

No. 696,131.

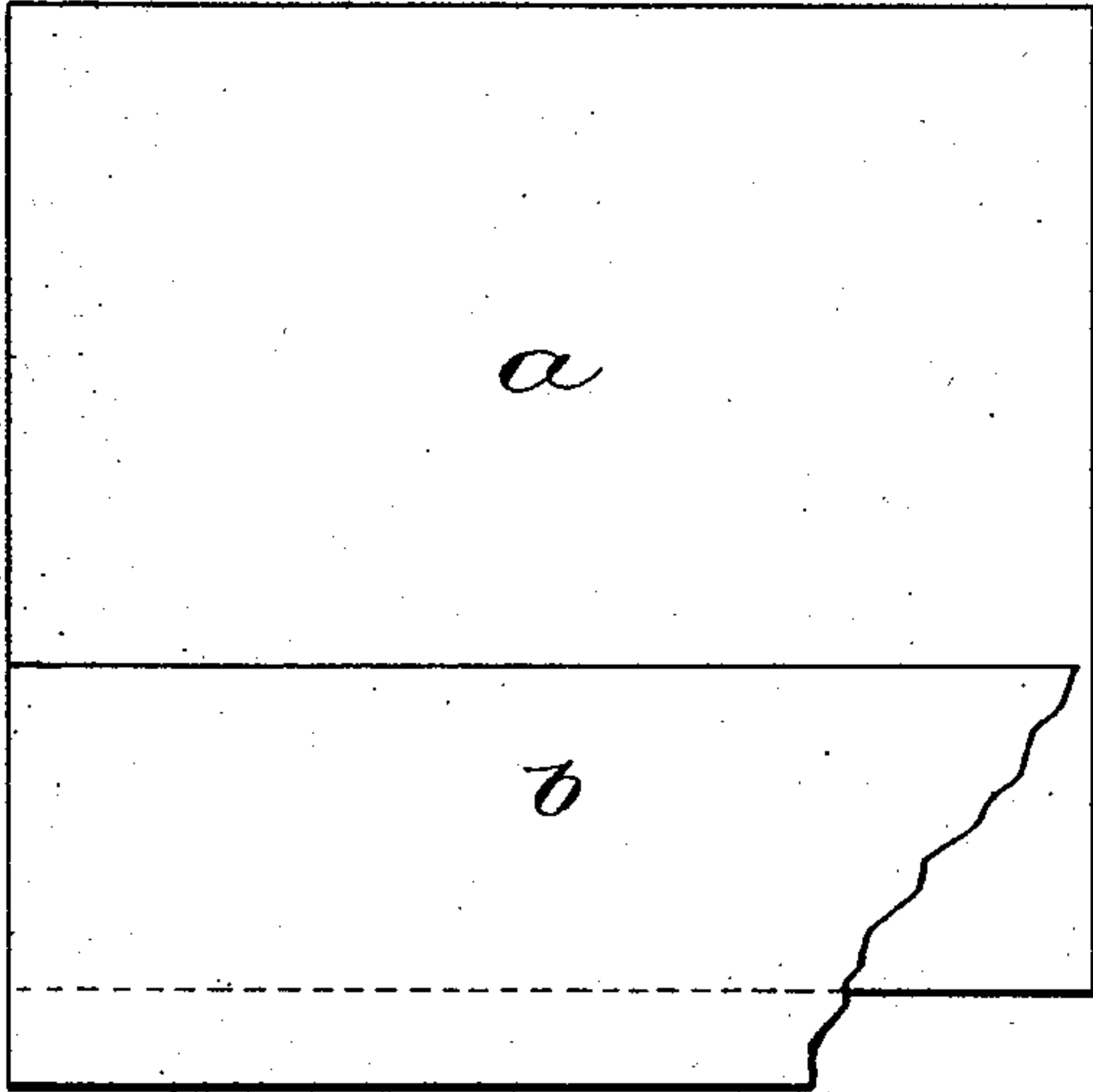
Patented Mar. 25, 1902.

C. S. BIRD.  
PAPER.

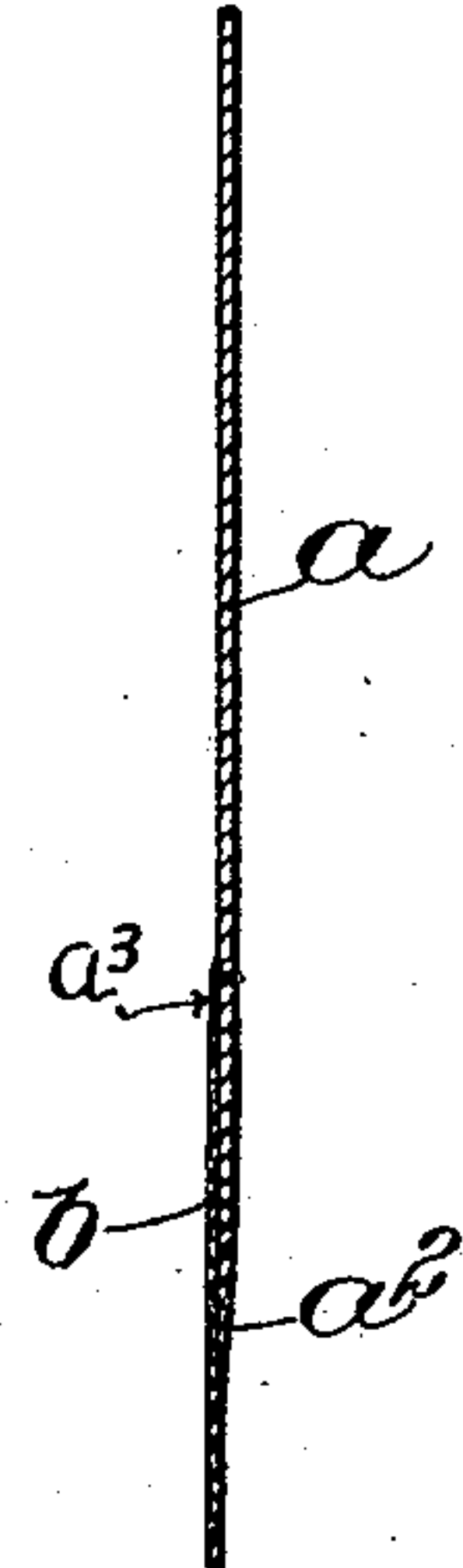
(Application filed Jan. 22, 1900.)

(No Model.)

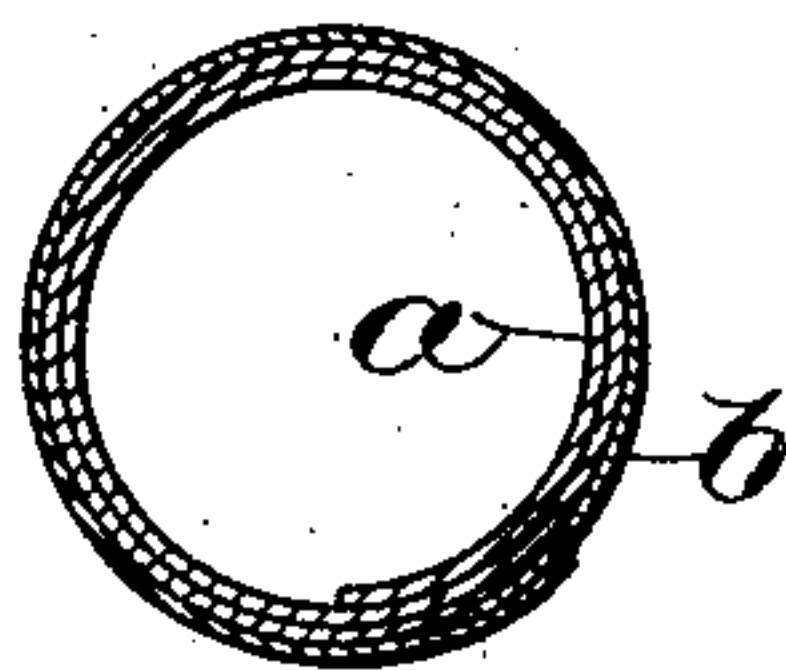
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES S. BIRD, OF WALPOLE, MASSACHUSETTS.

## PAPER.

SPECIFICATION forming part of Letters Patent No. 696,131, dated March 25, 1902.

Application filed January 22, 1900. Serial No. 2,280. (No specimens.)

*To all whom it may concern:*

Be it known that I, CHARLES S. BIRD, of Walpole, county of Norfolk, and State of Massachusetts, have invented an Improvement in Paper, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention is embodied in paper manufactured for making tubes, and relates especially to the paper used for making tubes for cartridges or other articles where a certain quality or strength of the material is required in the body of the tube, while a different quality is desirable in the outer surface of the finished tube—in other words, where it is desirable that the body portion of the tube should have certain qualities or characteristics, while the surface portion of the tube should have other qualities or characteristics.

The paper embodying the invention comprises a main or body portion of the desired quality, being usually of heavy material having some elasticity, the said body portion having along one margin an overlying strip or layer of material of the desired quality for the outer surface of the tubular articles, being, for example, thinner and finer and usually colored and of such quality as to be capable of being burnished or otherwise given a smooth hard finish. The width of the overlying strip or "marginal overlay," as it may be called, is slightly greater than the circumference of the tube to be rolled, so that when the paper is rolled up, beginning at the part of the body portion where there is no overlying strip, the body of the tube will be mainly formed of the body portion of the paper, the final turn, however, being completed by the marginal overlay, so that the outside of the tube has the desired quality, the said overlay, however, forming only the outside and need not form any substantial part of the body of the tube. In cartridge-tubes, for example, where it is desirable that the body of the tube should have some elasticity, while the outside must have a smooth finish, it is obvious that by the use of this paper the desired qualities are obtained and only one operation is required, there being a substantial advantage, therefore, over a tube rolled of material completely covered by an overlying

layer, in which case the more non-elastic overlying material extends completely through the body of the tube, and a substantial advantage over a tube the body portion of which is made of one material and completed before the outer layer is applied, so that a subsequent operation is required. The qualities desired in the marginal overlay are such that the said overlay may usually be comparatively thin, and by putting the two parts together in such a way that the overlay projects somewhat beyond the edge of the body portion it is obvious that a much smoother joint can be made where the paper terminates at the outer surface of the roll than would be the case if the sheet of paper as a whole were of uniform thickness throughout. It is also practicable in accordance with the invention to taper the edge of the body portion where it adjoins the overlay, so as to avoid forming a ridge along the outer surface of the tube where the said body portion terminates.

Figure 1 is a plan view of a sheet of paper embodying the invention with a portion of the overlay broken away. Fig. 2 is an exaggerated section, and Fig. 3 an exaggerated section of a tube rolled up from a sheet of the paper embodying the invention.

The main or body portion *a* is made of material having the qualities desired to form the main or body portion of a tube, the material in the case of cartridge-tubes usually being heavy Manila paper, which possesses some extensibility or elasticity, as is desirable, owing to the tendency of the tube to burst if it cannot stretch slightly when the shell is not closely supported by the chamber of the gun. The marginal overlay *b* is united with the body portion *a* along one edge thereof, as shown, and may project somewhat beyond the said edge, it being essential, however, only that the said marginal portion should be of sufficient width to completely cover the outer surface of the tube. The overlay is made of material which possesses the qualities necessary to afford the proper outer surface and is commonly thinner than the body portion, as indicated in Fig. 2. When, therefore, the tube is rolled up, as shown in Fig. 3, the final layer is composed wholly of the portion *b*, and the ridge where the said portion terminates is much less prominent



when the said portion projects beyond the edge of the body portion than would otherwise be the case. To make the surface of the tube still more uniform, the body portion *a* 5 may be beveled or tapered, as shown at *a*<sup>2</sup>, so that it terminates in a thin edge underneath the overlay, so that the ridge which would otherwise be present where the body portion terminates is absent in the finished tube. 10 Again, the inner end or edge of the overlay *b* may likewise be tapered, as at *a*<sup>3</sup>, Fig. 2.

I have found it desirable to unite the main and supplemental portions of the paper in the process of manufacture and to thin the 15 edges of the material, as described, also during the process of manufacture. Some of the advantages of the invention may, however, be attained if the main and body portions are otherwise united, and I do not, therefore, intend to limit the invention to any particular 20 means or method of uniting the said parts.

I claim—

1. A sheet of paper for use in forming tubes comprising a portion of one quality to be 25 rolled upon itself to form the body of the tube; and a marginal portion along that edge only of the body portion toward which the blank is to be rolled to form the tube, said marginal portion being of a different quality from that 30 of the body portion and united therewith and being of a width only sufficient to form the outside or cover of the tube, substantially as described.

2. A sheet of paper for forming tubes comprising a portion of given quality to be 35 rolled upon itself to form the body of the tube; and a marginal portion along one edge only of the body portion united with said body portion but being of a different quality from that of 40 the body portion and of a width sufficient only to surround the tube and form its external surface, substantially as described.

3. The herein-described sheet of paper for the manufacture of rolled tubes, which consists of a continuous sheet having a portion 45 of given characteristics to be rolled upon itself to form the body of the tube, and a marginal portion which is capable of being burnished or polished and is to form only the cover or 50 external surface of the tube, substantially as described.

4. A sheet of paper for forming tubes, comprising a body portion of given quality to be rolled upon itself to form the body of the tube, one end of said body portion being beveled; and a marginal portion along said beveled edge of the body portion, said marginal portion being of a different quality from that of the body portion and of a width only sufficient to surround the tube and form its external surface. 55 60

5. A sheet of paper for forming tubes, comprising a portion of given quality to be rolled upon itself to form the body of the tube, the end of said portion being beveled; and a marginal portion along the beveled edge of said body portion, said marginal portion being of a different quality from that of the body portion and united therewith, and being of a width only sufficient to surround the tube 65 70 and form its external surface, the inner end of said marginal portion being tapered or beveled, substantially as described.

6. The herein-described blank for the manufacture of rolled tubes, which consists of a continuous sheet of paper having a portion 75 of given characteristics to be rolled upon itself to form the body of the tube; and an end portion which is capable of being burnished or polished and is to form only the cover or external surface of the tube, the inner end of said end portion being tapered or beveled, 80 substantially as described.

7. A sheet of paper for forming tubes, comprising a body portion of given quality to be 85 rolled upon itself to form the body of the tube, one end of said body portion being beveled; and a marginal portion along said beveled edge of the body portion, the inner edge of the marginal portion being likewise beveled, and said marginal portion being capable of being burnished, and of a width sufficient only to surround the tube and form its external surface. 90

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 95

CHARLES S. BIRD.

Witnesses:

JOS. P. LIVERMORE,  
HENRY J. LIVERMORE.