

No. 687,711.

Patented Dec. 3, 1901.

A. S. ALLEN.

TYMPAN FABRIC FOR USE IN PRINTING.

(Application filed Apr. 14, 1900.)

(No Model.)

Fig. 1.

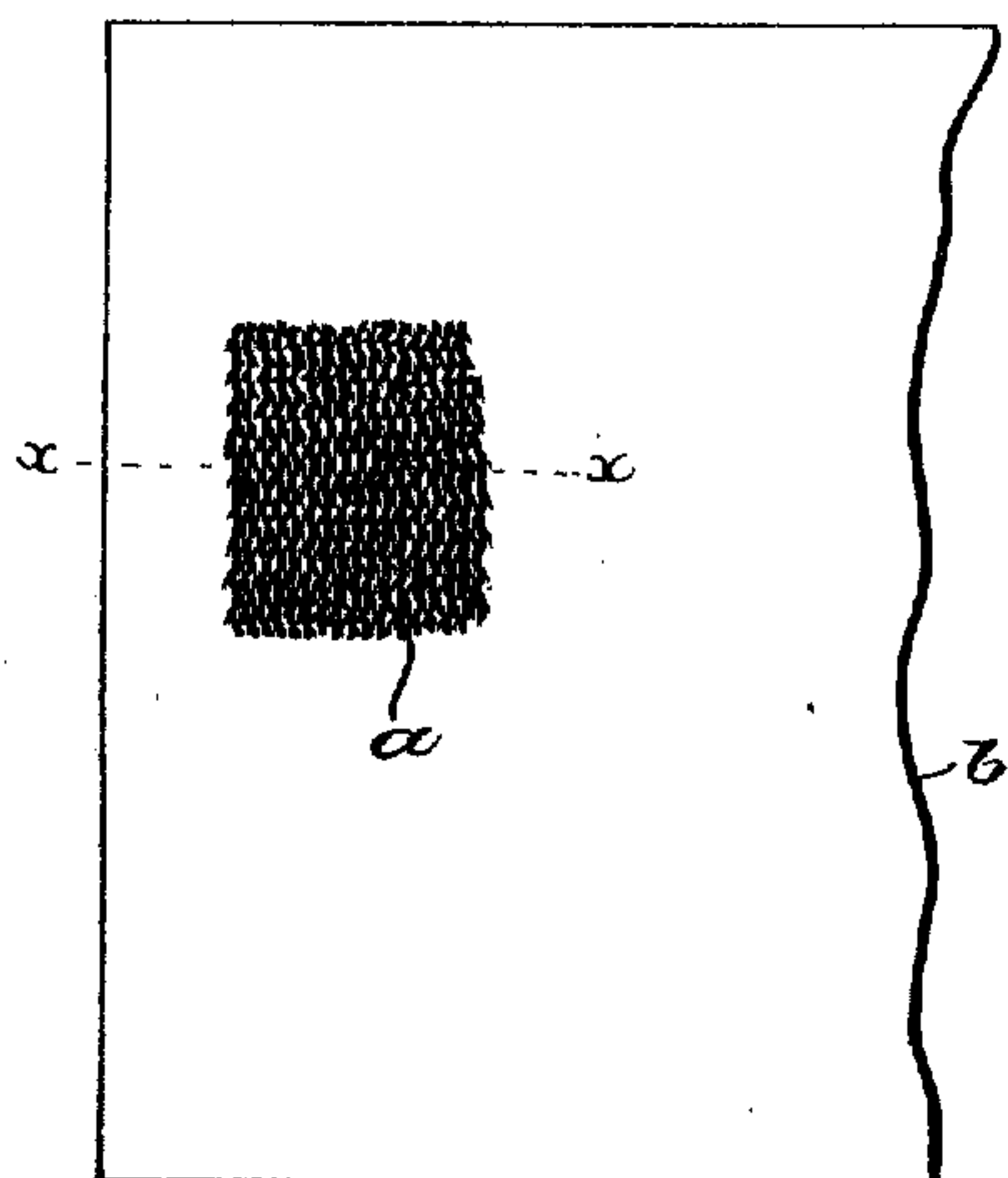


Fig. 2.

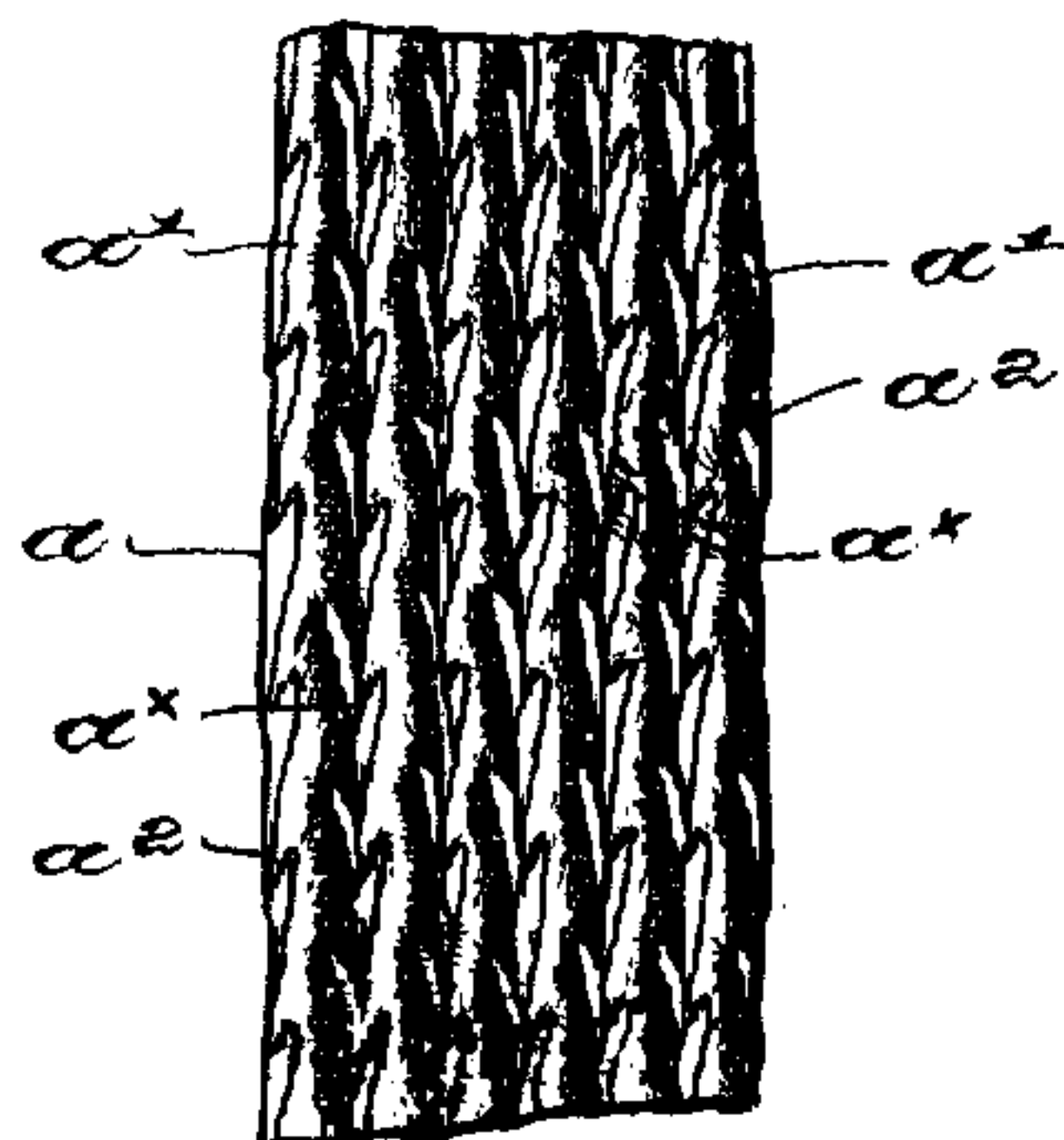
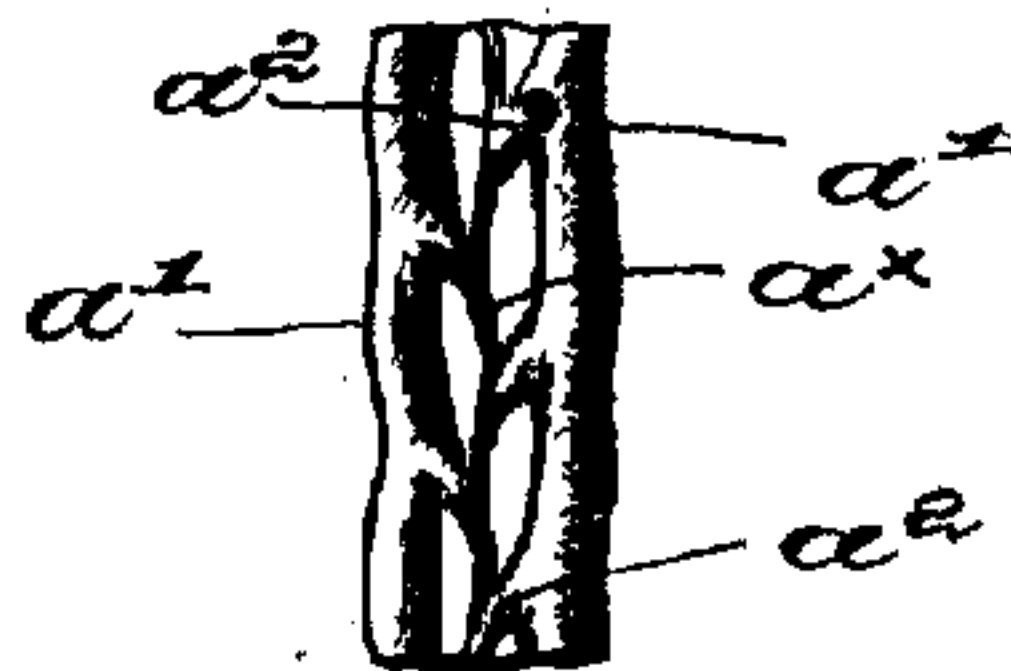


Fig. 3.



Fig. 4.



Witnesses.
 Thomas Drummond,
 Frank H. Kattie.

Inventor.
 Arthur S. Allen,
 by Leroy Ingory
 attys

UNITED STATES PATENT OFFICE.

ARTHUR S. ALLEN, OF BOSTON, MASSACHUSETTS.

TYMPAN FABRIC FOR USE IN PRINTING.

SPECIFICATION forming part of Letters Patent No. 687,711, dated December 3, 1901.

Application filed April 14, 1900. Serial No. 12,786. (No specimens.)

To all whom it may concern:

Be it known that I, ARTHUR S. ALLEN, a citizen of the United States, and a resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Tympan Fabrics for Use in Printing, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a novel tympan or tympan fabric by the use of which the operation of "making ready" in printing is greatly facilitated and to a large extent obviated, although not entirely eliminated. As is well known, making ready consumes time, and skill and experience are necessary in order to successfully perform the same, and I have heretofore patented certain improvements in tympan which largely do away with the operation of making ready, wherein a series of spring-coils are preferably embedded in a yielding bracing material interposed between the several twists of the coils, as shown and described in United States Patent No. 613,218, dated October 25, 1898. Such a tympan may yield somewhat to any unusual unevenness of printing-surface, thereby avoiding injury to the latter or to the tympan, and the unequal pressure of the printing-surface is evenly distributed at or about the point or points where yielding is necessary. In other words, the tympan embodying my invention is self-adjusting, and it substantially adapts itself to the printing-surface.

In my present invention the tympan fabric is composed of flexible material having an irregular surface composed of adjacent resilient sinuous ribs or wales, and such fabric may be used by itself to form the tympan, or it may be used as a covering for the tympan heretofore patented to me or as a backing therefor, if desired. I prefer to make the tympan fabric of soft vulcanized rubber, the surface being molded by a suitable matrix applied to the face of the rubber with pressure during vulcanization. In actual practice the sinuous ribs or wales are quite small, substantially parallel to each other, and they give to the surface of the fabric a peculiar wavy twilled appearance, and by reason of

the character of the surface the tympan fabric is well adapted for very fine and delicate work. By reason of the flexibility of the fabric it can be used in connection with a flat, curved, or circular printing-surface, and it is readily applied and held in place on the press.

I have found that one form of matrix may conveniently be a tympan composed of a series of spring-coils supported by a yielding substance as a bracing, such as substantially in the manner hereinbefore referred to, the portions of the coils exposed at the face of the fabric forming the depressions in the rubber sheet to be vulcanized, the sinuous ribs or wales resulting from the spaces between such exposed portions of the coils. In the present instance the matrix employed has what may be termed "double" series of spring-coils, the tops of the coils of the one series being inclined in one direction, while the tops of the coils of the other series of coils are inclined in a different direction.

Figure 1 is a top or plan view of a portion of tympan fabric embodying my invention. Fig. 2 is a similar view, but very much enlarged to show more clearly the structure thereof. Fig. 3 is a cross-sectional view on the line $x x$, Fig. 1; and Fig. 4 is a plan view on a large scale of a portion of the fabric stretched transversely to the ribs or wales to more clearly show the intermediate subordinate ribs connected with the main ribs.

Referring to the drawings, the fabric is composed of a sheet of flexible resilient material a , such as soft india-rubber, having an irregular surface formed by a series of adjacent sinuous ribs or wales a' substantially parallel to each other and raised above the body of the sheet. Between the main ribs, which form the impression-receiving and pressure-distributing surface, are a series of subordinate ribs a^x of less height than the main ribs and connected therewith by branches a^2 , which diverge from said main ribs below the tops thereof. The branches a^2 and subordinate ribs a^x form a species of herring-bone bracing or connection (see Fig. 4) between the main ribs or wales a' , strengthening the latter laterally and serving to maintain them in proper position and also assisting in restoring them to normal position when dis-

placed. When the printing-surface opposed to the tympan fabric is uneven, the ribs or wales *a'* yield proportionally to the height of the opposed portion of the printing-surface, and such yielding is evenly and uniformly distributed at or about such point or points, the resiliency of the ribs holding them up to their work while permitting the requisite yielding. Such a tympan fabric may have applied thereto, to constitute a smooth fine surface on which the paper or material may lie when receiving the impression, one or more layers of paper or cloth or equivalent material commonly exposed at the face of a tympan.

The tympan fabric herein described may be applied to any form of press or printing-machine, and it is cheap, durable, and highly efficient.

I prefer to apply to the under side of the sheet *a* a backing, as *b*, Fig. 3, of cloth, canvas, or other suitable material, to impart additional strength and durability without detracting in the least from the flexibility, resiliency, or effectiveness of the tympan fabric. Such backing also prevents improper stretching or pulling of the fabric as a whole.

The sinuosity of the ribs or wales serves to more thoroughly distribute the latter over the impression-receiving surface and obviates the formation of furrows or continuous hollows therein, the subordinate ribs and their connecting branches also coöperating to the same end.

My invention is not restricted to the precise construction and arrangement herein shown, as the same may be modified without departing from the spirit and scope of my invention.

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

1. A tympan fabric for use in printing, composed of flexible material having a series of closely-arranged resilient, sinuous impression-receiving ribs or wales upon its surface.

2. A tympan fabric for use in printing, com-

posed of flexible material having a series of closely-arranged resilient, sinuous impression-receiving ribs or wales upon its surface, and auxiliary branches extended from one of said ribs or wales and intersecting similar branches from an adjacent rib or wale.

3. A tympan fabric for use in printing, composed of flexible, resilient material having an irregular surface formed by adjacent, homogeneous sinuous ribs or wales.

4. A tympan fabric for use in printing, composed of flexible material having a series of resilient, sinuous main ribs or wales, and subordinate ribs alternating therewith and connected with said main ribs or wales at or near the bases thereof.

5. A tympan fabric for use in printing, composed of flexible material having a series of resilient, sinuous main ribs or wales, and subordinate ribs alternating therewith and connected by divergent branches with said main ribs or wales below their upper surfaces.

6. A tympan fabric for use in printing, composed of flexible, resilient material having an irregular surface formed by adjacent, homogeneous sinuous ribs or wales, and a backing for the flexible, resilient material.

7. A tympan fabric for use in printing, composed of flexible material having an irregular impression-surface formed of adjacent, resilient and substantially parallel sinuous ribs or wales.

8. A tympan fabric for use in printing, composed of resilient, flexible material having an irregular surface formed of sinuous, homogeneous impression-receiving ribs or projections, and smaller alternating ribs composed of diagonal branches springing from adjacent main ribs and intersecting each other.

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

ARTHUR S. ALLEN.

Witnesses:

GEO. W. GREGORY,
JOHN C. EDWARDS.