C. A. Stevens . Mineral Packing.

112647

PATENTED MAR 14 1871

Fig. 1.

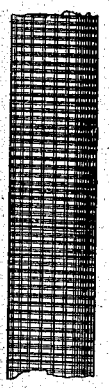


Fig. 2.

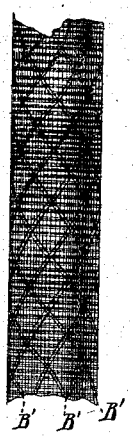


Fig. 3.

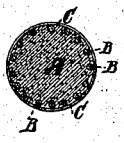
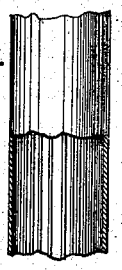


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHASE A. STEVENS, OF NEW YORK, N. Y., ASSIGNOR TO ABIJAH RICHARDSON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PACKINGS FROM ASBESTUS AND OTHER FIBROUS MINERALS.

Specification forming part of Letters Patent No. 112,647, dated March 14, 1871.

To all whom it may concern:

Be it known that I, CHASE A. STEVENS, of the city of New York, in the county and State of New York, have invented a new and Improved Mineral Packing; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in packing for stuffing-boxes of steam-engines, pumps, and the like, made of pure asbestus or other mineral fiber; and it consists in a packing of the fiber of such substance in the form of ropes or cords, or in flat or square form, in any lengths and sizes, made by compcompressing the fiber in powerful compressing apparatus, the said substances being treated either mechanically-by breaking, picking, and such other operations as are employed in reducing hemp and other vegetable or animal fibers for reducing it to a fine flocky condition, and expelling the silex and other hard or gritty substances, to render it suitable for use in contact with the working surfaces of the several parts of machinery for which such packing is required, as described in my patent No. 101,394 of March 29, 1870; or the said fibrous condition may be produced by the chemical process described in an application for a patent made by me and bearing even date herewith, or by any process by which the essential condition of freedom from any gritty matter may be produced. This fiber is then wrought into the structures required, in the form of a rope or other equivalent form, in powerful compressing apparatus adapted to compress it to such extent that it will retain its shape by adhesion, in which condition the natural expansive quality of the fiber will so act, when the packing has been applied and is subjected to the action of the working parts, as to cause it to swell and compensate for any wear that may take place, and keep the stuffing-box tight without readjustment of the glands for a much longer period than any other packing will do. This invention also consists in combining with the aforesaid packing longitudinal cords of animal or vegetable fiber, or it may be spun threads of the same material, for imparting tensile strength, the said thread being bedded in the surface of the packing while the compressing of the fiber is going on; and also in combining with the said packing, in such cases as may require it, exterior binding-threads for preventing the fiber from expanding after being compressed and being used, the said threads being wound on spirally or braided, or otherwise arranged as may be found best; or the ropes of asbestus fiber, made as before stated, may be covered with canvas or muslin, or any other suitable fabric or material.

Figures 1 and 2 are sections of my improved packing, made in the form of rope, and showing different arrangements of the threads for imparting tensile strength. Fig. 3 is a transverse section of the same; and Fig. 4 represents, in side view and section, the packing covered with canvas.

Similar letters of reference indicate corresponding parts.

A is the compressed mineral fiber of asbestus, amianthus, hornblende, or the like, which is first reduced to a fine, loose, and flocky condition, and is then subjected to the action of any suitable compressing apparatus, by which it may be wrought into the form of ropes or flat or square bars, and have considerable density, sufficient to enable me to make use of it for packing without covering it. For this purpose I prefer to employ the compressing-machine, invented by myself and Isaac Lindsley, which is the subject of an application for Letters Patent bearing even date herewith; but I may employ other apparatus, or in some cases it may be done by hand. B represents the longitudinal cords of any strong fiber, which, when a stronger packing is required, I combine with the said compressed mineral fiber to give it tensile strength. These cords are supplied with the loose fiber to the compressing apparatus, and fed along with it, so as to be worked into and below the surface of the packing by the compressing apparatus while the mineral fiber is being compressed. In Fig. 1 these threads are represented parallel with the axis of the condensed fiber, but they may be caused to take the form or direc-

tions represented at B′, Fig. 2, or they may be applied in any manner equivalent to these. In any case these cords will be so embedded in the fiber that the surface of the packing will not be materially altered from the character of the pure fiber by them. C represents the binding-threads, with which I bind the packing together to prevent it from expanding or separating laterally, which threads or cords are preferably wound on as the packing is leaving the compressing apparatus, and may be done by any suitable means, and as close together as may be needed for the purpose. This binding is not, however, needed in all cases, and, for many uses of the packing, may be dispensed with altogether, which I propose to do. The natural expansion of the compressed packing has the quality of keeping the box tight, which is one of the objects of compressing it.

I do not claim covering fibrous rope-packing with braid-wire, &c., as that is shown in patent of Ivoy B. and William H. Miller, dated April 4, 1865, and numbered 47,119, which is composed of vegetable fiber in the form of rope, and covered with braid-wire.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. Packing of asbestus, or other mineral fiber, made in the form of a rope, or in octagonal, square, or flat form, by compressing the fiber, prepared in a flocky state, and freed from silex and other gritty matter, into a dense and adhesive structure, substantially as specified.

2. Packing of asbetus or other mineral fiber, prepared in a flocky condition, and freed from silex or other gritty matter, compressed into the form of rope, or square or flat form, and having the strengthening-cords B or B′ embedded in the surface, and arranged either parallel, spirally, or braided on, all substantially as specified.

3. Packing of asbestus or other mineral fiber, prepared in a flocky state, and freed from silex or other gritty matter, compressed into the form of rope, or square or flat form, and having the strengthening-cords B or B′ embedded in the surface, as described, and also having the binding thread or cord C, all substantially as specified.

4. Packing of asbestus or other mineral fiber, prepared in a flocky state, and freed from silex or other gritty matter, made into the form of a compressed rope or other like structure, covered with canvas or muslin or any other equivalent fabric or material, substantially as specified.

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