No. 816,197. PATENTED MAR. 27, 1906.

J. B. WALSH.

METHOD OF MAKING LEATHER PACKING RINGS FOR HYDRAULIC PUMPS AND THE LIKE.

APPLICATION FILED MAY 24, 1905.

FIG. 1.

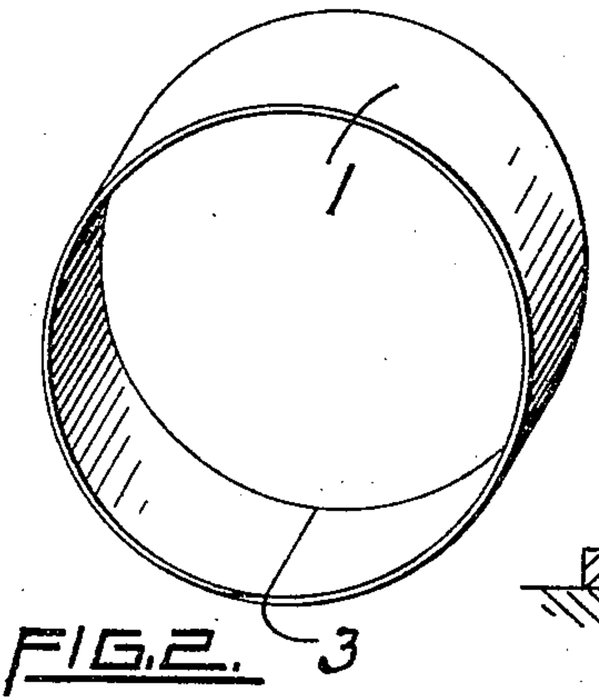


FIG. 2.

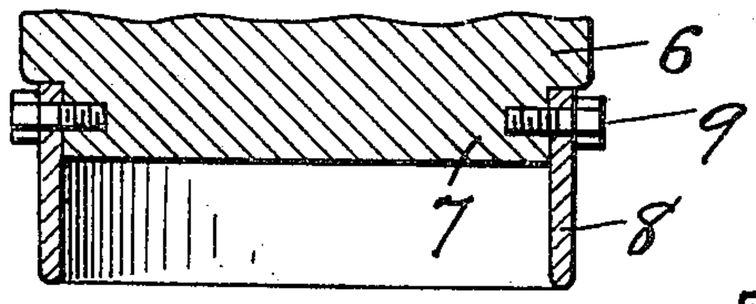


FIG. 3.

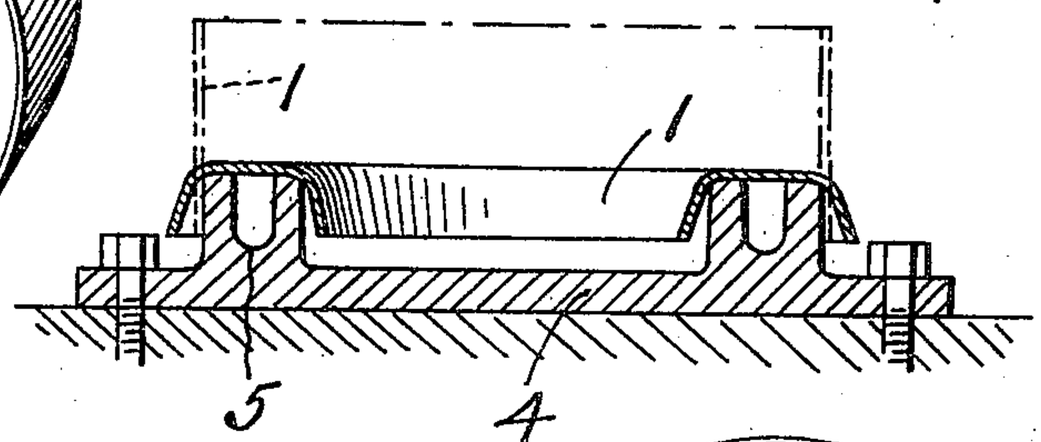
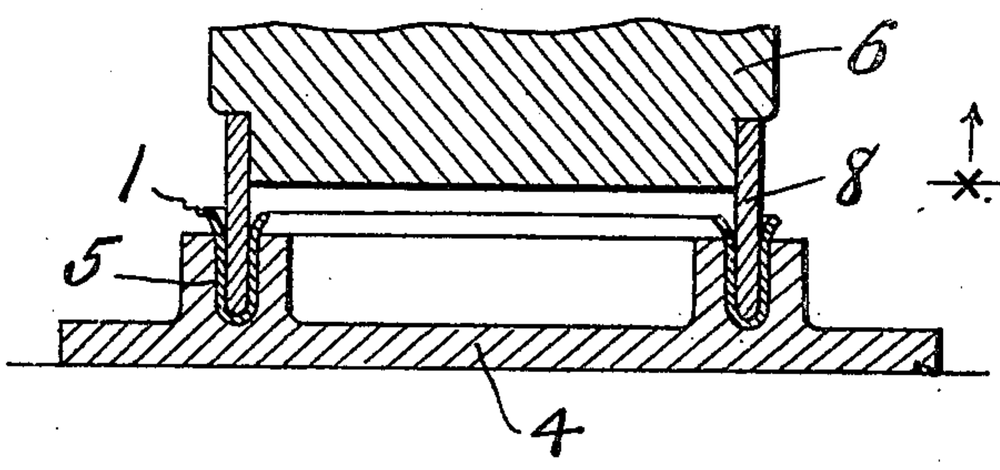


FIG. 4.



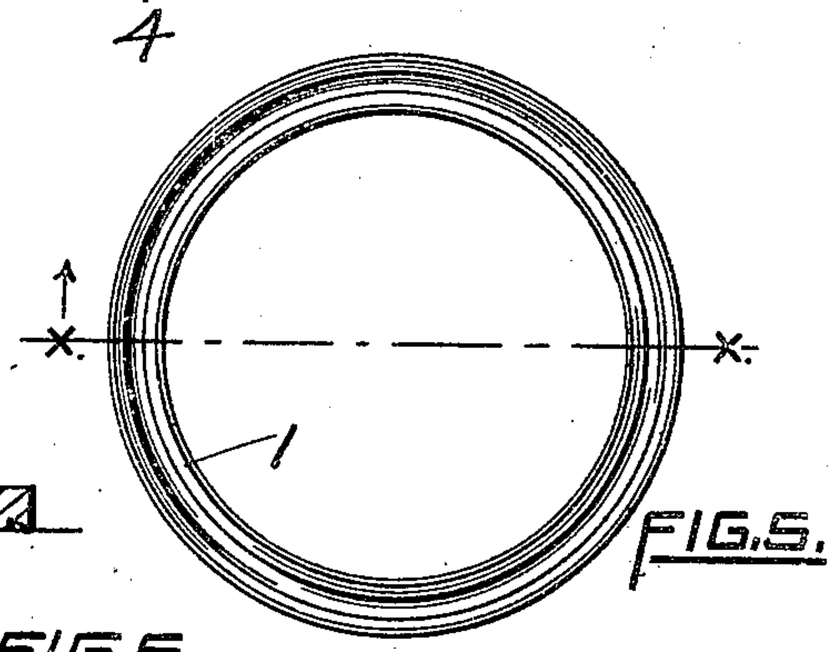
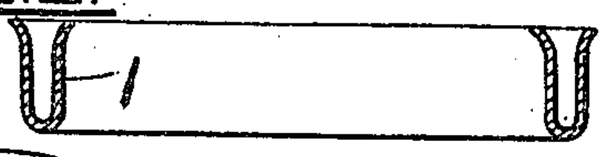


FIG. 5.

FIG. 6.



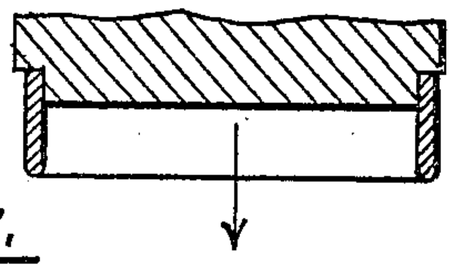
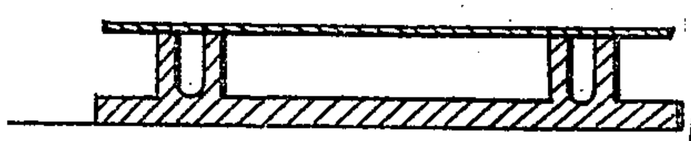
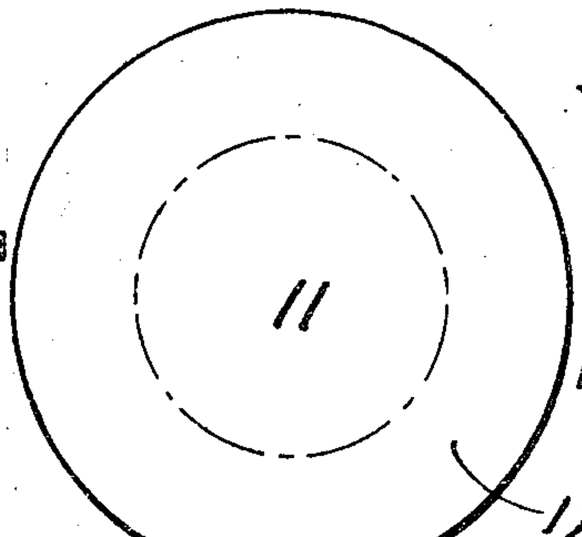


FIG. 7.





10 FIG. 9.

FIG. 8.

WITNESSES.

M. G. Dunn

Alexander Macwatty.

INVENTOR.

John B. Walsh.

By Charles P. Hannigan,
Attorney.

UNITED STATES PATENT OFFICE.

JOHN B. WALSH, OF PROVIDENCE, RHODE ISLAND.

METHOD OF MAKING LEATHER PACKING-RINGS FOR HYDRAULIC PUMPS AND THE LIKE.

No. 816,197. Specification of Letters Patent. Patented March 27, 1906.

Application filed May 24, 1905. Serial No. 262,083.

To all whom it may concern:

Be it known that I, JOHN B. WALSH, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Methods of Making Leather Packing-Rings for Hydraulic Pumps and the Like, of which the following is a specification.

My invention relates to new and useful improvements in methods of making leather packing-rings for hydraulic pumps and the like.

The method is to be more fully described in conjunction with the apparatus employed in connection therewith; and it consists in successive steps of manufacture, which are as follows: A longitudinal blank or strip of flexible leather is first cut from a sheet and is formed with its ends beveled on opposite sides. The said strip is then bent into the form of an annulus until its ends overlap one another, the overlapping ends thereof being held together by cement or glue. The next step consists in placing the strip upon a fixed die-block in the path of a descending hammer carrying a former corresponding in contour to the die-block. As the former descends upon the die-block the annular strip is upset into a substantially cross-sectional U shape. The steps above described represent the method necessary to produce the finished article.

A particular advantage accruing from my invention is the saving of material. Heretofore it has been the custom to place upon the die-block a circular sheet of metal, the outer portion thereof serving as a packing-ring and the inner or central portion being cut or punched therefrom and wasted. Thus where a great many packing-rings are manufactured in a large establisment there is a very large percentage of waste material.

Still another advantage which resides in my method is the perfection of the shape and finish of a completed ring. In the methods heretofore employed the rings which have been produced have become crimped under the blow of the former, and oftentimes the entire circular blank of leather has been torn and necessarily wasted. This of course is due to the resistance of the center or inner portion of the circular sheet of leather, which does not fall directly under the blow of the former.

The various steps in the method of manufacture will appear in the course of the following description, in which reference is had to the accompanying drawings, forming a part of this specification, like numerals designating like parts throughout the several views, in which—

Figure 1 is a perspective view of one of the flexible strips from which a packing-ring is formed as it is cut from a sheet of leather. Fig. 2 is a perspective view of the same strip after it has been bent into circular contour and has its overlapped beveled ends cemented together. Fig. 3 is a longitudinal sectional view showing the relative position of a fixed die-block, the annular strip laid thereon, and the former in its position above said strip ready to descend therefrom. Fig. 4 is a view similar to Fig. 3, showing the former in the position it assumes when it descends into the die-block with the leather packing-ring interposed between said former and die-block. Fig. 5 is a top plan view of the packing-ring produced by my improved method. Fig. 6 is a section thereof upon line x x of Fig. 5. Fig. 7 is a view similar to Fig. 3, but showing the method heretofore in vogue. Fig. 8 is a top plan view of blanks employed in the old methods. Fig. 9 is an elevation of the completed packing-ring as produced by previous methods.

In practice a strip of leather 1 is cut from a sheet and has its ends 2 beveled on opposite sides. The strip thus cut is bent into annular form and has its beveled ends lapped upon one another and secured together by flexible adhesive cement, as at 3. The flexible leather annulus is then placed about a fixed die-block 4 in an upright position, as shown in dotted lines in Fig. 3, and is bent over the face of said die-block by manual labor, as is shown in section in same figure.

The die-block 4 is provided with an annular recess 5. A hammer 6, provided with a reduced end 7, has secured thereto a former 8 by means of screws 9 or any other desired fastening means. As the hammer descends the former will enter the annular groove in the fixed die-block, thereby upsetting the leather annulus into a U-shaped cross-sectional contour, as shown in Fig. 4, and completing the operation. The packing-ring thus formed is removed from the fixed die-block 4 and has a perfectly smooth periphery which will effectually resist the wear and tear of the movement of the piston.

In the method heretofore in vogue the

former and die-block are of substantially the same construction as in the present method, the description given above for these elements being sufficient for the construction illustrated in Fig. 7. However, instead of an annular blank 10 bent across the face of the die-block, as shown in Fig. 3, a circular blank 10 is employed, which is bent across the face of the die-block. The central portion 11 thereof (shown in dotted lines in Fig. 8) is punched or cut from the blank and is wasted, and the outer portion 12 serves to form a packing-ring. The ring produced by the old method is oftentimes crimped and torn, as intimated above, and soon goes to pieces under the strain of the movement of the piston.

While I have described my process as used in connection with a blank of flexible leather, it is obvious that I need not limit myself to this material, as any flexible composition could be equally as well used in connection with the process described.

Various minor changes such as may be found expedient in practical use may be made without departing from the spirit or scope of my invention as defined in the appended claims.

Having fully described my invention, I claim—

1. A method of forming packing-rings which consists in bending a longitudinal blank of flexible material into the form of a ring and securing the meeting ends together, then spreading the upper portion of the ring and bending it outwardly and downwardly until the two edges of the ring are in the same plane and the ring is of concavo-convex shape in cross-section, then upsetting the ring from the convex side downwardly to U shape.

2. The method of forming packing-rings, which consists in upsetting a flexible concavo-convex annulus into a substantially U shape, by pressure applied simultaneously throughout the circumference of the ring at substantially the center of the convex side, and between the center and both edges of the concave side.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN B. WALSH.

Witnesses:

M. A. DUNN,

ALEXANDER MACWATTY.