

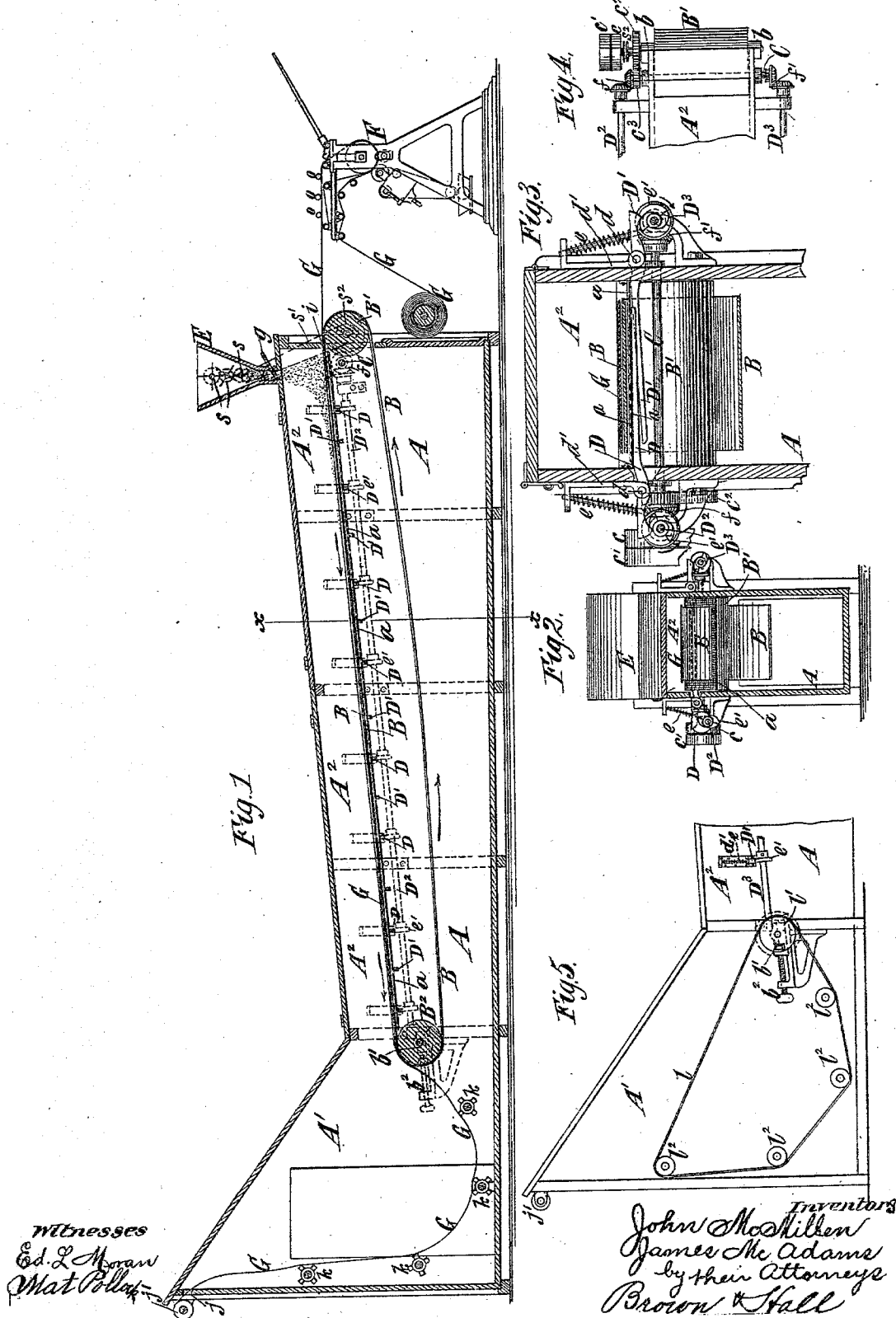
(No Model.)

J. McMILLEN & J. McADAMS.

METHOD OF FLOCKING PAPER AND OTHER FABRICS AND MACHINE THEREFOR.

No. 296,428.

Patented Apr. 8, 1884.



UNITED STATES PATENT OFFICE.

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METHOD OF FLOCKING PAPER AND OTHER FABRICS, AND MACHINE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 296,428, dated April 8, 1884.

Application filed January 7, 1884. (No model.)

To all whom it may concern:

Be it known that we, JOHN McMILLEN and JAMES McADAMS, both of the city and county of New York, in the State of New York, have invented a new and useful Improvement in the Method of Flocking Paper and other Fabrics, and in Machines therefor, of which the following is a specification.

Our invention is more particularly intended for flocking wall-paper; but both the method and machine may be used in flocking other kinds of paper and other fabrics.

Our invention relates to a method of flocking in which the paper or fabric is moved continuously forward while distributing flock upon it, and is subjected to a heating action as it moves; and it also relates to a machine for flocking.

The invention includes a method of flocking paper or other fabric which consists in printing with adhesive substance on the paper or fabric, in moving the paper or fabric continuously forward, and then upward to a point of delivery after printing, in delivering flock upon the printed paper or fabric as it moves, in subjecting the paper or fabric to a beating operation during its forward movement, to produce the uniform distribution and adhesion of the flock, and in subjecting the paper or fabric to a second beating or a shaking operation as it moves upward to the point of delivery, for the purpose of shaking off any superfluous flock, which otherwise would remain on the paper or fabric.

The invention also consists in the combination of a closed box having a flexible bottom of canvas or other material, an endless apron or carrier arranged to travel immediately above the bottom of the box, and serving to move continuously forward the paper or other fabric which rests upon it, beaters arranged below the bottom of the box for acting thereon a printing-machine for printing with adhesive substance on the paper before it enters the box, and a hopper or distributor for flock arranged at that end of the box at which the paper enters.

The invention also consists in other combinations of parts, hereinafter described, and referred to in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of an apparatus embodying our invention. Fig. 2 is a transverse vertical section thereof on the dotted line *xx*, Fig. 1. Fig. 3 is a transverse section of the upper portion of the apparatus, also on the dotted line *xx*, and on a larger scale. Fig. 4 is a plan of the forward portion of the closed box and its appurtenances; and Fig. 5 is a side elevation of the rear portion of said box, 60 wherein the paper has an upward movement to a point of delivery.

Similar letters of reference designate corresponding parts in all the figures.

A designates a stationary chamber or casing, which extends approximately horizontally, and which has at its rear end a portion, *A'*, of greater height. The top of this chamber *A* may be inclined, as shown, and at a suitable distance from the top is an inclined partition or floor, *a*, which may be of canvas or other suitable flexible material. The portion of the chamber *A* above the canvas or other floor, *a*, constitutes a closed flocking-box, *A'*, and the canvas floor *a* constitutes the bottom of said flocking-box. 75

B designates an endless apron or carrier, which may be made of india-rubber or other suitable material, and which is mounted on the rollers or drums *B'* *B''*, which are arranged at opposite ends of the flocking-box *A'*. The roller or drum *B'* is mounted in fixed bearings *b* at the front end of the flocking-box *A'*, and is positively driven by means of a belt passing over pulleys *c'* *c''*, with which its shaft is provided. The roller or drum *B''* is mounted in bearings *b'*, which are adjustable by means of screws *b''* to put proper tension on the apron or carrier *B*. One of the bearings *b'* and its screw *b''* are shown in dotted lines in Fig. 1, 90 and also in full lines in Fig. 5. Such an adjustment is well known in machines of various kinds in which an endless traveling apron is used, and we make no claim thereto. The roller or drum *B'* turns in a direction to move the apron *B*, as indicated by arrows in Fig. 1, and that portion of the apron which is above the canvas bottom *a* serves as a carrier for the paper.

D D' designate beaters, which extend from 100

opposite sides of the flocking-box A^2 inward and nearly across the box below the bottom a . Each beater consists of a long stick or bar, which may be of wood, and which is fulcrumed or pivoted at d in a bracket, d' , secured to the side of the flocking-box A^2 , as best shown in Fig. 3. The tail end or portion of each beater, which projects outward from the fulcrum d , is acted upon by a spring, e , and when not otherwise actuated the spring throws the outer end of the beater downward, and its inner end upward against the canvas bottom a . The beaters are arranged in two series, those, D , on one side of the flocking-box being arranged intermediately between those, D' , on the other.

D^2 D^3 designate shafts, which extend along opposite sides of the chamber A , and on which are cams e' , for acting on the tail ends of the beaters D D' . By the action of the cams the beaters are moved away from the canvas bottom, and when the cams release the beaters they are impelled upward by the springs e with a quick, sharp blow against the canvas bottom a . The shafts D^2 D^3 are rotated by means of bevel-gears f f' , connecting them with a shaft, C , as best shown in Fig. 4. The shaft C is rotated by means of a wheel and pinion, c^2 c^3 , connecting it with the shaft of the drum B' .

At the front of the flocking-box A^2 , and on top thereof, is a flock-hopper, E , which extends transversely across the box, and the outlet of which is controlled by a valve or gate, g . By adjusting said valve or gate the delivery of flock from the hopper into the flocking-box A^2 and upon the paper may be regulated.

In the hopper E may be arranged one or more rotary stirrers, s , for keeping the flock in a loose state and preventing its packing in the hopper. These stirrers may be rotated by means of a belt, s' , from a pulley, s^2 , on the shaft of the drum B' . At the forward end of the apparatus is a press, F , of the kind which is commonly used in printing wall-paper, and to which we make no claim.

The roll of paper G to be flocked is placed in bearings at the front of the chamber A , and is drawn continuously therefrom through the press F , whereby it is printed upon with adhesive substance or material. From the press the paper G passes continuously forward through a horizontal slot or opening, i , at the front end of the flocking-box A^2 , and just above the canvas bottom a . The forwardly-moving portion of the apron B likewise passes through the slot or opening i , and by it the paper is moved or carried forward from the front to the rear end of the flocking-box continuously. As the paper G passes under the flock-hopper E , the flock is distributed upon it very evenly, and by the automatic operation of the beaters on the paper a firm adhesion of the proper quantity of flock is insured. The flocked paper G , after leaving the rear end of the apron or carrier B , is taken or moved upward in the portion A' of the chamber, and is delivered through a slot, j , at the top thereof,

and over a roller, j' , whence it is taken continuously to drying apparatus. The drying apparatus is not shown, as it may be of any well-known kind, and forms no part of our invention. The paper G is slack in its passage through the portion A' of the chamber, and moves over cylinders or rollers k , which are lagged or otherwise formed so that they will constitute beaters, or will shake the flocked paper as it moves upward sufficiently to detach therefrom all surplus flock which falls back from the ascending portion of the paper.

The several rotary beaters or shakers k require very little power to operate them, and they may be rotated by any suitable means.

In Fig. 5 we have shown a belt, l , which passes around a pulley, l' , on the outer end of the shaft of the drum or roller B^2 , and around pulleys l^2 on the outer ends of the shafts of said beaters or shakers k .

Our invention may be employed for flocking cloth or other fabrics than paper. When the paper or other fabric is flocked in a pattern or figure, the form-roller of the press F will have in relief upon its surface the pattern or figure desired; but when the paper or fabric is to be flocked over its entire surface the roller of the press F which applies the adhesive substance will have a plain surface. In the latter case we prefer to employ one or more rollers, o , for the purpose of smoothing or evening the adhesive substance after it is applied to the paper or fabric G .

By the term "printing," as used in this specification and in the claims, we desire to cover the application of adhesive substance to the paper or fabric, whether it is applied in a pattern or figure, or over the whole surface thereof.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The method of flocking paper or other fabric, consisting in printing with adhesive substance on the fabric, in moving the fabric during and after printing continuously forward, and then upward to a point of delivery, in delivering flock upon the printed fabric as it moves, in subjecting the fabric to a beating operation during its forward movement and after the flock has been delivered upon it, and in subjecting the fabric to a second beating or a shaking operation as it moves upward to the point of delivery, substantially as and for the purpose herein described.

2. The combination of a closed flocking-box having a flexible bottom, an endless apron or carrier arranged to travel immediately above the said bottom, and serving to move the fabric continuously forward, beaters arranged below the bottom of the box for acting thereon, a printing-machine for printing with adhesive substance on the fabric before it enters said box, and a hopper or distributor for flock arranged at that end of the box at which the fabric enters, substantially as and for the purpose herein described.

3. The combination of the closed flocking-box A², having a flexible bottom, *a*, the endless apron or carrier B, the stationary hopper or distributor E, for delivering flock into said box, beaters for acting upon the said bottom *a*, and a printing-press from which the paper or fabric passes continuously into said box, substantially as and for the purpose herein described.
- 10 4. The combination of the closed flocking-box A², having a flexible bottom, *a*, the endless apron or carrier, B, the flock-hopper E, a printing-press from which the paper or fabric passes continuously into said box and to said carrier, means for producing an upward movement of the flocked paper or fabric as it leaves said carrier, and beaters or shakers for acting on the paper or fabric during such upward movement, substantially as and for the purpose herein described.

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Witnesses:

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ED. L. MORAN.