No. 612,003. Patented Oct. 4, 1898.

C. S. KEELER.

SELF ADJUSTING STUFFING BOX.

(Application filed Mar. 22, 1898.)

(No Model.)

Fig. 1.

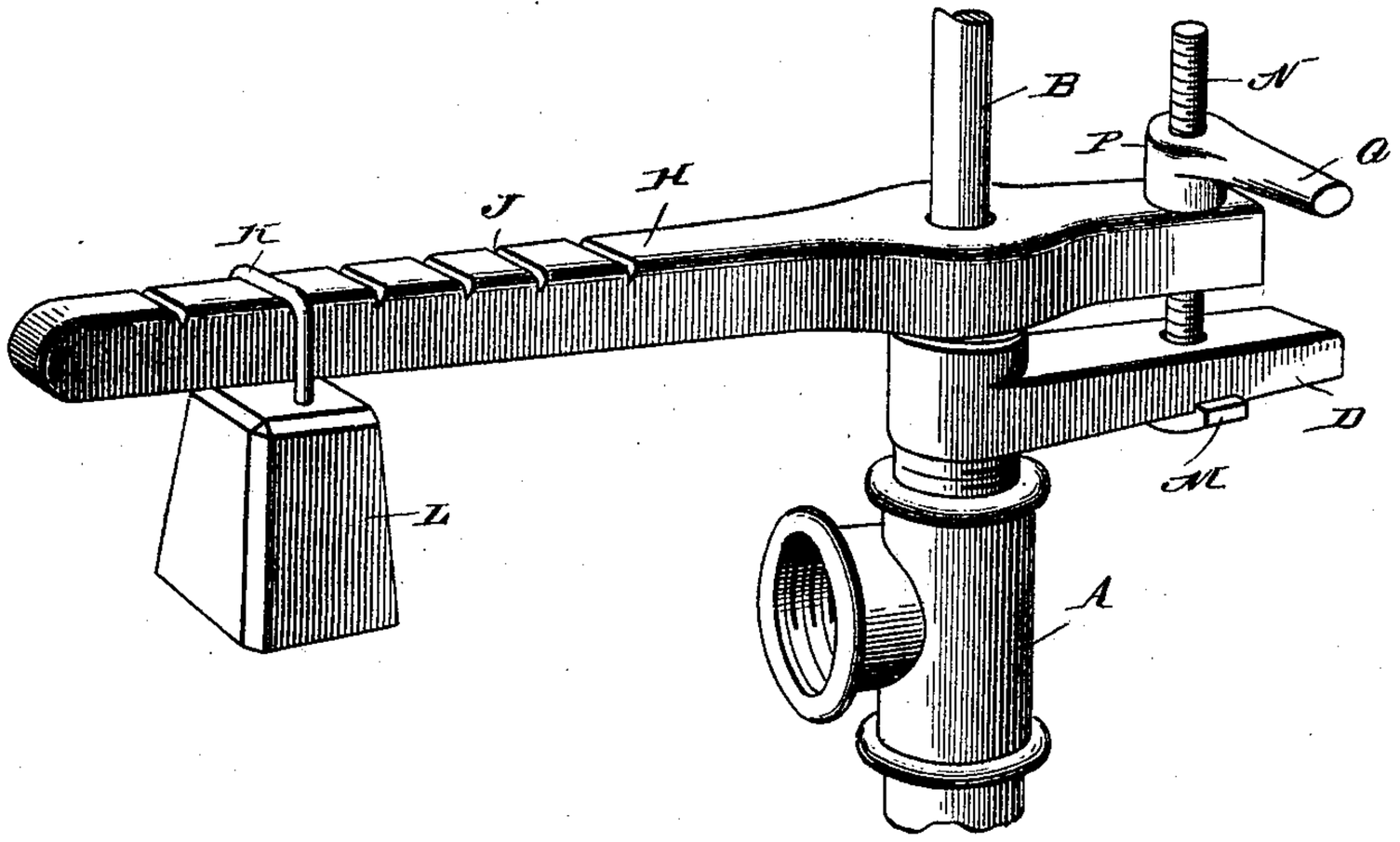

Fig. 2.

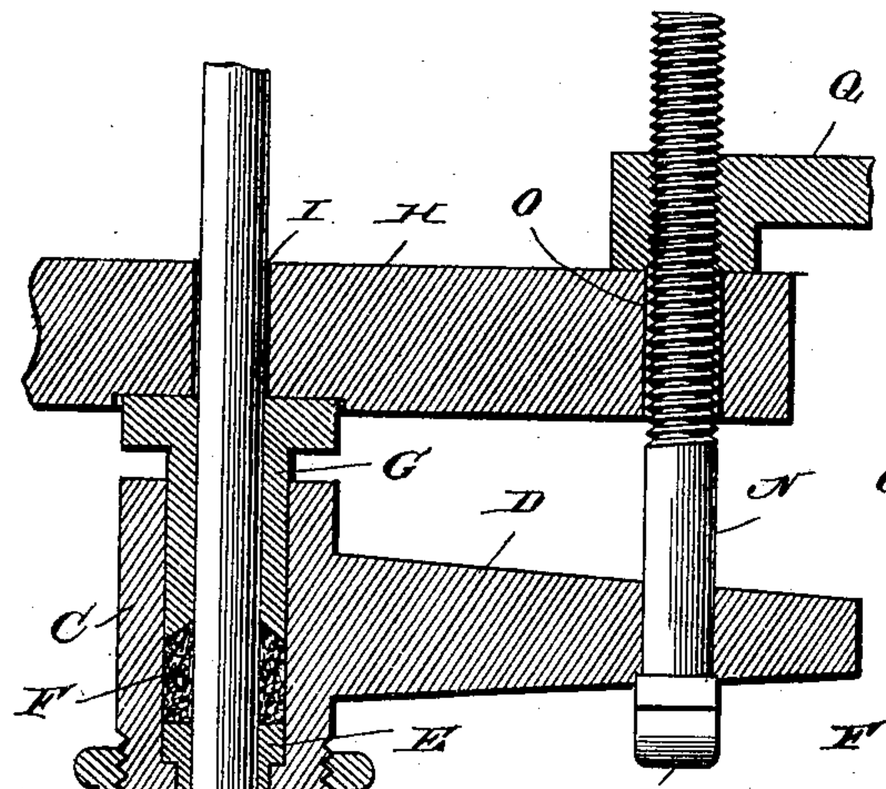

Fig. 4.

Fig. 3.

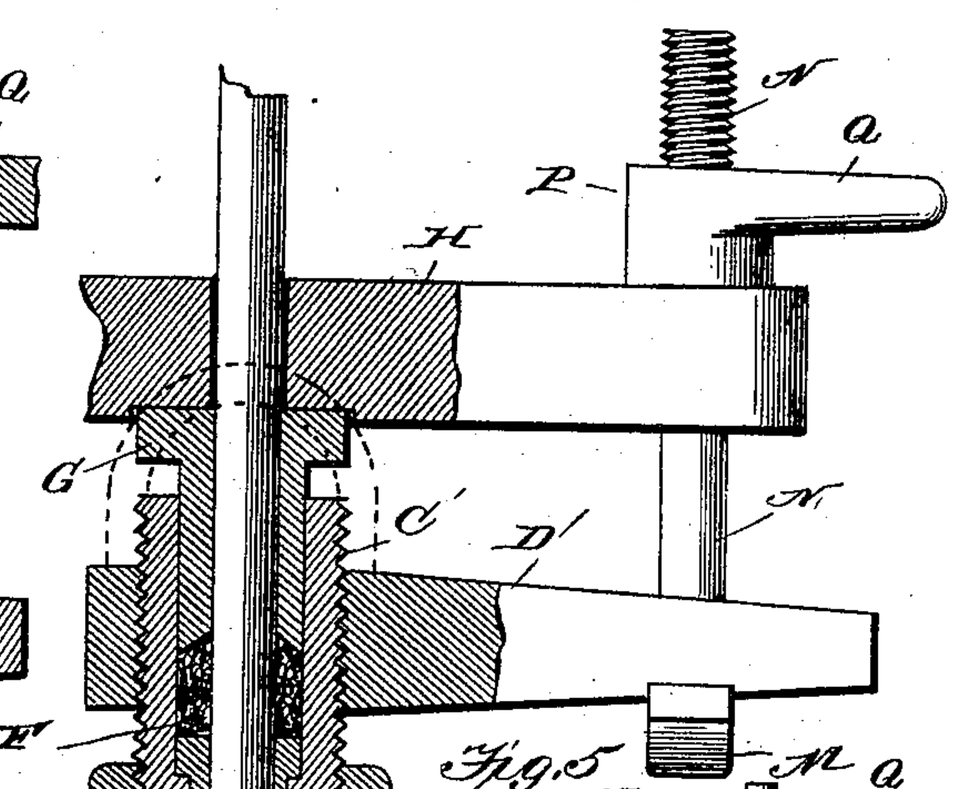

Fig. 5.

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UNITED STATES PATENT OFFICE.

CHARLES SHERMAN KEELER, OF VAN BUREN, OHIO, ASSIGNOR OF TWO-THIRDS TO JOHN HEALY AND DELL LIDDLE, OF BAIRDSTOWN, OHIO.

SELF-ADJUSTING STUFFING-BOX.

SPECIFICATION forming part of Letters Patent No. 612,003, dated October 4, 1898.

Application filed March 22, 1898. Serial No. 674,812. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SHERMAN KEELER, a citizen of the United States, residing at Van Buren, in the county of Hancock and State of Ohio, have invented a new and useful Self-Adjusting Stuffing-Box, of which the following is a specification.

My invention relates to stuffing-boxes, and more particularly to stuffing-boxes for use on pump-rods of oil-wells or upon pistons of all classes which have a vertical reciprocation, although the mechanism may be adapted for use upon horizontally-reciprocating piston-rods by a slight change, hereinafter mentioned.

The object of my invention is to provide a stuffing-box which shall be self-adjusting, by means of which the packing will be kept compressed with any degree of force desired, thus compensating at all times for the wear of the packing-ring and maintaining a close joint.

With this object in view my invention consists in the improved construction, arrangement, and combination of parts, hereinafter fully described, and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to which my invention most nearly appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of the upper portion of the tube of an oil-well, upon which is mounted a stuffing-box and regulating mechanism therefor constructed in accordance with my invention. Fig. 2 is a central vertical section through the same, the ends of the weighted lever and the handle of the adjusting-nut being broken away to shorten the figure. Fig. 3 is a like sectional view, partly in elevation, illustrating the adaptation of my invention to ordinary stuffing-boxes. Fig. 4 is a transverse vertical sectional view on the line 4 4 of Fig. 5, illustrating modified means for keeping the weighted lever in a horizontal position. Fig. 5 is a vertical sectional view on the line 5 5 of Fig. 4.

Like letters of reference mark the same parts wherever they occur in the various figures of the drawings.

Referring to the drawings by letters, A indicates the upper end of the tube of an oil-well, and B the pump-rod.

C indicates a sleeve screw-threaded into the upper end of the tube A and provided with a laterally-projecting arm D. The bore of the sleeve C is slightly smaller at the bottom, forming a shoulder upon which the lower gland E of the stuffing-box rests. Upon this shoulder is placed a packing-ring F, and upon the packing-ring is placed the upper gland G.

H indicates a lever provided with an opening I sufficiently large to be passed over the end of the pump-rod B, so that the lever will rest upon the top of the gland G. The long arm of the lever H is provided with notches J to receive a loop K of a weight L. The lateral arm D of the sleeve C is provided with a vertical opening, circular for the greater part of its extent, but angular at its lower end, to receive the head M of a bolt N, which is passed up through a smooth opening O in the short arm of the lever H, projecting some distance above said lever. Upon the upper projecting threaded end of this bolt N is threaded a nut P, which is provided with a handle Q for manipulating it.

From the foregoing the construction of my invention as illustrated in Figs. 1 and 2 will be readily understood.

In Fig. 3 I have illustrated the manner in which I apply my invention to ordinary stuffing-boxes already in use. To do this, the only steps necessary are to first remove the upper cap, as indicated in dotted lines, from the ordinary sleeve C′, which, as shown, differs from the sleeve C, illustrated in the other figures and heretofore described, in that it is threaded upon its outer surface to receive said cap, and to place upon said sleeve C′ an arm D′, interiorly threaded to fit the thread of said sleeve. Otherwise the arm D′ is constructed exactly like the arm D.

In Fig. 4 I show modified means for keeping the weighted lever H in a horizontal position. In this construction a block D^2 is substituted for the arm D, and it is clamped to the sleeve C by means of a clip D^3 and

bolts D^4. Otherwise the construction may be identical with that illustrated in Figs. 1 and 2.

The operation of my invention is the same in either adaptation thereof. It will be readily apparent that the weight L, bearing down upon the longer arm of the lever H, will continuously exert a downward pressure on the packing-ring through the medium of the upper gland G, and thus take up any wear to which the packing-ring has been subjected. The opening I in the lever H is slightly larger in diameter than the pump-rod, by virtue of which a slight depression of the longer weighted end of the lever is permitted without cramping the pump-rod. When, however, it becomes necessary on account of the wearing away of the packing-ring to adjust the lever H to prevent such cramping, it can be readily done by turning down the nut P upon the bolt N by means of the handle Q.

It will be obvious that a close joint will be maintained around the piston-rod as long as any of the packing is left, thereby fulfilling all the objects of my invention.

It will be readily understood that my invention may be applied to stuffing-boxes on piston-rods located horizontally by simply bending the long arm of the lever H at right angles to the main body thereof and parallel with the piston-rod, said bent portion being arranged below the piston-rod to receive the weight.

While I have illustrated and described the best means now known to me for carrying out my invention, I do not wish to be understood as restricting myself to the exact details of construction shown, but hold that any slight changes or variations, such as might suggest themselves to the ordinary mechanic, would properly fall within the limit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a stuffing-box, comprising a sleeve, a packing-ring and glands on each side thereof, of a weighted lever, bearing upon the outer gland to maintain a regular pressure against the packing-ring, substantially as described.

2. The combination with a stuffing-box, comprising a sleeve provided with a laterally-projecting arm, a packing-ring and glands on each side thereof, of a weighted lever, mounted upon the outer gland, a bolt passing through the lateral arm of the sleeve and through the short arm of said lever, and a regulating-nut upon the upper end of said bolt, bearing upon the upper side of said lever, substantially as described.

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