No. 652,519. Patented June 26, 1900.

T. A. O'CALLAGHAN.

ARTIFICIAL SPONGE.

(Application filed Jan. 24, 1900.)

(No Model.) 2 Sheets—Sheet 1.

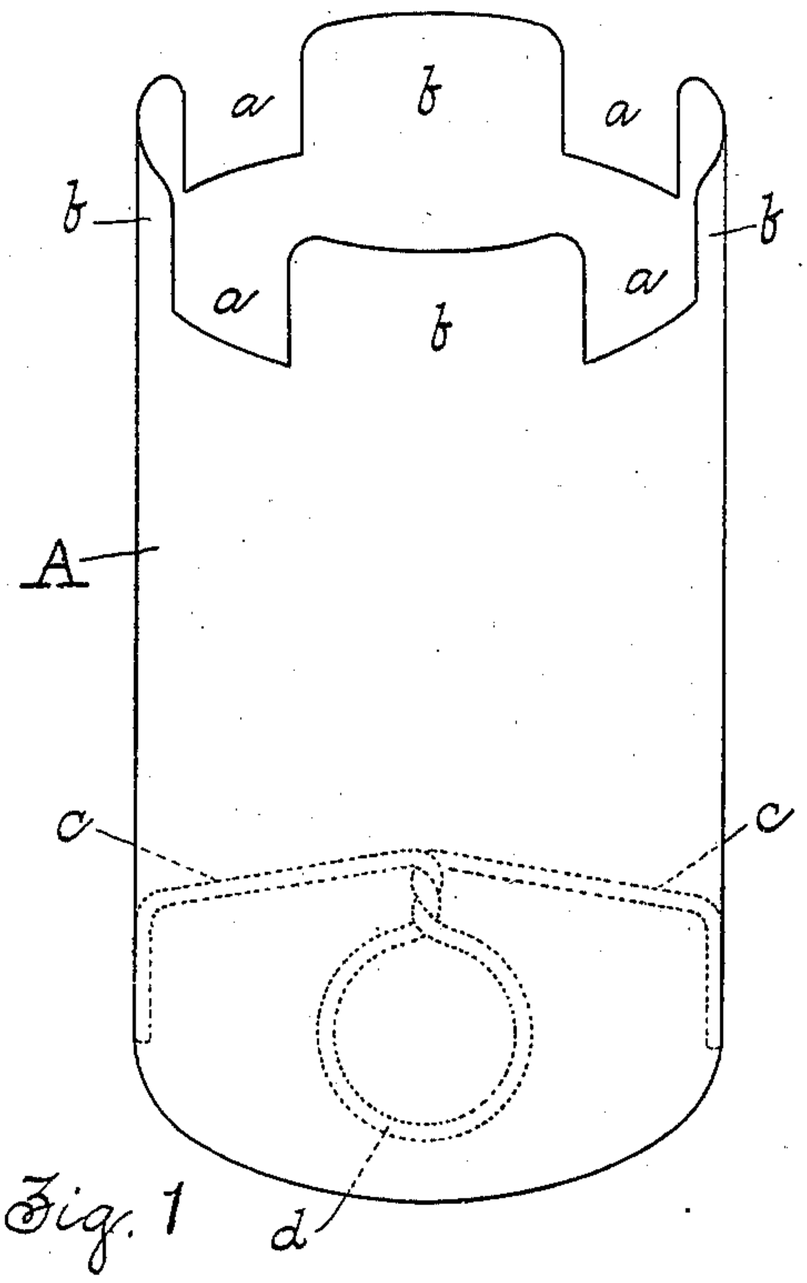

Fig. 1.

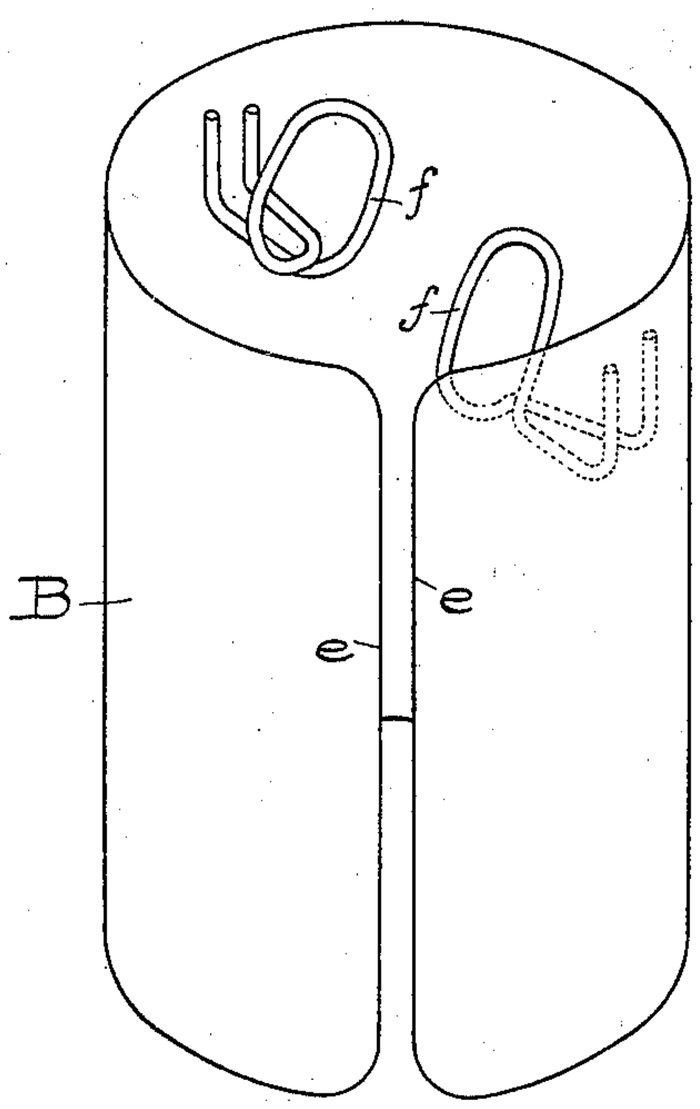

Fig. 2.

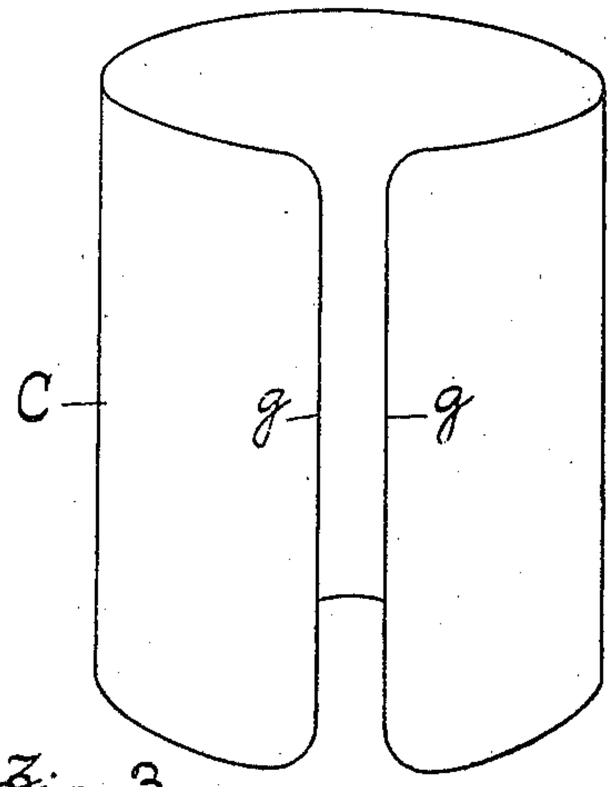

Fig. 3.

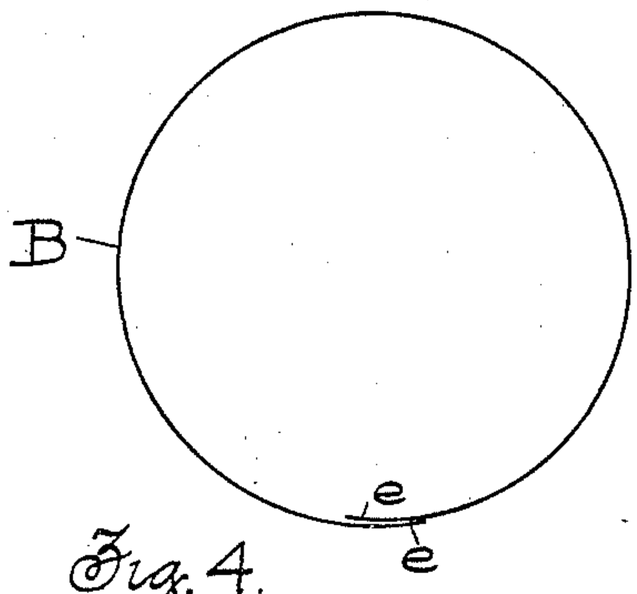

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

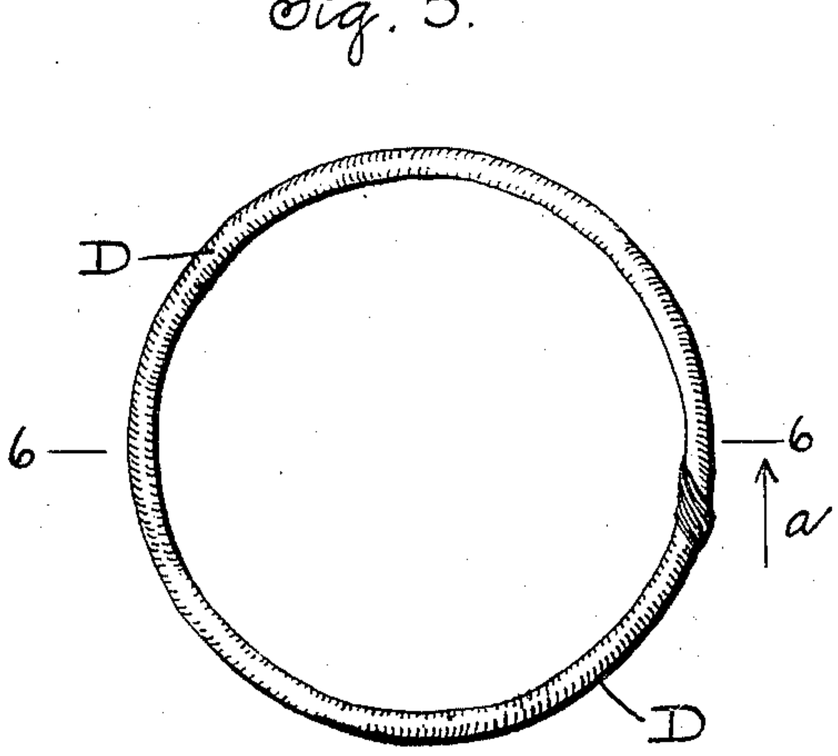


Fig. 6.

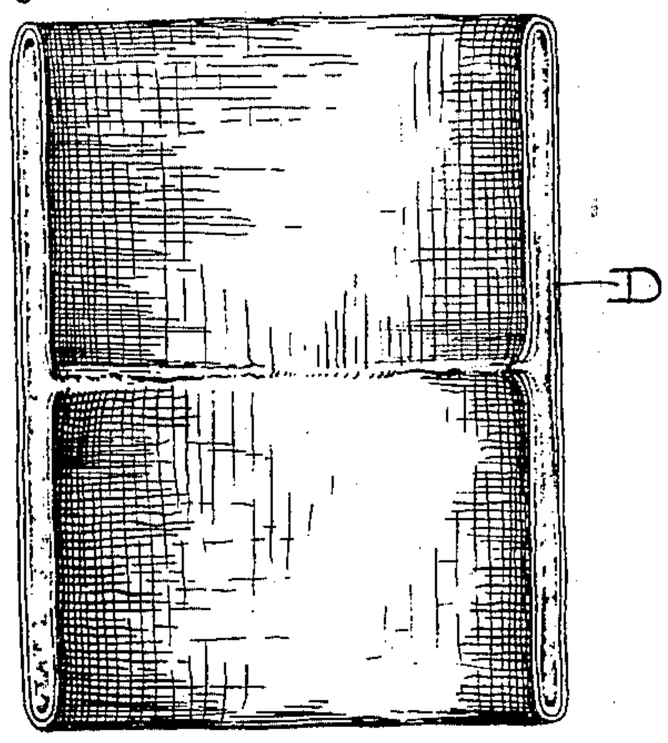
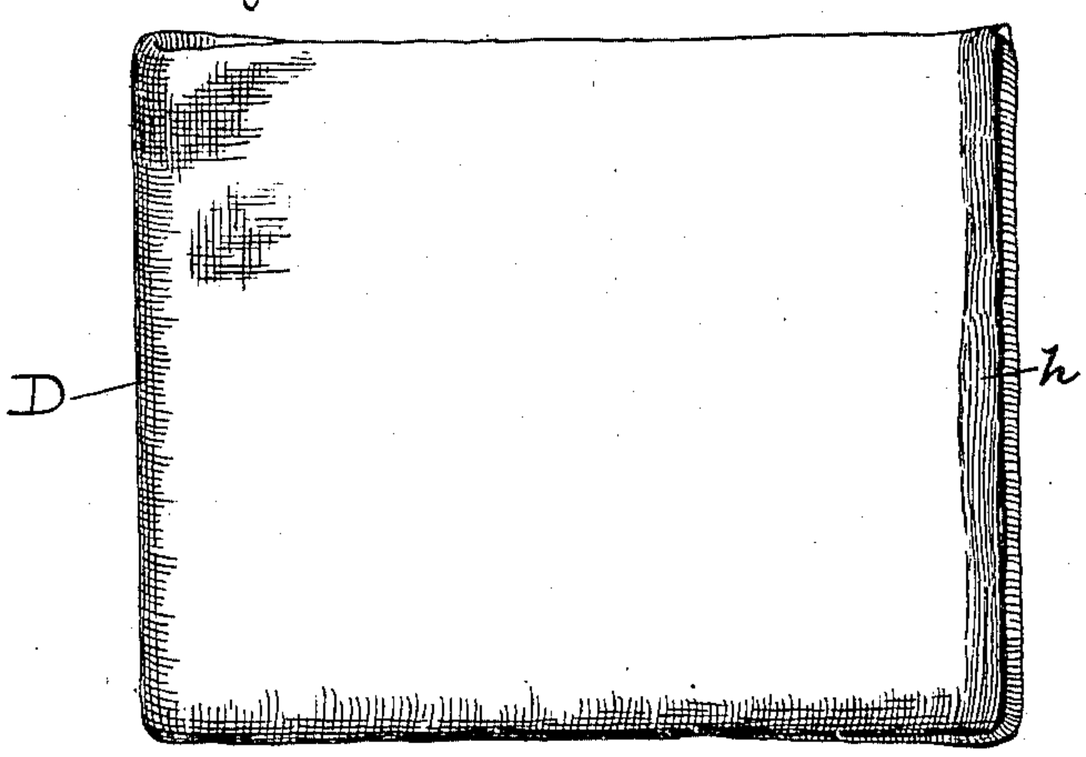


Fig. 7.



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UNITED STATES PATENT OFFICE.

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ARTIFICIAL SPONGE.

SPECIFICATION forming part of Letters Patent No. 652,519, dated June 26, 1900.

Application filed January 24, 1900. Serial No. 2,595. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. O'CALLAGHAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Artificial Sponges, of which the following is a specification.

My invention relates to artificial sponges used in surgical operations, &c.

Artificial sponges are now extensively used in all kinds of surgical operations instead of the well-known marine sponge. These artificial sponges are made of cotton-gauze, cheese-cloth, or other similar absorbent textile material, which is cut up into suitable shapes and sizes and then folded or rolled into two or more thicknesses of the material, according to the thickness of the sponge desired. It is very essential that these artificial sponges should be properly made, so as to remain whole and firm when used and not pull apart or become unwound, and also that they should have an even and smooth surface of uniform thickness, with no cut or raw edges exposed and no possibility of any threads becoming detached from the cut edges of the material. Heretofore these sponges have been made by simply folding or rolling the material into the desired shape and thickness. The sponges so folded may have the raw or cut edges exposed, so that the threads will become detached or the ends pull apart or become unwound.

The object of my invention is to make an improved artificial sponge for surgical purposes in which the raw or cut edges of the material cannot be exposed or any threads become detached or the ends pull apart or become unwound.

I have shown in the drawings one form of hand apparatus which may be used in making my artificial sponge. If desired, power may be used to automatically make my sponge.

Referring to the drawings, Figure 1 is a perspective view of a cylinder forming a part of the apparatus. Fig. 2 is a perspective view of another cylinder forming another part of the apparatus. Fig. 3 is a perspective view of a third cylinder forming another part of the apparatus. Fig. 4 is a top view of a cylinder, showing the divided edges passed by each other to reduce the diameter of the cylinder. Fig. 5 is an end view of my artificial sponge after it is drawn off the inner cylinder. Fig. 6 is a vertical section through the sponge shown in Fig. 5 on the line 6 6 looking in the direction of arrow *a*, same figure; and Fig. 7 is a plan of my sponge after it is pressed or flattened.

In the accompanying drawings, A is a hollow cylinder, preferably made of metal, with the ends open and of any desired length and diameter, according to the size of the sponge to be made. The cylinder A preferably has one end or edge notched or provided with recesses *a* therein, leaving the projecting portions *b*. There are preferably four notches *a* and four projections *b*, as shown; but there may be more or less, as desired. In the opposite end of the cylinder A is preferably secured a wire *c*, with an eye *d* to furnish means for grasping or holding the cylinder on the inside. Any other suitable means for grasping or holding the cylinder on the inside may be used, if preferred. The cylinder B (shown in Fig. 2) is also preferably made of metal, open at both ends and split or divided lengthwise, as shown, so that the diameter of the cylinder may be reduced by passing the edges *e* by each other, as shown in Fig. 4. Within one end of the cylinder B are secured, upon opposite sides thereof, the two wire projections or handles *f f*, which may be grasped and held by the thumb and forefinger to hold the cylinder and to press the edges *e* by each other. The cylinder B is about three-fourths as long as the cylinder A and of such a diameter as to fit snugly within the cylinder A when the edges *e* of the cylinder B are passed by each other.

The cylinder C, Fig. 3, is preferably open at both ends and divided or split lengthwise, so that the edges *g g* may be passed by each other to reduce the diameter of the cylinder. The cylinder C is a little shorter than the cylinder B and is adapted to be inserted within the lower end of said cylinder.

I will now describe how the three cylinders A, B, and C are used for making my artificial sponge.

A strip of cotton-gauze, cheese-cloth, or other suitable material, about one-fourth

wider than the length of the cylinder A and with one end preferably having a selvage end, is wrapped or rolled a number of times around the exterior surface of the cylinder A, the selvage end being the end which is last wrapped around the cylinder. One edge of the strip extends beyond the notched end of the cylinder A. The other edge does not extend beyond the other end of said cylinder. The number of times the cloth is wrapped around the cylinder determines the thickness of the sponge, and the diameter of the cylinder determines the size of the sponge in one direction. The length of the cylinder B determines the size of the sponge in the opposite direction. The sponge is flat when ready for use. After the strip of cloth is wrapped around the cylinder A the edge projecting beyond the notched end of the cylinder is turned in over the edge to extend within that end of the cylinder, and the cylinder B is grasped by the handles *f f* and compressed and the opposite or lower end inserted within the notched end of the cylinder A and pushed in until the upper ends of the two cylinders are flush or even with each other. The turned-in edge of the cloth is now held between the inner surface of the cylinder A and the outer surface of the cylinder B. The cloth is held firmly against the outer surface of the inner cylinder B by pressing it with the thumb and fingers of one hand by the operator through the notches *a* between the projections *b*. With the other hand by means of the handle *d* the cylinder A is drawn off from the cylinder B and away from the cloth wrapped around the cylinder A, leaving the cloth with one edge turned in on the outer surface of the cylinder B. The other free edge of the cloth extends beyond one end of said cylinder B substantially the same distance that the folded edge is turned in. This projecting edge is turned into the end of the cylinder B and the third cylinder C inserted in said end for nearly the full length of said cylinder to hold the turned-in edge between the inner surface of the cylinder B and the outer surface of the cylinder C. The cylinder B is now drawn off the cylinder C by the operator, one hand grasping the handles *f f* and the other hand holding the last-turned-in edge of the cloth on the cylinder C, leaving the cloth on the cylinder C with both edges turned in and extending upon the outer surface of said cylinder. The cloth is now drawn off from the cylinder C and leaves the cylindrical material or form D, Fig. 5, which is pressed or flattened, as shown in Fig. 7, leaving the sponge complete and finished, ready for use. In my finished sponge two or more thicknesses of the material are superimposed and one end of the strip is concealed within the body of the sponge and the other end, as *h*, Fig. 7, is not concealed, but is on the exposed surface of the sponge, preferably at one side thereof, as shown in Fig. 7. The end *h* is free and not connected to the body of the sponge except at the edges thereof.

The advantage of my artificial sponge will be readily appreciated by those skilled in the art. It can be made very expeditiously and of any desired thickness and the cut or raw edges of the cloth are turned or folded in for the whole length of the strip of cloth, and the free end of the strip is so connected with the body or main part of the cloth that there is no possibility of the edges being exposed or loose threads coming off or the end becoming loosened and the sponge unfolded or unwound. The surface of the sponge is smooth and even, and the sponge itself is firm and strong.

It will be understood that the apparatus shown in the drawings and above described for making my artificial sponge may be varied, if desired, and may be modified and adapted to be manipulated by power instead of by hand.

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

As an improved article of manufacture, an artificial sponge for surgical purposes, comprising a strip of absorbent textile material wound a plural number of times upon itself in the form of a cylinder, and having its circumferential edges then turned within the wound strip, whereby the free end of the strip is secured, and a seamless sponge is formed devoid of raw edges, and which will not pull apart or become unwound, substantially as shown and described.

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