

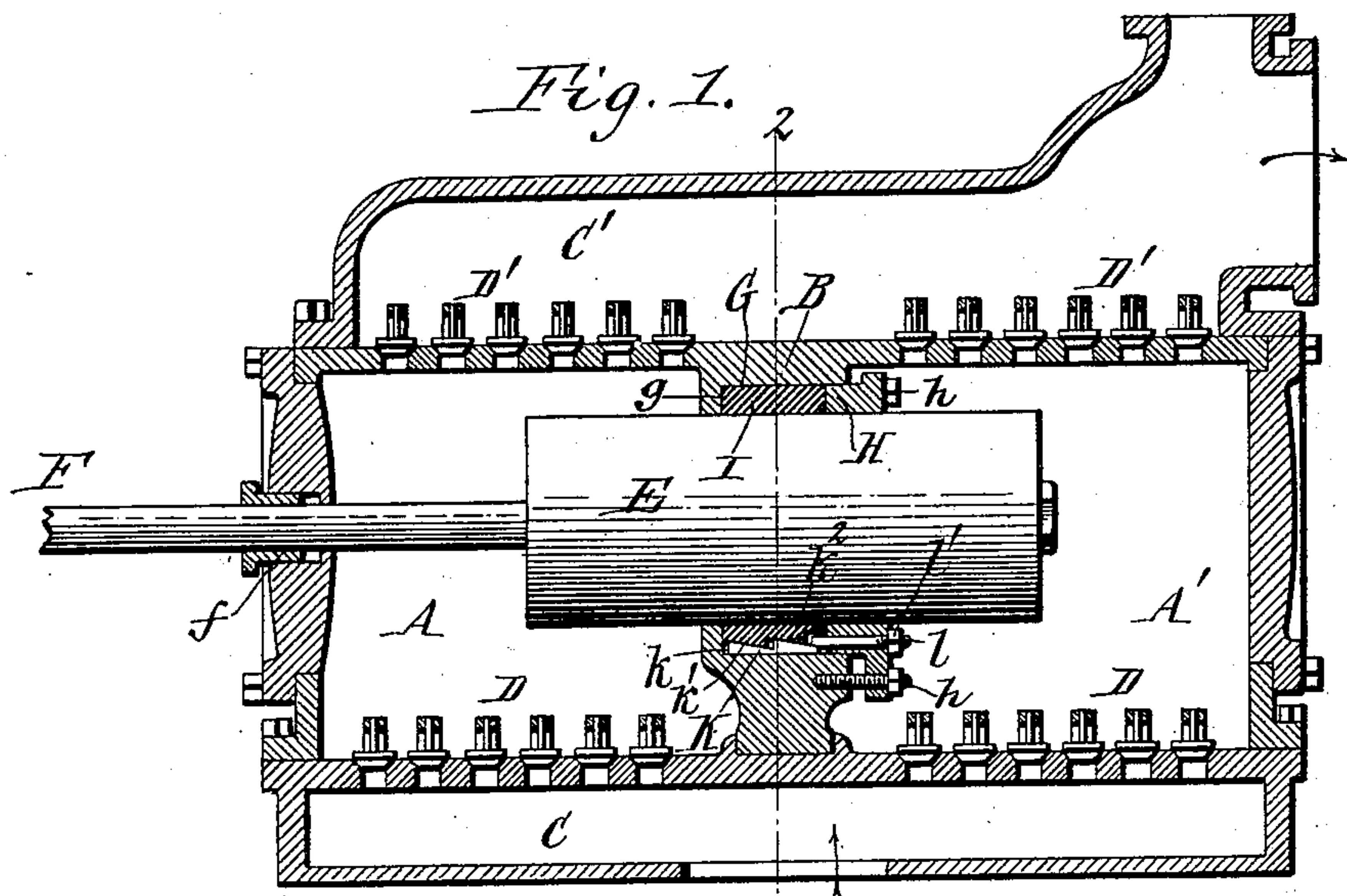
No. 626,856.

Patented June 13, 1899.

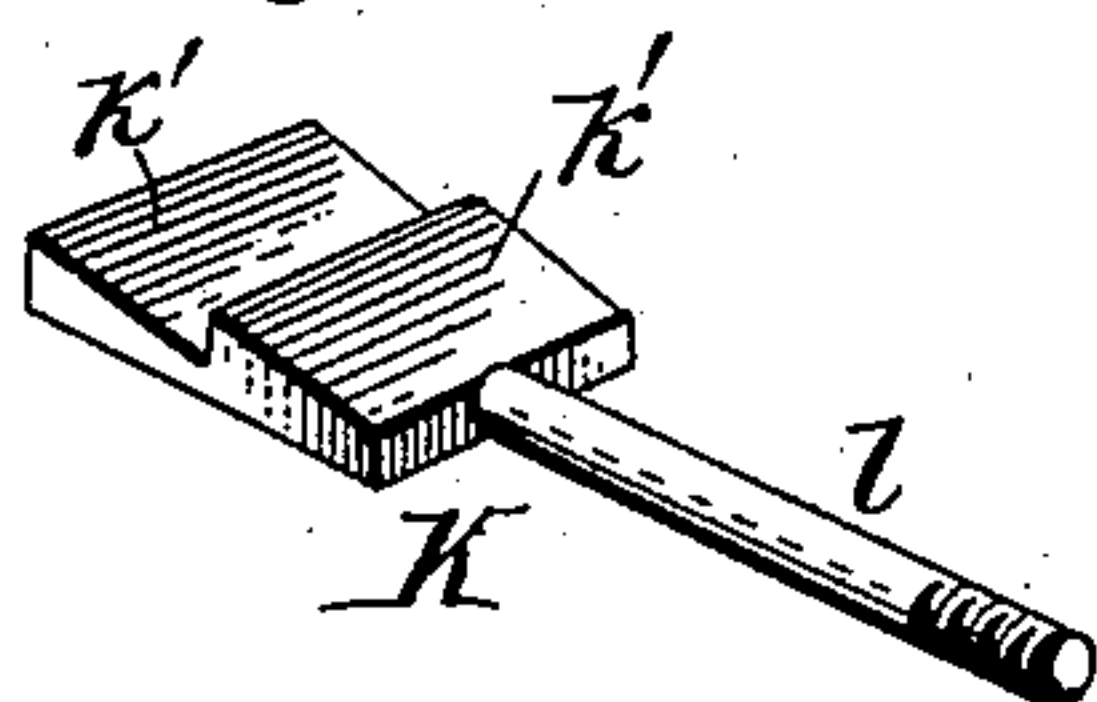
F. E. CHASE.  
PACKING FOR PUMP PLUNGERS.

(Application filed May 19, 1898.)

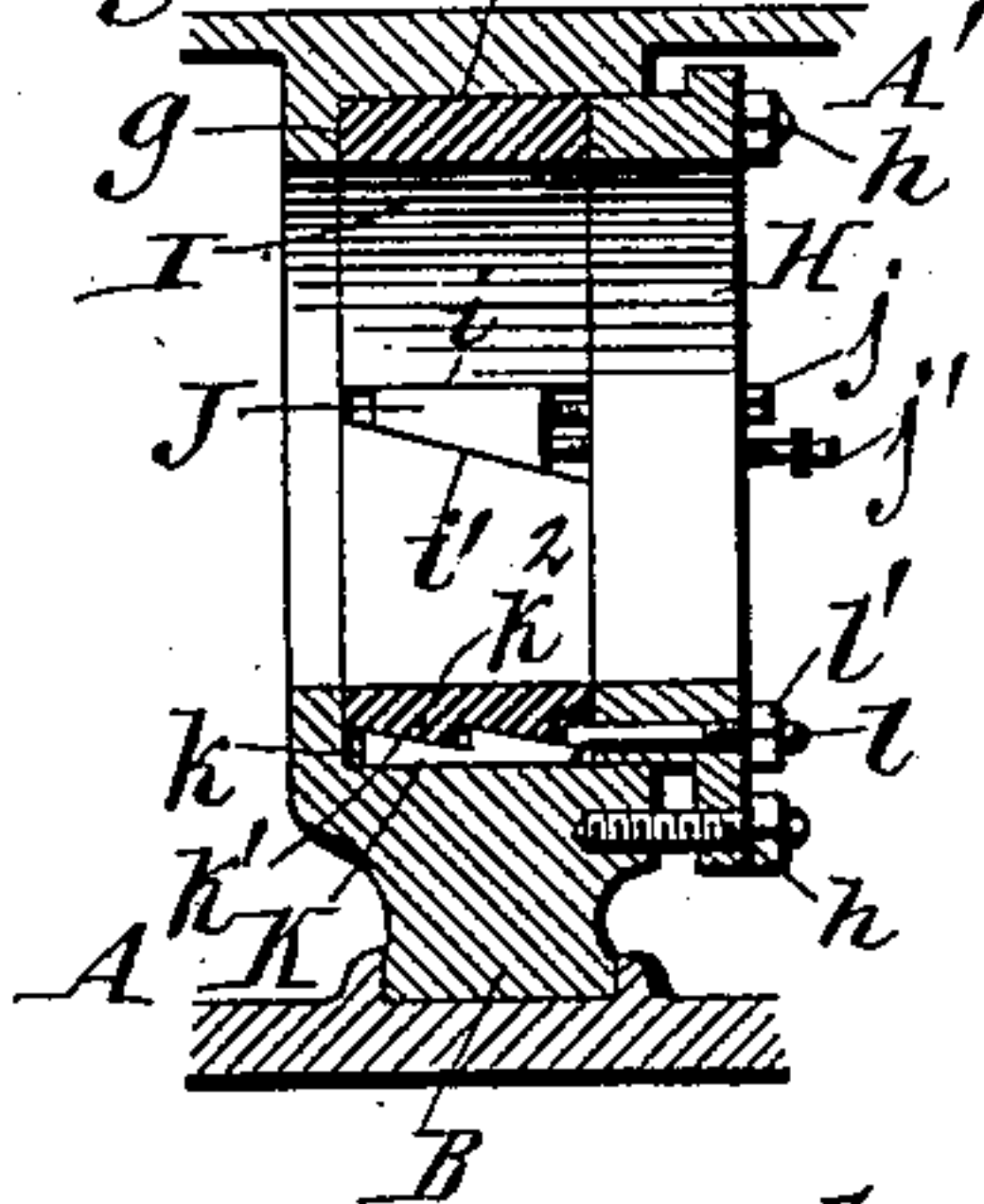
(No Model.)



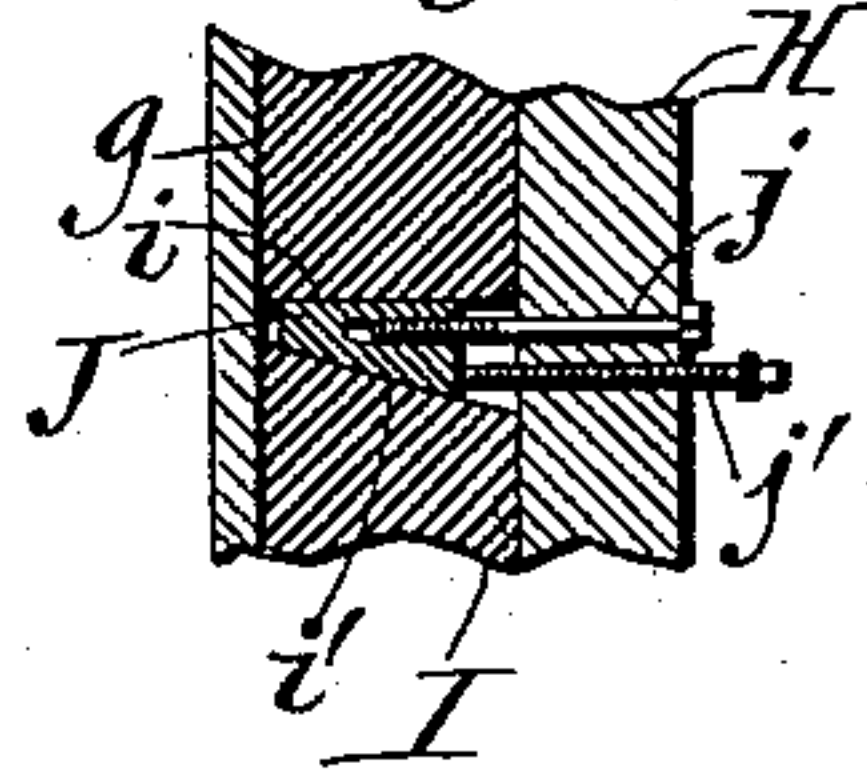
*Fig. 5.*



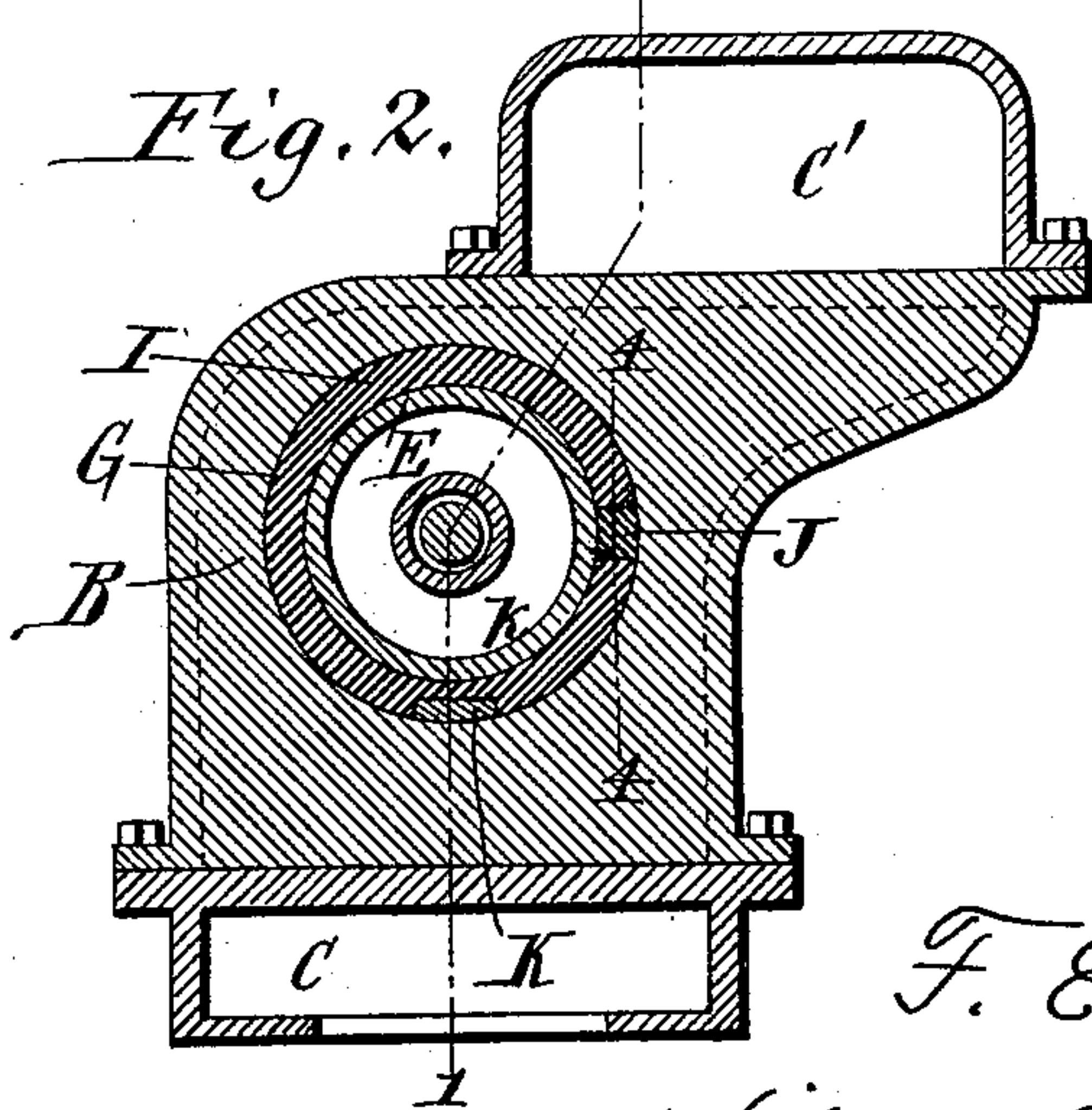
*Fig. 3.*



*Fig. 4.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

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## PACKING FOR PUMP-PLUNGERS.

SPECIFICATION forming part of Letters Patent No. 626,856, dated June 13, 1899.

Application filed May 19, 1898. Serial No. 681,123. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK E. CHASE, a citizen of the United States, residing at Tonawanda, in the county of Erie and State of New York, have invented new and useful Improvements in Packing for Pump-Plungers, of which the following is a specification.

This invention relates to a packing for the plungers of horizontal pumps of large capacity, and more particularly to pumps in which the plunger reciprocates in a diaphragm or partition which separates the two cylinders. In pumps of this character the weight of the plunger causes the packing between the same and the partition to wear rapidly on the lower side, thereby necessitating frequent renewal of the packing in order to prevent the water from leaking between these parts and also to keep the plunger in alinement with the plunger-rod.

The object of my invention is to provide a packing for the plungers of this class of pumps which is simple and durable in construction and which can be readily adjusted for taking up wear.

In the accompanying drawings, Figure 1 is a fragmentary longitudinal sectional elevation of a horizontal pump provided with my improved packing, the section being taken in line 1 1, Fig. 2. Fig. 2 is a vertical transverse section thereof in line 2 2, Fig. 1. Fig. 3 is a fragmentary longitudinal section of the partition separating the pump-cylinders and the plunger-packing arranged therein, the section being taken on the same line as Fig. 1. Fig. 4 is a fragmentary longitudinal section in line 4 4, Fig. 2. Fig. 5 is a perspective view of the adjusting device.

Like letters of reference refer to like parts in the several figures.

A A' represent the two horizontal pump-cylinders arranged end to end and separated by a vertical partition B, C C' the inlet and outlet chambers arranged, respectively, below and above the cylinders, D the inwardly-opening valves connecting the cylinders with the inlet-chamber, D' the outwardly-opening valves connecting the cylinders with the outlet-chamber, E the horizontal cylindrical plunger arranged in a circular opening in the partition, and F the horizontal plunger-rod con-

nected with the plunger and passing through a stuffing-box *f* in the head of one of the cylinders, all of which parts may be of any usual and suitable construction.

The bore of the partition is provided with an annular enlargement or seat G, which opens through one side of the partition, while its other end is contracted and forms a shoulder *g* at this end of the seat.

H represents an annular gland which fits into the open end of the seat and which is connected with the partition by bolts *h*.

I represents a split packing-ring which is arranged in the seat of the partition and around the plunger and which bears with one edge against the shoulder *g* and with its other edge against the gland. The split portion of the packing-ring is preferably arranged on one side and about midway of its height, and the end of its upper portion is horizontal, as shown at *i* in Figs. 3 and 4, while the end of the lower portion is inclined, as shown at *i'*, so that the opposing ends of the packing-ring diverge toward the gland.

J represents a filling piece or wedge fitting into the space between the ends of the packing-ring, so as to form, together with the split ring, a packing which extends completely around the plunger. This filling-piece can be moved backward and forward for loosening or tightening the same by means of a loosening-screw *j* and a tightening-screw *j'*. The tightening-screw engages with a screw-threaded opening in the gland and bears with its inner end against the filling-piece. Upon turning this screw so that it moves inwardly the filling-piece is moved forwardly and wedged in between the ends of the split ring and forms a tight joint at this point. The loosening-screw passes loosely through an opening in the gland and engages with its inner screw-threaded end in a screw-threaded opening in the filling-piece, while its head bears against the outer side of the gland. When it is desired to loosen the filling-piece, the tightening-screw is retracted and the loosening-screw is turned in the direction for moving the filling-piece backwardly, thereby producing a slack between the ends of the split ring. Preparatory to again tightening the filling-piece the loosening-screw is un-



screwed sufficiently from the filling-piece to permit the latter to be moved forward the required distance by the tightening-screw.

K represents an adjusting device whereby the lower portion of the packing-ring may be raised for taking up the wear on the same and the plunger. This take-up device consists, preferably, of a longitudinal movable slide or wedge which is arranged in a recess  $k$ , formed in the under side of the split ring, and rests with its lower side on the bottom of the seat in the partition, while its upper side is provided with one or more inclines  $k'$ , which bear against corresponding inclines  $k^2$  on the upper side of the recess in the packing-ring. The slope of the inclines on the take-up slide and the ring is such that upon moving the slide backwardly or toward the gland the lower section of the ring is raised. This movement of the slide is effected by a screw-threaded adjusting-stem  $l$ , arranged loosely in an opening in the gland and connected at its inner end with the slide, while its outer end is provided with an adjusting screw-nut  $l'$ , which bears against the outer side of the gland.

When the lower sides of the plunger and the packing-ring become worn to such an extent as to cause leakage, the filling-piece is first loosened and then the take-up slide is moved backwardly the required distance for raising the lower portion of the packing-ring and the plunger resting thereon until the packing-ring bears all around against the plunger, after which the filling-piece is again tightened between the ends of the ring. By this means the wear upon the packing-ring and plunger can be quickly and conveniently taken up, thereby necessitating stopping of the pump only a short time, and it also permits of always maintaining the plunger in alinement with the plunger-rod, thereby avoiding undue wear of the latter and its stuffing-box.

By providing the upper portion of the packing-ring with a horizontal end and the lower portion with an inclined end the lower portion can be raised for taking up wear without displacing the filling-piece circumferentially, thereby avoiding cramping of the adjusting-screws of the filling-piece.

If desired, the packing-ring may be split on diametrically opposite sides, in which case two filling-pieces are required, one for each split portion of the ring.

I claim as my invention—

1. The combination with the horizontal pump-cylinder, the vertical partition arranged in said cylinder and provided with a circular opening and with a circular seat in the bore of said opening, and the horizontal cylindrical plunger passing through said opening, of a packing-ring which is arranged in said opening and bears with its inner surface against the plunger and with its outer surface against

said seat and which is split on its side, an adjusting device engaging against the lower portion of the packing-ring and adapted to lift the lower portion of the ring and the plunger resting thereon while the upper portion of the ring abuts against the top of said seat and is held against vertical movement, and a filling-piece arranged between the ends of the split packing-ring and fitting between the plunger and said seat, substantially as set forth.

2. In a pump, the combination with the partition and the plunger passing through an opening in the same, of a split packing-ring arranged in said opening and around the plunger and having its split portion arranged on one side, and a slide or wedge arranged in a recess in the lower portion of the packing-ring and engaging with an incline on the upper side of said recess, substantially as set forth.

3. In a pump, the combination with the partition and the plunger passing through an opening in the same, of a split packing-ring arranged in said opening and around the plunger and having its split portion arranged on one side, a shoulder arranged on the partition and bearing against one edge of the packing-ring, a gland bearing against the opposite edge of the packing-ring, a filling-piece arranged between the ends of the packing-ring, a wedge arranged in a recess in the lower portion of the packing-ring and bearing with one side against said ring and with its opposite side against the bore of the opening, and a screw-adjusting stem arranged in the gland and connected with said wedge, substantially as set forth.

4. In a pump, the combination with the partition and the plunger passing through an opening in the same, of a split packing-ring arranged in said opening and around the plunger and having its split portion arranged about midway of its height, the end of the upper portion of said ring being horizontal while the end of the lower portion thereof is inclined, a shoulder arranged on the partition and bearing against one edge of the packing-ring, a gland bearing against the opposite edge of the packing-ring, a wedge arranged between the ends of the split ring, a tightening-screw engaging with a screw-threaded opening in the gland and bearing against the wedge, a loosening-screw arranged in the gland and engaged with a screw-threaded opening in the wedge, and an adjusting device engaging with the lower portion of the packing-ring, substantially as set forth.

Witness my hand this 16th day of May, 1898.

FRANK E. CHASE.

Witnesses:

JNO. J. BONNER,  
THEO. L. POPP.