J. E. SULLIVAN.

PISTON HEAD CONSTRUCTION.

APPLICATION FILED MAY 2, 1922.

1,437,869.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

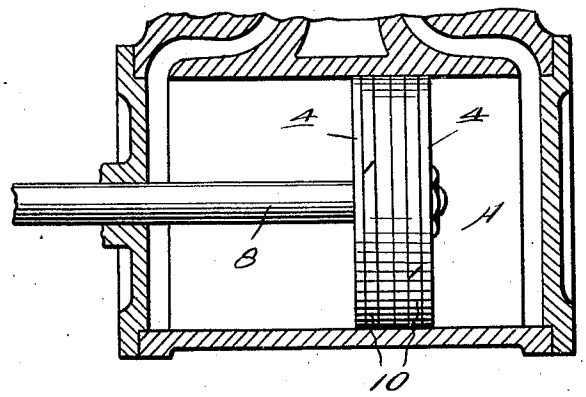
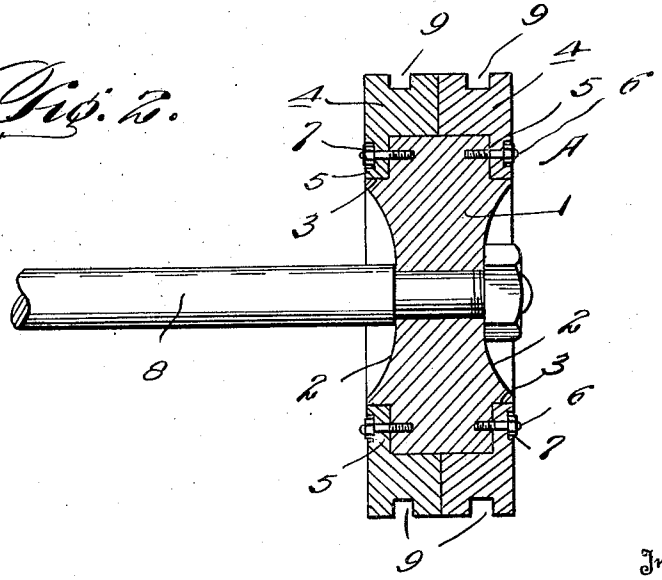


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

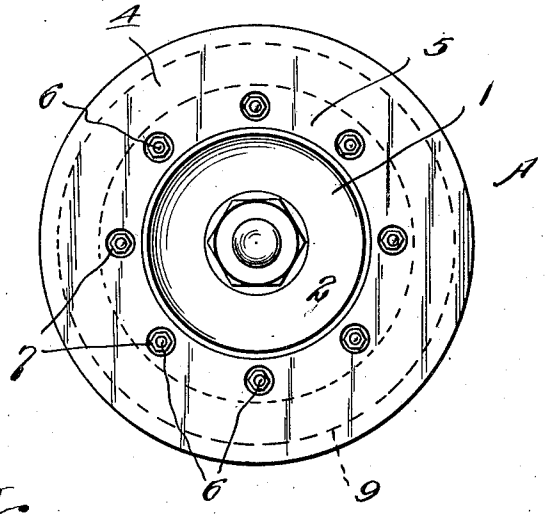


Fig. 4.

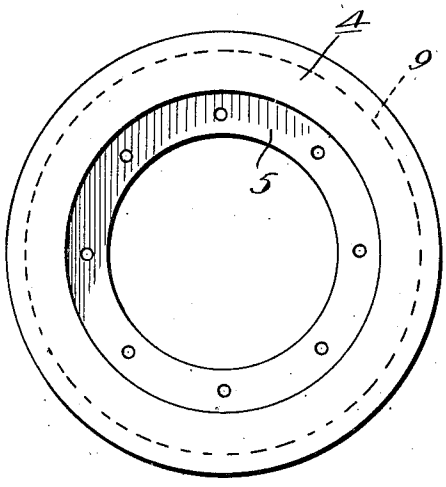
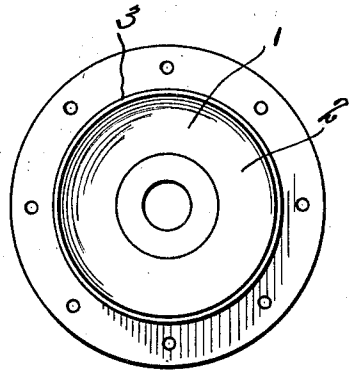


Fig. 5.



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Patented Dec. 5, 1922. 1,437,869

UNITED STATES PATENT OFFICE.

JAMES E. SULLIVAN, OF JACKSON, OHIO.

PISTON-HEAD CONSTRUCTION.

Application filed May 2, 1922. Serial No. 557,814.

To all whom it may concern:

Be it known that I, JAMES E. SULLIVAN, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Ohio, have invented new and useful Improvements in Piston-Head Constructions, of which the following is a specification.

In carrying out the present invention it is my purpose to provide a piston head which will be constructed in such manner that the life of the piston head as a whole will be greatly increased and wherein the disadvantages and trouble incident to the outer wall of the piston head, in a horizontal engine, wearing out of round will be minimized.

It is also my purpose to provide a piston head which will be constructed in such manner that the outer periphery or wearing surface may be adjusted circumferentially of the core of the head, so as to take up for wear, and wherein such wearing surface may be replaced when entirely worn out.

Furthermore, I aim to provide a construction of piston head which may be manufactured and marketed at small cost and wherein the component parts will be so arranged and corelated as to reduce the possibility of derangement to a minimum and enable such parts to be adjusted quickly and conveniently in order to provide for the taking up of wear and the replacing of the worn surfaces.

With the above recited objects in view, and others of a like nature, the invention resides in the construction, combination and arrangement of parts set forth in and falling within the scope of the appended claims.

In the accompanying drawings:—

Figure 1 is a view in side elevation of a piston head constructed in accordance with my invention, the same being shown in a horizontal cylinder, the latter being in section.

Figure 2 is a vertical sectional view through my improved piston head.

Figure 3 is an end elevation thereof.

Figure 4 is a view in elevation of one of the bull rings.

Figure 5 is a similar view of the core.

Referring now to the drawings in detail, A designates my improved piston construction as a unit. In accordance with my invention this piston comprises a core or body portion 1 having the opposite surfaces thereof concaved in the present instance, as at 2. The outer periphery of the core or body 1 at the marginal edges thereof is rabbeted as at 3.

Encircling the periphery of the core 1 are bull rings 4—4 snugly engaging the core 1 and having their confronting edges in contact with each other, as illustrated in Figure 2, and their outer edges at the inner surfaces formed, respectively, with inwardly projecting flanges 5 that seat within the rabbeted portions 3 in the core.

In the present instance, the vertical walls of the rabbeted portions of the core or body 1 are equipped with stud bolts 6 spaced apart around the core equal distances. These bolts pass through bolt holes in the flanges 5 and the outer ends thereof are provided with nuts 7 that are seated in countersunk portions of the flanges 5, as shown in Figure 2.

In the present form of my invention I employ eight of these bolts on each side of the piston head, so that the bull rings may be adjusted circumferentially of the piston head to eight different positions, in order that any wear on the lower side of the bull rings which constitute the wearing surfaces, incident to the horizontal travel of the piston in the cylinder, may be taken up.

In Figure 1 of the drawings I have shown my improved piston head as arranged within a horizontally disposed steam cylinder provided with steam passages leading into the respective ends thereof. It is obvious, of course, that my improved piston head may be used in connection with any engine, compressor or other machine employing pistons and at its center the body or core 1 is formed with a transverse bore in which is seated and appropriately fastened one end of the piston rod 8.

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that I have provided a piston head that is constructed in such manner that the bull rings may be adjusted around the core to a number of different positions, thereby enabling wear on any part of the wearing surfaces of the piston to be taken up and wherein the bull rings may be replaced when completely worn out and furthermore it will be seen that by means of my improved piston construction

the diameter of the piston may be changed by employing bull rings of various diameters.

In accordance with my invention the outer surfaces of the respective bull rings 4 are formed with annular grooves 9 and fitted within these grooves are packing rings 10 designed to engage the cylinder wall, so as to form a fluid tight joint between the piston head and cylinder.

While I have herein shown and described one preferred form of my invention by way of illustration, I wish it to be understood that I do not limit or confine myself to the precise details of construction herein shown and described, as modifications and variations may be made within the scope of the claims and without departing from the spirit of my invention.

Having thus described my invention, what is claimed as new, is:—

1. In a piston head, a core or body portion formed at the marginal edges of its periphery with rabbeted portions, bull rings encircling said core or body portion at the periphery thereof and having their inner edges in face to face contact, securing flanges formed on the outer edges of said bull rings at the inner peripheries thereof and seated in said rabbeted portions and means for fastening said flanges in said rabbeted portions.

2. In a piston head, a core or body portion formed at the marginal edges of its periphery with rabbeted portions, bull rings encircling said core or body portion at the periphery thereof and having their inner edges in face to face contact, securing flanges formed on the outer edges of said bull rings at the inner peripheries thereof and seated in said rabbeted portions, stud bolts carried by the vertical walls of said rabbeted portions and extending through bolt holes formed in said flanges and nuts threaded upon the outer ends of said stud bolts and seated in countersunk portions of said flanges.

3. In a piston head, a core or body portion formed at the marginal edges of its periphery with rabbeted portions, bull rings encircling said core or body portion at the periphery thereof and having their inner edges in face to face contact, securing flanges formed on the outer edges of said bull rings at the inner peripheries thereof and seated in said rabbeted portions, stud bolts carried by the vertical walls of said rabbeted portions and extending through bolt holes formed in said flanges and nuts threaded upon the outer ends of said stud bolts and seated in countersunk portions of said flanges, the outer surfaces of said bull rings being formed with packing ring grooves and packing rings disposed within said grooves.

In testimony whereof I affix my signature.

JAMES E. SULLIVAN.