(No Model.)

# G. W. BROWN.

## PISTON FOR PRESSURE INDICATORS.

No. 263,845. Patented Sept. 5, 1882.

*Fig. 1.*

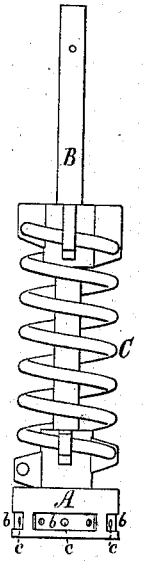



*Fig. 2.*

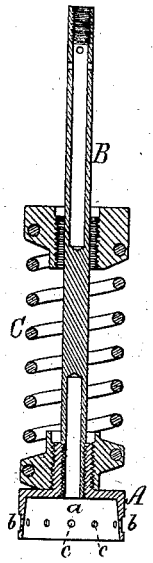
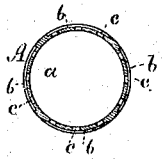



*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

GILMAN W. BROWN, OF WEST NEWBURY, ASSIGNOR TO THE CROSBY STEAM GAGE AND VALVE COMPANY, OF BOSTON, MASSACHUSETTS.

## PISTON FOR PRESSURE-INDICATORS.

SPECIFICATION forming part of Letters Patent No. 263,845, dated September 5, 1882.

Application filed April 21, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GILMAN W. BROWN, of West Newbury, in the county of Essex, of the State of Massachusetts, have invented a new and useful Improvement in the Pistons of Steam-Engine Pressure-Indicators; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is an elevation, Fig. 2 a vertical section, and Fig. 3 a horizontal section, of an indicator-piston provided with my invention, which consists in the piston provided with a depressing-spring and with a head having a series of open chambers or recesses in it at its outer periphery, and one or more holes leading from each of such chambers to the bottom of the head or into the interior open chamber or space within such head, such holes and external recesses being to cause the steam, when operating to elevate the piston against the depressing power of the spring, to pass from the interior open chamber to and into the said encompassing or peripheral chamber or chambers, in order to maintain the piston-head centralized within the cylinder, the peripheral chambers extending around the piston-head and being open outwardly against the bore or inner peripheral surface of the cylinder.

In the drawings, A denotes an indicator piston-head; B, its rod, and C the spring for depressing the piston. The piston-head has within it concentrically a cylindrical or other proper-shaped chamber, *a*, open at its lower end, and besides this chamber such piston has in its outer periphery a series of shallow recesses or chambers, *b*, each extending partially around it, and each having one or more holes, *c*, leading from it into the interior chamber, *a*. In case of the piston-head being constructed without the central chamber, the passage or passages from the peripheral chambers should lead through the bottom of the head.

In the steam-engine pressure-indicator the piston of whose cylinder is provided with a spiral spring, as shown in Figs. 1 and 2 of the accompanying drawings, it becomes necessary for the piston-head to have a loose fit to the bore of the cylinder. Generally speaking the said head has a diameter of about one five-hundredth part of an inch less than that of the bore of the cylinder, such being essential to cause the piston to travel in the cylinder with little or no friction, and to prevent deposits from the steam getting between the said head and the periphery of the bore of the cylinder and impeding the piston in its action. In most if not all such indicator-cylinders having their pistons provided with spiral springs there is a tendency of the spring to force the piston laterally, so as to press its head against the periphery of the bore of the cylinder, thereby causing friction to impede the upward movement of the piston. With my improvement this is prevented, for on the spring pressing the piston-head laterally against the cylinder one or more of the peripheral open chambers of the said head will be closed outwardly by being carried up to the inner surface of the cylinder. The steam, however, entering the said chamber or chambers will operate to crowd the piston-head away from the cylinder, and thus to counteract the said tendency of the spring to press the piston-head against the inner surface of the cylinder. With my improvement the piston during each upward stroke of it is maintained concentric with the cylinder-bore and out of contact therewith.

I am aware that it is not new in a common lifting-pump to have its piston provided with two annular packings, an annular space or chamber between them, and also with a central chamber open at bottom, and having passages leading from it laterally into the single peripheral space or chamber between the packings, such being as shown in the United States Patent No. 245,835.

In the indicator-piston a single annular space extending around the periphery of its head and opening against the cylinder and provided with inducts will not answer to maintain, against the action of the spring, the piston-head out of contact with the bore of the cylinder. A series of separate peripheral recesses or chambers, as described, is necessary; and therefore

I claim—

A steam-engine pressure-indicator piston, provided with the depressing spiral spring, and having a series of separate open peripheral recesses or chambers arranged, as set forth, in the head of such piston, and having inducts leading from them to the bottom of the head or into a central chamber arranged, as described, in it, the said head, and opening through its bottom, all being substantially as set forth.

GILMAN W. BROWN.

Witnesses:
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