

H. A. JAMIESON.

Valves for Direct-Acting Engines.

No. 148,462.

Patented March 10, 1874.

Fig. 5.

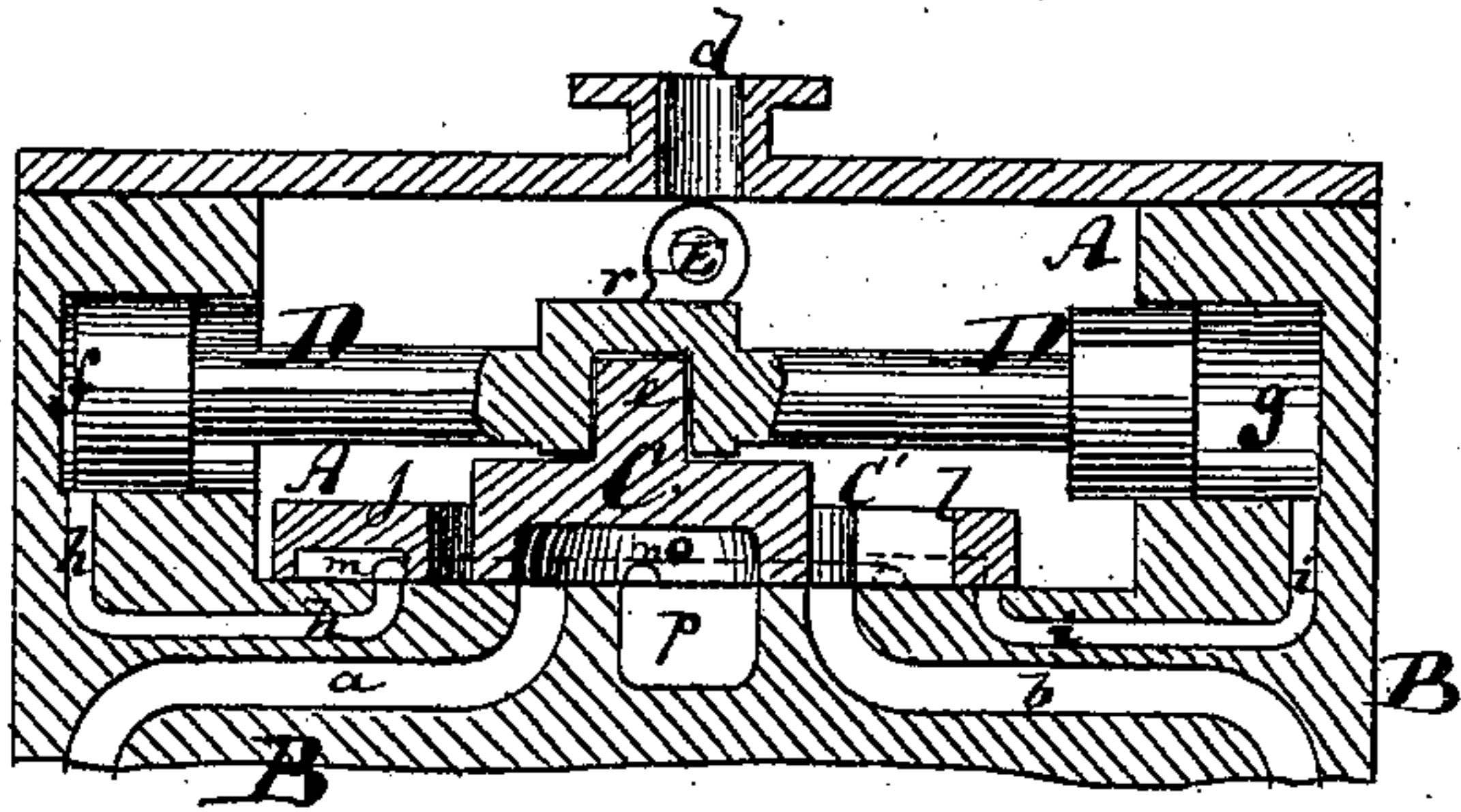


Fig. 4.

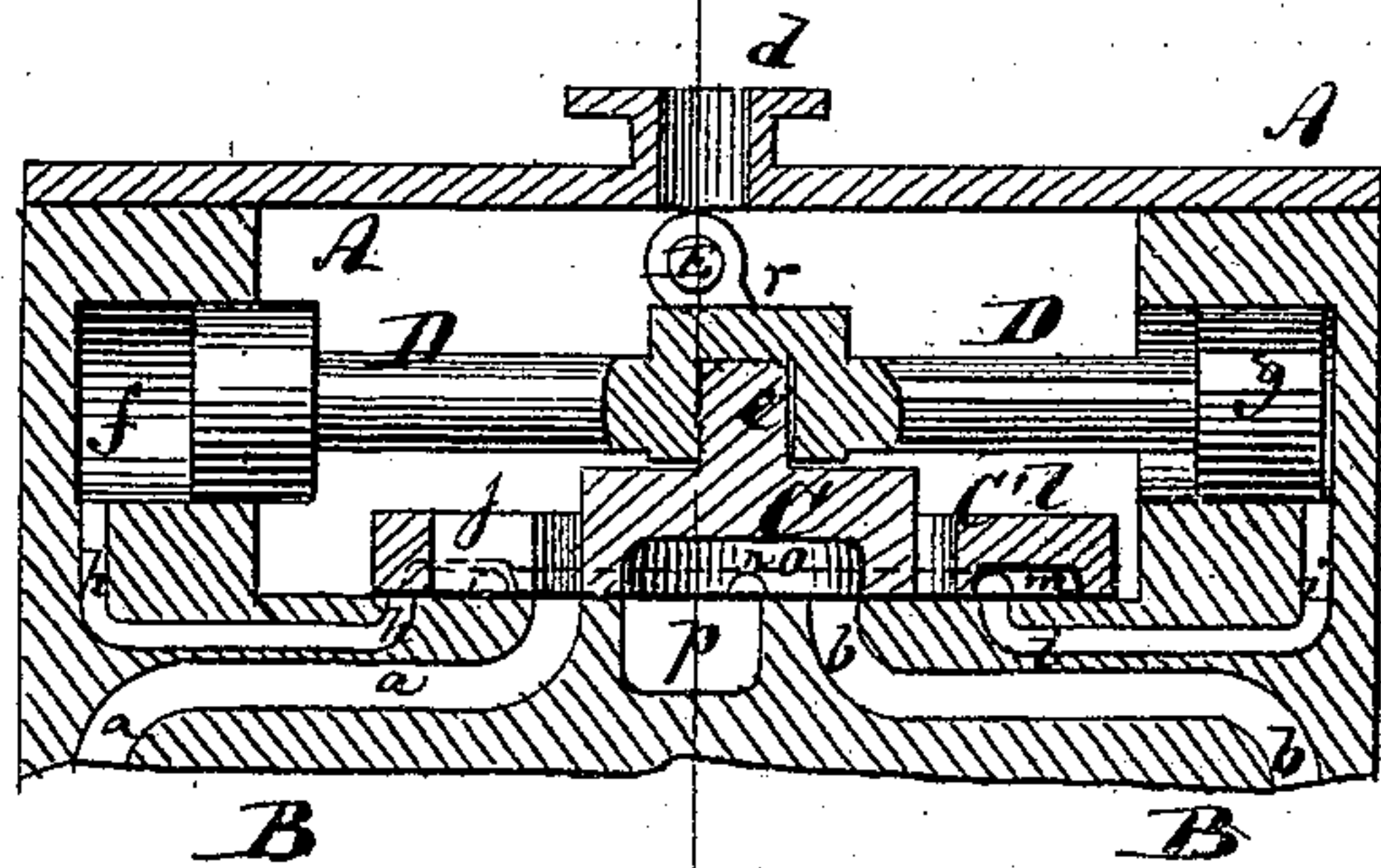


Fig. 3.

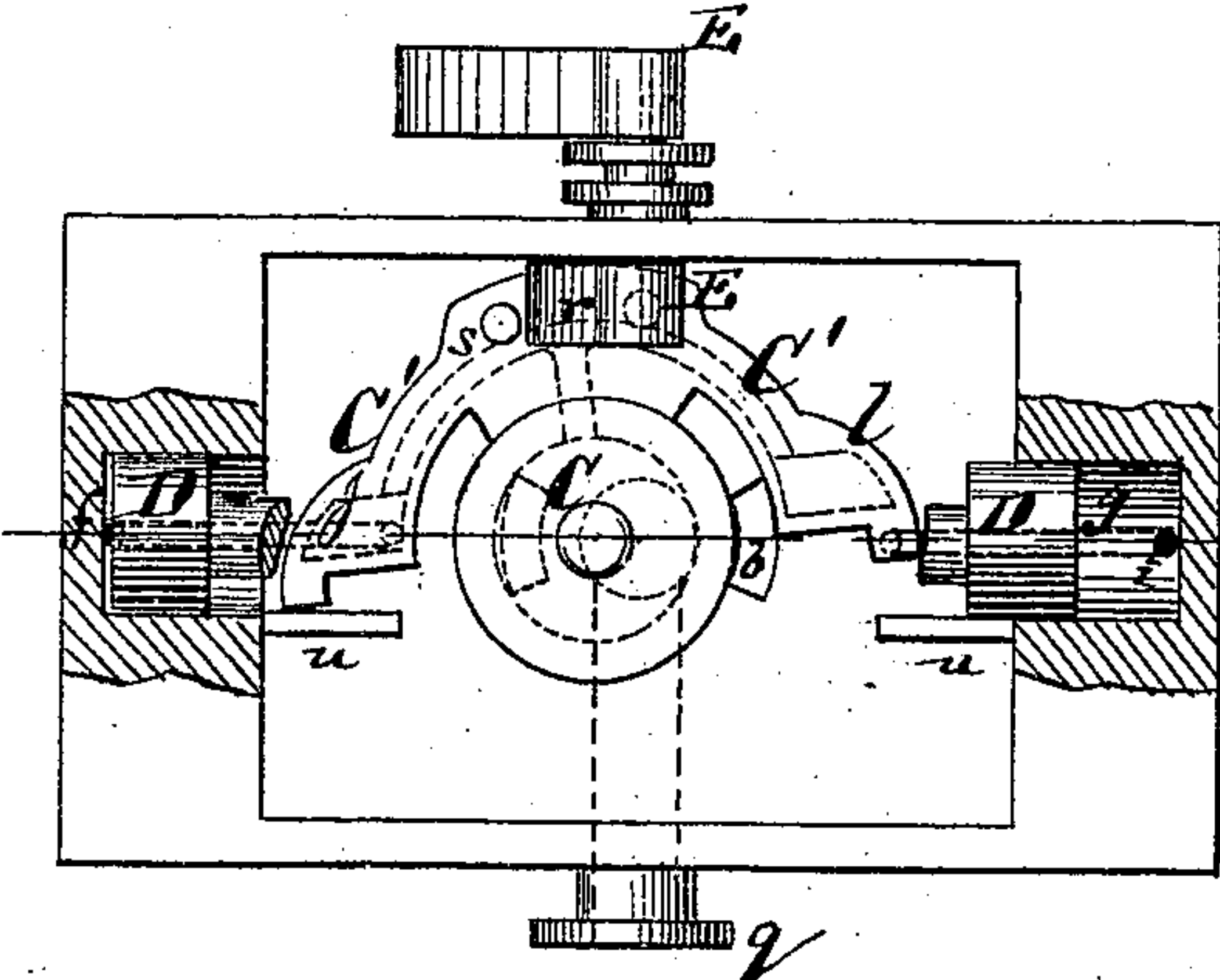


Fig. 1.

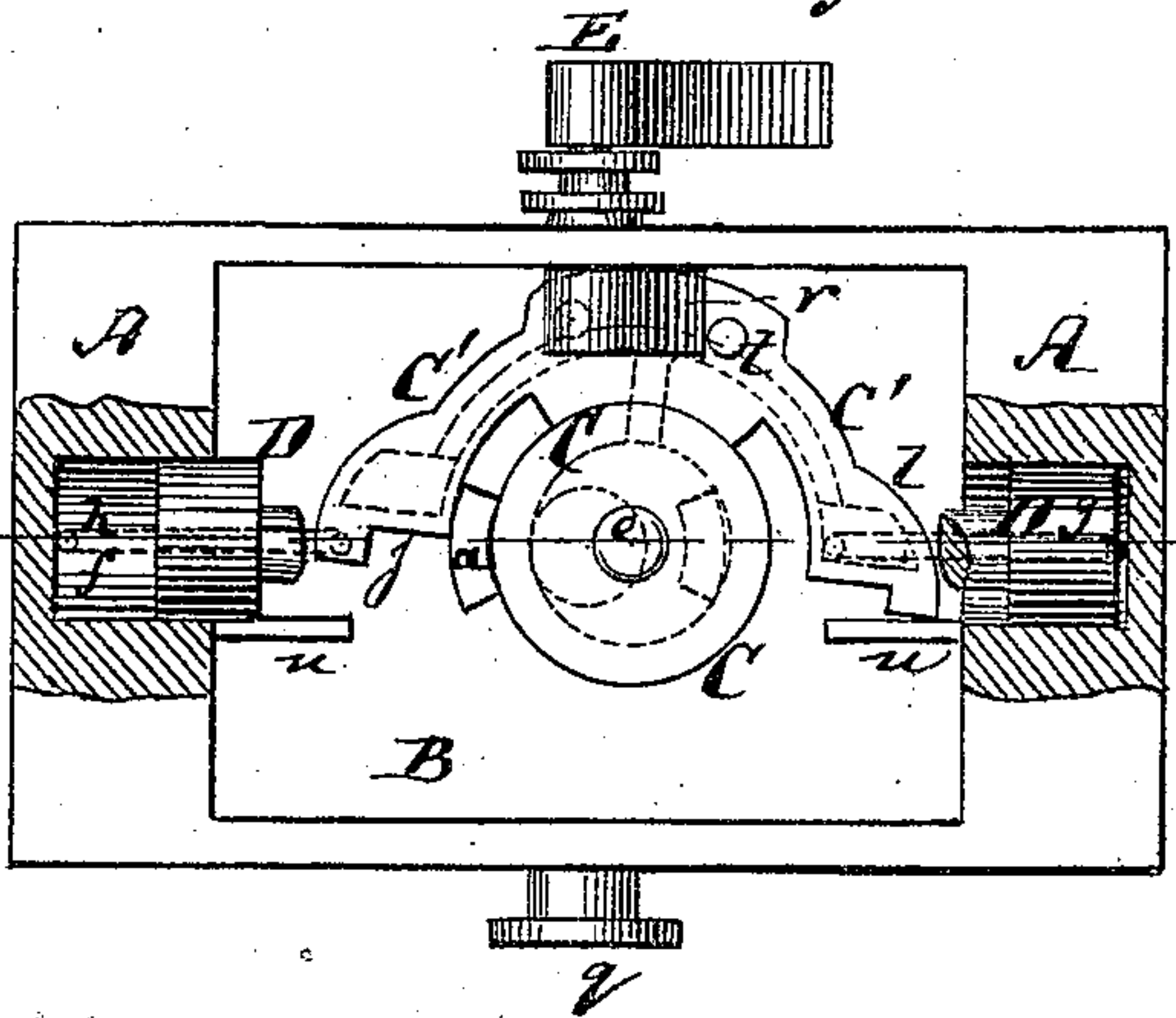


Fig. 2.

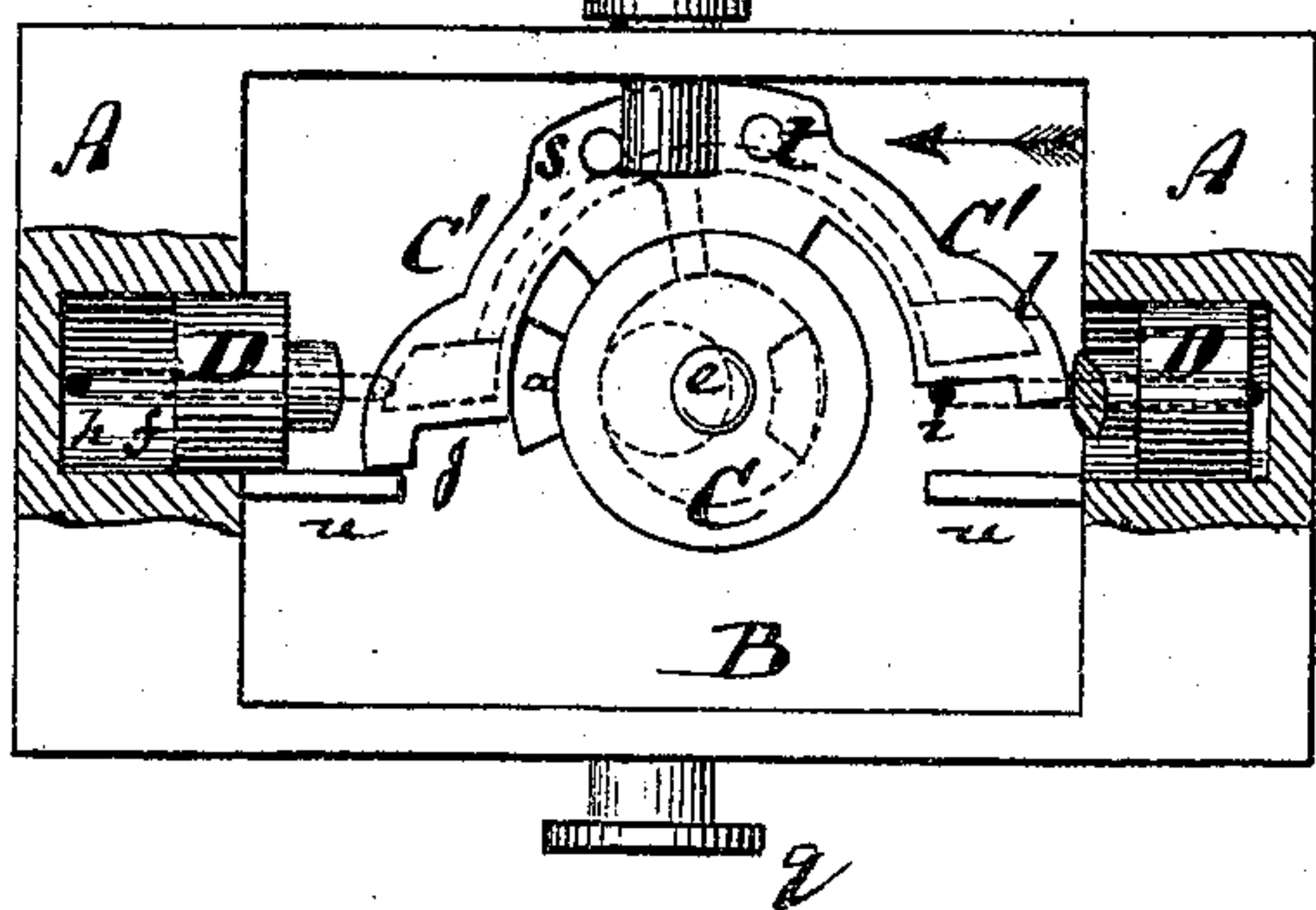


Fig. 6.

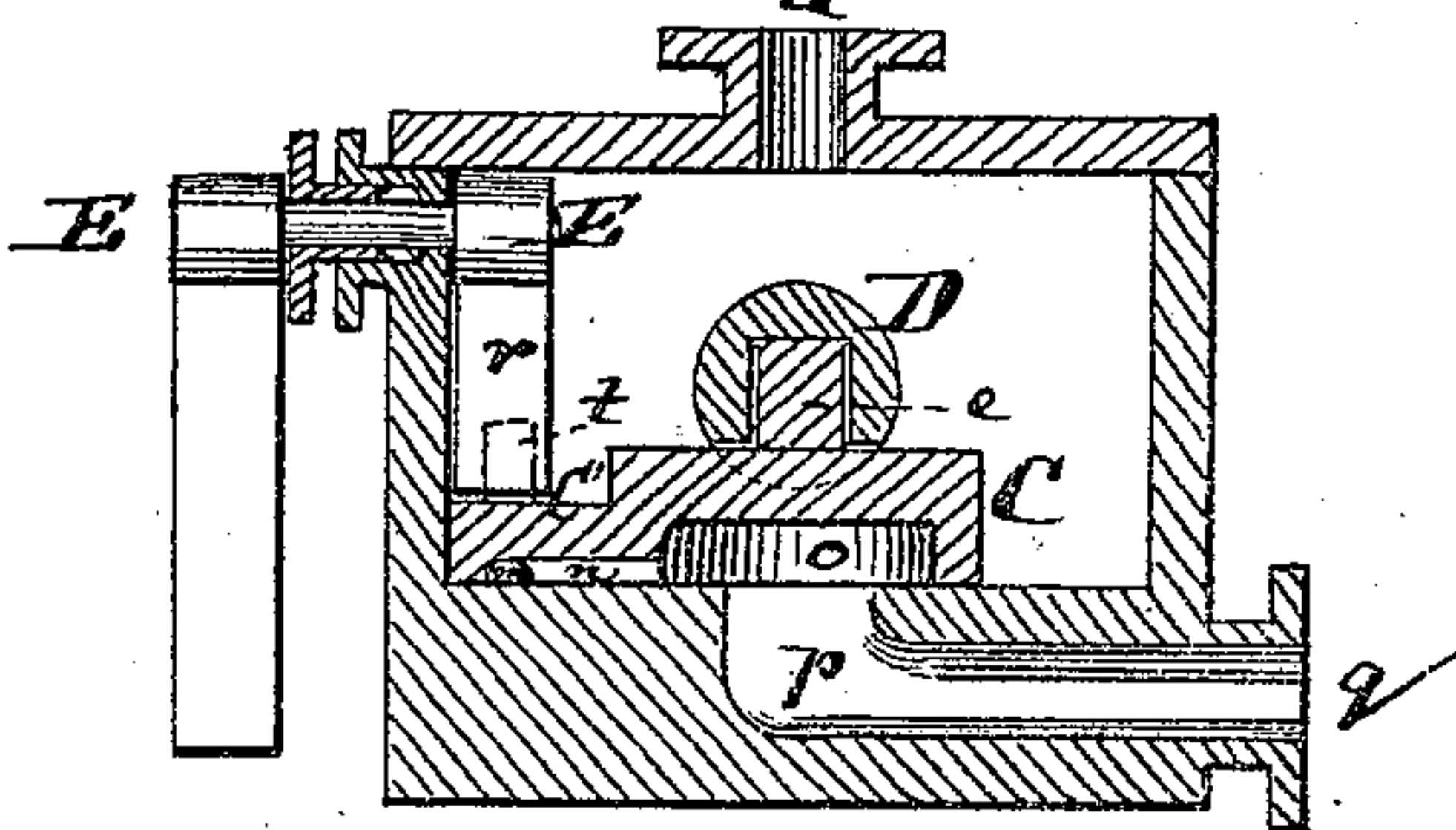
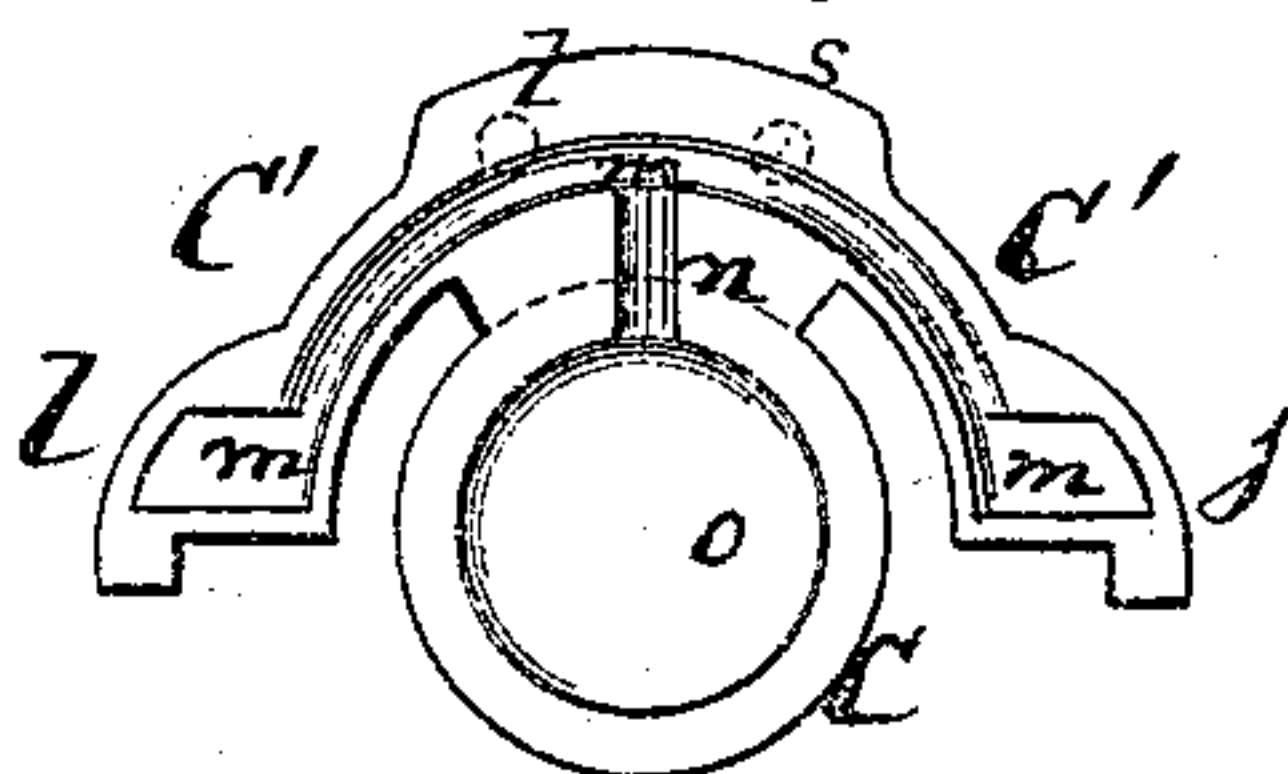


Fig. 7.



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY A. JAMIESON, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF
AND GEORGE WHITTAKER, OF SAME PLACE.

IMPROVEMENT IN VALVES FOR DIRECT-ACTING ENGINES.

Specification forming part of Letters Patent No. **148,462**, dated March 10, 1874; application filed
August 4, 1873.

CASE C.

To all whom it may concern:

Be it known that I, HENRY A. JAMIESON, of Brooklyn, in the county of Kings and State of New York, have invented an Improved Valves for Direct-Action Steam-Engines, for operating pumps and other apparatus, of which the following is a specification:

Figure 1 is a plan or top view, partly in section, of the steam-chest containing my improved valve. Figs. 2 and 3 are similar views thereof in different positions. Fig. 4 is a longitudinal vertical section through the center of the valve, showing the parts in the same position as in Fig. 1. Fig. 5 is a similar view thereof, showing the parts in the position of Fig. 3. Fig. 6 is a transverse section on the line *c c*, Fig. 4; and Fig. 7, a bottom view of the valve.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to a new arrangement of valve in the steam-chest of a steam-pump or other machine, with the object of utilizing the pressure of steam in such steam-chest, for insuring prompt and efficacious action of the valve. My invention consists in combining an oscillating valve with a sliding piston by a central pin projecting from the valve into a socket of the piston, the latter fitting with its ends into chambers provided in the ends of the steam-chest, and allowing the valve beneath to freely vibrate on the aforementioned pivot-pin, while at the same time it will carry the valve with it lengthwise whenever it (the piston) is moved by the action of steam on its ends. All danger of having the motion of the valve arrested during the passage over the ports is thus avoided, and positive action attained. In connection with the oscillating valve named, a link-connection for vibrating it is also used.

In the accompanying drawing, the letter A represents a steam-chest placed over a steam-cylinder, B, and connected therewith by inlet-ports *a b* in the usual manner. Steam enters the chest A through a pipe, *d*. C is a circular valve, so large in diameter that it may cover both ports *a b* at once. From the center of

the valve C projects upwardly a pivot-pin, *e*, which enters a socket formed in the middle of a piston, D. The said piston enters with its ends chambers *f* and *g*, that are respectively formed in the ends of the steam-chest, as is clearly shown in the several figures, 1 to 5, the piston being shorter than the space between the outer ends of such chambers. The chamber *f* connects, by a steam-passage, *h*, with the interior of the steam-chest, while a steam-passage, *i*, at the other end of the steam-chest, connects the chamber *g* with the interior, as shown in Figs. 4 and 5. With the valve C is connected a plate, C', of nearly semicircular form, said plate forming two wings, *j* and *l*, which are more fully shown in Figs. 1, 2, and 3. The under side of this semicircular attachment C' has a semicircular groove, *m*, formed in it, which groove connects at its middle, by a branch groove, *n*, with a recess or chamber, *o*, that is formed on the under side of the valve, to connect one of the steam-ports *a* or *b* with the exhaust-passage *p*. This exhaust-passage connects with an exhaust-pipe, *q*. In one side of the steam-chest A is hung a shaft, E, from which a crank, *r*, reaches down between two pins, *s* and *t*, that project from the valve or from the extension-plate C' thereon.

When the parts are in the position shown in Fig. 1, the port *a* will be open, and the port *b* connected with the exhaust-passage *p*, the piston D nearly filling the chamber *g*, and being nearly drawn out of the chamber *f*, as shown. The steam-passage *i* communicates with the exhaust-groove *m* without any special object in this position; but the steam-passage *h* is closed by the end of the wing *j*. When the shaft E is thereupon vibrated to carry its crank *r* against the projecting pin *s*, it will cause the valve to vibrate on its pivot *e* until the end of its wing *j* strikes a projecting guide-rib, *u*, on the bottom of the steam-chest. The ports will then be in the position shown in Fig. 2—that is to say, the port *a* will still be open and the port *b* still in connection with the exhaust-chamber; but the end of the steam-passage *i* will be uncovered by the wing *l*, to admit steam into the chamber *g*, and the steam-

passage *h* will communicate with the exhaust-groove *m*. Steam being thus admitted to the chamber *g*, forces the piston *D* toward the chamber *f*, and into the position shown in Fig. 3. By such motion the piston also carries with it the valve *C*, and causes all the parts to assume the position shown in Fig. 3. In this position the port *b* is open to the steam, and the port *a* connected with the exhaust, and *f* still with the exhaust-groove, while the steam-passage *i* is closed by the end of the wing *l*. The next move will be the vibration of the valve by the vibration of the shaft *E*, carrying *r* against *t*, and swinging the valve *C* until the wing *l* strikes a projecting guide-rib, *u*. Then the port *b* will still be open and *a* still connected with the exhaust, but the passage *h* will be uncovered by the wing *j*, admitting steam into the chamber *f*, and pushing the piston toward *g*, and all the parts into the position shown in Fig. 1. Thus the action of steam against the ends of the piston *D* is utilized for completing the strokes or movements of the valve that are started by the link-connection *E r*.

The length of the crank *r* may be such that, if the action of the steam on the ends of the piston should not suffice, the crank alone could slide the valve as much as is done by the action of the piston *D*, so as to avoid all danger of the parts becoming blocked or out of order from any cause.

What I claim as my invention is—

1. The combination of the valve *C*, having the cavities or channels *m n o*, with the steam-chest having the ports *a b p*, channels *h i*, and chambers *f g*, and with the piston *D*, all arranged to operate substantially as herein shown and described.

2. The combination of the rock-shaft *E* and crank *r* with the valve *C*, having the pins *s t*, lower cavities *m n o*, and with the steam-chest having the ports *a b p* and channels *h i*, all arranged substantially as specified.

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Witnesses:

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