(No Model.)

H. W. JOHNS.

STEAM PACKING.

No. 257,167. Patented May 2, 1882.

Fig. 1.

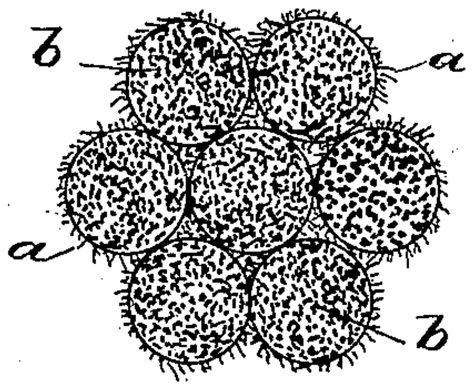


Fig. 2.

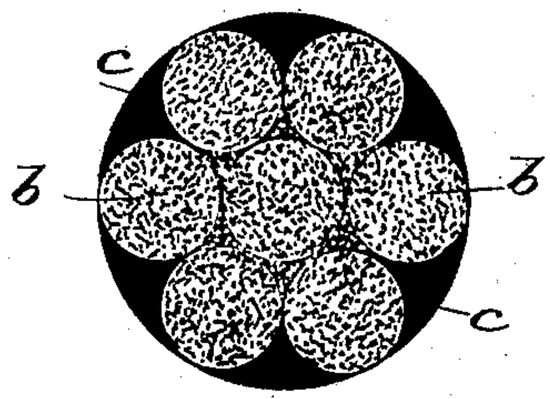
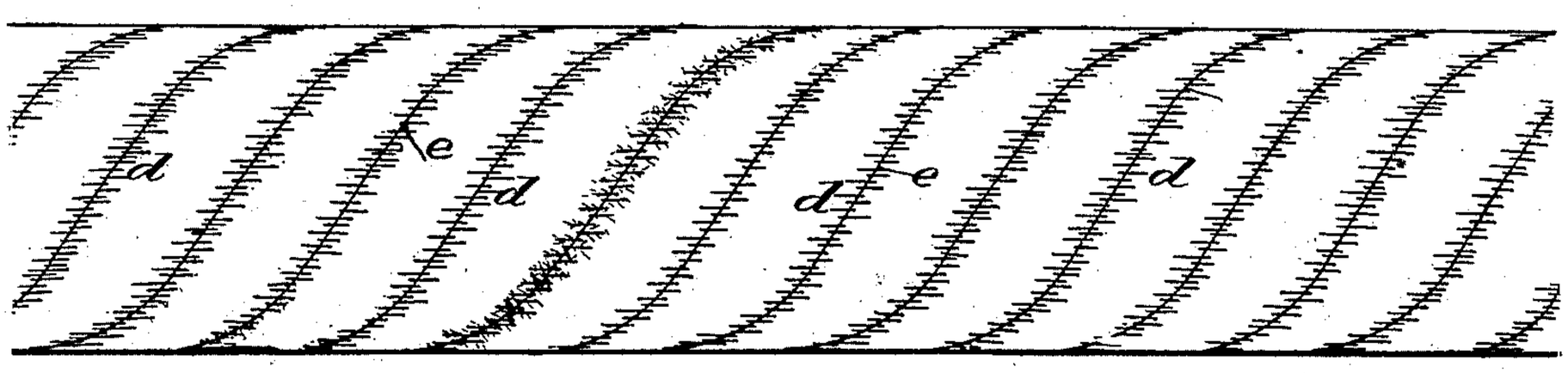


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY W. JOHNS, OF NEW YORK, N. Y.

STEAM-PACKING.

SPECIFICATION forming part of Letters Patent No. 257,167, dated May 2, 1882.

Application filed February 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. JOHNS, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented new and useful Improvements in Steam-Packing, of which the following is a specification.

My invention relates to certain new and useful improvements in packing for steam-joints and similar uses.

Prior to my invention, among other desirable materials suggested for the purpose, asbestus in the form of a rope has fulfilled the object sought with considerable success. Its use, however, has been attended with the objection that in order to prevent the strands composing the rope from being rubbed away or disintegrated by handling it has been necessary to confine them with a cloth covering or woolen netting. This feature of covering renders the structure expensive and laborious to produce, and the covering does not serve any purpose as a packing, but, on the contrary, being of a comparatively inflammable nature, soon becomes charred by the heat of the box in which it may be used. Asbestus has also been braided; but this is not only expensive, but fails of the object attained by my invention, because the strands cannot be separated when desirable.

The object of my invention is provide a rope composed of asbestus which shall be free from the objections named and highly desirable as a steam-packing; and with these ends in view my invention consists of a steam-packing composed of a series of strands of asbestus, twisted or "layed" into the form of a rope, and having the ordinarily projecting fibers laid flat in the direction of the length of the rope, and also having the interstices between the several strands of which the rope is composed filled or built up practically even with the outside surfaces of the strands by a paste or sizing composed wholly or in part of asbestus, as will be hereinafter more fully explained.

My invention also consists in a novel process by which the interstices are filled or built up and the strands bridged or tied, as will be hereinafter more fully explained.

My invention further consists in the details hereinafter described and specifically claimed.

In order that those skilled in the art to which my invention appertains may fully understand the same, I will proceed to describe in detail the peculiar characteristics of the rope and the process by which I am enabled to close the interstices between the strands, and in order that the differences between an ordinary rope and that forming the subject of my invention may be illustrated in the accompanying drawings I have shown at Figure 1 a cross-section of an ordinary rope devoid of the jacket or covering hereinbefore referred to. Fig. 2 illustrates a similar section of a rope embodying my invention; and Fig. 3, a plan view of the same, to more fully illustrate the tying or bridging of the interstices.

At Fig. 1 it will be observed that short spurs or fibers *a* project from the rope, and that the strands *b*, composing the rope, are, when twisted into form, separated by V-shaped or similar interstices, while by reference to Fig. 2 it will be seen that the interstices are built up or filled to about level with the outside surface of the rope, as illustrated by the blackened spaces marked *c*.

At Fig. 3 I intend by the short straight lines marked *d* to illustrate how the ordinary spurs or fibers shown at *a*, Fig. 1, are laid across or bridge the helical spaces marked by the curved lines *e*. The fine lines branching off from the lines *d* are intended to represent the felting or locking which takes place, as hereinafter referred to, after the interstices have been filled with the cement or sizing.

The process of manufacture which I have adopted as best calculated to accomplish the ends sought is, first to form a rope of the desired size and of any suitable number of strands of asbestus fiber in any well-known manner, but preferably by the use of double strands twisted together around a strong central twisted strand, which may be of hemp or other material, though I prefer asbestus. This enables me to retain the "spring" of the twist, which I find can be accomplished in no other manner so well as when using asbestus. It is then laid in such way that the exposed or outside surface of the several strands shall be slightly flattened to approach in their cross-section curvature as near as possible to a circle surrounding the whole number, and in this

way to a considerable degree lessen the proportions of the interstices which naturally occur between the "lay" of the strands. After the rope has been thus formed I then apply water or moisture in small quantities and in any suitable manner to the outside surface of the rope and subject the same to rapid longitudinal manipulation. This manipulation removes small particles of asbestus, and the water serves as a vehicle to deposit the asbestus, in the form of a paste or sizing, within the interstices of the rope in an even and smooth condition. This paste or sizing, being composed of asbestus, will, according to the character of the asbestus, form a film or membraneous coating of considerable strength when subjected to friction. The longer fibers or spurs, which are not removed and taken up by the water, are laid across or bridged over the filled interstices, and I have found that they are at the same time felted or matted together, as illustrated at Fig. 3. In manipulating the rope to accomplish these results I have found the human hand best adapted for the purpose; but of course I do not desire to confine myself in this particular, nor to the fact that I first apply the water or other moisture, as I may begin to manipulate the rope a little while before applying the moisture; nor do I wish to confine myself to the use of asbestus and water alone as the agents for filling the interstices, as other ingredients may be used so long as they are not of a character to be objectionable when placed within a steam-joint. I have found that a successful paste or cement for the purpose may be made from asbestus flour, water, glue, paraffine, kerosene, or other oleaginous matter and ordinary flour, or any two or more of the above, a superior material being the two flours combined with a little paraffine and a small quantity of kerosene. I prefer that asbestus should always form one element of the paste.

A packing when made according to my invention possesses one great advantage over any other that I am familiar with, except hemp packing, in that the strands of which it is composed may be readily separated, so as to form a packing for very small joints, or they may be combined to make a rope or packing of any desired size or shape. The manipulation of this form of asbestus rope with water or sizing reduces its size and renders it more solid and compact than asbestus can be made by any other process, which is a great desideratum for heavy engines.

The central strand may be saturated with a solution of india-rubber, which I find imparts a degree of elasticity which does not interfere with the solidity of the packing.

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

1. As a new article of manufacture, a steam-packing consisting of strands of asbestus twisted or laid into the form of a rope, with the interstices between the strands filled or built up with a suitable cement or size, substantially as set forth.

2. The asbestus-rope packing for steam-joints, having the interstices filled or built up, as described, and tied or bridged over by the longitudinally laid and felted short fibers, as hereinbefore set forth.

3. The asbestus-rope packing for steam-joints, composed of a series of strands of asbestus, with a central core saturated with a solution of india-rubber, as hereinbefore set forth.

4. The process of closing and building up the interstices of asbestus rope, consisting in longitudinal manipulation of the rope with sizing or water, substantially as hereinbefore specifically set forth.

5. The method of producing a hard smooth finish or polish on the surface of asbestus, consisting in the application of water or other suitable material, as described, and friction.

6. As a sizing for application to the surface of the asbestus, a compound consisting of asbestus and oleaginous or glutinous material with flour and water or other fluid, as hereinbefore set forth.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

HENRY W. JOHNS. [L. S.]

Witnesses:
GEO. S. CURTIS,
JOHN W. SHUTE.