

J. W. HARKOM.

VALVE.

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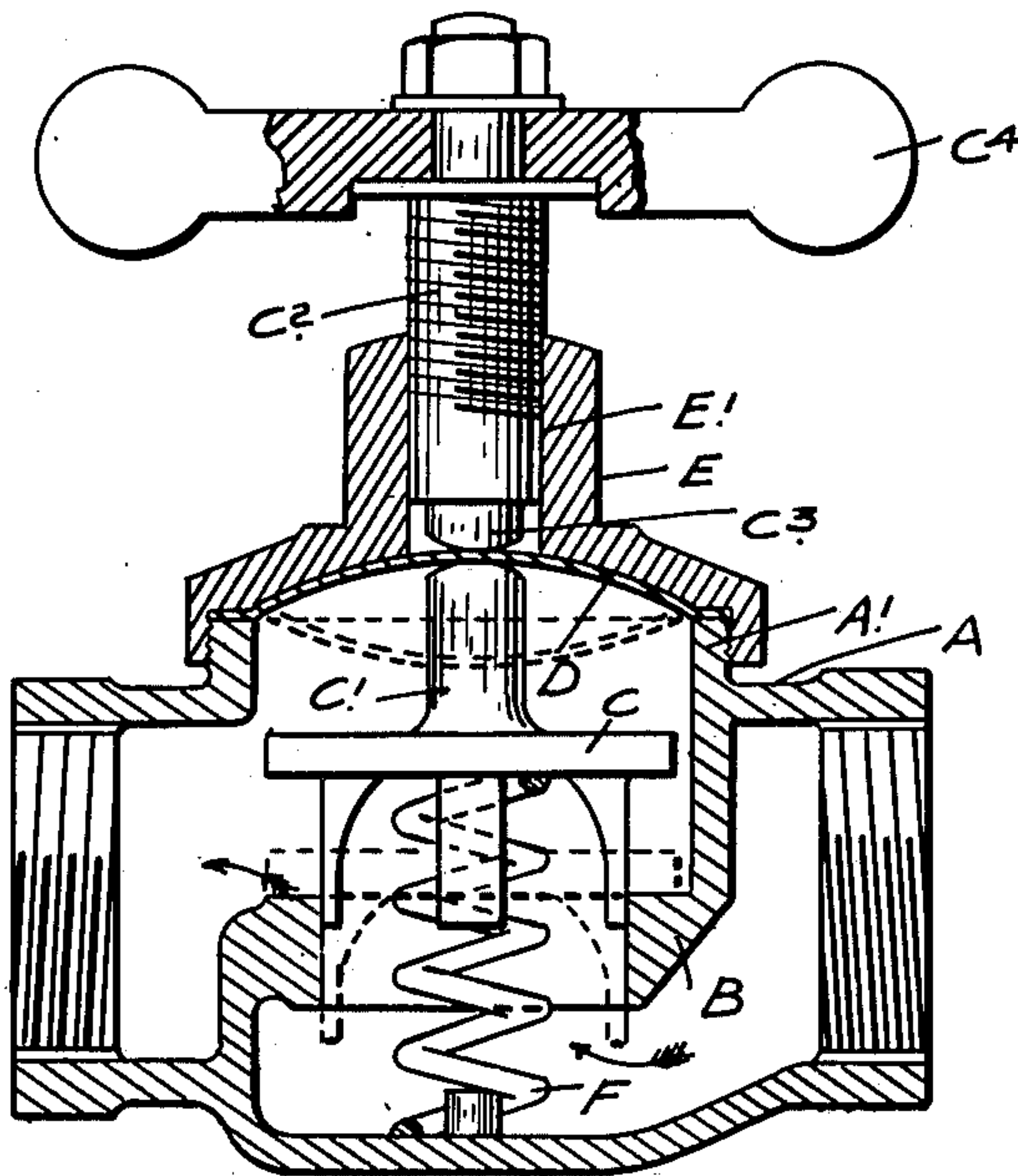


FIG. 1.

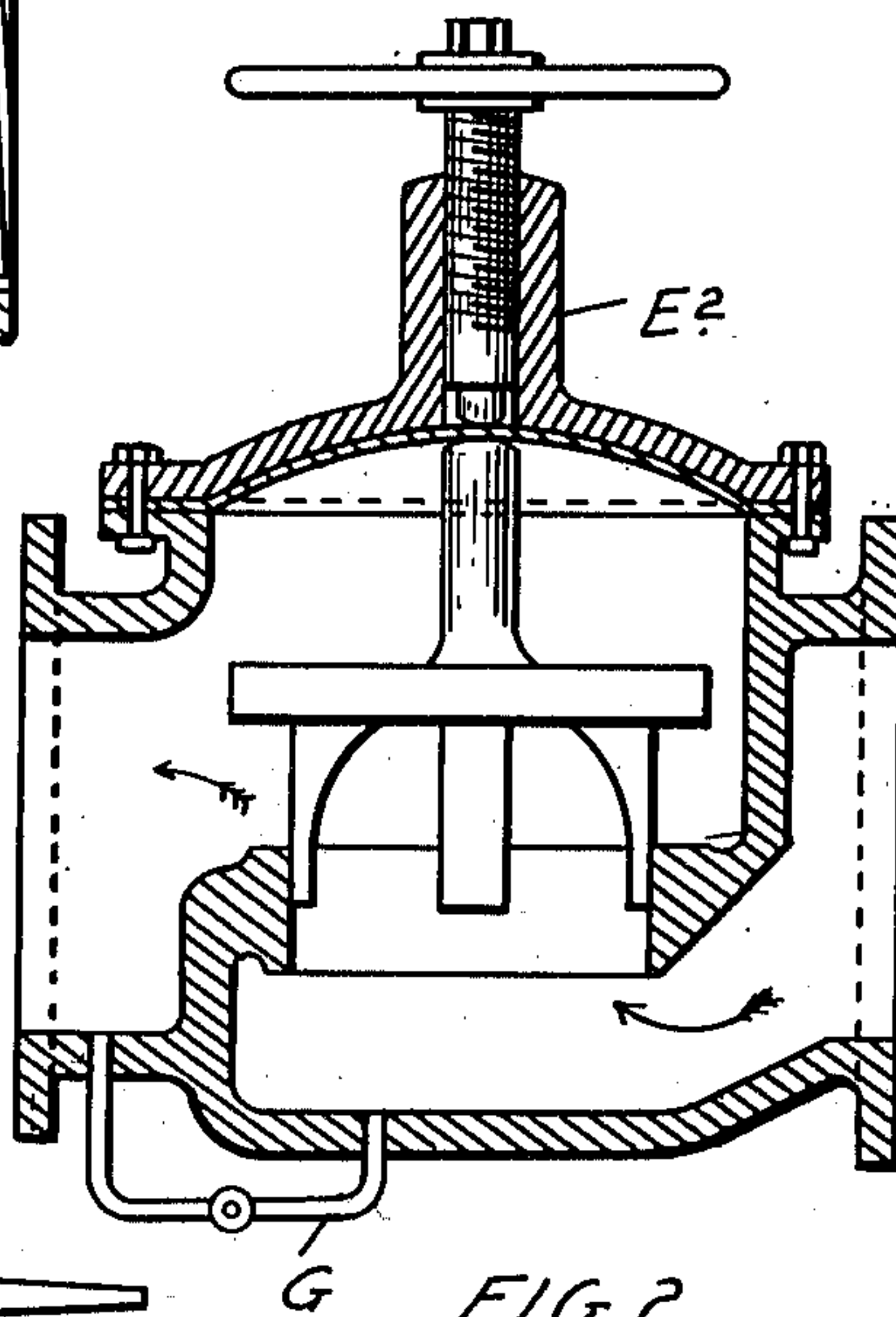


FIG. 2.

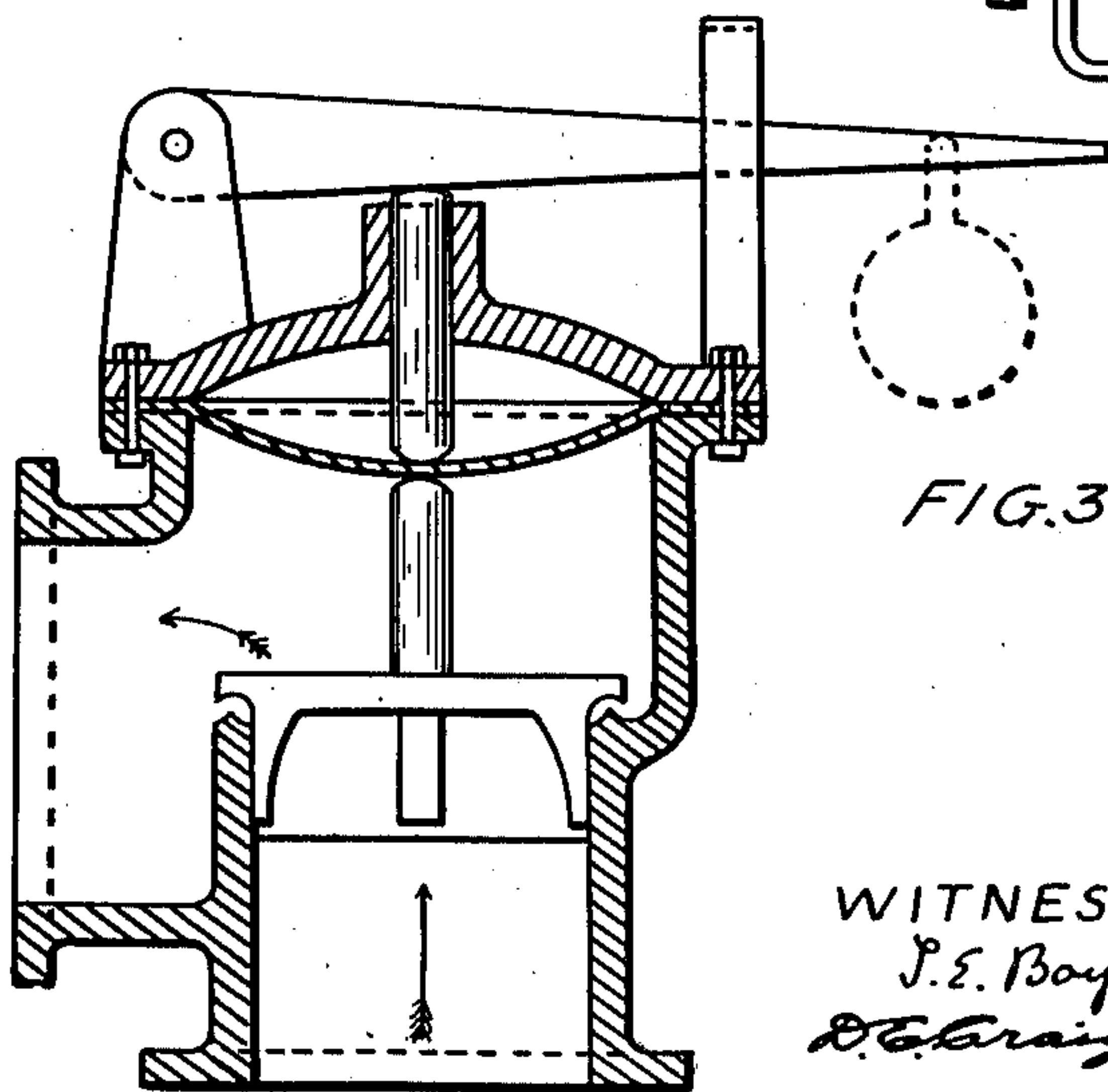


FIG. 3.

WITNESSES:

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VALVE.

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To all whom it may concern:

Be it known that I, JOHN WILLIAM HARKOM, of the village of Melbourne, in the county of Richmond, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Valves, of which the following is the specification.

My invention relates to improvements in valves, and the object of the invention is to devise a means, whereby an ordinary valve, such as a globe valve or angle valve may be insured of being rendered fluid tight when manufactured, and of remaining so during continued use.

Further objects are to dispense with the use of glands and packing, and prevent loss of pressure, and annoyance consequent on leakage.

My invention consists of a diaphragm located at the top of the valve casing beneath the flange of the cap and the top edge of the flange of the casing, which the cap surrounds, and a divided valve stem both portions of which abut the diaphragm one at each side thereof, the lower portion carrying the valve proper and the upper portion having thereon the operating handle or device, the parts being otherwise arranged and constructed as hereinafter more particularly explained.

Figure 1, is a sectional view of an ordinary globe valve. Fig. 2, is a diminutive view of a large style of globe valve in section. Fig. 3, is a view of a safety valve in section.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the valve casing, B the valve seat, C the valve, and C' the stem thereof, which is a short stem as indicated and is provided with a convex top.

D is a diaphragm preferably made dished and formed of copper or bronze, or other suitable metal having resilient qualities and capable of yielding under pressure. The diaphragm D fits at the edge on the top edge of the upwardly projecting flange A' of the casing.

E is a screw top or cap having the central threaded orifice E'.

C² is a screw spindle or stem having a convex bottom C³. The screw stem is provided with the usual handle C⁴.

As is usual in such valves I provide a supporting spring F for the valve C, which

under ordinary circumstances is only used for low pressures, such as for heating, where it is necessary to empty the pipes above the valve. For boiler pressure it is not necessary to use such a spring. The diaphragm D is shown in the drawing exaggerated for the purpose of more fully explaining its functions.

In Fig. 2, I show another form of globe valve in which the cap E² is bolted to the valve casing through flanges. The diaphragm is shown in this figure also to show its applicability. In this form also I show a by-pass G, which may be used for the purpose of draining the pipe and valve.

In Fig. 3, I show my device applied to an ordinary safety valve from which the escaping steam may be confined within connecting pipes and conducted outside of the building.

In all the forms the diaphragm is shown in an analogous position.

The operation of the valve is apparent. In order to close the valve the stem is screwed downwardly by operating the handle. The pressure behind the valve, be it spring or other pressure, serves to open the valve again. The diaphragm hereinbefore described serves to keep the valve casing steam tight.

It will be noticed in my invention the valve stem is shown divided, but it will be understood that various changes may be made in relation to the valve stem and form of diaphragm without departing from the spirit of my invention.

From this description it will be seen that the use of glands and packing are dispensed with preventing the loss of pressure or escape from the valve of the escaping steam or fluid. The valve is simplified and reduced both in weight of material and the amount of labor is also reduced to a minimum. It will also be seen that my diaphragm being formed up of metal in a dished form, that is to say, with the dished form permanent, is then in such a condition as to produce a yielding resilient action. It will be seen from this form, that it may be readily moved up and down without requiring any elasticity in the material itself, although, of course, from the form resiliency is inherent. It may also be stated, as will be readily seen, that my diaphragm is imperforate, and it is not fastened to the stem or valve in

any way by screws or any other means, and consequently there is no liability whatever to leakage therethrough.

What I claim as my invention is:

5 In a high pressure steam and temperature valve, the combination with the valve casing having a valve inserting orifice and provided with a flange and the cap fitting thereon, of a yielding metallic resilient imper-
10 forated diaphragm having the edge held between the cap and the flange and normally

dished shaped and capable of being moved up and down, and the valve having a divided valve stem between the two portions of which the diaphragm is interposed, the said diaphragm being designed to be pressed
15 downwardly to hold the valve closed, as and for the purpose specified.

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Witnesses:

B. BOYD,
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