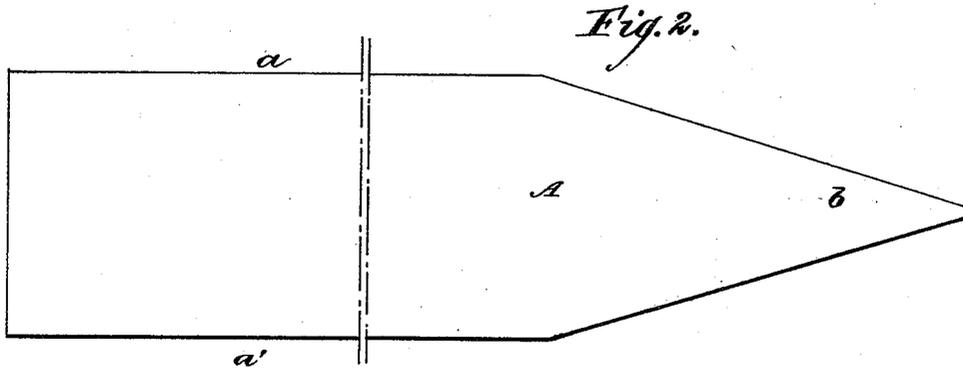


(No Model.)

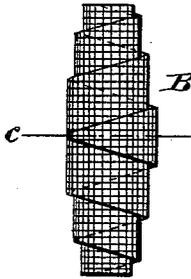
F. S. HUME.  
STOPPER.

No. 466,169.

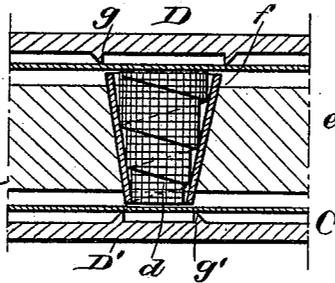
Patented Dec. 29, 1891.



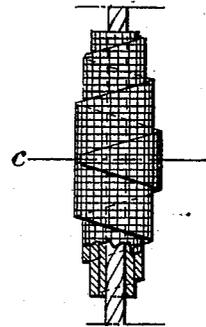
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



*Fig. 4.*



*Fig. 1*



*Fig. 6*



WITNESSES:

*Donn Twitchell*  
*E. M. Clark*

INVENTOR

*F. S. Hume*  
BY *Munn H*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

FRANCIS S. HUME, OF NEW YORK, N. Y., ASSIGNOR OF ONE-FOURTH TO  
JOHN F. AMBROSE, OF SAME PLACE.

## STOPPER.

SPECIFICATION forming part of Letters Patent No. 466,169, dated December 29, 1891.

Application filed July 31, 1891. Serial No. 401,269. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS S. HUME, of New York city, in the county and State of New York, have invented a new and Improved

5 Stopper, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a perspective view of the completed stopper. Fig. 2 is a plan view of the strip of fabric from which the double stopper-core is formed. Fig. 3 is a side elevation showing the strip of fabric rolled up, forming a double stopper-core. Fig. 4 is a plan view of the same. Fig. 5 is a side elevation, partly

15 in section, of a double stopper-core formed with a center of cord. Fig. 6 is a plan view of the same, and Fig. 7 is a longitudinal section of the mold in which the stopper is vulcanized.

20 Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to provide a rubber stopper having a textile core which will be adapted for stopping bottles and other vessels containing acids and other liquids and which may be removed by means of a

25 corkscrew. My object is, further, to provide a stopper in which the central portion will be composed

30 mainly of textile material and which will be stronger and more durable than stoppers made wholly of rubber. My object is, further, to provide a mold for forming and capping the stoppers and for

35 containing them during the process of vulcanizing. My invention consists in a stopper formed of a core of textile material, such as canvas, filled with vulcanizable rubber and rolled, the fabric being cut to form a strip having parallel sides and a pointed end, so that when the strip is rolled from the square end to the pointed end the tapering portion of the strip will increase the diameter of the double stopper-core at the center, the double core being

45 divided transversely at the center to form two stoppers, the said cores being inclosed on all sides by vulcanizable rubber and vulcanized. My invention also consists in a mold for the

being formed of a plate provided with one or more conical apertures and forming the body of the mold, the upper and lower plates being furnished with annular collars provided

55 with cutting-edges for shaping the ends of the stopper and cutting off the surplus rubber, all as will be hereinafter more fully described. The blank A from which the double stopper-core is formed consists of a strip of canvas or other suitable textile material having parallel sides  $aa'$  along the part forming the central portion of the double stopper-core and provided with a tapering end  $b$ , forming the

60 enlarged central portion of the double stopper-core. The strip of textile material is filled with vulcanizable rubber and rolled from the square end toward the pointed end, forming a double core B, as shown in Fig. 3, which

65 tapers from the center toward the ends. This core, when divided on the transverse line  $c$ , forms two stopper-cores  $d$ . The mold C, in which the stopper-core is formed and vulcanized, is provided with a

70 central plate  $e$ , having one or more conical holes  $f$  of the shape of the sides of the stopper. The plates  $DD'$ , forming the upper and lower portions of the mold, are provided with annular knife-edged collars  $g g'$ , which shape

80 the ends of the stopper and cut off the surplus material. The stopper is wrapped with vulcanizable rubber placed in the conical aperture of the central part of the mold, a sheet of vulcanizable rubber is placed upon opposite ends of the stopper, and the plates  $DD'$  are forced toward the central part of the mold, so as to bring the knife-edged collars in contact with the central part. The stopper is then vulcanized and removed from the mold complete, as shown in Fig. 1, the stopper consisting of a core of textile material formed in the manner described and provided with a covering of rubber inclosing the sides and ends of the

85 core. In some cases I wind the strip of textile material upon a piece of cord, as shown in Fig. 5, thereby facilitating the operation of manufacture. My improved stopper can be drawn by

90 means of an ordinary corkscrew without in-

jury to the stopper, thus giving my improved stopper a great advantage over the ordinary rubber stopper.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A blank for forming the core of a rubber stopper, the same consisting of a strip of textile material having parallel sides throughout the greater portion of its length, provided with a pointed end, and filled with vulcanizable rubber, substantially as specified.

2. A stopper formed of a tapered strip of textile material filled with rubber and rolled up, as described, and a covering of rubber inclosing the sides and ends of the core, substantially as specified.

3. A mold for the manufacture of rubber

stoppers, formed of a central member provided with a conical aperture for forming the sides of the stopper and upper and lower plates furnished with annular knife-edged collars for shaping the ends of the stopper and cutting off the surplus rubber, substantially as specified.

4. The method of making stoppers, which consists in rolling the material of the stopper-core into a double conical form, so as to form a double stopper-core, cutting the conical blank into two parts, and then covering each part with rubber upon the sides and ends, substantially as specified.

FRANCIS S. HUME.

Witnesses:

E. M. CLARK,  
C. SEDGWICK.