T. W. CAPEN.

PACKING FOR GRINDING MILLS.

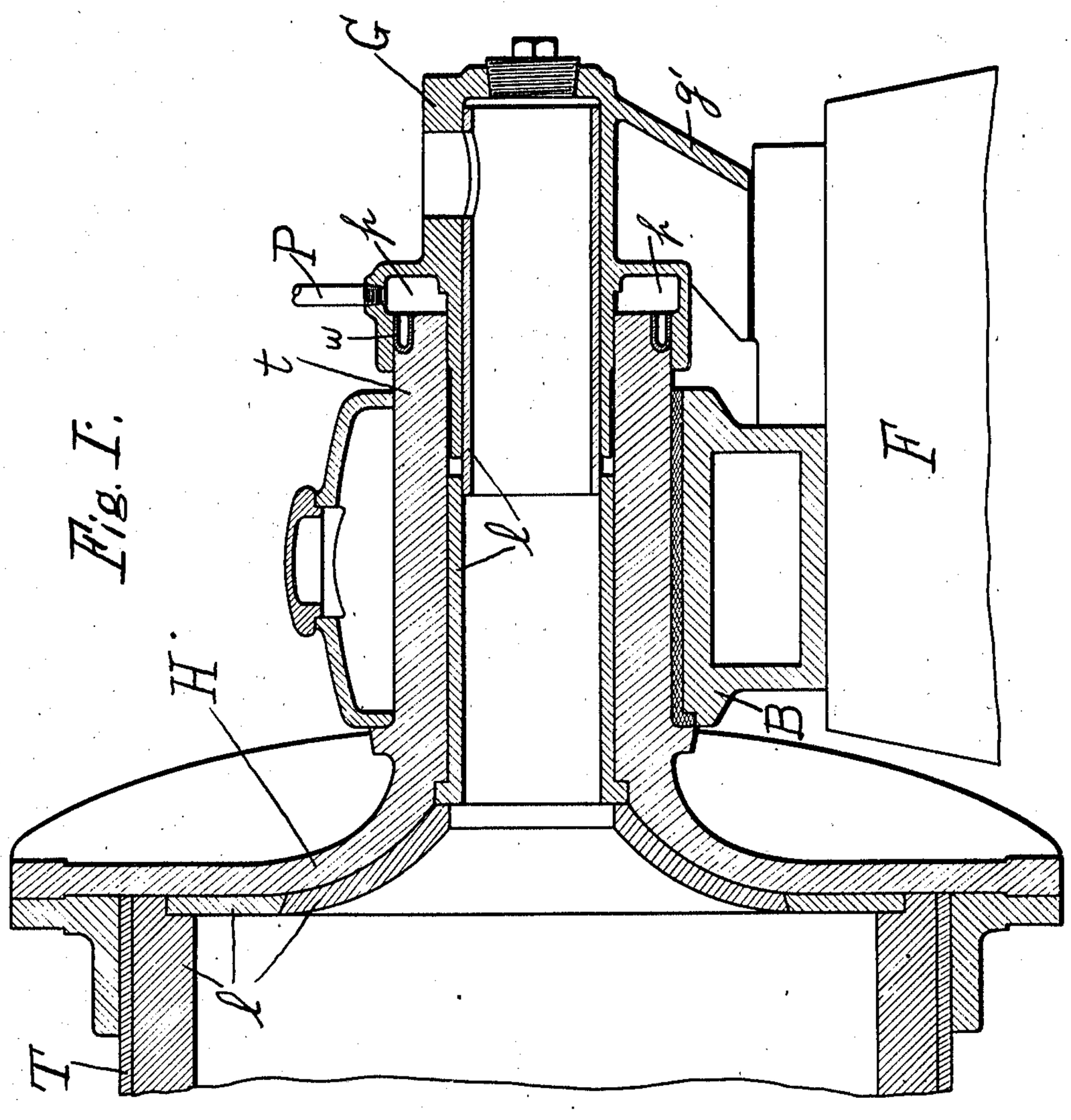
APPLICATION FILED JULY 12, 1906.

945,303.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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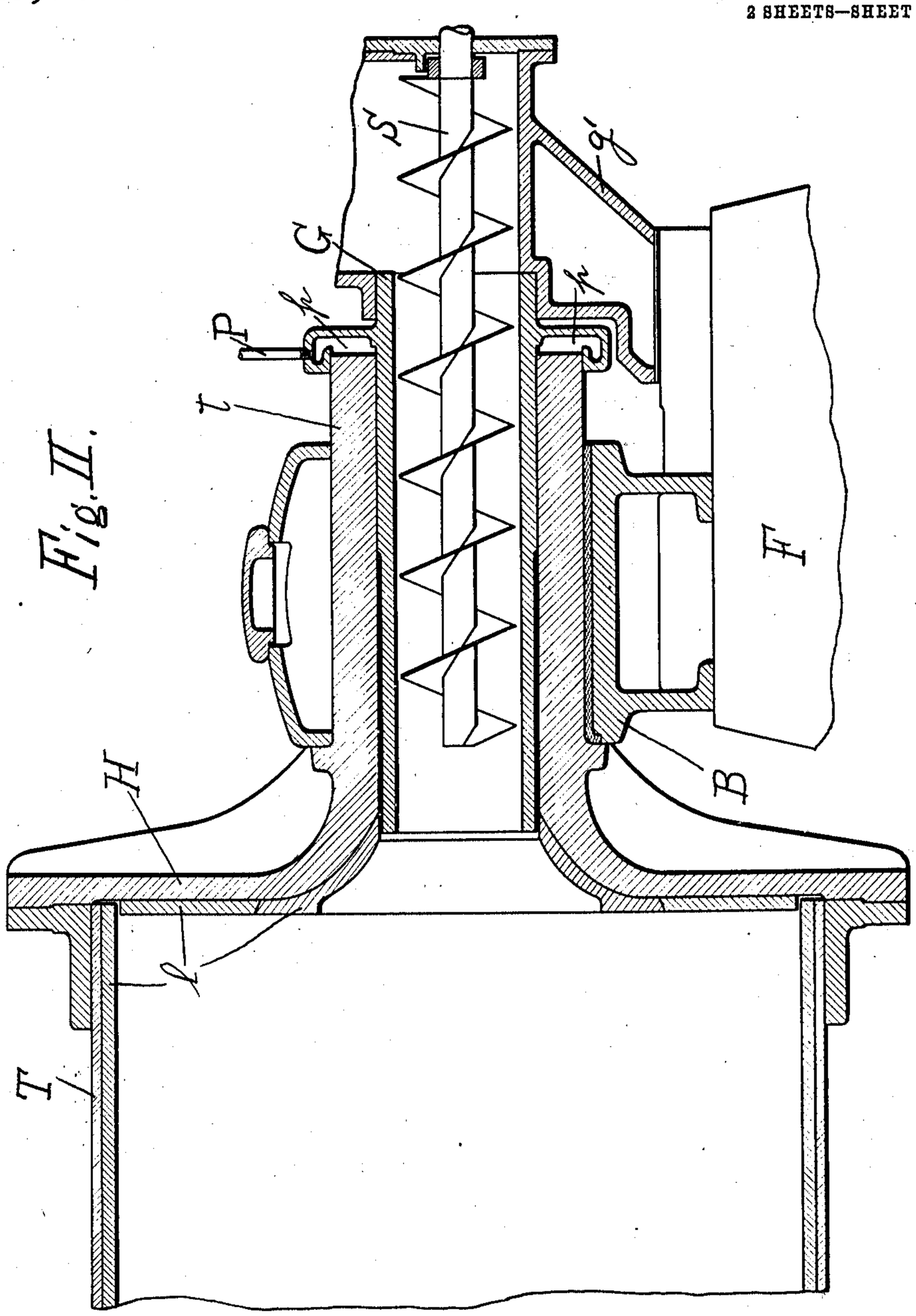
2 SHEETS—SHEET 2.

Fig. II.



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UNITED STATES PATENT OFFICE.

THOMAS W. CAPEN, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

PACKING FOR GRINDING-MILLS.

945,303. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed July 12, 1906. Serial No. 325,761.

To all whom it may concern:

Be it known that I, THOMAS W. CAPEN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Packing for Grinding-Mills, of which the following is a specification.

This invention relates to packing means especially adapted for grinding mills and the like, and, generally speaking, is intended to provide a fluid packing for such apparatus designed to prevent material under treatment from entering spaces between parts which are movable with respect to each other.

In the accompanying drawings which form a part of this specification and in which the same reference characters are used to designate the same elements on each of the several figures thereof,—Figure 1 represents in section the feed end of an ordinary form of tube mill which is designed to act upon material fed to it in a wet or pasty condition. Fig. 2 is a section, similar to the above, of a form of mill which is adapted to treat a material in a dry state.

The reference character T represents the body of a tube mill which is provided with a head H and the linings *l*. The head H is extended to form a tubular bearing *t* which is supported in the journal box B which rests upon the foundation F.

The reference character G represents the feed tube which is inserted within the trunnion *t* and which is also supported upon the foundation F by the base *g'*.

Reference character P represents a pipe which is adapted to convey a fluid under pressure into the cavity *p* with which feed tubes G are provided. It will be noticed by reference to the drawings, that if a fluid under pressure be introduced into the cavity *p* by means of the pipe P, it will tend to escape from said cavity *p* by passing between the inner surface of the trunnion *t* and the outer surface of the feed tube G which projects into the trunnion *t*.

In Fig. 2 the mill is shown as adapted to treat a dry material and the feed screw S is shown for feeding the material through the feed tube G into the grinding tube of the mill. In this case, if air under slight pressure be introduced through the pipe P, it will pass through the space between the trunnion *t* and the feed tube G into the body of the tube, and will thus prevent dust and gritty material from passing into said space and thence out into the apartment containing the mill, thus obviating both the discomforts of dust in said apartment, and prolonging the life of the several parts of the apparatus by preventing the destruction of the feeding tube G and trunnion *t* by the grinding action of the dust which otherwise would collect between them. It will be noticed that the part of the feeding tube G which provides the space *p* is adapted to inclose the outer surface of the trunnion *t*, and that no packing is interposed between these parts in the apparatus shown by Fig. 2, because when air under pressure is used, the escape of said air into the apartment is not objectionable. In the apparatus shown by Fig. 1, however, which is used for treating material in a wet or pasty condition, and in which water under pressure is introduced through the pipe P, while the same general arrangement and construction of parts is utilized as in the apparatus shown by Fig. 2, yet in this case a packing washer *w* of the ordinary U-shape in cross section is interposed between the outer surface of the trunnion *t* and the part of the feeding tube G which bears thereon, in order to prevent the escape of water into the apartment which would be objectionable.

In the apparatus shown by Fig. 1, the water which is supplied under pressure by means of the tube P passes between the inner surface of the trunnion *t* and the outer surface of the feeding tube G which is projected therein, and thence into the tube T of the mill, thereby both lubricating said members and preventing dust and grit from entering the space between these members and preventing the destructive action of said dust or grit upon these members.

What I claim is:

1. In a mill, the combination of a hollow trunnion, a feed tube extending into and loosely fitting said trunnion, and a pipe leading to the space between the said trunnion and the said tube for introducing a fluid under pressure therebetween.

2. In a mill, the combination of a hollow trunnion, a feed tube extending into said

trunnion, a closed cavity formed in the space between the said trunnion and said tube, and a pipe leading from an exterior source to said cavity for introducing a fluid under pressure therein.

3. In a mill, the combination of a hollow trunnion, a feed tube extending into said trunnion, a pipe leading from an exterior source to the space between said trunnion and said tube for introducing a fluid under pressure therebetween, and means for preventing leakage of said fluid around said trunnion.

4. In a mill, the combination of a hollow trunnion, a feed tube extending into said trunnion said feed tube being provided with a part extending around the exterior of said trunnion, a closed cavity formed in the space between the said trunnion and the internal and external extensions of said tube, and a pipe leading to said cavity for introducing a fluid under pressure therein.

5. In a mill, the combination of a hollow trunnion, a feed tube extending into said trunnion said feed tube being provided with a part extending around the exterior of said trunnion, a closed cavity formed in the space between the said trunnion and the internal and external extensions of said tube, a pipe leading to said cavity for introducing therein a fluid under pressure, and a packing member interposed between the external extension of said tube and the outside of said trunnion.

In testimony whereof, I affix my signature in the presence of two witnesses.

THOS. W. CAPEN.

Witnesses:

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G. F. DE WEIN.