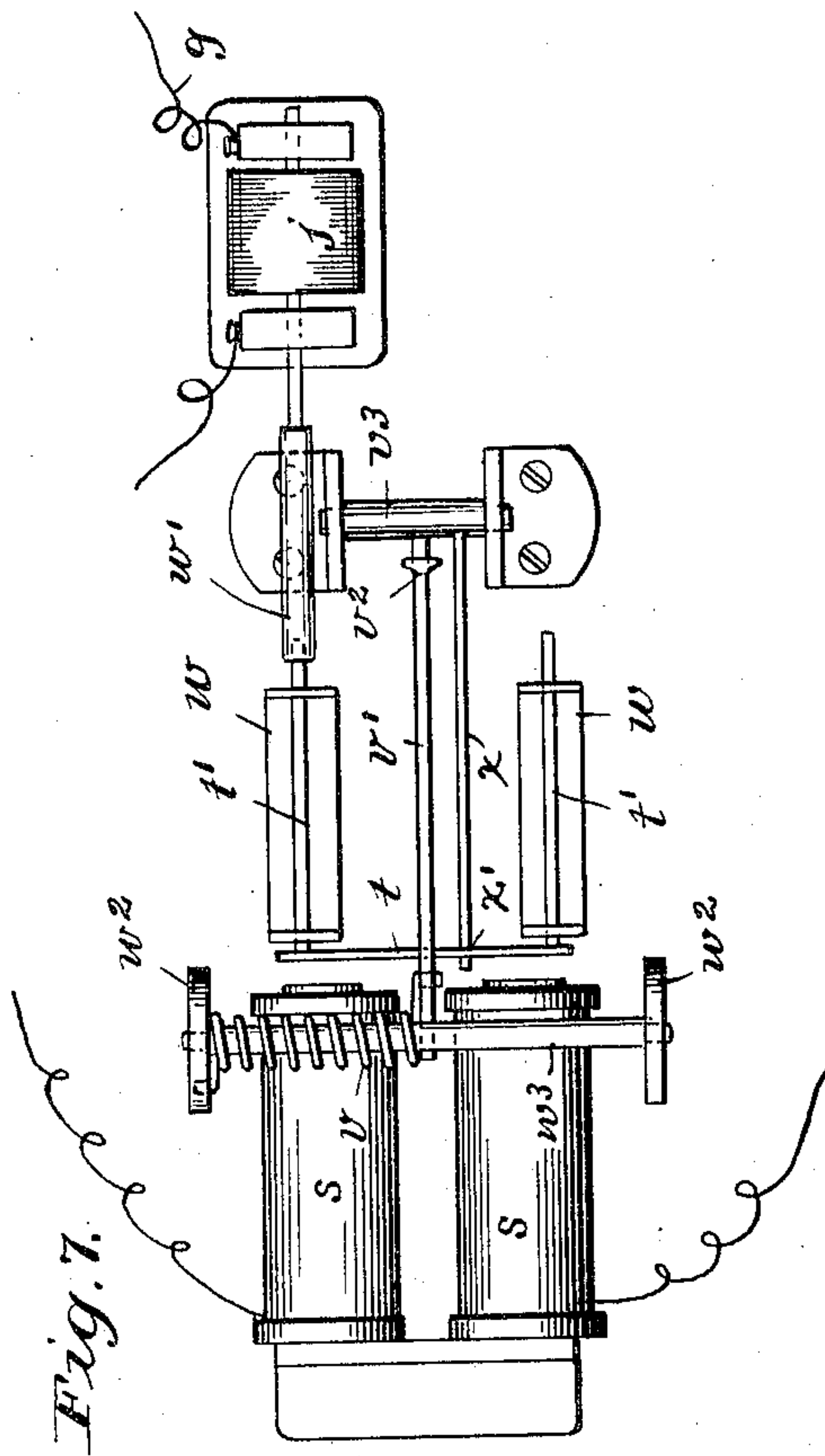
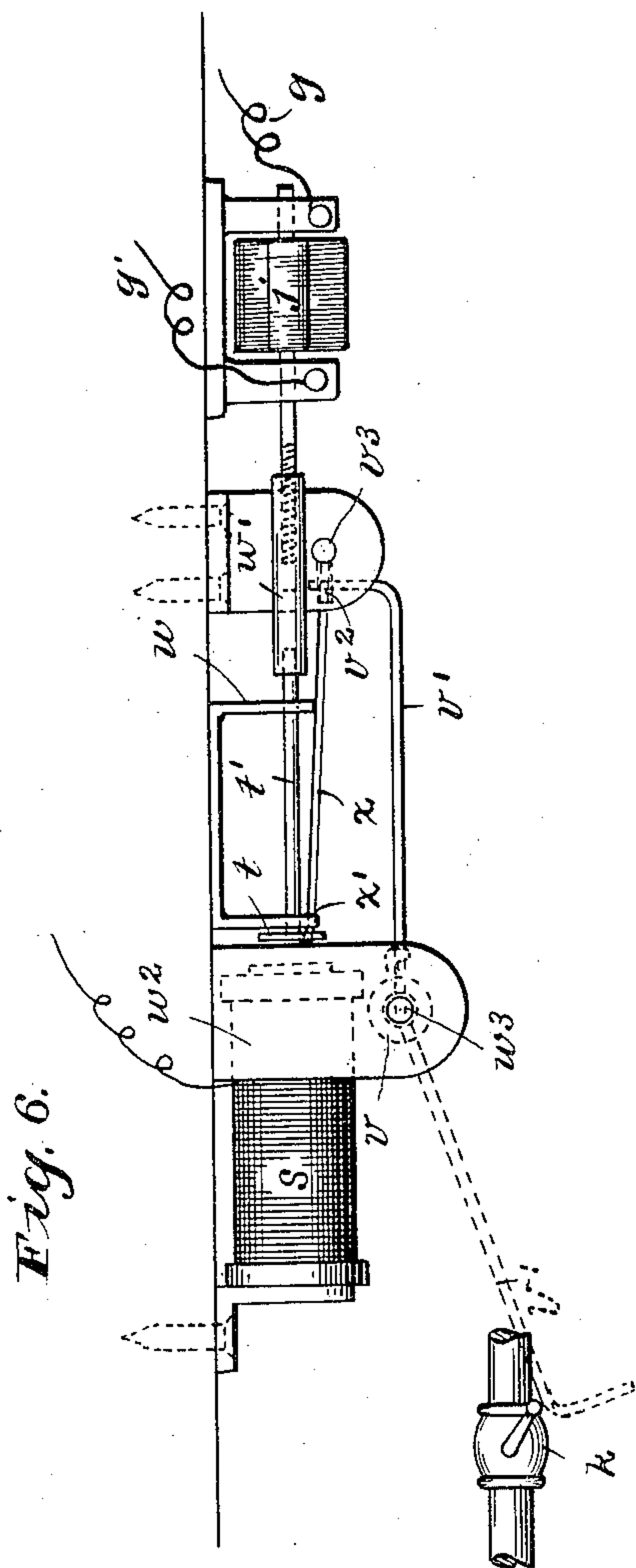
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3 SHEETS—SHEET 3.



Witnesses

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# UNITED STATES PATENT OFFICE.

BRUNEAU ETIENNE, OF PROVIDENCE, RHODE ISLAND.

## RAILROAD SAFETY SIGNAL DEVICE.

SPECIFICATION forming part of Letters Patent No. 770,569, dated September 20, 1904.

Application filed January 2, 1904. Serial No. 187,501. (No model.)

*To all whom it may concern:*

Be it known that I, BRUNEAU ETIENNE, a citizen of the United States, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Railroad Safety Signal Devices, of which the following is a specification.

This invention relates to new and useful improvements in automatic railway safety-signals to prevent head-on and end collisions, and more particularly relates to that class of inventions wherein extra electric rails and wires are employed to convey a current for a given distance from one train to another.

It is the object of my invention to provide means whereby an engineer in his locomotive will be notified of the approach or presence of a second train when within a given distance and whereby the steam for his locomotive will be automatically cut off, likewise the air-brakes automatically applied, and, if desired, certain red lights displayed as might be desired. A further provision is made for communicating by telephone between the trains when on the same block, as will be more fully explained.

With the above objects in view my invention resides and consists in the novel construction and arrangements of parts shown upon the accompanying three sheets of drawings, forming a part of this specification, upon which similar characters of reference denote like and corresponding parts throughout the several figures, and of which—

Figure 1 shows an outline drawing of a locomotive in side elevation with my improvements applied thereto. Fig. 2 shows a plan view of a section of tracks and trucks of two locomotives arranged thereon, each of which is provided with trolley-wheels to contact with the electric rail. Figs. 3 and 4 show a side elevation and edge view of the contact-wheels above mentioned. Fig. 5 is a detailed plan of a railway-crossover such as would be necessary with my system. Figs. 6 and 7 show a side and bottom plan view, respectively, of my automatic device for cutting off steam from the cylinders of the locomotive and for turning on the air-supply for the brakes.

Referring in detail to the characters of reference marked upon the drawings, A indicates the locomotive as a whole; B, the cab; C, a steam-dome; D, a steam-pipe leading therefrom to the cylinders, and E and E' the front trucks.

Referring to Fig. 2, F represents the usual rails, which are secured to ties. (Not shown.) These rails of course support the train, including the locomotive-trucks E and E', both of which are shown in this figure. Intermediate of the rails F is arranged electric rails *a* and *b* in sections, each of which are alternately insulated from each other at given distances, which may vary according to circumstances, but which for convenience we will say represent sections of two miles each; but owing to their alternate relations the sections of each rail represent blocks of but a single mile of solid or unbroken track—as, for instance, in Fig. 2, *a'* represents the broken or insulated part of the electric rail *a*, while *b'* represents a similar break in the rail *b*. The distance between these two points would indicate what I have termed a "section" or "block," making a complete circuit when two trains are in the section. It will be obvious that the track throughout its length would necessarily be equipped in a similar way, so as to form sectional closed circuits or blocks in the road at any point when two trains happen to be on that section or block.

Suspended in any suitable way from the locomotive-trucks E and E' is a bifurcated beam *c*, bearing adjustable links *c'*, supporting a shoe *c''*, the upper sides of which are guided in ways *d*, secured to the beam. This shoe is further provided with a box *d'*, which is insulated from the beam and serves as a journal for the trolley-wheel *f*, which is mounted intermediate of the shoe and is designed to engage the electric rails *a* and *b*, as is clearly apparent from Figs. 1, 2, 3, and 4. The trolley-wheel is normally held within the shoe, so as to protrude below it but a short distance only, thus avoiding its contacting with the lower electric rails of the crossing road, as is apparent from Fig. 3. The ends of the shoe turn up to readily ride over any minor obstruction upon the rail and in a way to pro-



tect the trolley-wheel itself. The wires  $g$  and  $g'$  lead from the trolley of said trucks to the cab B of the engine, and said wires are provided with a battery  $h$ , telephone  $i$ , bell  $i'$ , and is connected with the respective poles of a motor  $j$ . This motor serves to release a magnetic trip, which in turn is designed to operate the valve  $k$  in the pipe leading from the air-cylinder  $l$  to a cylinder  $m$ . The service-pipe of the air-pressure to the car-brakes is provided with an extra valve  $n$ , which is connected by a link  $o$  to an arm of the piston  $p$  of the cylinder  $m$ , so as to operate this air-brake valve by the opening of the valve  $k$ , before mentioned. The steam-pipe D of the locomotive is also provided with an extra valve  $q$ , which contains a link connection  $r$  with the piston  $p$  of the cylinder  $m$ , so that when said cylinder operates by reason of the air-pressure being turned in through valve  $k$  both valves  $n$  and  $q$  are operated, one being open to admit the air-pressure to the car-brakes and the other closed to cut the steam off from the locomotive-cylinders.

Referring to the trip mechanism shown in enlarged view in Figs. 6 and 7,  $s$  represents magnets, and  $t$  an armature therefor, the same being provided with guide-rods  $t'$ , mounted in brackets  $w$ . A sleeve  $w'$  is interposed between one of the guide-rods  $t'$  and the shaft of the motor and is further provided with a thread to engage threads of the shaft to the motor in a way to force the sleeve, guide-rod, and armature toward the magnet when the motor is set in motion.  $w^2$  indicates standards in which is journaled a shaft  $w^3$ , bearing a spring  $v$ , one end of which is connected to one of said standards in a way to throw the lever out when released and the other to the arm  $v'$ . This arm is normally held in the position shown in Fig. 6, which is in engagement with a pin  $v^2$  of a rocker-shaft  $v^3$ , journaled in suitable brackets. This rocker-shaft is provided with an arm  $x$ , which normally engages a hole  $x'$  in the armature  $t$  when in a retracted position, as indicated in Figs. 6 and 7.

It will thus be seen that with the parts in the position indicated, assuming that the trucks illustrated in Fig. 2 would each indicate a complete locomotive or train, that with the approach of the two trucks and after the one indicated by E had crossed the insulated point  $a'$  the current would be picked up from the intermediate section  $a$ , forming a complete circuit up through the cabs of each locomotive and back through the rail  $b$ , the effect of which would be to ring the bell  $i'$  of

telephone  $i$  and set the motor  $j$  in operation. The immediate effect of this would be to move the sleeve of the motor lengthwise sufficiently to shove the armature up against the magnet, thus releasing the arm  $v'$  and allowing its spring to throw it around against the valve  $k$ , operating the same to admit air to the cylinder  $m$ . The effect of this is to automatically operate both valves  $n$  and  $q$ , cutting off the steam-supply and applying the air-pressure to the brakes.

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

1. In a railway signal device the combination with electric rails arranged in blocks, one insulated from the other, a locomotive, trolley-wheels carried thereby to engage said electric rails, a shoe in which the wheel is hung adapted to protect the wheel on crossings and prevent its engagement from the rails of the crossing track, a motor electrically connected with said wheels, a trip operated by the motor, a valve operated by the trip to automatically turn off the supply of steam from the engine, and a valve likewise operated to supply air-pressure to the cars.

2. In an automatic railway safety signal device, the combination with electric rails arranged in blocks, insulated one from the other, a locomotive, trolley-wheels carried by the locomotive, a shoe for each of said wheels and in which they are journaled to govern the amount of bearing of the wheel upon the rail, means for adjusting the height of these shoes and wheels, a motor and battery with electric connections to said wheels, a trip mechanism adapted to be released by said motor, and means to be operated by said trip adapted to automatically stop the train.

3. In a railway signal device, the combination with electric rails arranged in blocks, a beam carried by the front truck of the locomotive, a shoe adjustably mounted in said beam, a trolley-wheel journaled in the shoe but insulated from the beam adapted to engage the rail, electric connections from said wheel to the cab, a motor operated thereby, a spring-actuated trip to be released by the motor, a valve for the trip with connections for applying the force to stop the locomotive.

Signed at Bristol, in the county of Bristol and State of Rhode Island, this 18th day of December, A. D. 1903.

BRUNEAU ETIENNE.

Witnesses:

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 EMMA W. PECKHAM.