

No. 626,611.

Patented June 6, 1899.

W. HAY.

EXPANSIBLE LUBRICATING PISTON.

(Application filed Apr. 30, 1898.)

(No Model.)

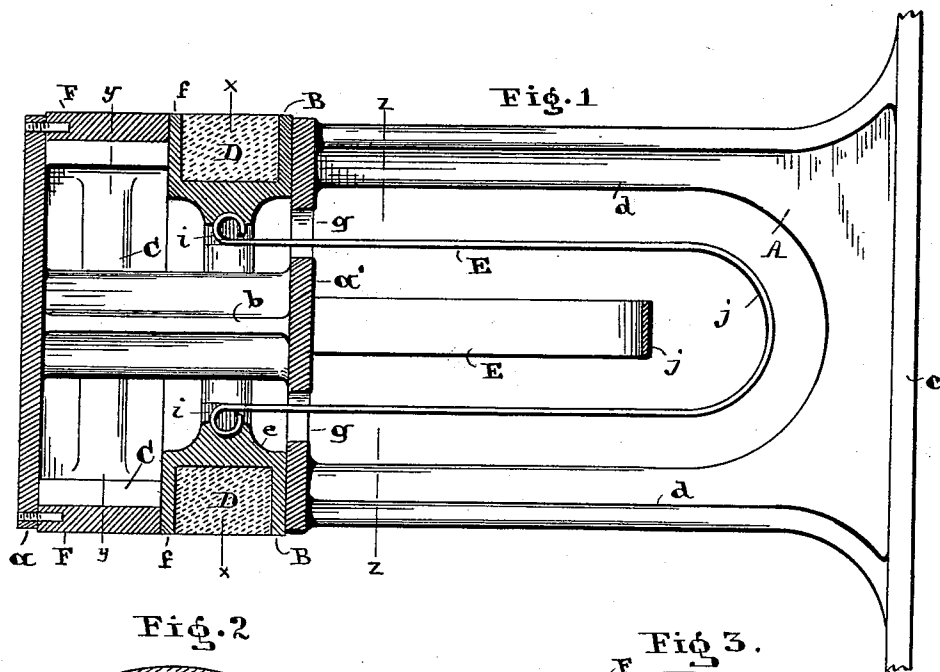


Fig. 2.

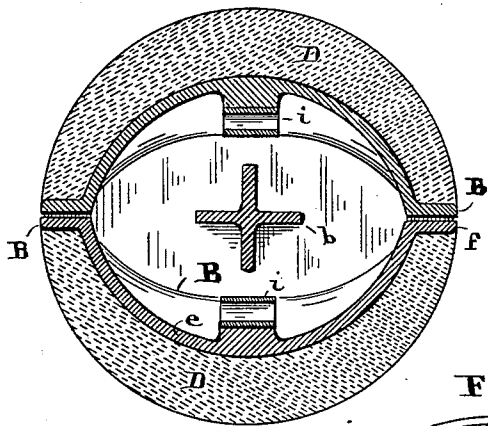


Fig. 3.

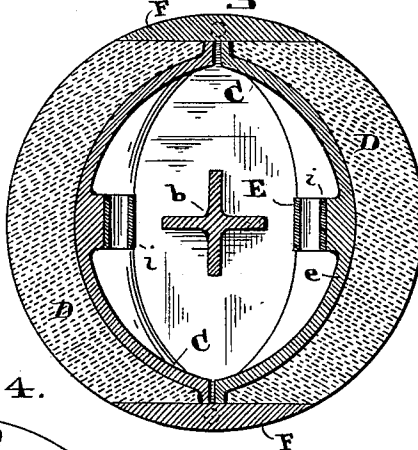
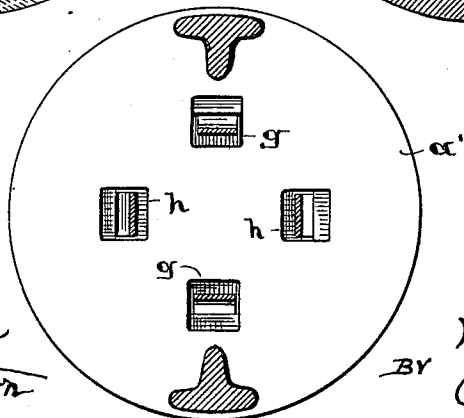


Fig. 4.



WITNESSES

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EXPANSIBLE LUBRICATING-PISTON.

SPECIFICATION forming part of Letters Patent No. 626,611, dated June 6, 1899.

Application filed April 30, 1898. Serial No. 679,315. (No model.)

To all whom it may concern:

Be it known that I, WALTER HAY, a citizen of the United States of America, and a resident of Seville, in the county of Medina and State of Ohio, have invented certain new and useful Improvements in Expansible Lubricating-Pistons, of which the following is a specification.

My invention relates to improvements in trunk-pistons which are more particularly intended for use in connection with caloric or explosive motor cylinders; and the objects of my improvements are, first, to provide for a suitable lubrication of said pistons, (cylinders, respectively;) second, to render said pistons expansible with regard to fitting the wall of such cylinders, and, third, to provide suitable means for such purposes which are most efficient and durable in operation. I attain these objects substantially by the means and in the manner as shown in the accompanying drawings, in which—

Figure 1 represents a longitudinal part sectional and part exterior view of a piston embodying the features above alluded to; and Figs. 2, 3, and 4, respectively, represent transverse sectional views on lines *x x*, *y y*, and *z z*.

Like letters of reference denote like parts in the drawings and specification.

The illustration of the piston herewith given substantially comprises the frame A, the semicircular casings B B and C C, the fillers D D, and the springs E E.

Circular plates or disks *a a'* constitute the piston-terminal of the frame A, the outer plate *a* of which is held secure and concentric in connection with the inner plate *a'* by means of the core *b*. (See Fig. 1.) As shown, the outer terminal *c* of the frame is adapted for a yoke connection with a crank-shaft or equivalent.

It is obvious that the sides *d d* be of such form as to embody greatest resistance in a comparatively light structure.

The casings B B and C C consist of the arch-plate *e* and the flanges *f f*. Said casings are of corresponding width, so as to fit closely between the plates *a a'*.

The fillers D D are prepared of suitable lu-

bricating ingredients and compressed into solid state to suit the cavity of the casings. (See Figs. 1, 2, and 3.)

The springs E E are of an elongated return form, in preference flat steel being used for the purpose of forcing the casings with contents against the wall of the cylinder. Through the ports *g g* and *h h* admission is had for the springs into the piston proper. Said ports also serve in the nature of guides for the purpose of retaining the casing and springs in about the relative position as shown. Any suitable mode or form of connection may be adapted for the purpose of retaining the terminals *i* of the springs in operative connection with said casings. (See Figs. 1, 2, and 3.)

It is intended that the casing-joints relatively should be about at right angles in order to effect a uniform expansion of the casings around the cylinder-wall, also to prevent leakage past said joints.

Auxiliary blocks F are employed in connection with the front casings C C. Said blocks cover the joints of said casings and admit of the expansion thereof under exclusion of exposure of said joints. (See Figs. 1 and 3.)

The piston is rendered self-lubricating owing to the lubricating consistency of the fillers D D. The material of which said fillers are made is sufficiently hard in nature to answer the purpose of making tight contact with the cylinder-wall in order to prevent leakage past the piston.

The form and position of the springs admits at all times of inspection thereof and a ready adjustment, if necessary. Furthermore, the active part (loop *j*) is so far removed from the heat of the cylinder that from this source no injury can be done to said springs.

It is obvious that the frame A of and for the piston may consist of an integral skeleton formed substantially as shown, or a structure answering the same purpose may be constructed of more than one part without departing from the nature of my invention.

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

1. A piston comprising a frame one end of which terminates in separated disks, a plu-

ality of semicircular casings carrying solid lubricants and fitting between said disks and elongated return-bend springs arranged in suitable connection with said casings for expanding the latter as and for the purpose set forth.

2. In a piston the combination of a frame one end of which terminates in separated disks, a plurality of casings intermediate said disks, lubricating-fillers and joint-covering blocks for said casings and elongated return-bend springs all constructed and arranged substantially as and for the purpose set forth.

3. A piston consisting of a frame of which one end terminates in separated disks, two or

more sets of casings, lubricating-fillers carried by said casings, which fit between said disks, auxiliary blocks for the outer set of said casings, and elongated return-springs extending through ports in the inner disk and being in operative connection with said casings all constructed and arranged substantially as and for the purpose set forth.

Signed by me, at Cleveland, Ohio, this 26th day of April, 1898.

WALTER HAY.

Witnesses:

BERNH. F. EIBLER,
GUSTAV SCHMITZ.