

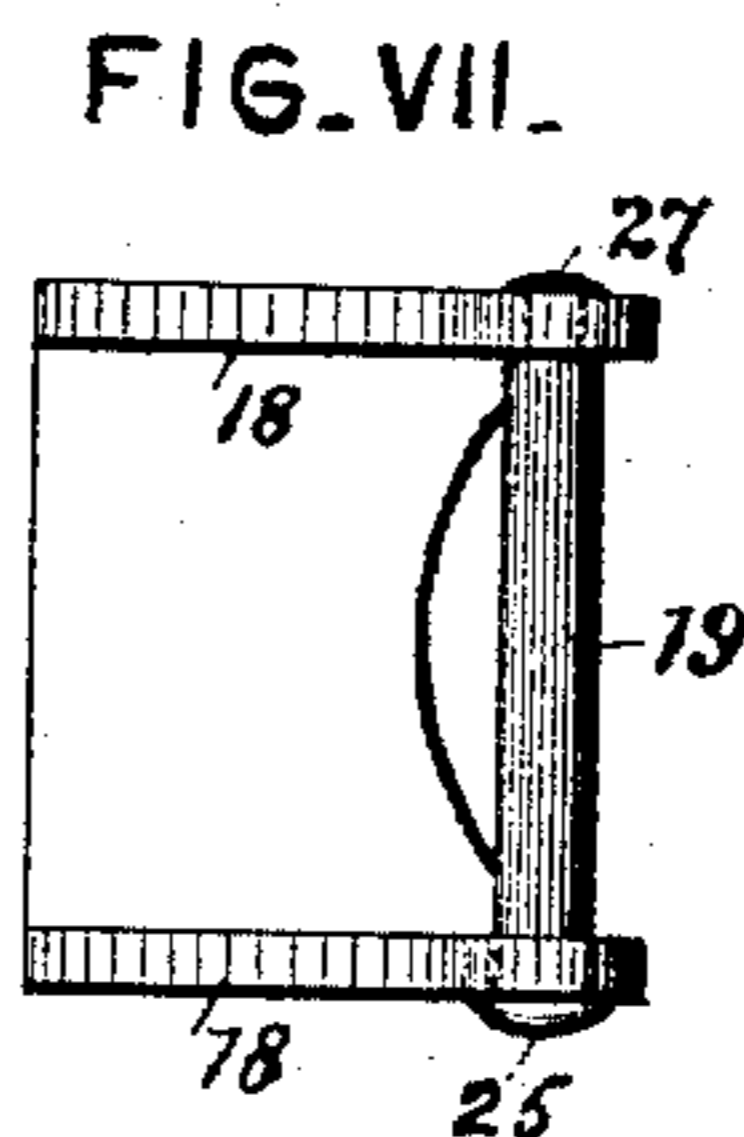
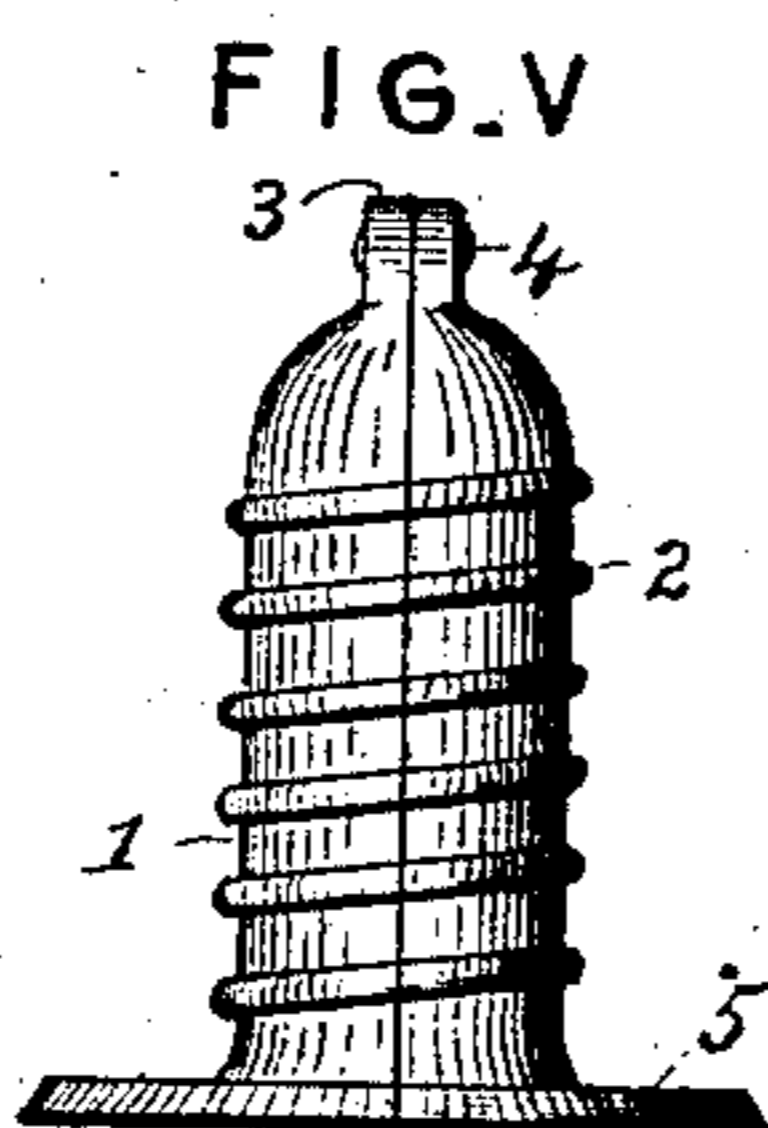
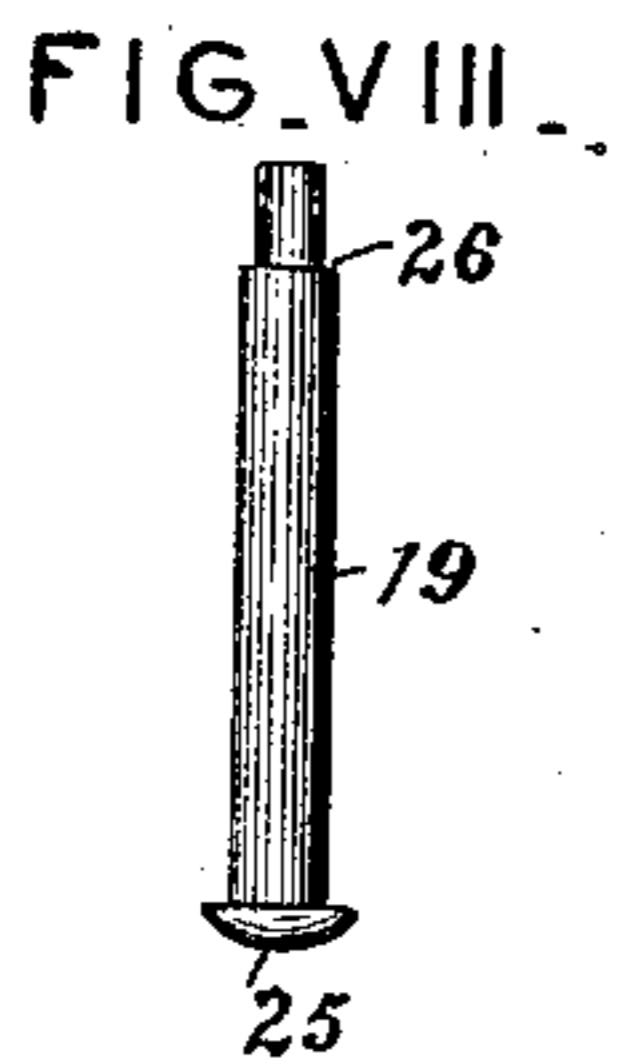
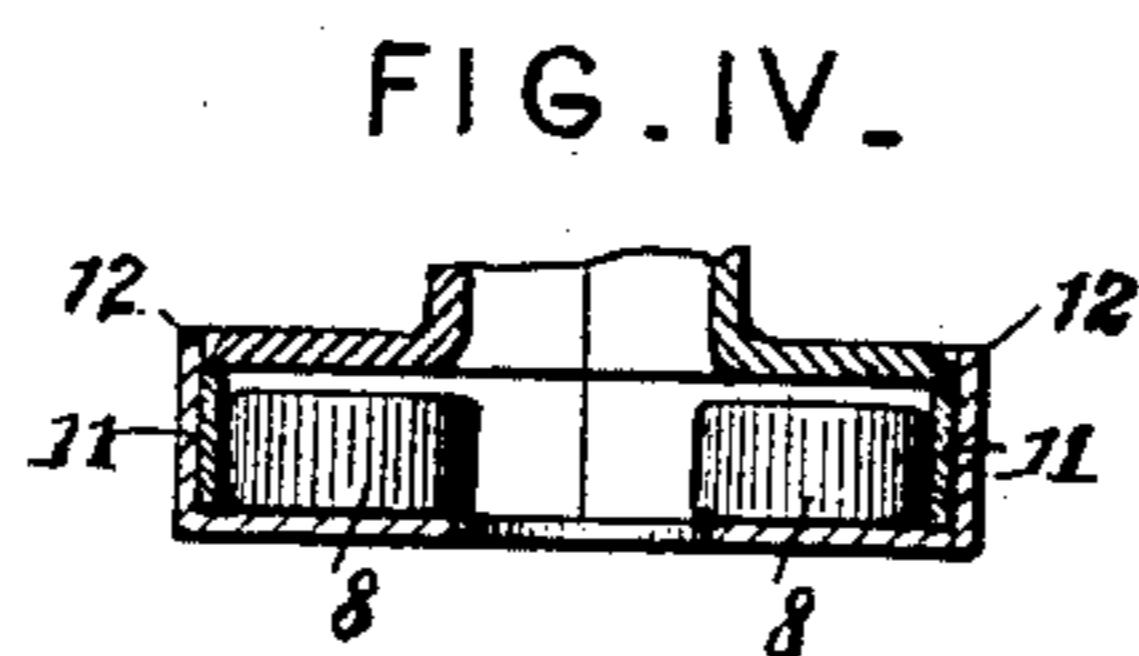
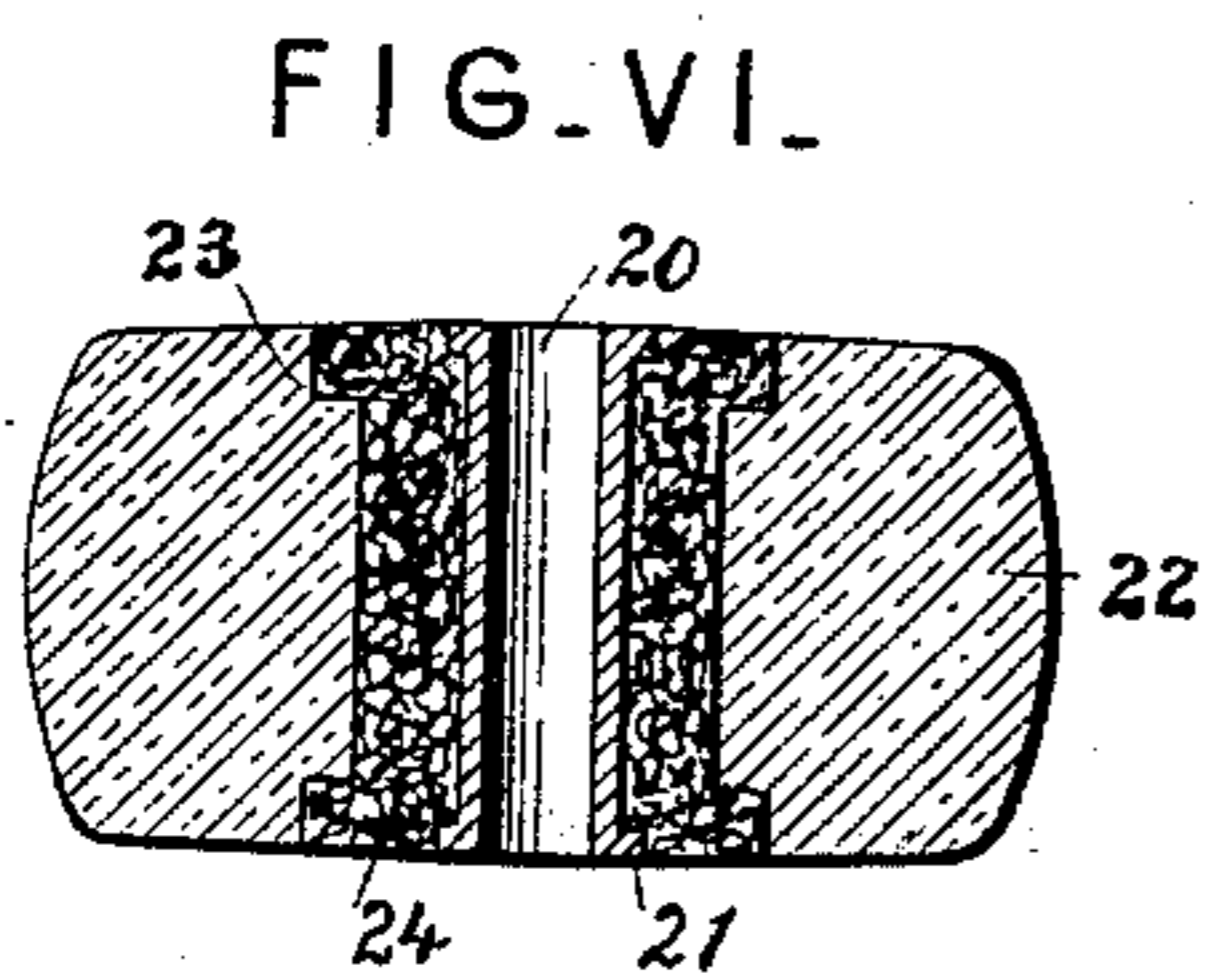
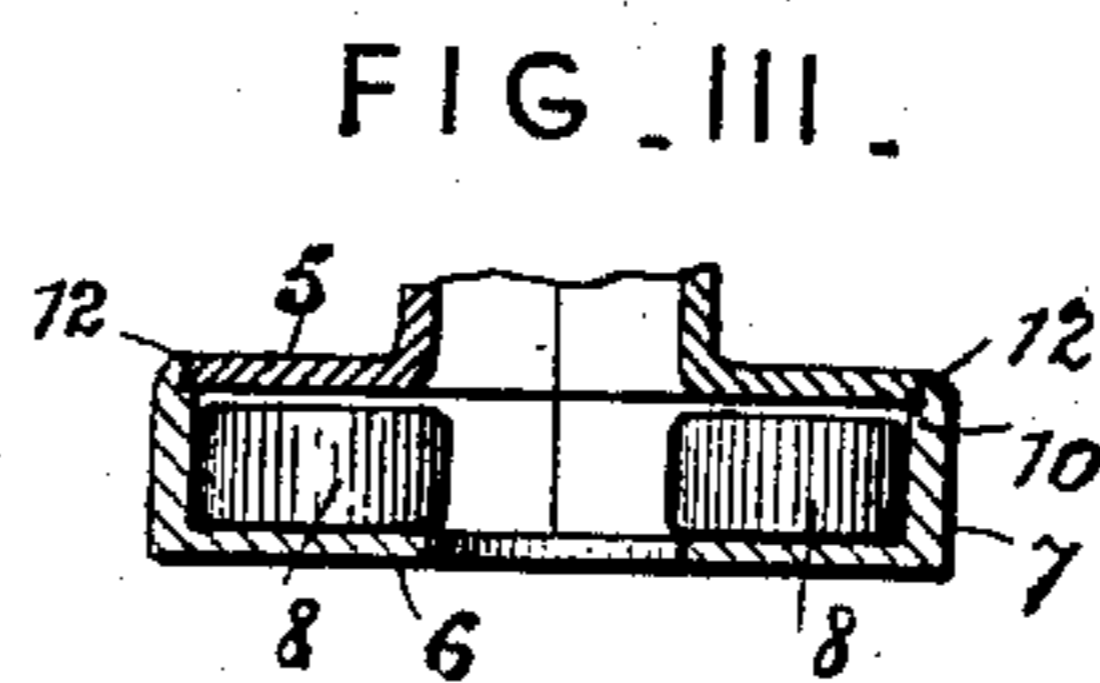
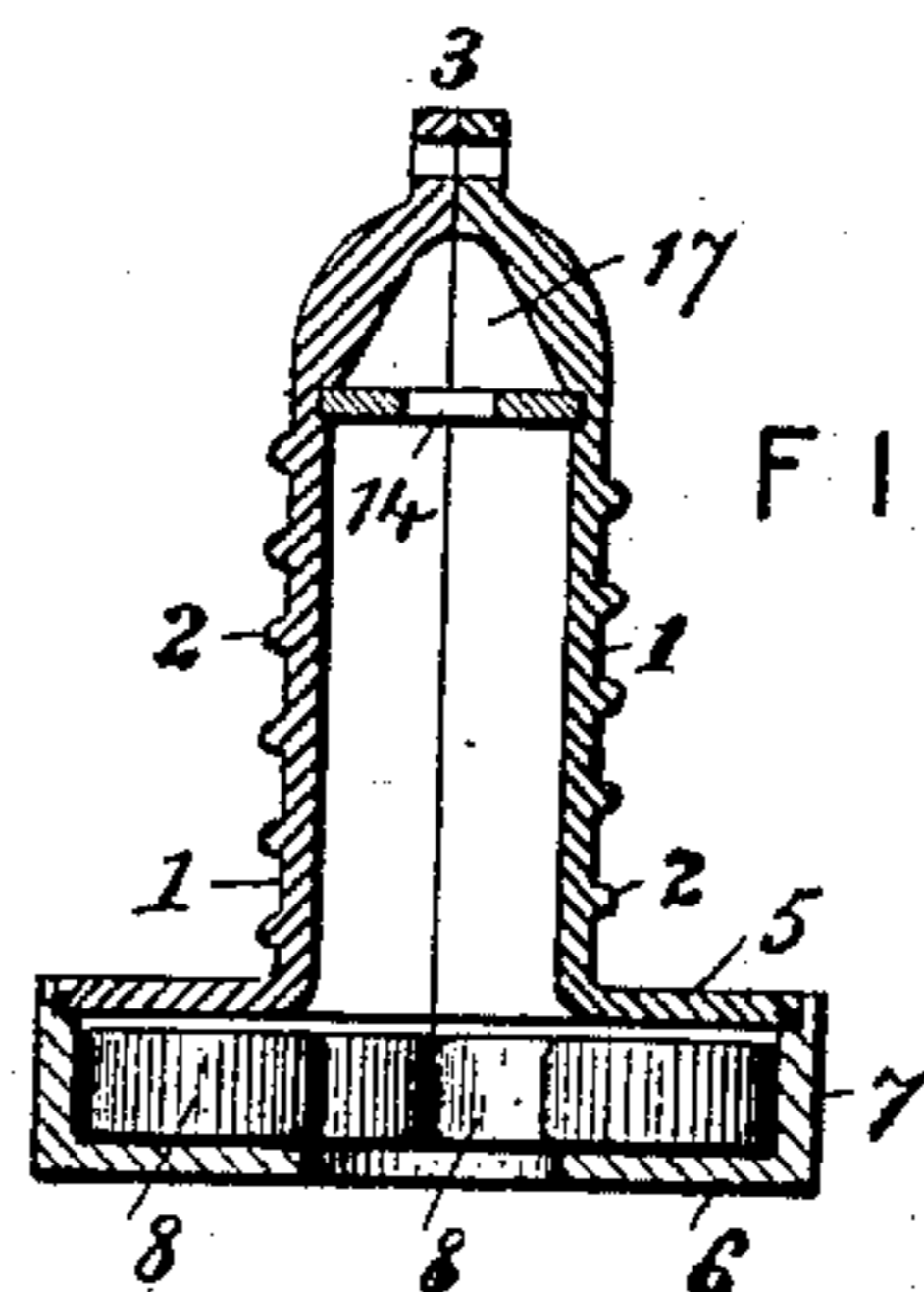
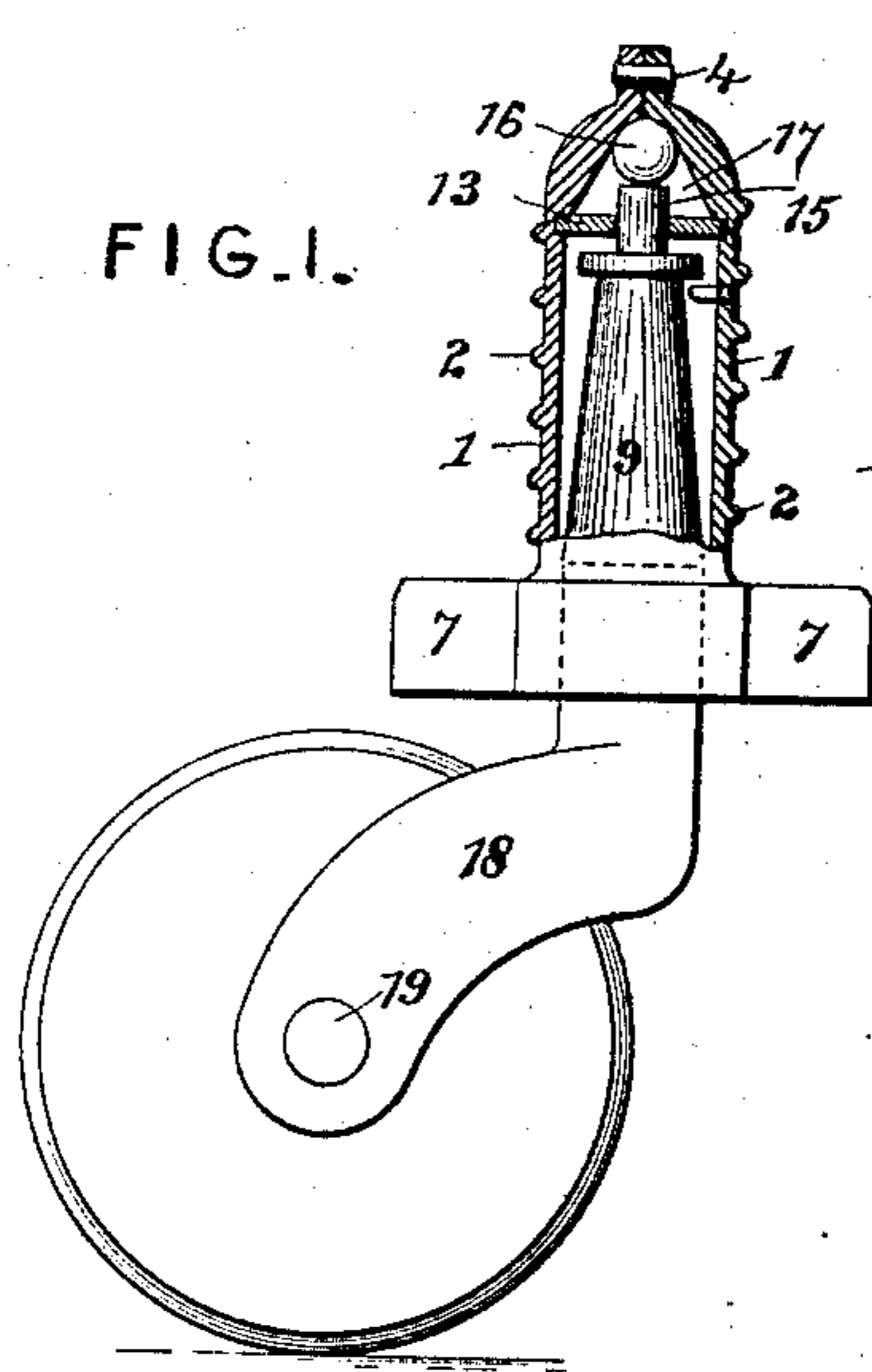
(No Model.)

S. C. MENDENHALL.

CASTER.

No. 314,965.

Patented Mar. 31, 1885.



Attest

Geo. P. Smallwood,  
*[Signature]*

Inventor:

Stephen C. Mendenhall

By *[Signature]*

attys.

# UNITED STATES PATENT OFFICE.

STEPHEN C. MENDENHALL, OF RICHMOND, INDIANA.

## CASTER.

SPECIFICATION forming part of Letters Patent No. 314,965, dated March 31, 1885.

Application filed December 2, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, STEPHEN C. MENDENHALL, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, (present business address Cincinnati, Ohio,) have invented certain new and useful Improvements in Casters for Furniture and other Purposes, of which the following is a specification.

My present improvements relate to methods of forming the top or socket of that form of stem-casters having a horizontal enlargement or chamber at bottom containing horizontal anti-friction rollers, against which the spindle bears. It also relates to improvements in the anti-friction devices for the top of the spindle, and to improvements in the method of forming a floor-wheel roller, which are applicable as well to the above as to other forms of casters. To these ends I cast the stem portion either solid in one piece or in halves, either with or without an external screw-thread for facilitating application to the furniture-leg or other part. At bottom said socket is formed with a horizontal flange chamfered at its outer edge, and is adapted to occupy a seat or shoulder upon a malleable cast or struck-up cap, an upwardly-projecting lip on which is bent over the chamfered edge of the socket-flange, (when the flange is in position,) so as to hold the top and the anti-friction wheels therein together. At top the socket is provided with a horizontal hard-metal diaphragm having circular bearing at center for a hard-metal stud on top of the spindle, and within the small chamber thus formed at the top of the socket I place an anti-friction ball of hard metal, adapted to bear upon said stud on the top of the spindle. This stud may be hardened in casting, if desired, or made of steel.

The invention further relates to an improvement in the axle-pin of the floor wheel or roller, whereby the horns of the saddle are relieved of strain resulting from carelessness in the riveting or attaching of said pin.

The improved caster-wheel is made of glass, with a central cylindrical bushing of phosphor-bronze, Babbitt or other anti-friction metal. Between said bushing and the glass portion of the roller is allowed in molding a suitable space, the sides of which may be left either in the

roughened condition in which they are found after molding, or may be bored in any suitable manner. In this space I ram a quantity of artificial stone in a semi-liquid condition, which when dry hardens, and so maintains the bushing fixedly in position.

In order that my invention may be more fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation, partly in vertical section, of my improved caster. Fig. II is a vertical section of the top or socket in condition to have its parts fixed together. Fig. III is a view of the bottom portion of said socket with the cap fixed thereon. Fig. IV is a similar view showing a modified form. Fig. V is a side elevation of the top without the cap-plate. Fig. VI is a vertical section of the preferred form of floor wheel or roller. Fig. VII is a bottom view of the saddle with axle-pin in position. Fig. VIII is a detached view of said pin.

1 is the stem socket or top, which may or may not be cast in two parts, as here shown, and which may or may not have external screw-threads, 2. If cast in two parts, it is formed at top with lips 3, which may be fixed together by rivet 4. At bottom the socket is provided with horizontal flange 5, chamfered on its periphery, as shown in Fig. V.

6 is a cap-plate having vertical rim 7 of sufficient height to allow a free chamber for the movement of a number of loose horizontal anti-friction rollers, 8, within which moves the spindle 9. Said cap-plate is provided with a rest, either in the form of a shoulder, 10, as shown in Figs. II and III, or of a separate ring, 11, as shown in Fig. IV. Upon said shoulder or ring the flange 5 of the socket rests when the top is being put together, and the lip 12, or upper edge of the rim 7 of the cap-plate, is then swaged or spun over the chamfered periphery of said flange to hold socket and cap-plate together, as shown in Fig. III. It will be seen that the provision of a rest for the top, as here shown, insures the leaving of sufficient vertical space between the flange and the bottom of the cap plate to allow free movement to the rollers.

At top the socket is provided with a horizontal steel or hard-metal diaphragm, 13, hav-

ing central hole, 14, which provides lateral bearing for the stud 15 at the top of the spindle. Vertical bearing of the furniture attachment, and consequently of the furniture, upon the spindle takes place by way of the ball 16, of steel or other hard metal. The stud 15 may also be hardened in casting, or it may be of steel, so that there will be scarcely any wear between these two surfaces, while at the same time there is provided a very perfect anti-friction bearing. The diaphragm 14 may occupy grooves in the sides of the socket and be fixed in place when the said socket is fastened together, or may be driven in in any desired manner. It will be seen that the chamber 17, formed at the top of the socket, is provided with inclined walls, which adapt the ball 16 to find a seat at the top of the socket when the spindle is placed in position.

At bottom the spindle 9 is cast with or fixed to the horns 18 of the saddle, which surround and retain the floor wheel or roller and have a pin, 19, occupying bearing in said roller. The said bearing consists of a tubular bushing, 20, formed of phosphor-bronze, Babbitt, brass, or other anti-friction metal, which may be provided at its ends with upturned lips or flanges 21. The main body 22 of the floor wheel or roller is made of glass. It is preferably formed, in the act of molding or blowing, with shouldered portions 23 at each side. 24 is a mass of artificial stone or cement occupying the annular space between the bushing and the main body 22 of the roller.

The method of fixing the bushing in position is as follows: The glass portion of the roller being formed, as described, with an enlarged axial opening, is chucked or clamped, and the bushing 20 placed by suitable machinery accurately in the axis thereof. A quantity of artificial stone or cement is then forced into the annular space around the bushing, completely filling the same and being compressed with any desired force.

It will be readily seen that when dry and hard the artificial-stone packing, while aiding the insulating qualities of the roller, firmly secures the bushing and glass together. It will be observed that while the bushing may thus be placed accurately in position while hollow, it may be convenient to place said bushing in solid, so as to avoid the necessity of such careful manipulation, and subsequently bore out the bearing for the pin 19. Said pin is held in place by riveting one end, 27, on the outside of one of the horns 18, the shoulder 26 on said pin abutting against the inside of said horn, so that horn and pin are held rigidly together. The bearing for the pin in the other horn is made of such diameter as to admit the pin, which when being put in posi-

tion is slid through the roller and horns until stopped by the shoulder 26.

While the pin is preferably formed with a head, it will be observed that practically said head could in this construction be omitted, while the pin serves to prevent breakage of the horns, so commonly occurring in the making of ordinary casters, by reason of carelessness in riveting.

I am aware that it has before been proposed to employ an anti-friction device for stem-casters, consisting of horizontal rolls mounted on pins fixed in a horizontal enlargement of the socket or furniture attachment, the bottom of the enlarged chamber in said socket being covered by a cap-plate shouldered to fit within the outer rim of the socket. I am also aware that it has before been proposed to fasten the main vertical spindle or pin of a caster to the saddle by riveting the saddle up against a shoulder upon said pin. These constructions, therefore, I disclaim.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with a furniture-socket having horizontal flange at bottom, a cap corresponding in cross-section to the shape of said flange, and having seat and lip, substantially as described.

2. The combination of a furniture socket or stem, a horizontal diaphragm therein having central bearing, as shown, a spindle having stud at top projecting through said bearing, and an anti-friction ball occupying the top of the socket and resting upon said stud, substantially as herein set forth.

3. In a furniture-caster socket, a horizontal diaphragm therein having central bearing, as shown, a spindle having stud at top projecting through said bearing, and an anti-friction ball occupying the top of the socket and resting upon said stud, in combination with a series of anti-friction rollers at bottom of socket-plate.

4. In combination with a saddle having horns embracing the floor-wheel and axial openings of different sizes in said horns, an axle-pin having shoulder abutting against one horn of the saddle, and an extension projecting through and fixed on the outside of the same horn, substantially as set forth.

5. A floor wheel or roller having an axial bushing of metal packed within the roller by means of artificial stone or other equivalent material, substantially as and for the purpose set forth.

STEPHEN C. MENDENHALL.

Witnesses:

HARRY E. KNIGHT,  
L. M. HOPKINS.