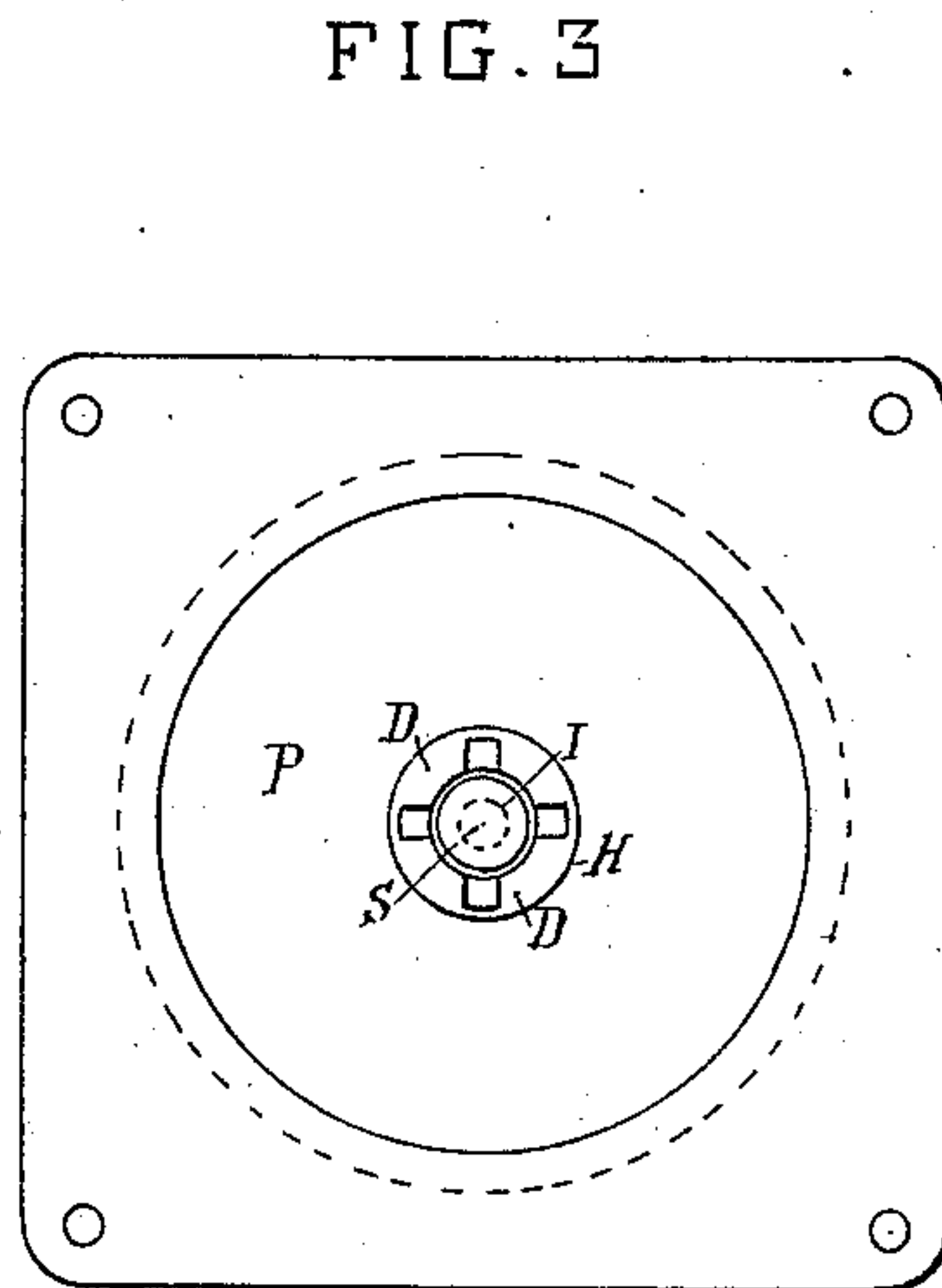
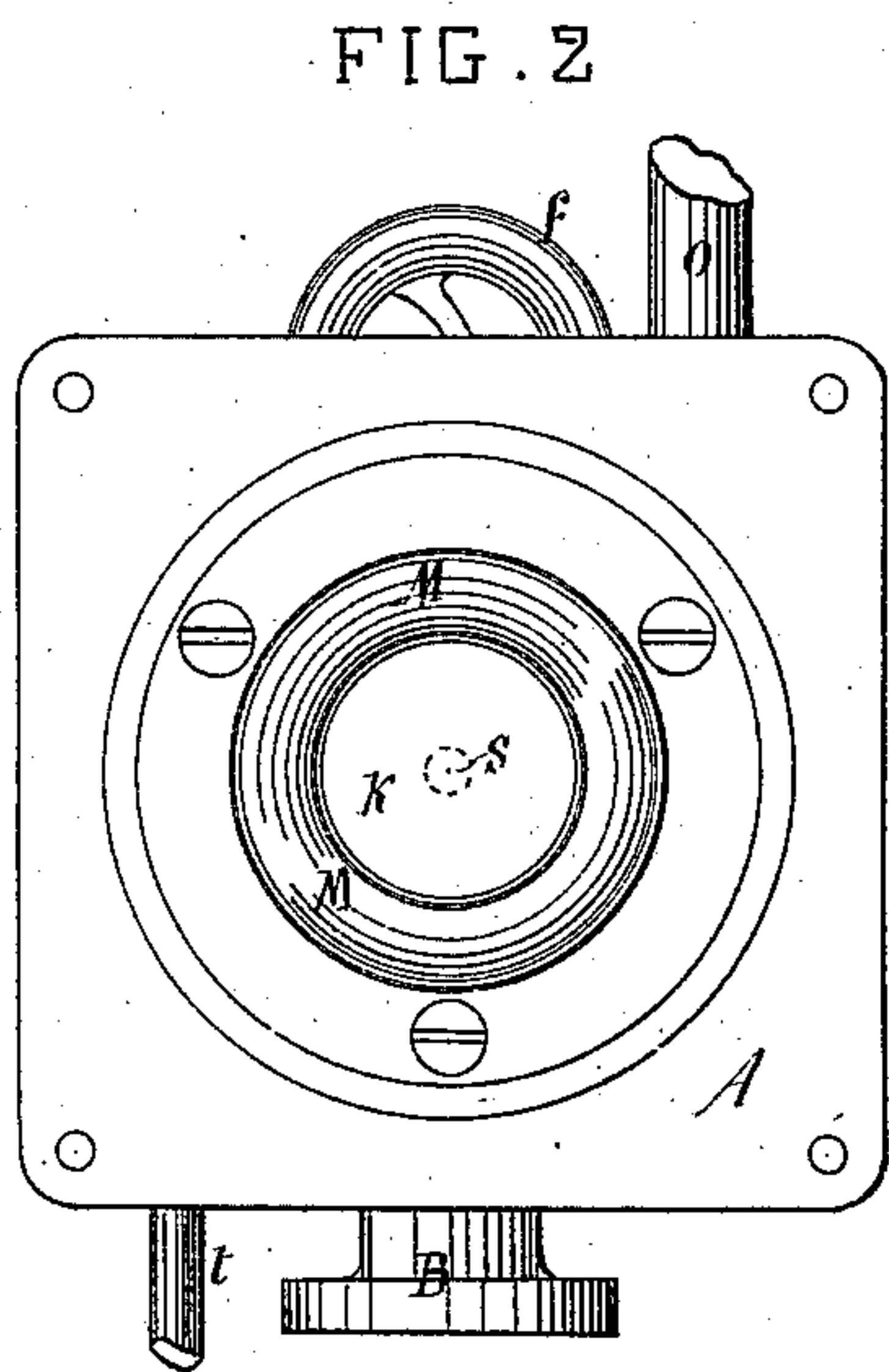
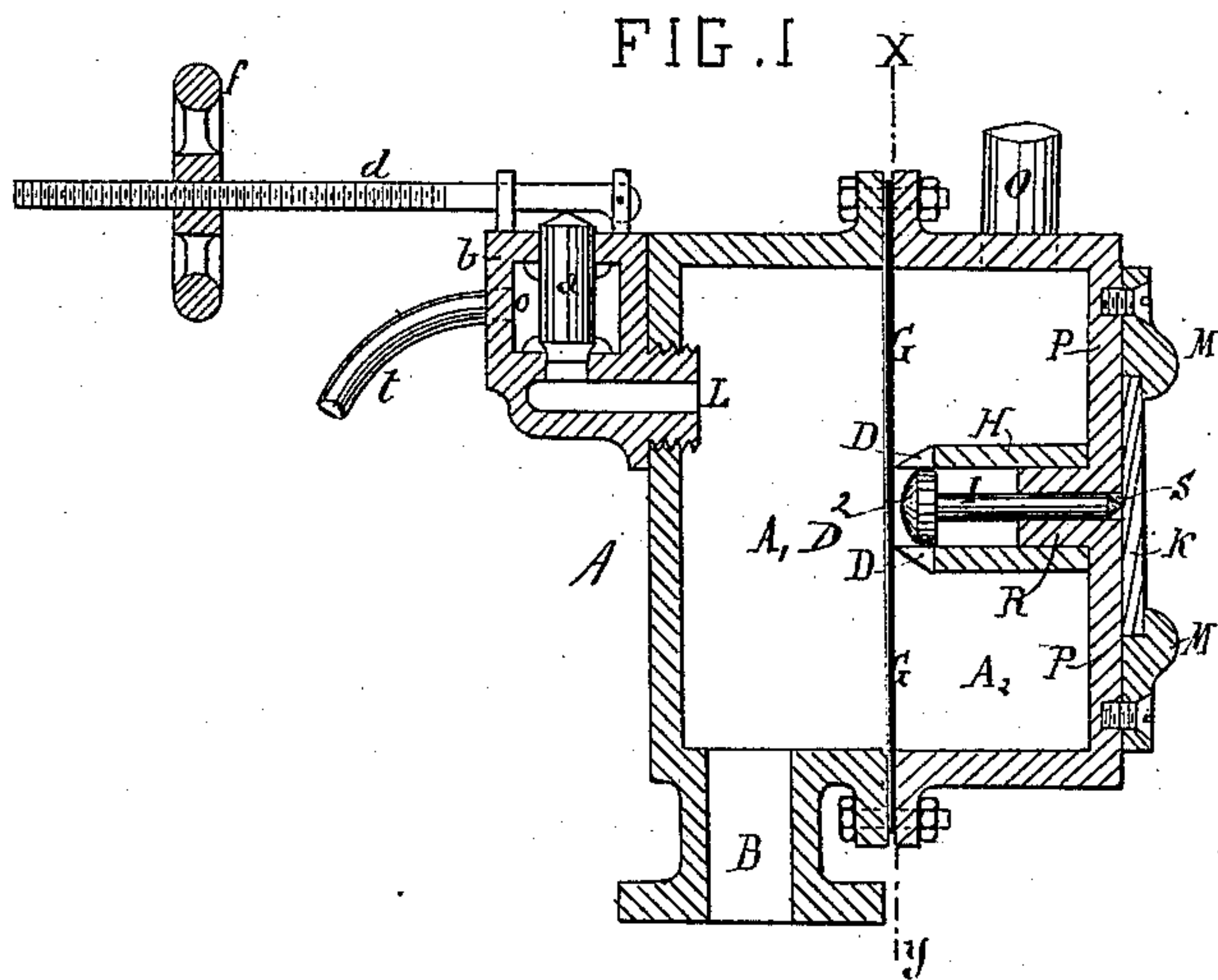


(No Model.)

E. BROUILLET.  
HIGH PRESSURE SIGNAL.

No. 362,420.

Patented May 3, 1887.



WITNESSES:

*F. H. Rosenbaum.*  
*Carl Karp*

INVENTOR:

*Emile Brouillet*  
By his Attorneys,  
*Goepels Paquien*

# UNITED STATES PATENT OFFICE.

EMILE BROUILLET, OF PARIS, FRANCE, ASSIGNOR TO THE SOCIETY DEVRIES & CO., OF SAME PLACE.

## HIGH-PRESSURE SIGNAL.

SPECIFICATION forming part of Letters Patent No. 362,420, dated May 3, 1887.

Application filed October 30, 1886. Serial No. 317,567. (No model.) Patented in France September 11, 1885, No. 171,131.

*To all whom it may concern:*

Be it known that I, EMILE BROUILLET, a citizen of France, of Paris, in the Republic of France, have invented certain new and useful  
5 Improvements in High-Pressure Signals, (for which Letters Patent were heretofore granted to me by the Government of France, dated September 11, 1885, No. 171,131,) of which the following is a specification.

10 This invention relates to improvements in devices for giving an alarm or signal when the pressure in a steam-boiler exceeds a certain pressure.

The invention consists in the combination,  
15 with a casing connected with the generator, of a safety-valve and alarm, such as a whistle and a diaphragm in said box, a sliding bolt operated by the diaphragm, and a pane of glass against which the bolt rests, which pane of  
20 glass is broken when the pressure exceeds the desired limit of pressure.

In the accompanying drawings, Figure 1 is a cross-sectional view of my improved high-pressure signal. Fig. 2 is a front view of the  
25 same. Fig. 3 is a sectional view on the line  $x$   $y$ , Fig. 1.

Similar letters of reference indicate corresponding parts.

The box A is provided with the neck B, by  
30 means of which it is fastened on the steam-generator. Said box is composed of two sections,  $A'$   $A^2$ , between which a diaphragm, G, is held, said diaphragm being composed of a sheet of copper or like material. By separating  
35 the box into the two compartments  $A'$   $A^2$ , by means of the diaphragm G, the compartment  $A^2$  is not, and the compartment  $A'$  is, in communication by means of the neck B with the generator.

40 The compartment  $A'$  is provided with a laterally-projecting neck, L, in communication with a chamber,  $b$ , containing a plunger,  $a$ , on which one end of a lever,  $d$ , rests, said lever  $d$  being screw-threaded and provided with a  
45 wheel,  $f$ , which acts as a weight. The box  $b$  is provided with a pipe,  $t$ , which may be connected with a whistle or like alarm.

The compartment  $A^2$ , which is not in communication with the generator, is provided at  
50 the upper part with an outlet-pipe, O. That

side P of the compartment  $A^2$  facing the plate G is provided with an aperture, S, around which the internally-projecting neck R is formed, on which neck R the tube H is held, which is provided at the end adjacent to the  
55 plate G with the beveled or pointed teeth D, the ends of which rest against the said plate G. A pin, I, or bolt is mounted to slide in the aperture S and in the bore of the neck R, its outer pointed end resting against a glass plate,  
60 K, held in the outer surface of the box A by a clamping-ring, M. On the opposite end of the pin I a piston or head,  $D^2$ , is formed, which is a very short distance from the surface of the plate G, and is guided by the tube H. 65

The operation is as follows: When the engineer leaves his engine-room, he adjusts the weight or wheel  $f$  in the proper position on the lever  $d$ , so that when the pressure in the boiler reaches a certain limit it raises the plunger  $a$   
70 and also the lever  $d$ , thus permitting the steam to escape through the pipe  $t$  and to sound the whistle or other alarm. If the pressure still increases and there is danger of an explosion in the generator, the pressure in the compartment  $A'$ , which is the same as that in the generator, gradually increases, as does also the  
75 pressure upon the diaphragm or plate G, whereby the pointed teeth of the tube H are forced through said plate, forming apertures  
80 which permit the steam to pass from the compartment  $A'$  to the compartment  $A^2$  and out through the pipe O. The plate G is also pressed against the head or piston  $D^2$  of the bolt or pin I, whereby the pointed end of the  
85 said bolt or pin is pressed against the glass pane K, which is broken. When the engineer or person in charge returns to the engine-room, he knows that the pressure has exceeded the given limit and the steam has been per-  
90 mitted to escape in the manner described.

The plate G must be of sufficient thickness that it will only bend at a certain pressure, and it is thus evident that different plates G must be used for different pressures. 95

The apparatus is very reliable and safe and in all cases prevents explosions.

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

1. In a high-pressure signal, the combina- 100



tion, with a casing, of a metal diaphragm in the same and fixed pointed teeth in said frame, substantially as shown and described.

2. In a high-pressure signal, the combination, with a casing, of a sheet-metal diaphragm in the same, a sliding bolt having one end adjacent to said diaphragm, and a fixed glass plate resting against the other end of the bolt, substantially as shown and described.

3. In a high-pressure signal, the combination, with a casing connected with the steam-generator, of a sheet-metal diaphragm in the same, which divides the casing into two compartments, pointed teeth adjacent to the diaphragm in one compartment, and an outlet-pipe connected with the said compartment, the other compartment being connected with the boiler, substantially as shown and described.

4. In a high-pressure alarm, the combination, with a casing connected with the boiler, of a sheet-metal diaphragm dividing the casing into two compartments, a tube having pointed teeth adjacent to one side of the diaphragm in one compartment, which is not con-

nected with the boiler, a sliding pin having a head within the toothed tube, a glass plate held in the side of the compartment, against which glass plate the pin rests, and an outlet-pipe for the compartment not connected with the boiler, substantially as shown and described.

5. In a high-pressure alarm, the combination, with a casing connected with the generator, of a diaphragm in said casing, which diaphragm divides the casing into two compartments, the outlet-pipe O, the tube H, having pointed teeth, the sliding bolt I, glass plate K, the tube L, the chamber *b*, the plug *a*, the weighted lever *d*, and the outlet-pipe *t*, substantially as shown and described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

EMILE BROUILLET.

Witnesses:

CH. MATHIEU CHARLES,  
ROBT. M. HOOPER.