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N. E. JOHNSON

1,646,356

PACKING AND METHOD OF MAKING THE SAME

Filed June 26, 1924

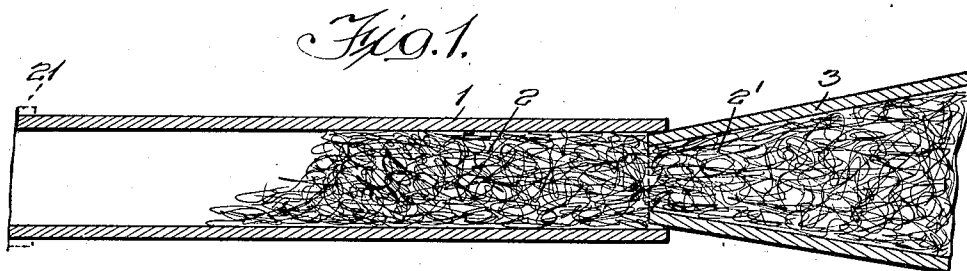


Fig. 2.



Fig. 3.

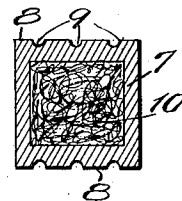


Fig. 4.

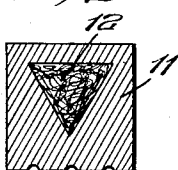


Fig. 5.

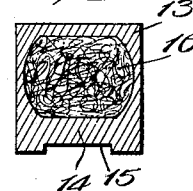


Fig. 6.

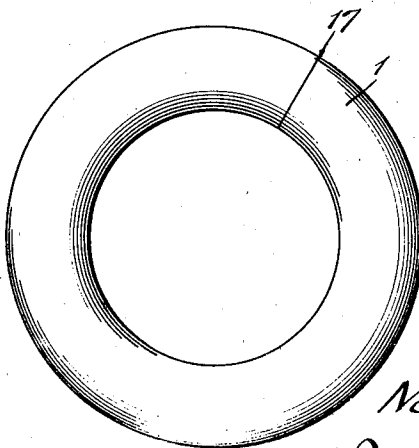


Fig. 7.

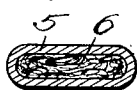
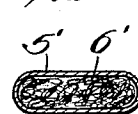


Fig. 8.



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UNITED STATES PATENT OFFICE.

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PACKING AND METHOD OF MAKING THE SAME.

Application filed June 26, 1924. Serial No. 722,538.

My invention belongs to that general class of devices known as packing, and relates more particularly to a flexible metallic packing comprising a metallic wear face and a core of an elastic resilient or yielding material. The invention has among its objects the production of a packing of the kind described that is simple, durable, reliable, leak-proof, inexpensive and satisfactory for use wherever found applicable, and a simple, inexpensive and convenient method of making the same. Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a sectional view through a portion of the packing, illustrating a step in the method of manufacture;

Fig. 2 is a sectional view through a portion of the completed packing;

Figs. 3, 4 and 5 are similar views illustrating other forms;

Fig. 6 is a view in elevation illustrating the packing ring made up of the packing;

Fig. 7 is a sectional view illustrating the modified shape; and

Fig. 8 is a similar view illustrating a thin metallic tube.

Referring to the drawings, in which only the preferred embodiment of the invention is shown, 1 represents a tube preferably of metal and a metal of the kind and grade that will be most satisfactory for the purpose for which the packing is intended. Generally this tube will be made out of lead or Babbitt material, or material similar thereto, but in some instances it may be made out of other materials such as soft copper, brass and even fabric, as will be more fully explained hereinafter.

The tube or wear face member 1 may be constructed in any suitable manner of the desired material and of the desired size and shape, which shape and the tubular bore may be regular or irregular, as desired. The method of making the tube itself will

depend upon the material employed. The core 2 may be of any suitable material, which may be handled in a more or less plastic, semi-plastic, or semi-fluid condition. It may be rubber, finely ground rubber, rubber compound, or similar material, or it may be cork, asbestos, or the like or combination of the same.

Generally I employ and have found satisfactory a cured crude rubber, the crude rubber being injected into the tube and afterwards cured. I have illustrated in Fig. 1 a spout 3, through which the material to form the core is directed into the tube 1, it being understood that any suitable press or injecting machine may be employed. The opposite end of the tube is preferably closed, as indicated at 21 after the tube has been filled and all the air displaced where the core is to be under compression in the packing. The core 2 may be applied or injected with as much pressure as found desirable. After the tube has been filled, as the end is closed as indicated at 21, or in an equivalent manner, considerable pressure may be built up in the tube. This pressure exerts an expanding force against the tube. After the tube has been filled with material that requires further treatment or curing, as in the case of the crude rubber, then it is subjected to this further treatment while in the tube. In the case of crude rubber, the same is subjected to heat of the desired degree and for the required time to secure the cure which is preferred. This heat, in the case of rubber, is below the melting point of the tube, as for example, if of lead, and should not be sufficient to break down the tube. After curing, the packing is then ready for use. I have found it convenient to form the same in a series of spirals like a coil spring, so that the user may cut off the desired portions. Forming this way, the coil may be made substantially of a diameter corresponding with the rod or box or the like in which the packing is to be used, so as to facilitate handling and installation. Portions may be severed by means of a sharp knife, hack saw, or any equivalent tool.

In Fig. 2, I have illustrated a section of packing, and I have shown grooves 4 formed in the tube, which, if so formed, constitute oil or lubricating grooves. These grooves may be filled with oil, graphite, oil and graphite, or any other suitable material.

However, they are not always essential, and I do not wish to be understood as limiting the packing to that with grooves or pits.

In this Fig. 2, the tube inner wall is shown concentric with the outer wall of the tube, but obviously the tube may be constructed with the wall thicker at one side than at the other. In Fig. 7, I have illustrated a flattened tube consisting of the outer casing 5 and the core 6. Obviously, the tube may be made substantially in this shape or it may be compressed to this or a different shape.

In Fig. 3, I have shown a modified shape, in which 7 represents the tube provided with wear faces 8 of increased thickness as compared with the side portions. Grooves 9 or merely recesses may be also provided, if desired. In this figure, 10 represents the core of suitable material which has been injected in the tube. With this particular piece of packing either side may be employed as the wear face, or the same may be installed in a construction where there may be wear on both sides.

In Fig. 4, 11 represents a modified type of tube, and 12 the core. In Fig. 5, 13 represents a modified type of tube with an increased wearing face 14, having a modified form of groove or recess 15. The core 16 may be of any of the materials mentioned. In Fig. 8, there is shown a packing consisting of the tube 5' and the core 6'. With this packing, the tube is shown of comparatively thin material; for example, this may represent copper, brass, or the like. This material will be particularly satisfactory for a gasket. In Fig. 6, I have shown a ring formed with the packing, and it may be mentioned that the two ends which are brought together to form the ring may be soldered, brazed, or otherwise secured together at their juncture 17, if so desired.

This particular type of packing is inexpensive, both in so far as materials are concerned, as well as in manufacturing costs. The same has been found to be of extremely long life, or, that is, it is particularly durable and makes a tight leak-proof packing. It may be used on reciprocating or rotating parts either in a stuffing box or bearing, or on the moving part itself, as on a pump plunger, for example. It may be used for packing, or it may be used for wearing faces, or for gasket purposes. It will be noted that the core is completely enclosed, and

even if the parts are not soldered together at their juncture, as indicated in Fig. 6, compressing the packing will bring the ends tightly together. Likewise, only the extreme ends of the core would be exposed under any condition. The packing is therefore particularly satisfactory where the same might be brought into contact with liquids or gases which might otherwise affect the core material. Where the core is put in under pressure, obviously its tendency to maintain the packing tight is increased, the core tending to restore the shape of the packing even when the same is compressed or distorted under pressure. While the packing is not a solid metallic packing as distinguished from a more or less flexible or soft or a resilient packing, this packing has characteristics of both. It has plenty of solid body metal, it is more or less flexible and elastic, it gives hard service and yet will give as required, and tend to always maintain itself tight and leak-proof.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. The herein described method of forming a packing which consists in discharging resilient material into a relatively thin casing of pliable, inelastic metal, the resilient material forming a core which exerts an expansive force against the wall of the casing to normally hold the casing in its expanded form but allowing the same to yield under pressure.

2. The herein described method of forming a packing which consists in discharging raw rubber into a relatively thin casing of pliable, inelastic metal and then heating to cure the rubber, the rubber forming a resilient core which exerts an expansive force against the wall of the casing to normally hold the casing in its expanded form but allowing the same to yield under pressure.

In testimony whereof, I have hereunto signed my name.

NORMAN E. JOHNSON.