(No Model.)

J. A. BURNS.

METALLIC PACKING FOR PISTON HEADS.

No. 584,539. Patented June 15, 1897.

Fig. 1.

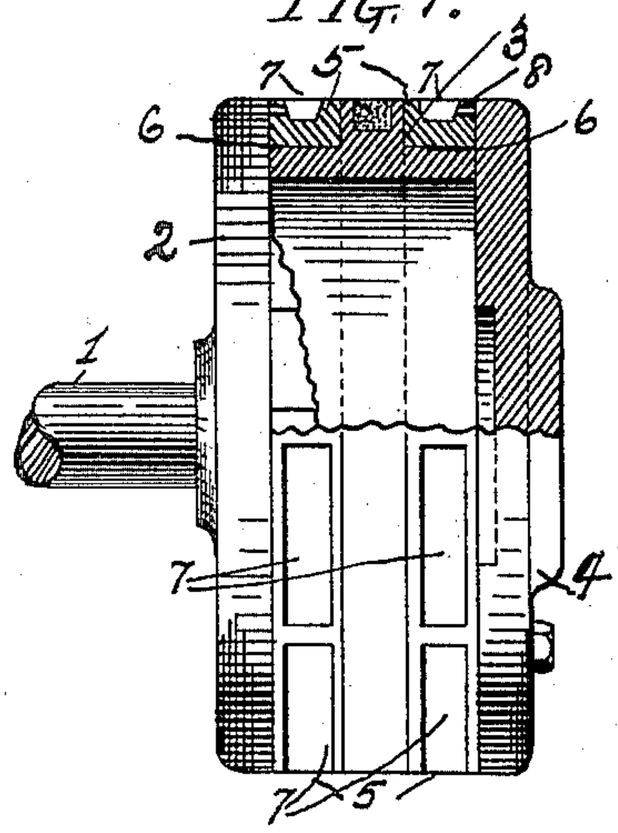


Fig. 2.

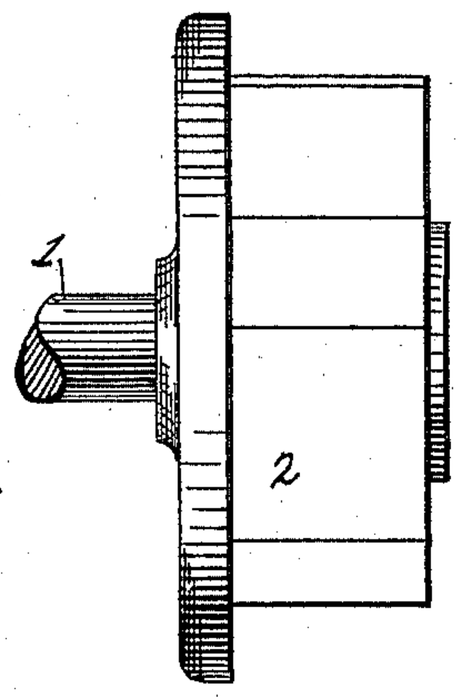


Fig. 3.

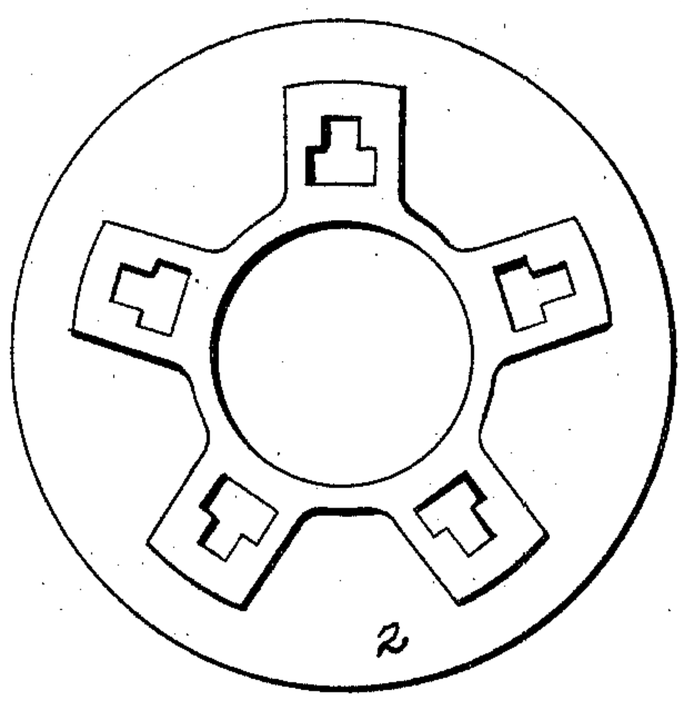


Fig. 4.

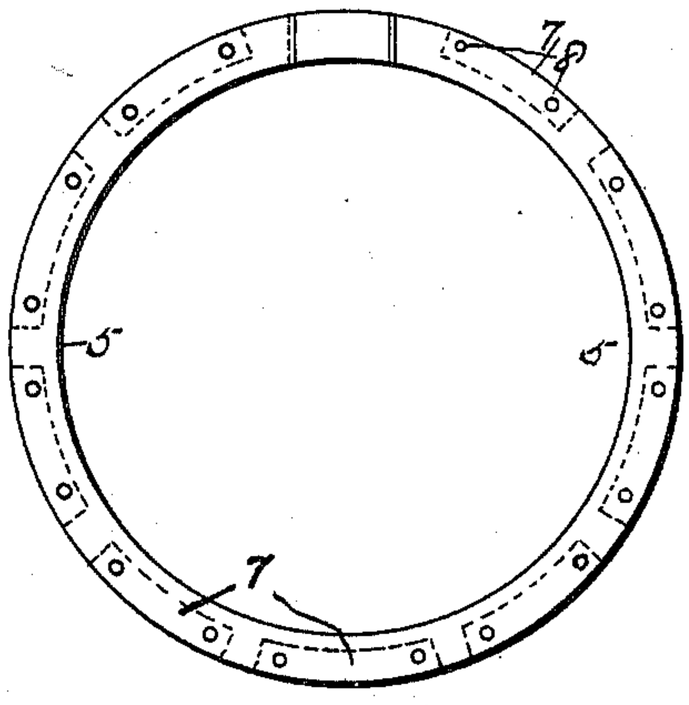


Fig. 5.

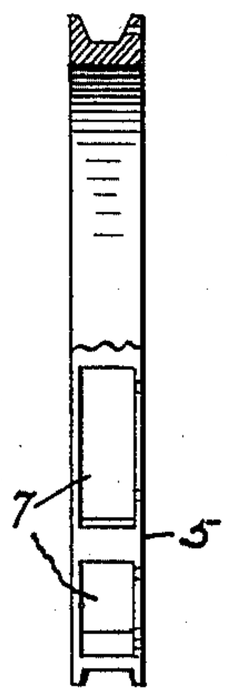


Fig. 7.

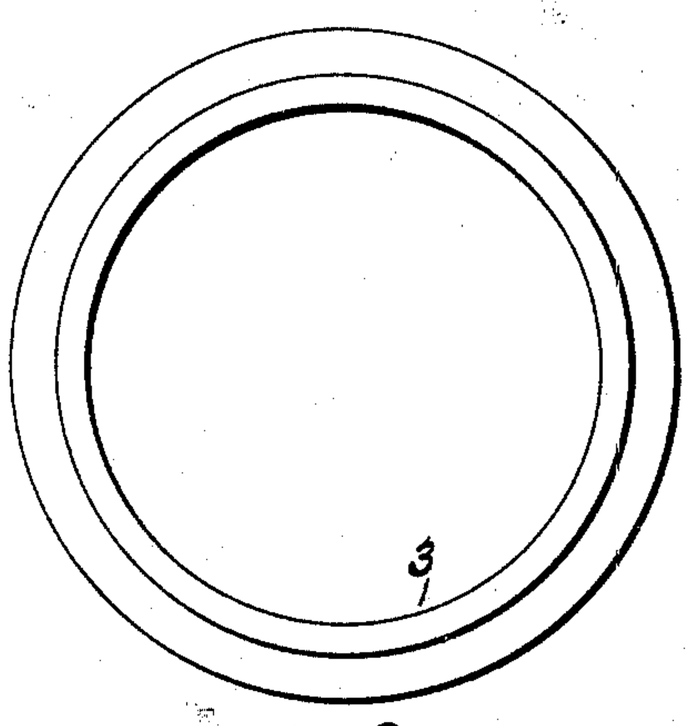


Fig. 6.

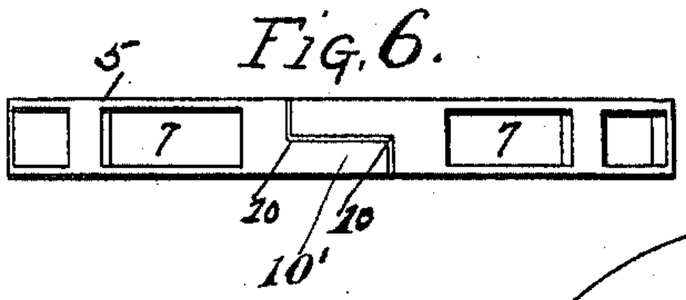


Fig. 9.

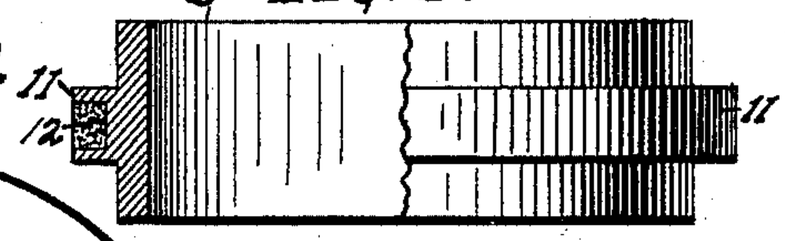
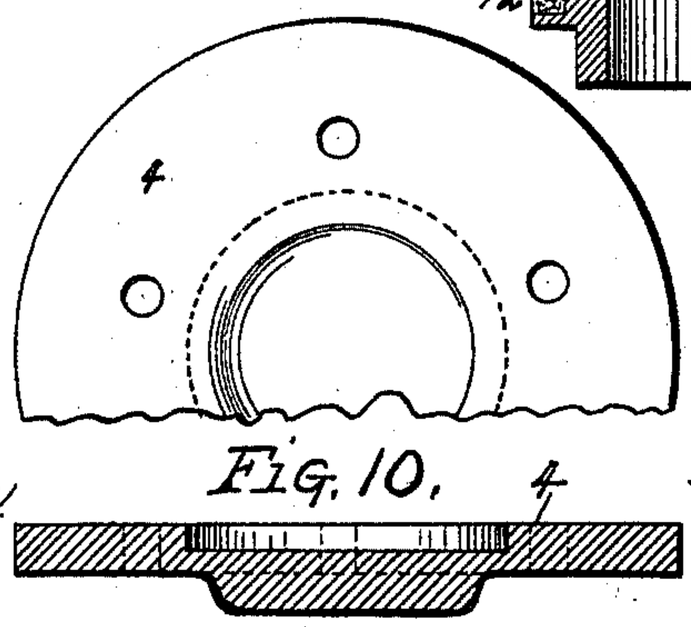


Fig. 8.

Fig. 10.



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his
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN A. BURNS, OF ALLEGHENY, PENNSYLVANIA.

METALLIC PACKING FOR PISTON-HEADS.

SPECIFICATION forming part of Letters Patent No. 584,539, dated June 15, 1897.

Application filed June 10, 1896. Serial No. 594,895. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. BURNS, a citizen of the United States, residing at Allegheny, in the county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Metallic Packing for Piston-Heads; and I hereby 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a longitudinal elevation, partly in section, of the piston-rod, bull-ring, springs, and followers. Fig. 2 is an elevation of piston and head. Fig. 3 is a plan view of the piston-head. Fig. 4 is a side elevation of the spring-ring. Fig. 5 is a sectional elevation of the same. Fig. 6 is an enlarged view of a portion of the spring-ring where the adjacent separable ends are connected. Fig. 7 is a plan view of the bull-ring. Fig. 8 is a side elevation, partly in section, of the same. Fig. 9 is a plan view of the follower. Fig. 10 is a section through the center of the same.

My invention relates to metallic piston-packing adapted to be regulated partly by the elasticity of the same and partly by the pressure of the steam, the object of my invention being to produce a simple and efficient packing applicable to any ordinary piston-head or to the bull-ring thereon, and to this purpose consists of the novel construction and arrangement of parts hereinafter described, reference being had to the accompanying drawings, forming part hereof, in which like numerals indicate like parts wherever they occur.

Referring to said drawings, 1 and 2 are respectively piston-rod and piston-head, which are of the usual construction.

3 is a bull-ring of the usual construction, secured in any suitable manner upon said piston-head between the follower 4, which is bolted or otherwise secured to said head, and the inner end of said piston-head, as shown in Fig. 1.

5 5 are flat metallic spring-rings adapted to be seated in the annular recesses 6 6, formed between the bull-ring and the inner end of the piston-head and the follower. Said spring-rings are provided with a series of recesses or chambers 7 7, the sides of which are inclined, or they may be V-shaped. They are likewise provided with a series of small openings 8 8, extending from said chambers in the front ring toward the front and in the chambers of the back ring toward the rear, for the admission of steam and oil into said grooves or chambers. The pressure of the steam within said chambers not only serves to regulate the distention of said rings and the consequent impingement of the same against the sides of the cylinder, but with the oil entering said chambers with the steam lubricates said packing. The separable ends of said rings terminate in respectively shoulders 10 10 and the tongues 10′, the end of either tongue being adapted to abut or seat itself against the shoulders formed in the opposite end of the ring, as shown in Fig. 6. Said rings are larger when distended than the inner diameter of the cylinder and are compressed somewhat in order to enter the cylinder, the elasticity of the spring causing them to impinge tightly against the cylinder. The friction of said springs upon the sides of the cylinder is graduated and adjusted by the pressure of the steam admitted to the recesses or chambers in said springs. Said openings 8 8 are also for the purpose of enabling the steam admitted into the chambers or recesses to exhaust therethrough.

The upwardly-projecting portion 11 of the bull-ring is provided with a recess 12, in which Babbitt or other suitable metal packing may be inserted.

The operation of my improvement is as follows, viz: The rings being adjusted up in the piston-head, as shown, said piston-head forces the same forward and enters the chambers or grooves in the rear ring through the small openings therein, the pressure whereof serves to contract said rings, if too widely distended, and lessen the friction of the same against the inner sides of the cylinder on the reverse stroke. The outer spring-ring on the head is operated upon in a similar manner by the steam, the steam acting upon the rear spring-ring being at this stroke permitted to exhaust, and thus decrease the friction of said inner ring upon the cylinder side.

Having described my invention, what I

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

1. The combination with the piston, bull-ring, and follower, of one or more separable flat spring-rings, each of which is integral throughout and of greater diameter when distended than the cylinder; said rings being compressed and seated in the recess formed between the bull-ring and follower, and having a series of chambers in the outer periphery of the same; the sides or edges of said rings having a number of small openings communicating with said chambers and the cylinder, substantially as and for the purpose herein described.

2. A metallic packing for piston-heads, comprising one or more flat separable spring-rings, integral throughout and of greater diameter than the cylinder when distended; said rings having a series of chambers in the outer periphery thereof of greater cross-section at the top transversely than at the bottom, and having a number of orifices in the edges or sides of the same communicating with said chambers and the cylinder, the separable ends of said ring or rings adapted to overlap, substantially as set forth.

In testimony that I claim the foregoing I hereunto affix my signature in the presence of two witnesses.

JOHN A. BURNS.

In presence of—
GEORGE D. EDWARDS,
C. A. WILLIAMS.