

F. S. HIRSCHFELD.
 PACKING FOR STUFFING BOXES.
 APPLICATION FILED APR. 27, 1912.

1,076,119.

Patented Oct. 21, 1913.

FIG. I.

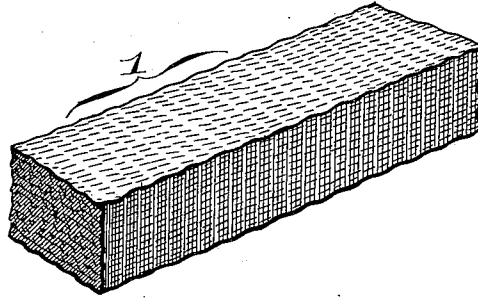


FIG. II.

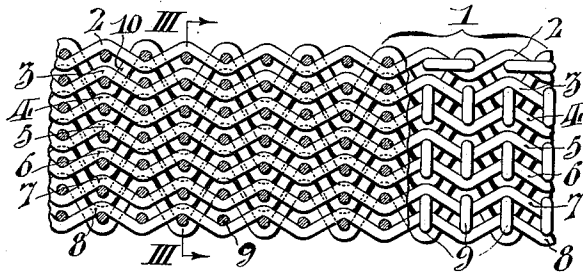


FIG. III.

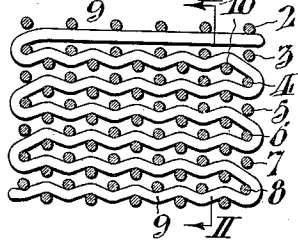
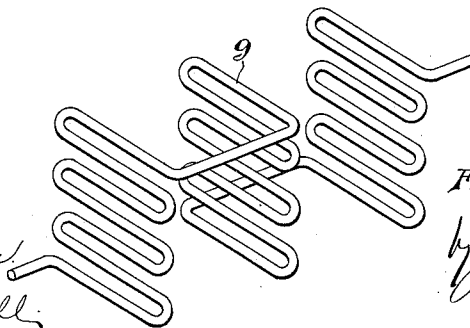


FIG. IV.



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PACKING FOR STUFFING-BOXES.

1,076,119.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK S. HIRSCHFELD, of New York, in the county of New York and State of New York, have invented
5 certain new and useful Improvements in Packing for Stuffing-Boxes, whereof the following is a specification, reference being had to the accompanying drawings.

10 An object of the invention is the production of a packing which is formed in one solid body, consisting of a plurality of strands which are so interwoven as to make a compact packing to maintain the strands in the interlocked relation to each other.

15 A further object of the invention is to provide a packing which is formed in a solid body, which packing is free from cements or adhesive materials of any character, which are subject to deterioration when the
20 packing is used, with high pressure or with hot water or superheated steam or the like.

These and other objects will in part be obvious, and will in part be hereinafter more fully described.

25 In the drawings which show by way of illustration one embodiment of the invention, Figure I, is a perspective view of a packing embodying my invention. Fig. II, is a view partly in side elevation and
30 partly in section of the packing, the section being taken on the line II, II, of Fig. III. Fig. III, is a sectional view on the line III, III, of Fig. II. Fig. IV, is a diagrammatic view in perspective showing the weft thread
35 for interlocking the warp threads of the packing.

I am aware that prior to my invention, it has been customary to form packings for stuffing boxes from asbestos or cotton cloth,
40 or the like, which is rolled or laid in layers to the desired thickness or diameter, which layers are held together by a binding material, such as rubber, cement or the like. Such packing, especially when used with
45 high pressure or super-heated steam or hot water, is more or less lubricated and exposed to oils, which lubricant has a tendency to disintegrate the rubber in the cement, thus allowing the layers of the pack-
50 ing to work loose and render the same worthless. It is also customary to form packings in braided form or plaited form, but packings of this character are necessarily formed of strands which are more or
55 less loosely held together, and such packings

are lacking in compactness, and are objectionable for other reasons.

The present invention consists in forming the packing on a loom in a solid body of the required dimensions of the packing space
60 between the piston rod and stuffing box on steam engines, pumps, air compressors or other power producing machinery. The strands of the packing may be made of any fibrous material, such as asbestos, cotton,
65 duck, jute, hemp, flax, linen, or the like, either in their original state or intermixed with one another.

Referring to the drawings, the packing 1, consists of a plurality of warp strands of
70 the above character, which are laid in a plurality of layers. As shown in Fig. III, there are seven layers, or banks of warp threads, which are numbered respectively 2, 3, 4, 5, 6,
75 7, 8. Interwoven with these layers or warp threads is a weft thread 9. This weft thread in the constructing of the packing may be interwoven with the warp threads in the layers 7, and 8. The manner of interweaving this weft thread with the warp threads
80 is well known, and will not need explanation. The weft thread is then interwoven with the warp threads in the layers or banks 6, and 7, after which the weft thread is interwoven with the next two upper layers of
85 the warp threads and so on, until the weft thread has been interwoven with all of the layers of the warp thread. In this interweaving of the weft thread with the warp threads, the weft threads lie in substantially
90 the same plane, and this plane will cut the packing in a direction substantially at right angles to the longitudinal axis of the packing. After the interweaving of the weft
95 thread with the warp threads in the manner above stated, the warp threads may be moved relative to the shuttle carrying the weft thread in the well known manner, and the weft thread can again be interwoven with the layers or banks of warp threads.
100 In this instance, the shuttle will interweave the weft thread first with the upper layers of the warp threads, and then with the successive layers underneath the same. It will be apparent from Fig. II, that each side of
105 the packing where the weft thread passes from one interweaving with the warp threads to the next interweaving therewith, said weft thread will be laid vertically along the side face of the packing. As herein
110

shown, the warp threads 10, in the layer 2, are carried below the warp threads 3, in the adjacent layer of the warp threads, so that the weft thread is interlocked with the warp threads 10, and 3, as clearly shown in Figs. II, and III, of the drawings.

In the present embodiment of the invention, the number of layers or banks of warp threads are slightly less than the number of warp threads in any layer, but the number of warp threads in each layer are the same, therefore the packing is rectangular in cross section.

It will be obvious that the number of layers of warp threads may be varied and thereby the thickness of the packing varied.

It is also obvious that the number of warp threads in each layer may be varied and thereby the width of the packing changed. Furthermore, it is obvious that the number of warp threads in successive layers may be varied, and thereby the shape of the interwoven packing in cross section slightly varied. The essential feature of the invention consists in the interweaving of the weft threads with the warp threads, so that a solid compact body is formed, the strands of which are so interlocked by the interweaving thereof that said packing will maintain its form. The weft threads lie in substantially parallel planes which cut the packing substantially at right angles thereto.

When the packing is made rectangular in cross section, the interwoven strands will form sharp well defined corners, so that the edges or sides of the packing will fit closely the rod and walls of the stuffing box.

It will be apparent from the above description, that I have provided a packing which is entirely free from any cement or adhesive material, for uniting the elements, and the strands are so interlocked that the packing will not deteriorate when subject to high pressure or exposed to hot water, super-heated steam or lubricants, of any character.

It is obvious that the packing as herein

illustrated is in strip form, and that it may be shaped or adapted in the usual way to the stuffing box where the same is to be used. It is also obvious that instead of using a single weft thread, other forms of interweaving a weft strand or strands with the warp strands may be employed, without departing from the spirit of the invention set forth in the appended claims.

Having thus described my invention, I claim:

1. A packing comprised of a plurality of layers of warp strands each layer including a plurality of warp strands and a weft strand interwoven with the warp strands in separate layers thereof.

2. A packing comprised of three or more layers of warp strands each layer including a plurality of warp strands, a weft strand interwoven with certain of the warp strands in the different layers and forming the sole means for uniting said warp strands.

3. A packing comprised of a plurality of layers of warp strands each layer including a plurality of warp strands and a weft strand interwoven with the warp strands in separate layers thereof, said weft strand being disposed in planes cutting the packing at right angles.

4. A packing comprised of a plurality of strands of fibrous material, which are interwoven with each other, so as to form a plurality of strands lying substantially in planes, cutting each other at right angles.

5. A packing comprised of a plurality of strands of fibrous material laid in layers and interwoven with cross layers of strands, said cross layers of strands being arranged in planes substantially at right angles to the longitudinal axis of the packing.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this twenty-fourth day of April 1912.

FREDERICK S. HIRSCHFELD.

Witnesses:

JAMES H. BELL,

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