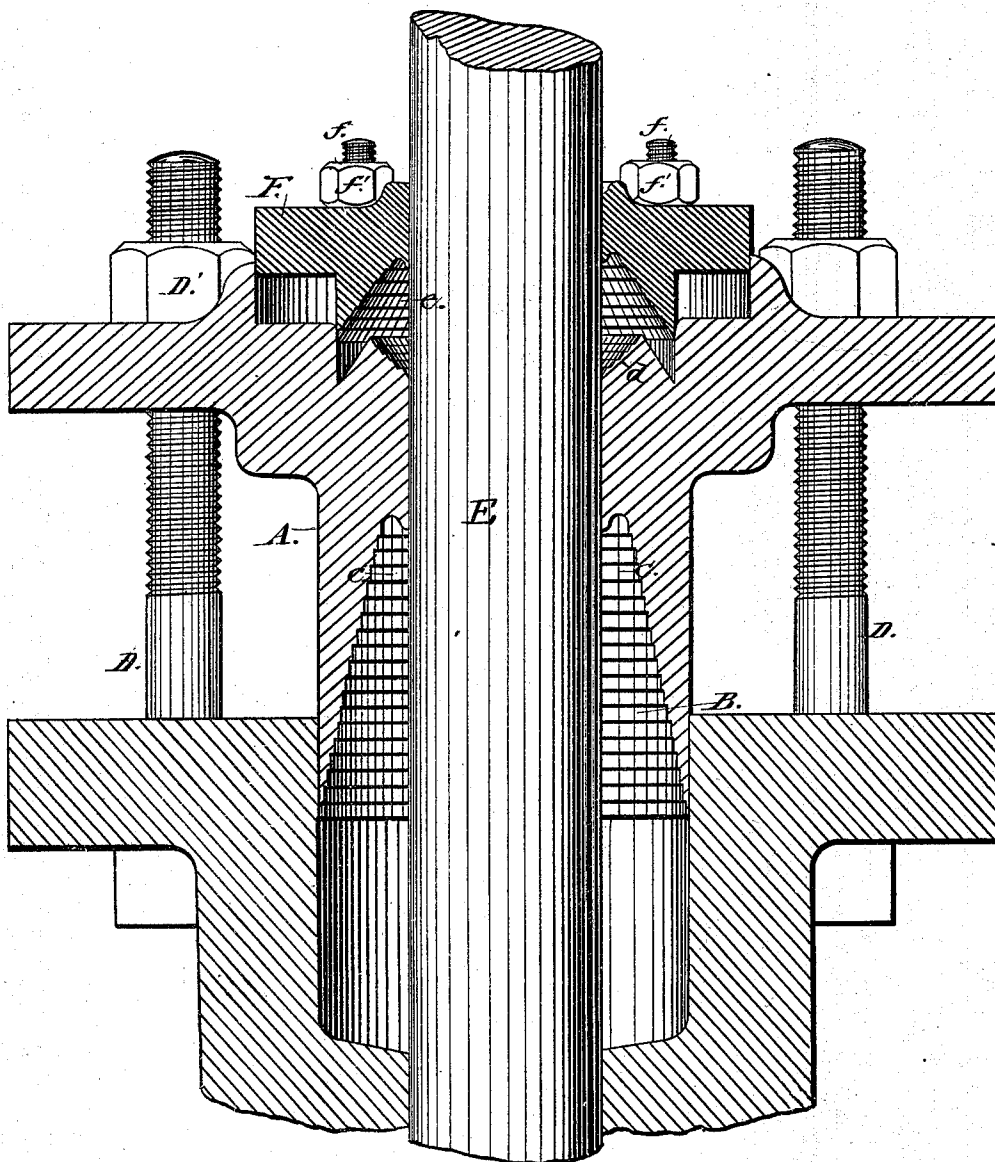


J. N. COLBY.
Glands for Stuffing Boxes.

No. 146,750.

Patented Jan. 27, 1874.

Fig. 1.



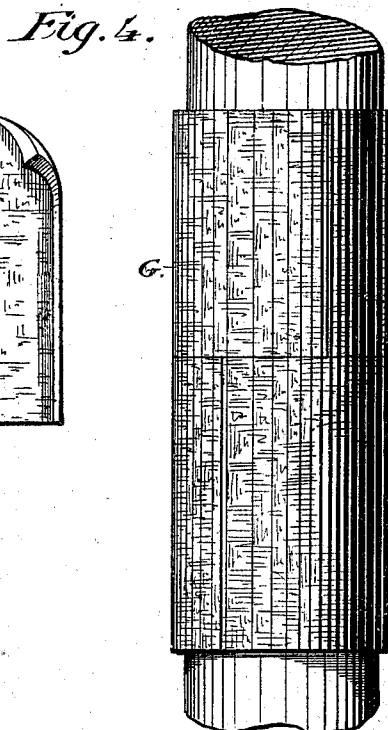
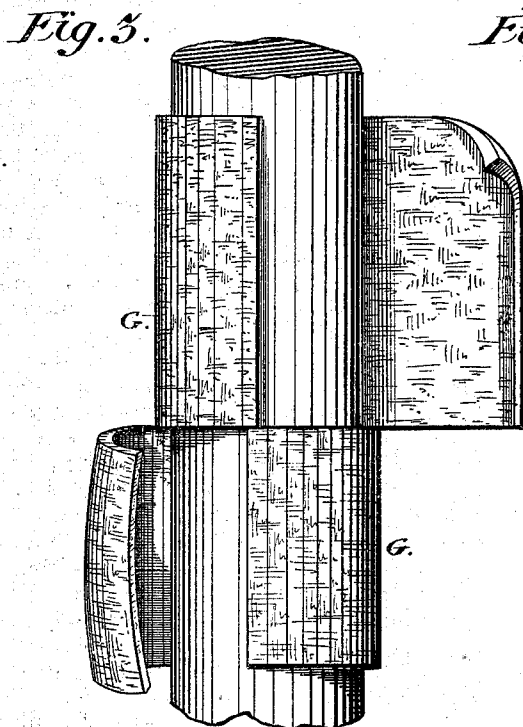
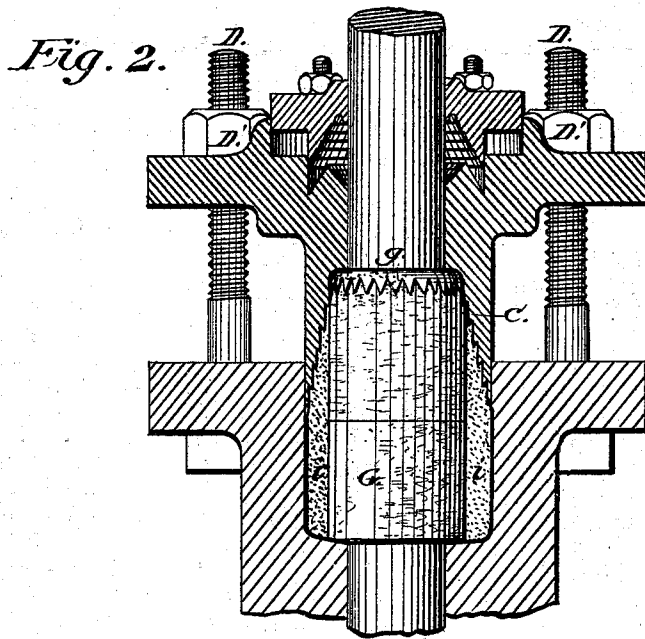
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UNITED STATES PATENT OFFICE.

JOHN N. COLBY, OF MYSTIC, CONNECTICUT.

IMPROVEMENT IN GLANDS FOR STUFFING-BOXES.

Specification forming part of Letters Patent No. **146,750**, dated January 27, 1874; application filed June 11, 1873.

To all whom it may concern:

Be it known that I, JOHN NEWTON COLBY, of Mystic, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in the Glands and Packing of Stuffing-Boxes for Piston and other Rods; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in glands for stuffing boxes for piston-rods, valve-rods, pump-plungers, and for stuffing-boxes when used in other situations; also, to a novel method of arranging the packing within the stuffing-box, by which scraps and short-fibered packing may be used as effectively as long packing.

The first part of my invention consists in forming the lower interior part of the gland of a long conical hollow shape, into which the packing in the stuffing-box enters as the gland is screwed down. The effect of forming the gland in the manner described is to compress the packing both circumferentially and endwise, and thus prevent leakage of the steam, by keeping it more closely around the piston-rod than is obtained by endwise pressure alone. To still further prevent leakage, a secondary gland is employed, which is placed in an annular groove in the outer end of the main gland around the piston-rod. In this groove a small quantity of packing is placed, and pressed against the rod by the small gland.

The second part of my invention consists of a case formed by wrapping card-board, paper, or cloth made from asbestos, or anything else of a similar nature, around the piston-rod, and pressed down into the stuffing-box. The space between the case and the stuffing-box is then filled with short packing, and the gland, being screwed down, turns the upper edge of the case over and incloses the packing. The effect of this arrangement is that the rod is closely packed, and at the same time the case prevents the short packing in the box from being blown out.

Figure 1 is a sectional view of the gland. Fig. 2 is a sectional view of the gland, showing

the packing-case. Fig. 3 is an elevation of packing-case open. Fig. 4 is an elevation of packing-case closed.

As shown in Fig. 1, the gland A is formed, at the lower interior part thereof, with a conical hollow, D, the largest circumference thereof being at the lower end of the gland, where it enters the stuffing-box. Into this hollow the packing enters, when the gland is screwed down by means of the bolts or studs D and nuts D'. The interior conical surface B is turned with a series of annular rings, c, extending from the bottom to the top, which gradually diminish in their internal diameter, the least diameter being at the top or upper part of the hollow B. These rings may be turned so as to represent a plain stepped section, as shown at Fig. 1, or they may be turned shaped like saw-teeth, presenting a serrated section. The interior surface of the conical hollow B, being thus rendered uneven or stepped, allows of a better gripe or hold of the packing being obtained by the gland when forced into it, and on the gland being forced down into the stuffing-box by the screws, its lower edge passes between the walls of the stuffing-box and the packing, and compresses it laterally or circumferentially and endwise against the rod. There is no immediate downward pressure exerted upon the packing by this gland; the pressure is principally lateral. The interior surface B being at a sharp angle to the sides of the gland, the tendency is to compress the packing closely against the rod, and it is only by degrees, as the packing wears away, that it is forced downward into the stuffing-box. In the passage of the gland downward the rings c take hold of the packing, and revolve it, thus presenting a new packing-surface continually to the action of the rod. It is a peculiar merit of this gland that it permits a surface of packing of the same depth as the stuffing-box to be always against the rod, and prevent the leakage of steam, while in the old form the surface was continually becoming narrower, and in consequence the liability to leakage greater. As a further precaution against the escape of steam, a cap or secondary gland, F, is placed at the outside end of the gland A, the lower part of which fits into an annular space, d, formed around

the entrance of the rod. That part of the secondary gland F which fits into the groove *d* is also constructed at the lower interior part thereof with a conical hollow, *e*, formed in a similar manner to the conical hollow B in the main gland A. In this space *d* a small quantity of packing is placed, which becomes compressed against the rod E when the cap F is screwed down by means of bolts or studs *f* and nuts *f'*. This device is intended to prevent the possibility of any leakage taking place, even though there be a defect in the gland A. However high the pressure may be, or however bad the rod, the device I have here described will be found to present an effectual barrier to any possible waste or leakage. The last part of my invention relates to a method of arranging the packing in the stuffing-box, and is applied with my improved gland. This device is made by cutting strips from cardboard, paper, or cloth made from asbestos, or other suitable material. These strips should be at least as long as the stuffing-box is deep. They are wrapped around the piston-rod closely, and fastened with wire, string, or elastic. This case can be made of a single piece of card-board, paper, cloth, or other fibrous or textile material, or it may be made of several pieces, so as to break joints, as shown in Fig. 4. In Fig. 4, G represents the case after it is fastened around the rod. After being secured, it is forced down to the bottom of the stuffing-box. Its upper end

should then be slit, as shown at *g* in Fig. 2. The edge is then turned outward from the rod. The space between the case G and the stuffing-box is then filled with any kind of packing, as cork, shavings, hemp, flax, cotton, jute, or asbestos, as shown at *i*. The gland A is then screwed down into the box, and those of the annular rings *c* which are nearest to the rod catch the edge of the case, which is turned over, and press it outward from the rod, thus closing over the loose packing, and preventing it from being blown out by the steam. By this arrangement the rod is effectually packed, and at the same time much packing which would otherwise be wasted is utilized.

I claim—

1. The gland A, with the interior conical hollow B, and the interior surface thereof turned with the annular steps *c*, as and for the purpose described.

2. The case G, arranged to close over the loose packing in stuffing-box *c'*, in the manner herein set forth, in combination with gland A, having interior conical hollow B and stepped or ringed surface *c*, as and for the purpose hereinbefore described and set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of May, 1873.

JOHN NEWTON COLBY.

Witnesses:

CHARLES H. COTTRELL,
JAMES CAMPBELL.