(No Model.)

S. O. BRIGHAM.

METHOD OF APPLYING BINDING TO THE EDGES OF BOLTING CLOTHS AND SIMILAR FABRICS.

No. 307,091. Patented Oct. 28, 1884.

Fig 1

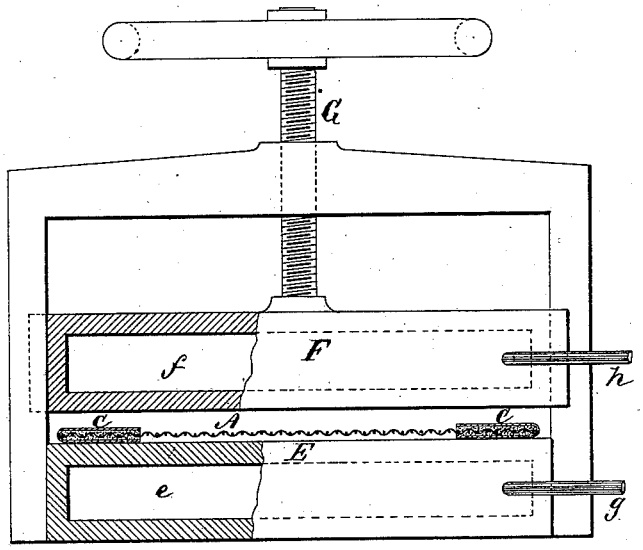

Fig 2

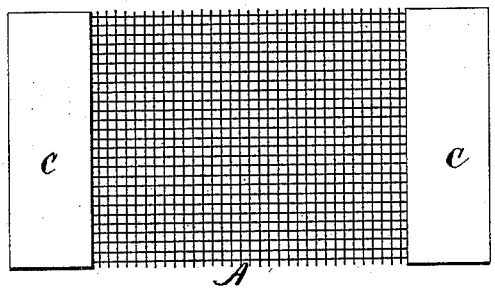

Fig 3

WITNESSES:

Rudolf Hyneman

John H. Fisher

INVENTOR

Silas O Brigham

BY James A Whitney

ATTORNEY

UNITED STATES PATENT OFFICE.

SILAS O. BRIGHAM, OF NEW YORK, N. Y.

METHOD OF APPLYING BINDING TO THE EDGES OF BOLTING-CLOTH AND SIMILAR FABRICS.

SPECIFICATION forming part of Letters Patent No. 307,091, dated October 28, 1884.

Application filed November 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, SILAS O. BRIGHAM, of the city, county, and State of New York, have invented certain Improvements in Methods of Applying Binding to the Edges of Bolting-Cloth and Similar Fabrics, of which the following is a specification.

This invention relates to bolting-cloth—such, for example, as that used in shaking-bolts—and composed of silk or wire or other suitable material; but the invention may also be applied in attaching bindings to the edge of fabrics for other purposes—as, for example, shaking-sieves, purifiers, &c.

My said invention is an improvement upon the method set forth and described in my former Letters Patent dated October 3, 1882, No. 265,302; and its object is to enable the binding, the cementing material, and the edges of the fabric to be held permanently and uniformly connected or united together, inasmuch as a flat pressure extending over a comparatively large surface and continued during an appreciable length of time secures these results with a nearer approach to perfection than when the said parts are pressed together between rollers, which at any one time subjects but a narrow portion of the surface to compression.

Figure 1 is a front view and partial sectional view representing an apparatus which can be employed in carrying into effect my said invention, the said figure also representing in cross-section an improved article of manufacture included in my said invention. Fig. 2 is a plan view illustrating the said article of manufacture, and Fig. 3 is a transverse sectional view on a larger scale, also illustrating the same.

A is the bolting fabric—in other words, the sifting fabric—which may be silk or ordinary bolting-cloth, or preferably of wire-cloth of suitable mesh or character of wire. This cloth or fabric, whatever its character as aforesaid, may be made in pieces or strips of any suitable length, and when the same is to be applied to a bolting-reel should be of such width that one of its longitudinal edges will rest upon one of the ribs of the reel, while the opposite longitudinal edge rests upon one of the adjacent ribs, and so on. Each longitudinal edge, *a*, has placed upon each side a longitudinal strip, B, of sheet india-rubber. These strips may, when desired, be made in one piece, folded so that one portion is above and the other below the fabric.

Placed over the strips B of india-rubber—that is to say, upon the external surface of the india-rubber strips—is a piece of cloth, C, which may be folded around the edge, as shown at *a'*. This cloth is preferably that commonly known as "ticking;" but any other cloth of suitable strength and flexibility may be used. The parts being arranged as just set forth, are pressed between heated flat surfaces under conditions which subject the india-rubber to the action of heat as well as pressure, the result being that the two strips B of india-rubber have their inner surfaces firmly cemented together through the interstices of the fabric, while each individual thread or wire of the latter is embedded in and firmly retained by the india-rubber embedded thereon, the fabric being simultaneously firmly cemented to the outer surface of the india-rubber by the combined action of the heat and pressure. Each piece or length of the fabric, having its two opposite edges provided with the india-rubber B and cloth C, may be readily attached to the ribs of the reel by tacks driven through the india-rubber and cloth, or, when desired, by sewing the two contiguous edges of adjoining strips or pieces together. Inasmuch as all the transverse threads or wires of the fabric are firmly embedded separately and collectively in the india-rubber, it follows that there is no inequality of strain upon said threads or wires. There is no such direct contact of the fabric with the ribs as would cause unequal working or wearing of the fabric or any of its threads or wires, and a perfectly flexible but strong and uniform connection of all the edges of each piece or length of the sifting fabric to the ribs of the reel is secured.

In the manufacture of the article aforesaid the edges provided with india-rubber cloth are placed between the bed E and platen F of the press represented in Fig. 1. The said bed and platen should be heated to such a degree as will effectually soften the india-rubber or ce-

menting material without dissipating the same or impairing the adhesive properties thereof. Such heating of the bed and platen may be most effectually accomplished by having the same made hollow, as represented at *e* and *f* in the sectioned portion of Fig. 1 aforesaid, and by supplying the internal chambers, *e* and *f*, of said bed and platen with steam through pipes *g h*, or in any other suitable manner. The platen F is worked up and down, as occasion requires, by means of the usual screw, G. The fabric A, with its longitudinal strips B of india-rubber or cementing material, and its binding-pieces C, are placed upon the bed E and beneath the platen, whereupon the latter is caused to descend with any requisite degree of pressure to compress the binding-cloth C upon the cloth or fabric A, with the india-rubber or cementing material interposed between the said binding-cloth C and the cloth or fabric A. It will be seen that those portions of the said parts compressed between the platen and the bed aforesaid are subjected to what may be termed a "flat pressure"—that is to say, a pressure substantially uniform throughout the extent of surface—between the platen and the bed, and which may be maintained for any requisite length of time, so that the permanent introduction of the cementing material, be it rubber or some other suitable substance, into the interstices of the fabric is secured, thereby producing a very much more effective and reliable mode of attachment of the binding-cloths to the cloth than would be feasible by passing the same between rollers, which latter, by exerting only a momentary pressure upon any portion of the said parts, does not insure that uniform, firm, and complete adhesion of the parts which is necessary to insure the best results in practice. When one portion of the fabric A, with its india-rubber or cementing material B and binding-cloths C, has been subjected to the action of the press aforesaid for a sufficient length of time, the pressure is released and the next adjacent part is brought forward in its place into the press and in its turn subjected to the action of the latter, and so on until the binding-cloth has been attached, as aforesaid, to the fabric A. When preferred, the india-rubber, before being applied, may be itself softened by any suitable means, and in this semi-plastic condition may be applied in place and have the cloth applied to the outer surfaces thereof. In such cases the pressure may be applied by the press at ordinary temperatures. When desired, however, the binding-cloth C may be coated on one side with india-rubber of the requisite depth or thickness, and by any ordinary or suitable means. This compound material may be cut into strips of suitable width, and these may be folded over the edges of the bolting fabric A, and then compressed thereon under conditions of heat and pressure by means of the press to insure the firm adhesion of the adjoining surfaces of the india-rubber and the attachment of said combined material to the edges of the bolting fabric A thoroughly and effectively, as hereinbefore set forth. Ordinarily the india-rubber B and cloth C, when applied to the bolting fabric as aforesaid, should extend inward from the outer edge about one and one-half inch—that is to say, when the strips of india-rubber and cloth are folded over the edge upon the opposite sides of the bolting fabric, as hereinbefore described, said strips of india-rubber and cloth should have the width of about three inches. The bolting cloth or fabric A may have the usual or any suitable width.

In lieu of india-rubber, any of the usual or known equivalents thereof may be employed—that is to say, substances having like properties of elasticity, strength, plasticity, and adhesiveness combined with the property of more or less softening under conditions of heat, such, for example, as the compound very generally known as a "cement" composed of india-rubber, litharge, and white lead.

While the use of heat, as hereinbefore explained, is preferable, yet by the use of a cementing material capable of solidification at ordinary temperatures the attachment of the parts may be secured by means of the "flat pressure," so termed, alone.

In further explanation of the advantages and merits of my said invention, it is to be observed that when the edging is applied to the bolting-cloth by means of rollers, the latter act only momentarily upon the material, and the more perfect the operation of rolling the more the contact approaches a mathematical line. Inasmuch as the pressure is only between the nearest surfaces of the rollers, and as the latter rotate continuously, the pressure is only momentary at any one portion of the binding. This does not afford time for the cementing material and the parts which it is designed to connect to so accurately fit themselves into the desired relation, and the attachment of the binding in place is proportionally imperfect. This is particularly true with reference to bolting-cloth in which the binding is folded across the edge of the cloth with one part below and the other above, the upper and lower portion of the binding being thus cemented at the outer edge by that part which is folded across the edge of the bolting-cloth. If now we subject the binding thus applied in place to the action of rollers, the result will be to press the flat portions of the binding out of place with reference to the edge, the tendency being to force the folded outer edge of the binding away from the edge of the bolting-cloth. Furthermore, the action of the roller will be to force the cementing material forward in advance of the roller, thereby removing it from between the pressed portions of the binding and that portion of the bolting-cloth to which said portions are designed to be affixed. This action of the roll-

ers tends, therefore, to remove the cement instead of to affix it in place for connecting the binding to the bolting-cloth. The action of the roller upon the cement is, in fact, very similar to that of the well-known roller-wringers upon wet fabrics, the yielding materials being forced out in advance of the greatest pressure of the rollers. As compared with this, in attaching the binding to bolting-cloths, a very great advantage is obtained by means of my invention herein set forth, inasmuch as this latter, by giving a direct pressure over considerable areas and in a direction perpendicular to the surface, causes the cement to be forced to unite directly through and to fill the meshes of the bolting-cloth, and thereby in the most secure manner attach the binding to said bolting-cloth.

What I claim as my invention is—

The herein-described method of cementing a binding-cloth, C, to a bolting or sifting fabric, A, which consists, essentially, in placing the said parts in their relative positions with a suitable cementing material between and then subjecting the same to compression between coincident flat or substantially flat surfaces in such manner as to exert a substantially uniform pressure thereon over more or less considerable areas thereof, substantially as and for the purpose herein set forth.

SILAS O. BRIGHAM.

Witnesses:
JAS. F. MACSHANE,
BENJ. F. DEVOE.