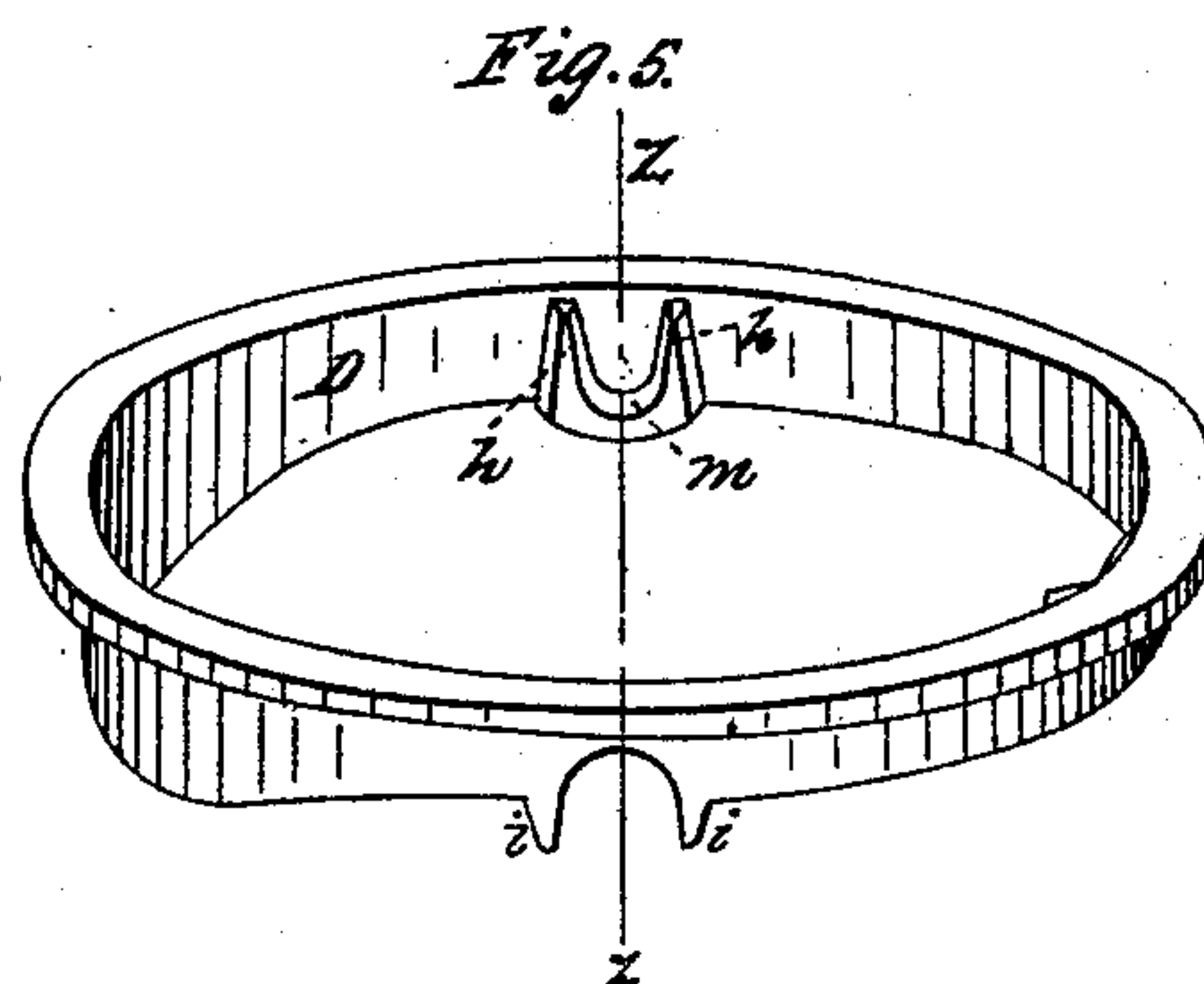
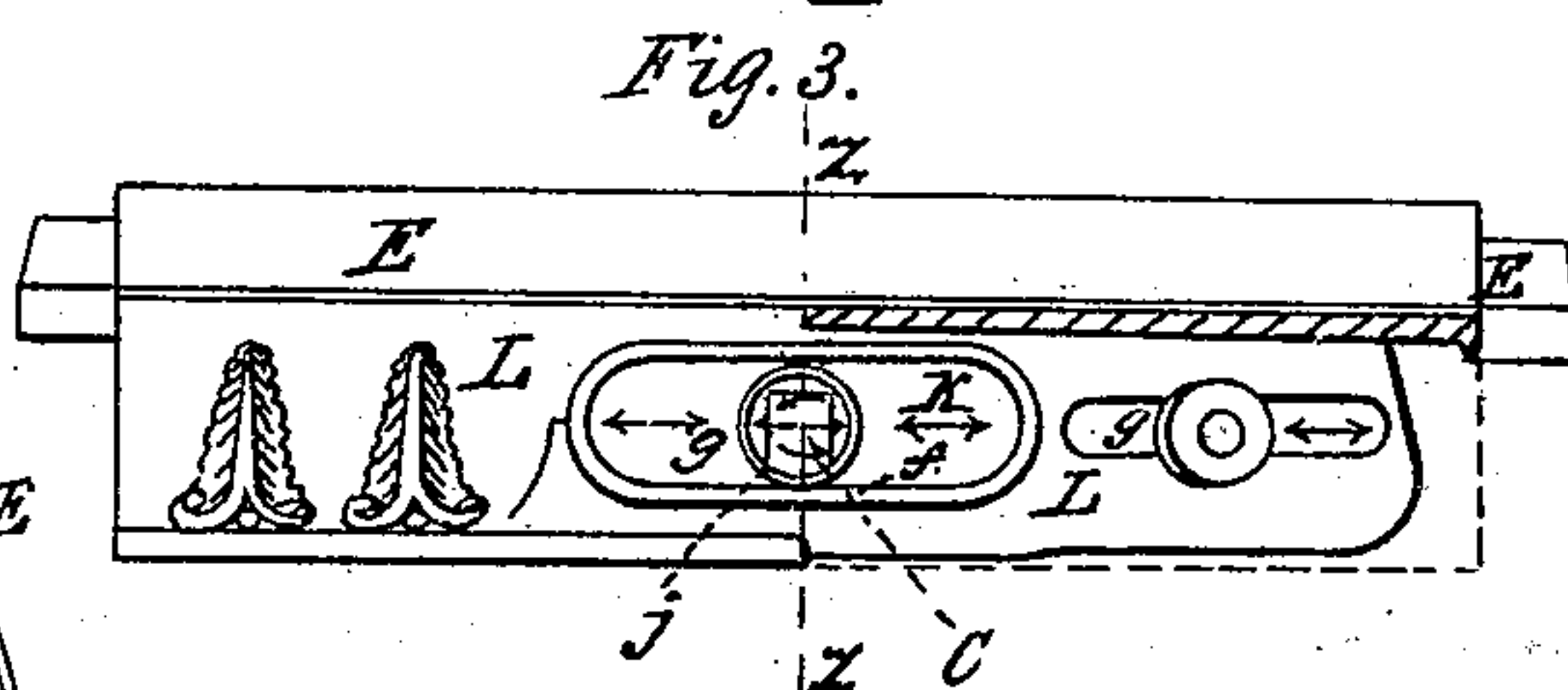
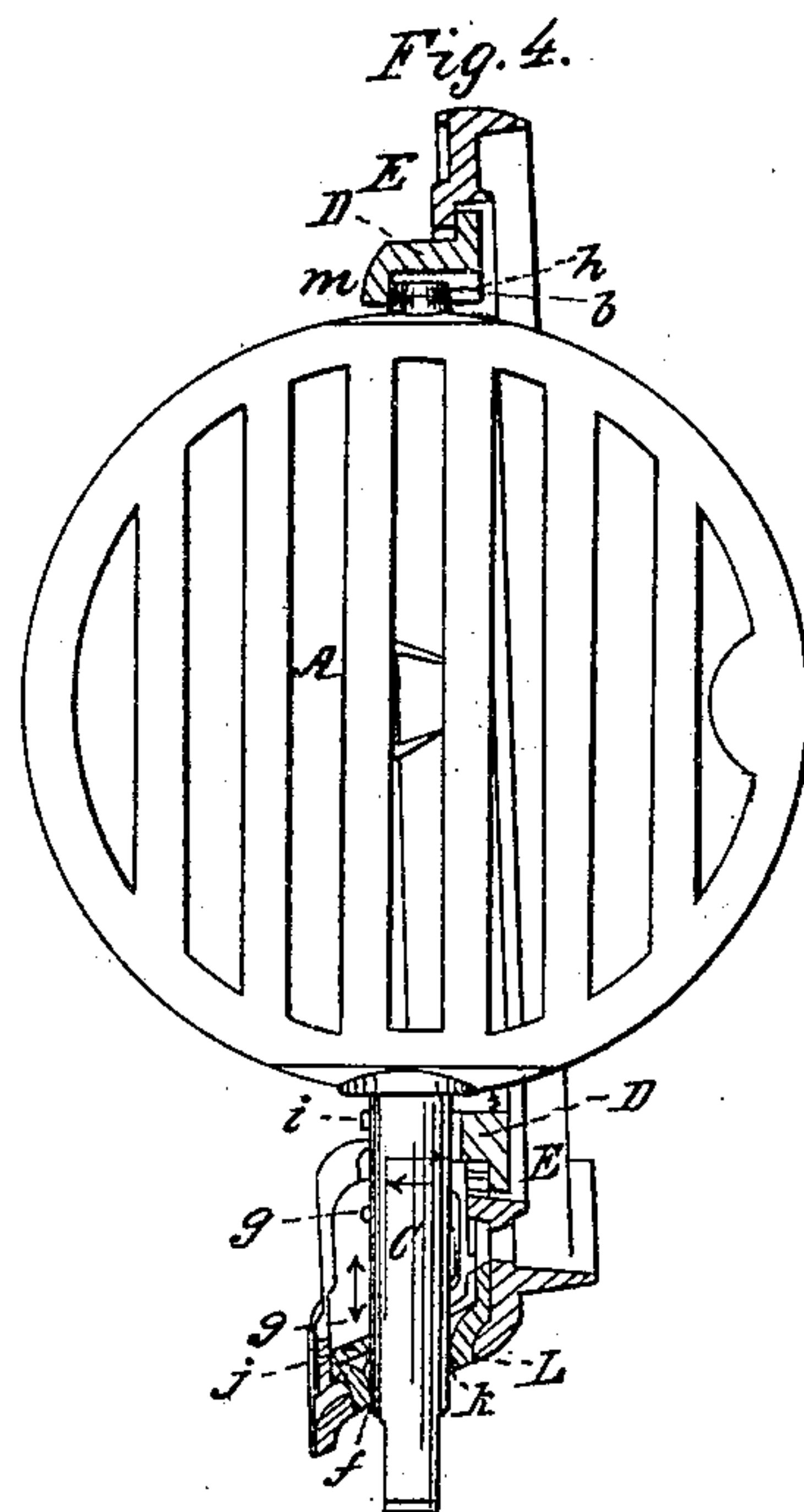
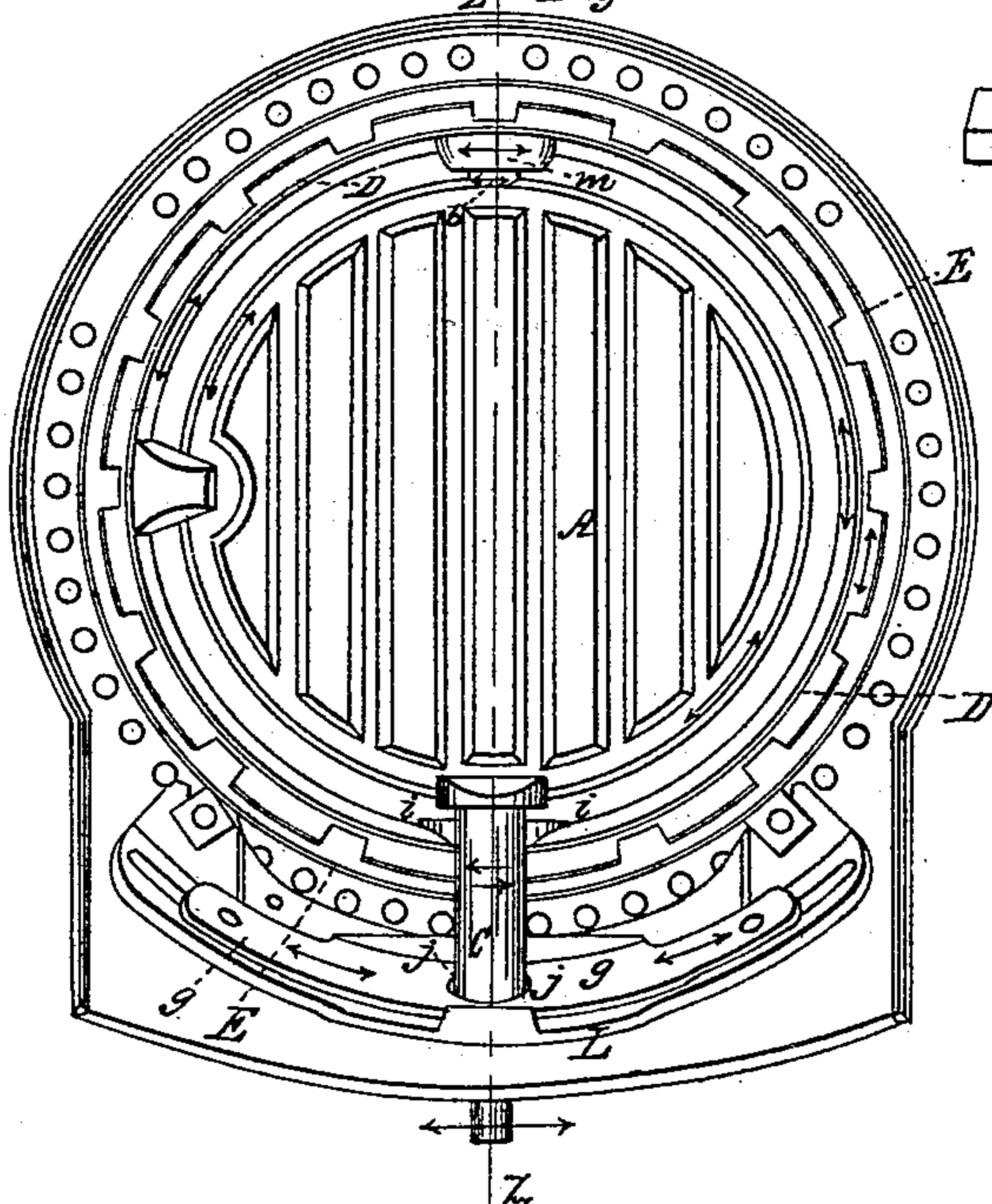
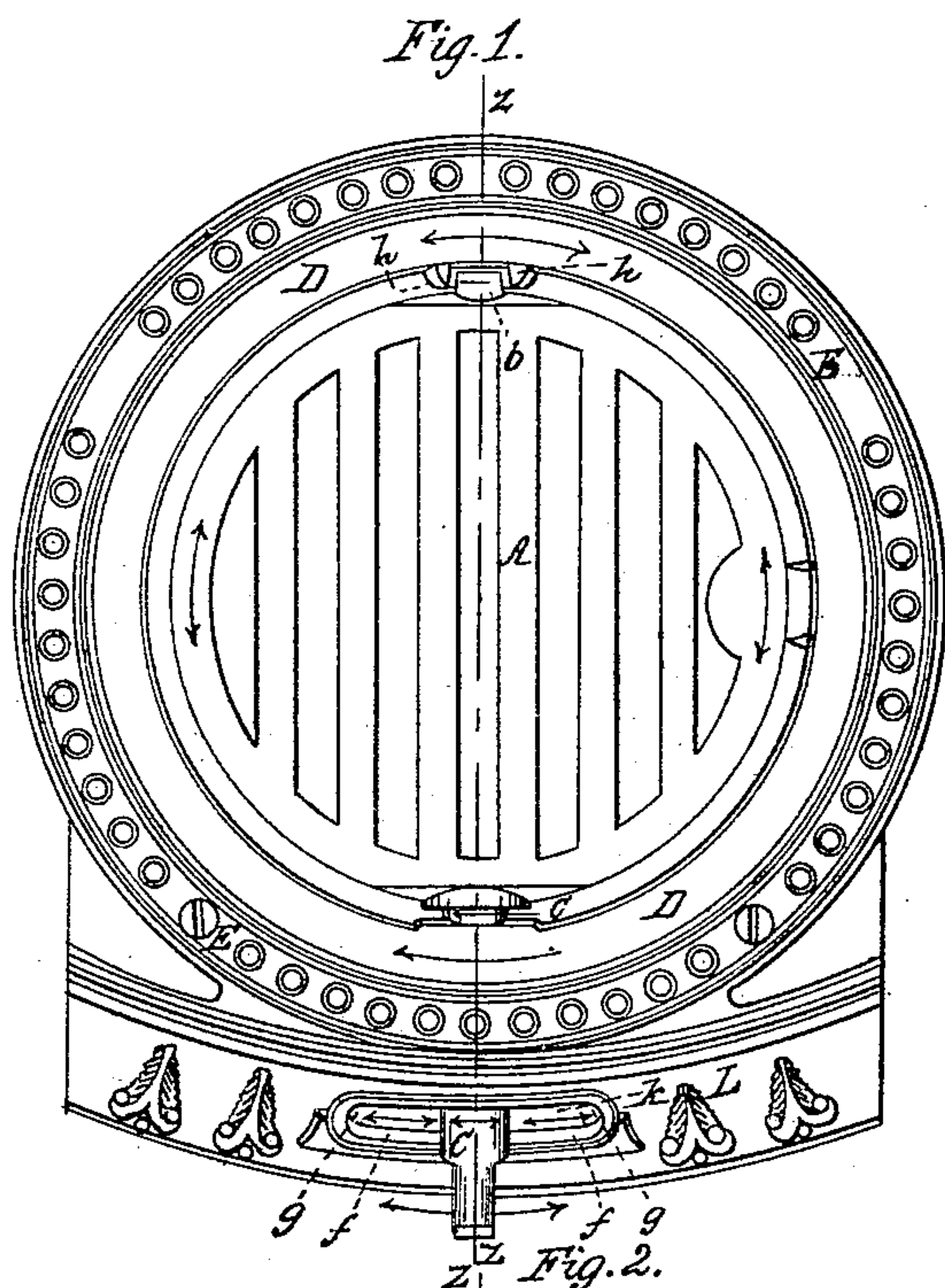


PHILLIPS & JOHNSON.

Stove Grate.

No. 40,146.

Patented Sept. 29, 1863.



Witnesses:  
*P. S. Sheldon*  
*Austin F. Park*

Inventors:  
*Geoff Phillips*  
*W. H. Johnson*



# UNITED STATES PATENT OFFICE.

GEORGE H. PHILLIPS AND WILLIAM H. JOHNSON, OF TROY, ASSIGNORS  
TO ANSON INGRAHAM, OF CENTER CAMBRIDGE, GEORGE H. PHILLIPS,  
AFORESAID, AND WM. H. INGRAHAM, OF TROY, NEW YORK.

## IMPROVEMENT IN STOVE-GRATES.

Specification forming part of Letters Patent No. **40,146**, dated September 29, 1863.

*To all whom it may concern:*

Be it known that we, GEORGE H. PHILLIPS and WILLIAM H. JOHNSON, each of the city of Troy, in the county of Rensselaer and State of New York, have jointly invented certain new and useful Improvements in the Grates of Stoves or Furnaces, of which invention the following embraces a sufficient description, reference being had to the annexed drawings, in which—

Figure 1 is a top view, Fig. 2 a bottom view, Fig. 3 a sectional front view, Fig. 4 a vertical section at or about the line  $z z$  in the other figures, and Fig. 5 a perspective view of a detached part, all of a portion of a stove or furnace embodying our improvements, like parts being marked by the same letters in all the figures, and their directions of motion indicated by the arrows thereon.

Our improved stove or furnace grate belongs to that class in which the grate *A* can be vibrated horizontally about its center to agitate burning coal on the grate and sift out ashes therefrom, and also rocked or tilted into an inclined or vertical position to dump refuse coal and cinders off from the grate, all by simply vibrating horizontally and rocking or turning one, *c*, of two opposite or nearly opposite shanks or journals, *b c*, which are fast on the grate and directly support the latter. Stove-grates of that class have been heretofore made with both of the said grate-shanks supported and held laterally by a ring which immediately surrounded the grate, and which was mounted on an annular or open base, so as to be turned horizontally back and forth thereon with and by the grate, thus securing an even horizontal vibrating movement to the grate about its center and an unobstructed space immediately under the grate, as shown in W. T. Coggeshall's United States patent, dated October 20, 1857; but in that case the whole weight of the grate, together with the weight of the mass of burning coal thereon in use, was sustained entirely by the said movable ring around the grate, and both of the supporting-bearings for the two grate-shanks, and also the bearings for the support of the said ring, were all greatly exposed to the ashes and cinders which fell down from the fire, so that

the said ring and shanks would slide and turn very hard in vibrating and tilting the grate, especially when the ring and the grate became expanded and warped by the heat, and their bearings all clogged or obstructed by the ashes and cinders to which they were exposed. Other grates of the same class have had both of the two supporting-shanks of the grate supported directly upon two opposite elongated bearings fast on a fixed circular frame around and next to the grate, as shown in D. H. Nation's United States patent, dated July 24, 1860; but in that case there was nothing to guide and make smooth and even the horizontal movements of the grate about its center, except the periphery of the grate or projections thereon striking and rubbing hard in spots, first against one side and then across against the other side of the casing around the grate, and all the bearing or rubbing surfaces were exposed to the heat and ashes from the fire, so that the grate worked altogether too hard and roughly to be of much utility. Now, instead of having both of the shanks *b c* of the grate supported by a loose ring just outside of the grate, and instead of supporting both of the grate-shanks upon two fixed elongated bearings directly exposed to the heat and ashes from the fire on the grate, we have, as a part of our invention, only one, *b*, Fig. 4, of the two shanks *b c* of the grate *A* supported by a ring, *D*, which surrounds the grate, and is mounted so as to turn back and forth about its center on an annular or suitable open base, *E*, and have the other grate shank, *c*, supported by a fixed elongated bearing, *f*, or a sliding one, *j*, separate from and outside of the said ring *D*, the latter being connected by lateral bearings *h h* and *i i*, Fig. 5, to both of the grate-shanks *b c*, so that the ring *D* will be thereby turned with the grate *A* about its center as the shank *c* is shaken horizontally. By this construction we not only leave an entirely unobstructed space immediately under the grate, and by means of the loose ring *D* secure a quitesmooth and even horizontal movement of the grate about its center, but, in addition, relieve the said movable ring, which is exposed to the heat and ashes from the fire, of about one-half, or very much, of the weight



of the grate and burning coal thereon, and also remove away from the heat and ashes of the fire the bearing which supports the shank *c*, to which all the power is applied to operate the grate, and thereby make the grate more easy to operate, especially as the grate gradually becomes warped and burned out in use, than if both of the grate-shanks were supported either by a loose ring around the grate, or by two fixed elongated bearings close to the grate, with all the bearings exposed to the heat and ashes from the burning coal.

Another part of our invention consists in the arrangement of a perforated slide, *g*, with a horizontal slot, *k*, in the casing *L* of a stove or furnace, and in combination with a grate, *A*, having two supporting-shanks, *b c*, fast thereon, and a ring, *D*, mounted on an open base, *E*, and supporting only one shank, *b*, of the grate, and connected by lateral bearings *h i i* with both shanks of the grate substantially as hereinbefore described, so that the said slide *g* will surround the shank *c*, by which the grate is operated, and constantly cover whatever changeable portion of the slot *k* is at any time left unoccupied by the said shank *c*, and thereby cover the unsightly parts inside, and either wholly or mostly prevent the escape of the gases and dust out through the said slot from within the stove or furnace when in use, as well while the grate is being vibrated horizontally with the ring *D* or tilted on its supporting-shanks *b c* as when the grate is left stationary, and so that the said slide *g* will also, if required, support the grate-shank *c* when stationary and in its rocking and vibrating movements, and thereby, in connection with the ring *D*, serve to sustain the entire weight of the grate and whatever coal or fuel shall be thereon.

In respect to this latter part of our invention, we merely present as new the combination of a perforated slide and a slotted casing with the particular above-described devices which we use in giving the horizontally vibrating and rocking movements to the grate, the same as D. H. Nation in his above-mentioned patent, and L. W. Harwood in his United States patent dated November 13, 1860. Each claims the combination of a perforated slide and slotted casing with the particular devices which each describes for giving the tilting and horizontally-vibrating movements to a fire-grate.

What we claim as new and of our invention, and desire to secure by Letters Patent, is—

1. A fire-grate, *A*, having two shanks or journals, of which only one, *b*, is supported by a ring, *D*, surrounding the grate, and the other one, *c*, by a bearing separate from and outside of the said ring, the latter being mounted on an annular or open base, *E*, and connected with both of the said grate shanks by lateral bearings *h i i*, substantially as herein set forth.

2. The combination of a perforated slide, *g*, and slotted casing *L* with a grate, *A*, having two supporting-shanks, *b c*, and a ring, *D*, mounted on a suitable open base, *E*, and provided with lateral bearings *h i i* for both, and a supporting-bearing, *m*, for only one of the said grate-shanks, substantially as herein described, with or without a fixed grate-shank bearing, *f*.

G. H. PHILLIPS.  
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Witnesses:

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