

No. 772,714.

PATENTED OCT. 18, 1904.

J. JACOBSON.
METALLIC PACKING.

APPLICATION FILED JULY 2, 1904.

NO MODEL.

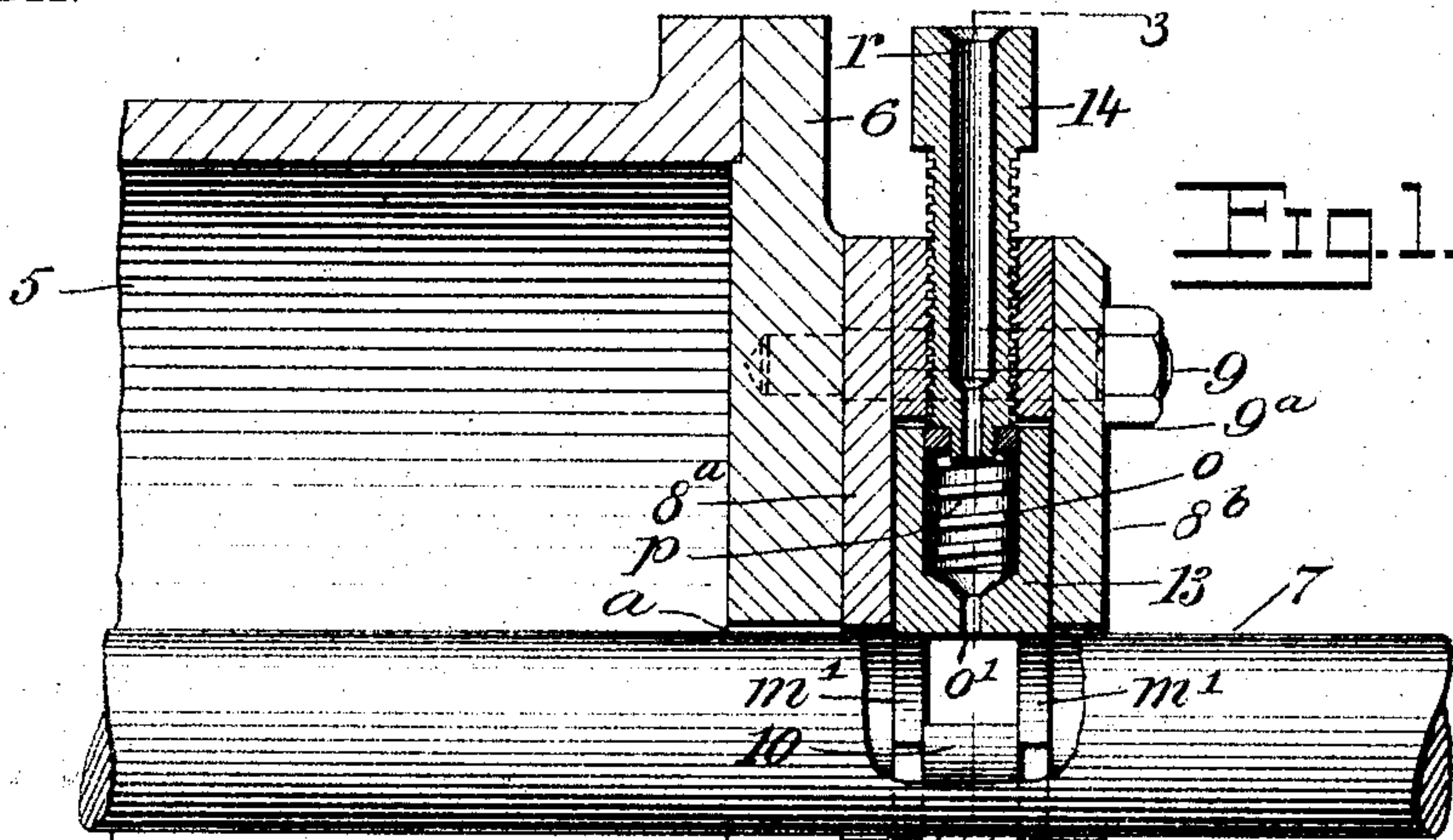


Fig. 1.

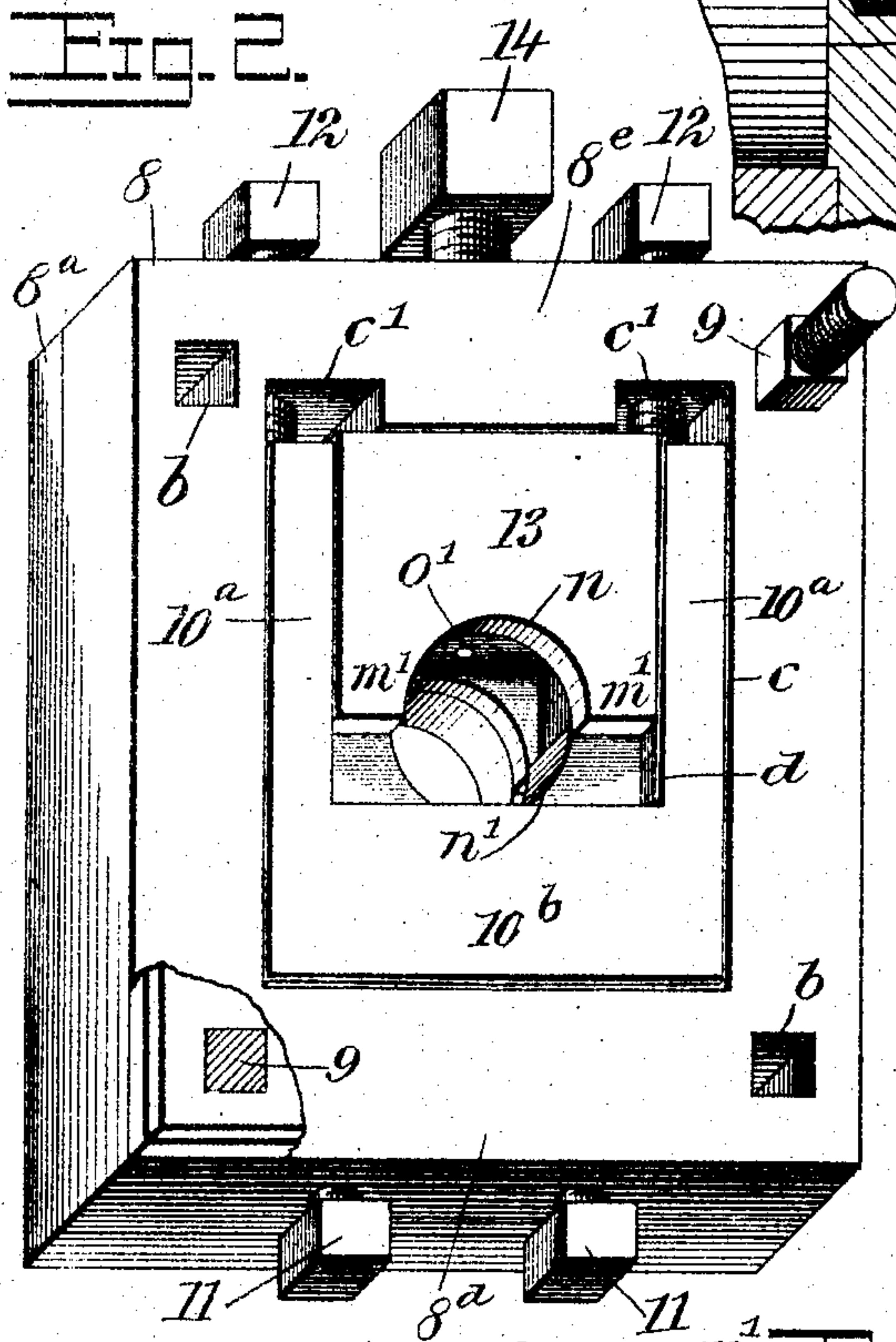


Fig. 2.

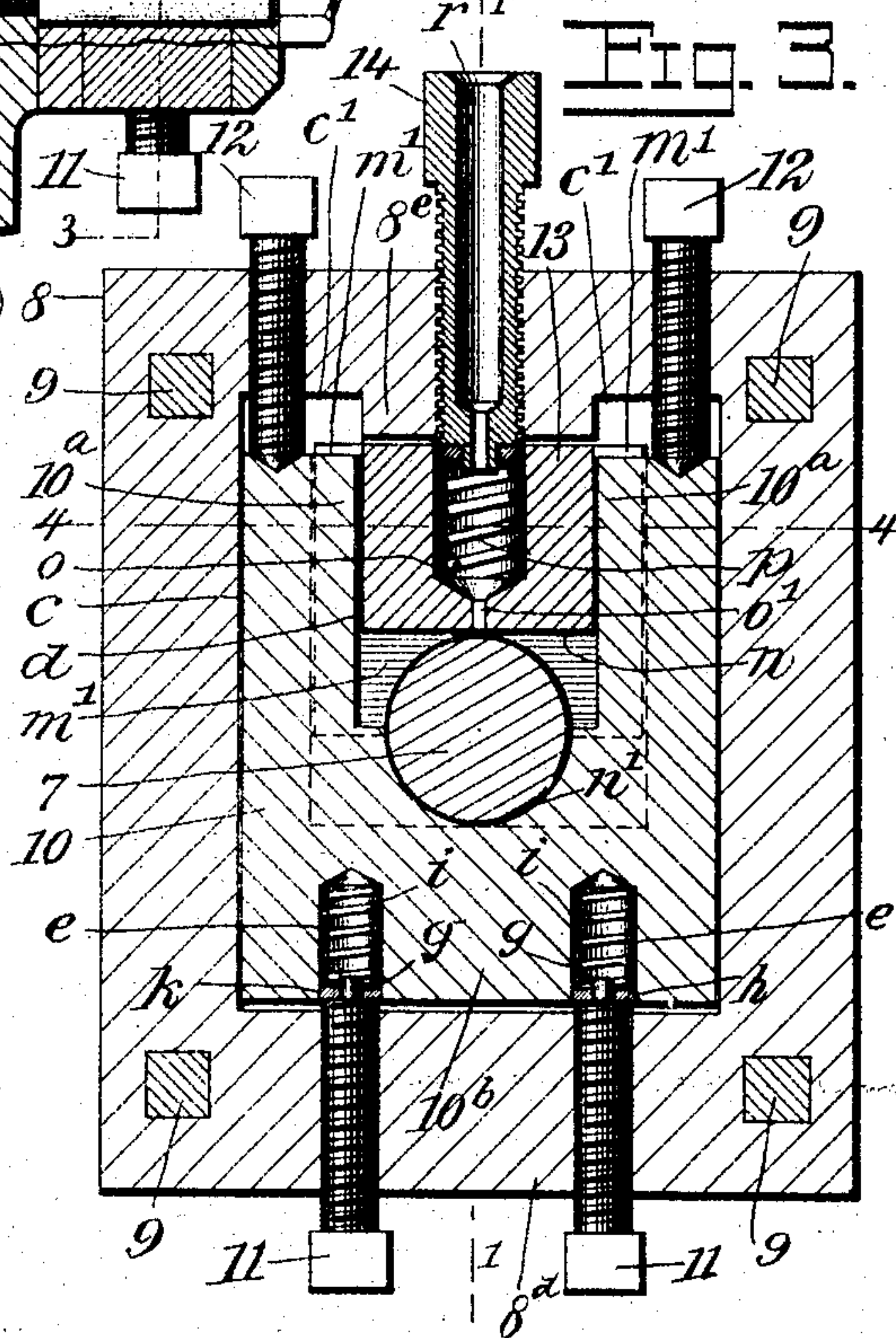


Fig. 3.

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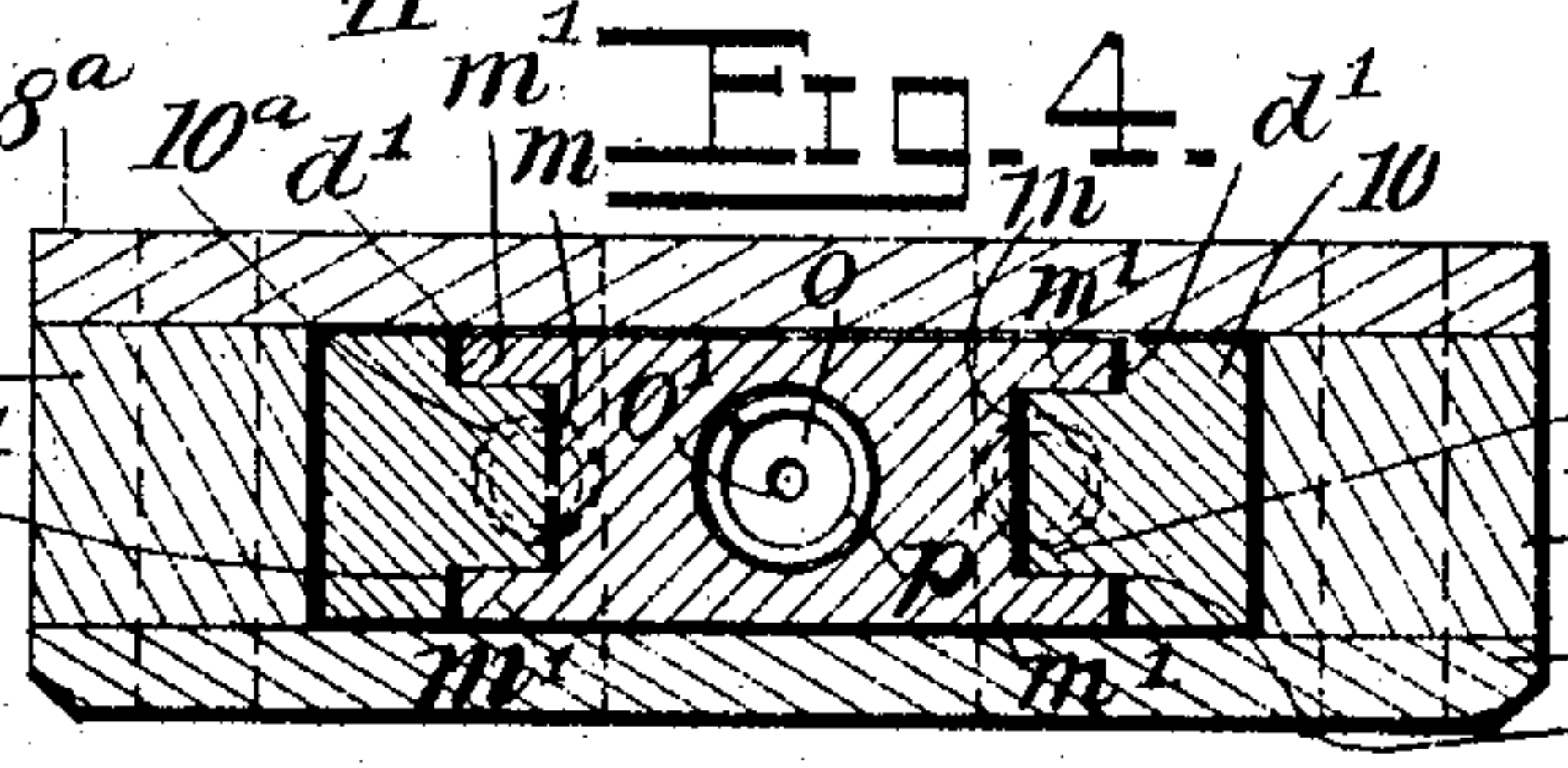


Fig. 4.

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METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 772,714, dated October 18, 1904.

Application filed July 2, 1904. Serial No. 215,157. (No model.)

To all whom it may concern:

Be it known that I, JACOB JACOBSON, a citizen of the United States, and a resident of Lead, in the county of Lawrence and State of South Dakota, have invented a new and Improved Metallic Packing for Rods, of which the following is a full, clear, and exact description.

This invention relates to metallic packing for piston-rods, valve-rods, or plunger-rods that are working members of steam or other engines, and has for its object to provide novel features of construction for a metallic packing which adapt it for very effective service, enable the convenient inspection or renewal of interior details when worn so as to require it, and that permit the application of lubricant through the packing and upon the rod packed therewith, as occasion may require.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical sectional view of the improved packing through its transverse center substantially on the line 1 1 in Fig. 3. Fig. 2 is a mainly perspective front view of the packing-box, from which the front plate is removed. Fig. 3 is a vertical sectional view substantially on the line 3 3 in Fig. 1, taken at a right angle thereto, showing the packing and the rod it engages in cross-section; and Fig. 4 is a sectional plan view of the packing substantially on the line 4 4 in Fig. 3.

The improved packing is generally applicable for preventing leakage of a motive agent on the valve-chest or cylinder of an engine using gas, water, air, or steam to actuate its working parts.

In Fig. 1, 5 indicates the cylinder of an engine, 6 a head or bonnet secured on one end of the cylinder, and 7 a piston-rod working centrally through the head 6, which is

suitably apertured, as at *a*, to permit the free reciprocation of the rod therethrough. A holder-box 8 is provided, wherein other details are contained and held in proper relative positions, and, as shown, the holder-box is preferably rectangular and is interiorly apertured to afford a central rectangular opening laterally therethrough. Four preferably angular holes *b* are formed in the holder-box 8, respectively near corners thereof, and in each rectangular hole the correspondingly-shaped body of a stud-bolt 9 is fitted, said bolts having reduced threaded ends, and when inserted the squared portions of the bolts project somewhat beyond the opposite sides of the holder-box. A rectangular-edged back plate 8^a, having angular perforations near its corners that respectively aline with the angular holes in the holder-box 8, receives the angular rear-end portions of the bolts 9 when the back plate and holder-box have contact. A front plate 8^b, which is similar to the back plate 8^a and has angular perforations near its corners, receives in said perforations the front angular projecting portions of the bolts 9. The plates 8^a 8^b are centrally perforated to loosely receive the rod 7. The front and back plates 8^b 8^a are fitted steam and liquid tight against the respective sides of the holder-box they have contact with, and the rear side of the back plate 8^a is adapted to form a steam and liquid tight joint with the central portion of the outer side of the cylinder-head 6 when the holder-box and back and front plates therefor are together secured upon the cylinder-head, as will be hereinafter explained. Centrally in the holder-box 8 a rectangular opening *c* is formed, having its upright defining-walls parallel with corresponding peripheral sides of the holder-box. A packing-block 10, having a rectangular peripheral form, is loosely fitted in the opening *c*, the thickness of said packing-block being equal with that of the holder-box 8. A central rectangular recess *d* is formed in the packing-block 10 and extends down therein below the center of said block, this recess leaving two similar side walls 10^a; and rabbets *d'* are formed in the opposite sides of the packing-

block along the inner upright walls of the recess, thus reducing the thickness of the packing-block 10 between the opposite rabbets.

As shown in Figs. 2 and 3, the upper defining-wall 8^e of the opening *c* in the holder-block 8 is rectangularly notched at two points *c'*, directly opposite the upper ends of the standing side walls 10^a of the packing-block 10, these notches permitting a vertical movement of said packing-block. In the lower transverse wall 8^d of the holder-block 8 two spaced perforations are formed therethrough, these vertical perforations having internal threads for reception of the adjusting-screws 11, that are clearly shown in Fig. 3. Two socket-perforations *e* are formed in the lower peripheral wall 10^b of the packing-block 10 opposite the upper ends of the adjusting-screws 11 and have a slightly-greater diameter than that of said screws, so that their ends may enter the sockets. The upper ends of the adjusting-screws 11 are reduced to form integral pins *g* thereon, each pin receiving a circular washer *h*, that fits loosely in the lower end of a socket *e*. In each socket *e* a coiled spring *i* is placed under tension, these springs pressing more or less upon the packing-block 10 in accord with the adjustment of the screws 11. Two abutment-screws 12 are screwed down through threaded perforations formed in the upper transverse wall 8^e of the holder-block 8, these screws at their lower ends having contact with the upper ends of the upright side walls 10^a of the packing-block 10, and it will be seen that the contact of the screws 12 with the packing-block 10 will define the vertical position of the packing-block in the holder-block. A complementary rectangular packing-block 13 is fitted to slide in the recess *d* of the packing-block 10, there being rectangular channels *m* formed in the two peripheral side walls of the packing-block 13, which receive the side walls of the up-standing members 10^a at and near the rabbets *d'* therein, said channels leaving similar flanges *m'* stand on the packing-block, which are slidably fitted in the rabbets mentioned, as is clearly shown in Fig. 4. Two semicircular concavities *n n'* are respectively formed in the lower transverse wall on the packing-block 13 and upper transverse wall of the packing-block 10, these concavities together forming a circular opening through which the rod 7 may be passed with a sliding fit therein. The rabbets *d'* in the opposite sides of the packing-block 10 are joined together at their lower ends by transverse rabbets of equal depth therewith, and the opposite flanges *m'* are downwardly extended each side of the concavity *n* in the packing-block 13, these extensions being adapted to slide in the transverse rabbets, thus providing for wear of the packing-blocks on the rod 7 by permitting said blocks to slide together. In the center of the

packing-block 13 and down through its upper side a socket-perforation *o* is formed of a proper depth, and from the bottom of said socket a smaller perforation *o'* extends, which at its lower end intersects the concavity *n*. Directly above the socket *o* a threaded perforation is formed in the transverse top member 8^a of the holder-block 8, and in said threaded perforation an adjusting-screw 14 is inserted, which may be screwed toward and into said socket a short distance. A nipple is formed on the lower end of the adjusting-screw 14 by reducing the diameter of the screw at said end, and upon the nipple a circular washer is mounted loosely, having a width that permits it to play freely in the socket *o*. A strong coiled spring *p* is seated in the socket *o* and at its upper end is pressed upon by the washer in the socket. An oil-passage *r* is formed axially through the adjusting-screw 14 and its nipple extension, so that a liquid lubricant may be fed down through the passage *r*, socket *o*, and oil-hole *o'* directly upon the rod 7 for its lubrication.

In assembling the details of the improved packing device for service the packing-blocks 10 and 13 are placed in the holder-block 8, said blocks being adjusted by the screws 11, 12, and 14 to closely but yieldingly embrace the rod 7. The stud-bolts 9 are screwed by an appropriate end of each one in a properly-located threaded perforation in the head 6 of the cylinder 5 until the shoulder at the inner end of each squared portion of the bolt-body impinges upon the cylinder-head, which will cause the four bolts to project from the latter at an equal distance from the central hole *a* in the head, through which the rod 7 is adapted to reciprocate. The back plate 8^a, the holder-block 8, and the front plate 8^b are successively mounted upon the rod 7 and upon the squared bodies of the bolts 9, so that the back plate may have intimate contact with the true surface of the head 6. Suitable nuts 9^a are now screwed upon the front threaded ends of the bolts 9, which project through the front plate 8^b, and it is of course understood that by tightening the nuts the holder-box, together with the front and back plates therefor, will be clamped steam and liquid tight upon the cylinder-head. Obviously for the convenient application of a liquid lubricant therethrough the adjusting-screw 14 is arranged vertically by the attachment of the holder-block 8 upon the cylinder-head 6, as indicated in Fig. 1, which will permit the lubricant to be poured down through the screw 14 and upper packing-block 13 into contact with the rod 7.

It will be seen that if the motive agent that reciprocates the rod 7 is steam and heat therefrom expands the rod the springs which press upon the packing-blocks 10 and 13 will yield sufficiently to compensate for such a diamet-

rical enlargement of the rod and also of the packing-blocks, so that without excessive friction of the blocks upon the rod the steam will be prevented from leaking through the joint between said parts. Upon removal of the nuts 9^a and the front plate 8^b the packing-blocks 10 and 13 may be inspected at any time when the rod 7 is not moving, and if they need repair or the substitution of new ones for those that are unserviceable this may be readily effected by slackening the adjusting-screws 11, 12, and 14, so as to release the packing-blocks, which may be then slid outward for removal and others inserted in their places, a readjustment of the screws mentioned and the replacement of the front plate 8^b adapting the packing for renewed service.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A rod-packing, comprising a holder-block having flat parallel sides, and a rectangular aperture therethrough, packing-blocks spring-pressed toward each other and held to slide in the aperture in the holder-block, said packing-blocks having their opposed edges concaved for engagement with a rod to be packed, a front plate, a back plate, each plate having an opening through which the rod passes, and means for clamping the front and back plates upon the holder-block.

2. The combination with a cylinder or the like, a head thereon having an opening, and a rod reciprocal in the opening, of a rod-packing, comprising a holder-block having two parallel flat sides, and a rectangular aperture therethrough, two packing-blocks spring-pressed toward each other and held to slide in the rectangular aperture, said blocks having concaved notches on opposed edges which receive and embrace the rod, a front plate, a back plate, said plates having contact respectively with the flat sides of the holder-block and each having an opening through which the rod passes, and means for clamping the holder-block and front and back plates together upon the cylinder-head.

3. The combination with a cylinder or the

like, a head thereon having an opening, and a rod reciprocal in the opening, of a rod-packing comprising a holder-block having opposite flat parallel sides and a rectangular aperture therethrough, two packing-blocks adapted to slide upon each other and each having a curved notch for engagement with the rod to be packed, said blocks loosely fitting in the rectangular aperture, springs in sockets formed in the upper and lower edges of the packing-blocks, adjusting-screws in the upper and lower transverse members of the holder-block and pressing upon the springs, a front plate, a back plate, said plates having central openings through which the rod passes, and bolts adapted to clamp the plates upon opposite sides of the holder-block and all upon the cylinder-head.

4. A rod-packing comprising a holder-block having a transverse rectangular aperture, two packing-blocks engaging each other slidably, and loosely held in the aperture, springs occupying sockets in the packing-blocks, and adjusting-screws in top and lower transverse members of the holder-block, inner ends of the screws pressing upon the springs for regulating their tension.

5. A rod-packing comprising a holder-block having a rectangular aperture therein, two packing-blocks having tongue-and-groove engagement with each other at side edges thereof, and held to slide in the aperture, coiled springs held in sockets in the packing-blocks, adjusting-screws pressing with inner ends on the springs, said screws working in top and lower cross members of the holder-block, and a central upper adjusting-screw having an oil-passage longitudinally therethrough for feeding oil through a passage in the normally upper packing-block.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB JACOBSON.

Witnesses:

WALTER MCKAY,
GEO. STROHM.