W. E. SANDERS.

PACKING.

APPLICATION FILED OCT. 25, 1910.

1,001,693. Patented Aug. 29, 1911.

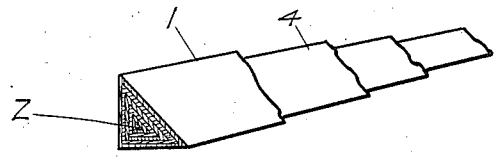

FIG. 2.

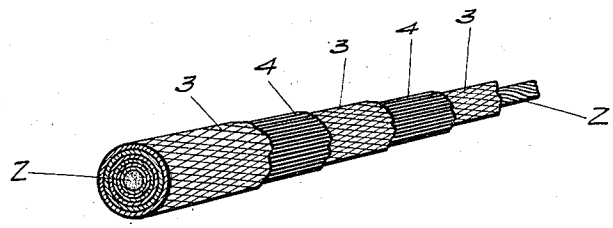

FIG. 1.

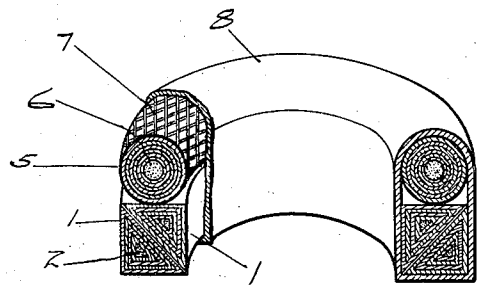

FIG. 3.

WITNESSES:

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PACKING.

1,001,693. Specification of Letters Patent. Patented Aug. 29, 1911.

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To all whom it may concern:

Be it known that I, WALTER E. SANDERS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Packing, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

An approved construction of packing, widely used in the stuffing boxes about steam engines and like places, where live steam or an equivalent of relatively high temperature is apt to be encountered, comprises paired triangular strips of packing material such strips having their inner or inclined faces adjoining so that, when pressure is applied, one will slide upon the other. Each pair of such strips is usually associated with a cushion strip of substantially circular cross section, the whole structure being inclosed in a suitable casing which retains the parts in their proper relative positions for insertion in the stuffing box.

More or less difficulty has heretofore been encountered in the construction of the wedge-shaped strips in packing of the kind just referred to, such strips being usually made of superposed parallel plies or layers of cloth, usually duck, held together by a rubber compound, which layers, under the influence of the reciprocating motion of the rod, and the action of steam and hot water at the high temperature referred to, are readily detached from each other, so that the whole strip rapidly disintegrates. I have heretofore proposed to improve the construction of such strips by forming them of a sheet of fabric wrapped around itself and held together by a rubber compound, the whole being subsequently molded in the desired wedge form; but even in this improved construction an edge of the sheet is still left free, which, subjected to the same disintegrating influences, tends to unwind and come apart, thus detaching from the tightness of the joint which it is the object of the packing to secure and shortening materially the life of the packing.

The present invention has as its object the complete overcoming of the difficulty just noted, incidental to which certain other features of improvement are incorporated by my new construction of packing. To the accomplishment of these and related ends, said invention consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 represents in perspective a broken section of my improved wedge-shaped packing strip in a preliminary stage of its manufacture; Fig. 2 illustrates the same after it has been molded into wedge form; and Fig. 3 represents a portion of a packing ring formed of such strips and an improved cushion strip, the ends of such strips appearing in transverse cross-section.

In the construction of the wedge shaped strip 1, two of which are associated together in the complete packing, I start with a suitable core 2, preferably of relatively small diameter, such core being made out of flax or like fibrous material. Over this core I then braid successive sheaths, or tubular coverings 3, of suitable fibrous material, until a body is built up of proper diameter, to form, when molded, a strip of the desired size. A layer 4 of rubber or adhesive composition is placed between the successive sheaths, so that when the strip, in the form illustrated in Fig. 1, is subjected to the molding operation, it will readily assume and permanently retain the wedge-shaped form thereby given it.

In the assembled strip of packing (see Fig. 3), two such wedge shaped strips 1 are associated in the fashion previously described, and a third cushion strip 5 of substantially circular cross section is disposed to rest against the face of one such wedge strip. This cushion strip will be made of a suitable core 6 of a fibrous material, upon which a strip of cloth may be rolled; or said cushion strip may be formed of superposed sheaths in a fashion analogous to that in which the wedge shape strips are permanently formed. Whether thus rolled or formed of successive sheaths, an outer sheath 7 is woven thereon, which I make of large mesh in order that the interstices therein may form pockets to hold lubricant.

All three strips are finally inclosed, as in the prevailing construction, with an outer casing 8, as has already been indicated.

Not only is there a material advantage in durability in service obtained by my improved construction of the wedge shape strips, that enter into my present packing, but I have also found it much more convenient to manufacture than either of the preceding forms of wedge-strip construction referred to above; since it is possible to braid the sheaths 3, which constitute the successive layers of the strip, in continuous lengths without interruption, whereas whether the strip be built up of superposed layers or wound from a sheet, a definite limit is placed upon the length of the product. Moreover, the wedge-molding process, in the present case, may follow immediately upon the application of the final or outer sheath, in this way rendering the manufacture a continuous one. Thus while I am enabled to obtain a superior product, this product is at the same time more easily and hence inexpensively manufactured. Furthermore, the continuous length thus obtained avoids the necessity for waste, when the product is prepared for use by being cut up in rings, such waste being considerable, where the product comes as heretofore in relatively short lengths. It is also new, so far as I am aware to make molded, wedge-shaped packing strips with cores of fibrous material, such as I have herein described. By the introduction of such a core, the strip is given an increased flexibility over the prevailing compact, solid construction of strip; so that, in other words, the packing may be readily bent to a relatively short radius and still form a perfect circle without binding or crimping.

It will be understood, of course, that while I have heretofore referred to fibrous materials, which will usually be cotton or flax, as the material that along with the interposed rubber, adhesive composition, or other binder goes to make up both the wedge shape strips and the round cushion strips, any suitable material may be utilized in the construction of such strips. I should remark particularly that where very high temperatures are encountered, such as might carbonize the materials first referred to, it is usual to employ asbestos in one form or another. In the present case, accordingly, in place of cotton or flax, I may utilize asbestos threads which can be made into a core or woven into a fabric or inclosing sheath just as readily as fibers of cotton or flax.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In packing of the character described, a packing strip of molded wedge-shape, said strip being formed of a central core of relatively flexible material, and successive concentric sheaths of fabric braided upon said core.

2. In packing of the character described, a packing strip of molded wedge-shape, said strip being formed of a central core of relatively flexible material, successive concentric sheaths of fabric braided upon said core, and layers of suitable binding material interposed between said sheaths.

3. Packing comprising the combination of two molded wedge-shaped strips having their inclined faces in contact, each of such strips including a central core composed of fibrous material more flexible than the body of said strip, substantially as described.

4. Packing comprising the combination of two molded wedge-shaped strips having their inclined faces in contact, each of said strips being formed of a central core of relatively flexible material, and successive concentric sheaths of fabric braided upon said core.

5. Packing comprising the combination of two molded wedge-shaped strips having their inclined faces in contact, each of said strips being formed of a central core of relatively flexible material, successive concentric sheaths of fabric braided upon said core, and layers of suitable binding material interposed between said sheaths; a cushion strip adjoining one of said wedge-shaped strips; and a casing inclosing the whole.

6. Packing comprising the combination of two molded wedge-shaped strips having their inclined faces in contact, each of said strips being formed of a central core of relatively flexible material, successive concentric sheaths of fabric braided upon said core, and layers of suitable binding material interposed between said sheaths; a cushion strip adjoining one of said wedge-shaped strips; a sheath of fabric of large mesh inclosing said cushion strip; and a casing inclosing the whole.

Signed by me this 15th day of October, 1910.

WALTER E. SANDERS.

Attested by—
ANNA L. GILL,
JNO. F. OBERLIN.