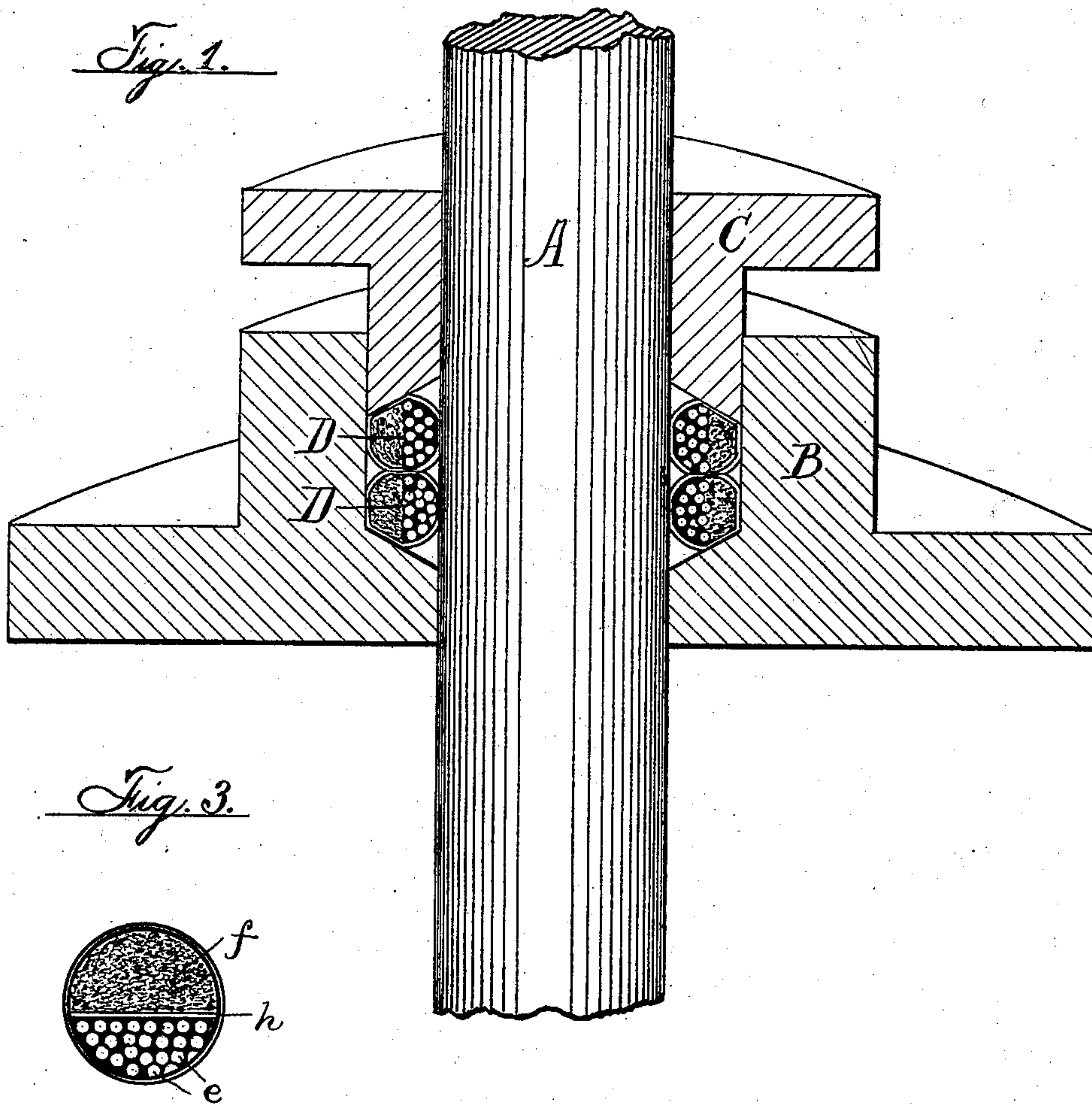


(No Model.)

S. ARMSTRONG.
METALLIC WIRE PACKING.

No. 287,751.

Patented Oct. 30, 1883.



Attest:
W. F. D. Crane.
W. Sheerath.

Inventor.
Sam'l Armstrong per
Thos. J. Crane, Atty.

UNITED STATES PATENT OFFICE.

SAMUEL ARMSTRONG, OF NEWARK, NEW JERSEY.

METALLIC WIRE PACKING.

SPECIFICATION forming part of Letters Patent No. 287,751, dated October 30, 1883.

Application filed March 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL ARMSTRONG, a citizen of the United States, residing in the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Metallic Wire Packings, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention consists in the combination, with a series of parallel wires, of a layer of elastic material for pressing the same toward the wearing-surface, against which the packing may be applied.

15 It also consists in means for combining the two named elements practically, and in the new articles resulting from such combinations.

The nature of the invention will be understood from the annexed drawings, in which 20 Figure 1 shows a stuffing-box in section, with the packing applied to a piston-rod. Fig. 2 shows a side view of the packing as manufactured in continuous bars, one end of the bar being shown in section; and Fig. 3 shows a section of a packing-bar of alternative construction.

In the packings heretofore made of parallel wires, as claimed in patent issued to me August 16, 1881, the non-elastic quality of the metallic rods or wires offered many advantages 30 over other constructions, but possessed the disadvantage of not yielding freely or voluntarily to irregularities of form or movement in the surface to which it was applied; and my present invention is intended to supply an additional 35 element to the combinations of wires heretofore known, whereby the latter may act as if themselves elastic to a considerable extent. The inelastic but yielding and compressible wires are thus adapted for many uses or situations where such voluntary movement is required, and are enabled to accommodate themselves automatically to the irregularities 40 caused by rough or crooked piston-rods. I accomplish this desirable object by combining with the parallel wires a layer or strand of suitable elastic material arranged to press the metallic rods toward the wearing-surface when in use. Such elastic action may be obtained 45 from hemp, jute, india-rubber, and other materials having the desired elasticity, the degree of which is not material to my invention,

as the amount of elasticity required in the packing depends entirely upon the degree of irregularity in the wearing-surface to which 55 the packing is applied. Such layer of elastic material may be combined or secured with the parallel wires in any desired manner, as by binding the same with a few fine threads or wires adapted to speedily wear off when the 60 packing is put in use; or the two substances may be inclosed in a fabric or wrapping entirely covering both materials, and serving as the vehicle, if desired, of a lubricant for the wearing-surface. In the drawings such an in- 65 closing fabric is shown, and may be produced by braiding, winding, or wrapping in any economical manner, the former method being the most convenient and efficient in practice, as the braided covering does not tend to unwrap 70 or displace itself when cut.

A is a piston-rod, B a stuffing-box, C the follower to press the packing therein, and D 75 two coils of packing inclosed therein.

In practice, three, four, or any desired number of coils may be inserted in the stuffing-box, the continuous bar shown in Fig. 2 being bent about the rod A, with the wires *e* toward 80 the rod, and cut to form the coils or rings indicated at D in the sectional view in Fig. 1.

The parallel series of wires are shown at *e*, the elastic layer associated or combined with them is shown at *f*, and the fibrous braided covering is shown at *g*. In Figs. 1 and 2 the series of wires is shown in direct contact with 85 the elastic material indicated at *f*; but in Fig. 3 the two elements are separated by a layer or partition of sheet metal, *h*, preferably of a very yielding substance, as lead or zinc. Such partition prevents the wires under the pressure 90 of the follower C from crushing into the yielding substance of the layer *f*, and thus secures a more efficient and continuous application of the wires to the wearing-surface to which they are applied, as the rod A. 95

To combine a lubricant with the inclosing covering *g*, the substance of the latter may be soaked in paraffine, tallow, &c., before or after application to the inclosed elements, and black-lead may be combined with the same in 100 any desired manner.

The metallic wires may be made of any suitable material, and the parallel layer of elastic material may, if made of fibrous material, be

braided, twisted, or otherwise formed into strands before combining with the wires in the manner described. Such bending of elastic fibers is highly conducive to the development
 5 of elasticity, and is therefore appropriate in the elastic material employed, while it is absolutely disclaimed in relation to the metallic wires, as their entire function depends upon free parallelism in the packing, as fully set
 10 forth in my former patent referred to above.

Having fully shown my invention in the accompanying drawings, it is obvious that it does not consist in an annular covering of elastic material, as the same was claimed by
 15 me in the prior patent referred to above.

I therefore claim my present invention as follows:

1. The combination, in a packing, of a series of parallel wires and a layer of elastic material, the whole arranged and operated as and
 20 for the purpose set forth.

2. The combination, in a packing, of a series of parallel wires, a layer of elastic material, and an inclosing fabric wrapped, woven, or
 25 wound about the same, substantially as and for the purpose set forth.

3. The combination, in a packing, of an inclosing fabric and a core, consisting in a series of parallel wires separated from a layer of

fibrous or other elastic material by a strip of
 30 sheet metal, substantially as and for the purpose set forth.

4. As a new article of manufacture, a packing having in its core a series of parallel wires, arranged at one side thereof to form the wear-
 35 ing substance thereof, and a layer of elastic material arranged at the opposite side thereof to press the wires toward the wearing-surface, substantially as and for the purposes set forth.

5. As a new article of manufacture, a pack-
 40 ing formed in bars, and consisting of a core having a series of parallel wires at one side thereof, a layer of elastic material at the opposite side thereof, and a binding material holding the wires and elastic material in the proper
 45 required relation, as and for the purpose set forth.

6. The combination, with a packing containing metallic packing-wires, operating as described, of a fibrous covering carrying a
 50 lubricant, as and for the purpose set forth.

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

SAMUEL ARMSTRONG.

Witnesses:

THEOS. S. CRANE,
 JOHN A. RODRIGO.