

H. Vesper's Steam Engines.

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PATENTED AUG 1 1871

FIG. 2.

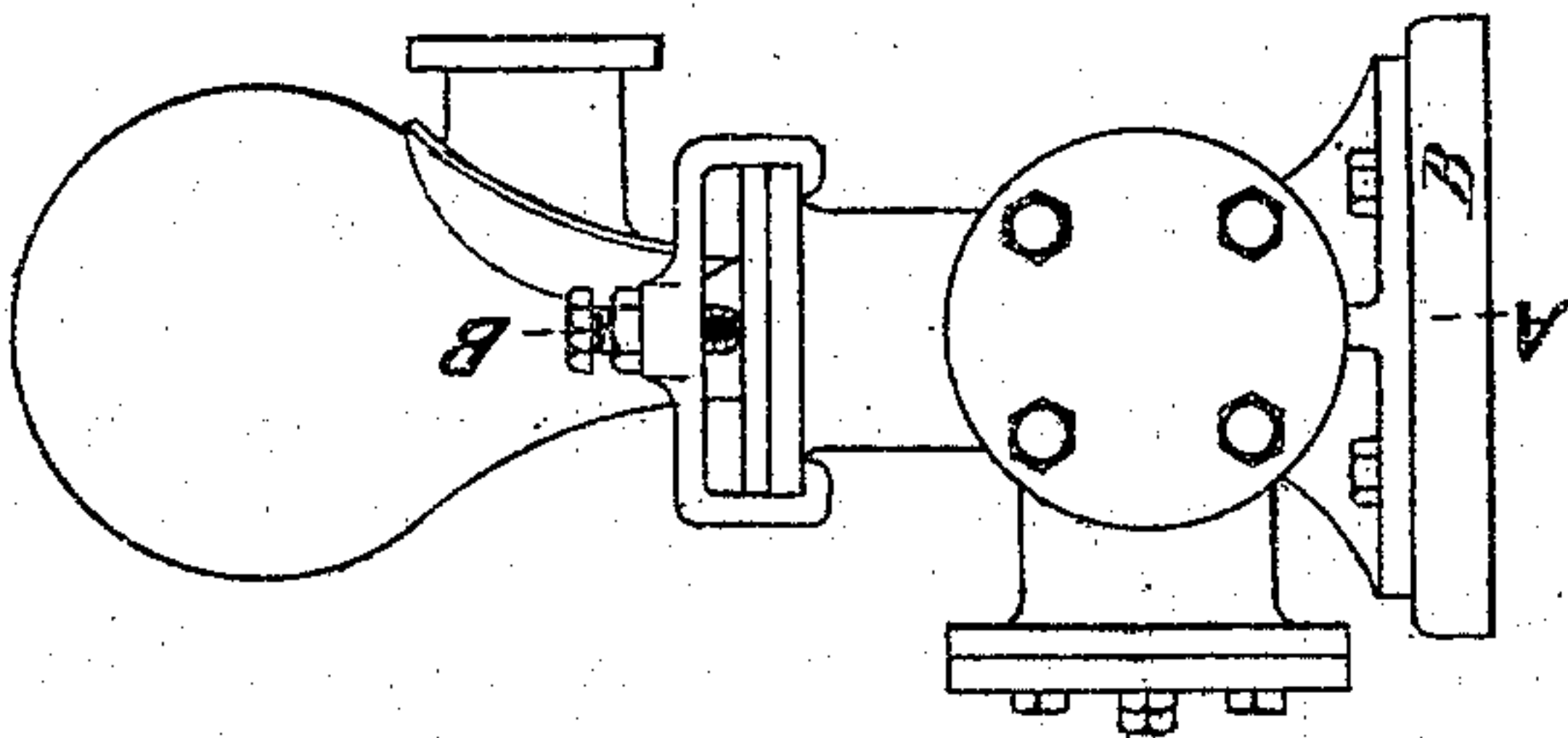


FIG. 4.

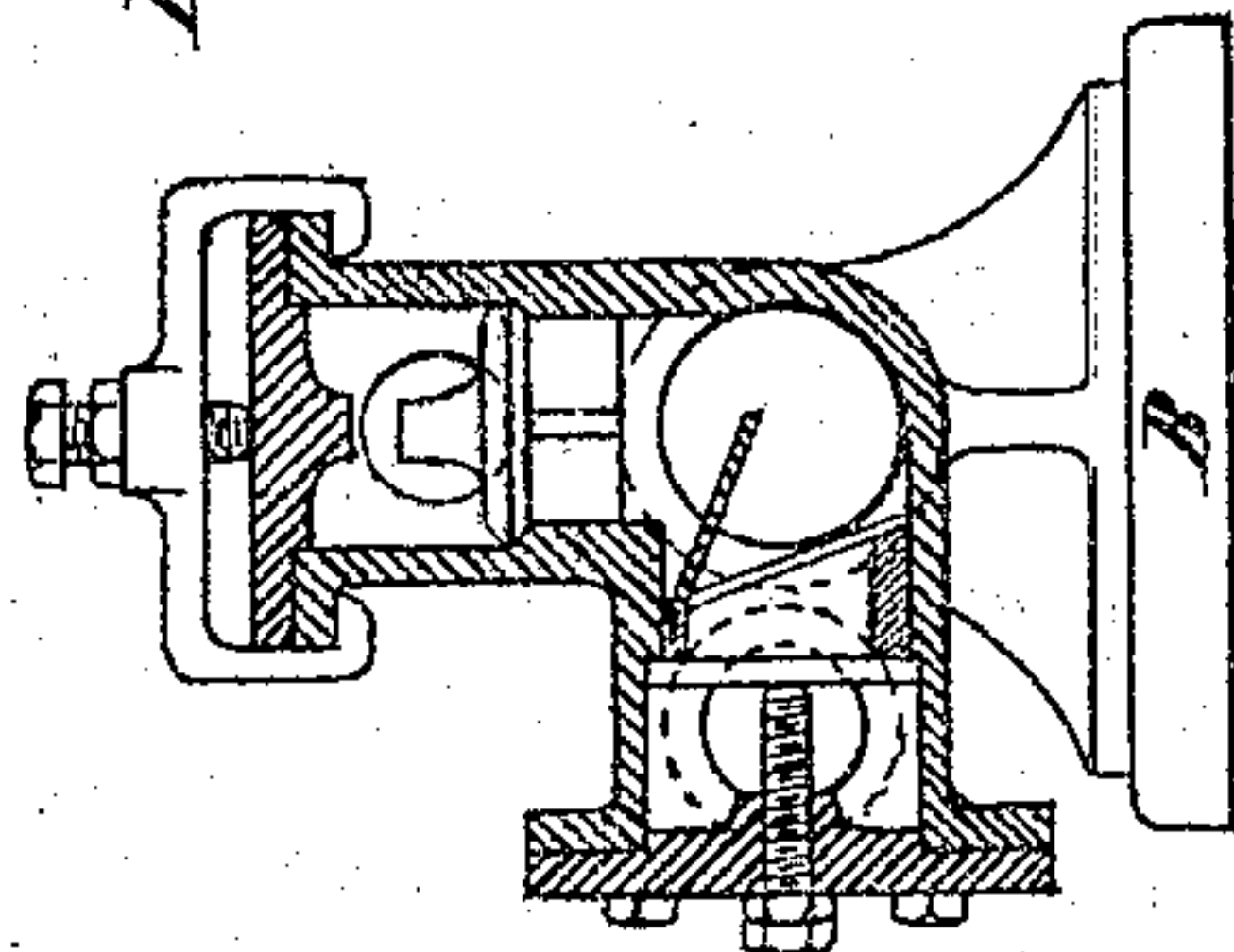


FIG. 1.

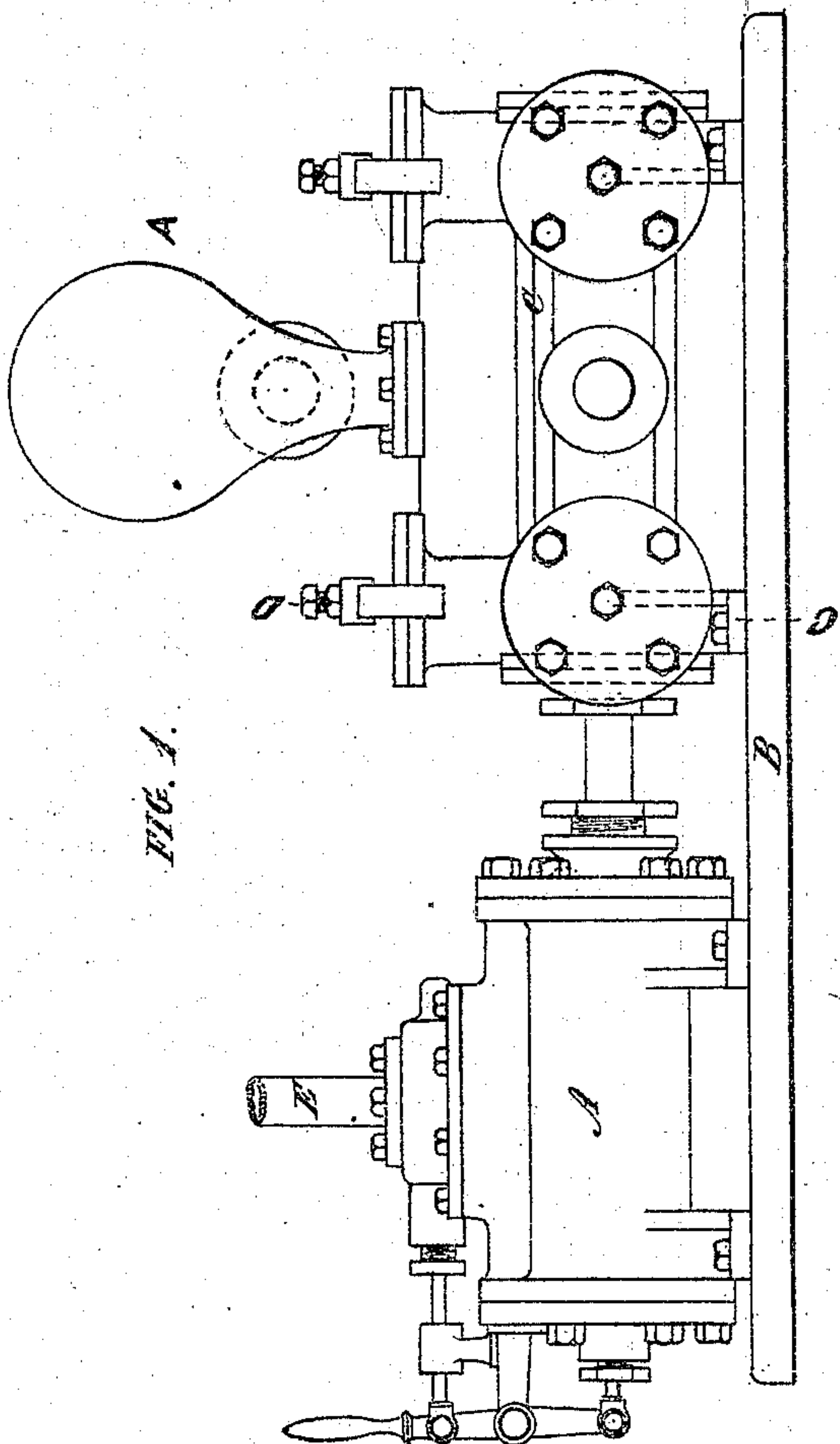
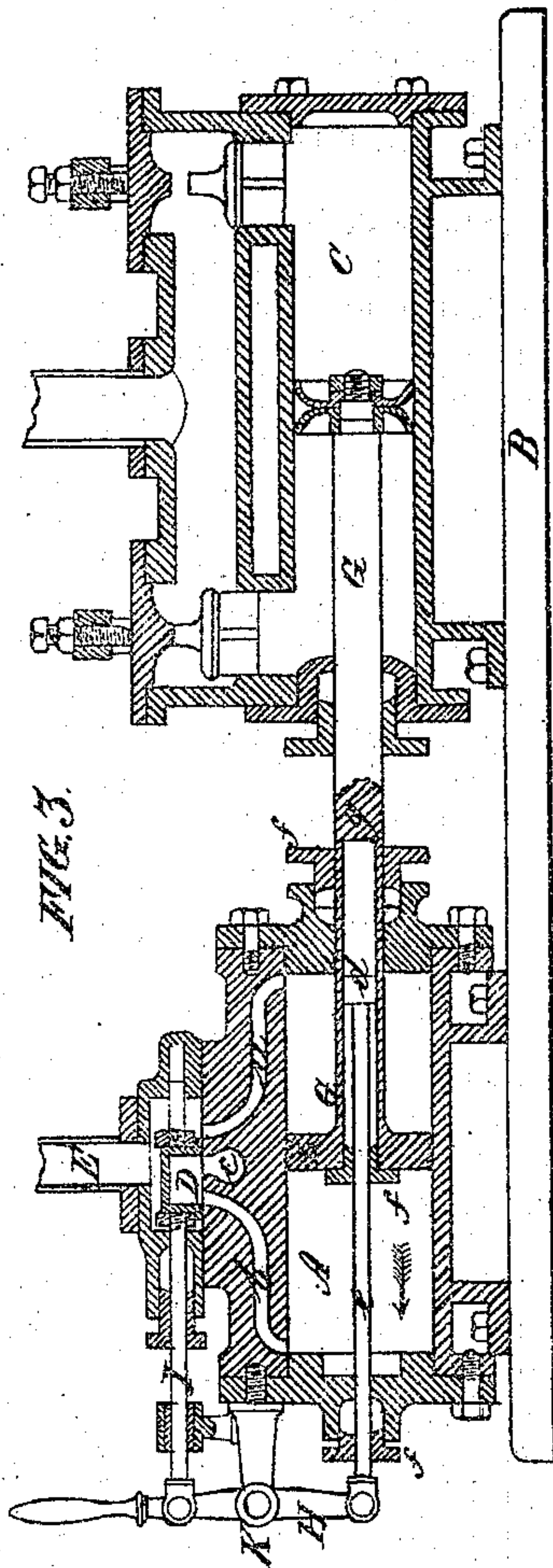


FIG. 3.



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UNITED STATES PATENT OFFICE.

HERBERT VOSPER, OF SOUTHSEA, ENGLAND.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 117,701, dated August 1, 1871.

To all whom it may concern:

Be it known that I, HERBERT VOSPER, of Southsea, in the county of Hampshire, England, Engineer, have invented Improvements in Direct-Acting Steam-Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The object of my improvements is to simplify the construction of the direct-acting steam-engine, whereby the full force of the steam is applied until the piston has nearly completed its stroke. To carry out my invention the slide-valve is actuated by means of a lever, one arm of which is suitably jointed to the rod of the slide-valve, and the other arm is connected to a rod working in the piston-rod of the engine, made hollow through a great part of its length for that purpose. The lever moves on a center or fulcrum on a bearing attached to a suitable part of the engine. At the upper end of the rod, in the hollow piston-rod, is fixed a collar, and when the piston of the engine arrives at nearly the end of its stroke it strikes against this collar, carrying it forward a short distance and with it the rod fixed to one end of the aforesaid lever, which thus moves on its center, and consequently moves the slide-valve by means of its rod, so as to cut off the steam from one port and open the other port, through which the steam now enters, driving back the piston; and the solid portion of its rod, in returning, strikes against the said collar and moves the valve in the opposite direction to that hereinbefore described, thus keeping up the motion of the engine. The hollow piston-rod is provided with suitable buffers. I employ an ordinary cylinder-piston and slide-valve. My improvements are applicable to ordinary existing engines.

Figure 1 represents a side elevation of my improvements in direct-acting steam-engines, shown applied to a pumping-engine. Fig. 2 is an end elevation of Fig. 1 at the end marked A. Fig. 3 is a longitudinal and vertical section through the line A B at Fig. 2; Fig. 4, a transverse section through the line C D at Fig. 1.

At each of the above figures similar letters of reference are employed to denote corresponding parts.

A marks a steam-cylinder fixed horizontally on a bed-plate, B, and connected to another cylinder, C, for pumping; D, slide-valve. *a b* are the ports or passages for the admission of steam into the cylinder in the usual way; E, steam-pipe leading from a steam-boiler; *e*, eduction-passage. G marks a piston-rod, made hollow for a portion of its length and fitted with a collar, *d*, connected by a rod, *e*, to one end of a lever, H. *f f* are steam-tight packings. I is another rod, also connected to the lever H and slide-valve D. K is the fulcrum of the lever H. L is a piston, fixed on the piston-rod G, and packed in the usual way, so as to work steam-tight in the cylinder A. According to the position of the slide-valve at Fig. 3 the steam would enter the port *a* and move the piston in the direction denoted by the arrow's flight, and when the solid part *g* of the piston-rod G comes into contact with the collar *d* it will push the collar forward, and, through the medium of the lever H, move the slide-valve D in an opposite direction, thereby cutting off the steam from the port *a* and opening the port *b*. A reverse action of the piston G will, when the piston is near the end of its stroke, cause the collar *d* to be pushed back, and thus change the position of the slide-valve so as respectively to cover and uncover the ports for the admission and emission of steam at the proper times.

It will appear obvious that the piston-rod G, instead of being connected to a pumping-engine, as shown, might be connected to a crank for imparting rotatory motion to machinery.

What I claim as my invention, and desire to secure by Letters Patent, is—

The hollow piston G and its stuffing-box with the piston and rod *d* and *e*, lever H, and rod I, whereby the motion of the main piston is made to operate the valve D, substantially as described.

HERBERT VOSPER.

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