G. A. BRACKETT.
Grain-Band.

No. 202,697. Patented April 23, 1878.

Fig. 1.

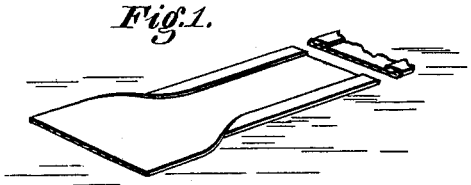


Fig. 2.

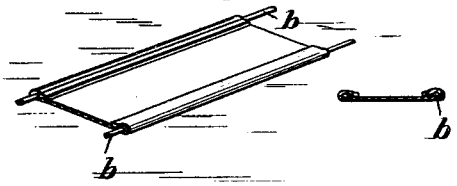


Fig. 3.

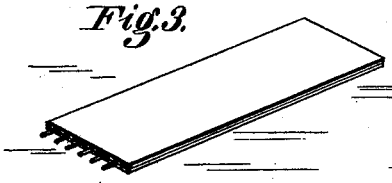


Fig. 4.

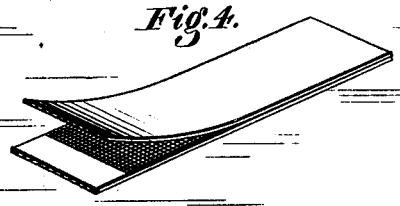


Fig. 5.

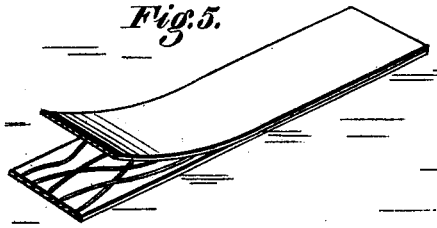
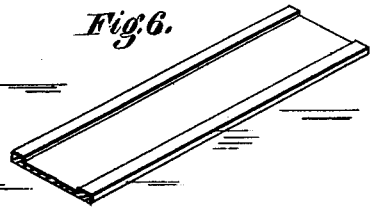


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE A. BRACKETT, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN GRAIN-BANDS.

Specification forming part of Letters Patent No. **202,697**, dated April 23, 1878; application filed March 7, 1878.

To all whom it may concern:

Be it known that I, GEO. A. BRACKETT, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Grain-Bands, of which the following is a specification:

This invention relates to improvements in bands for binding grain, made of paper or similar material, but designed more particularly as an improvement upon the bands for which Letters Patent of the United States were granted to David Olmsted, dated January 11, 1876, and August 8, 1876, and numbered, respectively, 171,950 and 180,910; and the invention consists in strengthening the bands by folding, doubling, or thickening their edges, or by incorporating therein, in any suitable manner, threads or other long fiber, or both strengthening the edges and introducing the fiber.

Referring to the accompanying drawings, the various figures represent different forms or modifications of my improvement.

In Figure 1 the band is represented as consisting of a single flat strip or thickness of paper, having its two edges turned over inward and folded down upon the main portion. The edges thus folded give to the band an increased strength at the edges, and prevent the danger of the band being torn or broken, as would be the case were the raw edges of the paper exposed on the outside, as in the original Olmsted patents.

In Fig. 2 the band is represented as consisting of a single strip or thickness of paper, having its edges folded inward in the same manner as in Fig. 1, with threads or cords *b* inclosed and confined thereunder, the cords thus introduced serving the double purpose of giving the band additional tensile strength, and of preventing it from being torn or broken inward upon the edge.

In Fig. 3 the band represented consists of two layers or webs of paper, having a series of longitudinal threads between them, the threads being introduced in a greater or less number at the edges alone or at the intermediate points, as preferred. The threads are preferably introduced at the time of manufacturing the paper by running them between the two webs or layers of pulp in the paper-forming machine; but they may be introduced between two thicknesses or layers of completed hardened paper, the layers of paper being, in such case, cemented, glued, or otherwise secured together by means of suitable mechanism arranged to lay the threads properly between.

Fig. 4 represents a band consisting of two thicknesses or layers of paper, having between them a layer of thin woven material—such, for example, as the material known in the market as "tarleton," and which may be introduced at the time of forming the paper, or subsequently.

Fig. 5 represents a band consisting of two layers or thicknesses of paper, having hempen or other long and strong fiber arranged longitudinally between them, the fiber being distributed evenly, but at random. When the fibrous material represented in Figs. 3, 4, and 5 is introduced at the time of forming the paper, the two layers or thicknesses of the latter will adhere firmly to each other, and become knitted together in such manner as to form, in effect, a single homogeneous body with the fiber incorporated therein.

Fig. 6 represents a band consisting of a single layer or web of paper, having its edges made thicker or heavier than its central portion, the band being formed in this manner upon the paper-making machine.

Bands constructed as in Figs. 3, 4, and 5 may have their edges folded or crimped down, as in Figs. 1 and 2, or in any other suitable manner which will produce a band with edges of increased thicknesses and strength.

While the above-described figures illustrate those forms or methods of construction which I prefer to employ, other forms may be employed without departing from the limits of my invention, provided they give to the paper band a thickened or strengthened edge, or incorporate therewith longitudinal strengthening-strips or fiber.

Among the modifications which may be adopted, as above suggested, is that of strengthening the band of single thickness by cementing or otherwise attaching to its edges a narrow strengthening-strip of paper or cloth, or similar material, which may be applied upon one face only, or folded over the edge and down upon both faces of the band. The

folded edges represented in Figs. 1 and 2 may be glued, cemented, or otherwise fastened down, or they may be left unfastened, as preferred.

It will, of course, be understood that the present bands, like the original Olmsted bands, are to be rendered water-proof; that they may be made in short lengths suitable for binding single bundles, or in a continuous roll of great length, from which the bands will be cut by the binding-machine; and that the form of lock shown in the Olmsted, or any other form of locking-lips, or other means of fastening the bands upon the grain, may be employed.

Having thus described my invention, what I claim is—

1. A paper grain-band having its edges turned or folded inward, substantially as shown.

2. A paper grain-band having a thin body, with edges of increased or double thickness, substantially as shown and described.

3. A paper grain-band having thickened or folded edges, with thread or cord inserted therein, substantially as and for the purpose described.

4. A prepared band for binding grain, consisting of a narrow strip of water-proof paper, having threads, woven material, or long fiber incorporated longitudinally therewith, substantially as shown and described.

5. A prepared paper band for binding grain, having its edges strengthened by cord or its described equivalent.

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