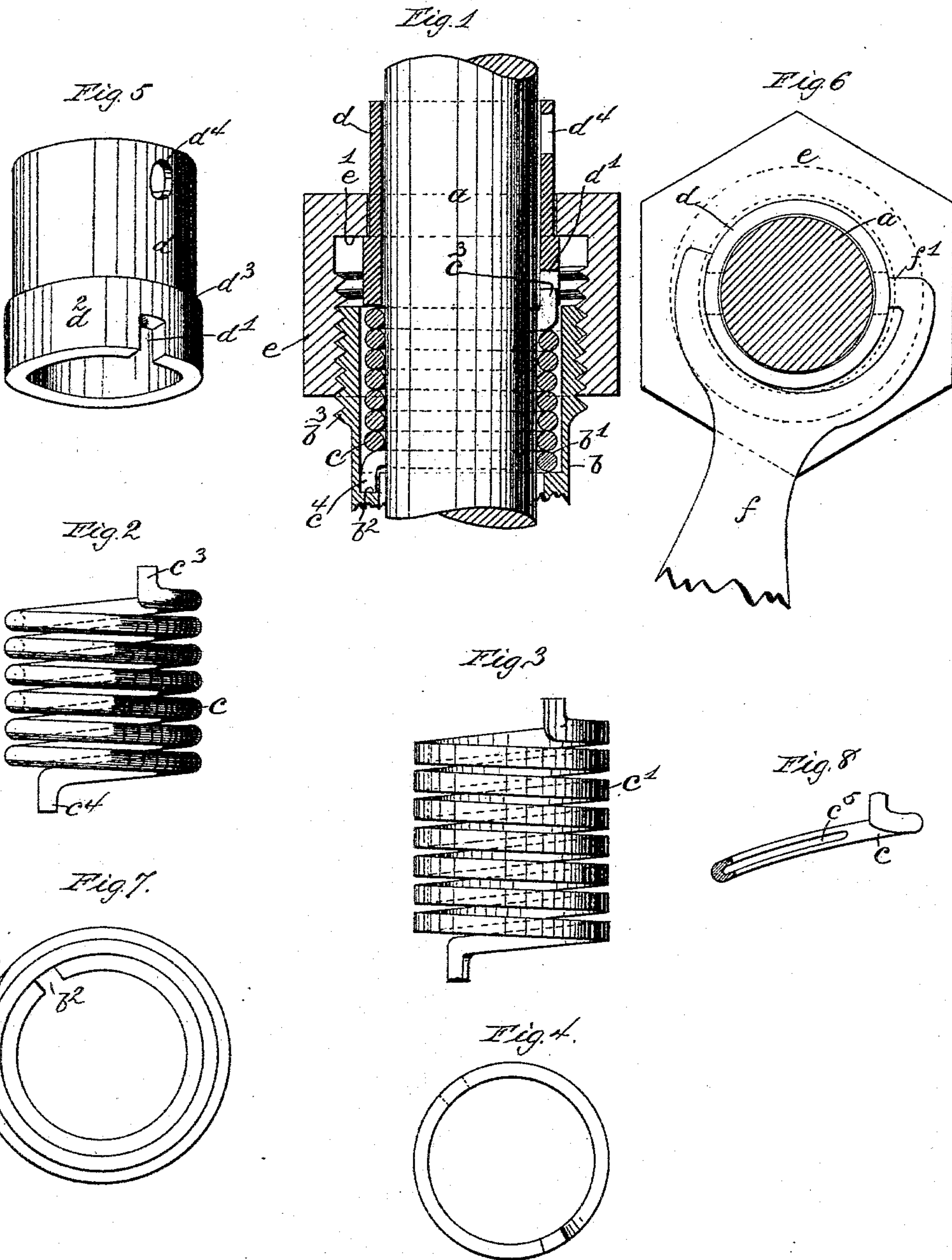


(No Model.)

R. G. FERGUSON.  
PACKING.

No. 490,107.

Patented Jan. 17, 1893.



Witnesses  
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*Fred. Kumpfer.*

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# UNITED STATES PATENT OFFICE.

ROBERT G. FERGUSON, OF LAKEWOOD, NEW JERSEY, ASSIGNOR OF TWO-THIRDS TO WILLIAM A. WILLIAMS, OF SCARBOROUGH, NEW YORK.

## PACKING.

SPECIFICATION forming part of Letters Patent No. 490,107, dated January 17, 1893.

Application filed February 19, 1892. Serial No. 422,070. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT G. FERGUSON, of Lakewood, in the State of New Jersey, have invented a new and Improved Packing, of which the following is a specification.

My improvement may be applied to packing the bearings of piston rods, valve stems &c. and is so constructed that the tightness with which it presses against the pressing surface is capable of regulation by means of a circumferential pressure applied to its overlapping ends.

In the accompanying drawings Figure 1 represents in longitudinal section a piston rod bearing packed according to my improvement. Figs. 2 and 3 show elevations and Fig. 4 a plan view of the packing. Fig. 5 shows the sleeve whereby the circumferential strain is exerted upon the packing. Fig. 6 shows the wrench in position for turning the sleeve shown in Fig. 5. Fig. 7 is a plan view of the parts to which the packing is applied. Fig. 8 is a portion of the coil shown in Fig. 2 illustrating the employment of a groove on the inner surface of the same.

*a* is a piston rod.

*b* is a cylinder end containing at the top an annular chamber *b'* at the bottom of which is a notch *b<sup>2</sup>*. Exteriorly at the top, the cylinder end is provided with the screw thread *b<sup>3</sup>*. Within the chamber *b'* is placed a coil *c* or *c'* adapted to encircle the rod *a*. The ends of this coil *c<sup>3</sup>* and *c<sup>4</sup>*, are turned axially in opposite directions forming shoulders adapted to receive the pressure of twisting mechanism; the end *c<sup>4</sup>* being thereby adapted to fit into the notch *b<sup>2</sup>* when the coil rests in the chamber *b'*.

*d* is a sleeve encircling the rod *a* and resting on top of the coil *c* and provided with a notch *d'* into which the coil end *c<sup>3</sup>* fits. The lower portion of the sleeve *d* is provided with a flange *d<sup>2</sup>*, the upper portion of which presents a shoulder *d<sup>3</sup>*.

*e* is a nut internally screw threaded to engage with the screw thread *b<sup>3</sup>* and provided above its screw threaded portion with an inwardly projecting lip *e'* that extends over the shoulder *d<sup>3</sup>* of the sleeve *d*. The sleeve *d* extends above the lip *e'* and is there provided

with a hole *d<sup>4</sup>* adapted for the engagement of the finger *f'* of a wrench *f*.

The parts are utilized as follows: The cylinder end and piston or other rod to be packed being in position, the coil *c*, already formed to fit the rod easily, is slipped axially onto the rod and into the chamber *b'* where its lower end *c<sup>4</sup>* rests in the notch *b<sup>2</sup>* and is thus held in a fixed position; then the sleeve *d* which also fits the rod easily, is slipped onto the rod until it rests on top of the coil and engages the upper end *c<sup>3</sup>* of the coil within its notch *d'*. It will now be evident that by turning the sleeve *d* on its axis it will move the end *c<sup>3</sup>* of the coil with respect to the end *c<sup>4</sup>* in such a manner as to make the coil grip the rod *a* to any tightness required. Next, the nut *e* is slid onto the rod *a* and screwed onto the upper end of the cylinder until the opening *d<sup>4</sup>* of the sleeve is above it, then by the application of the wrench *f*, the sleeve *d* is turned upon its axis to the extent required for tightening the coil *c* upon the rod *a*. While the sleeve is thus held by the wrench *f*, the nut *e* is further screwed down so as to bring the lip *e'* in contact with the shoulder *d<sup>3</sup>* and jam the sleeve *d* downward sufficiently to force all the turns of the coil *c* in contact with each other and give the coil the tightness of a continuous ring of metal.

In constructing the coil, I may employ material either round in section, as shown in Fig. 2, or square in section, as shown in Fig. 3, or of any other form. The coil may be composed of a core of copper or other wire coated with Babbitt metal or may be composed wholly of Babbitt metal, or of any other material or combination of materials possessing sufficient tensile strength combined with qualities adapting it for a tight bearing surface. The material, however, of the coil should be such as to be capable of taking a set in coil form so as to be set in that form before being applied.

I have shown the coil in the form of a helix having a considerable number of turns around the rod, but this form may be varied so long as the coil extends sufficiently to lap over itself and thus enable the axial pressure of the nut *e* to press its overlapping parts into contact. It is also evident that the means where-



by it is jammed axially may be varied in form from that shown. Therefore, I do not wish to be understood as confining myself to the particular form or arrangement or number of  
5 any of the parts shown.

In Fig. 8 I have shown a portion of the coil similar to that shown in Fig. 2 but containing a recess or groove  $c^5$  cut into its surface which comes in contact with the rod  $a$  such a recess  
10 being sometimes desirable to secrete sufficient water for sealing the joint between the coil and the rod.

It will be seen that the groove does not extend the whole length of the coil but is interrupted by an ungrooved portion which prevents a free passage through the groove from  
15 end to end of the coil.

I claim:—

1. As a packing for a stationary and movable part, in combination, a coil of set material carried by one of said parts, means whereby the coil may be twisted to regulate the radial pressure thereof and means connected with the part carrying the coil whereby the  
20 several turns of the coil may be pressed together, substantially as described.

2. In combination, a rod or stem, a bearing for the same provided with a packing chamber and with means for securing one end of  
30 the packing coil in a fixed position, a coil

within said chamber, a shoulder connected with said coil adapted to receive the pressure of twisting mechanism and a cap screw-threaded to the bearing whereby the coil may be compressed axially while it is being held  
35 by said twisting mechanism, substantially as described.

3. In combination with a rod or stem and its bearing, a coil interposed between the two, means whereby said coil may be twisted to  
40 regulate the radial pressure thereof and a member secured to the bearing whereby an axial thrust is exerted and maintained upon the coil when in operation, substantially as described.

4. In combination, the stem or rod, the bearing therefor, the cap for said bearing, a coil packing, a sleeve connected with one end thereof and projecting through said cap whereby  
45 said coil may be twisted without removing the cap, substantially as described.

5. As an article of manufacture, a packing composed of a coil provided with an interrupted groove on its inner face, substantially  
50 as described.

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Witnesses:

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