

(No Model.)

D. W. SMITH.

REGULATOR OR CUT-OFF FOR GENERATORS.

No. 393,590.

Patented Nov. 27, 1888.

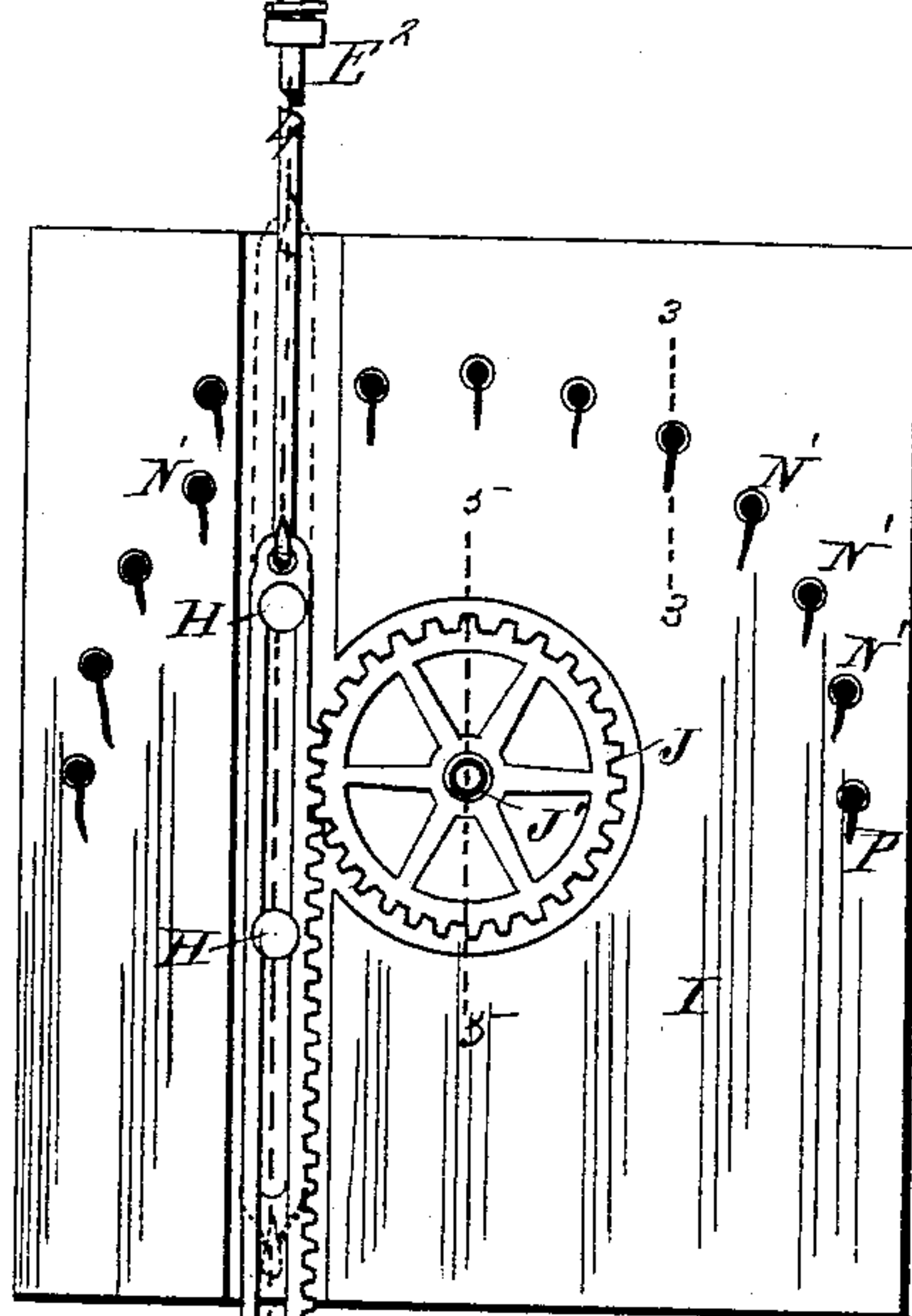
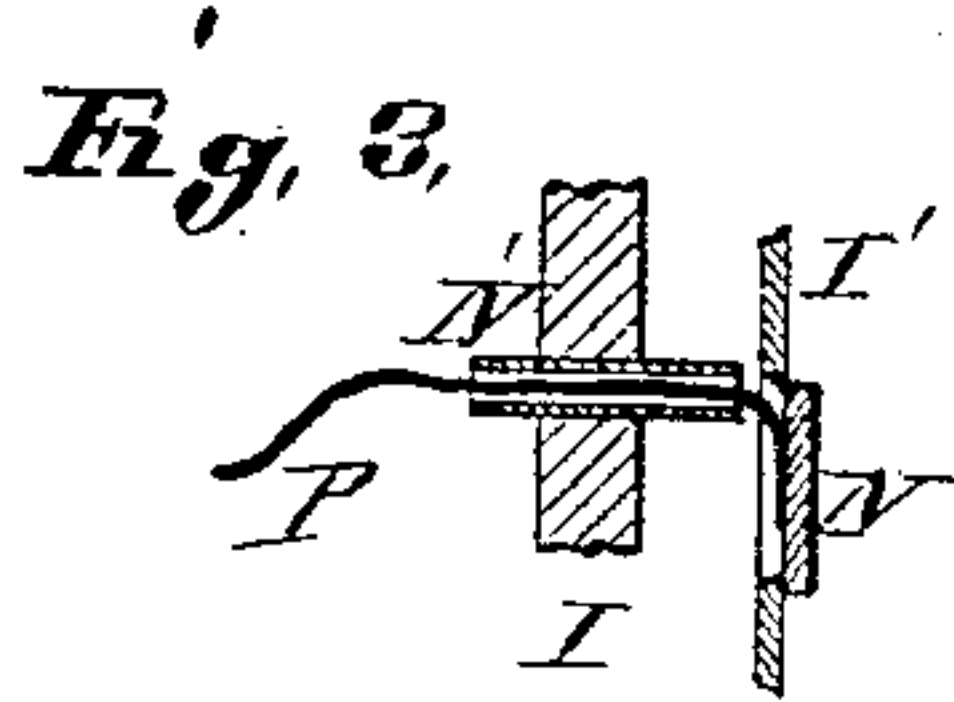
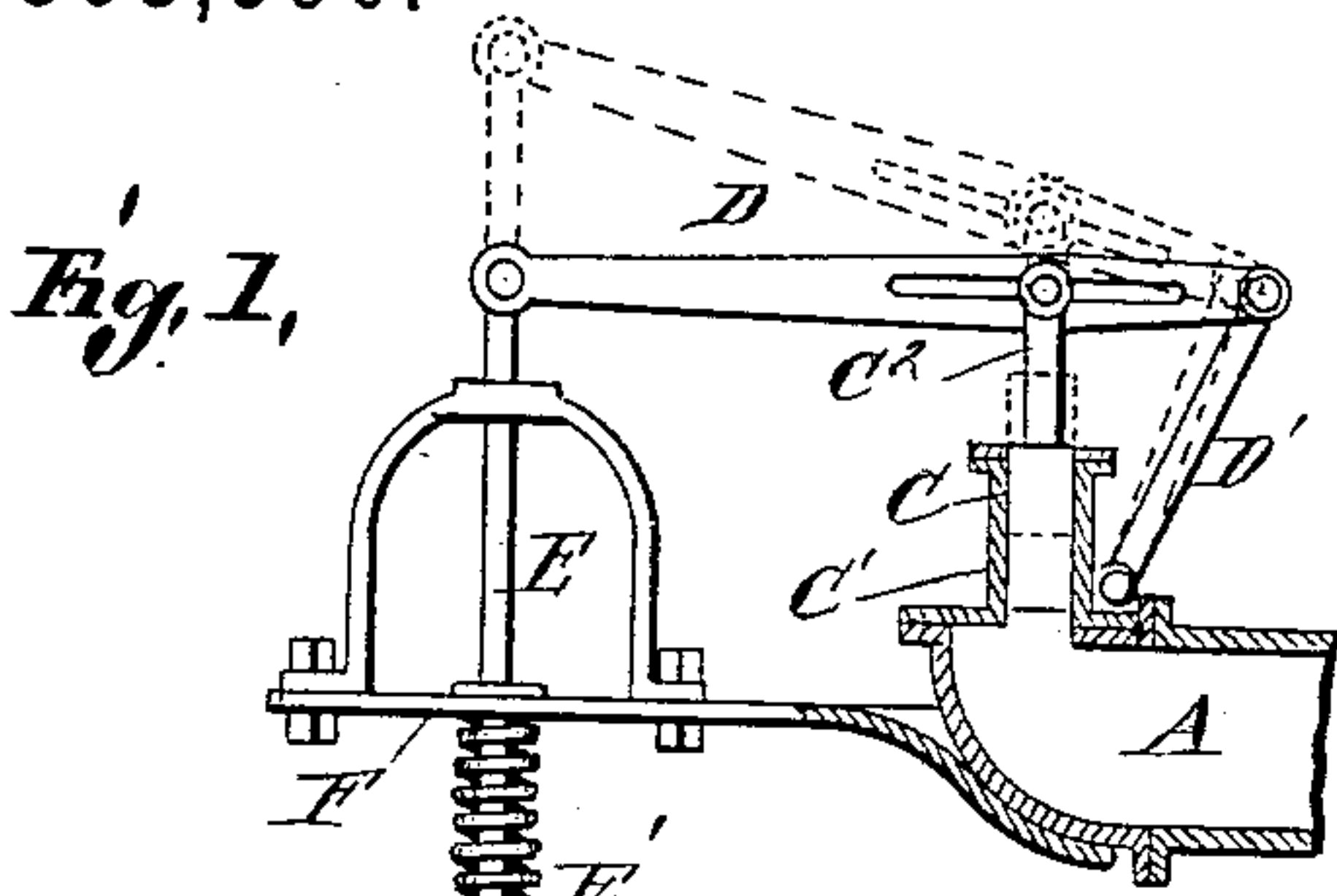


Fig. 2,

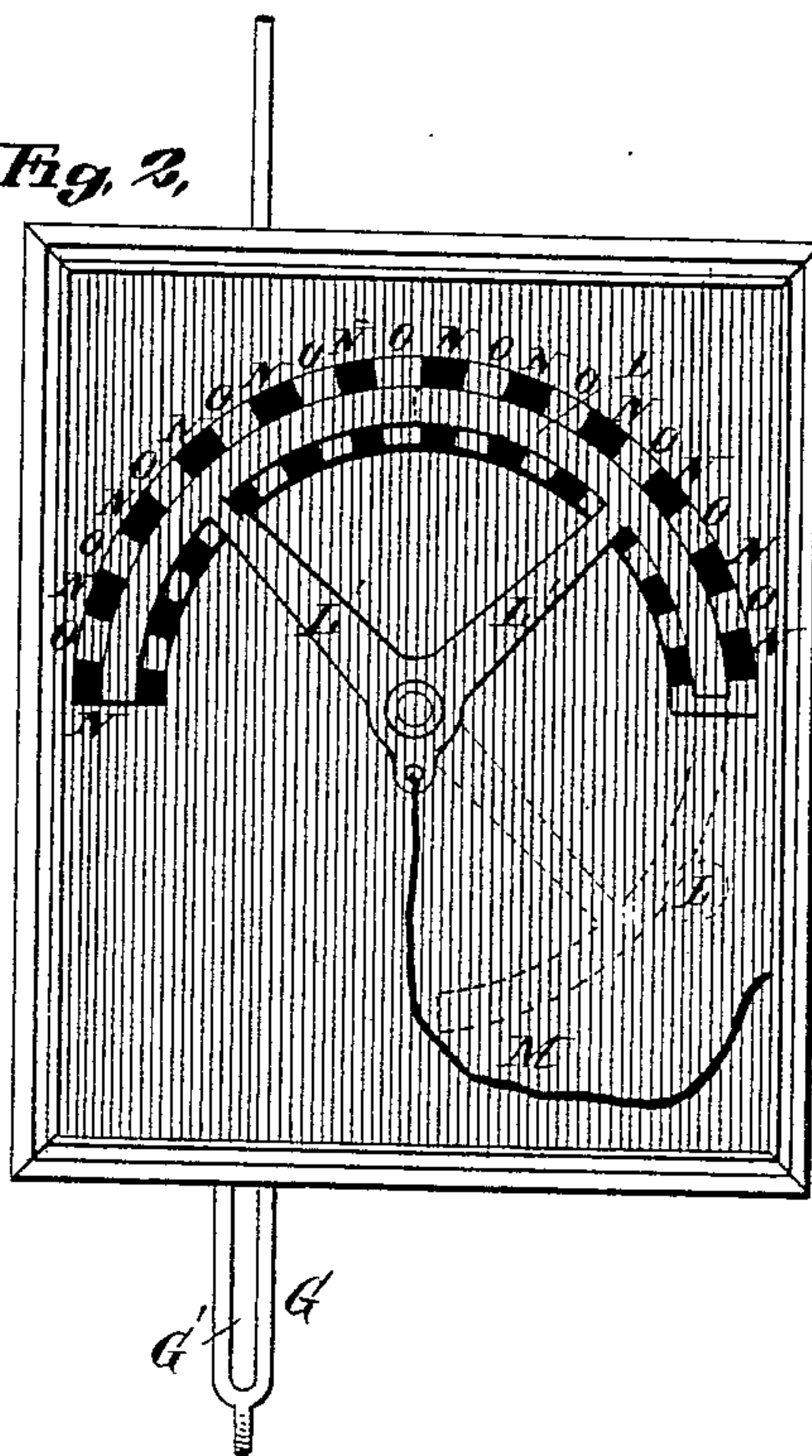


Fig. 6,

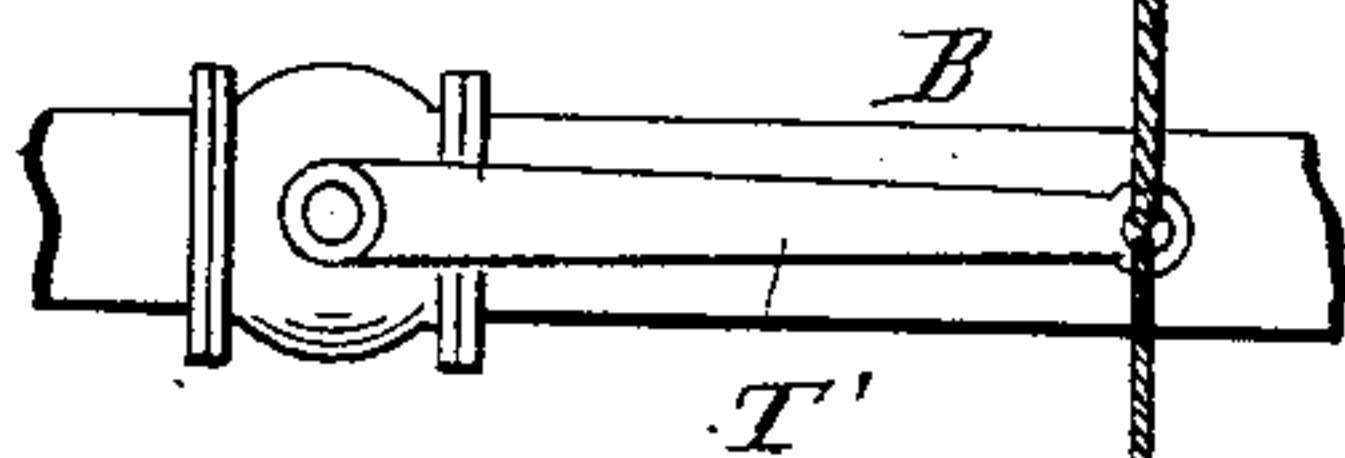
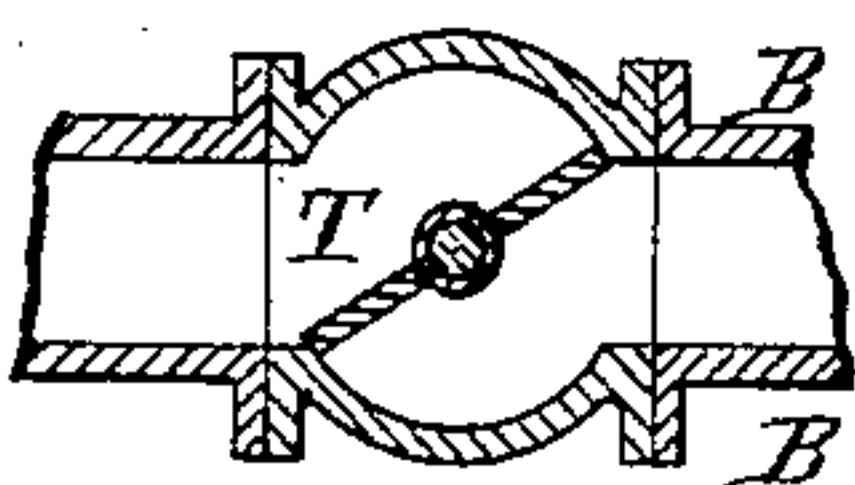


Fig. 4,

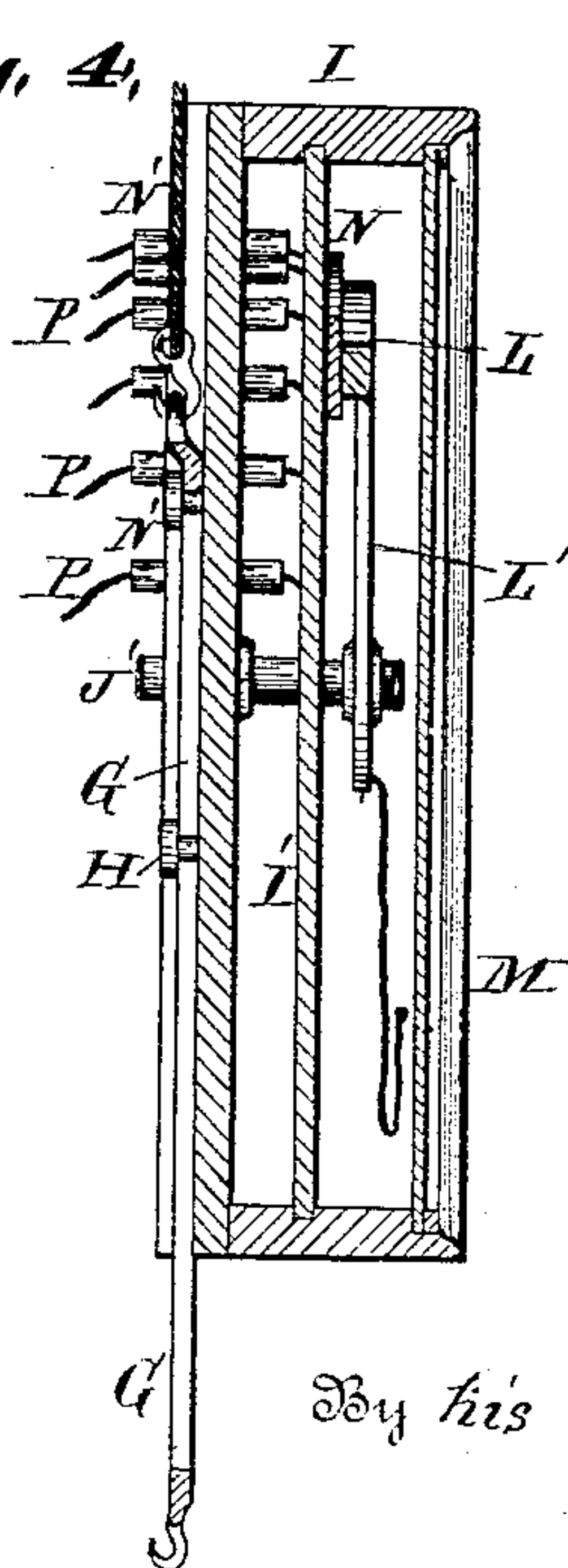
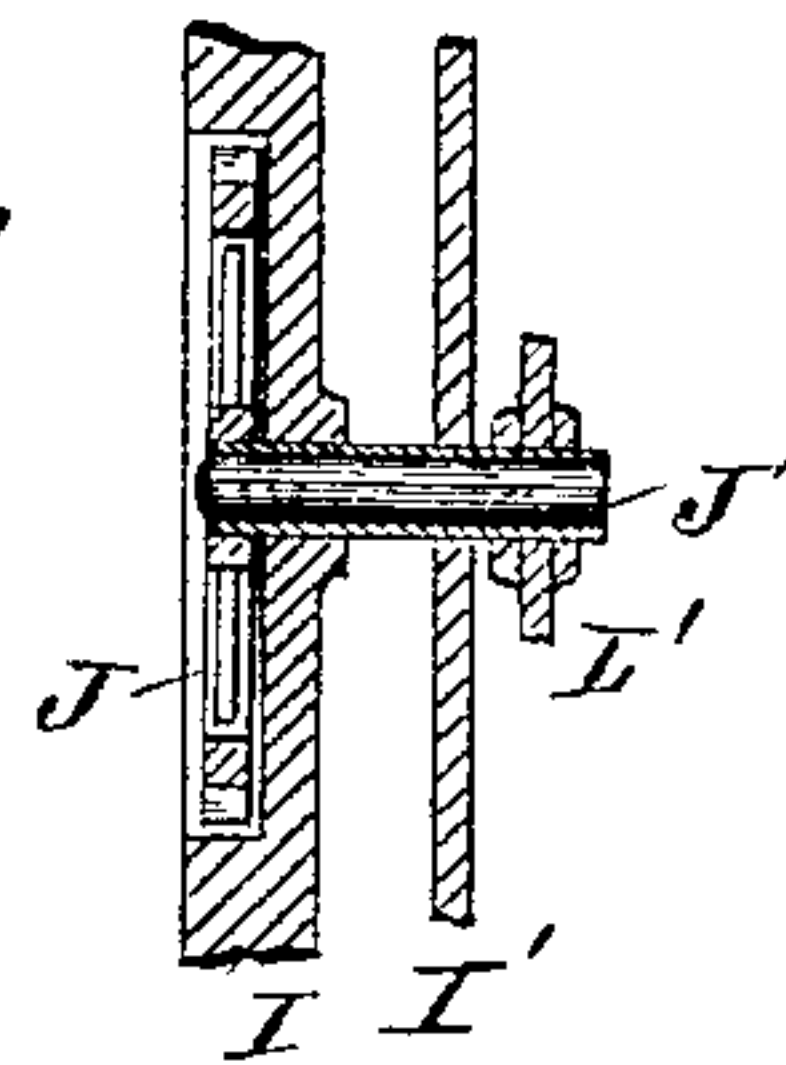


Fig. 5,



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UNITED STATES PATENT OFFICE.

DANIEL W. SMITH, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
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REGULATOR OR CUT-OFF FOR GENERATORS.

SPECIFICATION forming part of Letters Patent No. 393,590, dated November 27, 1888.

Application filed November 26, 1887. Serial No. 236,243. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. SMITH, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Regulators or Cut-Offs for Generators, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a front elevation of my improved regulator. Fig. 2 is a back view of the switch part of my regulator. Fig. 3 is a detail view taken on line 3 3, Fig. 1, showing only the front plate and the switch-boards. Fig. 4 is a vertical section taken on line 4 4, Fig. 1. Fig. 5 is a detail section taken on line 5 5, Fig. 1, and not showing the back plate of the casing. Fig. 6 is an enlarged detail section of the valve of the water-pipes.

My invention relates to an automatic regulator or cut-off intended more particularly for use in connection with steam-generators—as, for instance, like that shown in my application filed herewith, Serial No. 256,245.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the pipe A' of my application referred to, and B represents the water-pipe P' of that application, and as a means of illustrating the operation of this device I will describe it in connection with these pipes.

Supposing, now, that the steam-pressure in the pipe A is too high, a piston, C, located in a cylinder, C', on the pipe A, will be raised, lifting a lever, D, pivoted by a link, D', to the pipe A and connected by a rod, C², to the piston C. As the lever is raised to the position shown by dotted lines in Fig. 1, it lifts a rod, E, secured to its free end, compressing a spring, E', located between a nut or projection, E², on the rod and a guide-plate, F, through which the rod passes. The tendency of this spring is to hold the piston C down until it is raised by the high pressure of steam. Connected to the lower end of the rod E² is a rod, G, guided and held in a vertical position by pins H, passing through a slot, G', in the rack and con-

necting the rack to the front wall of the casing I of the electric switch. This rack meshes into a pinion, J, connected to and insulated from a shaft, J', upon which is secured by arms L' a switch-plate, L. Connected to these arms, or to the plate L, is a wire, M, leading to a dynamo or to any other electric supply. As the rack G ascends or rises, it turns the plate L from the position shown in full lines, Fig. 2, to the position shown in dotted lines.

N represents a number of contact-plates secured in a partition, I', located within the casing I, and between the plates there are placed insulators Q. With each one of the plates N connects one of the wires P, leading to or from the respective burners N' of my application referred to, these wires passing through and insulated from tubes N', supported in the front wall of the casing I. Now it will be seen that when the piston C rises and turns the plate L, as described, the plate will be removed from one or more of the plates N, according to the distance it is moved by the travel of the piston C, and when the plate L moves from one of these plates N it breaks the circuit of that burner, shutting off the heat from the boiler of that burner, and when the plate L turns back by the descent of the piston C the circuit is closed again. Thus it will be seen that the movement of the piston C by the increase of steam-pressure in the pipe A over and above the amount desired acts to close off one or more of the burners of the different heaters and regulates the amount of steam. Now, in order that the valve T of the water-pipe B may be regulated by the movement of the piston C, I connect to it a lever, T', secured to the lower end of the rack G by means of a cord or other connection, G², and as the rack ascends the valve, through its connection with the rack, is regulated, and as the rack descends the valve is moved accordingly by a weight, G³, secured to the lever T'.

This device affords a cheap means of cutting off and regulating the supply of heat of the respective boilers, thus controlling the amount of steam generated.

I claim as my invention—

1. In a cut-off for electric water-heaters, the combination of a piston, a switch, a lever con-

nected to the switch, and a connecting-rod between the piston and lever, constructed substantially as herein described.

2. In an automatic cut-off, the combination, 5 with plates to which the wires of electric heaters are to be connected, of a switch-plate in connection with said heater-plates and rack and pinion operated by a piston for moving said switch plate, substantially as and for the 10 purpose herein set forth.

3. In an automatic cut-off, in combination with the lamp-wires P, plates N, to which the lamp-wires are connected, switch plate L, secured to a pinion shaft, rack controlled by a

piston engaging said pinion, and valves connected to said rack, substantially as and for the purpose set forth. 15

4. In an automatic cut-off, the combination of the steam-pipe A, piston C, pivoted lever D, spring-rod E, rack G, valve T, connection 20 G², pinion J, shaft J', switch-plate L, connected to the shaft, and wires of electric burners, the whole being arranged and operating substantially as set forth.

DANIEL W. SMITH.

In presence of—

JOS. WAHLE,

EDWD. S. KNIGHT.