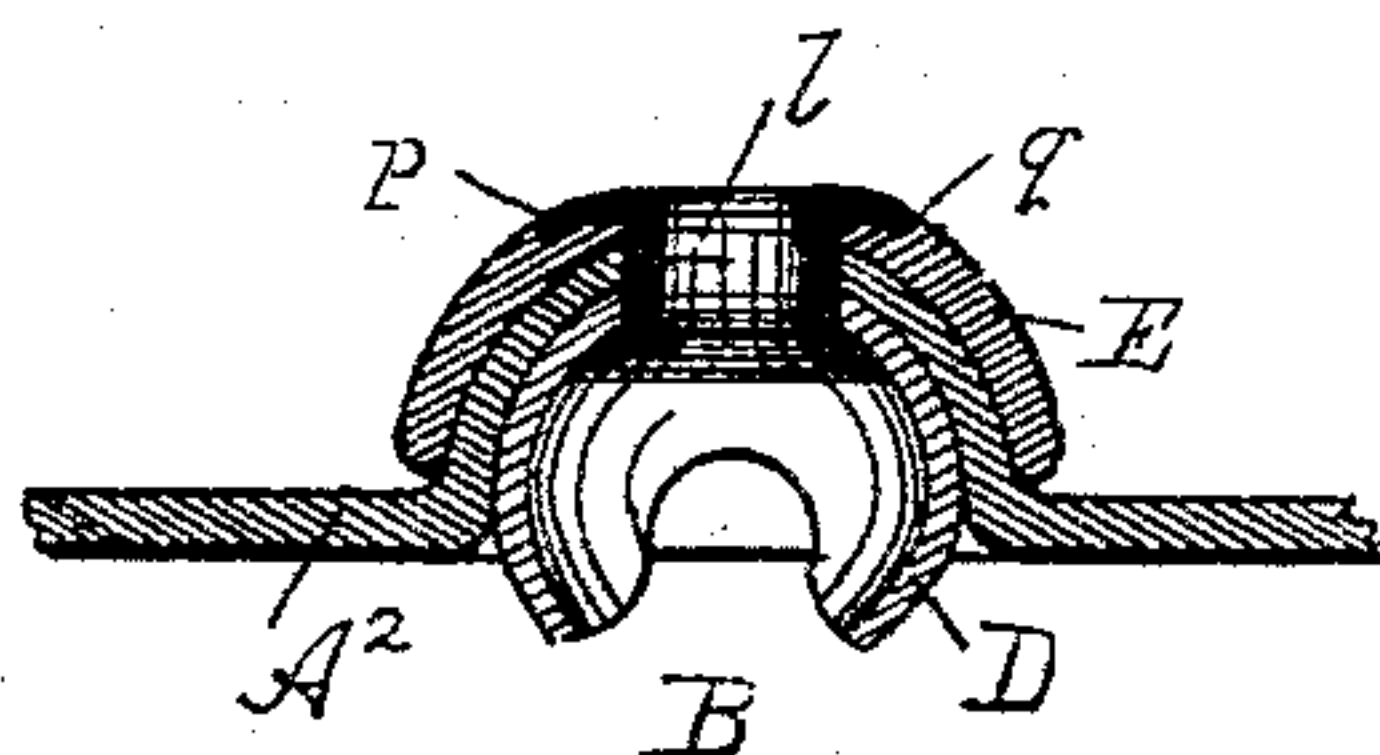
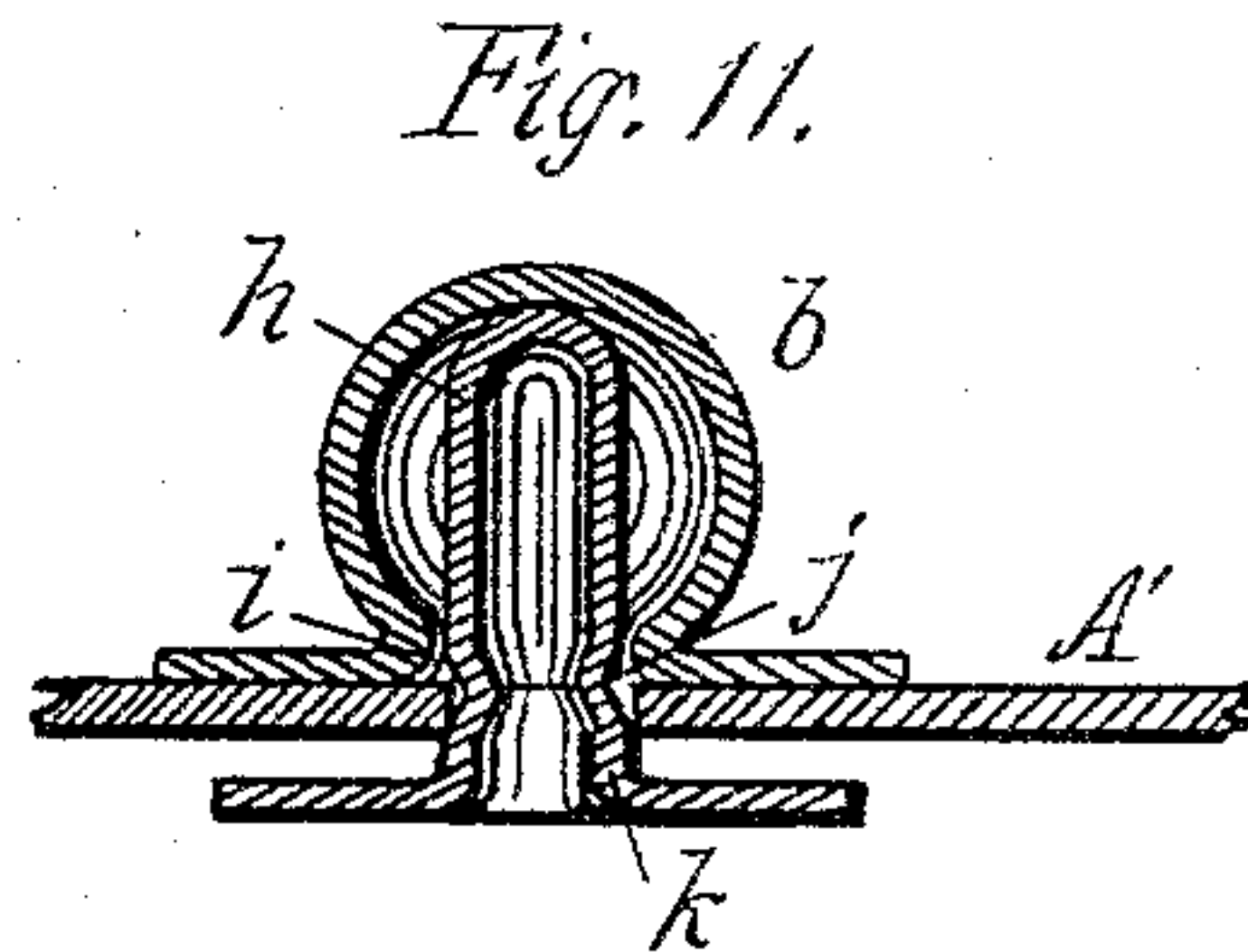
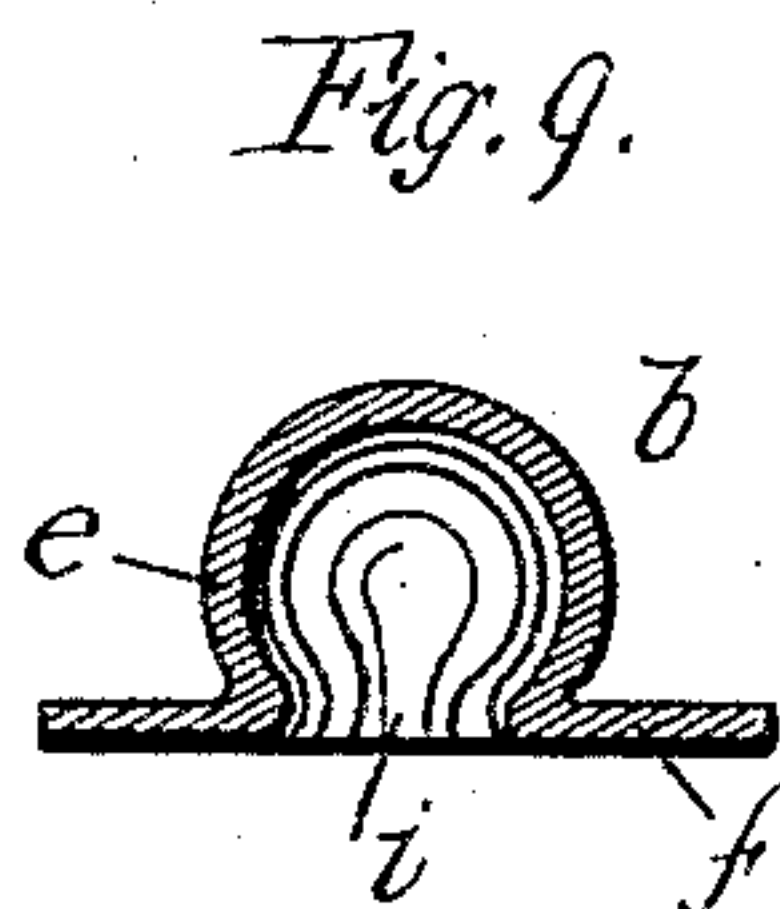
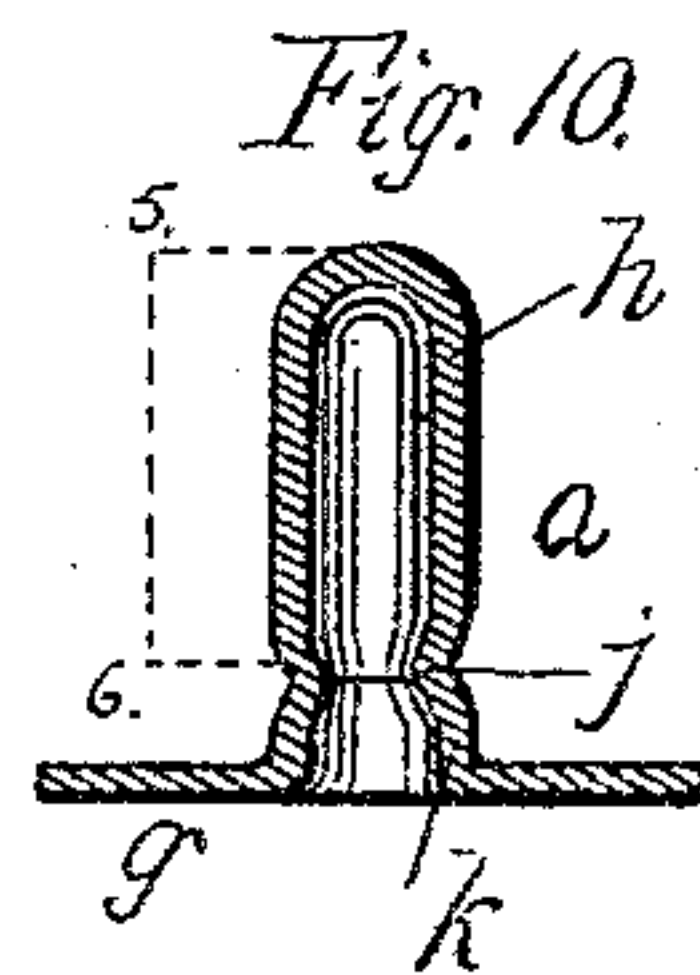
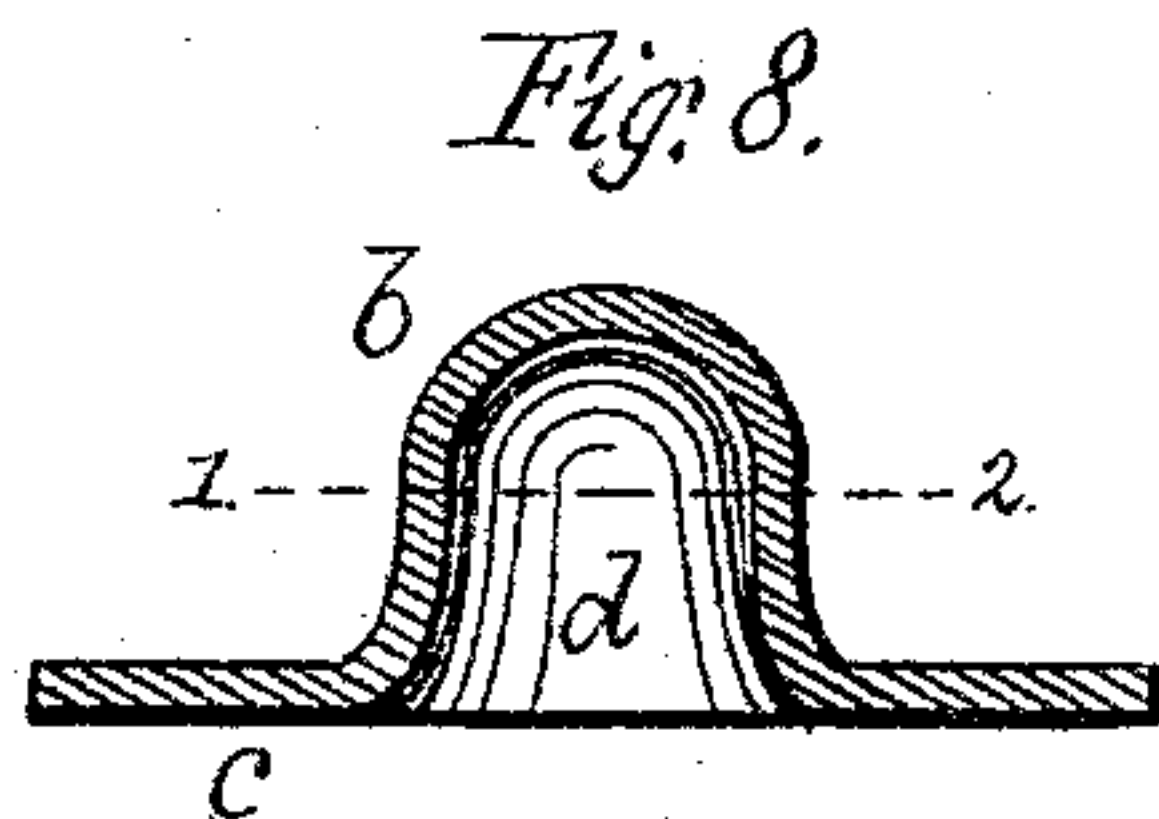
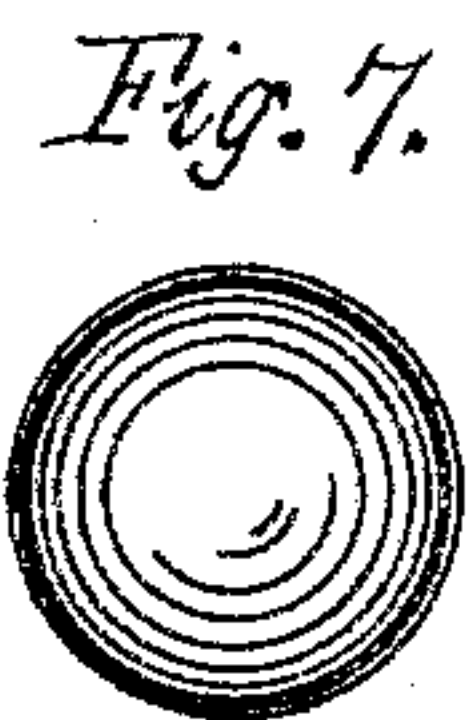
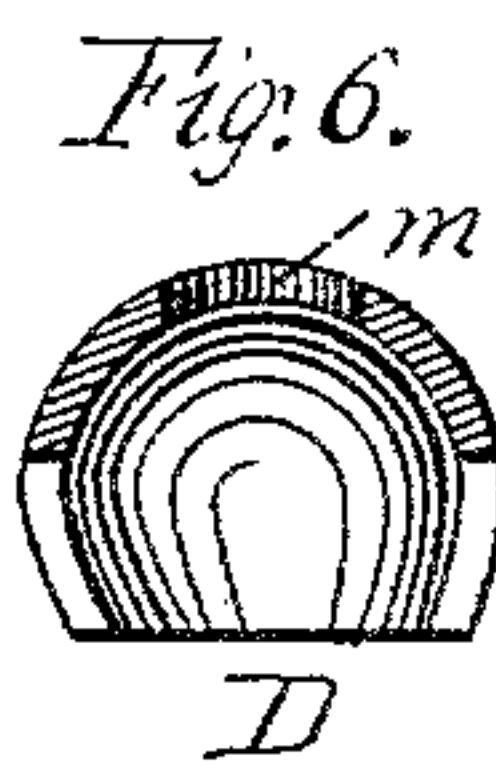
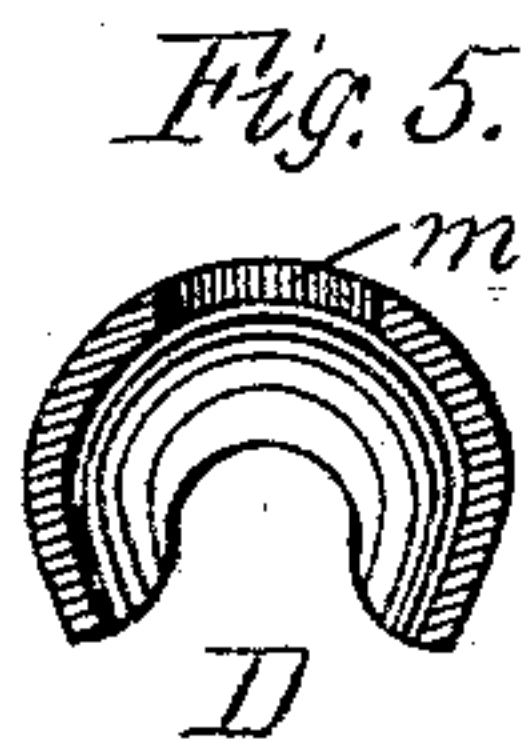
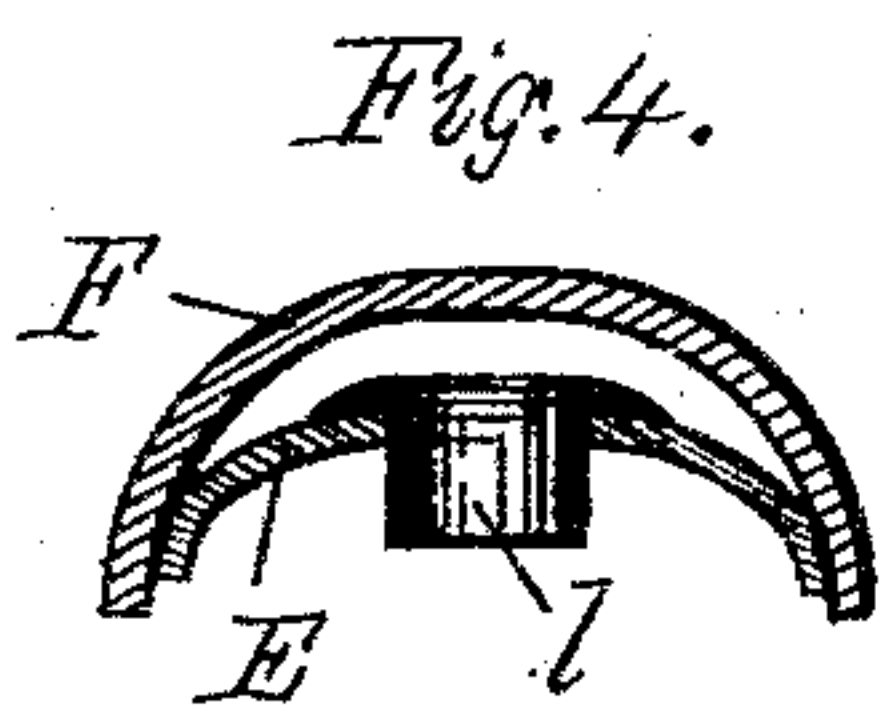
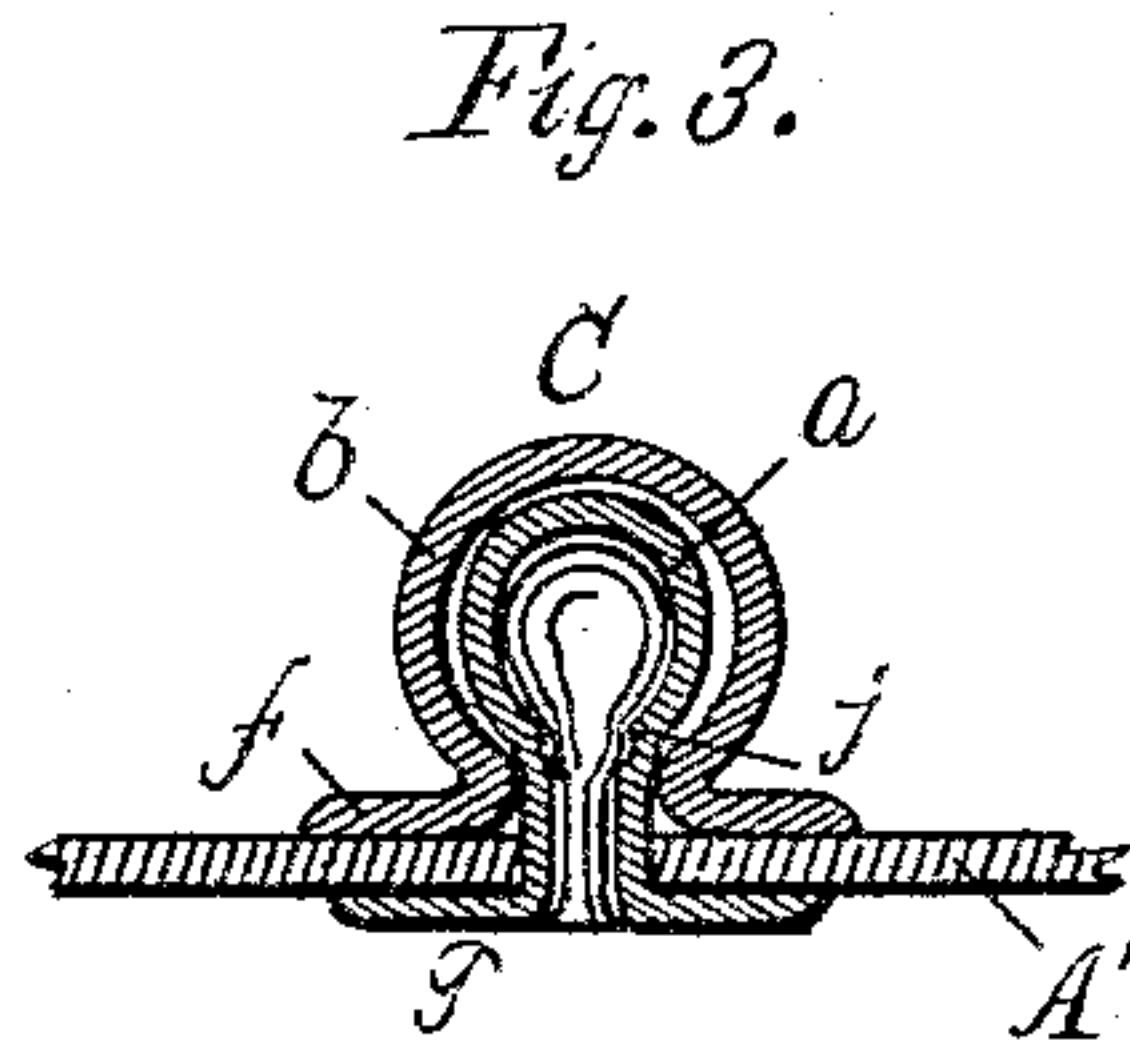
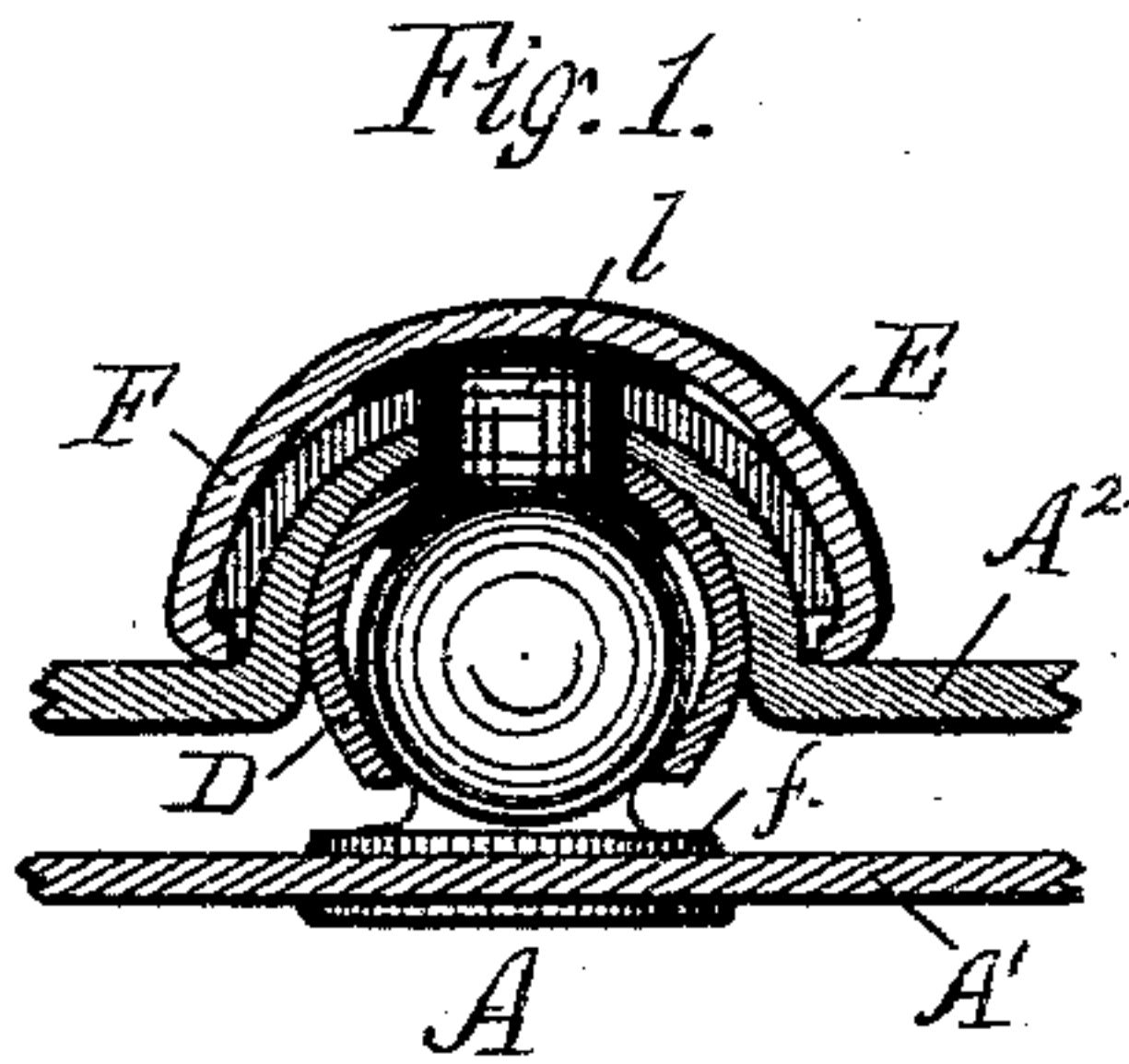
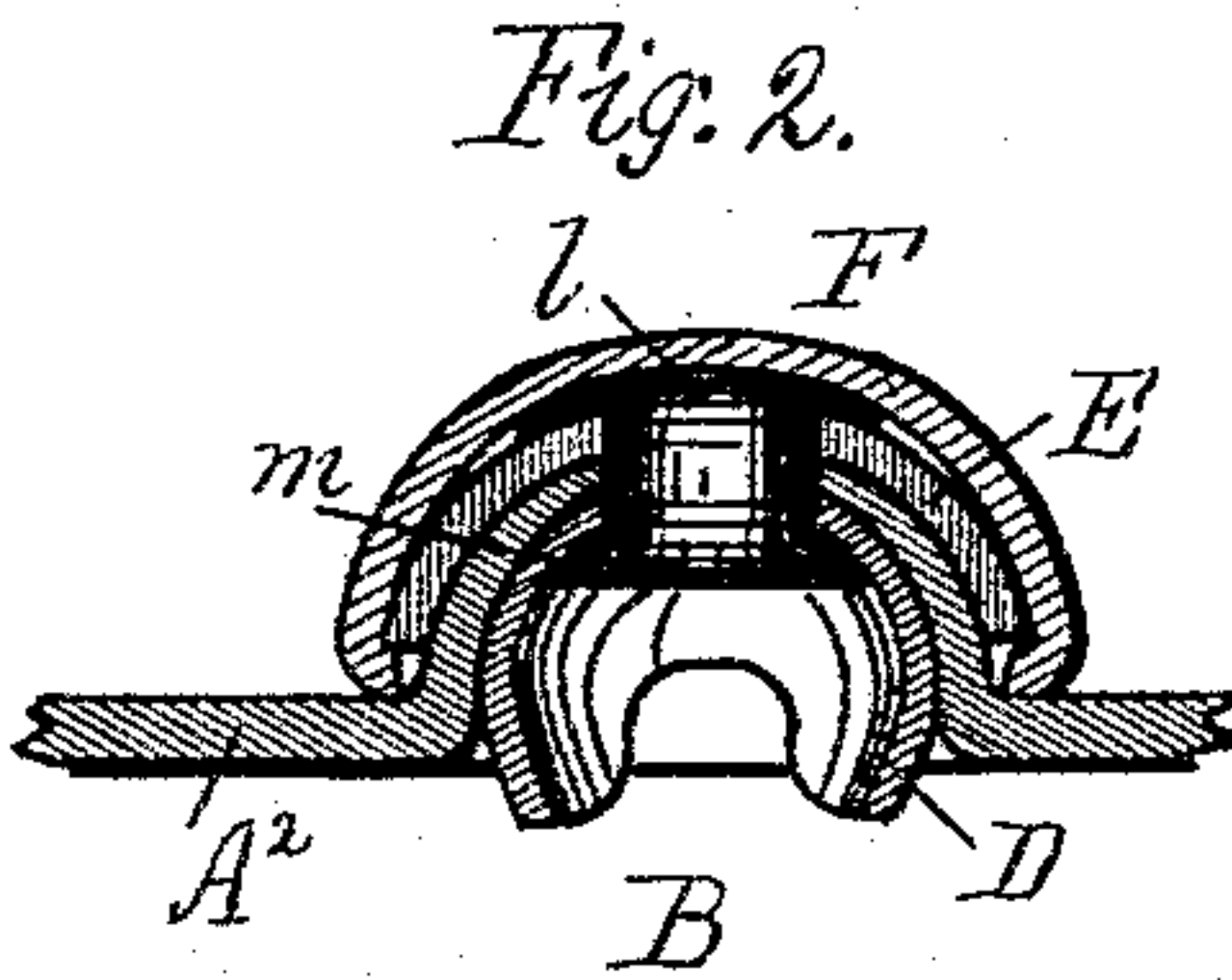


(No Model.)

A. G. MEAD.
BUTTON.

No. 325,688.

Patented Sept. 8, 1885.



Witnesses.
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A. J. Hayden.

Inventor.
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UNITED STATES PATENT OFFICE.

ALBERT GALLATIN MEAD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
BALL AND SOCKET FASTENER COMPANY, OF NASHUA, N. H.

BUTTON.

SPECIFICATION forming part of Letters Patent No. 325,688, dated September 8, 1885.

Application filed February 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, ALBERT GALLATIN MEAD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Buttons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to metallic fastenings employed in securing the separate flaps of any article, such as gloves or other similar articles of wear, in lieu of the ordinary button and button-hole, and pertains especially to that class entitled "ball-and-socket fastenings," in which a ball is adapted to be inclosed by and retained within the hollow or socket member, when the fastening is actively employed.

I consider my present invention embraces, first, the method of centrally securing the socket portion of the fastening to the article, whereby the open part or socket of said member is disposed upon the under side of the flap and secured by a rivet extending through the fabric, thus in permanently securing it to the latter a suitable button-head or cap is employed upon the upper surface of the flap and can be so formed and constructed as to form a button finish, a result much desired, since it gives the article an appearance exactly similar to an ordinary button, which is the most neat and tasty finish that can be employed in the class of articles of apparel to which such fastenings are usually attached, but, further, the whole device is thereby concealed and prevented from becoming caught and broken; secondly, in the peculiar method of forming the ball member of said fastening, as likewise that of the rivet by which the ball is secured to the fabric, the two parts forming a unit and readily used in connection with the socket member, forming an article very easily manufactured, cheap, and inexpensive, and one which presents an unusually ornamental finish.

The drawings represent, in Figure 1, a cross-section of a complete fastening attached to the

material, composed of the two members constructed as herein specified and embodying my invention. Fig. 2 is a vertical section of the socket member completed and attached to the fabric, while Fig. 3 shows a similar section of the ball member of the fastening. Fig. 4 shows the button-shaped cap with the fastening eyelet or rivet without the socket portion. Figs. 5 and 6 are cross-sections taken diametrically through the socket portion. Fig. 7 is a plan of the complete socket member. Fig. 8 shows a partially-completed ball struck from an intact blank. Fig. 9 represents the completed ball prior to the attachment to the material, and Fig. 10 the rivet employed in fastening to the fabric the ball, which is adapted to be employed in connection with the socket. Fig. 11 illustrates the rivet in position in the hollow ball before compression. Fig. 12 represents the other member of the fastening and its attaching devices.

In these drawings I have represented the complete fastening at A as composed of two portions; B, the socket or hollow inclosing part, while C represents the ball or inclosed portion, which I will now proceed to describe, and may be considered as compound, since it is incomplete without its fastening-rivet *a*, which secures the active or ball element *b* thereof to the fabric. This portion *b* is formed from a flat blank, *c*, formed of any suitable metal by a die which at the same time operates to strike up and form a short cylinder, *d*, hemispherical at its extremity, say, from the broken line 1 2, while the diameter of said cylinder is to be the same as that of the finished ball portion *b*. After this operation the blank is transferred to a second die or revolving rollers, where the short cylinder or neck portion *d*, below the line 1 2, is compressed and rounded into a hemispherical shape, *e*, which completes the ball *b*. (See Fig. 9.) Moreover, the metal forming the lower portion during this forming process has drawn down the top portion and shortened it slightly, and the whole sphere, when completed, rests snugly upon the flange *f* and is now in readiness to be secured to the fabric as one member of a fastening device of the class hereinbefore premised.

Hitherto it has been a very difficult thing

to secure a member of a fastening device so constructed to the fabric, since if any device is attached to its exterior periphery in order to secure it the usefulness of the ball is very much impaired, since a portion of the surface is occupied. Hence I have employed in lieu of an external fastening, which has heretofore been generally employed, an internal or central fastening, and in the method employed I consider exists one of the essential features of my invention.

I will now proceed to describe the second element, *a*, or fastening-rivet of the ball portion or inclosed part of the fastening. This rivet is formed somewhat similar to the other element, *b*, from a circular blank, *g*; but the latter is struck up in the form of a cylinder, hemispherical, preferably, at its extremity and of an external diameter equal to the opening *i* in the ball or inclosed part. Afterward said blank is transferred to a pair of rolls, which cripple or weaken the metal at the contracted portion *j*, leaving the upper portion intact and of a length, as shown by the dotted lines 5 6, slightly longer than the diameter of the ball *b*, for purposes to be described. This passing of the rolls over the part *j* leaves a short neck, *k*, below, and is of a suitable length adapted to compensate for the thickness of the fabric *A'*. From this neck extends the flange which forms a bearing for the fastening, to give it steadiness, and at the same time more securely affix it to the material, since it incloses a larger area of the latter and prevents it tearing away.

In order to secure the ball element *b* of the member *C* of the fastening to the material, I proceed as follows: Having punched or otherwise formed a hole in the fabric, I place the ball element over said hole with the opening *i* in alignment therewith. I then take the rivet *a* for fastening the part *b* of said member *C* and insert it through the hole in the fabric and into the ball *b* until the cylinder *h* rests against the top of the ball, (see Fig. 11,) when, owing to the length of said rivet, the flange does not come in contact with the material *A'*, and it requires to be inserted in a die in which the matrix is spherical to prevent injury to the ball in the act of securing the two elements together. Then the plunger is brought down upon the flange of the fastening-rivet *a*, while, owing to the crippling of the metal at *j*, before mentioned, which part is constructed to rest about opposite the top of the opening *i*, the metal begins to yield and spread or flatten against the pressure, rolling outward, while the top of the cylinder *h* is spread out and very nearly fills the interior of the ball, approximating thereto in general shape as shown in Fig. 3. This compression or crippling of the fastening-rivet *a* has somewhat reduced its length, and its flange now firmly closes the material between it and the flange *f* of the button part *b*. This crippling of the material effects a second result besides that accomplished in the above description—that is, it

prevents any undue pressure from distorting the proper shape of the neck *k*, and this always insures a proper fastening of the member *C* without disturbing the normal shape of said neck.

I have now in complete and perfect form a member, *C*, of a fastening device, spherical in shape, intact throughout its periphery, and yet securely and rigidly fastened to the fabric without any exterior fastening appendages by which to attach it, as is usual, and impair its efficacy or detract from its appearance.

In a fastening device of the class before premised, a somewhat similar difficulty has existed in securing the socket or hollow inclosing portion of the fastening, as has occurred in attaching the ball or inclosed portion thereof, and I have therefore constructed such socket member as follows: *D* represents, in Figs. 5 and 6, diametrical cross-sections of a hollow socket provided with yielding sides. This form of socket has heretofore been secured to the upper side of the fabric by a lateral arm, which does not present a neat or ornamental finish, and is liable to catch and be torn from the article. Hence I propose to radically change the position thereof and employ the active or socket portion below the fabric, and dispose an ordinary fastening eyelet, *l*, through said socket *D*. This eyelet is located centrally of the socket, and when this part of the fastening is completed is secured and rests at its top between the cap or button-head *F*, which surrounds the whole and the disk *E*, while its lower extremity is similarly upset upon and over the interior periphery of the socket *D*. The disk *E* may be a flat plate; but in the present instance I have shown its outer edge or circumference bent in order to approximate to the general shape of the button-head when the latter is pressed into its finished form, and thus it strengthens said cap. Moreover, the eyelet *l* is passed into this disk *E* and secured between the latter and the button-cap by pressing the two together, as shown in Fig. 2. Hence in securing this socket or any similar hollow member of a fastening device, I punch a hole in the material sufficient to enter the eyelet *l*. Having previously struck up the button-shaped cap *F*, I place in it the centrally-perforated disk *E*, with the eyelet in it, and insert the lower extremity of the latter into the opening *m* of the socket *D*, which has likewise been placed in position upon the under side of the material and centrally of the hole therein, in readiness for the introduction of said eyelet. When this is accomplished, the button-shape cap is placed in a similarly-shaped die, and with a round-headed plunger the lower extremity of the eyelet *l* is swaged or pressed out laterally. By this process the disk *E* approximates very nearly in shape to the outside periphery of the button-head, while between these two elements is retained the enlarged top of the eyelet *l*. Moreover, the lower extremity of said eyelet is spread out at the same operation

against the interior surface of the socket D, and the latter is maintained in close connection with the fabric A² and the parts D E F and l are firmly united, thus completing the other member or inclosing portion of the fastening fabric.

By reference to Fig. 12 of the drawings, I have shown a slight deviation in the manner of finishing the button portion of the fastening, as shown in Fig. 2; but I do not consider this modification distinct from the spirit of my invention, nor embodying new matter, since it would ordinarily suggest itself to one skilled in the art to which it appertains. In case it is desired, the imperforate cap or button-head F may be entirely removed, and by this means, although not securing a button finish, still the cost of making this part of the fastening is materially lessened. Supposing this form is adopted, the eyelet must be flush with the exterior surface of the disk E. In order to present a more perfect finish, and at the same time to prevent the edges thereof from catching, I have formed an annular depression, q, in the top of said disk E of a depth equal to the thickness of the metal forming the eyelet l. Thus a smooth exterior surface is secured. In lieu of finishing the socket portion of the fastening in the manner above described, a capped eyelet may be employed, in which the cap of the eyelet may be extended to cover and inclose the disk E in the manner shown in Fig. 2 as accomplished by the imperforate cap or button-head F, since by this method the cost of the finished article is somewhat lessened.

It will readily be seen that the interior or active portion of said socket or inclosing portion is not interfered with, and the ball member can easily enter its full diameter, if so desired. On the other hand, I have effectually concealed the socket portion of the fastener from sight, and in lieu thereof I have substituted a simple circular button cap or head, as shown in Fig. 7.

The whole fastening device, when the component parts (the ball and socket) are interlocked or actively employed, presents a very neat and tasty appearance, since from disposing the said members in the manner above described all parts are concealed except the cap F, which surmounts the whole, and, if it is so

desired, may be engraved or otherwise more or less ornamentally finished.

I claim—

1. A flanged ball or sphere formed from a sheet of metal intact, and provided with an interior chamber, with a fastening-rivet adapted to be inserted and flattened within said ball, for the purpose set forth.

2. A flanged tubular fastening-rivet constructed in one piece and provided with a head and neck, in combination with a flanged hollow ball which receives said head, and is held to the material by said rivet, for the purpose set forth.

3. In a fastening device, the flanged rivet composed of the head, the contracted or crimped part j, and the neck, whereby, upon compression, the head is spread laterally, and the ball member of the fastening is secured to the fabric, all substantially as and for the purposes herein set forth.

4. In a fastening device of the nature described, the inclosing portion composed of a hollow socket centrally secured to the fabric by a button-head, F, and with the inclosing portion disposed upon the under side of the flap, substantially as stated.

5. The combination, with a member of fastening device composed of a hollow socket, with spring or yielding lips disposed upon the under side of the flap and centrally secured to the latter by a button-head, of the ball constructed and secured to the outside of the material, in the manner substantially as set forth.

6. A member of a fastening device consisting of a hollow socket, in combination with a rivet and button-head, whereby it is centrally attached to the fabric, substantially as set forth.

7. A member of a fastening device composed of a hollow socket, D, centrally attached by an eyelet, l, the latter resting upon and within an annular depression, q, formed in a concaved collet or disk, E, substantially for purposes herein set forth.

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

ALBERT GALLATIN MEAD.

Witnesses:

H. E. LODGE,

A. F. HAYDEN.