

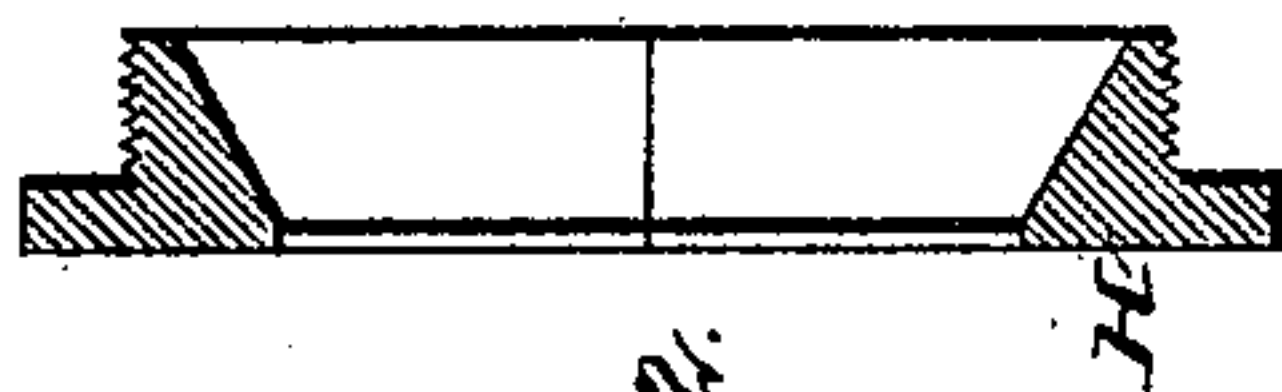
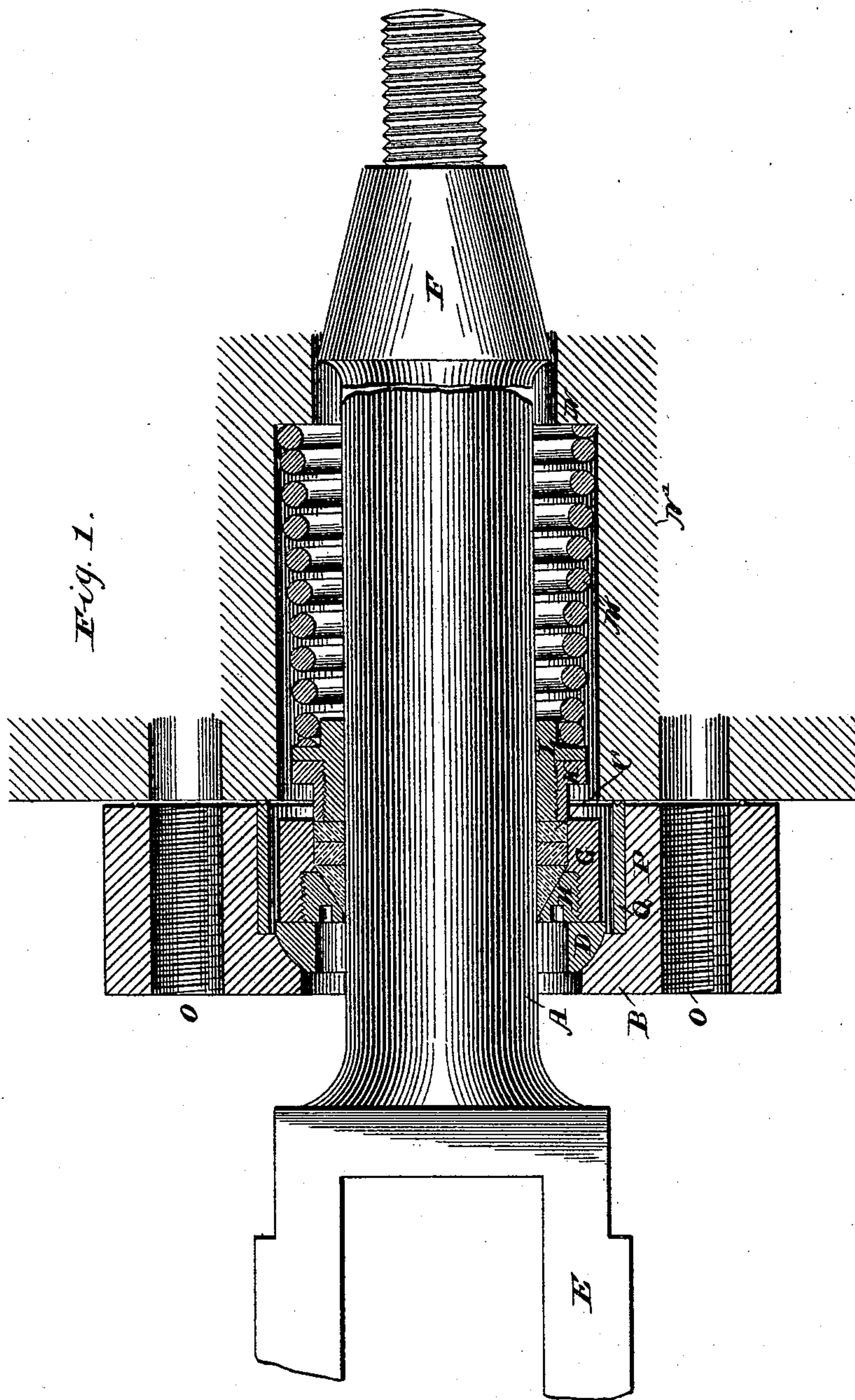
(No Model.)

4 Sheets—Sheet 1.

E. P. MONROE.  
METALLIC PACKING.

No. 464,330.

Patented Dec. 1, 1891.



Witnesses

*Forrest J. Julian. Sec*  
*R. P. Clwell.*

Inventor  
*E. P. Monroe.*

*By Hopkins & Atkins.*

Attorneys

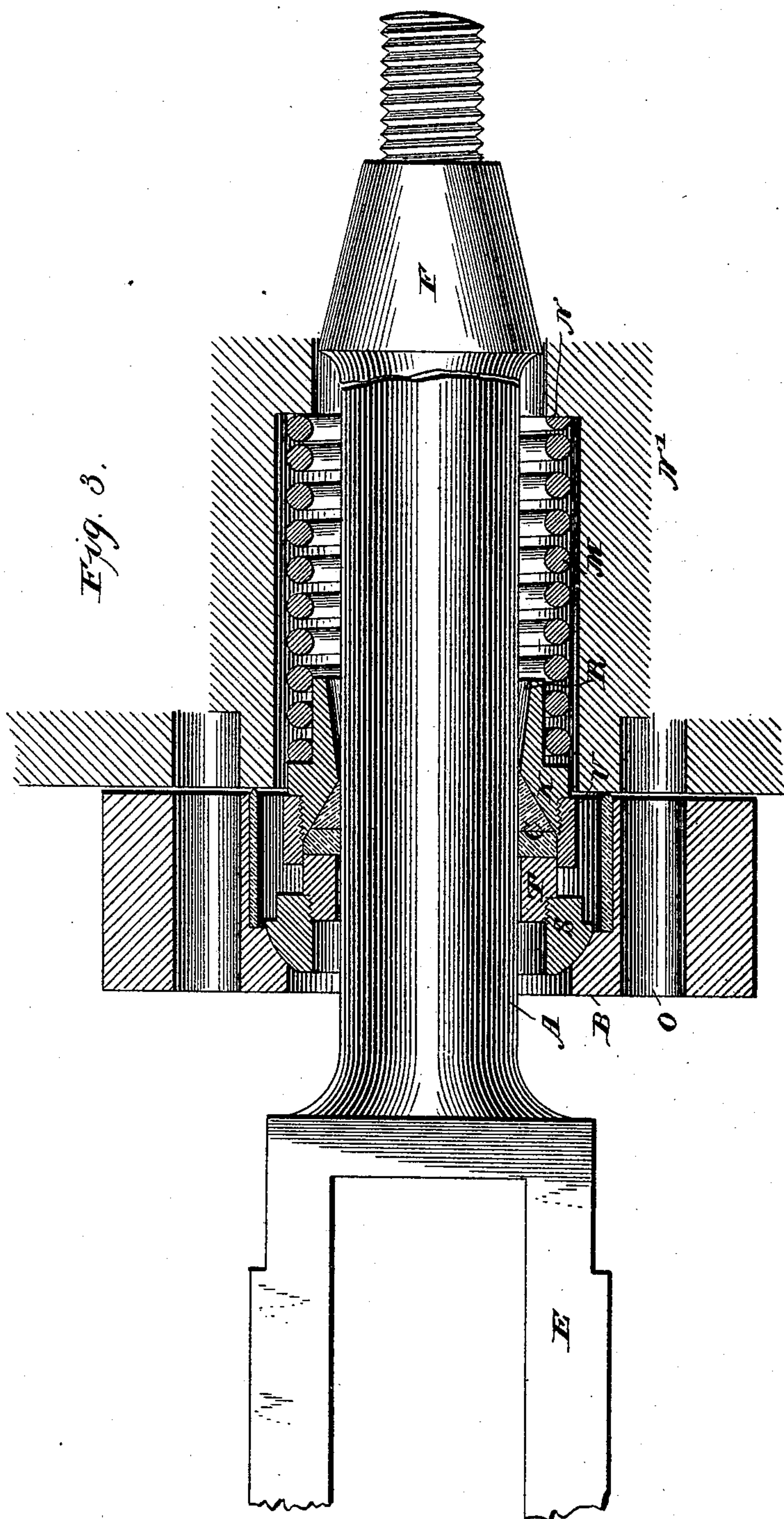
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4 Sheets—Sheet 2.

E. P. MONROE.  
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Patented Dec. 1, 1891.



Witnesses  
*David T. J. J. J.*  
*C. P. Cluffell.*

Inventor  
*E. P. Monroe.*

*By Hopkins & Atkins.*

Attorneys



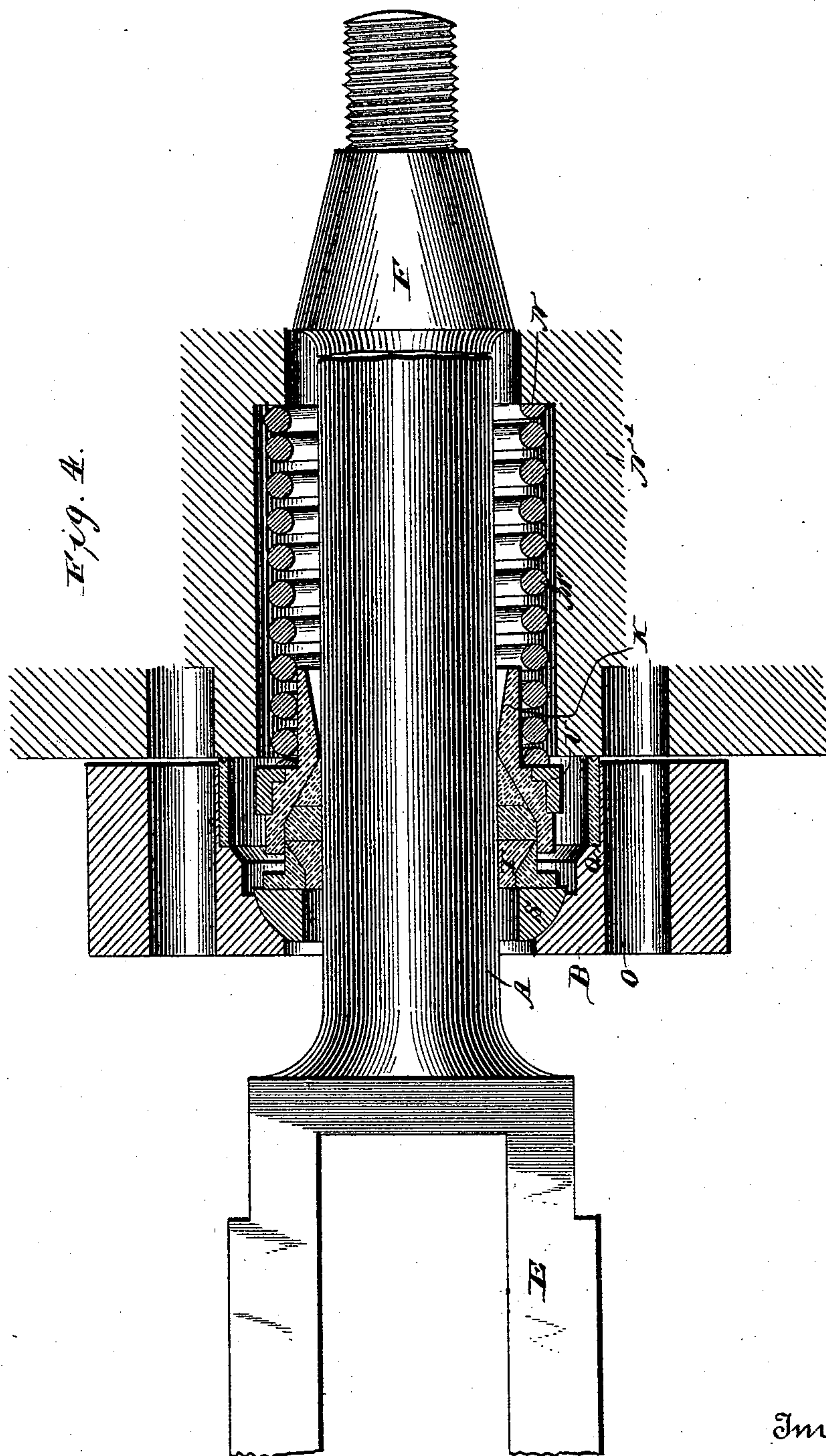
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E. P. MONROE.  
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Patented Dec. 1, 1891.



Witnesses

*Roscoe D. Julian.*  
*L. P. Chubb.*

Inventor

*E. P. Monroe.*

*By Hopkins & Atkins.*

Attorneys

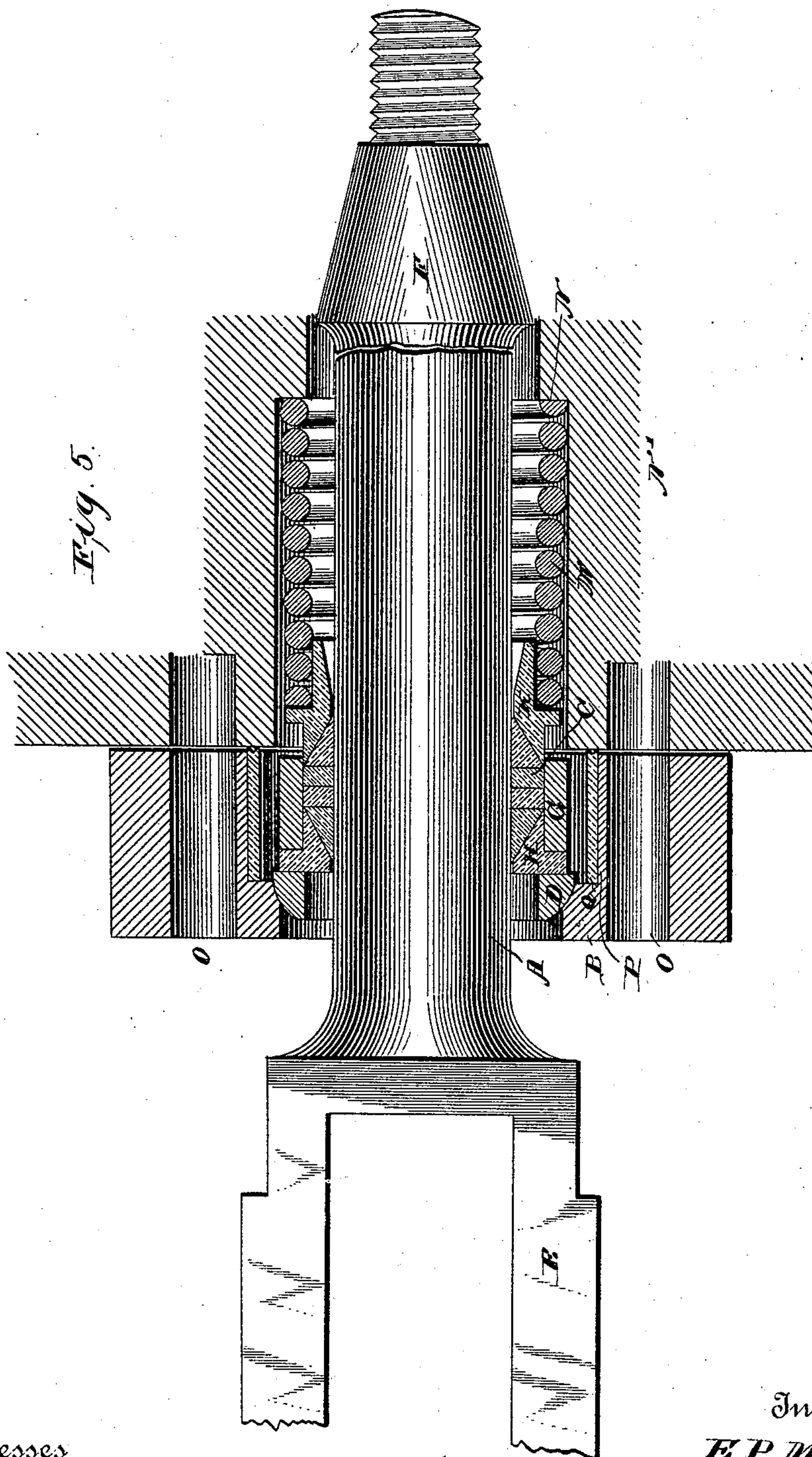
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4 Sheets—Sheet 4.

E. P. MONROE.  
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Patented Dec. 1, 1891.



Witnesses

*Louis D. J. J. J.*  
*E. P. Monroe.*

Inventor

*E. P. Monroe.*

*By Hopkins & Atkins*

Attorneys



# UNITED STATES PATENT OFFICE.

EDWIN PEAR MONROE, OF PHILADELPHIA, PENNSYLVANIA.

## METALLIC PACKING.

SPECIFICATION forming part of Letter's Patent No. 464,330, dated December 1, 1891.

Application filed January 8, 1891. Serial No. 377,097. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN PEAR MONROE, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Packing, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to metallic packing adapted to be employed for reciprocating rods or spindles; and it consists in the construction and arrangement of the parts as hereinafter described.

In the accompanying drawings, Figure 1 is a longitudinal diametrical section showing one form of embodiment of a part of my improvements, together with so much of ordinary connected parts as are necessary for illustrating the operation and utility of my improvements. Fig. 2 is a diametrical section of a supplemental ring made in two or more parts to complete when applied the vibrating cup. Figs. 3, 4, and 5 are similar views showing such modifications of my improvements as are necessary in applying them to different machinery and to different parts of the same machine or engine.

Referring to the letters upon the drawings in aid of a detailed description, A indicates in all the figures a rod, which may be a piston-rod, valve-stem, spindle, or other corresponding part.

B in all the figures indicates the casing, which carries in various modifications the packing C.

D in all the figures indicates a ball-and-socket ring provided for the purpose of accommodating tilting or vibrating lateral movements of the spindle and packing.

Referring to Fig. 1, there is illustrated a piston-rod in common use for locomotives, in which the cross-head E is integral with the rod and the rod is also enlarged at its end F.

One object of my invention is to provide packings adapted not only for new work, but also suitable for application to old machinery, such as locomotives and numerous other engines. In an example of a piston-rod—for instance, such as illustrated in Fig. 1—a special construction and arrangement of the parts to constitute a good metallic packing are necessary, because of the fact that the diameter of

the piston where the packing must be applied is much less than its transverse measurement through the cross-head or through the enlargement at F and close-fitting parts cannot be slipped to place on the rod. Accordingly I provide special parts, illustrated in this figure, in which G indicates a holding-ring for encircling and holding the packing in contact with the rod. This ring is internally screw-threaded at one end, and its internal diameter is sufficient to enable it to be passed over the enlarged part F of the rod. H indicates a segmental part of this cup made in sections and to be applied and screwed to place, as illustrated, so that the parts G and H form together a suitably-fitting vibrating cup to hold the packing in place around the rod. By this construction the segmental parts of the cup interlock upon each other in such a manner as to form a united whole without the use of a separate binding-ring, because these parts screw into the part G, as illustrated. Thus I dispense with what I will term an "exterior holding-ring" and reduce the number of parts hitherto deemed necessary to constitute a complete and secure vibrating cup.

K indicates an annular follower, which is internally screw-threaded and of sufficient diameter to slip onto the rod over the enlargement F. L is a supplemental part of this follower, made in sections similar to those of the vibrating cup and similarly applied by screwing to place, as shown, to complete the follower, so that the packing is properly supported and confined between it and the vibrating cup.

M indicates a coiled spring seated at one end upon a ledge N in the stuffing-box N' and at the other end bearing against, encircling, and supporting the sections of the follower.

O indicates bolt-holes in the casing for securing it by means of bolts on a stuffing-box. In boring out these holes it is found that in order to accommodate the lateral movements of the packing and at the same time avoid giving the casing too great a diameter and consuming too much room with it the metal partition at P is necessarily left too thin to withstand the steam-pressure within the casing, so that it is liable to blow out or to give way in time by corrosion. To remedy this



evil I insert a re-enforcing ring Q, preferably of brass or other metal of greater tensile strength than cast-iron and better adapted to resist corrosion. This ring is made to fit  
 5 very snugly and is driven to place by hydraulic power or other strong force. I am thus enabled to secure sufficient strength of the part P within the necessarily limited space available in ordinary cases.

10 In Fig. 3 there is illustrated a modification of my improvements, in which there is shown a follower so constructed that it has the function practically of the vibrating cup shown in Fig. 1. In this figure the parts correspond-  
 15 ing to the vibrating cup and the follower in Fig. 1 are reversed in position. The follower K is cut away at R to admit of any necessary rocking movement due to the vibration of the rod. In this figure the part S corre-  
 20 sponds to the part L in Fig. 1, the part T to the segmental follower K, and the part U to the holding-ring G in that figure.

Fig. 4 corresponds substantially with Fig. 3, except that it illustrates a formal modifica-  
 25 tion by which the parts can be put together and secured in place without the use of screw-threads.

In Fig. 5 is illustrated a modification in which the segmental follower is supported in  
 30 place by the coiled spring alone without the aid of an encircling ring U, as shown in Fig. 4.

In this instance the straight portion of the vibrating cup G is elongated in the direc-  
 35 tion of the spring, so as to make an additional support and guide for the follower to main-

tain it in its proper position. In this figure the supplemental sectional part of the vibrat-  
 ing cup is shown without screw-threads; but in other respects it is the same as shown in  
 Fig. 2 and is held by the encircling ring G. 40

I have not illustrated all of the modifica-  
 tions of my improvements which may be made in practice to accommodate the varying kinds  
 and sizes of engines and rods and to suit all  
 of the different situations in which my pack- 45  
 ing is applicable, but have shown enough to exhibit in some degree the varied application of which my improvements are susceptible.

What I claim is—

1. In a metallic packing, a vibrating cup 50  
 consisting of segments, the interior segments together forming the conical portion and screwing into the exterior segment forming the straight portion and exterior part of the  
 cup, substantially as set forth. 55

2. In a metallic packing, a vibrating cup consisting of segments, together with a fol-  
 lower in sections, in combination with a ball-  
 and-socket ring, substantially as set forth.

3. In a metallic packing, the combination 60  
 of a cup in segments with follower in sections and ball-and-socket ring, together with the Babbitt-metal packing-rings cut in halves, substantially as set forth.

In testimony of all which I have hereunto 65  
 subscribed my name.

EDWIN PEAR MONROE.

Witnesses:

THOS. S. HOPKINS,  
 C. P. ELWELL.