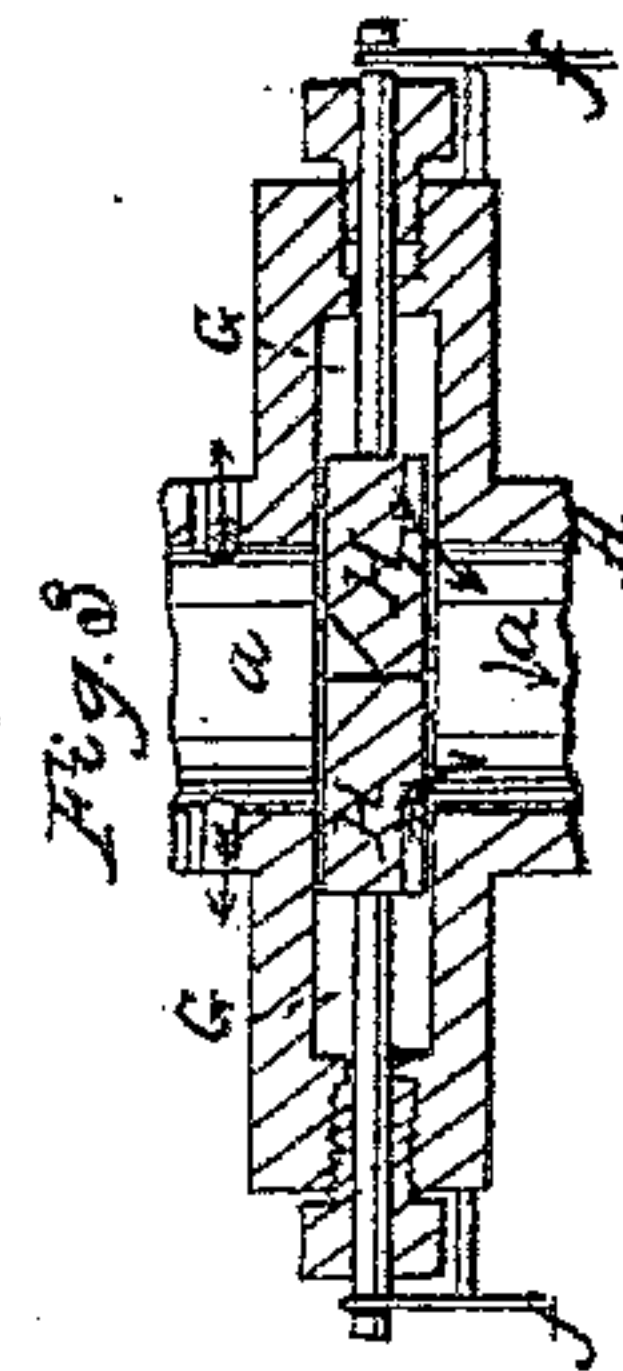
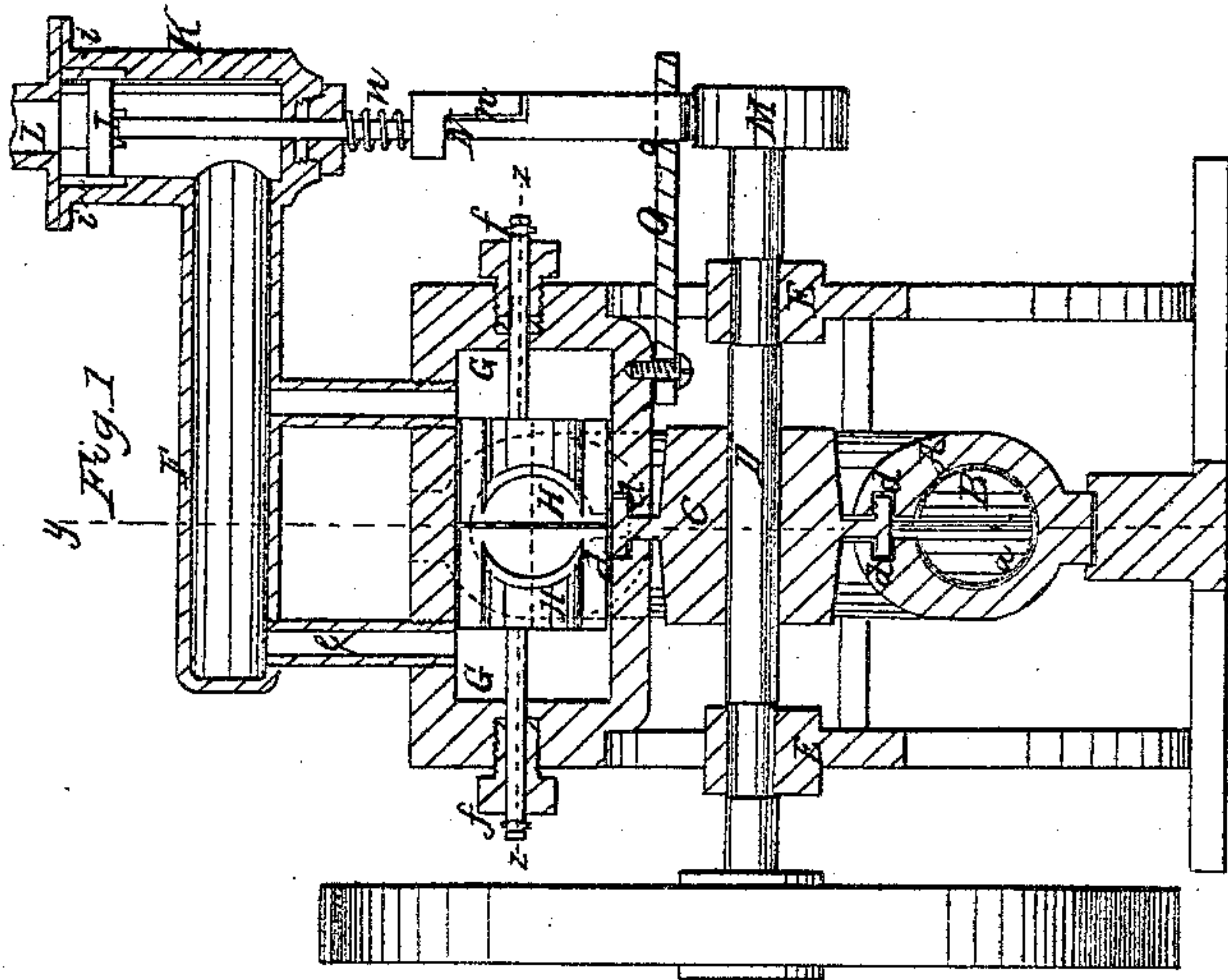
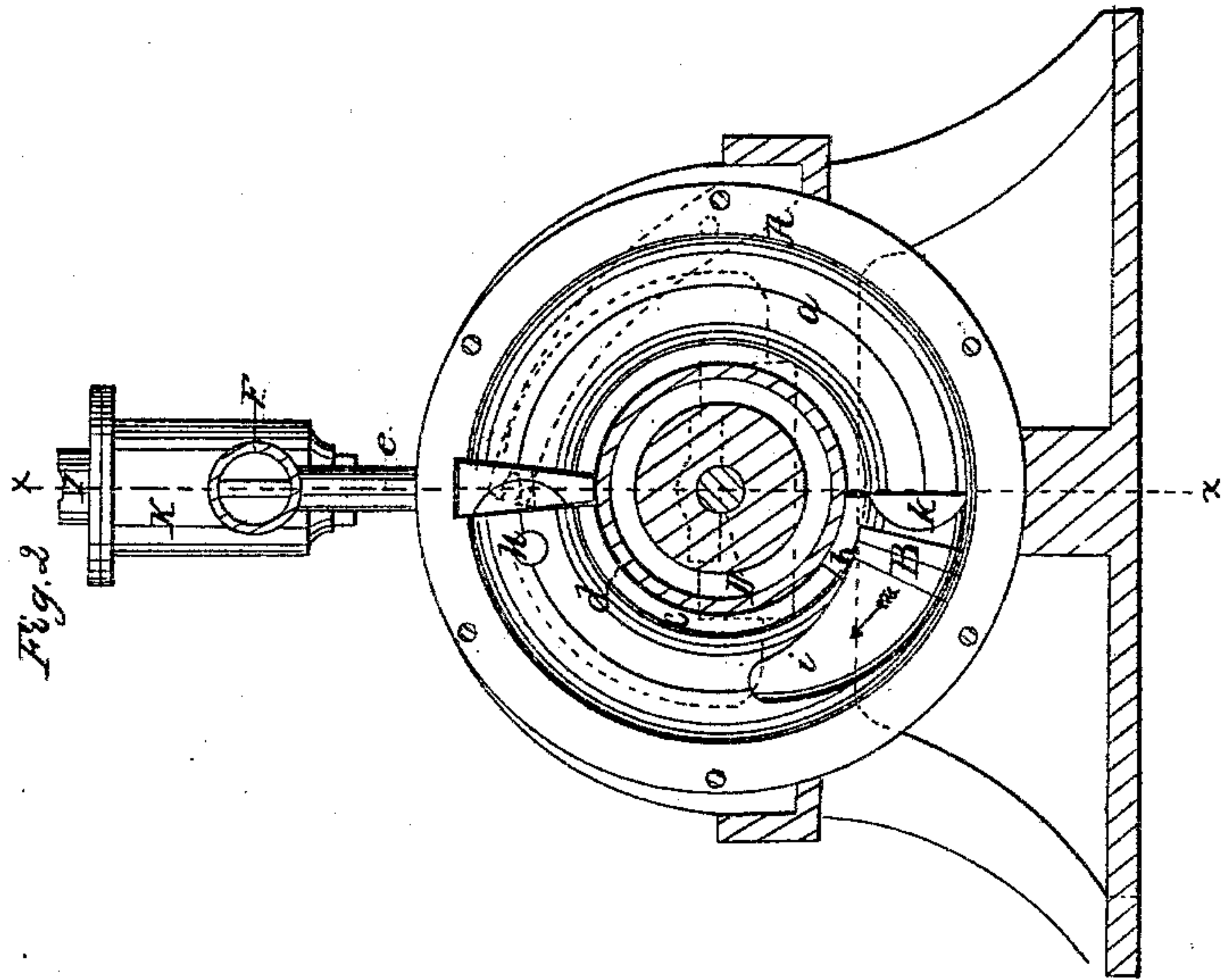


F. Fischer,

Rotary Steam Engine.

N^o 62,190.

Patented Feb. 19, 1867.



Witnesses:

*F. Fischer,
J. A. Service.*

Inventor:

*F. Fischer,
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Attorney.*

United States Patent Office.

FRIEDRICH FISCHER, OF GARIBALDI, IOWA.

Letters Patent No. 62,190, dated February 19, 1867.

IMPROVEMENT IN ROTARY STEAM ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FRIEDRICH FISCHER, of Garibaldi, in the county of Keokuk, and State of Iowa, have invented a new and improved Rotary Engine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical section of this invention, taken in the plane indicated by the line *x x*, fig. 2.

Figure 2 is a similar section of the same, the plane of section being indicated by the line *y y*, fig. 1.

Figure 3 is a horizontal section of the same, the line *z z*, fig. 1, indicating the plane of section.

Similar letters of reference indicate like parts.

This invention relates to a rotary engine, which is composed of an annular cylinder fitted with a piston which is secured to a piston-wheel. The steam is admitted at one side of an abutment in the cylinder, and through cavities or channels in said abutment, made of two parts, which close up by the action of springs, and which are forced apart by a wedge-shaped projection or toe, secured to the piston, and travelling with the same in such a manner that, immediately as the piston has passed the abutment, the two halves thereof close up, and the steam acts on the piston until the wedge-shaped toe comes in contact with the abutment and forces the two halves thereof back, steam being shut off at the same time until the piston has passed.

A represents the cylinder of my rotary engine, which is provided with an annular steam space, *a*. Into this steam space is fitted a piston, B, which is secured to the piston-wheel C, being connected thereto by a narrow tongue, *b*, which extends through a circular slit, *c*, in the cylinder A. This cylinder is composed of two halves, which are united by suitable screws passing through their flanges, and, when the two halves are united, the slit *c* is formed between their inner edges. Said slit extends from the steam space *a* to circular grooves, *d*, which are turned in the inner surfaces of the two halves of the cylinder, and which are intended to receive the edges of the piston-wheel, as shown in fig. 1 of the drawing. These edges are ground into the grooves *d* so as to form steam-tight joints, and obviate the necessity of packed joints or stuffing-boxes. The piston-wheel is mounted on the shaft D, which passes freely through central openings in the cylinder, and has its bearings in suitable standards, E, which rise from the bed of the engine. Steam is admitted to the cylinder A through a pipe, F, which connects by branch pipes, *e*, with steam chests, G, situated on opposite sides of the cylinder, as shown particularly in fig. 3. Each of these steam chests forms the guide for a flat slide, H H, and these slides are subjected to the action of springs, *f*, whereby they are forced in until their inner ends meet in such a manner that by said slides an abutment is formed, which is situated between steam-supply channels *g g*, and the exhaust ports *h h*. The steam-supply channels are dug out of the slides H H, and they do not extend clear through to the inner ends of said slides, as shown in figs. 1 and 3, so that when said slides are forced back the channels will be closed. In order to open the slides at the proper interval, the piston is provided with a wedge-shaped toe, *i*, as shown in fig. 2, and as said piston approaches the slides, the point of the toe forces itself in between them, and opens them gradually for the passage of the piston. The action of the toe on the slides is facilitated by a chamfered recess, *j*, which guides the point of the toe, so that the same is enabled to enter between the slides without fail. After the piston has passed the abutment, the slides close up again by the action of the springs *f*, and, to prevent the slides from closing up with a sudden blow, the piston head is provided with inclined planes, *k*, which compel the slides to come together gradually. The supply of steam from the generator to the steam pipe F is governed by a piston-valve, I, which works up and down in a chamber, K. This chamber connects by a pipe, L, with the steam generator, and it is provided with recesses, *l*, so that when the valve is raised to a certain height the steam which enters through the pipe L can pass through said recesses to the pipe F, but if the valve is lowered the communication between the pipes L and F is cut off. The position of the valve is regulated automatically by a cam, M, which is mounted on the shaft D of the piston-wheel, and which acts on the end of the stem N, which passes through a stuffing-box in the bottom part of the chamber K, and connects with the piston-valve I, a spring, *m*, being applied so as to keep the end of the stem in contact with the surface of the cam. This cam is so shaped that it allows the valve to drop just before the toe enters between the slides, and thereby the waste of steam is prevented. The valve-stem N is made in two parts, which are connected by a pivot, *n*, and the lower end of said stem catches in a socket, *o*, in the

end of the starting-bar O. By the action of the starting-bar the hinged end of the stem can be turned off out of contact with the surface of the cam M, and by this motion the valve I is permitted to drop, and the engine is stopped; or the hinged part of the stem can be turned back on the cam, whereby the valve is opened and the engine started. This engine is very simple in its construction, and it can be run with great economy.

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

1. The abutment H H, which opens from the middle, in combination with the toe i on the advancing end of the piston B, constructed and operating substantially as and for the purpose described.

2. The inclined planes k on the piston head, in combination with the abutment H H, opening from the middle, substantially as and for the purpose set forth.

3. The hinged or jointed valve-stem N, cam M, and starting-bar O, in combination with the piston-valve I, abutment H H, piston B, and cylinder A, constructed and operating substantially as and for the purpose described.

FRIEDRICH FISCHER.

Witnesses :

JOHN J. JACQUES,

AUGUST STEIGLEDER.