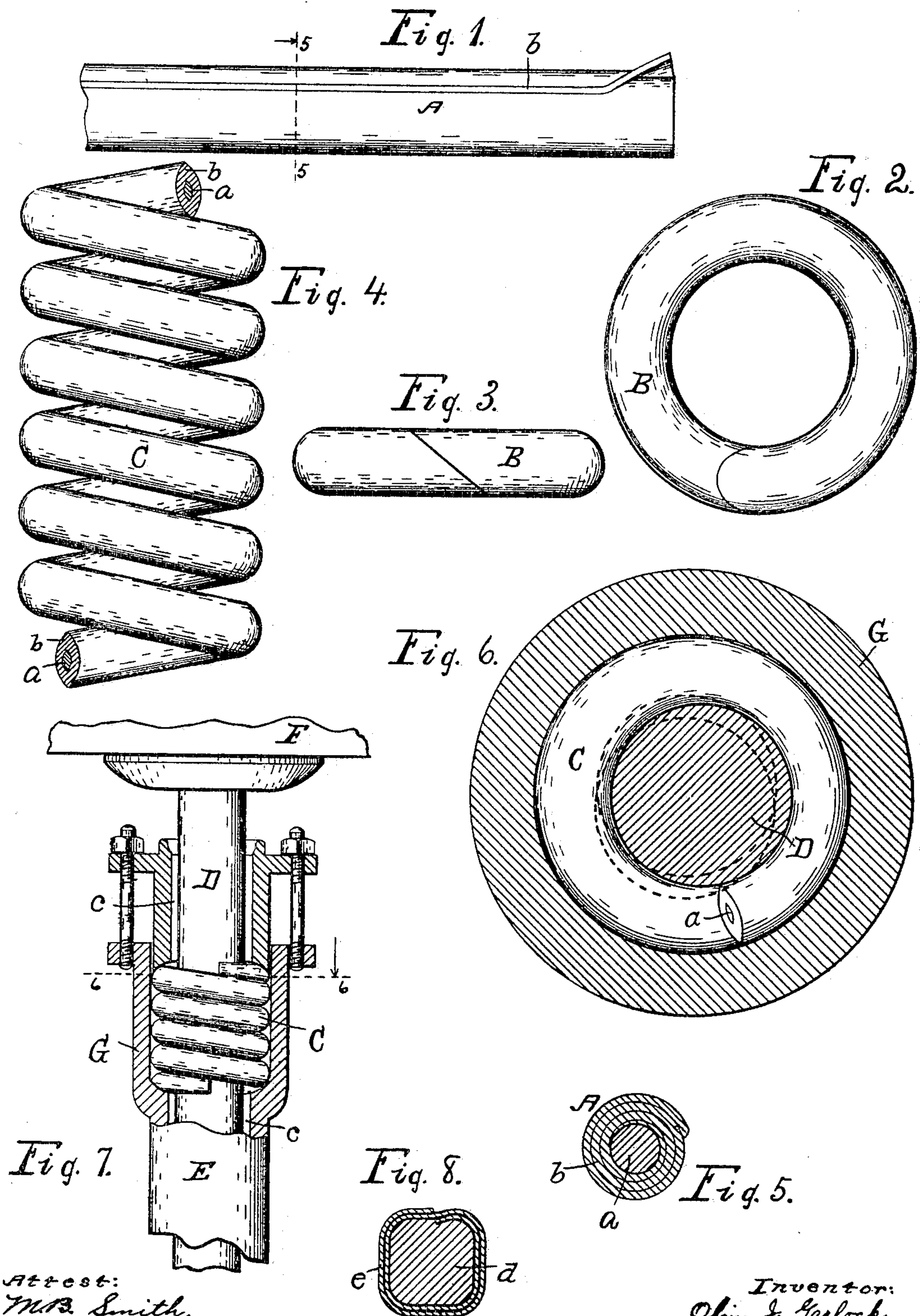


No. 798,895.

PATENTED SEPT. 5, 1905.

O. J. GARLOCK.
ROD PACKING.
APPLICATION FILED MAY 20, 1905.



Attest:
M. B. Smith.
Q. M. Whitmore

Inventor:
Olin J. Garlock,
By E. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

OLIN J. GARLOCK, OF PALMYRA, NEW YORK, ASSIGNOR TO THE GARLOCK PACKING COMPANY, OF PALMYRA, NEW YORK.

ROD-PACKING.

No. 798,895.

Specification of Letters Patent.

Patented Sept. 5, 1905.

Application filed May 20, 1905. Serial No. 261,320.

To all whom it may concern:

Be it known that I, OLIN J. GARLOCK, of Palmyra, in the county of Wayne and State of New York, have invented a new and useful Improvement in Rod-Packing, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is an improved packing for piston-rods, intended more especially for longitudinally-moving rods or shafts of great length having long travels or reciprocatory strokes through the packing-boxes.

Piston and pump rods of short length, such as employed with the ordinary steam-engine or water-pump, move as a rule truly and accurately through the stuffing-boxes as the pistons and plungers reciprocate, and with these rods any ordinary rod-packing will usually serve the purpose intended; but in case of very long rods or shafts—like, for instance, the vertical lifting-pistons sometimes used under elevator-cars in high buildings—having strokes or movements in vertical directions through long distances a different and special kind of packing is necessary—that is to say, a packing that is especially yielding and elastic. In these cases the side pressure of the rod against the body of packing incident to the wobbling of the car while in motion and other causes is uneven and changeable, particularly when the car is low or near the upper end of the cylinder. Furthermore, the side swaying or the jerking of the car in lateral directions, resulting from the moving in and out of the passengers, tends to cause the rod or shaft to beat abruptly one way and another against the packing, these movements of the car temporarily destroying the concentricity of the rod and the stuffing-box and correspondingly compressing the body of packing at one side and another. Whatever the direction or the extent of these sidewise motions of the rod the packing must be of a kind or nature to readily and quickly change form and adjust itself to the varying positions of the rod and keep the space in the stuffing-box around the rod filled or occupied to hold back the water under pressure acting to drive the piston and the car upward. The pistons in these elevator-cylinders are usually simply straight rods or shafts of uniform diameters and without enlarged parts or piston-heads, as in case of the ordinary pump or steam-engine.

The piston is purposely and necessarily made considerably less in diameter than the interior of the cylinder and the stuffing-box, leaving a clear space of considerable extent all round the piston to admit of a due amount of unavoidable side sway or temporary leaning of the piston, as stated, the water under pressure filling the space up to and against the body of packing in the stuffing-box. To properly pack such pistons and hold the water back all around, the packing must be not only pliable and very elastic and resilient, but it must also be of such nature as to maintain its elasticity and resilience during reasonable use and not soon become set or slow in action. Packing for this purpose needs to have a firm and hard exterior portion to successfully withstand the wear and abrasion resulting from the rubbing of the piston and an inside or backing for the hard outer part that is both soft and yielding and highly elastic. Also as the hard exterior has necessarily few and small interstitial spaces or pores it can absorb and hold but little oil or lubricant, and the soft core or backing needs to be such as to hold a liberal quantity of oil and gradually communicate it to the hard outer covering. To produce a body of packing of this nature and having these requirements has been the object of my present invention, the packing herein shown and described being the result of trial and experiment. This improved packing is primarily made in rope or cable form, having an elastic center strand or core of prepared flax, with a sheet of asbestos or of cloth or fiber embedded in india-rubber wound in involute or spiral form around the flax core, the whole being united in a single body by means of some adhesive substance, as a thin cement.

The invention is hereinafter fully described, and more particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification.

Figure 1 shows in side elevation a portion of the packing. Fig. 2 shows a ring of rod-packing made from the rope or cable shown in Fig. 1. Fig. 3 is an edge view of the ring shown in Fig. 2. Fig. 4 shows a spiral of packing formed from the rope shown in Fig. 1. Fig. 5 is a cross-section of the rope or cable, taken as on the dotted line 5 5 in Fig. 1. Fig. 6, drawn to an enlarged scale, shows a horizontal cross-section of a stuffing-box and

associated rod, taken as on the dotted line 6 6 in Fig. 7, showing by full and by dotted lines eccentric positions of the rod in the stuffing-box. Fig. 7, drawn to a reduced scale, is a side elevation of parts at the upper end of the cylinder and the piston, parts being broken away and in axial section. Fig. 8 is a cross-section of a modified form.

Referring to the drawings, A is a portion of a rope or cable of packing made primarily out of which to subsequently form rings B, Figs. 2 and 3, or spirals C, Figs. 4, 5, and 6, of packing of common form for filling a stuffing-box around the rod. This rope or cable A is formed with a center or axial strand or core *a*, Figs. 4 and 5, of uniform diameter, it being of a material that is soft and pliable and elastic in a high degree and one of a nature to absorb and hold oil, preferably prepared flax or hemp. Upon the core *a* is rolled or wound in spiral or involute form a sheet *b* of a firmer and harder material, as asbestos or cotton duck or other firm cloth, having its threads filled in and covered with india-rubber, the core and the wrapper being cemented together in a single mass or body. This outer covering or wrapper for the core is yielding and elastic and being harder and more firm than the flax core is adapted to withstand the wear and abrasion resulting from the action of the reciprocating rod. The rope or cable thus made up is pliable and highly elastic, especially so on account of the nature and action of the flax core, and when squeezed or compressed laterally will quickly resume its normal form when the pressure is removed, and a body of packing made from the rope, either in single rings or spiral form, and placed in a stuffing-box around the rod will quickly change form and adjust itself to the positions of the rod resulting from lateral motions, and so keep the annular space around the rod closely filled and packed to the exclusion of the water beneath it, and this yielding and elastic character of the packing renders it particularly serviceable in packing rods that are out of line or not coaxial with the stuffing-boxes, as it will readily conform to such imperfectly-positioned rods and fill the space all round. The absorbent core *a*, being loaded or saturated with oil, gradually yields it to the less porous covering *b*, keeping the latter supplied to reduce the friction of the sliding rod or piston, and so prolong the life and usefulness of the parts in contact.

Fig. 7 shows a stuffing-box G filled with packing C in spiral form around the piston D, E being a portion of the long vertical cylinder and F a portion of the elevator-car

mounted upon the upper end of the piston. The cylinder and the stuffing-box are formed to have annular spaces *cc* of considerable lateral extent around the piston to allow for the latter an unavoidable amount of side swaying due to the rocking or wobbling of the car.

Fig. 6 shows by full and by dotted lines various eccentric positions liable to be assumed by the rod in the stuffing-box, in all of which positions of the rod it is necessary to have it closely surrounded and pressed by the yielding and elastic packing.

In some cases in forming the rope of packing I give it the form and structure of cross-section shown in Fig. 8, it being approximately square, with the soft core *d* large in proportion to the wrapper *e* and constituting the main part of the body. Rings or spirals made of this style of packing better answer the purpose of packing rods or pistons that are very much out of line or lacking in coaxiality, as such bodies of packing are more pliable and compressible from the preponderance of the softer substance forming the core.

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

1. A packing for pistons, consisting of a rope having a soft elastic core, as of flax, and a wrapping of harder uniformly elastic non-metallic material as fiber embedded in india-rubber, the core and the wrapper being cemented together to form a single body.

2. A packing for pistons, consisting of a rope having an elastic absorbent core, as of flax, and a wrapping of harder uniformly elastic non-metallic material, as asbestos, the core and the wrapper being cemented together to form a single body, said wrapper being a sheet wound continuously around the flax core in involute form.

3. A packing for rods, consisting of a rope having a center strand of pliable elastic material, as flax, and an envelop for the center strand consisting of a sheet of firm non-metallic and uniformly elastic material harder than the material of the center strand.

4. Rings of packing made from a rope having a center strand or core made of flax and wound with an envelop of rubber and non-metallic fiber, and harder than the flax strand.

In witness whereof I have hereunto set my hand, this 15th day of May, 1905, in the presence of two subscribing witnesses.

OLIN J. GARLOCK.

Witnesses:

JOHN L. TRAVERS,
HARRY G. CHAPMAN.