Dec. 20, 1927. 1,653,439

F. E. PAYNE

PACKING

Filed Feb. 8, 1923

FIG. 1

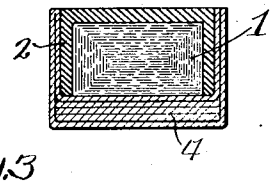


FIG. 2

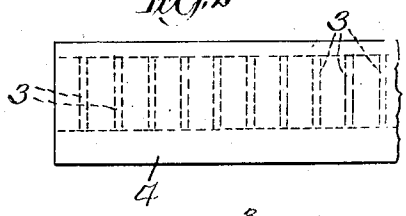


FIG. 3

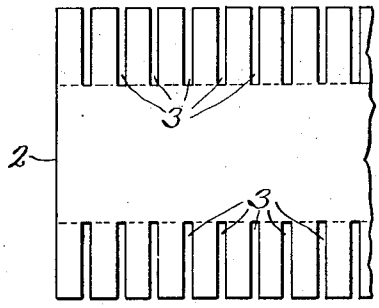


FIG. 4

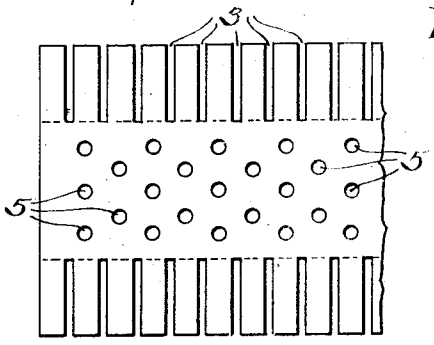


FIG. 5

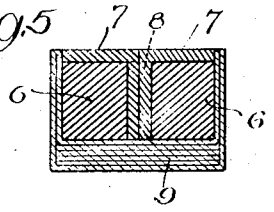


FIG. 6

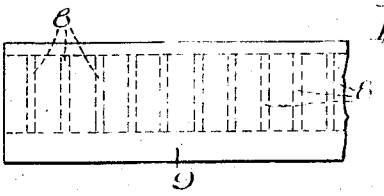


FIG. 7

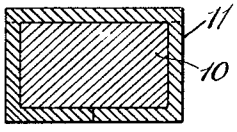


FIG. 8

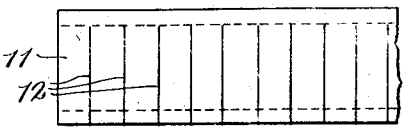


FIG. 10

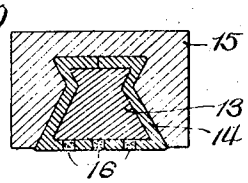


FIG. 9

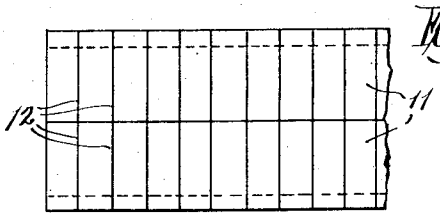
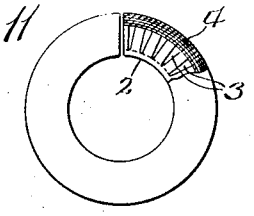


FIG. 11



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Attys

Patented Dec. 20, 1927. 1,653,439

UNITED STATES PATENT OFFICE.

FRANK E. PAYNE, OF CHICAGO, ILLINOIS, ASSIGNOR TO CRANE PACKING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PACKING.

Application filed February 8, 1923. Serial No. 617,722.

My invention relates to improvements in packing, such as is used in connection with steam engines, air compressors, and pumps for fluids of various kinds.

The object of the invention is to provide an improved packing reinforced by a metal wearing face, such as lead or its alloys, but constructed so as to be flexible, i. e., easily bent to conform to the contour of the rod which it surrounds and capable of being deformed to insure a tight fit in the stuffing box. A further object is to provide a packing of this character in which the metallic wearing face is held to the body of the packing by side flanges which are slotted or notched to permit bending. An additional object is to provide a yielding backing, whereby the wearing face is pressed against the reciprocating or rotating rod as it wears away.

In the accompanying drawings, I have illustrated several embodiments of my invention.

Fig. 1 is a cross-section of one form of packing;

Fig. 2 is a side elevation of a short length thereof;

Fig. 3 is a plan of a strip of lead as it appears before being bent to the shape of a channel to form part of the packing;

Fig. 4 is a modified form of a strip of lead for a similar purpose;

Fig. 5 is a section of a modified form of packing;

Fig. 6 is a side elevation of a short length thereof;

Fig. 7 is a section of a further modification;

Fig. 8 is a side elevation thereof;

Fig. 9 is a bottom view thereof;

Fig. 10 is a section of a further modification; and

Fig. 11 illustrates, on a reduced scale a completed packing cut to a predetermined length and bent to form a ring.

Referring to Figs. 1, 2 and 3, the body of the packing 1 may be either a metallic packing or a fabric packing such as duck, rolled up and compressed to a rectangular cross-sectional form. Where a metallic packing is used, I prefer to construct the same by helically winding a strip or ribbon of metal foil back and forth upon itself to form a cylindrical length of packing, which is thereafter run between rollers or otherwise pressed to square or rectangular outline. The method of preparing such a packing is disclosed in prior Patent No. 1,151,344, August 24, 1915.

The body thus formed is fitted into a channel-shaped member 2, consisting preferably of sheet lead bent or rolled to channel form. Said sheet of lead is provided with a series of slits or notches 3 on opposite sides thereof, as shown in Fig. 3. After bending the lead to channel form the notched portions constitute the sides or flanges of the channel member, as shown in dotted lines in Fig. 2. With this arrangement the packing may be readily bent.

The structure, as thus far described, is thereafter partially surrounded by fabric, which in one form may be referred to as a channel member 4, consisting, for example, of duck, rubber or asbestos fabrics, the base of the channel being comparatively thick to form a yielding cushion or resilient backing for the body of the packing. The sides of the channel serve as an aid in holding the resilient backing to the main body of the packing and act as wipers on the rod or shaft. One method is to stitch said sides to said packing, although they may be vulcanized thereto or otherwise secured, or the sides may be omitted entirely.

The completed packing is then cut to suitable lengths and may be bent to any desired form, such as the ring shape shown in Fig. 11, for example. In said figure the inner wearing surface is composed of sheet lead with the resilient material on the outside thereof. The packing is thus suitably reinforced by the lead, particularly on the wearing face, but is not too stiff to prevent it from being bent to the form of rings. When a number of these rings are placed around a reciprocating rod or rotating shaft and compressed into a stuffing box, the soft metal surface bears directly against the rod or shaft. As the surface wears away slightly, the yielding cushion behind the metal wearing face maintains sufficiently intimate contact between the rod or shaft and the wearing surface of the packing, to avoid leakage. When the wear increases due to long continued use, tightening of the stuffing box re-compresses the packing and particularly the fabric cushion at the back thereof. In this arrangement the packing gland need not be tightened except at infrequent inter-

vals. After the sheet lead wearing surface wears away, the metal foil, where used, becomes the wearing surface of the packing.

In Fig. 4 I have shown a further modification in which a sheet lead plate similar to the one shown in Fig. 3 is not only notched but is also provided with perforations 5, to render the packing somewhat more flexible and to provide receptacles for graphite or other lubricating material.

In Fig. 5 the body of the packing may comprise any suitable packing material, such as fabric cores 6. Each of these is partially surrounded by an L-shaped sheet metal structure or angle structure 7. The soft metal angles are provided with slots 8 to facilitate bending. A resilient fabric cushion 9 is also provided, which may be similar to that shown in the previous figures, and the face of the soft metal angle sections may be perforated, as in Fig. 4.

In Fig. 7 the core of the packing 10 may be of any material, such as the cores in the two previously described forms of packing. The outer casing consists of sheet metal 11, bent so as to completely surround the main body of the packing. Slits 12 are cut in the sides and continue along the bottom of the lead sheath, as shown in Figs. 8 and 9, whereby the packing is rendered more flexible, and the central part is held in place without the use of a fabric channel. The packing may, if desired, be provided with a resilient backing, as in Figs. 1 and 5.

In Fig. 10 a form of packing is shown, in which the central part 13 may be made of any of the materials previously described, this central core being surrounded by a sheath of soft metal 14, such as lead or lead alloys. The core and its lead sheath have a substantially dove-tailed engagement, whereby they are locked together. A backing of fabric or asbestos 15 is also provided, which conforms to the shape of the lead sheath, so that the entire packing is locked together without stitching. Said parts may be vulcanized, to ensure against partial separation thereof in bending the same. The face of the metal may be provided with perforations 16, similar to those previously described and for a similar purpose. In this form, with a suitable back clearance on the core, there is an automatic feeding forward of the wearing surface when the gland pressure is applied, due to the wedge shape of the parts.

In the various forms of the packing shown herein the lead surface may be bent over and clinched in against the packing or core without necessarily providing a channel having sides long enough to fully receive said core.

I claim:

1. A packing comprising a body of flexible packing material, a sheet lead channel member enclosing the same, and a second channel enclosing said first channel, said second channel having a base of cushioning material.

2. A packing comprising a body of flexible packing material, a sheet lead channel member inclosing the same, said channel member having cuts in the sides thereof to facilitate bending, and a second channel inclosing said first channel, said second channel having a base of cushioning material.

3. A packing comprising a body of flexible packing material, a sheet metal member having a flange at the side thereof, said flange having notches cut therein, and a fabric cushion on the side of said packing material opposite said sheet metal member.

4. A packing having a metallic face and metallic sides having slits therein to permit bending, said packing having yielding material opposite said face to provide a cushioning element, and packing material between said face and cushioning element.

5. A packing comprising a body of flexible packing material, a wearing face of soft sheet metal secured thereto, said sheet metal having openings therein, and lubricating material within said openings.

6. A packing comprising a body of flexible material, a sheet metal strip partially inclosing the same, said strip having slits cut in the sides thereof to faclitate bending, and a fabric base on the side of said flexible material opposite said sheet metal strip, said base having side extensions to hold it in place.

7. A packing comprising a metallic face having rearwardly extending portions, a resilient backing attachable to said portions, and a flexible packing material interposed between said face and backing.

In testimony whereof, I have subscribed my name.

FRANK E. PAYNE.