J. CRANE.

METALLIC PACKING AND METHOD OF MAKING THE SAME.

APPLICATION FILED MAY 29, 1916.

1,206,306. Patented Nov. 28, 1916.

Fig. 1

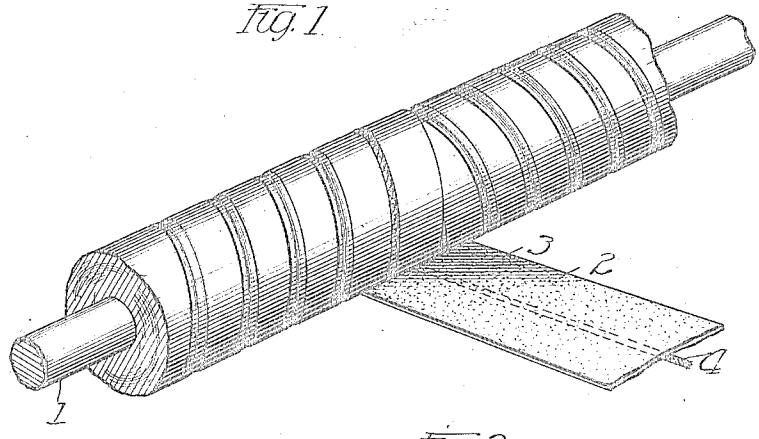


Fig. 2.

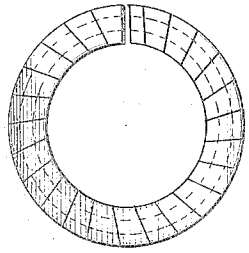


Fig. 3.

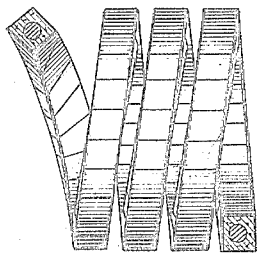


Fig. 4.

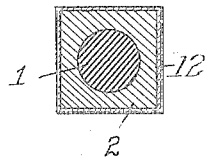


Fig. 5.

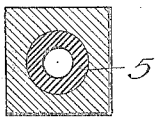


Fig. 6.

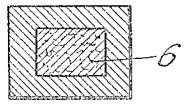


Fig. 7.

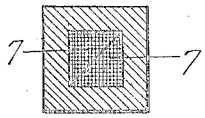


Fig. 8.

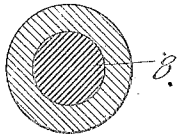


Fig. 9.

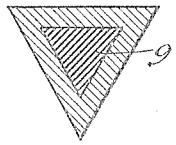


Fig. 10.

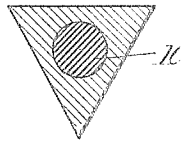
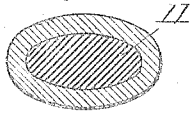


Fig. 11.



Witnesses:
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Stephen Bolton

Inventor
John Crane
by Lindsey Bayard Jones
Atty.

UNITED STATES PATENT OFFICE.

JOHN CRANE, OF CHICAGO, ILLINOIS, ASSIGNOR TO CRANE PACKING COMPANY, OF CHICAGO, ILLINOIS, A PARTNERSHIP CONSISTING OF FRANK E. PAYNE AND JOHN CRANE.

METALLIC PACKING AND METHOD OF MAKING THE SAME.

1,206,306. Specification of Letters Patent. Patented Nov. 28, 1916.

Application filed May 29, 1916. Serial No. 100,572.

To all whom it may concern:

Be it known that I, JOHN CRANE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Metallic Packings and Methods of Making the Same, of which the following is a full, clear, concise, and exact description.

My invention relates to improvements in metallic packing of the general type disclosed in my prior Patent No. 1,151,344, issued August 24, 1915. The packing therein illustrated is made by winding a metal foil strip back and forth helically on to a core of flax, twine, or other suitable non-abrasive material, the strip being wound on with a string to insure a compact roll and to mechanically reinforce the finished product, whereby it may be bent without breaking. Lubricating material, such as graphite, is applied to the strip as it is being wound.

My present invention is a further development of this earlier product, whereby the packing may be better adapted to certain classes of service, such as piston packing and gaskets for example, in which case it is desirable that the packing be more resilient. To attain this object, I provide a metal packing having a relatively large core of resilient or expansible material, such as rubber, flax, canvas, or some suitable equivalent. On to this core I wind metal foil, the lubricating material being applied between the adjacent turns.

The invention will be understood from the accompanying drawings, in which—

Figure 1 is a perspective view illustrating the method of manufacture employed; Fig. 2 shows a length of completed packing bent to circular form; Fig. 3 is a length of packing wound in a helical coil for general convenience; Fig. 4 is a cross section of one form the finished product may assume; and Figs. 5 to 11 inclusive, are cross sections of further forms the finished product may take.

The core 1, which is made of rubber, flax, canvas, or any other suitable resilient material adapted to expand due to prior compression, to heat or to moisture, is rotated in any suitable manner, whereby thin strips or sheets of metal foil 2 may be conveniently wound thereon.

Lead, and alloys containing lead, are well adapted for this purpose, although other metals and alloys are suitable. The metal is preferably wound back and forth, although I do not necessarily limit myself to this method of winding.

A coating of graphite 3 or some other suitable lubricating compound is applied to the metal either as it is being wound on to the core or prior thereto, whereby said insulating compound is confined between the adjacent turns.

A string 4 is preferably wound on with the metal, where such metal would otherwise tear or break easily, to permit it to be wound tightly forming a compact roll. The string therefore serves as a tension member and in addition reinforces the finished product, whereby it may be bent to a curvature of small radius without injury. Any other suitable tension member may be employed, for example, copper wire or other non-abrasive metal, fabric, or other material.

After the packing has assumed a cylindrical form, it is run through rollers or dies which press it to some one of the configurations shown in Figs. 4, 5, 6, 7, 9, 10 or 11. In other words, it may have a cross section which is rectangular, triangular, oval or any other suitable outline which would facilitate its installation within a stuffing box, gasket, groove or other support or inclosure. The core being compressible, permits the packing not only to be compressed, but allows it to expand so as always to fill the space in which it is confined.

In some packings used heretofore, in using piston packing for example, the piston rod does not always run exactly true, in which case the packing is pressed to one side, and if it is not expansible, it does not maintain a tight joint thereafter. With the present packing, a tight joint is maintained despite irregularities in the movement of the piston rod or other rod or even with a roughened or shouldered rod.

The core may also be of some material which expands when subjected to heat or moisture, whereby this same advantageous result may be secured without necessarily compressing the packing initially to the extent otherwise required.

Fig. 5 illustrates a hollow core 5 which

may be of rubber or any other suitable material. With such a core, more compression is possible than with a solid core. The core in Fig. 6 is made of flax 6. The core 7 in Fig. 7 is made of canvas in two sections whereby the two parts may slide over each other somewhat when the packing is compressed. Fig. 8 illustrates a round packing having a core 8 which may be assumed to be of any of the various materials illustrated in the other figures, or any suitable equivalent thereof. This figure illustrates a packing after being formed and before being compressed to some other shape, or it may be used as a gasket in the form shown without being changed. The core 9 in Fig. 9 is of triangular section. Fig. 10 shows a round core 10 in a triangular section of packing. In Fig. 11 the core 11 is of oval outline.

The packing shown in any of the figures may have an outer wrapping or reinforcement of non-abrasive sheet metal or other metal adapted to withstand high pressures and temperatures. In Fig. 4 such a covering 12 is illustrated.

While the foregoing description is intended to illustrate various forms which the packing may assume and various materials from which it may be constructed, I do not intend to limit myself to the particular forms or materials specified, as various departures may obviously be made from what is disclosed.

The features disclosed in connection with one figure may be employed in connection with features shown in other figures, and on the other hand, some of the features disclosed may be employed without necessarily using them in conjunction with others.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A packing consisting of a resilient core, sheet metal wound thereon, and a tension member interposed between successive turns of said sheet metal for insuring a compact product and for reinforcing it mechanically, said core being of such cross sectional area, as to permit substantial compression of said packing and subsequent enlargement thereof as the pressure is relieved.

2. A packing comprising a rubber core, a helical roll of metal foil about said core, and lubricating means between the adjacent turns thereof.

3. A new article of manufacture consisting of rings of rectangular cross section formed of metal foil rolled about an expansible core and an outer coating of non-abrasive metal protecting and further reinforcing said inner metal.

4. A packing consisting of a resilient core, non-abrasive metal wrapped around said core, and an outer metal coating wrapped around said non-abrasive metal, said outer coating being also non-abrasive and serving to protect said inner metal.

5. The method of manufacturing packing which consists in helically winding a strip of metal foil on to a rubber core, winding a protecting covering of harder metal over said first metal, molding the roll thus formed to the desired cross section, and bending the product thus formed to the desired outline.

In witness whereof, I hereunto subscribe my name this 27th day of May, A. D. 1916.

JOHN CRANE.

Witnesses:
D. B. QUINLAN,
A. G. HAUBOLD.