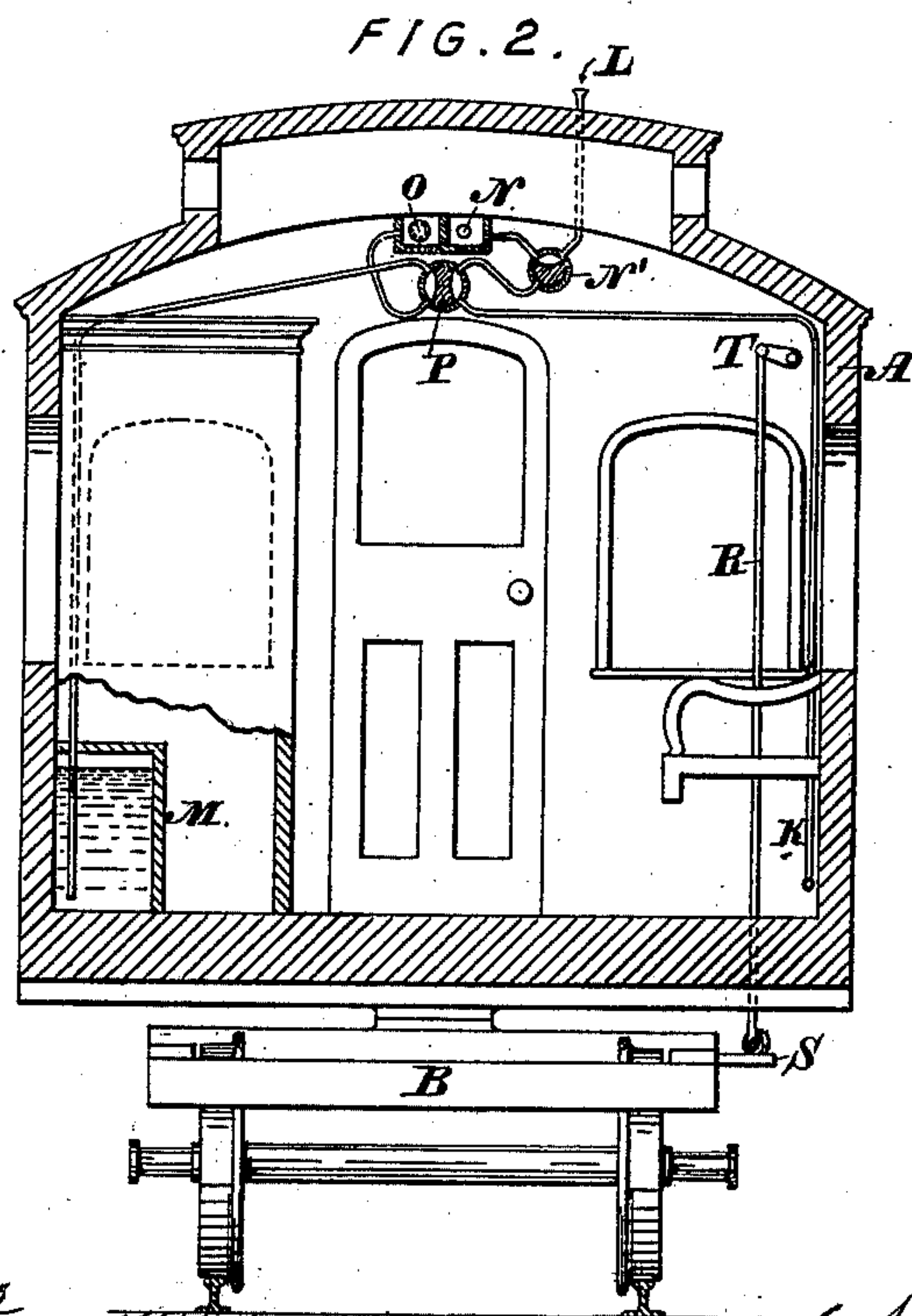
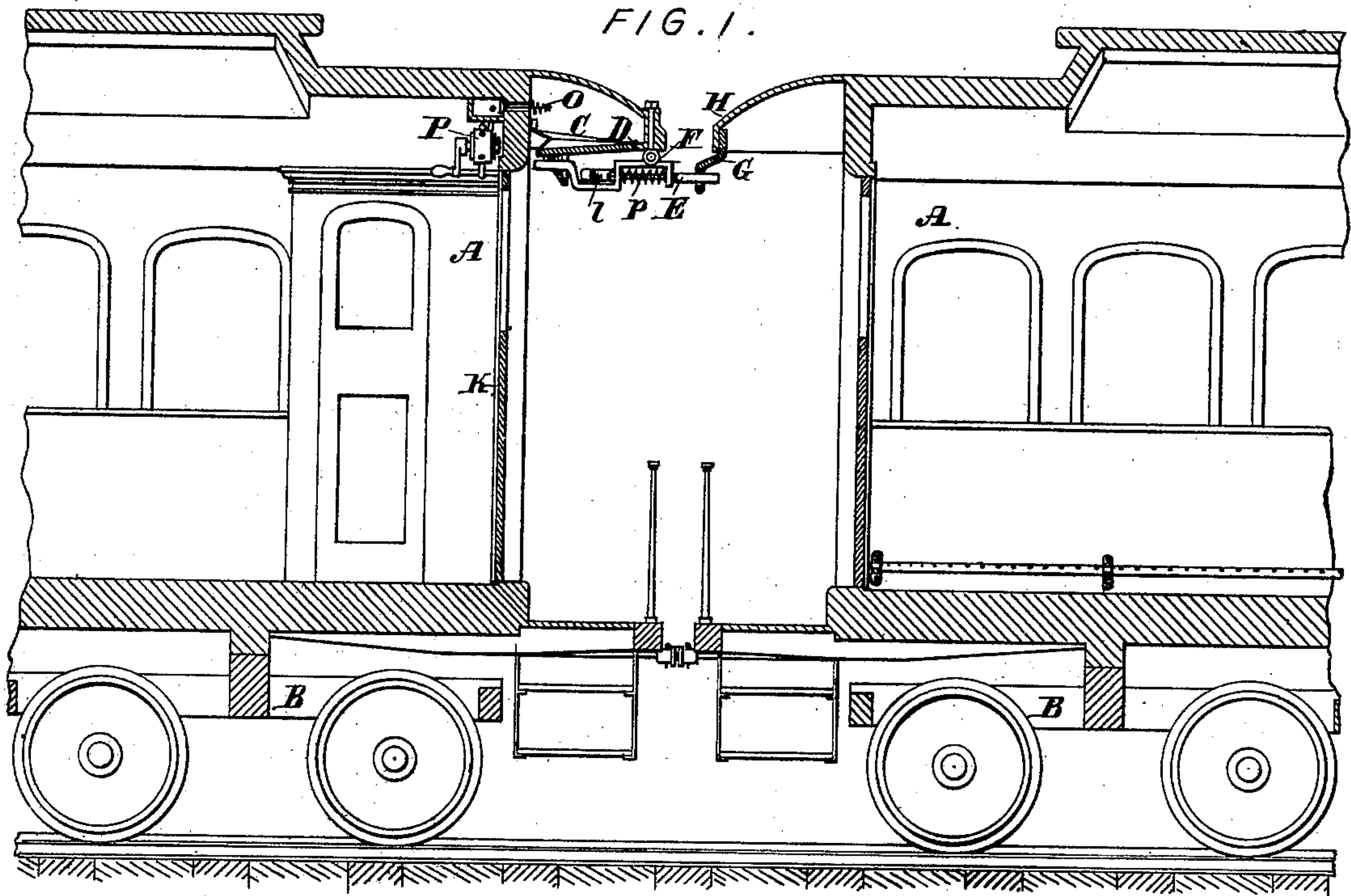


J. B. ELIOT.
Ventilating and Refrigerating Cars.
No. 223,640. Patented Jan. 20, 1880.



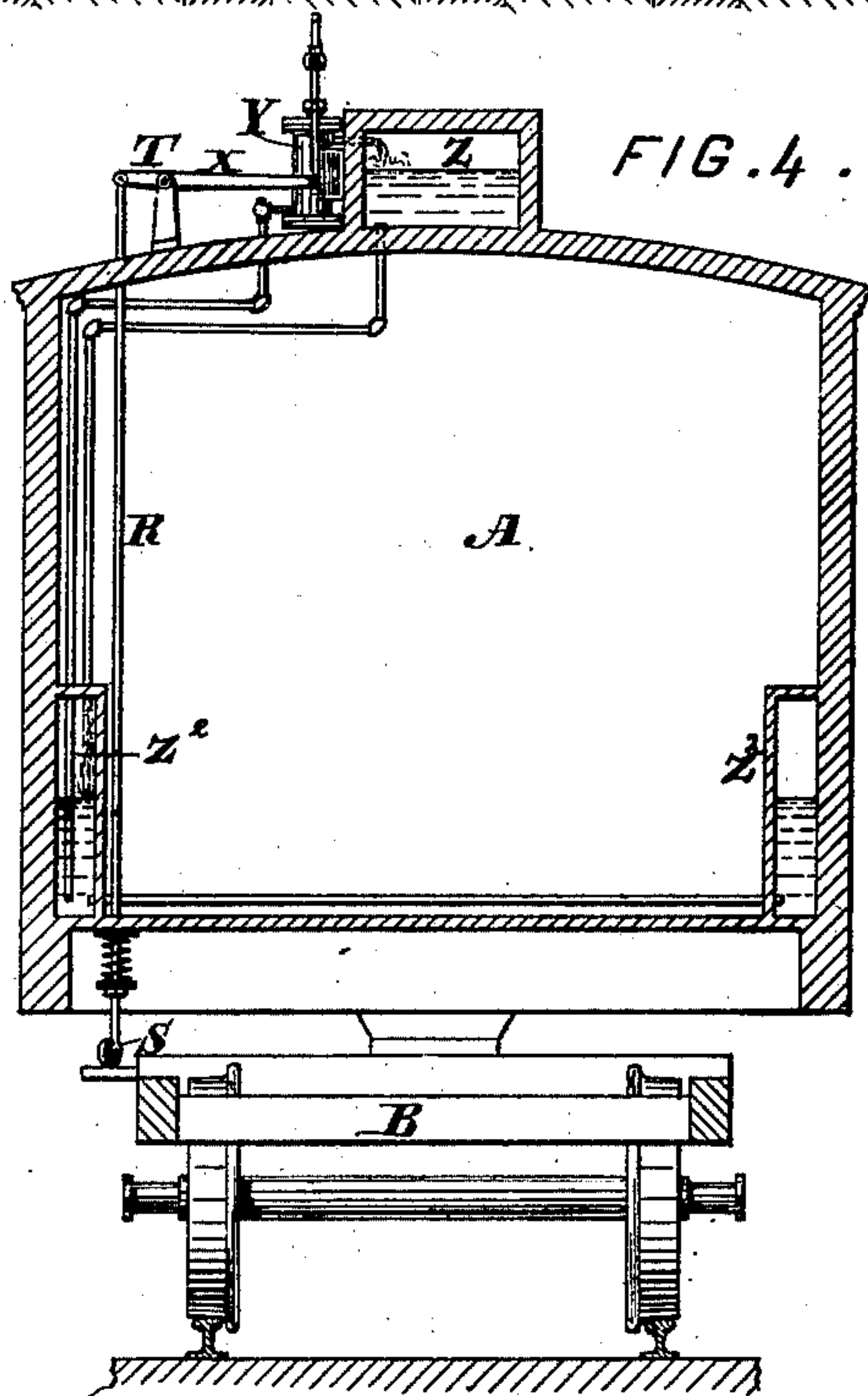
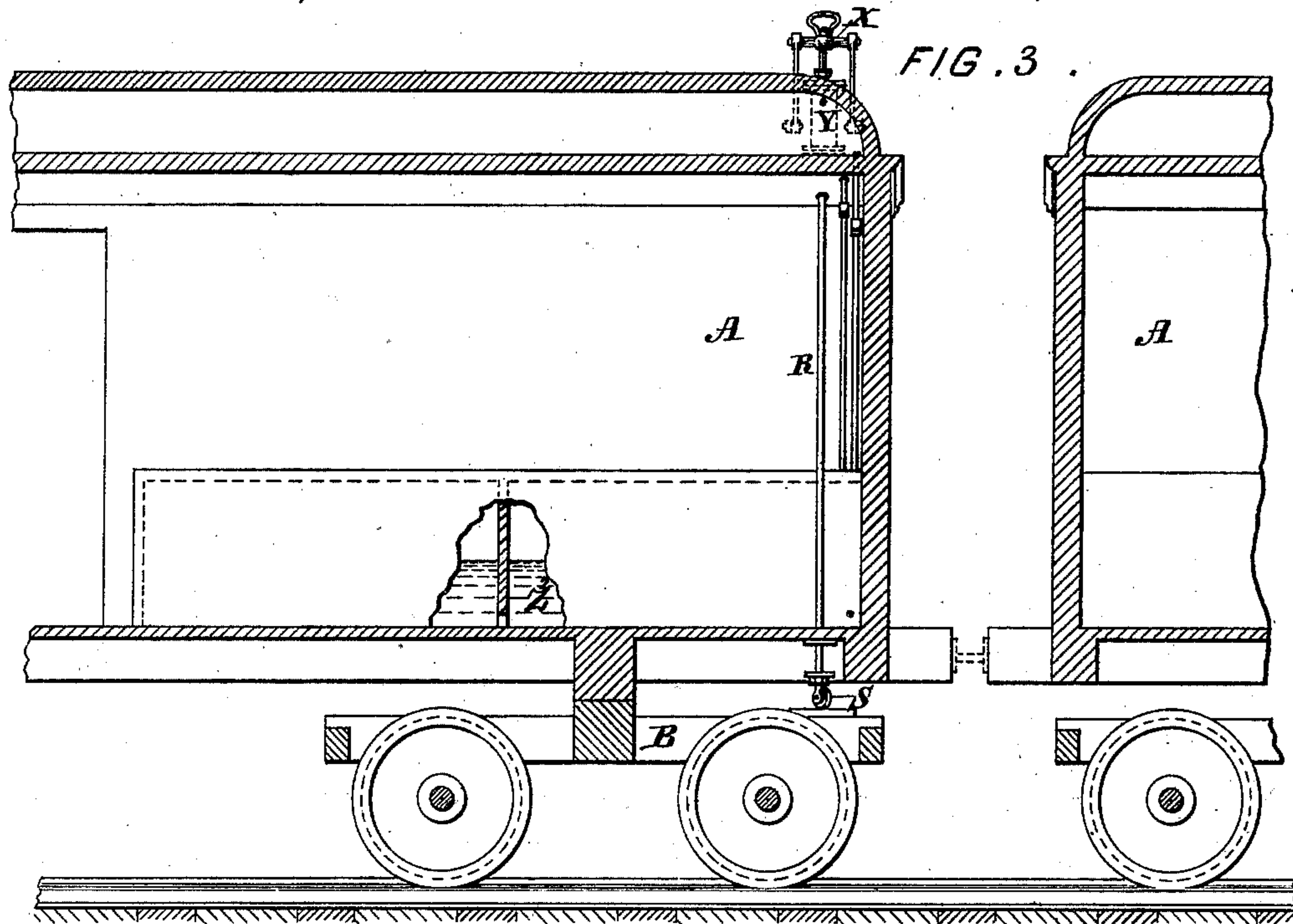
WITNESSES.

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FIG. 5.

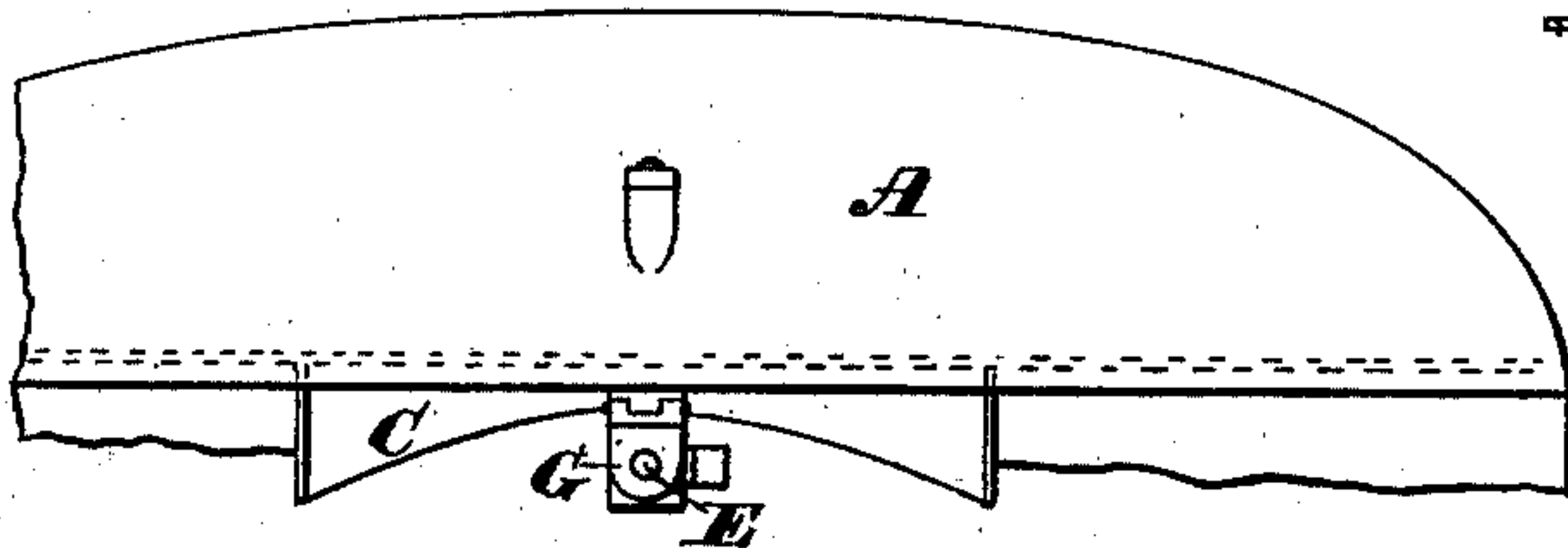


FIG. 6.

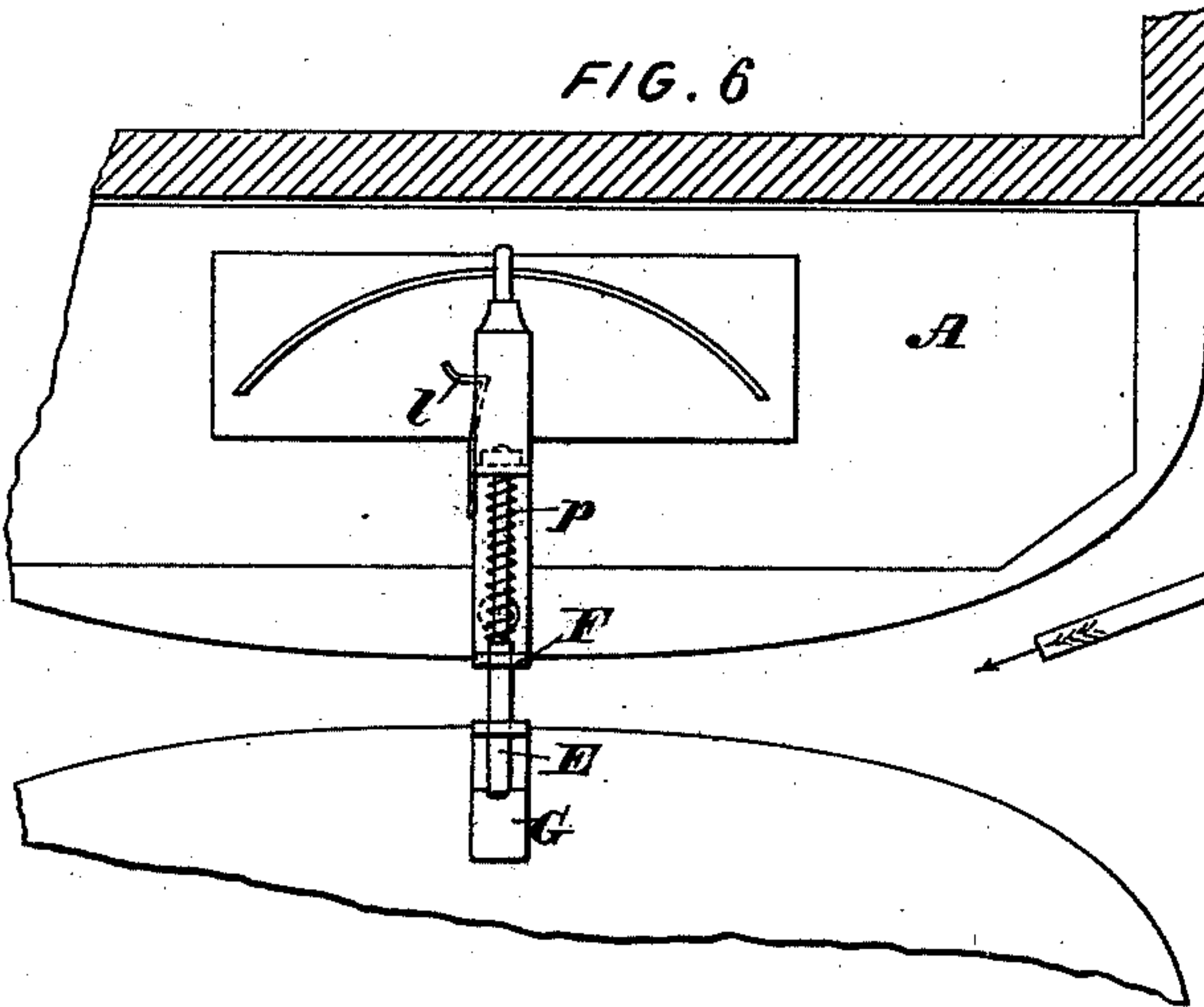


FIG. 9.

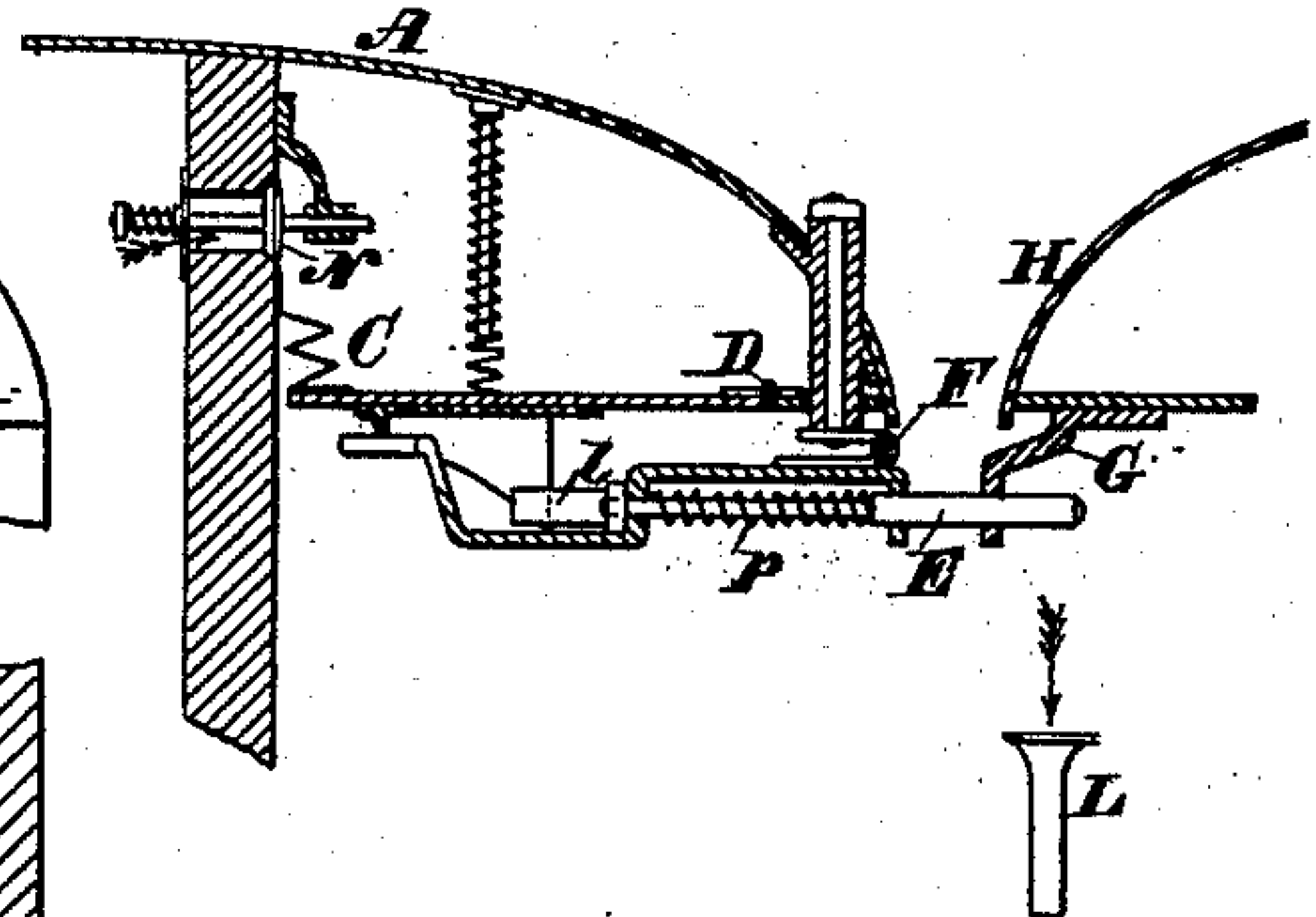


FIG. 10.

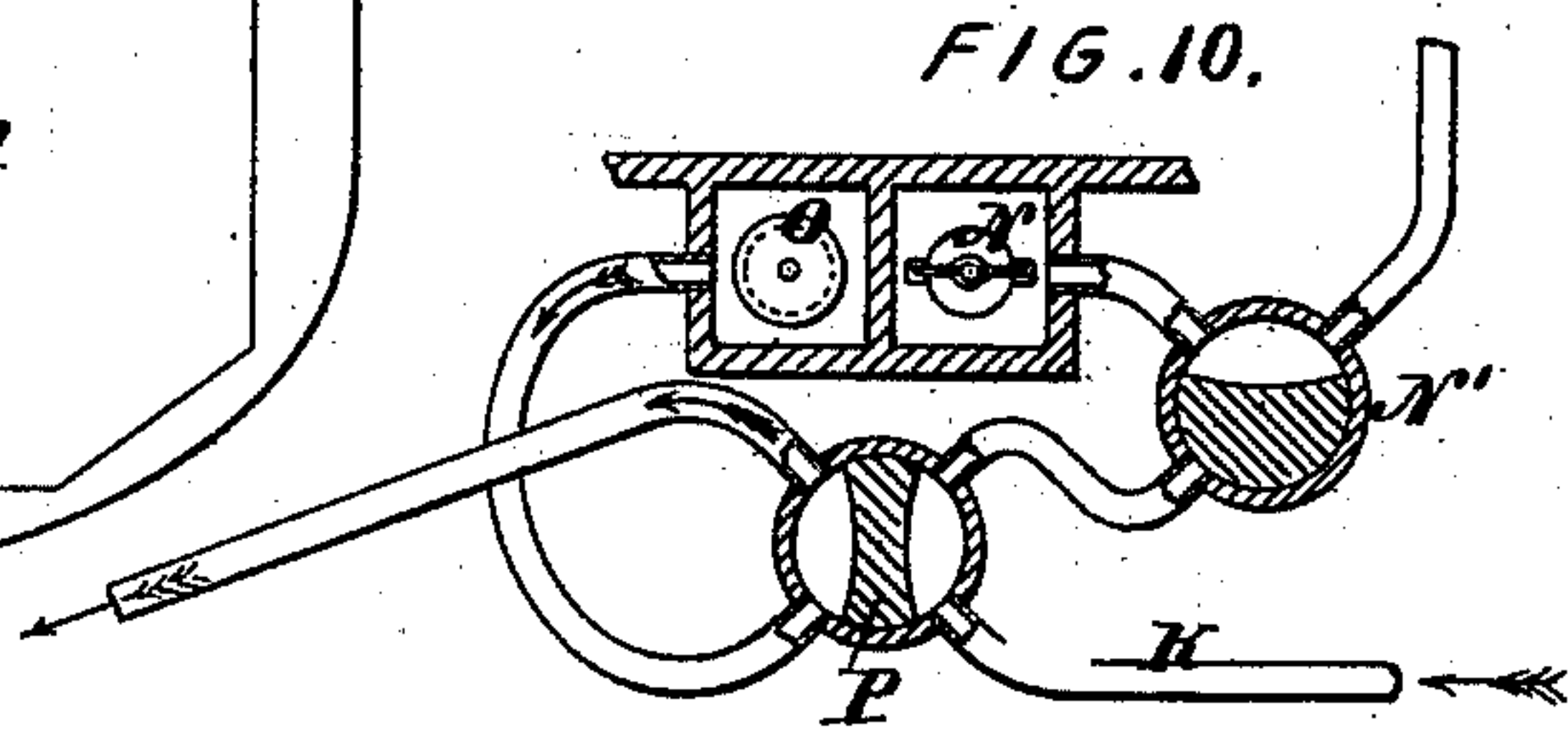


FIG. 11.

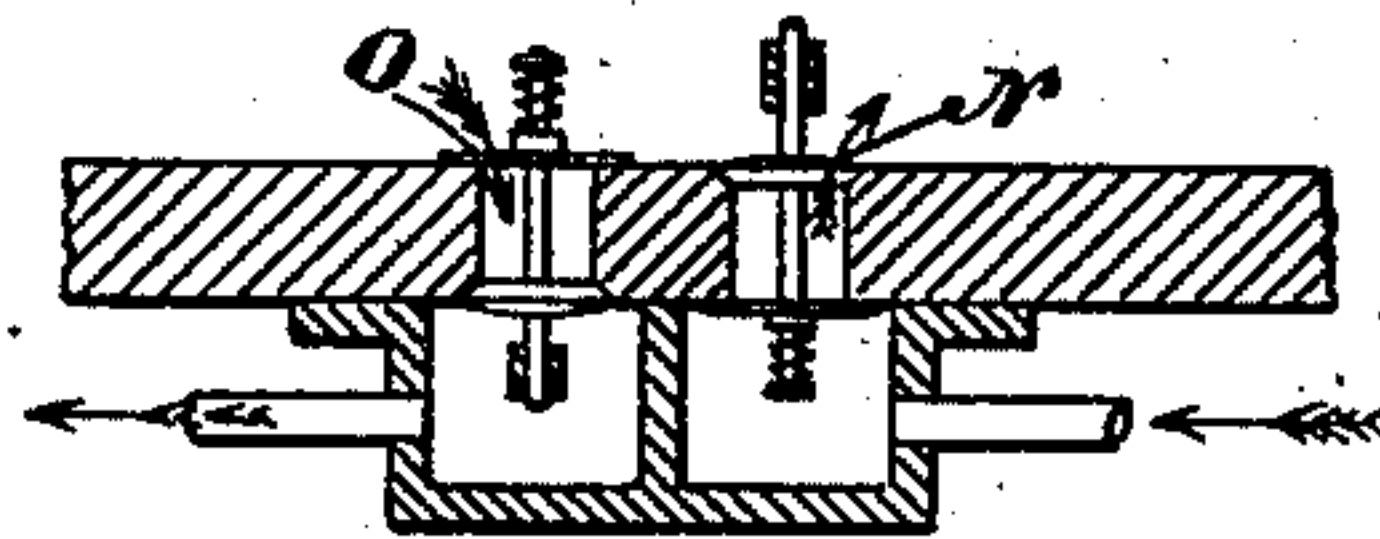


FIG. 7.

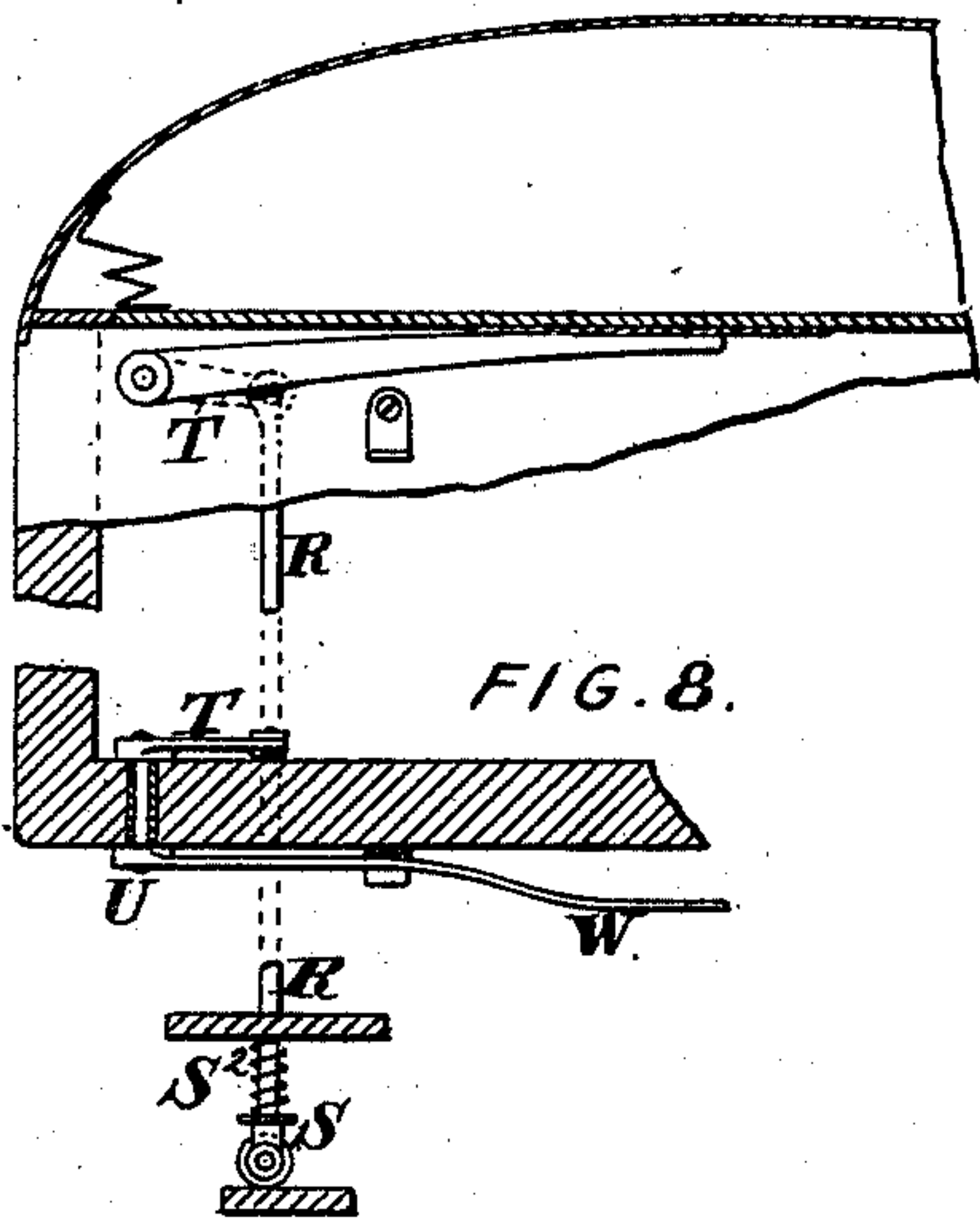


FIG. 8.

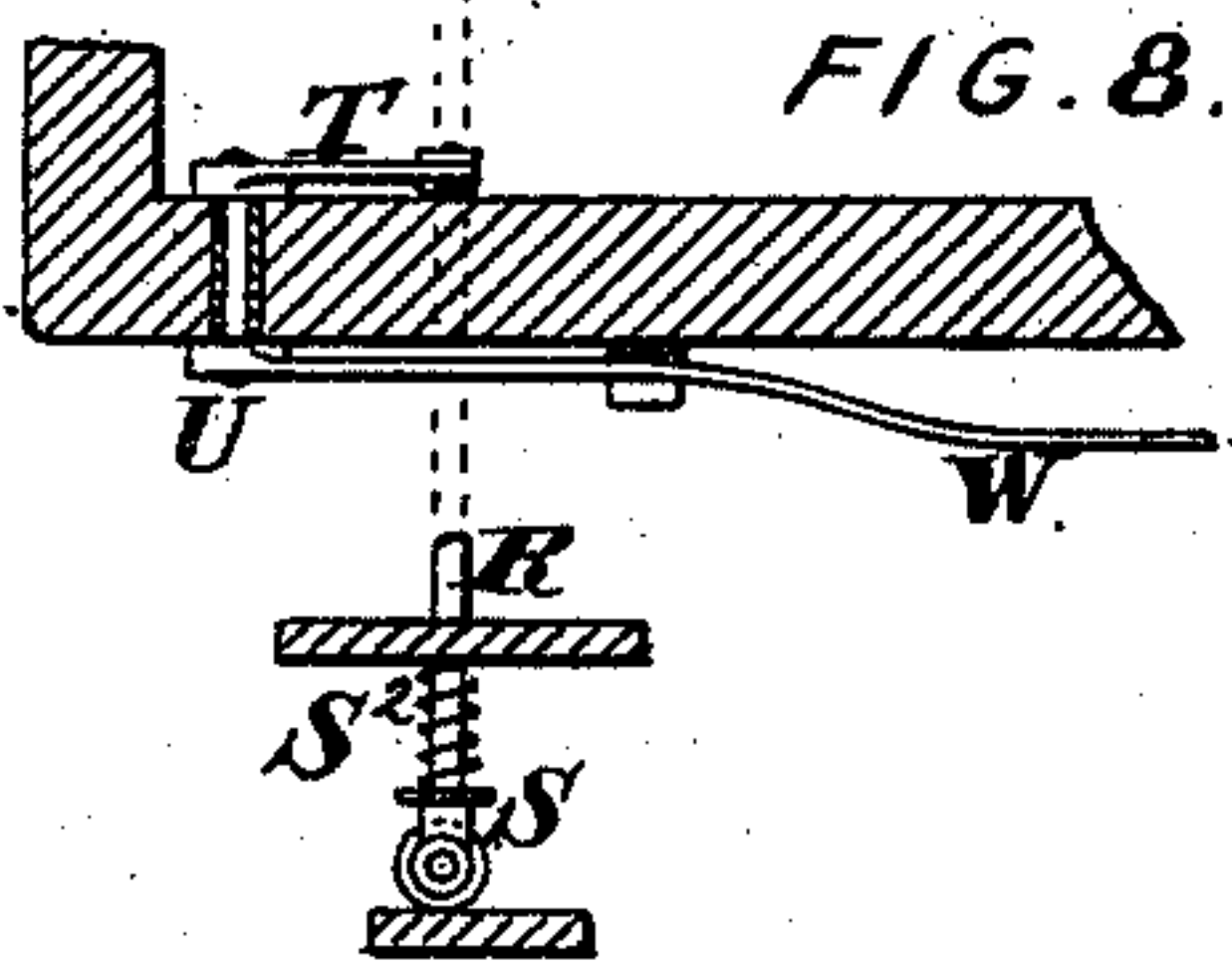


FIG. 12.

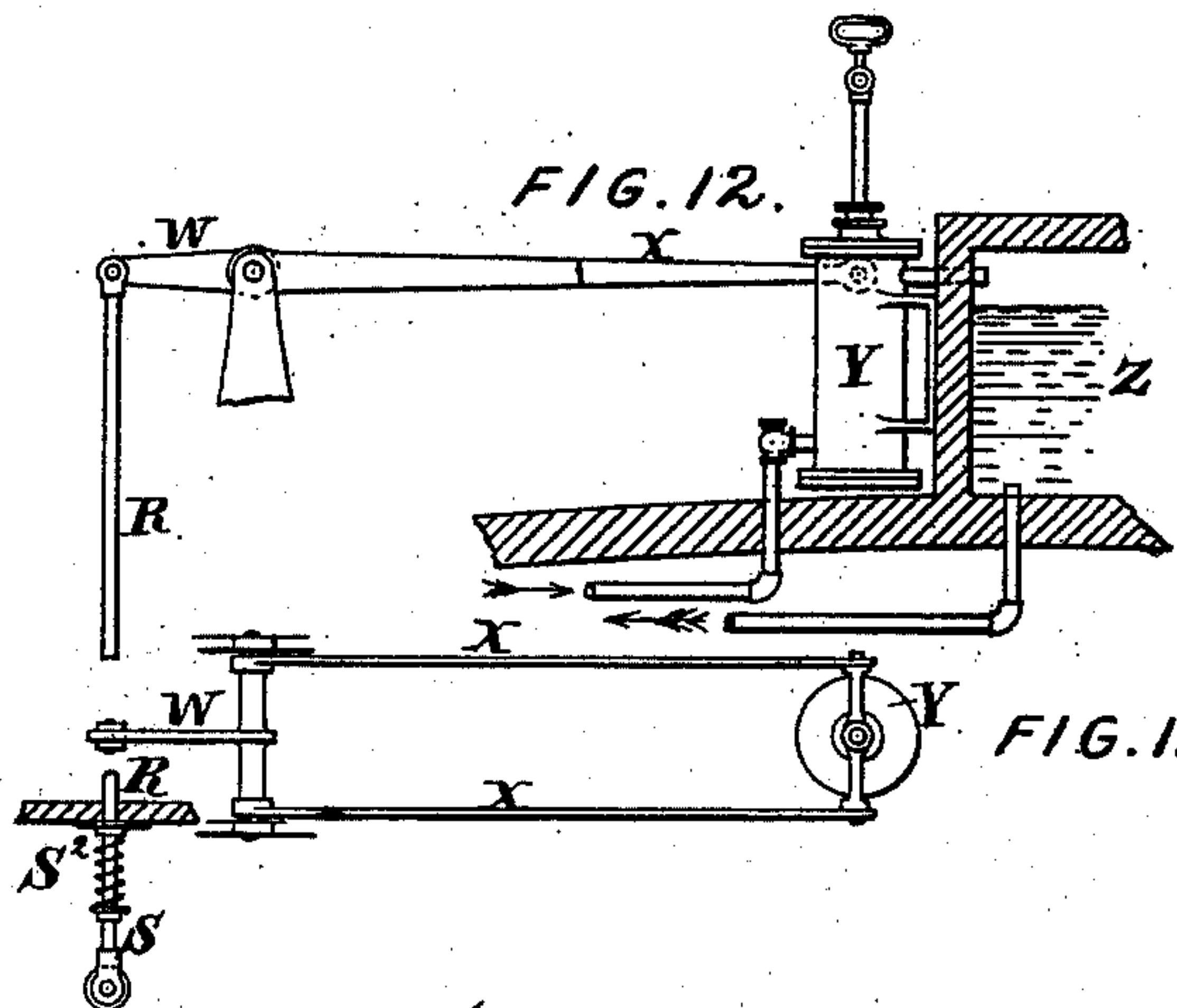


FIG. 13.

WITNESSES.

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John B. Eliot
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UNITED STATES PATENT OFFICE.

JOHN B. ELIOT, OF NEW YORK, N. Y.

VENTILATING AND REFRIGERATING CARS.

SPECIFICATION forming part of Letters Patent No. 223,640, dated January 20, 1880.

Application filed May 28, 1879.

To all whom it may concern:

Be it known that I, JOHN B. ELIOT, of the city, county, and State of New York, have invented certain new and useful Improvements in Ventilating and Refrigerating Railway-Cars, of which the following is a specification.

This invention pertains to the class of inventions used for circulating air or liquids in railway-cars, either for purifying the atmosphere in them, as required for passenger or sleeping cars, or for cooling them for the preservation of perishable articles, as meats, fruits, &c., in transit, as required in what are termed "refrigerating-cars;" and the invention consists, chiefly, in utilizing the rocking, oscillating, or vibratory action of the car relatively to its truck or another car coupled to it by means of levers or bearing arms or rods attached to bellows or pumps and circulating pipes, so that the required amount of circulation either of the air or cooling-liquid, or both combined, will be effected, as will hereinafter appear.

Figure 1 represents a vertical section of portions of two passenger-cars coupled together and a bellows and attachments, whereby the rocking motion of the two cars relatively to each other will draw off the foul air from the interior of the car or force pure air into it, as desired. Fig. 2 of the same sheet shows a transverse section of a car and the arrangement of the bellows for the inlet or outlet of the air, also a rod leading from the bellows to the truck for operating the bellows as the car oscillates upon its truck. Fig. 3 represents a portion of two freight-cars provided with refrigerating-tanks and one with a circulating-pump operated in the same manner as the bellows in Figs. 1 and 2. Fig. 4 is a transverse section of the same; Figs. 5, 6, 7, 8, 9, 10, 11, 12, and 13, views in detail of the working parts, and will be explained in the specification hereinafter.

It is well known that one of the chief troubles in ventilating passenger or sleeping cars is to get rid of the foul air that settles down in the lower part of the car, and oftentimes accumulates to such a degree as to be almost stifling to the passengers. To obviate this I propose to attach a bellows or pump of some kind to any convenient portion of the car and operate it by means of a rod or arm extend-

ing out to the adjoining car or to the truck of the same car, so that the rocking, oscillating, or vibratory motions between the two cars or the car and its trucks will operate the bellows or pump, and thereby draw off the foul air and eject it from the car.

At A is shown a portion of a passenger-car mounted upon its truck, as at B. Underneath the hood, over the platform, is fitted a bellows, as at C. The under side of the bellows is hinged near to the outer end of the hood, as at D, and the other edge is caused to vibrate by means of a lever, as at E, which is attached by pivotal bearings to the front edge of the hood, as at F, said bearings being so constructed as to permit the lever to vibrate in all directions, the outer end extending through a bracket, as at G, which is fastened upon another car, as at H, so that, as the two cars, when in motion, are caused to rock, oscillate, or vibrate relatively to each other, the lever E will be vibrated, and thereby operate the bellows, which is provided with suction-pipes and valves, in such a manner as to draw the air from the car and eject it to the outside or draw in air from the outside and force it into the interior, as may be desired.

The suction-pipe is shown at K, Figs. 1, 2, and 10, to draw off the foul air from the car or to supply the bellows, and another supply-pipe is shown at L, and to let in outside air when wanted, and in this case the air may be forced into a tank in one corner of the car, as shown at M, which contains water to wash the air from any impurities, and then let it escape into the car. These pipes may be controlled by valve mechanism, best seen at Figs. 10 and 11, where N represents the inlet-valve to the bellows and O the outlet from the same, and P shows a shifting valve, by which the air may be taken from the inside of the car and passed into the tank, and there purified and let into the car; or said valve may be turned one-quarter of a revolution, and then, by means of another inlet-valve, as at N', allow the outside air to be forced into the car through the tank; or these valves may be so turned as to draw the inside air out through the bellows and eject it out of the car.

The details for working the bellows are best seen at Figs. 5, 6, 7, 8, and 9, the views at 5,

6, and 9 being applicable to the work when two cars are connected, and the others, 7 and 8, where the connection is made with the truck of the car.

5 The lever E is made to slide in its bearings G in the form of a telescope, so that it may be moved back, when not wanted, from contact with the other car, and in this case a spring-stop, as at *l*, is provided to hold it back, and
10 a spring, as at *p*, is used to force it out and hold it in place or in contact with the other.

When the bellows are worked from the truck, then a rod, as at R, having its roller at its lower end to work upon a curved bearing on
15 the truck-frame, is used, as seen at S. This rod is attached to a crank-arm, as at T, (shown enlarged at Figs. 7 and 8,) which is upon a rock-shaft, U, on the outer end of which is an arm, W, that operates the bellows. A spring,
20 as at S², holds the rod upon its bearing on the truck.

The same kind of a device is used for working a pump to circulate a cold or refrigerating liquid, as represented in the cars shown at
25 Figs. 3 and 4; but in this case the arm or lever W is attached to a rock-shaft that has arms, as at X, attached to the piston of a pump, as at Y, which is mounted upon the top of the car, and is connected to a tank, as at Z, which
30 contains the refrigerating liquid of any of the well-known kinds used for such purposes, and which flows down from the tank into the cooling-chambers, as at Z², which are located in the interior of the chill-room of the car, and are con-
35 nected by tubes to each other and to the pump, so that as the car vibrates the liquid will be lifted again into the cooling-tank.

The details of this apparatus are best seen at Figs. 12 and 13.

40 It is also evident that by means of such an apparatus air may be forced into a chamber or reservoir to serve as a force for operating

the brakes upon the car or for starting the cars, as upon street-railways; or the same force may be applied to wind up a spring for the
45 same purpose, if desired.

It is evident that the bellows or pump may be located in any other part of the car—as, for example, underneath it—and that the le-
50 vers and rods may be so changed as to operate in such manner and for the same purpose.

What I claim is—

1. The combination of the railway-cars with suitable intermediate connections, whereby the
55 rocking, oscillating, or vibratory motion of the cars may be utilized as a force for operating a bellows or pump, as and for the purposes set forth.

2. The combination of a car, with its trucks or one of its trucks, with suitable intermedi-
60 ate mechanism, whereby rocking, oscillating, or the vibratory motion of the car may be utilized as a force to operate a bellows or pump, as and for the purposes set forth.

3. The combination, with a car, of a bellows
65 and levers or other mechanism and another car, so arranged that the rocking, oscillating, or vibratory motion of the car will operate the bellows to produce a circulation of air, as de-
70 scribed.

4. The combination, with a car, of a bellows and suitable connections with its truck, as by
75 a rod or lever, as shown, so that the rocking, oscillating, or vibratory motion of the car will operate the bellows, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

JOHN B. ELIOT.

Witnesses:

JAMES L. NORRIS,

JAS. A. RUTHERFORD.