

F. DUTCHER.

FUSEE CAP.

APPLICATION FILED AUG. 8, 1907.

Patented Sept. 21, 1909.

2 SHEETS—SHEET 1.

934,897.

Fig. 1.

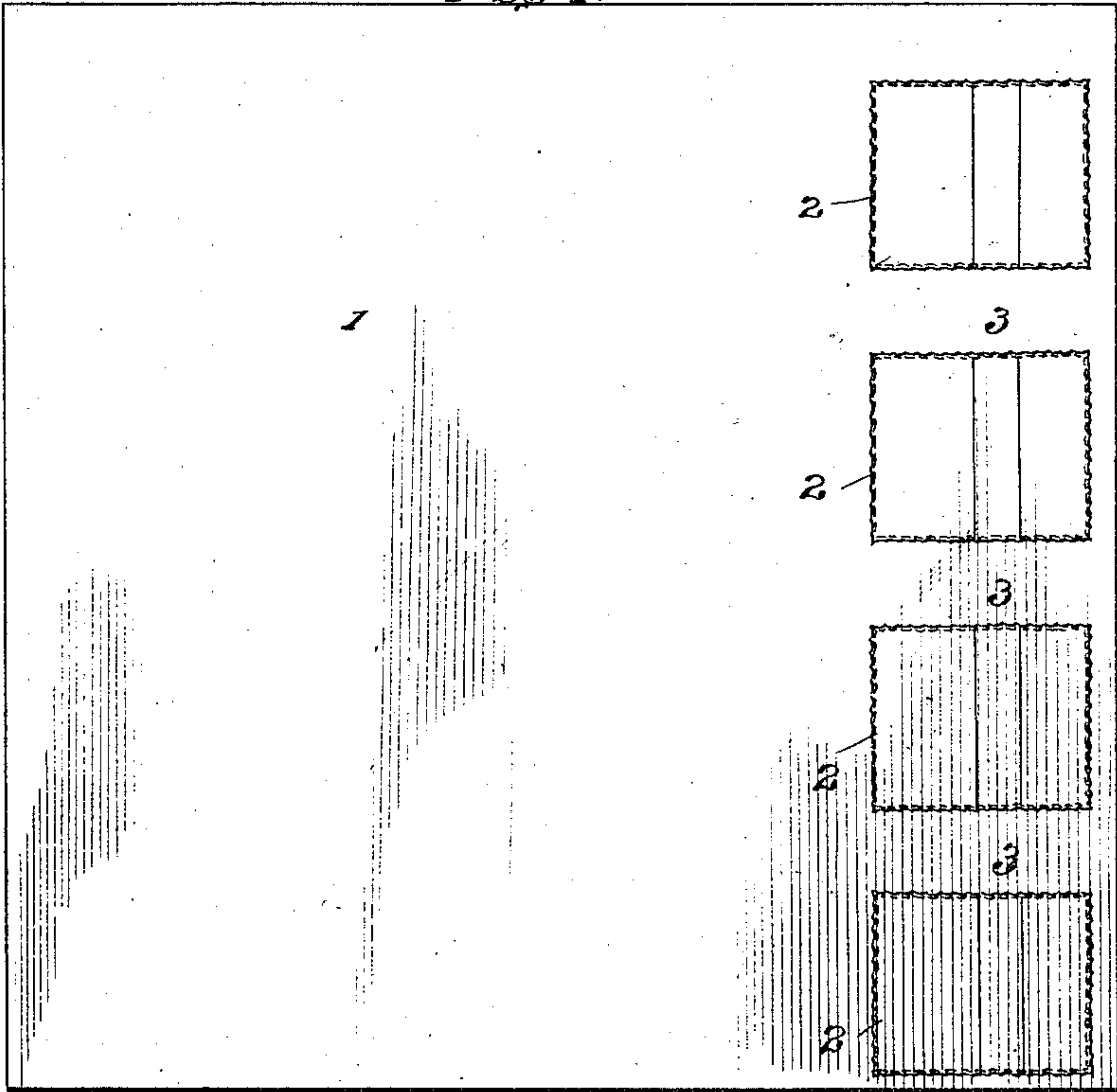


Fig. 2.

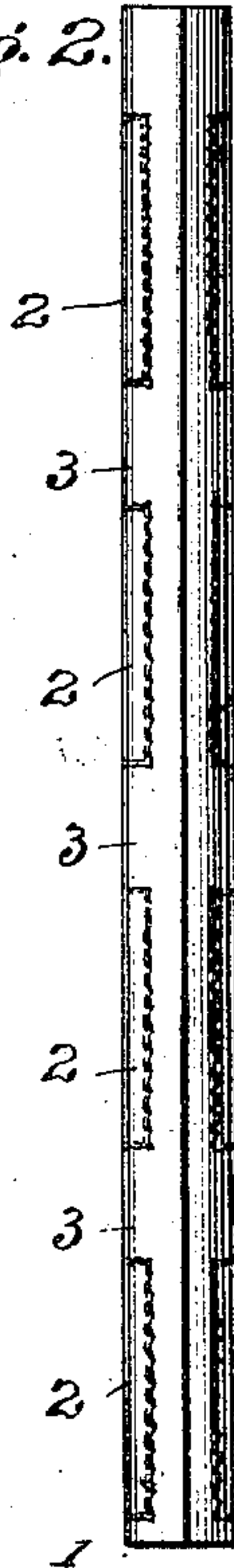


Fig. 3.

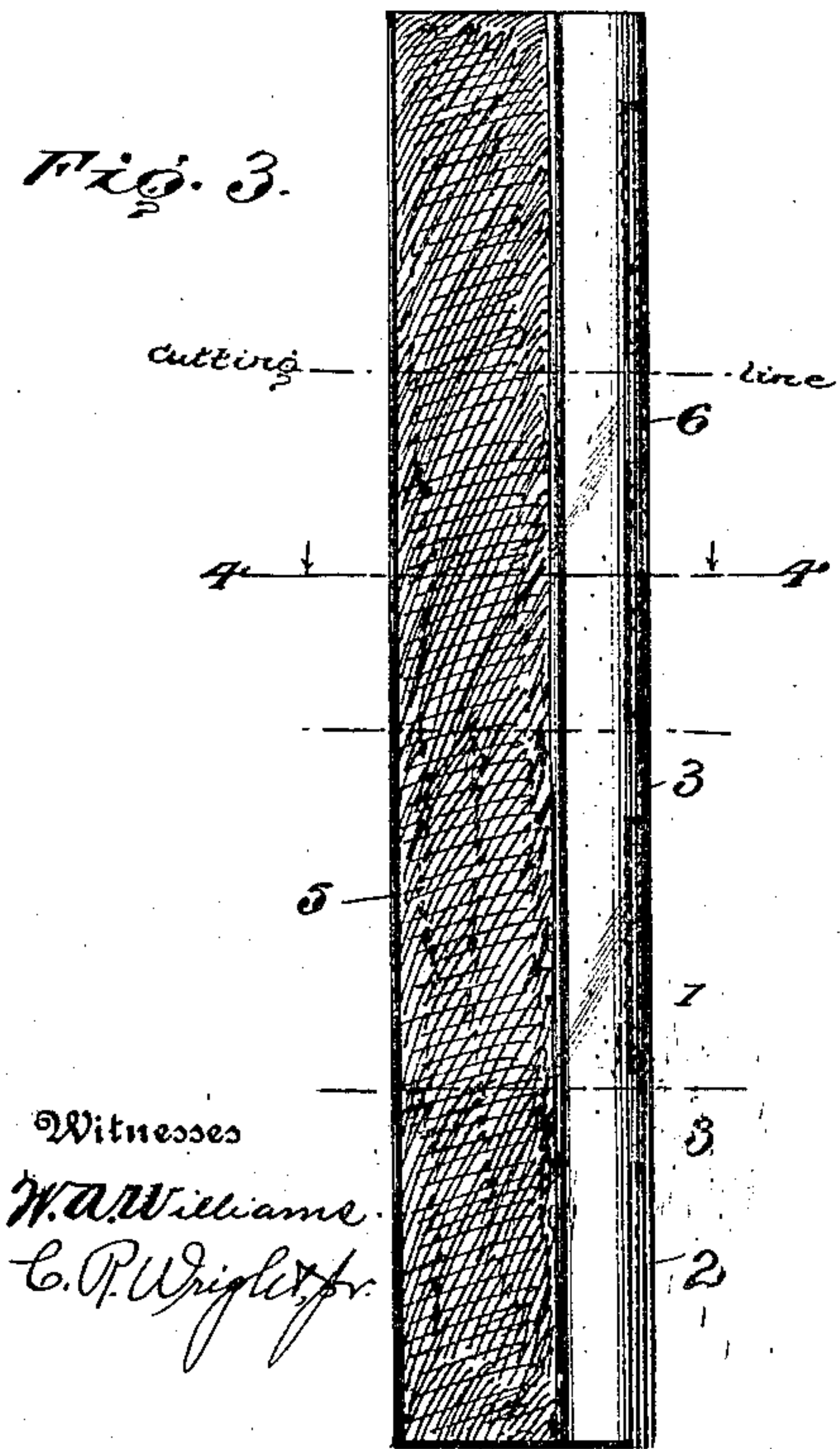
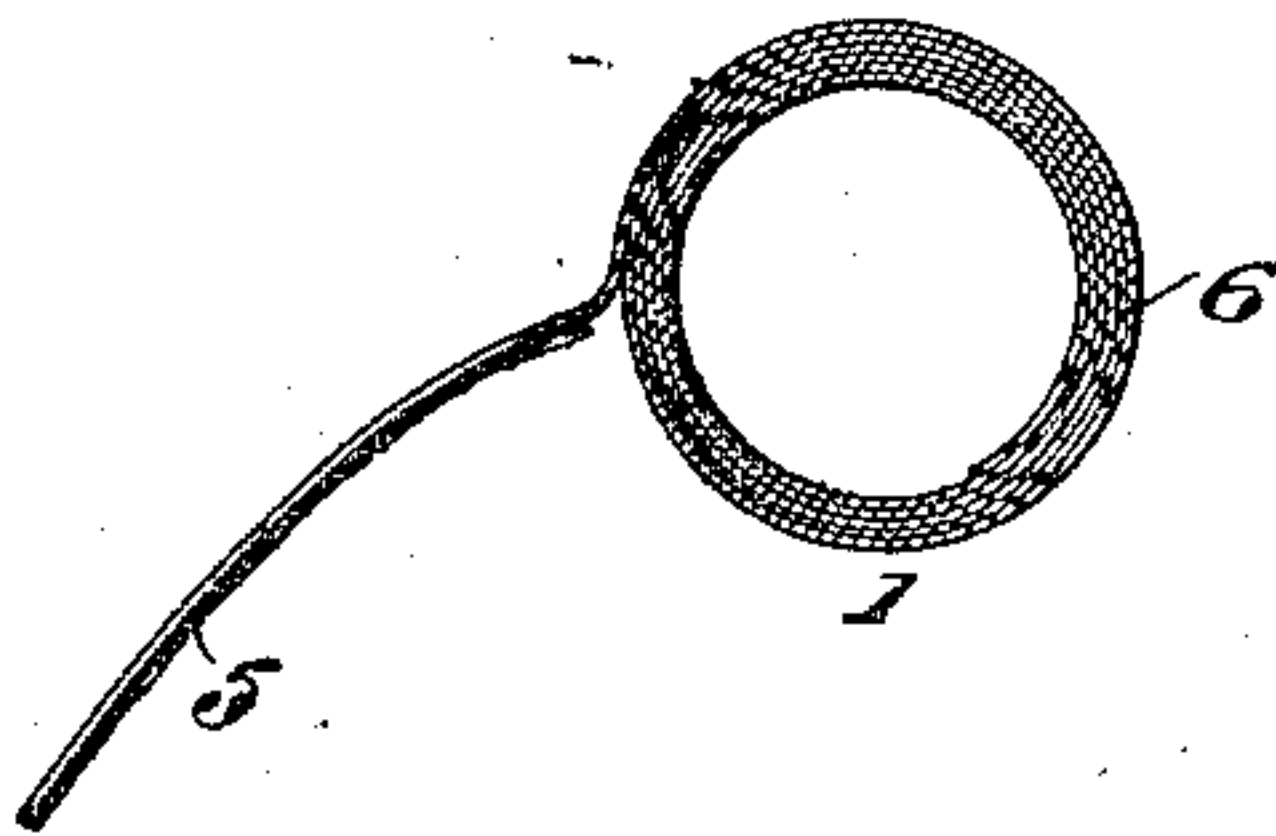


Fig. 4.



Inventor

Frank Dutcher,

A. S. Patterson,

Attorney

F. DUTCHER.

FUSEE CAP.

APPLICATION FILED AUG. 8, 1907.

Patented Sept. 21, 1909.

2 SHEETS—SHEET 2.

934,897.

Fig. 5.

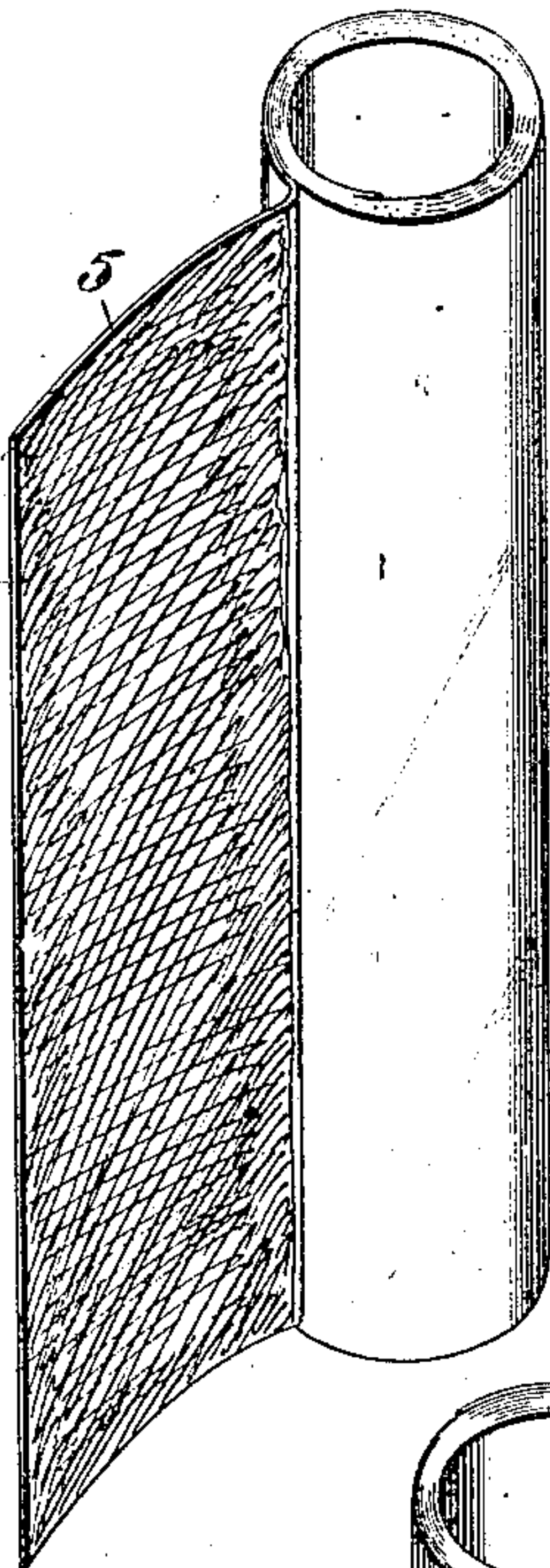


Fig. 6.

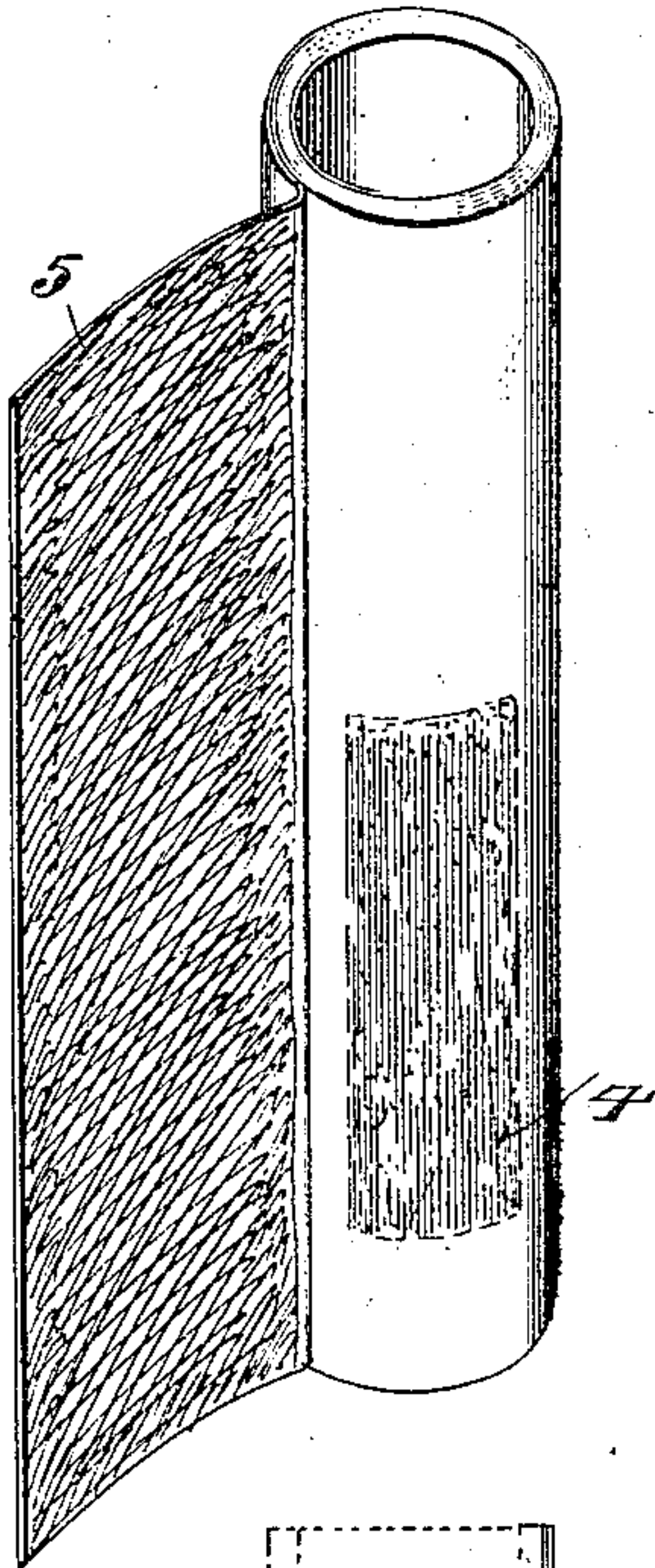


Fig. 7.

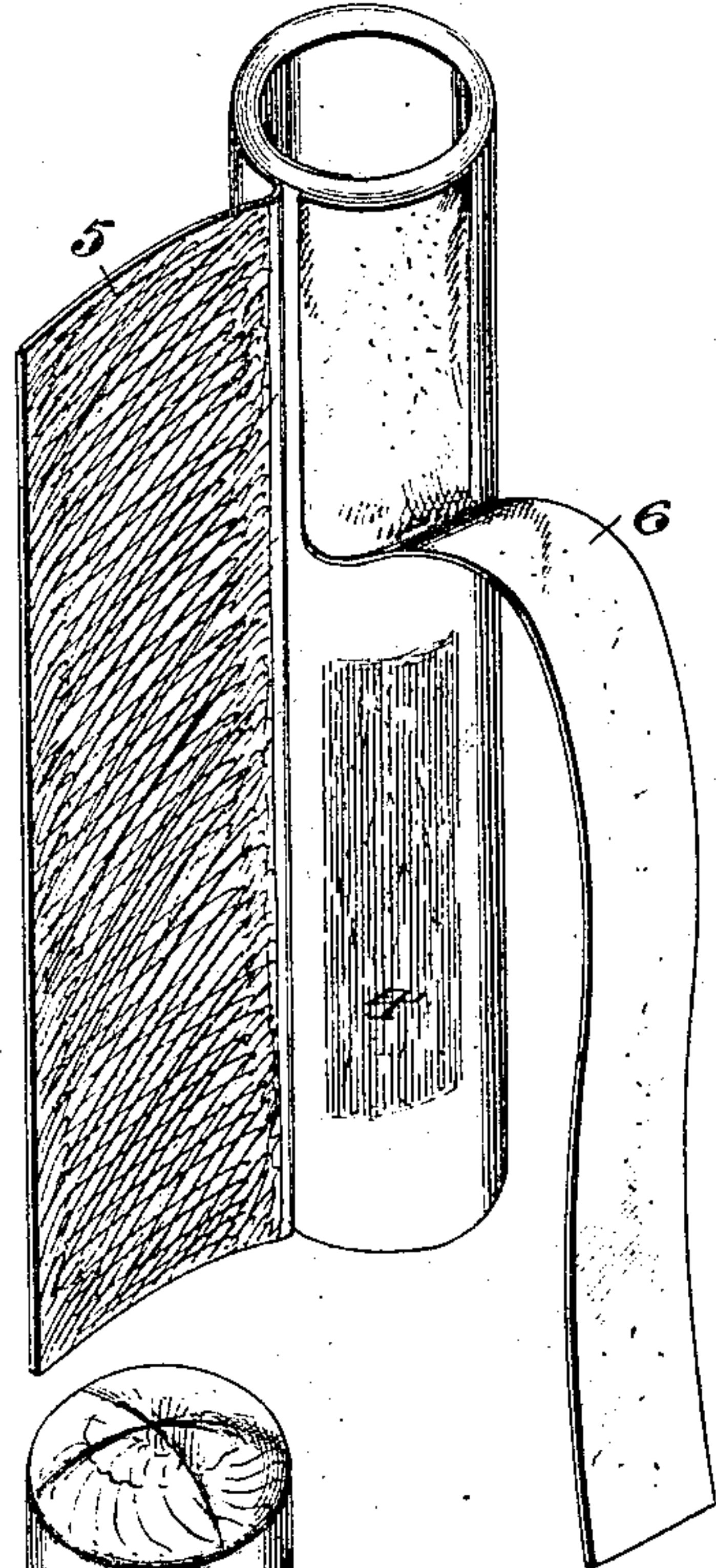


Fig. 8.

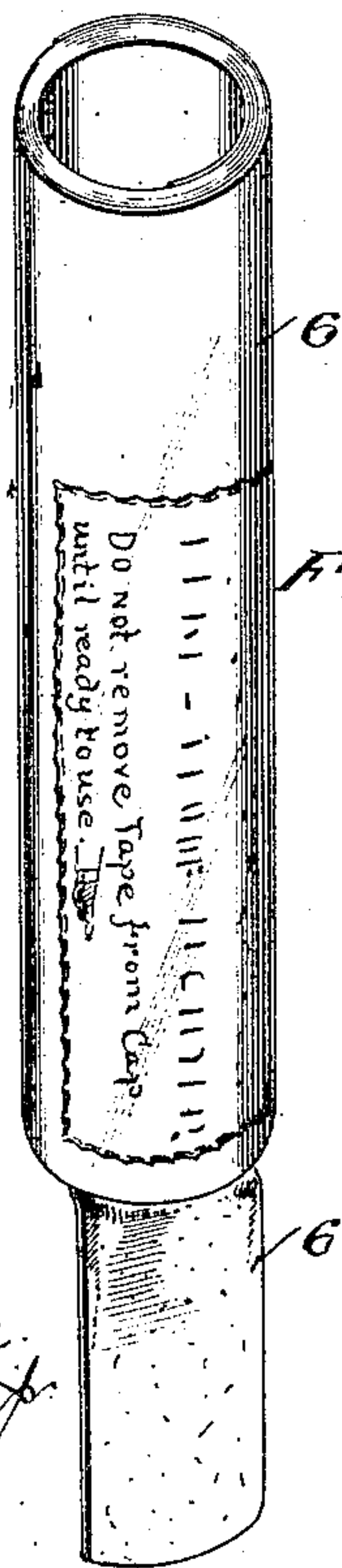


Fig. 9.

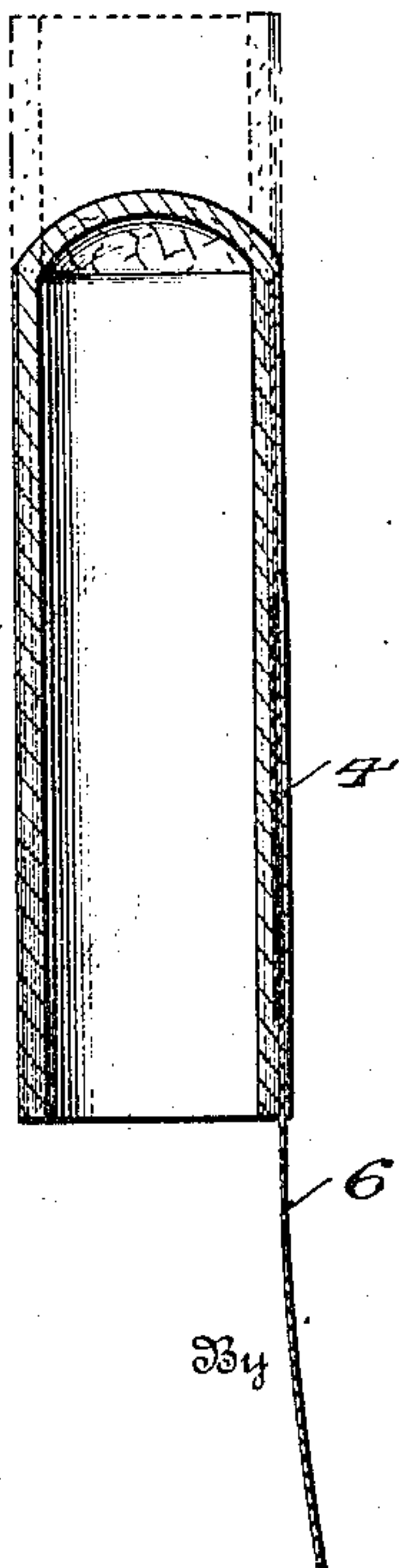
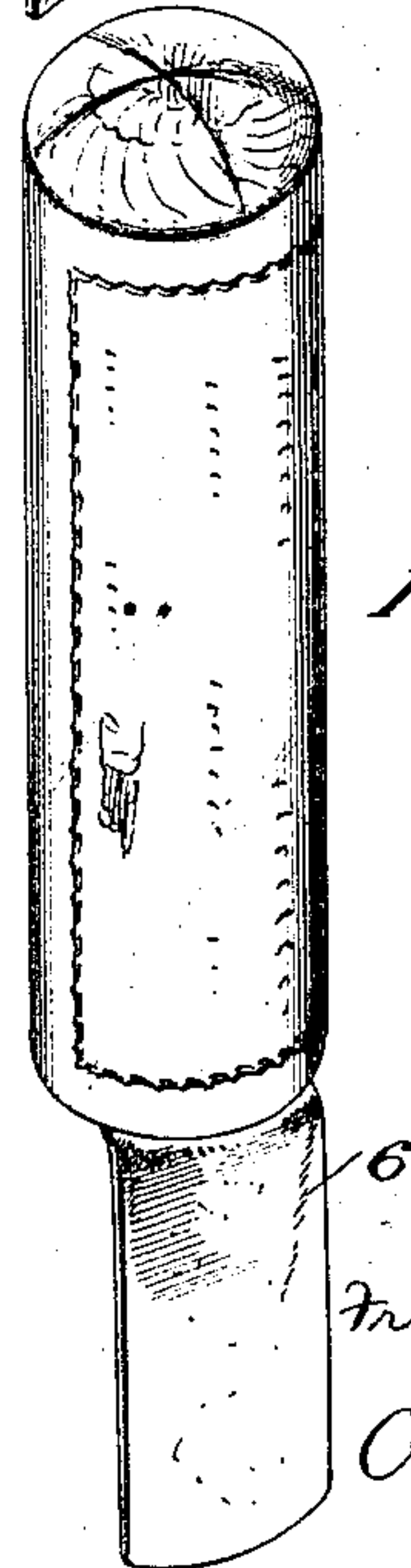


Fig. 10.



Witnesses
W. A. Williams
C. P. Wright, Jr.

Inventor
Frank Dutcher,
A. J. Patterson

Attorney

UNITED STATES PATENT OFFICE.

FRANK DUTCHER, OF VERSAILLES, PENNSYLVANIA.

FUSEE-CAP.

934,897.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed August 8, 1907. Serial No. 387,665.

To all whom it may concern:

Be it known that I, FRANK DUTCHER, a citizen of the United States, residing at Versailles, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fusee-Caps, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in fusee caps, and the objects of the present improvements are First: To form the tube for the cap and its label from a single sheet of paper. Second: To form from a single sheet of paper a tube having a plurality of labels, so that the tube may be severed at points between the labels to produce several labeled cap-tubes from the one sheet of paper. Third: To form a fusee cap-tube from a single sheet of paper with igniting material located between the outer end of the rolled sheet and the body of the tube. Fourth: The specific arrangement of the parts whereby certain additional improved results and objects are accomplished which will be fully explained hereinafter.

In the accompanying drawings Figure 1 is a plan view of a printed sheet from which the paper tube is rolled or formed. Fig. 2 is a side view of the tube formed from the printed rolled sheet. Fig. 3 is an enlarged side view of a portion of the tube, with the over-lapping end of the sheet broken away from the body of the tube. Fig. 4 is a sectional view on the line 4-4 of Fig. 3. Fig. 5 is a perspective view of a segregated portion of the tube shown in Fig. 3, and from which the cap is to be formed. Fig. 6 is a similar view with the igniting material applied to the body portion of the tube in position to be covered or embraced by the separated end of the sheet from which the tube is formed. Fig. 7 is a similar view showing the removing strip applied. Fig. 8 is a detached perspective view of the tube with the igniting material and removing strip applied and the separated end of the sheet pasted back, the tube being ready to have one end thereof closed. Fig. 9 is a vertical sectional central view of the completed tube with the extended end crimped and compressed inwardly to form a closure for one end of the tube, the extended end which has been closed inward being shown in dotted lines. Fig. 10 is a perspective

view of the completed cap with the closed end.

In making the improved fusee cap a sheet of suitable paper 1 has printed at and near one edge a plurality of labels 2, and these printed portions of the sheet are separated by the spaces 3 for a purpose to be presently explained. This sheet is then rolled into a tube, the rolling operation beginning from the unprinted edge or end of the sheet, so that when the tube is rolled the printed portions are on the outside of the tube as shown in Fig. 2. In rolling the sheet it is first coated on the unprinted side or face with paste, which unites or cements the rolled sheet into tubular form. The damp tube is then permitted to dry in any well known way. The result is a dry tube with a plurality of printed labels on the outside thereof separated by blank spaces. The next step is to break away or loosen a portion of the rolled sheet as shown in Fig. 4. The tube is then severed at a point at or adjacent the lower edge of each of the printed portions designated as "cutting lines" in Fig. 3, the result being a plurality of short tubes like that shown in Fig. 5 with the printed edge of the sheet separated from the body of the tube. This tube which is to constitute a fusee cap is then provided with a suitable amount or batch of igniting material 4 at a point to be covered or embraced by the loosened printed portion 5 of the sheet when it is repasted. A label removing or igniting material exposing strip 6 is then placed at a point to cover the igniting material and is made longer than the tube as shown in Fig. 7. Preferably this tape 6 has its upper end temporarily pasted to the body of the tube above the igniting material to hold it in position when the loose portion 5 is repasted in position. However the strip 6 could be held in position by the operator while the loosened portion 5 was being repasted. After the portion 5 has been repasted the result is a short tube containing printed directions or label and a removing tape with a projecting end to enable the sheet from which the tube is formed to be broken away for exposing the igniting material. The blank spaces 3 between the printed portions is to form an extended end 6 on the completed tube as shown in Fig. 8, the extended end to be crimped and compressed inwardly to form a closure for one

end of the tube in the manner fully explained and claimed in a co-pending application of mine.

A fusee cap constructed as herein shown and described avoids the necessity of providing a separate label; of providing a separate closure for the tube of which it is formed, and it provides a tough and substantially waterproof protection for the igniting material.

I desire to be understood that the advantages of that feature of the invention brought about by placing the igniting material and the removing tape between the outer end of the rolled sheet and the body of the tube may be had without printing the label directly on the sheet of which the roll is made. I desire to also be understood that certain features of the improvement can be utilized if the sheet is only wide enough to make a single tube like that shown in Figs. 5, 6, and 7. While I prefer to loosen the end of the sheet from the long tube shown in Fig. 2, yet it would be readily understood that the long tube can first be severed into the short tube sections, and the end of the sheet of each tube section loosened. All these and other modifications of the improvement will occur to persons skilled in this art and I do not therefore limit myself to the precise description and construction.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is:

1. As an article of manufacture, a fusee cap consisting of a fiber sheet wrapped sufficiently to form a tube having a stiff wall, the sheet having a removable outer end, and igniting material secured to the wall under the removable end of the sheet.

2. As an article of manufacture, a fusee cap consisting of a fiber sheet wrapped sufficiently to form a tube having a stiff wall, the sheet having a removable outer end, igniting material secured to the wall under the removable end, and a removing tape between the igniting material and said removable end, one end of the tape projecting beyond said removable end for the purpose described.

3. An improved fusee cap consisting of a tube formed from a sheet of wrapped fiber having igniting material and a removing tape located between the walls of the wrapped portion of the sheet, and the wall of one end of the tube and the end of the tape crimped and compressed inwardly to form a closure for the tube.

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

FRANK DUTCHER.

Witnesses:

CHARLES MOORE,
ARCH OSBORNE.