C. Kline.

Stuffing-Box for Valve-Stems, &c.

No. 73450 Patented Jan. 21, 1868.

Fig. 1.

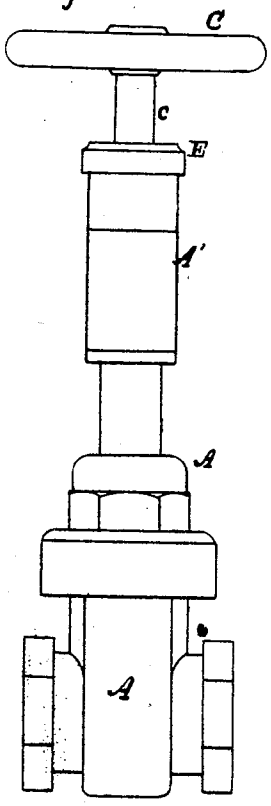
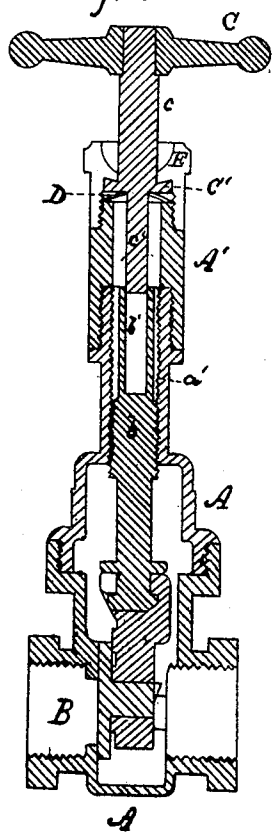
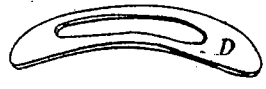


Fig. 2.





Witnesses.

Harlow C. Smith

Edmund Mason

Inventor.

C. Kline

by his Attorney J. D. Slaton

United States Patent Office.

CALVIN KLINE, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND R. L. PEABODY, OF NEW YORK CITY.

Letters Patent No. 73,450, *dated January* 21, 1868.

IMPROVEMENT IN STUFFING-BOXES FOR VALVE-STEMS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CALVIN KLINE, of Brooklyn, in the county of Kings, in the State of New York, have invented certain new and useful Improvements in the Stuffing-Box or Tight Joints adapted for revolving or partially-revolving stems or shafts; and I do hereby declare that the following is a full and exact description thereof.

I will first describe what I consider the best means of carrying out my invention, and will afterwards designate the points which I believe to be new therein. The accompanying drawings form a part of this specification.

Figure 1 is a side elevation, and

Figure 2 is a longitudinal vertical section through the same.

Similar letters of reference indicate like parts in all the figures.

The material of the whole may be iron and steel.

A is the upper portion of the casing of a steam stop-valve or other structure, in which it is desired to operate a valve or other part, B, by turning a screw, *b*, the threads of which run in a corresponding female screw, *a'*, as represented. The head of the screw *b* is provided with a deep, square socket, as represented by *b'*. To operate the valve B, it is necessary to turn the part *b*, and in turning the latter it traverses axially up and down, as will be obvious. C is a hand-wheel, by turning which in opposite directions the valve B is to be operated. It is connected by a stem, *c*, which is furnished with a square tenon, *c'*, which notches into the square socket *b'*, and allows sufficient space for the socketed part to traverse up and down as far as may be necessary without losing its connection. C' is a collar, formed on the stem *c'*, and accurately finished on its upper surface. I make this upper surface conical or concave, as represented, with a concavity on the upper surface of the cap E, to contain oil for lubricating, The lower face of this collar C' is also smoothly finished. I prefer to make this surface plain. D is a spring, made by simply curving a washer of steel. It lies between the lower face of the collar C' and the upper end of the part A'. This spring need have but a short extent of motion, but must be sufficient to allow for the wear of the surfaces, and acts with a constant force, pressing the collar C' up against a corresponding accurately-finished surface on the cap-piece E. This cap-piece is screwed upon the upper end of the top-piece A', which is secured as represented, upon the part A, and is easily made to fit steam-tight thereon. The only place which it is difficult to make steam-tight is the joint around the revolving stem *c*. This must necessarily fit loosely, or easily, to allow it to be turned with facility, and as these parts are ordinarily made, soft packing is employed for the purpose, which requires frequent attention and adjustment. The necessity for any such soft packing is obviated by my invention, because the spring D presses the accurately-finished upper surface of the collar C' against the nicely-finished corresponding surface of cap E. The slight wear of these surfaces is taken up by the extension of the spring D, and a steam-tight contact is always maintained.

Whenever a pressure of steam or other fluid exists within the casing A, it is liable to be experienced on the under side of the collar C'. But this only has the effect to press the rubbing surfaces the more tightly into contact, and my stuffing-box, by which name I prefer to term it, although there is no stuffing properly so called employed, will serve for a very long period, without any necessity for adjustment or other attention.

I can employ any of the materials, such as brass or steam-metal, which are adapted for these kinds of surfaces. It may be preferable in most cases to make the cap E and stem *c* of such material, in order to avoid the possibility of rusting.

Stuffing-boxes analogous to mine have been proposed and patented, in which a spiral spring, mounted above the tight part, was introduced to perform the function of my spring D. My improved construction and arrangement are preferable, for the reason that the tight part of mine can be conveniently lubricated, while the other cannot, and that my spring D never changes its tension by any tendency to wind and unwind by turning the stem, while the other is seriously objectionable on this account.

A portion of my invention is adapted to operate on rolling valves, rotary steam-engines, and the like situations where a shaft or stem is rotated, or partially rotated, without requiring any provision for the traversing of one part endwise relatively to the other. I such cases the socket and tenon *b' c'* may be dispensed with, and

the stem *c*, or an equivalent part, may be extended directly through. But in order to adapt my invention to the working of screw-valves, and those frequently-recurring uses where one part must move endwise, my tenon and socket, or some equivalent provision, is necessary. The square form of my tenon and socket is not essential. Any form of sleeve which allows the parts to move endwise upon each other, while compelling them to turn together, will answer the purpose.

Having now fully described my invention, and indicated what I consider the best means of putting it in practice, what I claim as new, and desire to secure by Letters Patent, is as follows:

I claim the collar C′, on the rotating or partially-rotating stem *c*, arranged as represented relatively to the casing A, spring D, and cap E, so as to allow of lubrication, all as and for the purposes herein set forth.

CALVIN KLINE.

Witnesses:

EMILIE T. DALEY,

R. L. PEABODY.