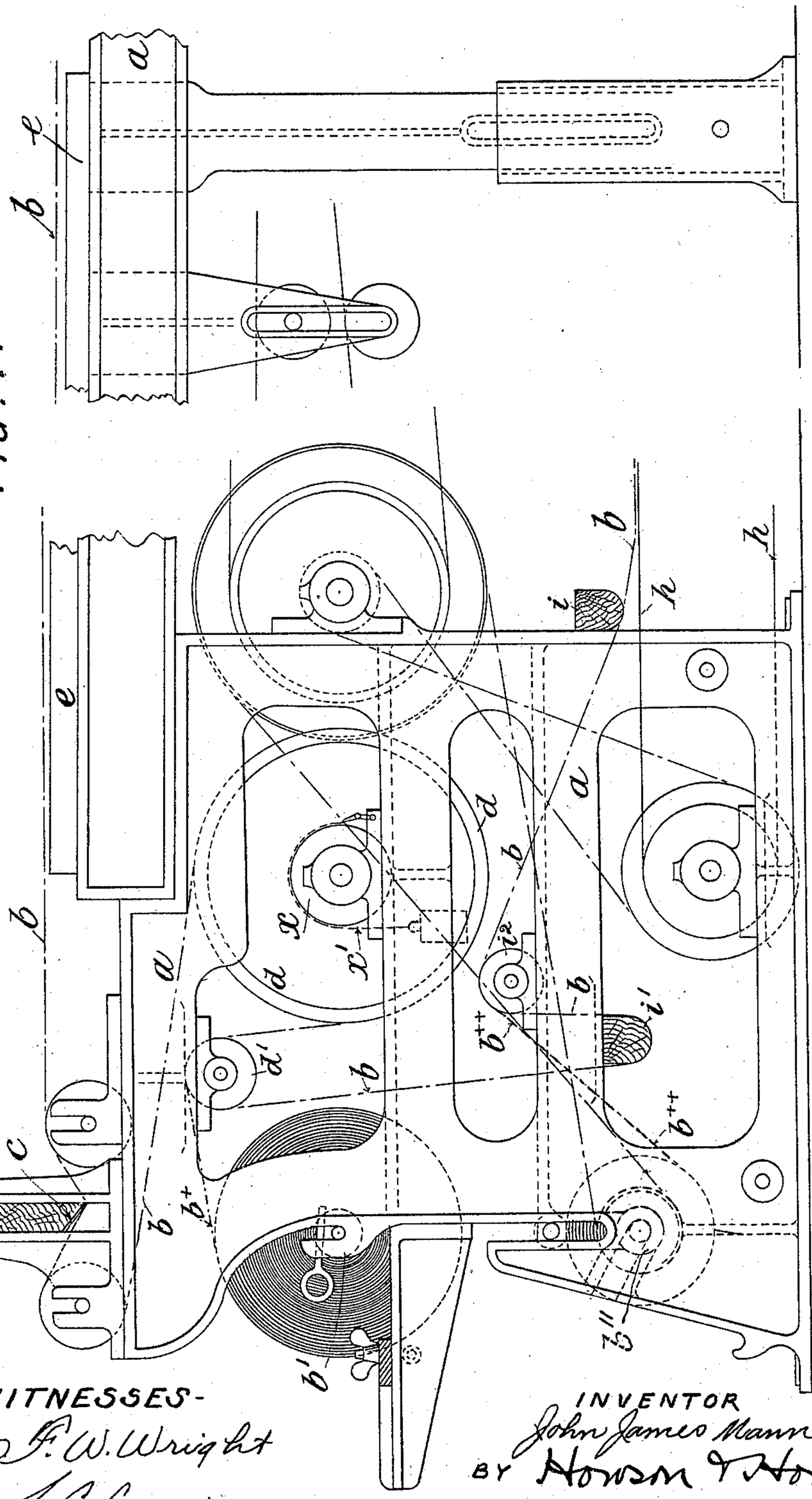
(No Model.) 2 Sheets—Sheet 1.

J. J. MANN.

MACHINE FOR SPREADING WATERPROOFING MATERIAL UPON FABRICS.

No. 590,157. Patented Sept. 14, 1897.

FIG. 1.



WITNESSES-

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(No Model.) 2 Sheets—Sheet 2.

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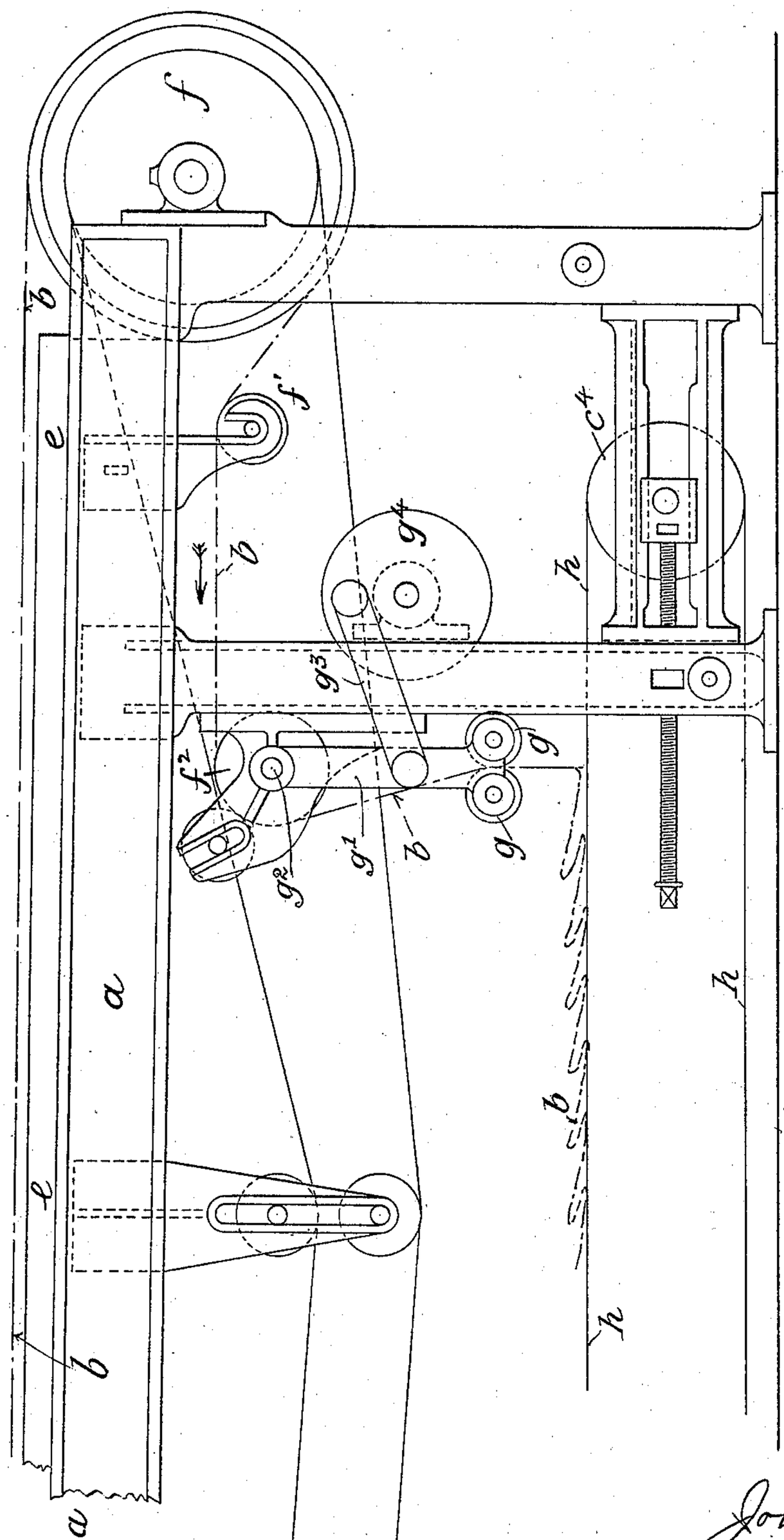

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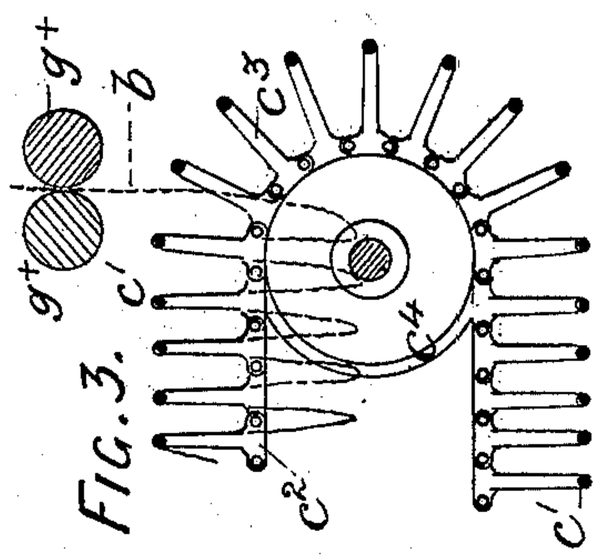

FIG. 3.

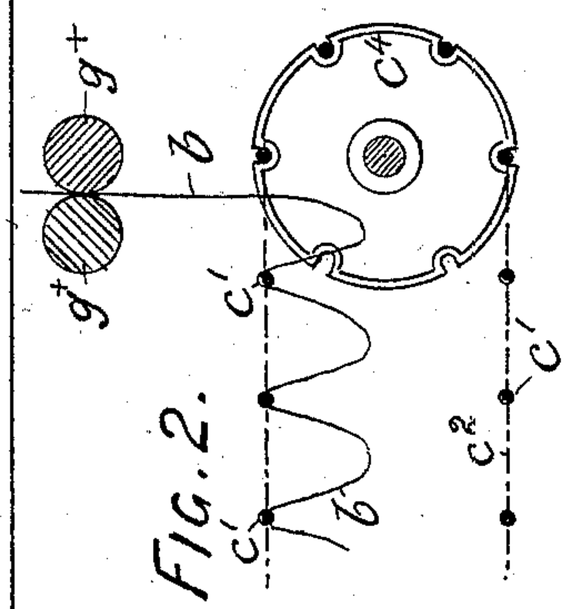

FIG. 2.

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UNITED STATES PATENT OFFICE.

JOHN J. MANN, OF PARIS, FRANCE.

MACHINE FOR SPREADING WATERPROOFING MATERIAL UPON FABRICS.

SPECIFICATION forming part of Letters Patent No. 590,157, dated September 14, 1897.

Application filed December 24, 1896. Serial No. 616,880. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAMES MANN, engineer, a subject of the Queen of Great Britain, residing at Paris, France, have invented new and useful Improvements in Machines for Spreading Waterproof Material Upon Fabrics and for other Similar Purposes, of which the following is a specification.

This invention relates to machinery or apparatus employed for spreading waterproofing or like material or composition upon woven or other fabrics, the object being to facilitate the operation of spreading several successive coats of such material or composition upon the fabric.

Supposing, for example, that it is desired to give six successive coats of waterproof material or composition to a piece of fabric by my improved apparatus, the said fabric is brought to the machine as usual in a batch and its end fastened to a cloth "tailpiece" or cord, which is threaded through the machine, but instead of winding it as it receives its first coating upon a roller or "batch" it is passed through the mechanism which takes up the fabric in an extended or otherwise smooth and uncrumpled form until the whole length has been unwound from the batch. The coated end of the fabric then comes to the front of the machine again and is joined to the rear end before it passes through the spreading apparatus, and then the remaining coatings may be given continuously and without further trouble. The ends of the fabric are then separated and the latter may, if desired, be wound upon a batch and carry the threading cord or fabric (to which the coated fabric has been again joined) through the machine, and be finally cut away therefrom.

The surplus length of the endless fabric to be coated may be taken up by passing the said fabric in a zigzag direction around suitable guide-rollers, one or more of which is adjustable automatically (by springs or weights) or otherwise, to regulate the tension on the fabric to be coated, or I may arrange tension-rollers which hold the fabric before the spreading mechanism and deliver it after it has been dried by the steam-chest (or other drying device) to apparatus which disposes of the surplus length of the fabric between the end of the said steam-chest or drying apparatus and the front of the machine in a loose but even and uncrumpled form. Such apparatus may consist of mechanism for laying the fabric lightly in folds (say upon a creeper) in such a way that it can be unfolded as required by simply drawing it by rollers or the like, or it may consist of a series of rods or bars arranged in the form of an endless lattice upon two chains. Between each pair of these rods a loop of the fabric is delivered by suitable rollers, the said rods being moved by the chains toward the front of the machine while the fabric hangs upon them, the loop of fabric being then withdrawn from each pair of rods by a suitable roller or rollers and delivered to the spreading apparatus again, and the said rods pass round with the chains to the back again to take up a fresh loop of cloth, or other means may be employed for returning the surplus fabric in a loose but continuous and uncrumpled state to the front of the machine to receive a fresh coat of the waterproofing or other material.

My invention will be readily understood from the following description on reference to the accompanying drawings.

Figures 1 and 1^a are side elevations of the rear and front ends of a machine for spreading waterproof material upon a fabric with my invention applied thereto in one form. Figs. 2 and 3 are detached diagrams showing modifications hereinafter more particularly referred to.

a is the framing of the machine.

b is the cloth to be coated, shown endless, as hereinafter described, but the cloth to be coated will in the first instance come from a batch seen at *b'*, as shown by the dotted line b^+, and will finally be wound upon the batch-roller seen at *b''*, as shown by the dotted lines b^{++}.

c is an ordinary spreader or doctor stretching across the piece and spreading the waterproofing or similar material thereon in the usual manner, but any other spreading apparatus may be employed.

d is a roller covered with suitable material, around which the fabric *b* is passed over the guide-roller *d'* before passing to the spreading mechanism. The roller *d* is provided with brake-pulleys *x* and band-brake *x'* or other device for retarding its motion, so as to

put a suitable drag upon the fabric to be coated.

e is the usual steam-chest for drying the coating spread upon the fabric *b*, which is immediately passed over the said steam-chest *e*, as shown. After passing over the steam-chest *e* and around the revolving roller *f* at the rear end of the machine the coated fabric is brought round a suitable guide-roller *f'* and delivering-rollers f^2 to a plaiting-down apparatus consisting of a pair of rollers *g g* at a suitable distance apart, carried by a rocking arm *g'*, hanging on a fulcrum g^2 and moved by a link g^3 and crank g^4. The rollers *g g* and the arm *g'* deliver the fabric *b* in folds upon an endless traveling apron *h*, moving in the direction shown by the arrow, Fig. 1ª, and in this condition the fabric *b* is carried back to the front of the machine.

The speed of the apron *c* and the motion of the arm *g'* are such that when the end of the fabric which was first coated arrives at the front of the machine it can be joined to the other end of the fabric which has not yet passed to the roller *d*.

In passing the fabric to the front of the machine I employ tension-rails *i i'* and a roller i^2 or equivalent means to complete the tension upon the fabric at this point and allow the fabric to be quite loose between the plaiting-down mechanism and the front of the machine, and yet always insure perfect tension of the fabric between the roller *d* or its equivalent and the roller *f*.

When the tailpiece or other threading fabric or cord comes to the front of the machine, it can be passed over the roller i^2 and wound on a batch at *b''* and cut away from the cloth *b*, leaving the latter free to be joined up endless, as above described. This batch can then be removed from its bearings.

When the endless cloth or fabric *b* has passed a sufficient number of times through the machine and the end first finished has reached the front of the machine, it can be separated from the rear end of the fabric and carried (say from the roller i^2) to a "batch-roller" at *b''*. The rear end of the fabric *b* may then be fastened to the end of a fresh piece of fabric to be coated or to the tailpiece or threading fabric or cord and the fabric can then be finished and wound on the batch at *b''* and severed from the above fabric or cord.

Instead of the plaiting-down mechanism I may employ two fixed rollers $g^\times$ (see Figs. 2 and 3) in fixed bearings, delivering the coated and dried fabric *b* to a creeper formed of rods or bars *c'*, carried by chains c^2, the motion of the chains c^2 and rods or bars *c'* being such that as the cloth *b* is delivered it will fall in a fold or loop between two of the bars *c'*.

The links of the chain c^2 may be formed or provided with arms c^3, at the end of which the rods or bars *c'* are carried, so that the said rods or bars *c'* will be farther apart as they pass around the ends of the pulleys c^4 by which the chains are supported and driven, so that the loops can be formed in the fabric between the rods or bars *c'* without difficulty, although the rods or bars *c'* may be close together when the chain is straight.

I have shown three methods of applying my invention, but, as before stated, I do not wish to limit myself to such methods, as for other spreading apparatus other means may be adopted to carry the said invention into practice.

I claim as my invention—

1. The combination with apparatus for spreading waterproof material upon fabrics or for similar purposes, of mechanism whereby the fabric can be passed through the machine in an open length and mechanism whereby the fabric having been joined endless in the machine when the first end has once passed through can then be repassed through the machine as often as desired in this endless form, and finally, the ends being separated, wound upon a batch and removed in this form, substantially as set forth.

2. The combination in a machine for spreading waterproof material upon fabrics or for similar purposes, of mechanism for first passing the fabric through the machine in an open length, with mechanism consisting of apparatus for conveniently disposing of the long length of coated fabric and for so regulating the tension upon part of the fabric that the same can be joined endless, and passed again through the machine, and mechanism whereby the fabric having been sufficiently treated, the ends thereof can be separated and the fabric delivered by the machine in a portable condition, all substantially as described.

3. The combination in a machine for spreading waterproof material upon fabrics or for similar purposes, of tension-rollers and guide-rollers for passing the fabric through the machine in open length, additional guide-rollers for passing the fabrics when endless, batch-roller brackets and batch-rollers mounted therein, driving mechanism for said batch-rollers, with spreading and drying apparatus and mechanism for disposing of the slack fabric, substantially as set forth.

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

J. J. MANN.

Witnesses:
HERBERT W. BOWEN,
JUAN GADARIO.