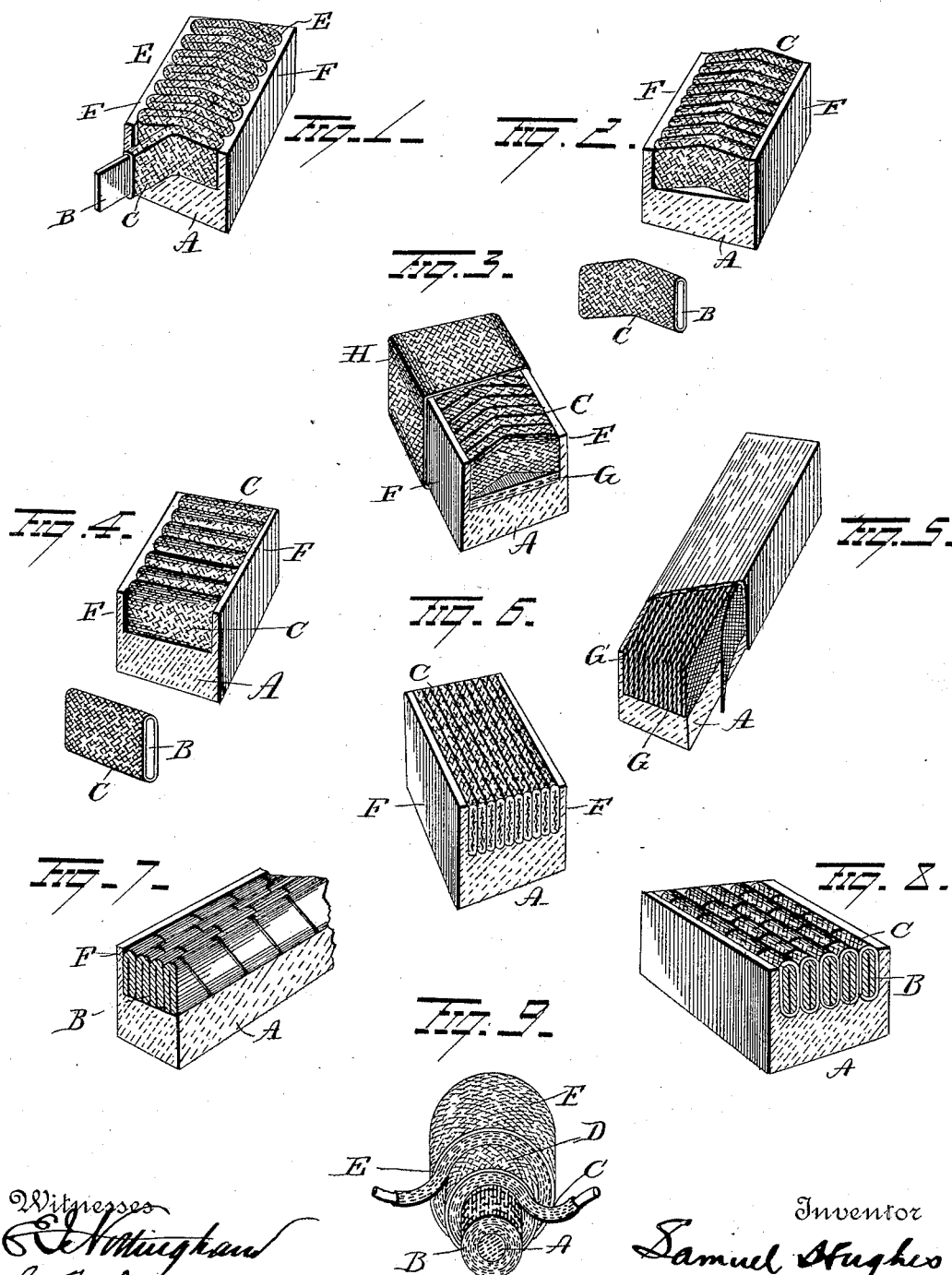


(No Model.)

S. HUGHES.
PISTON ROD PACKING.

No. 423,160.

Patented Mar. 11, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

SAMUEL HUGHES, OF CHARLESTON, SOUTH CAROLINA.

PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 423,160, dated March 11, 1890.

Application filed October 11, 1889. Serial No. 326,686. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HUGHES, of Charleston, in the county of Charleston and State of South Carolina, have invented certain
5 new and useful Improvements in Piston-Rod Packing; and I do 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 appertains to
15 make and use the same.

My invention relates to an improvement in piston-rod packing, the object being to provide a packing which will withstand the pressure and constant friction which packings are
15 subjected to and at the same time form a steam-tight joint between it and the rod; and to this end my invention consists in metallic strips in combination with an elastic packing. It further consists in a series of insulated
20 strips of metal having an elastic back; and still further, it consists in certain novel features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

25 In the accompanying drawings, Figures 1, 2, 3, 4, 5, 6, 7, 8, and 9 show several different forms of packings embodying my invention.

A represents an elastic back, preferably consisting of rubber, which constitutes the
30 foundation of the packing, and B is a strip of metal, by preference metallic alloy, similar to Babbitt metal, as being cheap and more readily handled in the formation of the packing. This strip is insulated by means of some
35 textile material C, braided or otherwise wrapped around it, and the strip is attached edgewise upon the elastic back by means of rubber, cement, or some other adhesive substance. In this form a single long strip of
40 insulated metal is employed, and this is folded back and forth, as shown, in a kind of V-shaped zigzag. The various folds are usually held together, at least temporarily, by bast-
ing-stitches, and when placed on the back
45 they are held fast at the edges E E, where the turns are made, by the rubber facing-strips F F, which, together with the rubber back, incase the metallic strip on the sides.

In Fig. 2 a very similar form of packing to

the one just described is shown, the only difference being that instead of using a long
metal strip folded back and forth, a large number of small V-shaped pieces are employed. Each of these pieces is incased in a
braided textile wrapper, and they are then
55 arranged side by side with their edges against the rubber back and their ends embedded in the rubber facing-strips F F, which constitute the sides of the packing. By this form small
and otherwise worthless pieces are utilized, 60 and with equally good results as in the former construction, in which a continuous strip is employed.

In Fig. 3 another slight departure is made. In this construction the same elastic back is
65 used and the small V-shaped insulated metallic pieces are employed, as well as the elastic facing-strips; but in this instance a textile strip G is interposed between the elastic back and the insulated metal pieces, and to
70 keep the parts compactly united they are insheathed in a braided textile wrapper H.

The next form I desire to describe (shown in Fig. 4) is substantially the same as that illustrated in Fig. 2, the only difference being
75 that the small metal pieces extend straight across the back instead of being V-shaped. Otherwise the two constructions are precisely similar.

In Fig. 5 several strips of woven-wire gauze
80 insulated by rubber are cemented edgewise upon the back, and these strips extend longitudinally of the latter. A thin strip of rubber G is usually placed between the strips
and the back, and the rubber insulating material or gum between the different strips
85 holds them compactly together.

In Fig. 6 each of these narrow strips of gauze is incased in a braided or woven textile wrapper. In other respects this construction
90 and the preceding one are exactly alike.

The form shown in Fig. 7 consists of the rubber back common to all the other varieties herein described, in combination with
several flattened twisted strips B B of metal, 95 which are placed side by side, with an edge against the back A, where they are cemented by rubber, gum, or other adhesive substances

and by the facing - strips. These various twisted strips are insulated by rubber cement, which holds them yielding together.

The construction illustrated by Fig. 8 differs from the one just described only in this particular, that each twisted strip is insulated by a braided textile case and rubber.

All of the varieties described thus far are square, or nearly so, in transverse section, as shown; but the form shown in Fig. 9 is round. This consists of a round elastic core A, which takes the place of the rubber A in the other forms. This is incased in several layers of textile fabric B, and around this the insulated wires C C are wound spirally. A braided textile wrapper D is formed around these wires C C, and similar insulated wires E E are wound spirally around this wrapper, and an outside wrapper F, like the wrapper D, holds all the various parts together. Thus it is seen that all are upon the general plan of insulated metallic strips with an elastic back, the result of this combination being that much harder metal can be used than when there is nothing between the strips. In the latter case the metal must be soft and easily matted together, in order to make a tight joint between them, and as ordinarily the only pressure that can be put upon the packing is such as can be had by screwing up the gland of the stuffing-box it is clear that uninsulated strips cannot readily be made tight except at low pressure. On the other hand, insulated strips may readily be forced into the fiber or gum between them with a slight pressure from the gland and be steam-tight at high pressure. This is proven beyond question by actual use. There is another advantage in the insulation, in that the insulating material (fiber or gum) may, if desired, carry a lubricator.

In every instance the packing must be pressed into a steam-tight mass, and the less pressure that is required from the gland to accomplish and maintain this result the more useful will be the packing.

When in use, the packing is so placed that when the gland of the stuffing-box is screwed up the packing will be spread laterally, thereby making a tight joint against the piston-rod and the walls of the stuffing-box.

It is evident that other changes than those shown might be made in the form and arrangement of the several parts described without departing from the spirit and scope

of my invention, and hence I do not wish to limit myself to the particular construction herein set forth; but,

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

1. A packing for piston-rods, consisting of metallic strips placed edgewise on an elastic backing, substantially as set forth.

2. A packing for piston-rods, consisting of strips of metal, insulating material interposed between the several strips, and an elastic back, substantially as set forth.

3. A packing for piston-rods, consisting of a rubber back, metallic strips secured thereto, and insulating material interposed between the several strips, substantially as set forth.

4. A packing for piston-rods, consisting of an elastic back, metallic strips connected therewith, and elastic facings forming the sides of the packing, substantially as set forth.

5. A packing for piston-rods, consisting of an elastic back, insulated metallic strip or strips cemented or otherwise secured thereto, and elastic side facings, substantially as set forth.

6. A packing for piston-rods, consisting of an elastic back and metallic strip or strips connected therewith, so that one edge rests upon the back and the other against the rod, substantially as set forth.

7. The combination, with an elastic back, of a folded metallic strip secured edgewise thereto, substantially as set forth.

8. The combination, with an elastic back, of a metallic strip bent in V-shaped folds and secured edgewise to the back, substantially as set forth.

9. The combination, with an elastic back, of an insulated strip of metal bent in V-shaped folds and secured edgewise to the back, substantially as set forth.

10. The combination, with an elastic back, of an insulated strip of metal bent in V-shaped folds and secured edgewise to the back, and elastic facing-strips forming sides to the packing, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SAML. HUGHES.

Witnesses:

W. GREGG CHISOLM,

CONRAD MATTHEISEN.