(No Model.)

P. THACHER & M. H. & W. D. MORRIS.

ADJUSTABLE PACKING FOR STUFFING BOXES.

No. 382,334. Patented May 8, 1888.

Fig. 1.

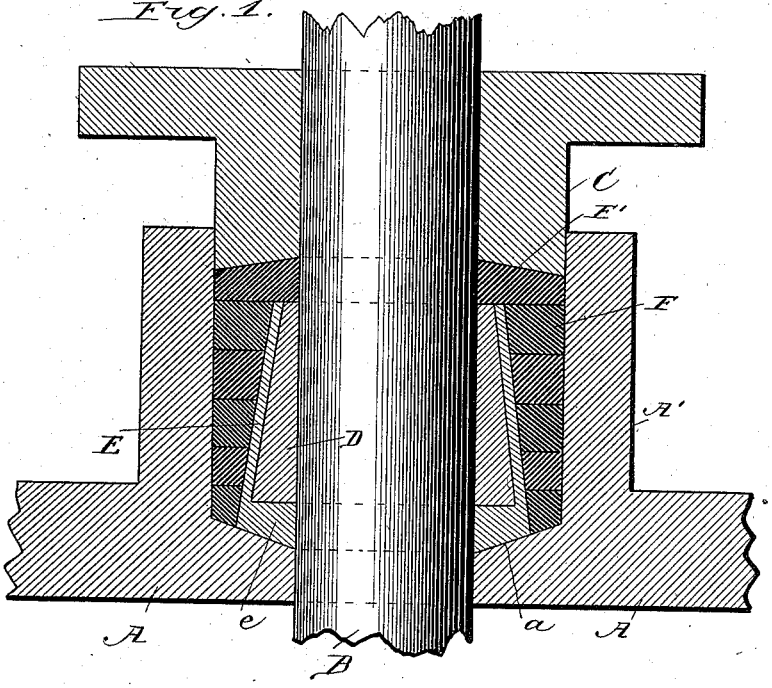


Fig. 2.

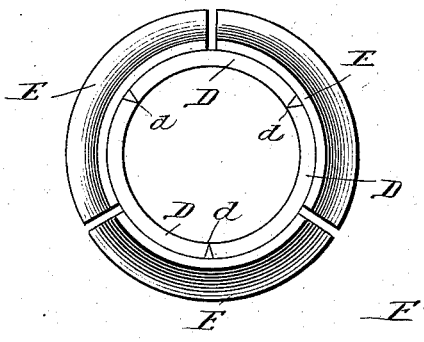


Fig. 3.

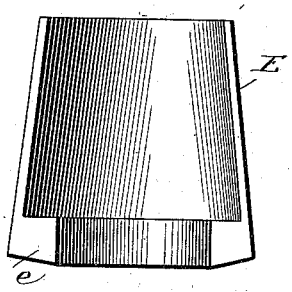
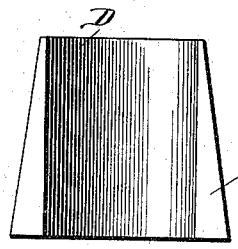


Fig. 4.



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By Morris Price Fisher Attys.

UNITED STATES PATENT OFFICE.

PETER THACHER, MILES H. MORRIS, AND WILLIAM D. MORRIS, OF CHICAGO, ILLINOIS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO A. C. CALKINS, TRUSTEE, OF SAME PLACE.

ADJUSTABLE PACKING FOR STUFFING-BOXES.

SPECIFICATION forming part of Letters Patent No. 382,334, dated May 8, 1888.

Application filed December 17, 1887. Serial No. 258,376. (No model.)

To all whom it may concern:

Be it known that we, PETER THACHER, MILES H. MORRIS, and WILLIAM D. MORRIS, residents of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Adjustable Packing for Stuffing-Boxes, of which the following is hereby declared to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The present invention has for its object to provide a simple, cheap, durable, and effective packing for stuffing-boxes of pistons, valve-rods, and the like, whereby the escape of steam through the stuffing-boxes can be prevented, and the danger of the displacement of the parts of the packing can be avoided. This object of invention we accomplish by the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in central longitudinal section through a portion of a cylinder-head, its stuffing-box and guard-gland, and through the parts of our improved packing in position within the stuffing-box. Fig. 2 is a detail plan view of the inner and outer sleeve of our improved packing. Fig. 3 is a detail view, from the inner side, of one of the segments or sections of the outer sleeve. Fig. 4 is a similar view of one of the sections of the inner sleeve.

A designates a portion of a cylinder-head provided with the usual stuffing-box A′, through which passes the piston-rod B, and C denotes a gland or ring, of usual or suitable construction, adapted to be bolted to the stuffing-box in well-known manner.

Within the stuffing-box A′, and encircling the piston-rod B, is placed the inner sleeve of our improved adjustable packing, this inner sleeve consisting of several sections or segments, D, the inner faces of which bear snugly against the piston-rod B, while their outer faces are tapering, so that when placed upon the piston-rod the inner sleeve will be of varying diameter.

Around the inner sleeve of our packing is placed the outer sleeve, formed of separate segments or sections E, the lower ends of which are preferably beveled to bear against the inclined base *a* of the stuffing-box, and are provided with the thickened portion or shoulders *e*, which bear against the piston-rod B. The interior surfaces of the segments E of the outer ring are inclined or tapering to correspond with the exteriorly-tapering surfaces of the segments or sections D of the inner ring, and the inner faces of the shoulders *e* are preferably squared, so as to afford a firm bearing for the ends of the segments D, which abut snugly against these shoulders.

The outer sleeve of our improved packing is preferably formed of somewhat smaller diameter than the interior of the stuffing-box A′, so as to leave a space between the segments E and the inner wall of the stuffing-box, and the outer faces of the segments E are preferably inclined, as shown, from their rear to their front ends, and within the space thus formed between the segments and the stuffing-box are placed the packing-rings F, of prepared rubber or other suitable material. Between the ends of the segments of the inner and outer sleeves and the gland or ring C is preferably placed a packing-ring, F′, which encircles the piston-rod and bears against the ends of the segments. The several segments or sections of the inner and outer rings of the packing are arranged in such manner with respect to each other as to break joint, as seen in Fig. 2. The abutting edges of the sections D are inclined, as shown at *d*, and the abutting edges of the sections E may be so inclined, the purpose in thus inclining the abutting edges of the sections being to maintain a tight joint as the sections are reduced by wear. By inclining or tapering the outer surfaces of the segments D of the inner ring, and by correspondingly inclining or tapering the inner surfaces of the segments E of the outer ring, all danger of the relative displacement of these segments or sections, by reason of the movement of the piston-rod B in the operation of the engine, will be avoided, since it is obvious that the inner diameter of the outer sleeve, being smaller than the diameter of the thicker portions of the sections of the inner sleeve, will prevent the move-

ment of the inner sleeve in outward direction as the piston-rod is moved. So, also, the shoulders *e* of the segments E of the outer ring, against which the inner ends of the segments D of the inner ring abut, will guard against all danger of the slipping or relative displacement of the segments as the piston-rod B is moved inwardly. By inclining the outer surfaces of the segments or sections E of the outer ring the space between these segments E and the inner surface of the stuffing-box will be of varying diameter, and consequently the packing-rings F will be thicker around the outer ends of the segments E than around the base or inner ends of said segments, and hence all danger of the displacement of the segments E incident to the movement of the piston-rod B will be avoided. Moreover, by forming the sleeves of our adjustable packing of considerably smaller diameter than the interior of the stuffing-box A′, we are enabled to obtain the space between the sections E of the outer sleeve and the stuffing-box, wherein the packing F may be placed; and hence, even should there occur a slight leakage of steam through the joints of the several segments or sections of the inner and outer sleeves of the packing, the further escape of the steam will be arrested by the packing-rings F. By providing a packing-ring, F′, fitting snugly around the piston-rod at the outer ends of the segments D and E, the danger of the escape of steam will be further guarded against, since it is obvious that even in event of a slight leakage through the joints of the segments the ring F′ will obstruct the further passage of the steam.

An advantage incident to inclining or tapering the outer surface of the segments E is that when the gland or ring C is thrust inward, in the usual manner, the pressure upon the packing-rings F and F′ will tend to uniformly increase the bearing of the segments D of the inner ring against the piston-rod, and will also cause the shoulders *e* of the outer sleeve to bear snugly against the surface of this rod. It is obvious that features of the present invention can be employed without using the invention as an entirety, and it is also obvious that the details of construction above set out may be varied without departing from the scope of the invention. Thus, for example, although we prefer to form the segments D of the inner sleeve of gradually-tapering shape, it will be equally within the scope of the invention to vary the diameter of this inner sleeve otherwise than by gradually tapering the same. So, also, instead of employing the packing-rings F and F′, the space occupied by such rings may be filled by any other suitable form of packing.

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

1. The combination, with the stuffing-box and its packing, and with the rod or stem extending through said box, of the inner and outer segmental sleeves intermediate said rod and packing, each sleeve consisting of separate sections having upright conical conforming taper at the meeting surfaces of the sleeves, substantially as described.

2. The combination, with the stuffing-box and its packing, and with the rod or stem extending through said box, of the inner and outer segmental sleeves intermediate said rod and packing, each sleeve consisting of separate sections having upright conical conforming taper at the meeting surfaces of the sleeves, the outer sleeve sections being provided with inturned shoulders to seat the segments of the inner sleeve, substantially as described.

3. The combination, with the stuffing-box A′, of an adjustable packing, comprising an inner sleeve formed of separate segments or sections, and an outer sleeve formed of separate segments or sections arranged to break joint with the segments of the inner sleeve, and having exteriorly-tapering surfaces and suitable packing between the wall of the stuffing-box A′ and the surfaces of the outer sleeve, substantially as described.

4. The combination, with the stuffing-box A′, of the adjustable packing, comprising an inner sleeve formed of separate segments D, an outer sleeve formed of separate segments E, the diameter of said outer sleeve being less than the interior diameter of the stuffing-box, a series of packing-rings, F, placed in the space between the outer sleeve and the stuffing-box, and a packing-ring, F′, placed around the piston at the outer ends of the segments D and E, substantially as described.

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