No. 852,701. PATENTED MAY 7, 1907.

E. A. BRYANT.

METALLIC ROD PACKING.

APPLICATION FILED JULY 23, 1906.

Fig. 1.

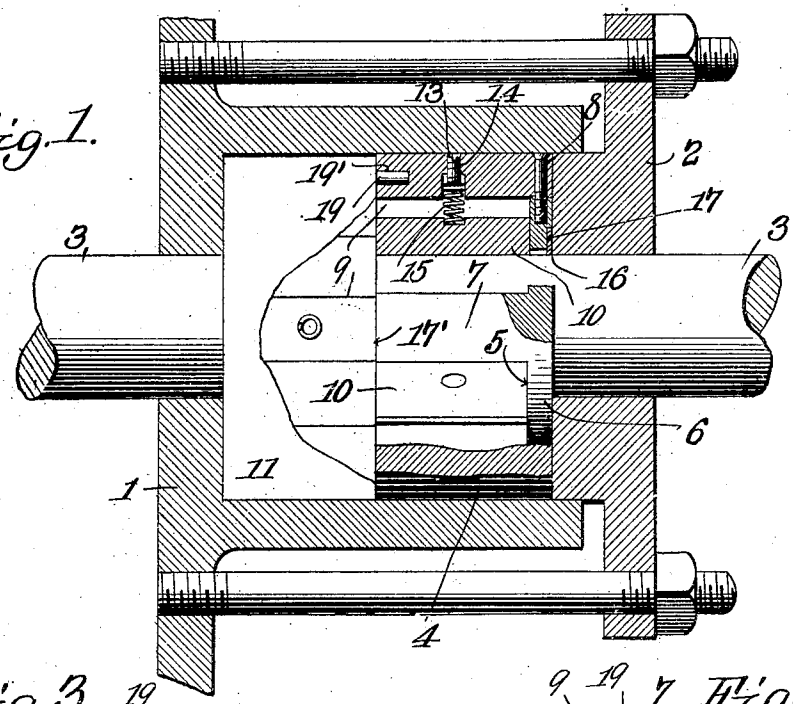


Fig. 3.

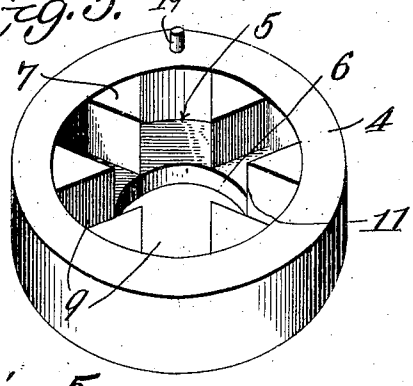


Fig. 2.

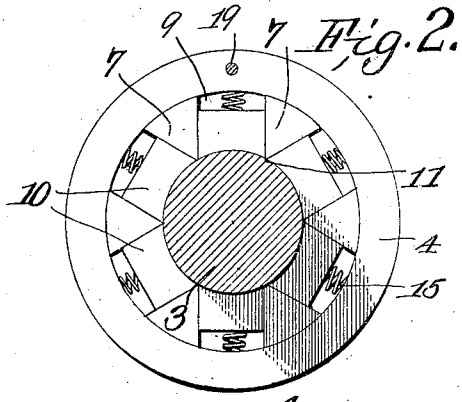


Fig. 5.

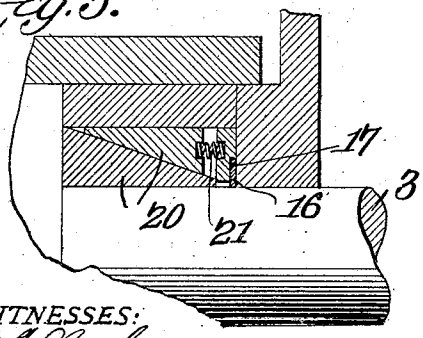
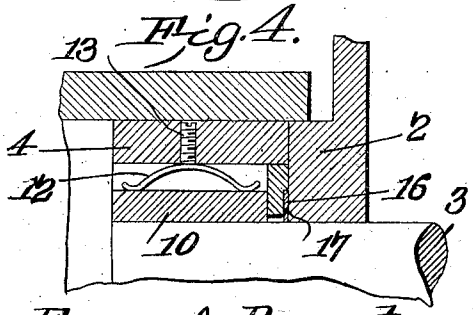


Fig. 4.



WITNESSES:

E. G. Stewart

C. Broadway.

Eugene A. Bryant,
INVENTOR.

By Cashow & Co
ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EUGENE A. BRYANT, OF MINNEAPOLIS, MINNESOTA.

METALLIC ROD-PACKING.

No. 852,701. Specification of Letters Patent. Patented May 7, 1907.

Application filed July 23, 1906. Serial No. 327,455.

To all whom it may concern:

Be it known that I, EUGENE A. BRYANT, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Metallic Rod-Packing, of which the following is a specification.

This invention relates to a shaft packing for preventing fluid under pressure from escaping around the shaft where the same passes through a wall, and it has for one of its objects to provide a metallic packing of simple, inexpensive and improved construction which will effectively prevent leakage of fluid.

A further object is the provision of a packing of this character which consists of few parts so that the cost of maintenance will be reduced to a minimum and so that repair and renewal can be effected with great facility and economy.

With these objects in view, and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates certain of the embodiments of the invention, Figure 1 is a longitudinal section of a stuffing box with the improved packing applied thereto, the latter being shown partly in section and partly in elevation. Fig. 2 is a transverse section of the packing. Fig. 3 is a perspective view of a cage or holder for the packing segments of one of the sections of the packing and the casing therefor. Figs. 4 and 5 are fragmentary sectional views of modifications.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawing, 1 designates a packing box which may be of any ordinary or preferred construction, as desired, having the gland 2 and receiving the reciprocating shaft 3. The packing for the shaft may be made of one, two, or more sections, as desired, two sections, as shown in the present instance, being preferable for some cases.

Each section of the packing comprises a cylindrical casing 4, preferably, though not necessarily, made in one piece with its ends carefully finished in a transverse plane so that the casing of one section will snugly fit the casing of the other and the outer ends will engage, respectively, the bottom of the stuffing box and the gland. Within the casing 4 is arranged a cage or frame-like holder 5 which comprises a circular collar that fits within the casing 4 and is arranged flush with one end thereof. Extending in an axial direction from one side of the collar 6 are spaced fingers or separating members 7 which also engage the inner cylindrical wall of the casing and are preferably formed integral with the collar. The cage or holder 5 may be secured in the casing in any suitable manner, as by means of the countersunk screws 8. The cage thus divides the casing into a plurality of radially extending pockets or compartments 9, the walls of each of which are preferably parallel, this being accomplished by making each of the spacing members 7 sector-shaped in cross section.

In each of the radial pockets 9 is a segment 10 of any desired material, the inner surface thereof being arc-shaped so as to fit snugly on the shaft 3. The axial length of the segments may be varied, as desired. As shown in Figs. 2 and 3, the converging surfaces of each of the separating members meets in a sharp edge, as indicated at 11, so that the two segments of adjacent pockets are arranged in extremely close proximity, so that the segments extend practically around the entire surface of the shaft.

In order to constantly maintain the segments in contact with the shaft and to compensate for wear of the former, a spring is employed for each segment. The spring may be formed as a spiral, as shown in Fig. 1, or as an arched leaf spring 12, as shown in Fig. 4, each spring being arranged in a segment pocket and disposed between the segment and the casing 4. To effect the proper frictional engagement between the segments and the shaft, and to adjust the segments from time to time to take up the wear, an adjusting screw 13 is provided that engages in a tapped opening over each spring in the casing 4, as indicated at 14. In the construction shown in Fig. 1, the outer end of the helical compression spring 15 of each segment abuts at one end its respective adjusting screw and at the other end its segment. In Fig. 4, the inner end of the screw for adjusting each segment abut the center of the arched spring of the latter. By either of these constructions, the tension of the spring can be increased or diminished by turning the screw in or out.

The collar 6 of the segment holder is slightly larger in diameter than the shaft, so as not to bear on the latter and thus be worn away. The wear is adapted to be taken by wearing plates 16 that are preferably made in segments and seat in a counterbore 17 of the collar, the plates being made segmental so as to facilitate renewal or repair without having to take the packing sections entirely off the shaft, as will be readily understood. With a packing thus constructed, it will be seen that the parts that are subject to wear consist of the packing segments and the plates 16, both of which members are of extremely simple and inexpensive construction.

In assembling the two sections of the packing, it is preferable to arrange the sections so that the free ends of the fingers or separating members 7 of one section will engage the inner ends of the packing segments of the other section, as clearly shown by the broken away portion of the left hand section, indicated at 17′. To facilitate this, a centering pin 19 is arranged in one section and is adapted to engage in a socket 19′ of the other section. By so arranging the sections, the joints between the segments of one section are staggered with respect to the joints between the segments of the other section, thus effectively preventing leakage along the shaft.

Referring to the modified construction shown in Fig. 5, each segment is composed of two oppositely disposed wedge-shaped parts 20, the upper one being adapted to be urged in a longitudinal direction so as to maintain the lower, or inner part, in effective contact with the shafts. To impart this longitudinal movement to the upper part of the segment, any suitable device may be employed, as, for instance, a compression spring 21 arranged in each pocket of the cage and bearing against the bottom wall of the pocket and the adjacent end of the movable part of the segment. In this arrangement, the spring is given the initial tension by the two sections of the packing being compressed together during the seating of the gland of the packing box.

I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, but I desire to have it understood that the apparatus shown is merely illustrative, and that various changes may be made, when desired, as are within the scope of the invention.

What is claimed is:—

1. A packing comprising a casing, a pair of members mounted in the casing and provided with a plurality of spaced sockets, the sockets of one member being in staggered relation to those of the other member, a plurality of packing segments extending longitudinally of the pockets, and means for locking the members together to preserve the staggered relation of the packing segments.

2. A packing comprising a casing, a holder snugly fitting in the casing formed of a collar, and a plurality of spaced axially extending separating members, radially movable packing segments disposed between the separating members, and adjustable springs for urging the packing segments inwardly.

3. A packing comprising a casing, a holder mounted in the casing and formed with a collar fitted flush in the casing and having spaced axially extending separating members, and radially adjustable packing segments disposed between the fingers.

4. A packing comprising a holder composed of a collar and integral separating fingers extending axially from one side thereof, a casing in which the holder snugly fits, means carried by the casing for securing the holder therein, packing segments arranged between the said members, and means for urging the segments inwardly.

5. The combination of a plurality of packing sections each comprising a cylindrical casing, a cage fitted in the casing, means carried by the casing for securing the cage therein and preventing relative rotation, packing segments arranged within the cage and held from longitudinal and rotary motion thereby, and adjustable means carried by the casing for each segment; and means engaging two adjacent sections for preventing relative rotation and holding the cage of one section in engagement with the segments of the adjacent section.

6. A packing comprising a casing, a holder mounted in the casing and formed with a collar fitted flush in the casing and having spaced axially extending separating members, radially adjustable packing segments disposed between the fingers, and wearing plates carried by the holder.

7. In a packing, the combination of a cylindrical casing, a holder fitted therein and comprising a collar and integral spacing fingers extending therefrom, and screws for positively holding the cylinder and holder together.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses:

EUGENE A. BRYANT.

Witnesses:
HARRY S. SWENSEN,
ETTA E. BOHARSON.