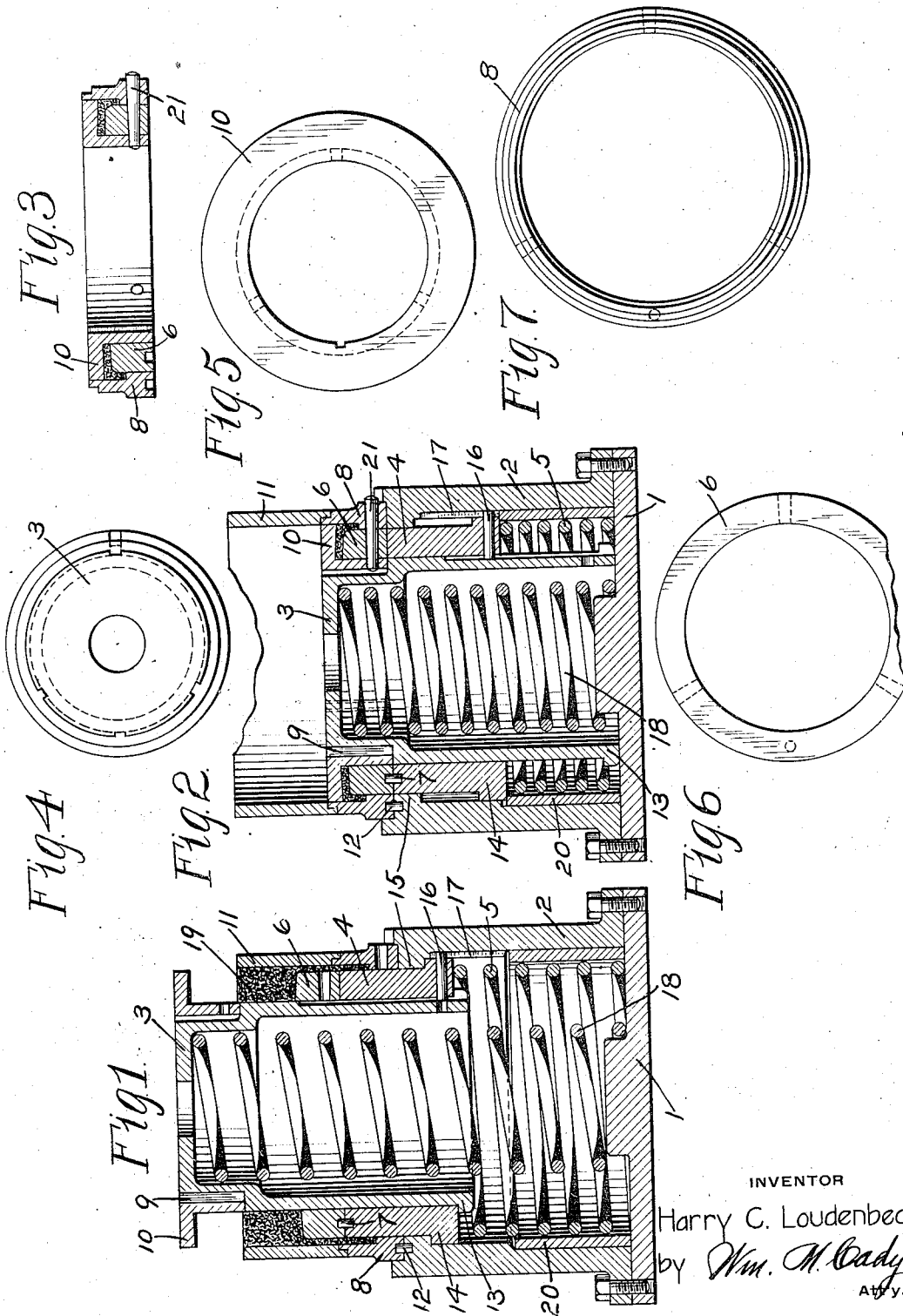


H. C. LOUDENBECK.
 PISTON PACKING MANUFACTURE.
 APPLICATION FILED MAY 23, 1917.

Patented Dec. 3, 1918.

1,286,681.



INVENTOR

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UNITED STATES PATENT OFFICE.

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PISTON-PACKING MANUFACTURE.

1,286,681.

Specification of Letters Patent.

Patented Dec. 3, 1918.

Application filed May 23, 1917. Serial No. 170,381.

To all whom it may concern:

Be it known that I, HARRY C. LOUDENBECK, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Piston-Packing Manufacture, of which the following is a specification.

This invention relates to piston packing, and the principal object of the invention is to provide a process for the manufacture of piston packing from ground cork.

The invention has special reference to cup shaped piston packing, such as is commonly employed in brake cylinder pistons for fluid pressure brakes.

It has heretofore been proposed to employ ground cork as the basic material in making flat sheets, in which the ground cork is mixed with a suitable binding agent and is then pressed under heavy pressure into sheets, which may then be heat treated and finally cut into desired shapes for use as gaskets and the like.

When, however, it is attempted to form shapes disturbing the plane of the sheet, the result has been found unsatisfactory, since the inherent nature of the ground cork is such that it will not flow, in the sense that metal and other materials flow when formed up by means of dies and the like, and the result is that articles so formed are liable to develop weak spots.

It is desirable, particularly in connection with brake cylinder piston packing, that such weak spots be avoided, especially at the angle of the packing, and one of the important features of the present invention is to so form the packing that the same will have substantially uniform strength throughout.

This is accomplished principally by providing dies or molds adapted to form the packing in such a way that the material does not have to "flow" in order to produce a homogeneous packing of uniform density.

In the accompanying drawing; Figure 1 is a central sectional view of the dies or mold members employed for forming the packing, showing the parts in position before pressure is applied; Fig. 2 a similar view, showing the parts in position after pressure has been applied; Fig. 3 a central sectional view of the mold proper as removed for

further treatment; Fig. 4 a plan view of the main plunger; Fig. 5 a plan view of interior ring of the mold; Fig. 6 a plan view of the intermediate ring; and Fig. 7 a plan view of the exterior ring of the mold.

As shown in the drawing, the packing forming apparatus may comprise a base 1 to which is secured a cylindrical member 2. Centrally within the member 2 there is arranged a main plunger 3 and intermediate the plunger 3 and the cylindrical member 2 is a secondary plunger 4 subject to the pressure of a heavy coil spring 5.

Mounted on top of the secondary plunger 4 is the intermediate ring 6 of the packing mold, held in position against rotation by a dowel pin 7. The exterior ring 8 of the mold is mounted on the top of the cylindrical member 2 and held in position by a dowel pin 12, leaving a space the thickness of the packing between same and the plunger 4.

Removably attached to the main plunger 3 by a key 9 is the interior ring 10 of the mold.

A cylindrical section 11 has a joint connection with the top of the ring 8 and forms a chamber for receiving the ground cork.

The main plunger 3 is normally held in its upper position by a heavy coil spring 18 and said plunger is limited in its upward movement by the engagement of a flange 13 with the under face of the secondary plunger 4, the secondary plunger 4 being similarly held by engagement of a flange 14 with a flange 15 on the member 2.

A pin 16, secured in the plunger 4, prevents rotary movement of the plunger, by engagement in a slot 17 formed in the member 2.

In operation, the parts being positioned as shown in Fig. 1 of the drawing, the space formed by the member 11 and between the ring 8 and the secondary plunger 4 is filled with ground cork mixed with a suitable binder and pressure is applied to the main plunger 3 by means of a press or the like. The main plunger then moves down, so that the flanged ring 10 engages the face of the ground cork and then the secondary plunger 4 with the ring 6 moves downwardly, compressing the ground cork in the annular space between the ring 8 and the plunger 4

in a direct line, as well as the cork between the upper face of the ring 6 and the flanged ring 10 until the plunger 3 engages the base 1, and the plunger 4 engages a cylindrical stop 20, as shown in Fig. 2 of the drawing.

It will now be noted that the above described operation of forming the packing does not require any "flowing" action of the ground cork, since the movement of the cork is entirely in the line of pressure exerted and that consequently, the formation throughout is the same as that of a pressed flat sheet.

When the parts have assumed the positions shown in Fig. 2 of the drawing, tapered dowel pins 21 are inserted in aligned apertures of the rings 6, 8, and 10, while the parts are still under pressure, so as to hold the rings together.

The pressure on plunger 3 is now relieved, so that the springs 5 and 18 shift the parts upwardly and the cylinder 11 having been taken off, the mold rings secured together by the dowel pins 21 and containing the formed packing, as shown in Fig. 3, may be lifted off.

The mold is then placed in an oven to heat treat the packing and finally the dowel pins 21 are removed and the finished packing is taken out of the mold.

By providing a number of molds, the press and the forming apparatus may be kept in continuous operation while each mold is being successively subjected to heat treatment.

It is recognized that the herein described process would apply to other non-flowing substances such as saw dust and the like,

and while ground cork is mentioned in the claims, it will be understood that other materials similar in nature, are contemplated as embraced within the scope of the claims.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A device for making packing, comprising a main plunger, a secondary plunger, an intermediate mold ring supported by the secondary plunger, an exterior mold ring providing an annular chamber adjacent to the intermediate mold ring, and an interior mold ring carried by the main plunger for compressing the packing material.

2. A device for making packing, comprising a stationary mold ring, a movable mold ring, a floating plunger carrying the movable mold ring and mounted interiorly of the stationary ring, a compressing plunger mounted interiorly of the floating plunger, and a mold ring carried by the compressing plunger for compressing the packing material.

3. A device for making packing, comprising a main cylindrical plunger, stationary mold member, a secondary cylindrical plunger intermediate the main plunger and the mold member, a mold ring mounted on the secondary plunger and forming an annular chamber with respect to the stationary mold member, and a flanged mold ring carried by the main plunger for compressing the packing material.

In testimony whereof I have hereunto set my hand.

HARRY C. LOUDENBECK.