C. T. SLEEPER.

STUFFING-BOXES FOR STEAM-ENGINES.

No. 191,892. Patented June 12, 1877.

Fig. 1

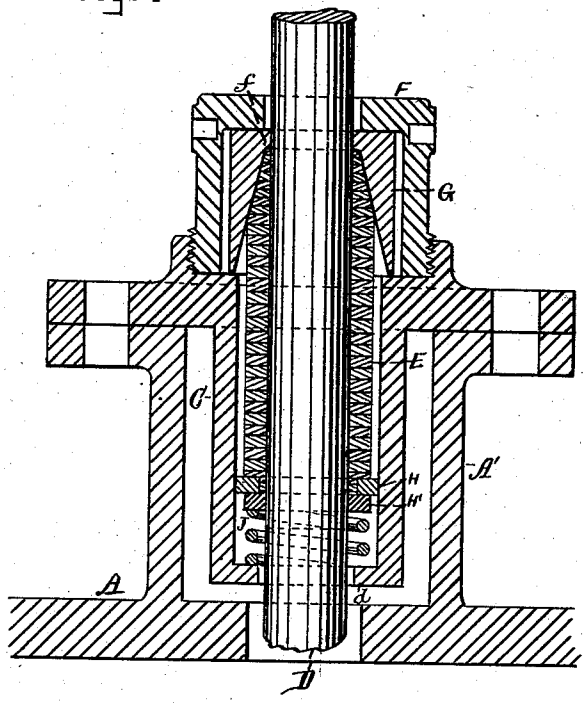
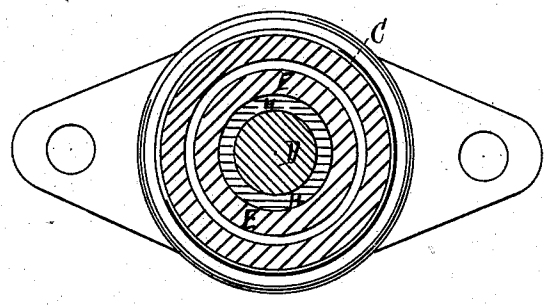


Fig. 2



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES T. SLEEPER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE G. BENEDICT, OF SAME PLACE.

IMPROVEMENT IN STUFFING-BOXES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 191,892, dated June 12, 1877; application filed February 19, 1877.

To all whom it may concern:

Be it known that I, CHARLES T. SLEEPER, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Stuffing-Boxes for Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a longitudinal central section of a stuffing-box embodying my said invention, and Fig. 2 represents a cross-section of the same, taken on line *x x*, Fig. 1.

Like letters of reference indicate like parts.

The object of my invention is to improve the stuffing-box for which I made application for Letters Patent of the United States on the 20th day of March, 1876; and it consists in providing the laterally-movable cone with an internal flange or shoulder, against which the packing-rings rest; and, also, in combination with the packing-rings, of a double follower, as hereinafter more fully described and claimed.

In the drawing, A represents a section of the cylinder-head, which is made in the usual form, and so as to provide an annular rim, A′, projecting from the outer end thereof around the piston-rod in the ordinary manner. C is the stuffing-box proper, which is fitted into the rim A′ and permanently bolted thereto, and in the position shown in Fig. 1. D is the piston-rod, which passes centrally through the stuffing-box C. E represents a series of packing-rings, which are made from any suitable soft metal, and are fitted around the piston-rod within the stuffing-box. F is an annular cap, through which the piston-rod loosely passes, and is screw-threaded externally at its end adjacent to the stuffing-box, and is screwed into an annular flange on the outer end of the stuffing-box, by which means the stuffing-box and cap are firmly connected together. G is an annular sleeve fitted into the chamber of the cap F and around the piston-rod, and is provided with an internal conical chamber, through which the piston-rod passes, and into which the packing-rings are forced from the chamber of the stuffing-box. H and H′ are annular rings or followers, which are fitted into the chamber of the stuffing-box and around the piston-rod. J is a spiral spring, located between the follower H′ and the shoulder *d* on the inner surface of the stuffing-box, as shown in Fig. 1.

The diameter of the chamber in the cap F is greater than the gross diameter of the sleeve G, and the end of the sleeve resting against the cap is ground to a steam-tight joint, so as to admit of a lateral movement of the sleeve within the cap without leakage of steam between the cap and end of the sleeve, the object being to allow the packing-rings to adjust themselves to the piston-rod should the latter be out of line with the stuffing-box.

The packing-rings are made less in diameter than the diameter of the bore of the stuffing-box, for the purpose of admitting of any lateral movement of the piston-rod without causing the packing-rings to bind against the wall of the stuffing-box.

The gross diameter of the follower H is such as to fill the bore of the stuffing-box, and the diameter of the opening in the follower, through which the piston-rod passes, is greater than the diameter of the rod; and the gross diameter of the follower H′ is less than the diameter of the bore in the stuffing-box, and the opening in the follower, through which the piston-rod passes, is equal to the diameter of the piston-rod, by which means the follower H′ is allowed to move laterally with the piston-rod independent of any lateral movement of the follower H, the object being to prevent any sediment which might accumulate in and escape from the boiler from passing between the packing-rings and wall of the stuffing-box.

The sleeve G is provided, at its end farthest from the stuffing-box, with an internal shoulder, *f*, against which the packing-rings rest. This shoulder is curved or formed at an angle to the plane of the piston-rod, so as to allow the thin edge of the packing to ride up the inclined surface of the shoulder, which admits of a movement of the packing from the stuffing-box sufficient to keep up the supply of pack-

ing in the sleeve as the packing is worn away by the friction of the piston-rod, while at the same time the shoulder prevents the packing from being forced from the chamber of the sleeve by the pressure of the steam against the followers.

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

1. The combination, with the stuffing-box C and series of packing-rings E, adjusted within the stuffing-box, of the sleeve G, having the conical chamber to receive the packing-rings as the same are forced from the stuffing-box, and provided with the curved or angular retaining-shoulder *f*, substantially as and for the purpose specified.

2. The combination, with the stuffing-box C and series of packing-rings E, of the followers H H′ and spring J, substantially as and for the purposes specified.

CHARLES T. SLEEPER.

Witnesses:
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