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 APPARATUS FOR PACKING AND UNPACKING STUFFING BOXES.
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974,583.

Patented Nov. 1, 1910.

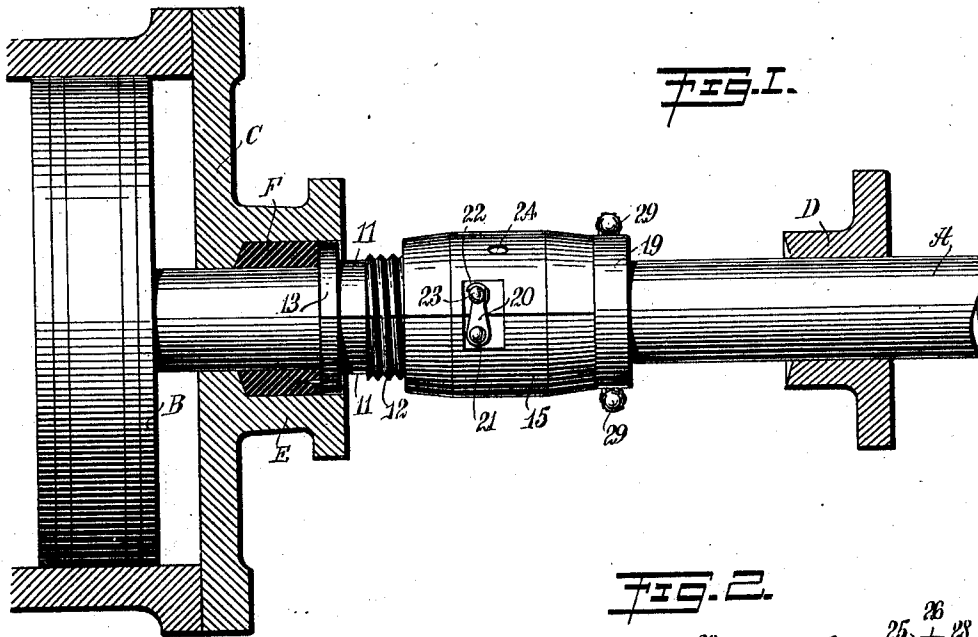


FIG. 2.

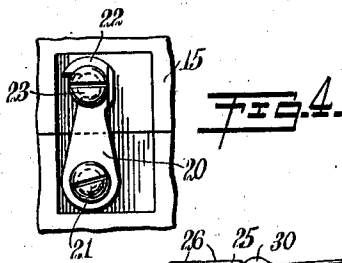
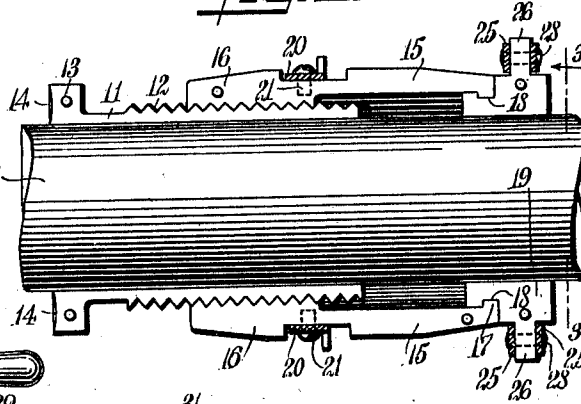


FIG. 4.

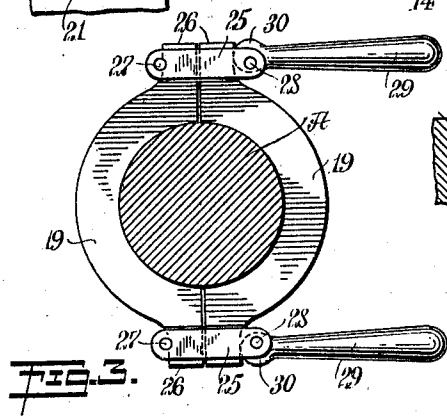


FIG. 3.

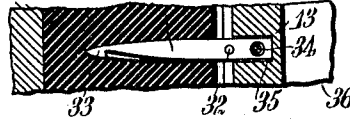


FIG. 5.

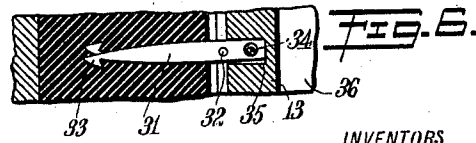


FIG. 6.

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APPARATUS FOR PACKING AND UNPACKING STUFFING-BOXES.

974,583.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ALBERT MEIER and HANS DUMELIN, citizens of the United States, and residents of West Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Apparatus for Packing and Unpacking Stuffing-Boxes, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide an apparatus for inserting and removing the packing of stuffing boxes from cylinder heads or from packed recesses; to provide an apparatus of the character set forth which may be applied without disturbing the assembled machinery upon which it is to operate; to provide means whereby the hardened or rigid packing may be removed from stuffing boxes of the character set forth; and to provide an apparatus of the character mentioned which is simple, economical and durable in construction and operation.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a side elevation of an apparatus constructed and arranged in accordance with the present invention, the same being shown in conjunction with the piston rod, head, and cylinder of the usual pump; Fig. 2 is a detail view, on an enlarged scale and fragmentary in form, showing a half section of the apparatus herein described as applied to the plunger or piston rod; Fig. 3 is an end elevation of the apparatus, shown in conjunction with the piston rod to which it is attached, which piston rod is shown in section, the section being taken on the line 3—3 in Fig. 2; Fig. 4 is a detail view, on an enlarged scale, of one of the retaining latches for holding the two-part rotary driver in operative position; Fig. 5 is a detail view, on an enlarged scale and in section, showing the ram head and picker needles attached thereto, and in collapsed position as disposed when entering the packing; and Fig. 6 is a view similar to Fig. 5, showing the picker needles in their expanded position, as on being drawn from the stuffing box.

The present invention is peculiarly adapted for use in pumps, elevator plungers, steam engine pistons, and similar devices

wherein is employed a stuffing box to operate on exudation of the material being handled within the cylinder. In each of the instances mentioned the piston rod or plunger A is permanently attached to a piston head B within a cylinder C. When installing the plunger A a gland ring D is slipped over the said plunger A. When in the course of operation it becomes necessary to pack the stuffing box E, under the present system the gland D is removed from the stuffing box and slipped back on the plunger or piston rod, substantially as shown in Fig. 1 of the drawings. The attendant then packs the stuffing box with suitable packing F, placing the same in the box E and packing the same therein with the ordinary tamping tools. When the packing has been rendered sufficiently solid the gland D is replaced, and bolts are properly inserted and the gland drawn up against the packing to insure the contraction of the same upon the plunger or piston rod A. When in the course of operation it becomes desirable to remove the packing F, the gland D is removed from the stuffing box E in the manner substantially as above set forth. The operation which now follows of extracting the packing F is an exceedingly tedious and difficult one. No adequate tools are provided to aid in this operation, which, therefore, consumes considerable time, which, for the operation of the engine, may be regarded as lost time.

It is as a substitute for the operation above described that we have provided the ram members 11, 11. The members 11, 11 are formed as semi-cylinders, being calculated to fit over the piston rod or plunger A in sliding relation therewith. The two members 11, 11 are provided with a heavy screw threaded section 12, the screw threads being formed on the two members when the same are united in cylindrical position. The ram members 11, 11 are each provided with a semi-circular laterally flanged head 13. To aid the head 13 in its packing operation the face of the said head is cupped, as shown at 14 in Fig. 2 of the drawings. The heads 13, 13 are held in cylindrical relation by means of a two-part rotary driver 15, 15. The driver 15, 15, when the two sections are joined, forms a hollow cylinder, the forward section 16 whereof is internally threaded to register with the screw threads 12 formed on the

ram members 11, as shown particularly in Fig. 2 of the drawings. The rear ends of the driver sections 15, 15 are provided with inwardly extended flanges 17, 17, which are inserted in grooves 18 formed in a two-part collar 19. The half sections of the driver 15 are semi-cylindrical, and are united by means of a latch 20. The latch 20 is pivoted at 21, and is provided with a hook-shaped end 22. The hook 22 is extended over a fastening pin 23. The pins 23 and the pivots 21 are mounted upon the opposite halves of the driver sections 15. When the latches 20 are thrown into position, as illustrated best in Fig. 4 of the drawings, the driver sections 15 are held as a complete circle. If the driver has been joined over the ram members 11, 11 it will be found that the screw threaded section 16 of the said driver registers perfectly with the screw threaded section 12 of the ram members 11. The rotation of the driver 15 is manually performed, a spanner wrench being preferably used for rotating the said driver. The spanner wrench fits within a socket 24, shown in Fig. 1 of the drawings. In its rotation the driver 15 is controlled by the collar 19 being united therewith by means of the flanges 17 and the grooves 18, as shown best in Fig. 2 of the drawings. The collar 19 is fixedly mounted on the plunger or rod A, the two parts of the said collar being united by loops 25, 25 which are extended over projections 26, 26 formed on the said collar. The loops 25, 25 are preferably pivoted at 27, 27 to one of the said projections 26, and have pivotally mounted at 28 in the opposite ends of the said loops, hand levers 29, 29. The levers 29, 29 are provided with heads 30, 30, the same rotating upon the pivots 28, 28 of the said levers 29. The loops 25 and the levers 29 are so constructed that when the said loops are thrown over the projections 26, 26, as shown in Fig. 3 of the drawings, and the levers 29, 29 are operated to extend the long axis of the eccentric 30 between the pivots 28 and the projections 26, then are the half sections of the collar 19 clamped rigidly and in holding position upon the plunger or rod A.

In mounting the apparatus upon the plunger or rod A, the collar 19 is first installed, being clamped rigidly upon the said plunger or rod A in position adjacent to the stuffing box E. It will be understood that as in the hand manipulating operation the gland D is removed from the stuffing box and slid back on the plunger or rod A. The ram members 11 are then disposed upon the rod or plunger A, and the two sections of the driver 15 are folded over the said ram members 11 and over the collar 19 and the flanges 17 are inserted within the grooves 18. In this position the sections of the driver 15 are united by throwing the latches 20, 20

into holding relation with the pins 23, 23. The loose packing F is now inserted within the stuffing box E, and by means of a suitable spanner wrench, as above stated, the driver 15 is rotated, the flanges 17 sliding in the grooves 18 of the collar 19. By reason of the screw threaded engagement of the ram members 11 with the screw threaded sections of the driver 15, the ram is forced forward against the loose packing, driving the same firmly and solidly within the stuffing box E. This operation is rapid, and may be repeated as often as desired. By the peculiar arrangement of the screw threads and the unlimited leverage which is afforded for the spanner wrench, it is obvious that any reasonable and desired force may be applied for seating the packing F within the stuffing box E. To disassemble the apparatus it is only necessary to throw the latches 20, 20 to unlocked position, when the driver parts may be removed. The ram members 11 are then parted, and by throwing the levers 29, 29 the collar members are likewise parted, and the rod or plunger A is free of the apparatus. In this position the gland D is moved against the packing F and the same is secured home.

When it is desired to remove the packing F we use the spreading needles 31, 31. The needles 31, 31 are shaped as seen in Figs. 5 and 6 of the drawings. The needles are semi-circular, the flat surfaces thereof registering and pivoting on a pin 32 which permits of the spreading movement of the two halves of the needles, as seen in Fig. 6 of the drawings. Each half of the needle 31 is provided with a barb 33, which, when extended, clutches into the material of which the packing is composed and draws the same from the box E. The strain of the pull on the needles 31 is not great, and is received upon pins 34 which are driven through perforations formed in the heads of the said needles. The perforations thus formed, are sufficiently large to avoid binding the needle halves in the operation above set forth. The said needles are secured in operative position in recesses 35.

In Figs. 5 and 6 of the drawings are shown ram members 36, 36, of form modified from the ram members 11, 11. In some cases we prefer to use the ram members 36, 36 as having the needles 31, 31 permanently mounted thereon, thus providing a tool ready for operation at all times. However, in many instances we have formed the recesses 35, 35 in the heads 13 of the ram members 11.

By the operation of an apparatus such as shown in the accompanying drawings and herein described, having installed therein the needles 31, 31, a packing, which under the old process would take considerable time to remove, is rapidly and efficiently drawn

from the stuffing box E. The operation of the whole apparatus for the purpose both of removing and installing the packing is rapid, efficient and desirable.

5 Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a rotary driver pivotally mounted on said collar; a ram member slidably mounted upon the shaft to be packed; and wedging means interposed between the said driver and said ram member for forcing the said ram member from the said driver longitudinally on said shaft.

2. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a rotary driver pivotally mounted on said collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a screw threaded section extended within said driver; and means mounted on said driver for engaging said screw threaded section on said ram member.

3. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a rearwardly extended screw threaded section; and a rotary driver pivotally mounted on said collar, said driver having an internally formed screw threaded section, the threads whereof are engaged with the screw threaded section of said ram member.

4. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a rearwardly extended screw threaded section; a rotary driver pivotally mounted on said collar, said driver having an internally formed screw threaded section, the threads whereof are engaged with the screw threaded section of said ram member; and means for rotating said driver.

5. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a rearwardly extended screw threaded section; a rotary driver pivotally mounted on said collar, said driver having an internally formed screw threaded section, the threads whereof are engaged with the screw threaded section of said ram member; and a plurality of extracting devices adapted to be inserted within the packing to engage and withdraw the same from the packing recess.

6. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a rearwardly extended screw threaded

section; a rotary driver pivotally mounted on said collar, said driver having an internally formed screw threaded section, the threads whereof are engaged with the screw threaded section of said ram member; and a plurality of two-part expansible barb-ended needles adapted to contract when being inserted and to expand when being withdrawn from the packing material in the packing recess.

7. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a rearwardly extended screw threaded section; a rotary driver pivotally mounted on said collar, said driver having an internally formed screw threaded section, the threads whereof are engaged with the screw threaded section of said ram member; and a plurality of auxiliary removable two-part expansible barb-ended needles adapted to contract when being inserted and to expand when being withdrawn from the packing material in the packing recess.

8. An apparatus for packing and unpacking stuffing boxes, comprising a stationary collar; a ram member slidably mounted upon the shaft to be packed, said ram member having a rearwardly extended screw threaded section; a rotary driver pivotally mounted on said collar, said driver having an internally formed screw threaded section, the threads whereof are engaged with the screw threaded section of said ram member; a plurality of auxiliary removable two-part expansible barb-ended needles adapted to contract when being inserted and to expand when being withdrawn from the packing material in the packing recess; and means for rotating said driver to advance and retract the said ram member into and from the packing recess.

9. An apparatus for packing and unpacking stuffing boxes, comprising a plurality of semi-circular collar sections arranged to form a collar to fit the shaft being packed; a plurality of fastening devices for holding said collar rigidly upon said shaft; a plurality of ram members semi-cylindrical in form, having provided thereon a screw threaded section; a plurality of driving sections semi-cylindrical in form and having produced thereon a screw threaded internally disposed section arranged to register with the screw threaded section of said ram members; and a plurality of fastening devices for holding the said driving sections in cylindrical arrangement.

10. An apparatus for packing and unpacking stuffing boxes, comprising a plurality of semi-circular collar sections arranged to form a collar to fit the shaft being packed; a plurality of loops disposed to infold the said collar sections; a plurality of eccentric

lever locks mounted in said loops and adapted to draw the said collar sections toward each other and upon the shaft being packed; a plurality of ram members semi-cylindrical in form, having provided thereon
5 a screw threaded section; a plurality of driving sections arranged to register with the screw threaded section of said ram members; and a plurality of latches mounted on
10 one of said driver sections and adapted to

engage in locked relation the other of said driver sections.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ALBERT MEIER. [L. S.]
HANS DUMELIN. [L. S.]

Witnesses:

JACOB WEBER,
ERNST F. HIESSLE.