

(No Model.)

W. C. CHURCH.
CIRCULAR SLIDE VALVE.

No. 356,984.

Patented Feb. 1, 1887.

FIG. 1.

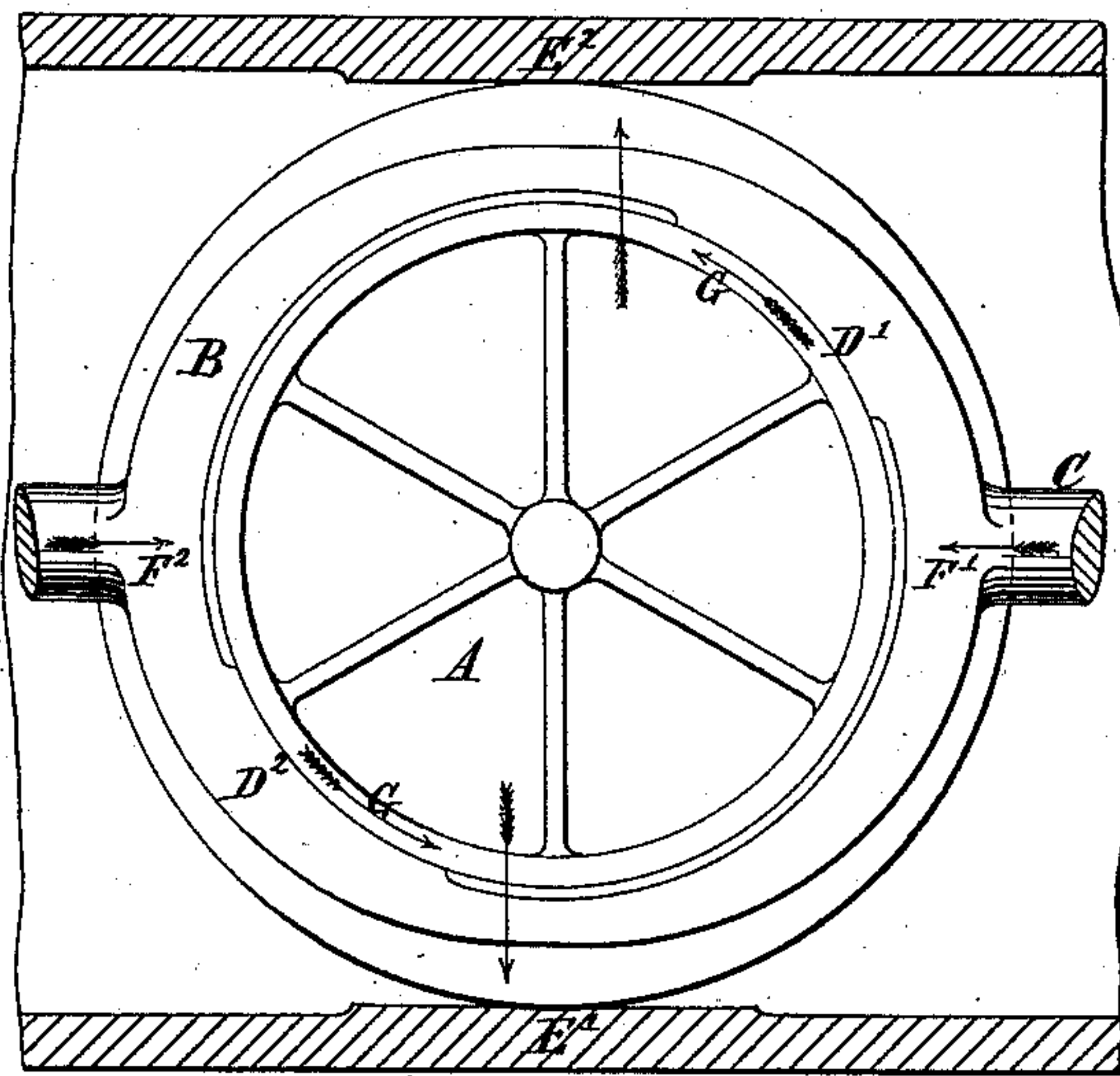


FIG. 2.

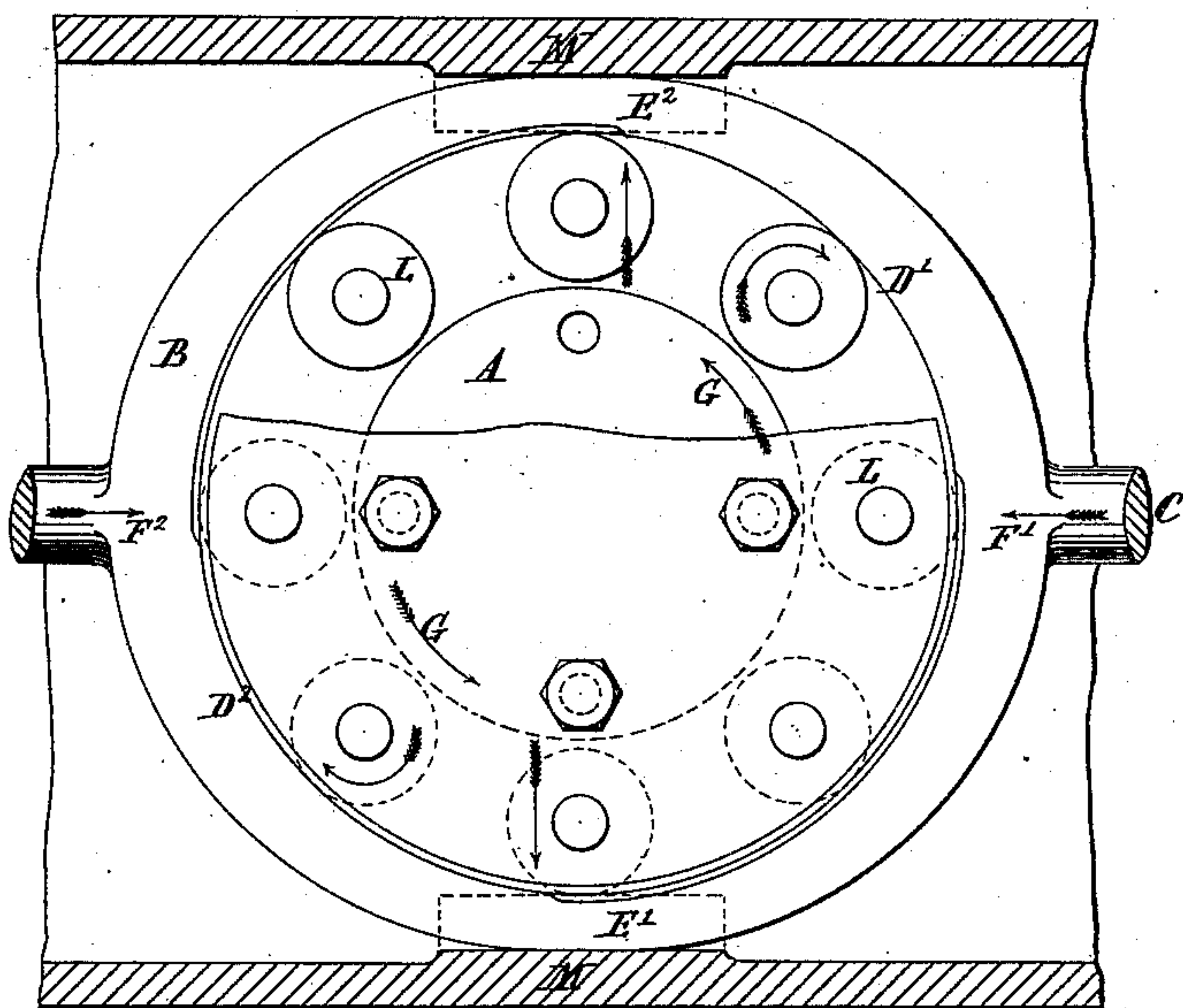
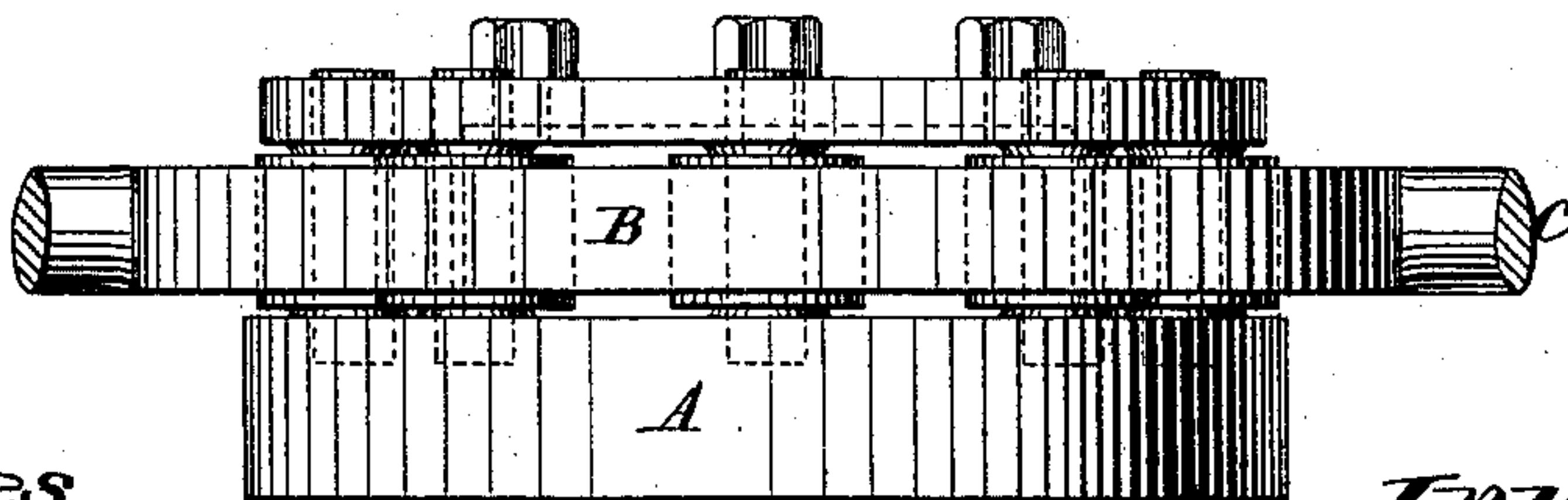


FIG. 3.



Witnesses,

J. A. Rutherford,
Robert Everett

Inventor,

Walter C. Church,

By

James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

WALTER C. CHURCH, OF BRIXTON, COUNTY OF SURREY, ASSIGNOR TO THE
WALTER C. CHURCH ENGINEERING COMPANY, (LIMITED,) OF LONDON,
ENGLAND.

CIRCULAR SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 356,984, dated February 1, 1887.

Application filed June 10, 1884. Serial No. 134,439. (No model.) Patented in England January 21, 1880, No. 266; in France July 7, 1880, No. 137,676; in Germany July 16, 1880, No. 13,194; in Belgium July 29, 1880, No. 52,153, and in Austria-Hungary October 30, 1880, No. 4,187.

To all whom it may concern:

Be it known that I, WALTER CHARLES CHURCH, a citizen of England, residing at Brixton, in the county of Surrey, England, have invented a new and useful Improvement in Circular Slide and Sluice Valves, (for which I have obtained patents in Great Britain, dated January 21, 1880, No. 266; France, dated July 7, 1880; Belgium, dated July 29, 1880; Austria-Hungary, dated October 30, 1880, and Germany, dated July 16, 1880,) of which the following is a specification.

Slides for governing ports of steam-cylinders and other passages for fluid have been made of circular form, the ports or passages which they govern being made of crescent or like suitable shape, so that the circular edges of the slide, as it moves rectilinearly to and fro, cover and uncover them in a manner similar to that in which a rectangular slide operates. Such circular slides are held in a circular loop or eye of the slide-rod which moves them, being free to turn round in such loop or eye, so that when any roughness or irregularity in the rubbing-surfaces of the slide and of the facing on which it works presents itself, or when there is any tendency to cohesion at any part of these surfaces, the slide may, while it moves rectilinearly, turn partly round its own axis, and thereby bring fresh portions of the surfaces to bear against each other. As the chief object to be attained by the use of such circular slides is to insure, by their turning round, equalization of wear and to prevent the formation of ridges and hollows in the rubbing-surfaces, and as such turning round is uncertain and precarious when it depends only on accidental inequalities, I, according to this invention, so construct and arrange the slide and the eye or loop in which it is held that at every to-and-fro stroke of the slide it is caused to turn partly round always in one direction, and thus I insure a continual change of the parts of the surfaces which rub against each other. I will describe the construction which I employ for this purpose, referring to the accompanying drawings.

Figure 1 is a plan of a circular slide with the loop or eye of its rod according to my invention. Fig. 2 is a like plan, and Fig. 3 a side view showing a modified arrangement according to my invention.

In all the figures similar parts are marked by similar letters of reference.

A is the circular slide, which has its boss inclosed in the eye or loop B of the slide-rod C, by the reciprocation of which the slide is moved to and fro over the port-faces.

According to the arrangement shown in Fig. 1, the eye B fits the circular boss of the slide only in two opposite parts, D' D², situated about midway between the longitudinal and transverse diameters of the eye, and the slide-jacket is made with two opposite straight surfaces, E' E², almost touching the circular flange of the slide. When the slide-rod moves in the direction of the arrow F', the slide is pressed on by the part of the eye marked D', and consequently its flange is borne against the straight face E', the frictional contact causing it, as it moves longitudinally, to roll along E', so that it partly revolves within the eye in the direction of the arrows G. Again, when the slide-rod makes its back stroke in the direction indicated by the arrow F², the slide is pressed by the part D² of the eye, and thus its flange is borne against the opposite surface, E², causing it to roll, and therefore to revolve within the eye in the same direction, G, as before. Thus at every stroke of the slide-rod in both directions the slide is caused to turn partly round always in one direction, so that its rubbing-surface and the port-face on which it works are subjected to uniform wear.

In the arrangement shown in Figs. 2 and 3 a number of rollers, L, mounted on the slide bear successively against the parts D' D² of the eye, causing the flange of the slide to roll alternately along the straight bearing-strips E' E², which project inward from the opposite sides of the slide-jacket. The eye B is itself guided along straight faces M M, formed on the sides of the jacket.

Having thus described the nature of my in-

vention and the best means I know of carrying it out in practice, I claim—

1. The combination, with a circular slide, of a loop on the slide-rod, having frictional contact with said slide at two opposite points only, said points being cut by a diametrical line, forming an acute angle with the perpendicular, and two opposite rolling faces on the slide-jacket, substantially as described.
2. The combination, with the circular slide a , of the loop B on the slide-rod, said loop having the contact surfaces or parts D' and D'' ,

but cut by a straight line, forming an angle with the perpendicular, and the rolling faces E' E'' upon opposite faces of the slide-jacket, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 6th day of May, A. D. 1884.

W. C. CHURCH.

Witnesses:

JNO. P. M. MILLARD,
J. WATT.