W. M. BROOKE.

METALLIC PACKING.

APPLICATION FILED APR. 15, 1910.

981,912. **Patented Jan. 17, 1911.**

Fig: 1,

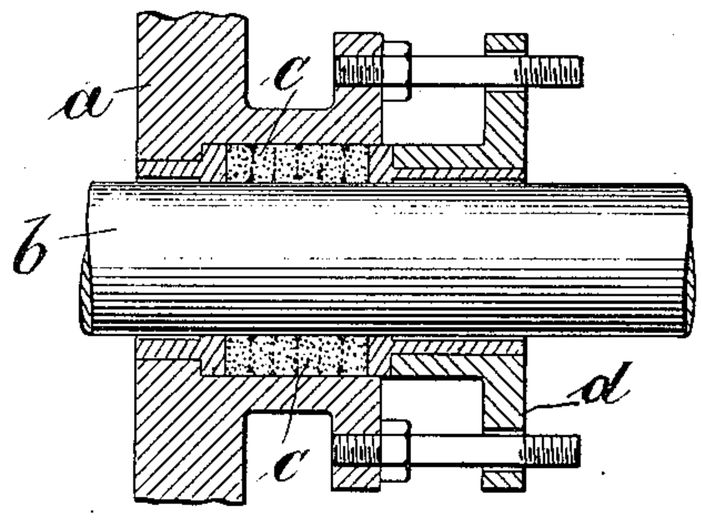

Fig: 2,

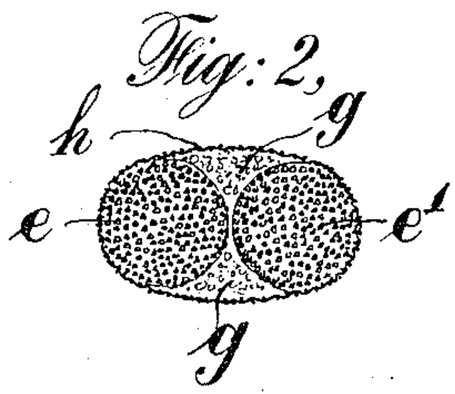

Fig: 3,

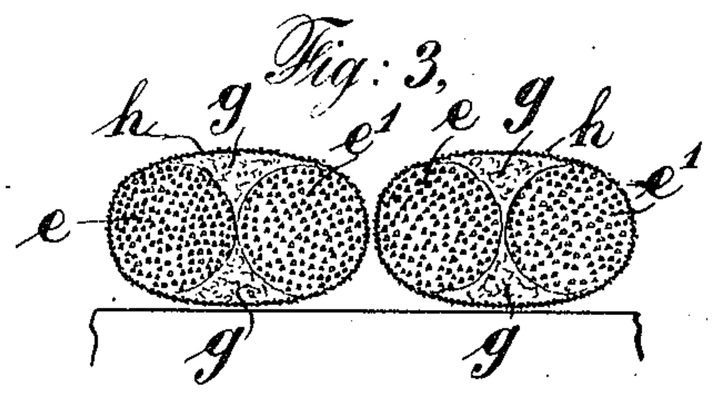

Fig: 4,

Fig: 5,

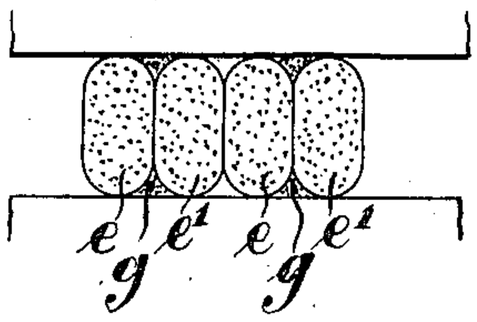

Fig: 6,

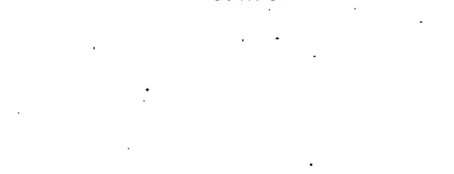

Fig: 7.

Witnesses
Max B. A. Döring.
Corinne Myers.

Inventor
William M. Brooke
By Attorney L. K. Böhm.

UNITED STATES PATENT OFFICE.

WILLIAM M. BROOKE, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO PREMIER ENGINEERING & MFG. CO., OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

METALLIC PACKING.

981,912. Specification of Letters Patent. Patented Jan. 17, 1911.

Application filed April 15, 1910. Serial No. 555,619.

To all whom it may concern:

Be it known that I, WILLIAM M. BROOKE, a citizen of the United States of America, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Metallic Packing, of which the following is a specification.

This invention has reference to improvements in metallic packing for stuffing boxes and the like.

It is the special object of my invention to produce metallic packing for steam and water and of great efficiency in an ammonia atmosphere. Means are provided within the packing to impart the required elasticity, said means performing the function of an absorbent to condense steam that may accumulate in the stuffing box and also aid in arresting the flow of steam and readily allow of gradual and regular adjustment of the packing until firmly seated in the stuffing box. These elastic means will not remain permanently efficient but act as above stated during the application of the packing insuring a well-set permanent metallic packing, properly adjusted after they have performed the required services and will disappear consequent to heat, wear and absorption leaving the metallic body in the form of a solid permanent metallic packing.

In order to render possible a compact setting of the packing the metallic cores forming part of same are composed of single wire-like small metallic cords or threads of triangular cross section which allow of an easy and effective compression. In this shape these have the advantage of wedging closely toward one another without crowding as is the case with round metallic wires. In making the small cords or threads of triangular cross section cores are produced of a strong cross section which are not subject to the same objections as the many types of known fibrous metallic packings which are deficient because they do not wedge so well. The novel packing is prevented from blowing into the cylinder or out through the gland or disintegrating by being spirally wound in cable fashion. This completely interlocks the numerous cords or threads and from practical tests has proven an efficient method for holding the same in position.

The single cords or threads of triangular cross section are made of any suitable composition of metals which varies according to the liquid, vapors or steam to which the packing is subjected, different liquids and vapors having different effects upon different compositions. The metal or composition from which the cords are made has preferably a fusion point above 600° F. and in every case is softer than bronze or steel. Practical and severe tests have proven its efficiency in filling scores on rods to be of a high standard.

The packing is preferably provided with a cover for holding the entire mass intact. Asbestos heretofore used is deficient because it hardens under the influence of heat. The covering permits the packing to be handled with equal facility as any soft packing. It is self evident that the covering will soon wear on the side which is next to the rod but it lasts for a time sufficiently long to permit of the packing becoming well set in the box. That portion of the covering which always remains will also act as an absorbent in conjunction with the elastic means above mentioned and being located between the metallic cores that would otherwise come in contact with one another permit of the removal of the various rings should occasion require this.

When finished the packing is thoroughly and permanently lubricated. The lubricant is injected into the entire mass so as to thoroughly lubricate and saturate the covering and flexible means and also fill all spaces between the triangular small metallic cords or threads and care has been taken to produce a soft metallic packing which may be easily cut and fitted retaining at the same time all the qualities of a positive metallic packing.

In order to make the invention fully understood reference is made to the accompanying drawing in which:

Figure 1 represents in sectional view a stuffing box with the novel packing applied therein embodying in desirable form the present improvements. Fig. 2 is an end view of the packing in form of a cable. Fig. 3 shows in end view two of such cables. Fig. 4 is an end view of the single wire-like small metallic cords or threads of triangular cross section of which the cores are composed. Fig. 5 shows the packing as applied. Fig. 6 shows in end view a modification, and Fig. 7 illustrates another modification.

Similar characters of reference denote like parts in all the figures.

In the drawing in Fig. 1, *a* represents a stuffing box, *b* is the rod, *c* is the packing as applied and *d* illustrates a tightening mechanism.

The packing illustrated in end view in Fig. 2 is made in form of a cable say about 20 ft. long. It consists of two metallic cores *e*, e^1 of circular form. Each metallic core consists of a large number of small metallic cords or threads *f* of triangular cross section of which a number are shown on an enlarged scale in Fig. 4. The cores are twisted in cable fashion for the purpose above mentioned. Between two metallic cores there are provided fibrous triangular wedges *g* which fairly fill the space between the two metallic cores. The wedges *g* consist of textile fibers such as flax for instance and represent the elastic means in the packing and the absorbent during the application and setting of same in the stuffing box. The two metallic cores with the two wedges of textile fibers between are all inclosed in a textile covering *h* knit of flax or other soft textile fibers. Thus cables are obtained which may be easily handled, cut, bent and fitted.

When applying the packing the cable is cut into suitable lengths to form a ring around the rod. After constant pressure of the gland the packing assumes the shape of a compact mass as shown in Fig. 5 where the metal cores *e*, e^1 are shown to be of elongated shape bearing against the rod. Succeeding sections of packing placed in the stuffing box will be subject to precisely the same conditions and influence as above described because of the arrangement of the flax wedges and the dual metallic cores within a common cover. As shown in Fig. 5 the flax wedges will appear alternately and not between two neighboring sections. This also finds expression in Fig. 3 where two cables are shown side by side without any flax wedges between the two cables.

A modified form of packing is shown in Fig. 6 which is constructed of two cores *e*, e^1 made of small metallic cords or threads of triangular cross section and surrounded by a common covering *h* of textile fibers as above described but the absorbent elastic triangular wedges between the cores are omitted. Another modified form is illustrated in Fig. 7 consisting of a single core composed of metallic cords or threads of triangular cross section and a textile covering around same.

By virtue of the construction of the above described metallic packing with its flexible qualities, it will adapt itself to any form that may be desired or which may be necessary to meet the conditions existing in a stuffing box. One particular object of the invention is to produce metallic packing which possesses all the advantages of a soft packing as regards handling, cutting and fitting and being a well lubricated product it retains all the qualities of a positive metallic packing. The single cords or threads being of relatively large cross section do not burn out like almost hair-like metallic fine wires. Although the packing is efficient for steam, water and ammonia it is particularly well adapted for use in an ammonia atmosphere.

I claim as my invention:

1. Metallic packing in form of a cable consisting of a flexible core composed of small metallic cords or threads of triangular cross section twisted in cable fashion, and a covering of textile material around said core.

2. Metallic packing in form of a cable consisting of cores composed each of small metallic cords or threads of triangular cross section and twisted in cable fashion, and a covering of textile material around said cores.

3. Metallic packing consisting of cores composed each of small metallic cords or threads of triangular cross section, an elastic and absorbent wedge of textile fibers on each side of said cores to fill the triangular spaces formed thereby, and a cover of textile material surrounding said cores and wedges.

4. Metallic packing consisting of cores composed each of small metallic cords or threads of triangular cross section and twisted in cable fashion, elastic and absorbent wedges of textile fibers between said cores, and a cover of textile material surrounding said cores and wedges.

5. Metallic packing consisting of rings around the rod composed each of two cores made of single cords or threads of triangular cross section and twisted in cable fashion, elastic and absorbent wedges of textile fibers between said cores, and a textile covering common to all, arranged side by side so that flexible wedges are solely between each pair of cores.

6. In metallic packing a core composed of small metallic cords or threads of triangular cross section and twisted in cable fashion, said cords being of triangular cross section for the purpose of wedging closely toward one another when compressed.

Signed at New York, N. Y., this 12th day of April, 1910.

WILLIAM M. BROOKE.

Witnesses:
CORINNE MYERS,
EDWARD LOEBNER.