

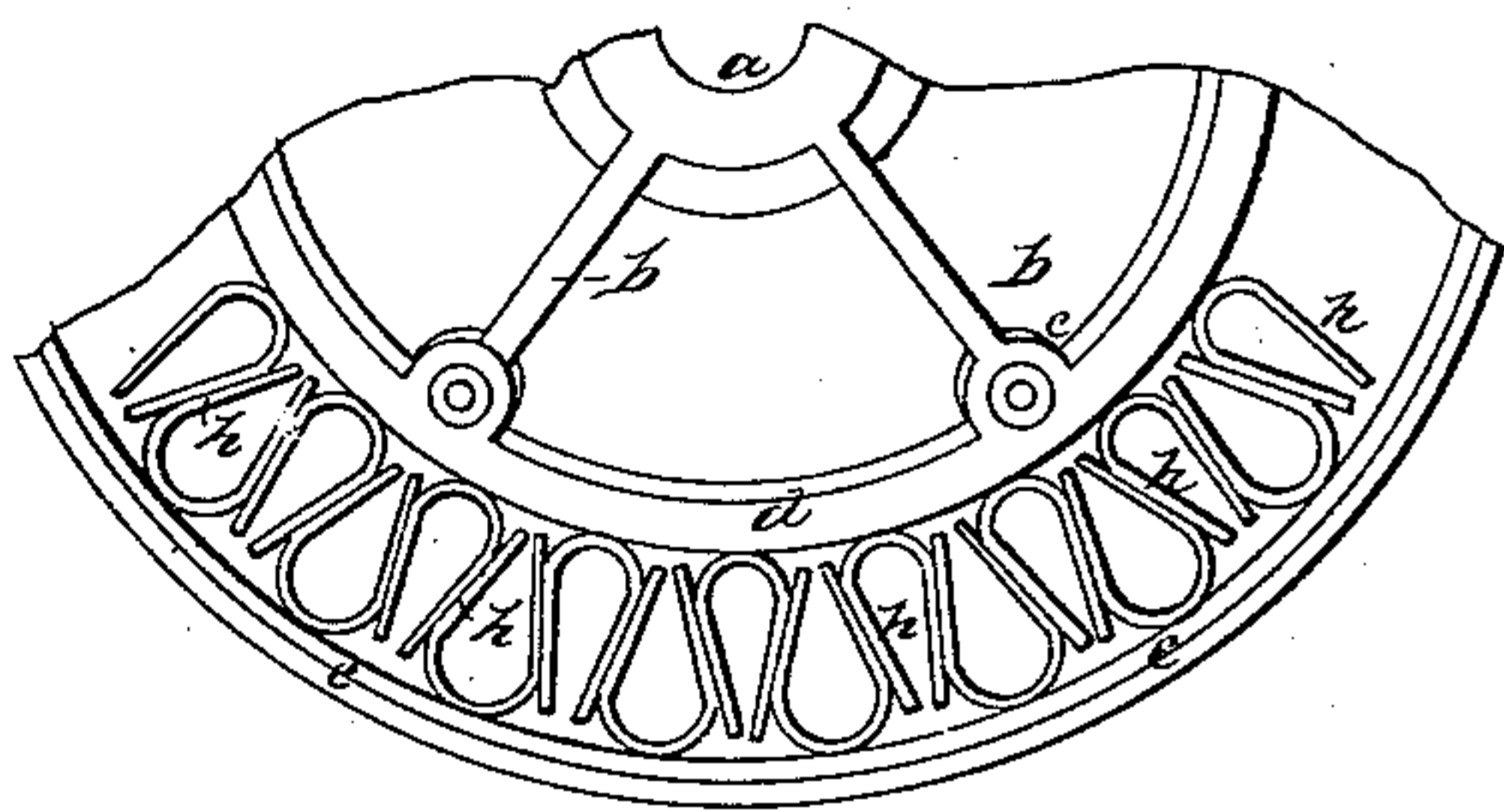
*L. B. Flanders,*

*Piston Packing.*

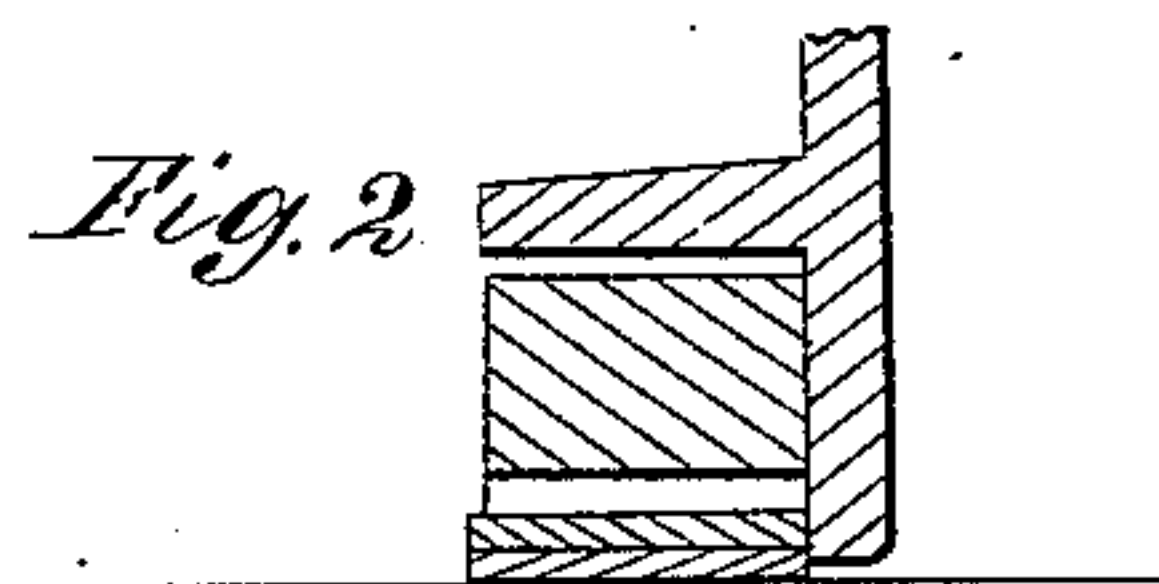
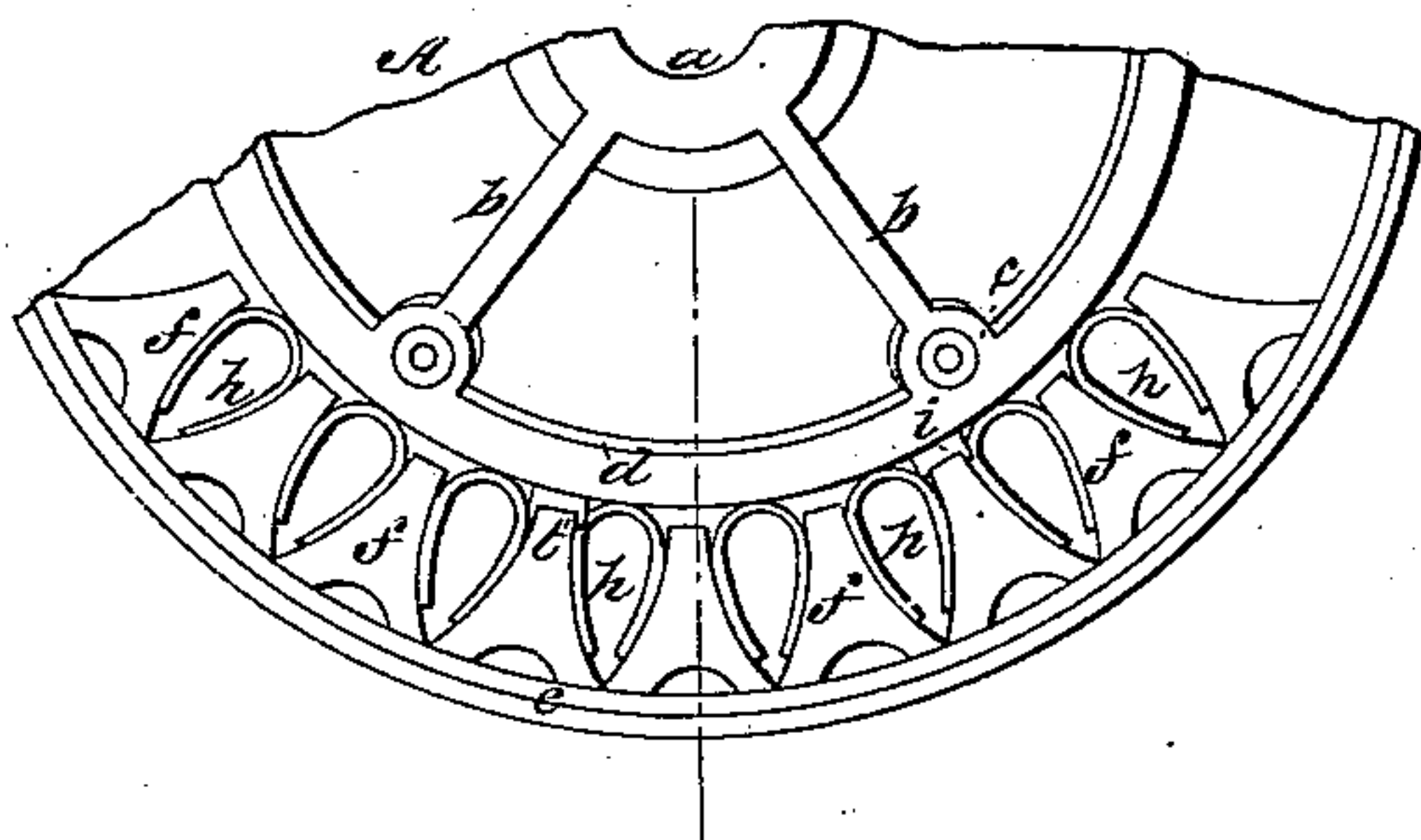
*N<sup>o</sup> 61,728.*

*Patented Feb. 5, 1867.*

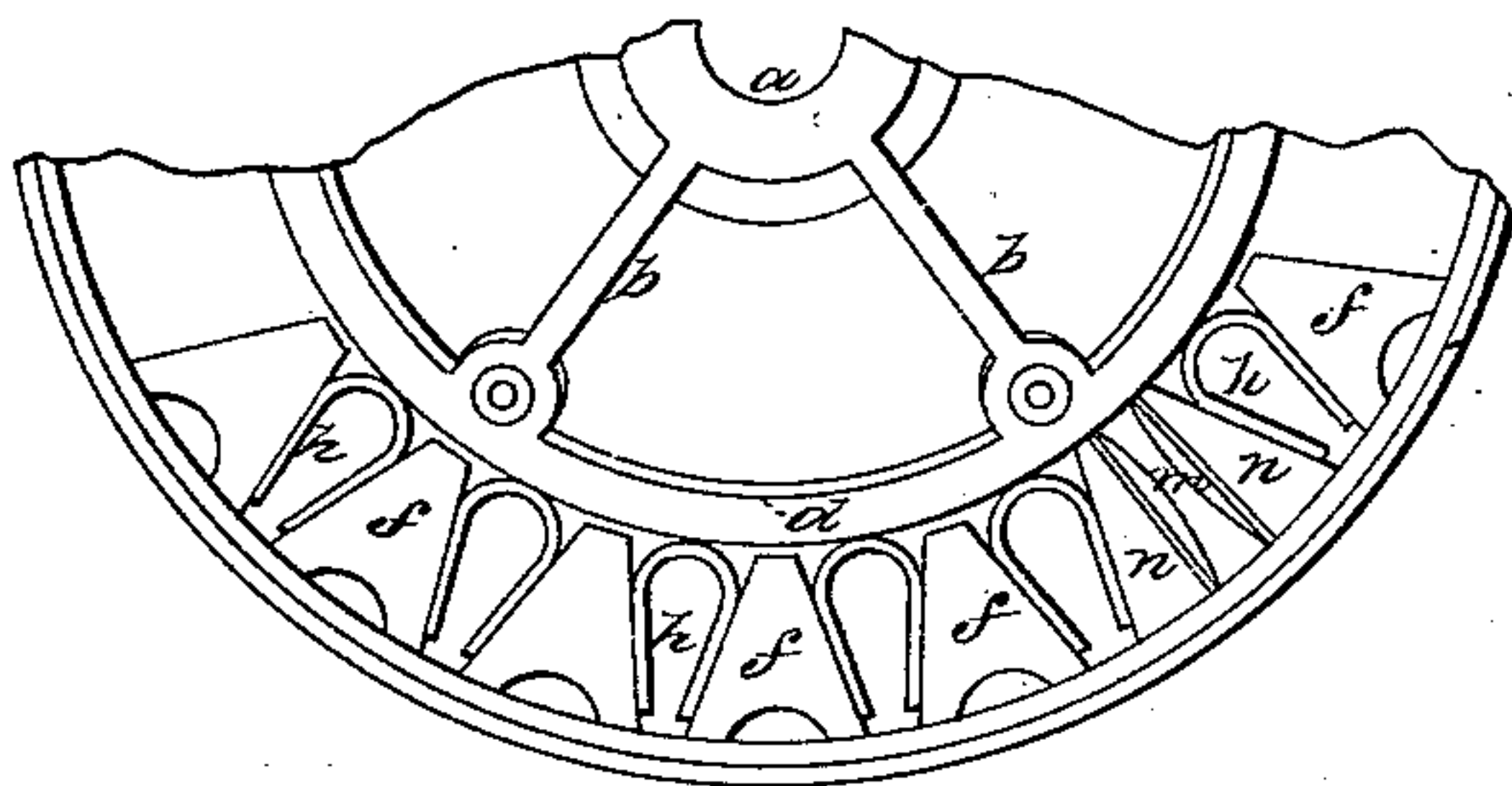
*Fig. 5*



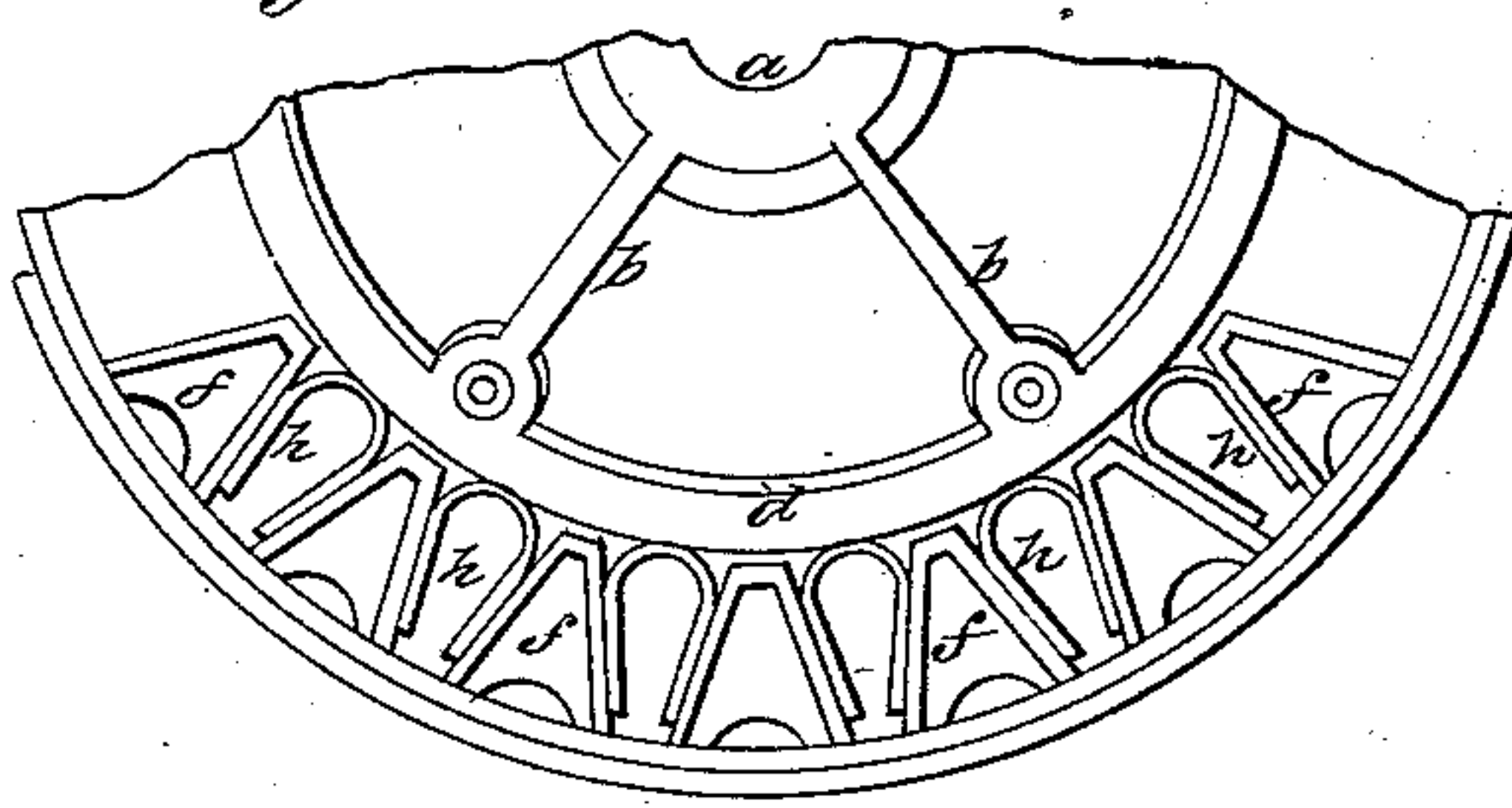
*Fig. 1*



*Fig. 3*



*Fig. 4*



*Witnesses;*

*Wm. Albert Smith  
John Parker*

*Inventor;*

*L. B. Flanders  
By his Atty  
H. Howson*

# United States Patent Office.

L. B. FLANDERS, OF PHILADELPHIA, PENNSYLVANIA.

*Letters Patent No. 61,728, dated February 5, 1867.*

## IMPROVEMENT IN PISTONS FOR 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, L. B. FLANDERS, of Philadelphia, Pennsylvania, have invented an Improvement in Pistons; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to the peculiar construction of the packing of pistons for steam engines, pumps, etc., the said packing consisting of a series of blocks and springs constructed, arranged alternately, and applied to the piston substantially as described hereafter, so as to form a packing which can be uniformly expanded without any excess of strain at any one point, or any undue strain on the springs. The improvements further consist of a device, described hereafter, for preventing the yielding of the packing at the lower edge of the piston of a horizontal engine; also of a device for expanding the aforesaid packing.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a face view of my improved piston with the cover removed.

Figure 2, a transverse section on the line 1-2, fig. 1; and

Figures 3, 4, and 5, modifications of the invention.

The main body of the piston is constructed in the ordinary manner, there being the usual central hub *a*, from which to the annular rib *d* extend the radial arms *b*, and between the said annular rib and the usual split rings *e* intervenes the annular space for containing the packing, which consists of a series of metal blocks, *f*, and vent springs, *h*, arranged alternately. Each block has its opposite tapering sides curved to conform to the shape of the springs, the inner ends of the blocks not reaching to the annular rib *d*, with which, however, the springs are in contact, the broad outer ends of the blocks being in contact with the inside of the rings. In large horizontal engines the lower edges of the pistons and covers are apt to wear, owing to the weight of the piston and to the yielding of the packing at that point; this I prevent by placing between the inner ends of two or more of the blocks *f* and the annular rib *d* small keys, *i*, which prevent undue compression of the packing at the bottom edge of the piston. The mode of expanding the packing will be best understood by reference to fig. 3, in which the blocks and springs are of a somewhat different form. A key, *m*, having a slight taper, is driven between two special blocks, *n*, so as to force the latter apart and extend the entire ring of blocks and springs, thereby forcing the split rings *e* outwards and increasing the diameter of the piston. This expansion is uniform throughout, there being no excessive strain at any one or more points, no undue strain being imparted to the springs, as they all yield equally, the yielding of any one spring being of the smallest extent.

The modifications illustrated in figs. 4 and 5 will be readily understood without description.

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

1. The within-described packing, composed of blocks and springs, constructed and arranged alternately on a piston between the annular rib *d* and split rings *e*, substantially as described.
2. The keys *i*, arranged between the blocks and annular rib *d*, for the purpose specified.
3. The key *m*, applied for expanding the packing in the manner described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

L. B. FLANDERS.

Witnesses:

JOHN WHITE,

W. J. R. DELANY.