

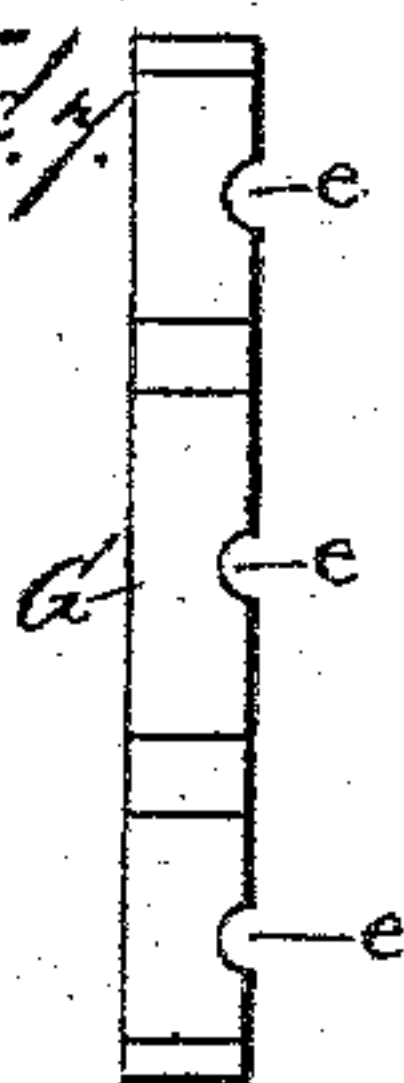
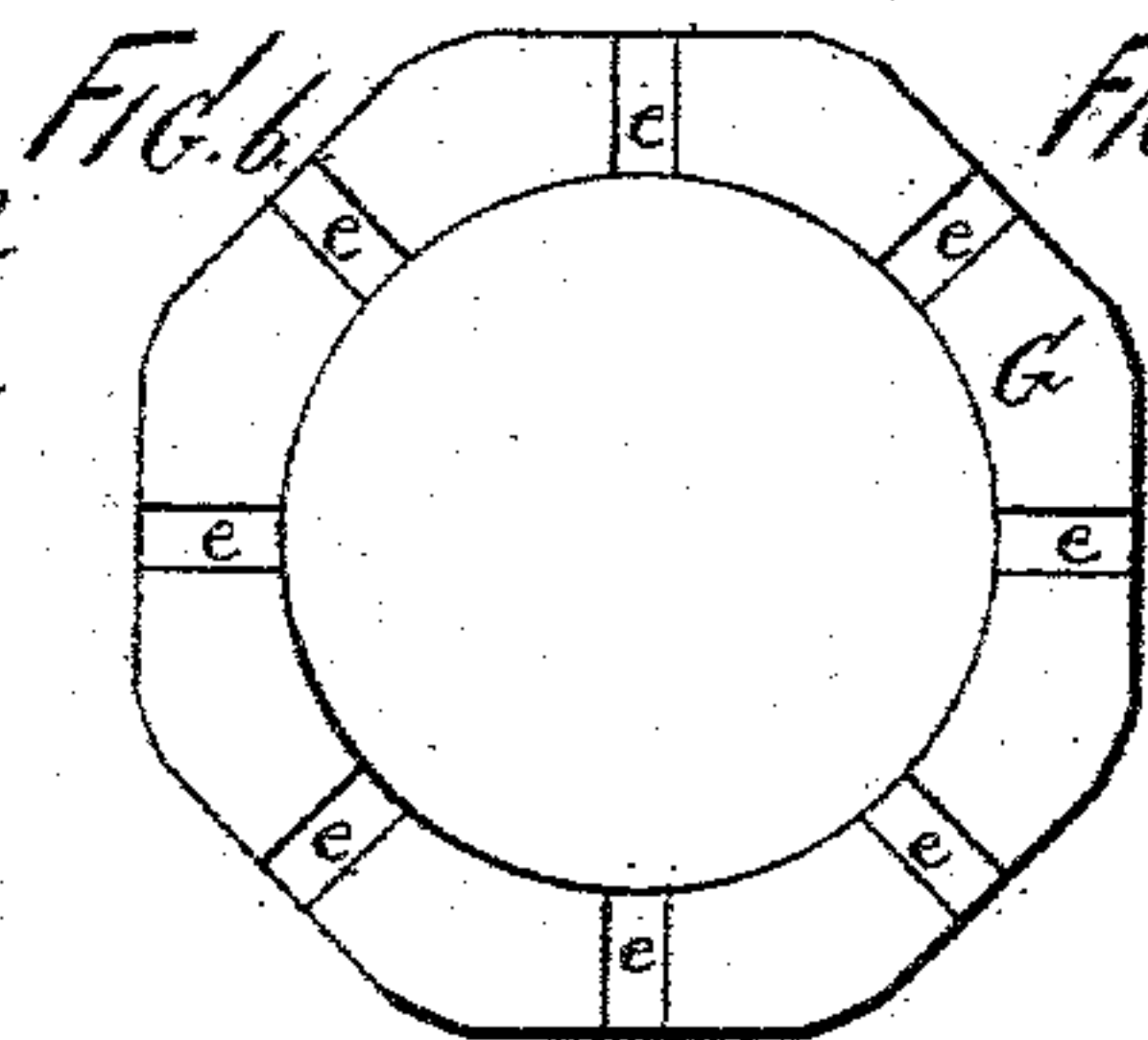
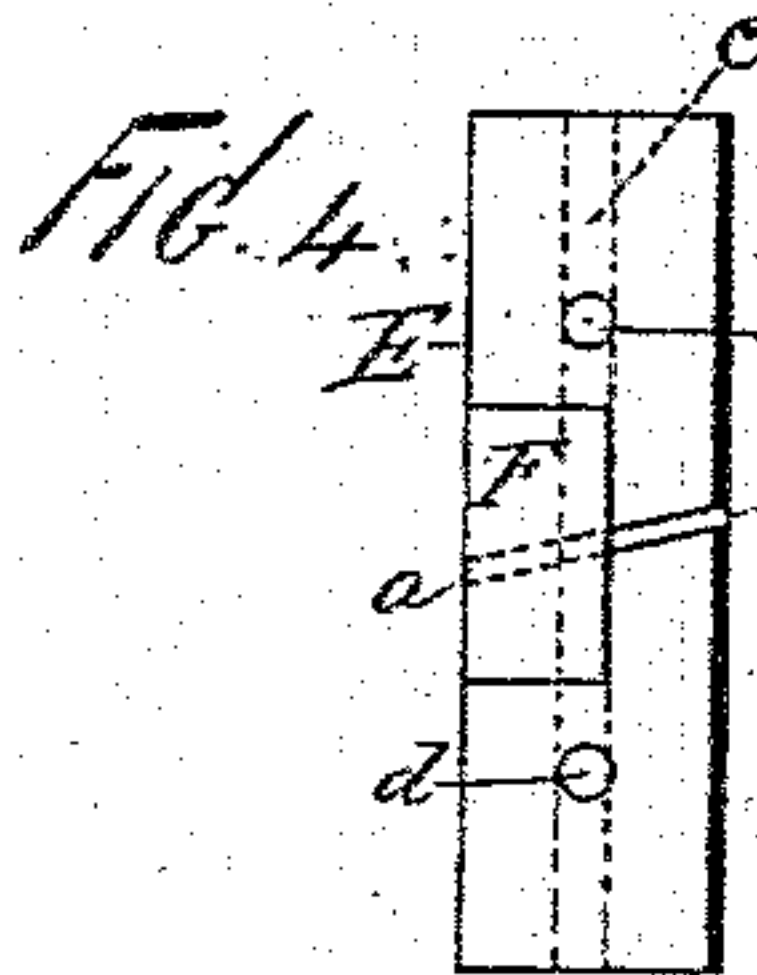
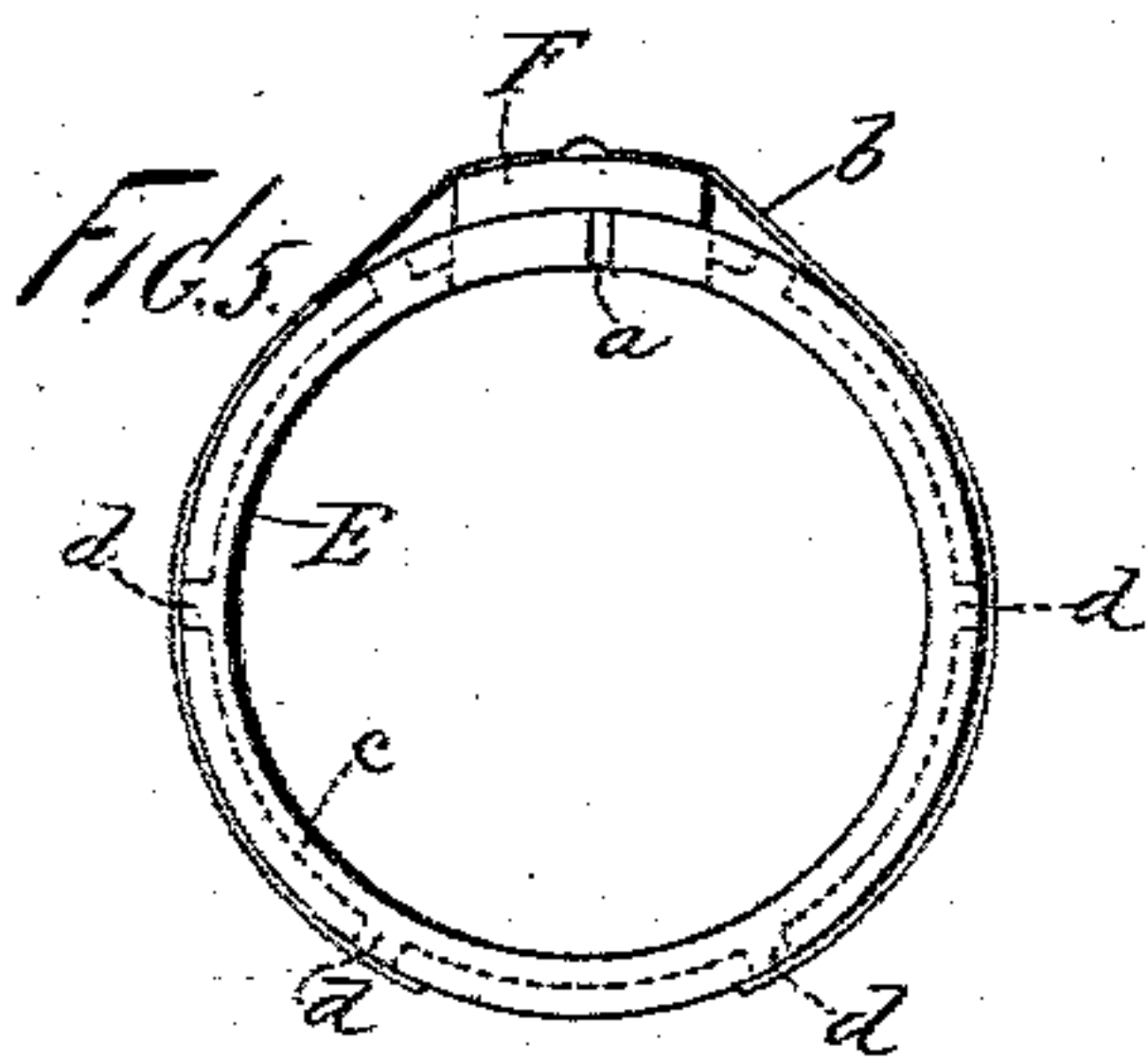
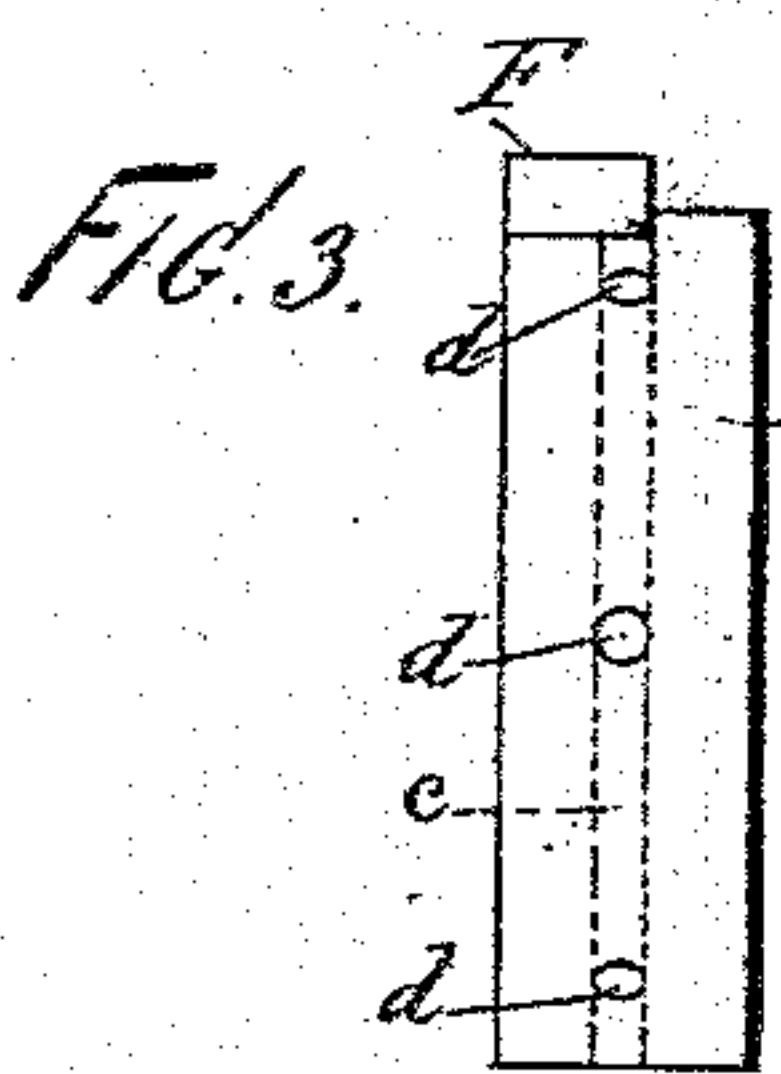
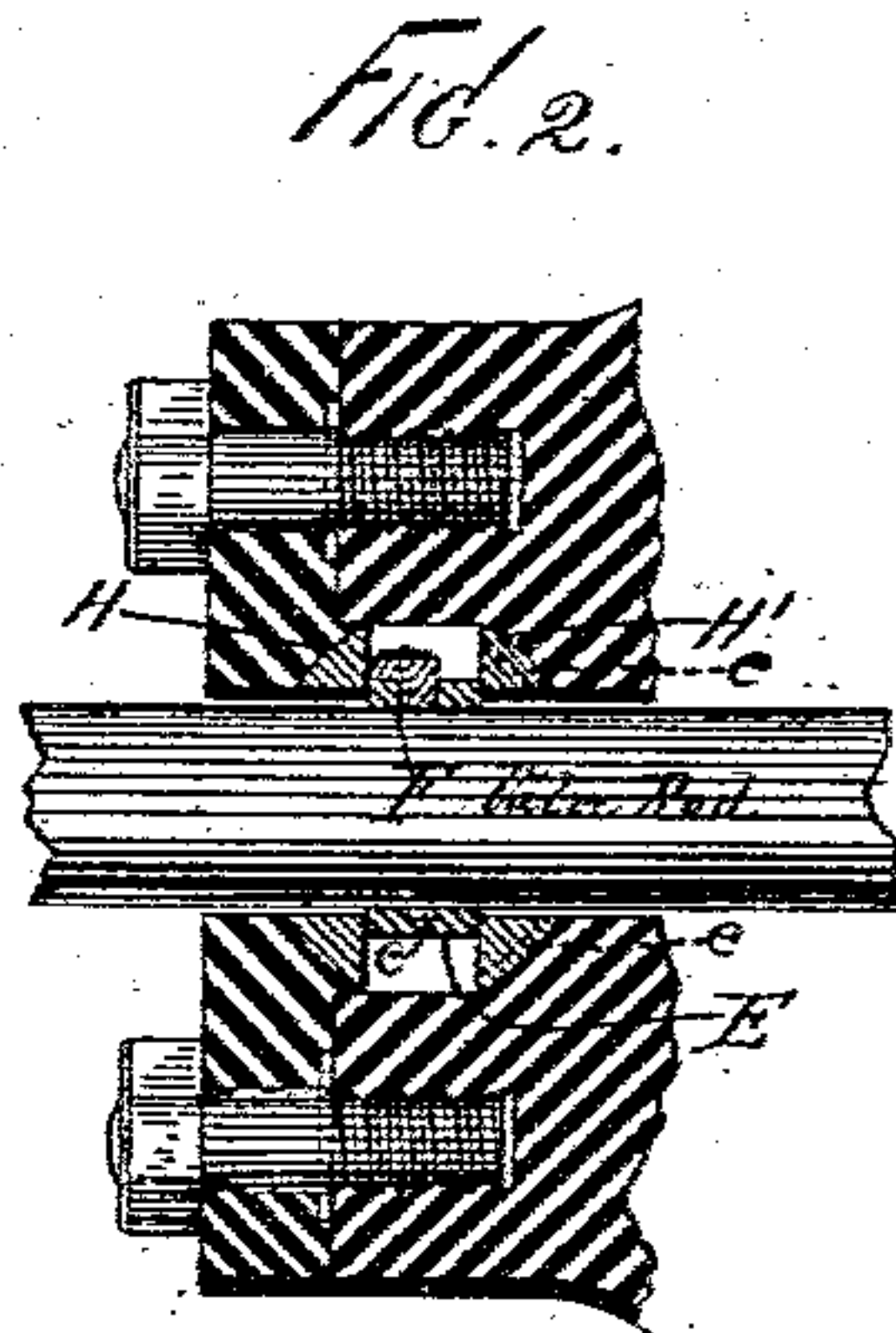
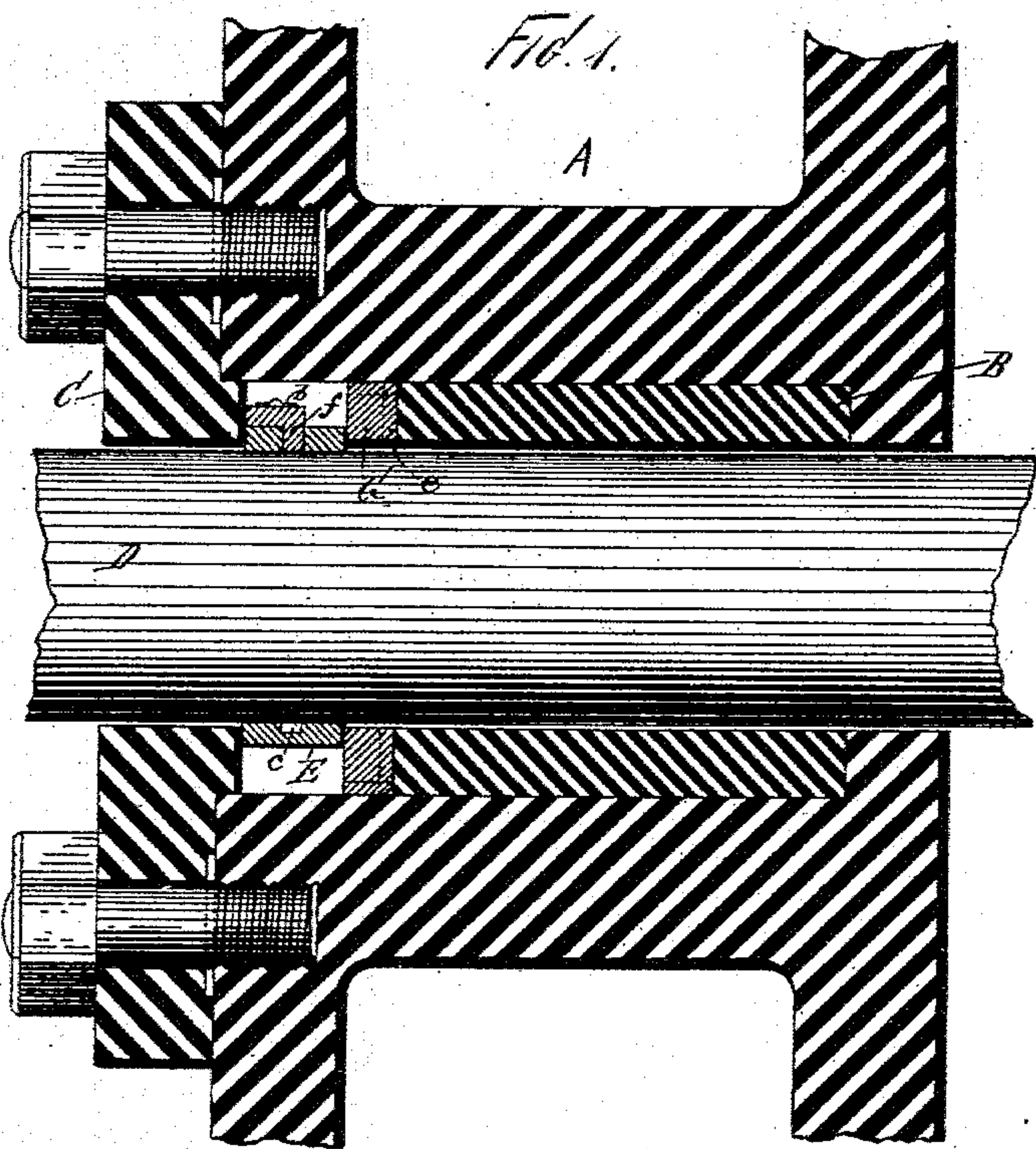
(No Model.)

T. B. PURVES.

PACKING FOR PISTON AND VALVE RODS.

No. 356,785.

Patented Feb. 1, 1887.



Witnesses:  
John Buehler,  
L. O. Osgood,

Thomas B. Purves,  
Inventor:  
By North Osgood  
Attorney.



# UNITED STATES PATENT OFFICE.

THOMAS B. PURVES, OF GREENBUSH, NEW YORK.

## PACKING FOR PISTON AND VALVE RODS.

SPECIFICATION forming part of Letters Patent No. 356,785, dated February 1, 1887.

Application filed July 9, 1886. Serial No. 207,535. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS B. PURVES, of Greenbush, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Packing for Piston and Valve Rods, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention has relation to means for packing the piston-rods and valve-rods of steam and other engines, the object of my said invention being to produce a simple, cheap, durable, and effective form of packing which may be readily and conveniently applied in connection with any pattern of engine, be easily accessible and removable at any time, insure a perfectly steam-tight joint without unnecessary friction, and accommodate itself to any vibratory movements of the rods to which it may be applied.

To accomplish this and to secure other advantages, as will hereinafter appear, my improvements involve certain novel and useful peculiarities of construction, relative arrangements or combinations of parts, and principles of operation, all of which will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional elevation showing my improved packing applied in connection with the piston-rod of an old form or type of engine, only a fragment of the rod and the neck of the engine cylinder-head being represented. Fig. 2 is a similar view showing the improved packing applied upon a valve-rod in connection with the ball-joint. Fig. 3 is a side view, and Fig. 4 a top or plan view, of the packing-ring with the break-joint in place thereon. Fig. 5 is a face view of the packing-ring, showing the break-joint and holding-spring in place. Fig. 6 is a rear elevation, and Fig. 7 an edge view, of the bushing-ring shown in Fig. 1.

In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

A is the neck on the cylinder-head, and this is shown as having an elongated cavity such as formerly employed in many old styles of

engines to receive the packing. To apply the improved packing in such a neck, I fill the greater portion of this cavity at the rear with a bushing of suitable material, as B, leaving only the little space at the front required to receive the narrow packing-ring and the inside bushing-ring. In new engines the cavity in the neck can be made originally only the required depth, and thus the length and weight of the neck may be much reduced, as will be apparent.

C is the gland, secured to the neck in the usual way.

D is the piston rod.

Fitting neatly around the piston-rod is the packing-ring E, of metal, the same being divided, as at *a a*, Figs. 4 and 5, and located within the cavity so that its front vertical face bears snugly against the gland. The ring hugs the piston-rod, and to close the joint between the ends of the ring I employ an angular block, F, called a "break-joint," of which the projection *f* enters a circumferential slot in the ring. This allows the ring to open and close slightly, as may be necessary, and prevents escape of steam through the space between the ends of the ring. The break-joint is held to its seat by a simple form of spring, as at *b*, preferably anchored by being extended partly around the ring, as shown in Fig. 5. This prevents any accidental displacement of the break-joint, and permits it to be easily displaced whenever required. This form of spring may be replaced by any other suitable form which will not interfere with the passage of steam to the interior of the ring. At about the central part of the interior of the ring is a channel, *c*, which channel communicates with the exterior through a series of small perforations, *d d*. The projection *f* on the break-joint closes the ends of the channel *c*.

G is the inside bushing-ring, bearing against the inner face of the packing-ring and the base of the cavity in the neck, (in this instance the base being formed by the bushing B.) The bushing-ring G has a series of channels or grooves, *e e*, extending radially upon its rear face, and serving as passages through which steam may find its way to the other side of the ring, passing either through connecting channels of like form cut in the periphery of the



ring or through the narrow spaces produced by reducing the ring to polygonal form, as indicated in Fig. 6.

The parts being assembled as in Fig. 1, the operation of the improved packing is as follows: Steam from the cylinder follows along the piston-rod, passes through grooves *e e* into the space in the cavity outside of the packing-ring, presses the ring firmly against the rod and against the gland, and at the same time presses the break-joint firmly to its seat upon and in the ring, making all the joints steam-tight. Steam finds admission to the interior channel of the ring and counterbalances part of the external pressure thereon, thereby avoiding any unnecessary friction or wear of parts, and insuring perfect ease and smoothness of motion.

The packing above described is applicable to the valve-rod as well as to the piston-rod. To accommodate the up and down movements of the valve-rod produced by the rocker-arm, I supply the valve-rod with a ball-joint, as shown in Fig. 2, and place the improved packing-ring between the two sections of this joint.

*H H'* are the two sections of the joint, to receive which the gland and the base are suitably reamed out. The section *H'* has channels on its rear face, as at *e e*, corresponding with those on the bushing-ring, Figs. 6 and 7, and answering like purposes.

The ring between the sections is pressed upon the rod, and the pressure is counterbalanced same as in connection with the piston-rod. The up and down movements of the valve-rod (which are only slight) cause the two sections of the ball-joint to move slightly on their seats, but without in any way interfering with the security of the packing.

The improved form of packing is easy to make and apply, and is well calculated to an-

swer the purpose or object of the invention, as previously set forth. It may be applied in connection with engines propelled by steam, air, or any fluid or liquid under pressure.

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

1. The herein-described packing-ring for piston or valve rods, the same having an interior channel, perforations leading from said channel to the exterior, and being supplied with a break-joint arranged to close the space between the ends of the ring, substantially as shown and described.

2. In a packing for piston and valve rods, the divided ring having the interior channel and perforations leading therefrom to the exterior, the break-joint, the front bearing or gland, and the channeled rear bearing or bushing-ring, combined and arranged substantially as shown and described.

3. In combination with the rod, the herein-described divided, channeled, and perforated packing-ring, the break-joint applied on said ring, and the two sections of the ball joint, constructed and arranged for operation substantially as shown and described.

4. The combination, with the divided, channeled, and perforated packing-ring, of the break-joint having a projection entering a circumferential slot in the ring and a retaining-spring, substantially as shown, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

THOS. B. PURVES.

Witnesses:

THOS. B. PURVES, Jr.,  
WM. RAWLINGS.