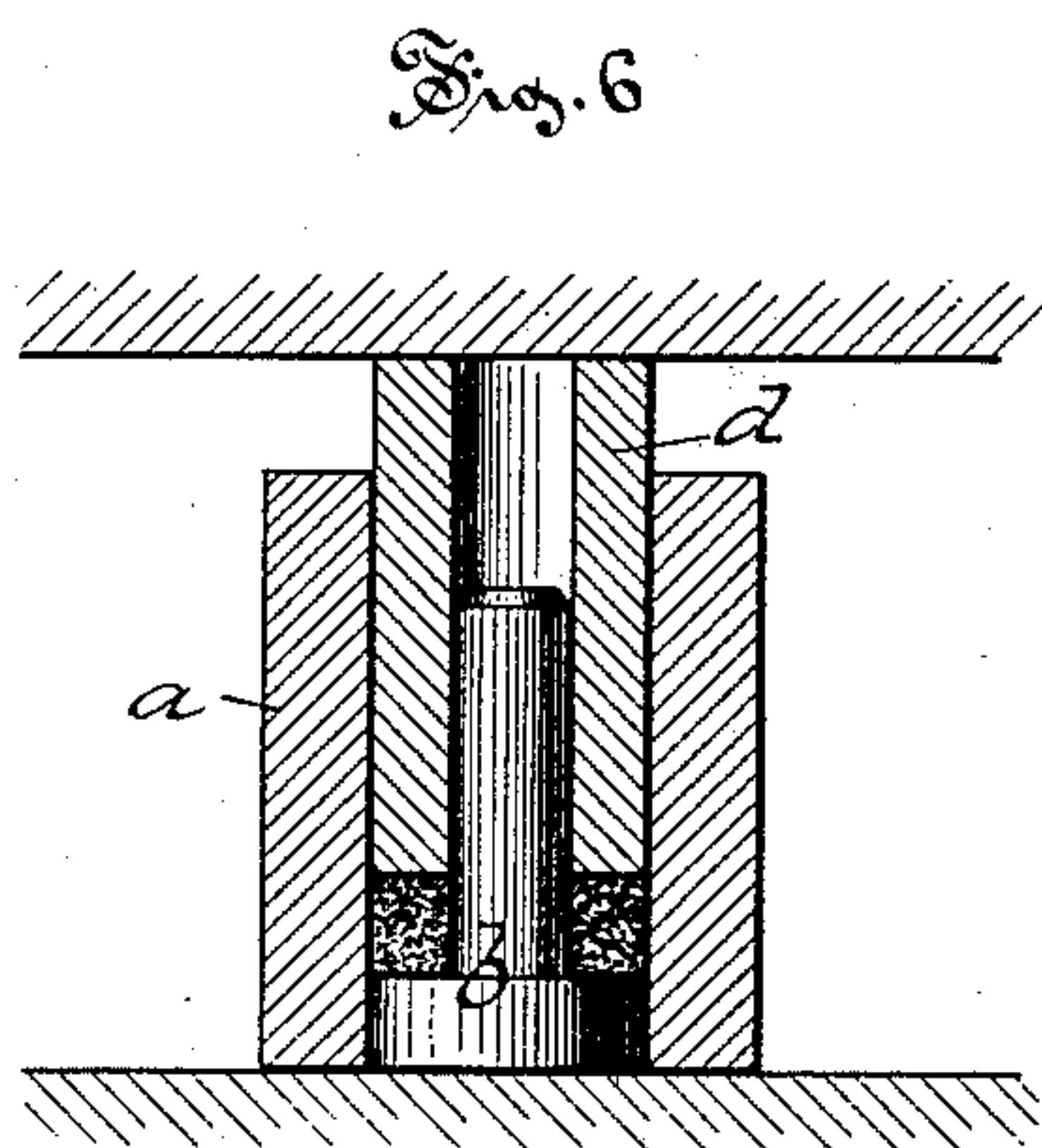
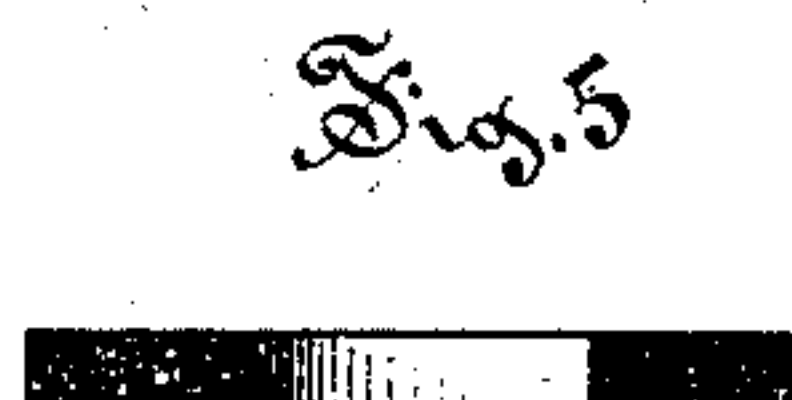
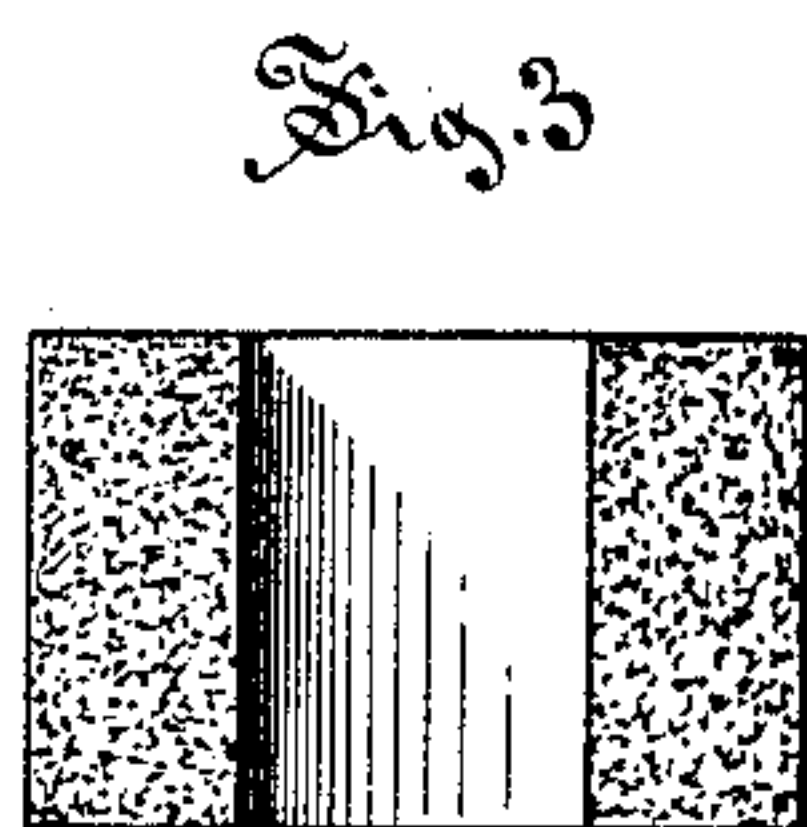
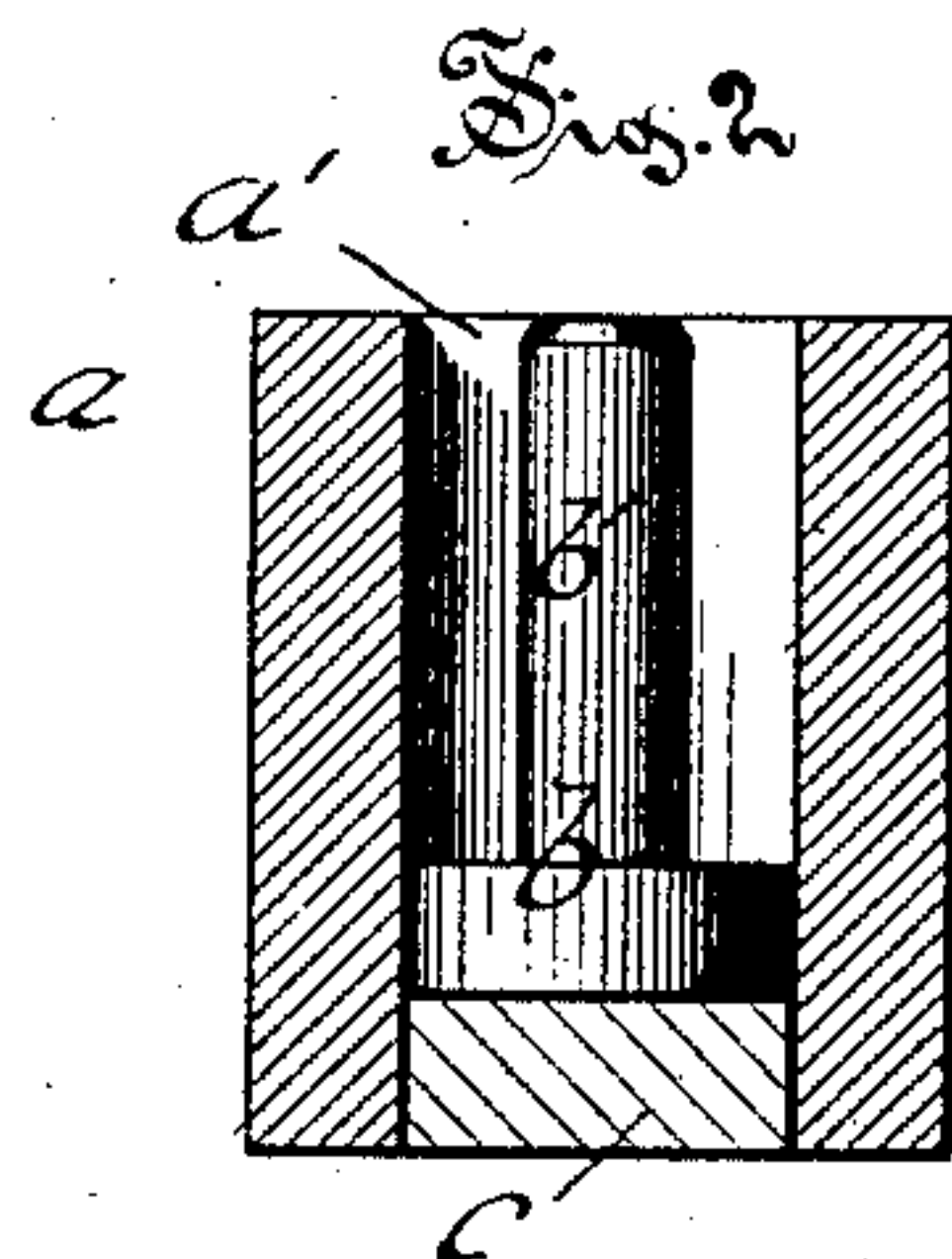
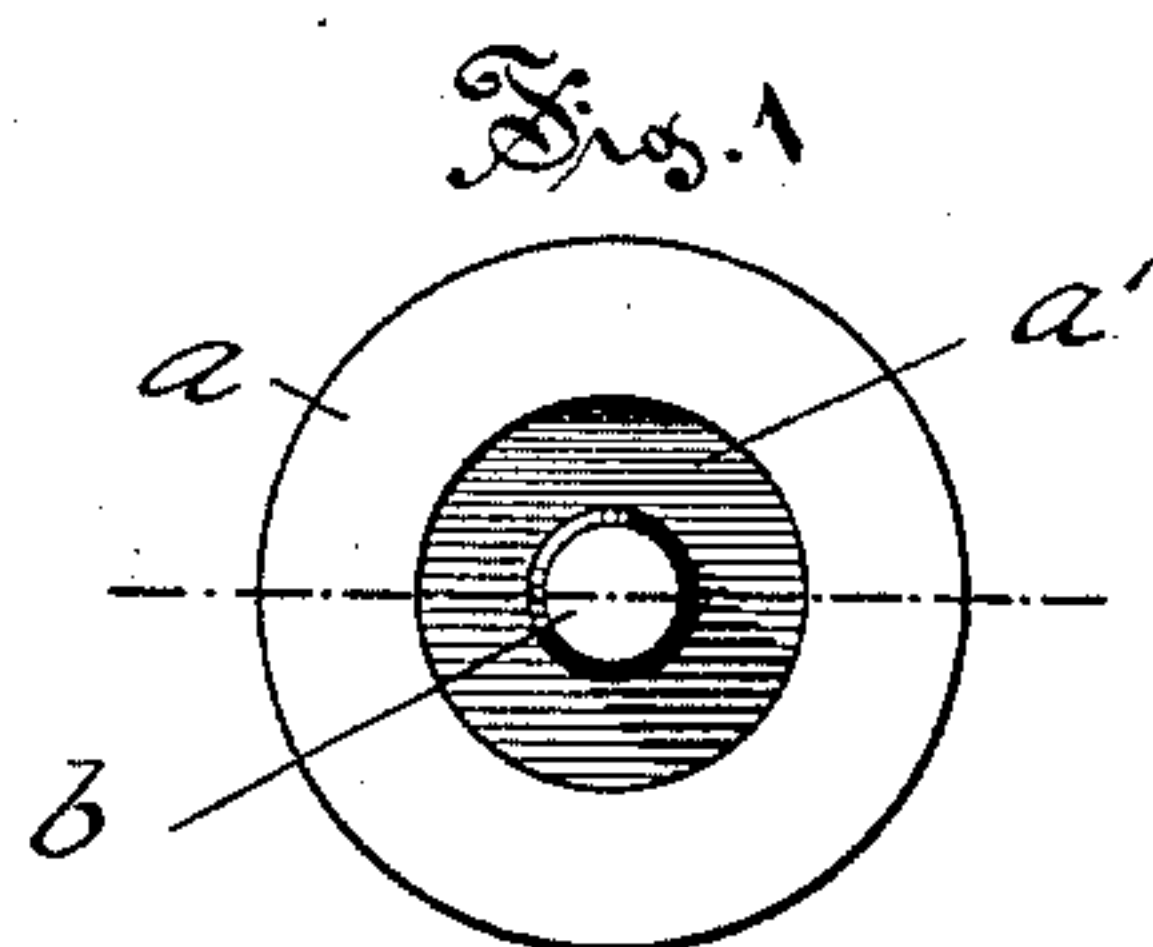


(No Model.)

R. N. PRATT.
ASBESTUS PACKING.

No. 338,358.

Patented Mar. 23, 1886.



Witnesses:

W. M. Perkins
H. R. Williams.

Inventor,

Rufus N. Pratt,
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attys.

UNITED STATES PATENT OFFICE.

RUFUS N. PRATT, OF HARTFORD, CONNECTICUT.

ASBESTUS PACKING.

SPECIFICATION forming part of Letters Patent No. 338,358, dated March 23, 1886.

Application filed October 30, 1885. Serial No. 181,374. (No model.)

To all whom it may concern:

Be it known that I, RUFUS N. PRATT, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Asbestus Packing, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a top view of a mold used in the practice of my invention. Fig. 2 is a view in vertical central section of the same and the plunger. Fig. 3 is a detail sectional view on enlarged scale of the ring of asbestus-fiber, illustrating their position in one part of the operation of forming an annular packing. Fig. 4 is a like sectional view of the same in another step in the practice of my invention. Fig. 5 is a detail cross-sectional view of the annular packing after completion. Fig. 6 is a view in central section of the molds in a press.

The object of my invention is to produce a packing that is composed mainly of asbestus, in which the fiber is preserved in filaments of considerable length, and one in which the fibers are so thoroughly and evenly distributed throughout the mass as to produce a packing of uniform density throughout.

My within-described improvement relates more particularly to the special kind of asbestus packing that forms the subject-matter of United States Letters Patent granted to John Dewrance, February 3, 1885, No. 311,729; and it consists in the method of making such packing, as more particularly hereinafter described.

In the accompanying drawings, in which the tools for forming an annular packing in accordance with my improvement are illustrated, the letter *a* denotes a mold, which consists of a cylinder of metal, as steel, with an opening, preferably completely through it; *b*, a core, which, piston-like, fits closely within the central opening of the mold, and has a narrow stem, *b'*, extending from one side of the base parallel to the inner walls of the mold, and leaving between the stem and these inner walls an annular forming-chamber, *a'*.

The lower surface of the mold and the upper surface of the core are preferably parallel, so as to adapt them for ready insertion between the base and platen of any ordinary form of press.

In the practice of my invention, asbestus—and by this term I mean to describe the peculiar substance known commercially by that name—is disintegrated in any suitable manner that will leave the material in a fibrous condition, particular care being taken not to comminute or triturate or otherwise reduce it to a powdered condition. This asbestus fiber is then thoroughly saturated with naphtha or the like volatile fluid, in which a certain portion of rubber and sulphur has been dissolved and mixed, and these ingredients (the asbestus fiber and the solution of rubber and naphtha in which sulphur has been mixed) are thoroughly mixed together. The saturated asbestus is taken in suitable quantities and distributed in the mold-chamber. The core *b* having been put in place, as shown in Fig. 2, is supported on a plug, *c*, of greater or less thickness, depending upon the desired thickness of the ring of asbestus, the outer and inner diameters of the ring depending upon the size of the forming-chamber. As soon as this chamber is filled with the saturated asbestus the tubular plunger *d* is used with a slight downward pressure upon it to pack and distribute the fiber evenly in the mold, a slight rotary motion being given to the plunger to aid in this operation. The core and plunger are next withdrawn from the mold, holding the ring of saturated asbestus between them, and they are then drawn apart and the ring carefully slipped off the core and laid one side to dry, care being taken to prevent it from becoming thoroughly dry. When the ring is dry enough, so that it can be handled without injury to its form, it is again placed upon the stem of the core in the mold, the plunger introduced, and the ring pressed to about the relative thickness shown in Fig. 3, when it is again removed from the mold and core and dried to a further extent. The ring is again further compressed in thickness, and finally reduced to the thickness shown in Fig. 5, to which thickness the ring is finally brought after the last drying, which must be thorough, in order to form a compact mass that shall be free from wrinkles and folds in the vertical surfaces or edges of the ring or other packing. This process of alternately drying and pressing the ring while it is making is necessary to the formation of a perfect ring, for the reason

that if it is allowed to dry when of a considerable thickness and an attempt is then made to press it the sides are seamed and folded in a manner that in a measure destroys the utility of the ring.

It is evident that this process or method of forming asbestos fiber into compact form may be applied to blanks or sheets of any desired form and extent, the molds in each instance being properly made to produce the desired form. The packing may be made in continuous sheets by passing the mass of saturated fiber between rollers while spread on a platen, and the drying and pressing repeated in alternation until the desired thickness of packing is produced.

When the saturated asbestos or like fiber is made in sheets, it may be cut into any desired shape after it has been dried, and then placed in suitable molds or in its final position in grooves or sockets in the part to be packed, and firmly compressed therein and afterward vulcanized without removing it from the socket. In vulcanizing this coated fiber after it has been formed to shape, I find it best to hold the article under pressure to secure an even surface than can be produced if the rings or other articles are vulcanized without pressure.

I am aware that asbestos and the like fibers have been reduced to a comminuted condition, and then mixed with rubber and other substances, and made into rings and other forms for packings; but the fault of such prior mixtures has been that the asbestos by such treatment loses its durability, and as the cementing material—as rubber—wears away quickly, the asbestos is carried with it; but in my improved form and process I utilize the whole wearing properties of the fiber, and use the rubber or like cementing material simply to hold the mass of fibers together, and they are so intertwined that the wear of this cementing material merely presents an almost solid surface of asbestos to stand the frictional wear.

I am also aware that asbestos and the like fiber has been made into rings and other forms of packings by the process of laying up the fiber, and such I do not broadly claim.

I am also aware that rings of packing have been made from the saturated fiber under the patent to John Dewrance, dated February 3, 1885, in which the fiber in saturation is dried and then packed in small quantities at a time in proper molds, compacted by hammering to

a certain hardness, and this continued until sufficient thickness is obtained. I have practiced this method, and find it objectionable, for the reason that it is extremely difficult to form the packing of uniform thickness, in addition to the fact that too much time is required in the process.

I do not broadly claim any of these several prior methods, nor the coating of asbestos fiber with solution of rubber, &c.

I claim as my improvement—

1. The within-described process of forming asbestos or the like fibers into a mass for use as a packing, which consists in mixing them in a solution of india-rubber or the like adhesive gum, and then distributing the fibers while wet in molds, then removing the molded mass and alternately drying and pressing the mass, the final pressure being applied after the final thorough drying of the mass, all substantially as described.

2. The within-described process of forming a composition of asbestos and india-rubber or the like gum into a mass of uniform density while in a fibrous state, which consists in mixing the fibers with india-rubber in solution with naphtha or the like fluid, and then subjecting the mass to the alternate drying and pressing process, all substantially as described.

3. The within-described process of forming asbestos packing, which consists in distributing the fibers in a wet state in a mold of the desired shape, next removing it from the mold for drying, and then subjecting it to pressure, and repeating these drying and pressing operations in alternation until the mass is compressed to the desired density, all substantially as described.

4. The within-described process of forming packing-rings of asbestos fiber, which consists in distributing the fibers in a wet state about the removable core in the forming-chamber, then compressing the mass with a tubular plunger, then removing the ring and partly drying it, then subjecting it to further pressure within the forming-chamber, and continuing these drying and pressing operations in alternation until the mass is compressed to the desired thickness, all substantially as described.

RUFUS N. PRATT.

Witnesses:

ERNEST CADY,
CHAS. L. BURDETT.