(No Model.)

S. P. WATT.

PISTON.

No. 442,729. Patented Dec. 16, 1890.

Fig. 1.

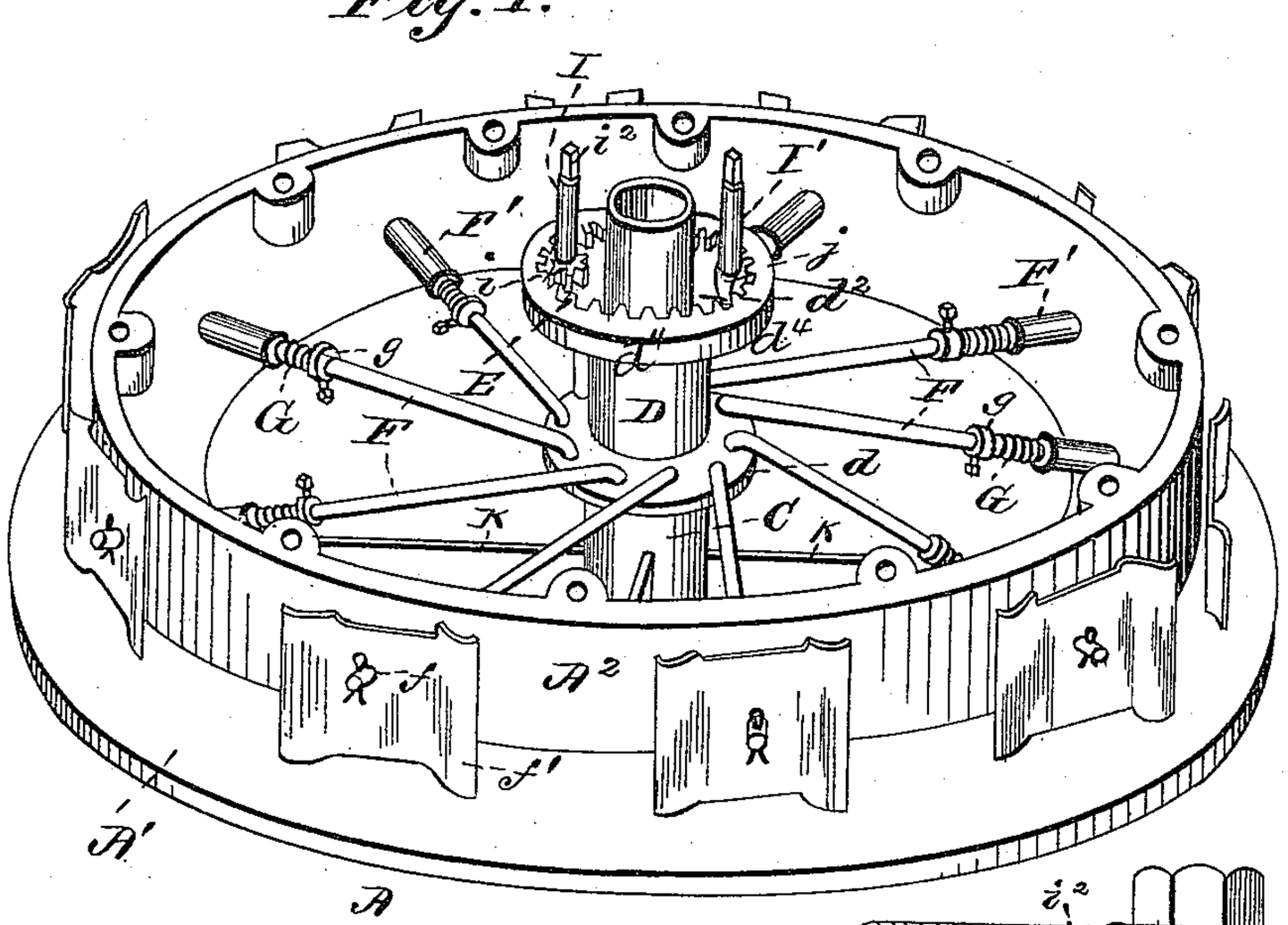
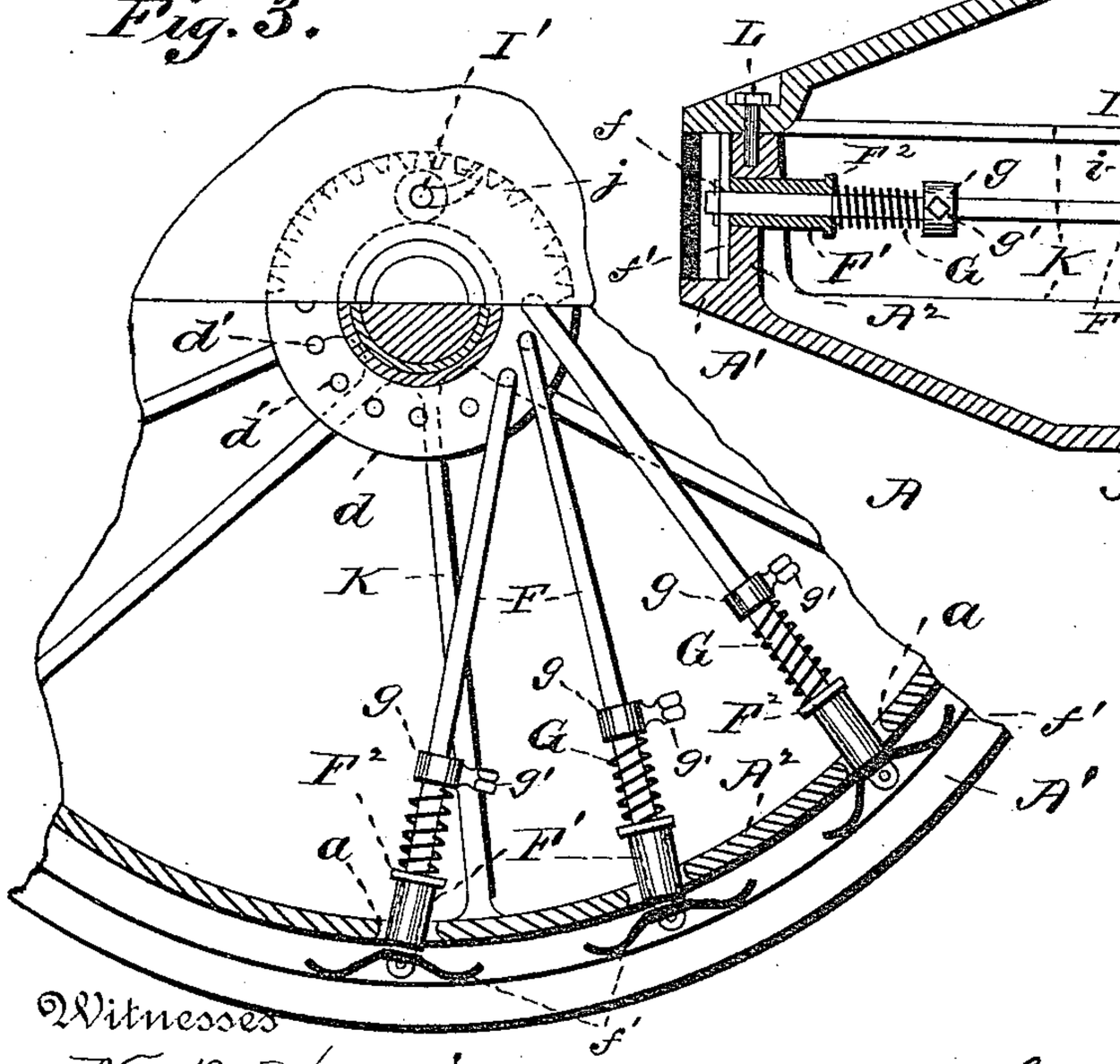


Fig. 3.



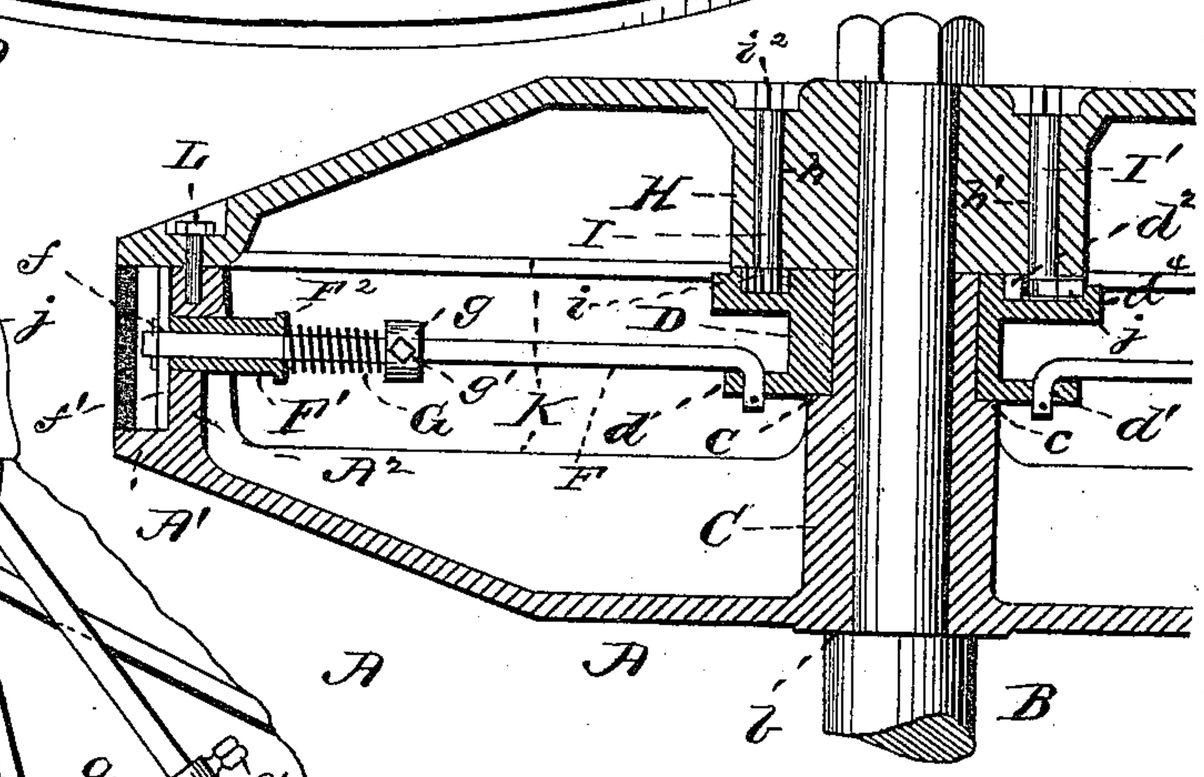


Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

SERN P. WATT, OF COLUMBUS, OHIO, ASSIGNOR TO THE COLUMBUS MACHINE COMPANY, OF SAME PLACE.

PISTON.

SPECIFICATION forming part of Letters Patent No. 442,729, dated December 16, 1890.

Application filed July 5, 1890. Serial No. 357,803. (No model.)

To all whom it may concern:

Be it known that I, SERN PERLEY WATT, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Pistons; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to means for adjusting springs in a piston-head whereby the piston-ring is caused to bear equally upon the cylinder; and it consists in the construction and novel arrangement of parts, as hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

The objects of my invention are, first, to provide the piston-springs with suitable rods passing through openings in a vertical flange of the piston, said rods radiating from an annular flange within the piston-head; secondly, to provide said rods at their outer ends with sleeves adapted to bear against the piston-springs against the tension of spiral springs on the rods, as hereinafter more fully described, and, thirdly, to provide suitable means for adjusting the piston-springs without necessitating the removal of the follower-plate.

In the drawings, Figure 1 is a perspective view of a piston-head embodying my improvements, the follower-plate thereof removed. Fig. 2 is a vertical section of a piston, the follower-plate in position. Fig. 3 is a partial plan and sectional view of a piston-head embodying my improvements.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in all the figures, the letter A indicates the piston-head, consisting of the horizontal plate A′, having rising from it and at right angles thereto the vertical annular flange A^2, provided near its central part in its periphery and for its entire circumference with a series of openings *a*, for a purpose presently explained.

The letter B designates the piston-rod, provided with a shoulder *b*, upon which is designed to rest the piston-head A, as shown in Fig. 2. Rising from the piston-head at its central part, and made integral therewith, is a hollow boss C, having intermediate of its upper and lower edges an annular shoulder *c*, designed to receive a flanged collar D, said collar being provided at its lower edge with a laterally-extending annular flange *d*, having formed therein at regular intervals openings *d′*. At the upper edge of the collar D is formed a laterally-extending annular flange d^4, provided on its upper face with an annular rectangular groove d^2, said groove being provided in its outer wall with gear-teeth E, as shown in Fig. 1.

F designates rods having one of their ends projecting through the openings *a*, and have secured upon their outer ends, by means of split-keys passing through suitable openings *f* in the rods, piston-springs *f′* of ordinary construction. At their inner ends the rods F are bent at right angles, and said bent portion passed downward through the openings *d′* and secured therein by pins passing through the projecting ends of the rods.

Upon the outer ends of the rods F are placed sleeves F′, which abut against the inner face of the piston-springs and are provided at one end with an annular flange F^2, forming a support for one end of the coiled springs G, their opposite ends abutting against collars *g* on the rods F, and made adjustable thereon by set-screws *g′*, which pass through suitable openings in the collars and have a point of bearing upon the rods F.

H designates a hollow boss made integral with the piston-follower plate, through which passes the reduced end of the piston-rod, and at each side thereof, as shown, the boss H is provided with vertical openings *h h′*, in which fit and work shafts I and I′, the former one having rigidly secured at its lower end and meshing with the gear E a pinion *i*, the upper end of said shaft having the squared portion i^2, upon which fits a suitable wrench for a purpose presently explained. The shaft I′ has rigidly secured at its lower end a pawl *j*, which is adapted to engage the gear E and hold the flanged collar D in its adjusted position against the tension of G and *f′*.

In order that the piston-head and piston-follower may be strengthened, I form on their inner faces and radiating from the bosses C and H ribs K, as shown, and to firmly secure the follower on the piston-head I form in the vertical flange A^2, at its upper edge, a series of screw-threaded lugs registering with openings formed in the follower-plate, through which pass the follower-bolts L.

It will be noticed in the drawings that the rods F do not radiate from the axial center of the piston, but at an angle thereto, the object being to make the rods F sufficiently long to allow of the piston-springs being set out against the piston-ring, and to prevent binding of the sleeves F′ in the openings *a* the edges of said openings are rounded off, as shown in Fig. 3.

The operation of my invention, taken in connection with the above description and accompanying drawings, may be briefly described as follows: When it is desired to adjust the piston-springs, should the piston at any time leak or the piston-ring bear too tightly against the cylinder, suitable wrenches are placed upon the upper squared ends of the shafts I and I′, and by turning the wrench on the shaft I′ release the pawl from engagement with the gear E. Then by turning the shaft I, carrying the pinion meshing with the gear E, the piston-springs may be adjusted in or out as desired. When sufficient tension has been put on the piston-springs, the pawl is then turned to engage the gear E, as shown in Figs. 1 and 3. It will thus be seen that by my improvement piston-springs may be readily adjusted without necessitating the removal of the follower-plate, and that owing to the like pivoted connection of each spring with the flanged collar D, carrying the gear E, all the springs may be readily adjusted alike and cause the piston-ring to bear equally at all points on the cylinder.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the piston, of a hollow boss located therein, carrying a flanged collar having a series of rods radiating therefrom, the sleeves on said rods adapted to bear against the piston-springs through the medium of coil-springs carried by the rods and bearing against collars on said rods, for the purpose set forth.

2. The combination, with the piston having flange A^2 and hollow boss C, with shoulder *c*, of the collar D, formed at its bottom with flange *d*, from which radiate the rods F, and at its top with flange d^4, having formed therein the gear-teeth E, vertical key-headed shaft I, bearing pinion *i*, and key-headed shaft I′, with pawl *j*, substantially as described, for the purposes specified.

3. The combination, with the piston provided with a vertical flange, of a hollow boss located within the piston, carrying a flanged collar having radiating from it a series of rods carrying sleeves, which sleeves are adapted to bear against the piston-springs by coiled springs on said rods, and means, substantially as described, for locking the rods in a projected position, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

SERN P. WATT.

Witnesses:
ROBT. B. COLLIER,
R. W. WEAVER.