E. H. ANGIER.

REINFORCED TAPE.

APPLICATION FILED OCT. 21, 1914.

1,195,430.

Patented Aug. 22, 1916.

Fig. 1.

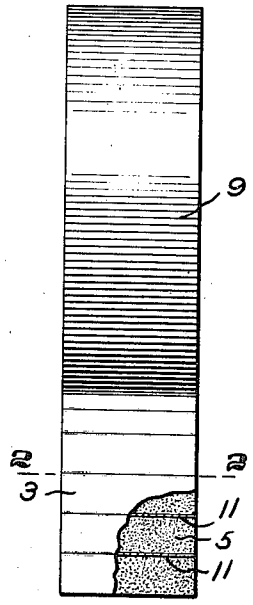


Fig. 3.

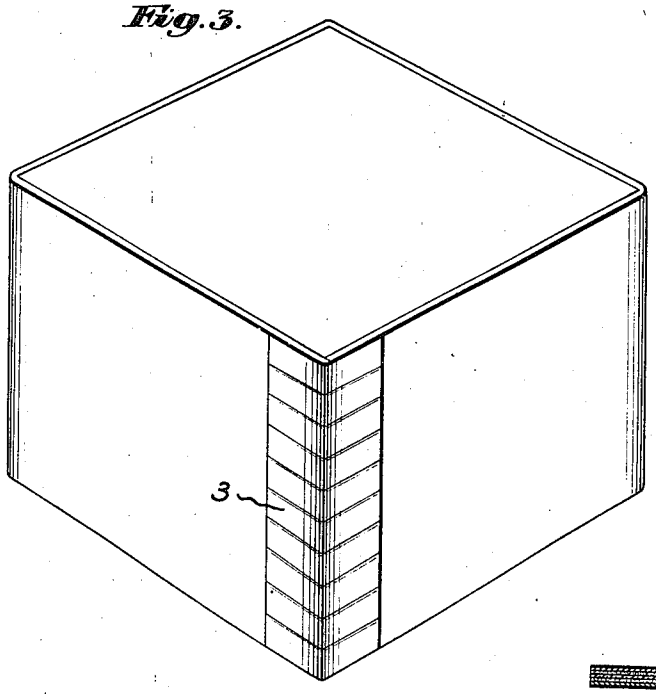
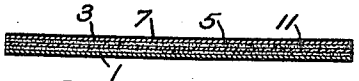


Fig. 2.



Witnesses:
Horace A. Troseman.
Llewellyn Richards.

Inventor:
Edward H. Angier.
by Emery, Booth, Janney & Varney
Attys.

UNITED STATES PATENT OFFICE.

EDWARD H. ANGIER, OF FRAMINGHAM, MASSACHUSETTS.

REINFORCED TAPE.

1,195,430. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed October 21, 1914. Serial No. 867,886.

To all whom it may concern:

Be it known that I, EDWARD H. ANGIER, a citizen of the United States, and a resident of Framingham, Massachusetts, have invented an Improvement in Reinforced Tape, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to reinforcing tapes which are used for strengthening the corners of paper boxes and for other purposes.

The character of the invention may be best understood by reference to the following description of an illustrative embodiment thereof shown in the accompanying drawing, wherein:

Figure 1 is a view of a roll of reinforcing tape shown herein as embodying the invention; Fig. 2 on an enlarged scale is a transverse section taken on line 2—2 of Fig. 1; and Fig. 3 is a perspective view of a box having a corner reinforced by the tape.

Referring to the drawing, the illustrative tape shown therein as embodying the invention comprises a ribbon-like layer 1 of strong paper or other appropriate material. Combined with this layer is a layer 3 which may be also of paper or other appropriate material. To secure these layers together and provide a water-proof protection therefor, a layer of adhesive black asphaltum 5 may be interposed between them, although other appropriate adhesive or water-proof material may be employed if desired. The outer face of one of the paper layers is provided with a coating layer 7 of gum which is normally dry and non-adhesive but when moisture is applied thereto, it will readily strongly stick to the surface to which the tape is applied. These ribbon-like strips are preferably manufactured of very great lengths and when it is desired to apply the tape along the end portions of a box (Fig. 3) adjacent the corner thereof to unite the same the proper length of tape is severed from a supply. This supply may be in the form of a roll 9 conveniently mounted on a suitable dispensing reel (not shown).

To provide sufficient strength in the direction of the length of the tape it is essential that the grain of the paper should run in the direction of the length of the tape; otherwise it will be likely to be torn and fail to withstand the pull which is brought to bear thereon in unrolling the reel. However, when the reinforcing tape is applied to the marginal portions of a box adjacent the corner of the box the greatest stress on the tape is not in the direction of the length thereof, but is transversely to the length thereof. Since the grain of the paper runs in the direction of the length of the tape instead of transversely thereof, the paper when applied to reinforce the box is weakest where it should be strongest.

An important feature of the invention relates to reinforcing means for the tape to supply the desired strength thereto transversely to the direction of the length thereof. To accomplish this, short threads or strings 11 of hemp or other appropriate material are distributed at intervals along the tape transversely to the length thereof. In the illustrative embodiment of the invention shown herein these threads are embedded in and secured in place by the adhesive layer between the paper layers, although obviously they might be inserted within one of the paper layers or be secured in an adhesive layer on the face of one of them. When the threads are introduced between the paper layers, however, they are protected against displacement by the layers and permit smooth and uninterrupted surfaces to be had on opposite sides of the tape.

In applying the tape described to a box the proper length of tape to fit the corner of the box is severed from a source of supply. It is then folded centrally longitudinally thereof and its gum face moistened and pressed to the portions of the box adjacent the same, where it is secured in intimate adhesive engagement. When thus applied the strengthening threads extend transversely across the corner and their tension prevents the ends of the box adjacent said corner from pulling apart.

The tape may be used to unite terminals of the box blank or to reinforce a corner formed by scoring and bending the box material. This bending causes the fiber to be ruptured more or less all along the corner, thereby weakening the part of the box which is subjected to the greatest amount of wear. When a tape such as described herein is applied to the corner this weakness is compensated for and the corner is greatly strengthened.

While the tape herein has been described more particularly in connection with its use for reinforcing box corners, it will be under-

stood that it is not limited to this use, but it may be employed for a great variety of purposes as desired.

Having described one illustrative embodiment of the invention without limiting the same thereto, what I claim as new and desire to secure by Letters Patent is:

1. A reinforcing tape for box corners and other purposes comprising a plurality of narrow ribbon-like layers of paper, an adhesive layer between and securing said paper layers together, and short threads embedded in said adhesive layer and extending transversely to the length of the tape.

2. A reinforcing tape for box corners and other purposes comprising a plurality of narrow ribbon-like layers of paper, an adhesive layer between and securing said layers together, short threads in said adhesive and extending transversely to the length of the tape, and a gum coating on the outer surface of one of said paper layers.

3. A reinforcing tape for box corners and other purposes comprising a plurality of narrow ribbon-like layers of paper, an adhesive layer between and securing said layers together, and short threads spaced at intervals transversely to the length of the tape.

4. A reinforcing tape for box corners and other purposes comprising a plurality of narrow ribbon-like layers of paper of indefinite length, an adhesive layer between and securing said layers together, and short threads extending substantially perpendicularly to the length of the tape.

5. A reinforcing tape for box corners and other purposes comprising a narrow ribbon-like layer, an adhesive layer, and a multiplicity of short threads extending transversely to the length of the tape.

6. A reinforcing tape for box corners and other purposes comprising a narrow ribbon-like layer, short threads distributed at intervals along said layer transversely to the length thereof, and a gum coating on one face of said layer.

7. A reinforcing tape for box corners and other purposes comprising a narrow ribbon-like layer having its grain extending longitudinally thereof, and short threads distributed at intervals along the tape and extending transversely to the grain of said layer.

8. A reinforcing tape for box corners and other purposes comprising a narrow ribbon-like layer having its grain extending longitudinally thereof, short threads distributed at intervals along the tape and extending transversely to the grain of said layer, and a gum coating for a face of said layer.

9. A reinforcing tape for box corners and other purposes comprising a plurality of narrow ribbon-like layers, a water-proof adhesive layer securing them together, and short threads distributed at intervals along the length of said tape and extending transversely to the length thereof.

10. A reinforcing tape for box corners and other purposes comprising a narrow ribbon-like layer, a water-proof layer in adhesive engagement therewith, and short threads distributed at intervals along said tape and extending transversely to the length thereof.

11. A reinforcing tape having tension threads 11 distributed at intervals along and extending transversely to the length thereof and adapted to extend across and strengthen the corner of a box.

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

EDWARD H. ANGIER.

Witnesses:
HENRY T. WILLIAMS,
EVERETT S. EMERY.