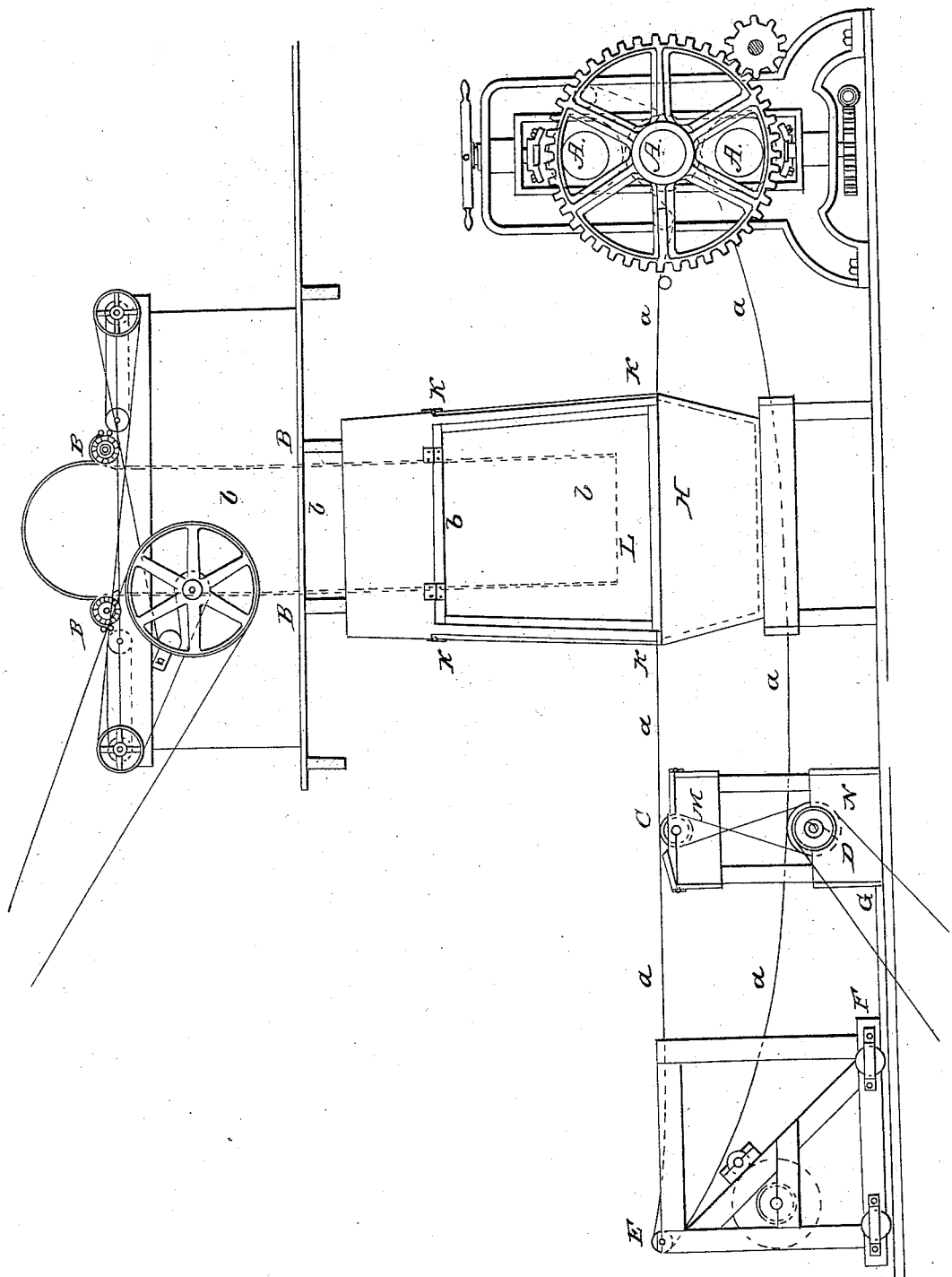
J. F. GREENE.

Making Waterproof Fabrics.

No. 35,855. Patented July 8, 1862.



Witnesses

John Mundy

Wm. H. Foley

Inventor

John F. Greene

UNITED STATES PATENT OFFICE.

JOHN F. GREENE, OF WARWICK, ASSIGNOR TO SAMUEL BOYD TOBEY, OF PROVIDENCE, RHODE ISLAND.

IMPROVED MACHINE FOR MANUFACTURING WATER-PROOF FABRICS.

Specification forming part of Letters Patent No. **35,855**, dated July 8, 1862.

To all whom it may concern:

Be it known that I, JOHN F. GREENE, of Warwick, in the State of Rhode Island, have invented a new and improved apparatus for combining flocks and fibrous substances with india-rubber in sheets, or when attached to cloth or felted material, or to leather, so as to form flocked or napped india-rubber goods by one operation, the means by which this result is effected and the manner in which they are combined and operated being as follows:

The sheet of rubber is formed in the usual manner and attached to the cloth or other material used as a base by being passed, when softened in any of the known modes, between the ordinary calender-rolls, or the base may be coated with rubber spread upon it in a state of solution. In my mode of operation it is most convenient to unite the ends of the piece of cloth when coated with rubber, so as to form an endless band, passing around the middle roll of the calender and over a roll upon a movable stretcher nearly on a level with the calender-roll. Between the stretcher and the calender and near the calender, and at an elevation of from seven to ten feet above the surface of the rubber-cloth to be coated with flocks or fiber, I place one of my machines for making hat-bodies described in a patent issued to me bearing date the 1st day of January, A. D. 1861. Beneath the trunk through which the sifted flocks fall a box is placed to receive the flocks or fiber which do not rest upon the surface of the rubber, and the space around the trunk and between that and the box is surrounded by a netting of wire-gauze, leaving a small space between the frame of the gauze and the edge of the trough for the cloth to pass through freely. Between the sifting-machine and the movable stretcher I place two revolving brushes, one operating on the surface of the rubber fabric coated with flocks and the other upon the cloth itself.

In the drawings hereto annexed, A A A A represent the calender-rolls with their frame and gearing; B B B B, the sifting-machine; D, the brush operating on the flocked surface; C, the brush operating on the cloth; E, the roll in the movable stretcher; E F, the movable stretcher; G G, railway or guides upon which the stretcher is moved; H, the box beneath the sifting-machine; K K K K, the frame containing the network of wire-gauze; L, a movable piece of the gauze above the box; *a a a a*, the cloth passing through the machine; *b b b b*, the flocks or fiber descending upon the cloth; M N, boxes to secure the flocks brushed from the fabric. When a sheet of rubber only is intended to be coated with fiber, it must be laid upon and attached to an endless band of firm glazed or well-sized cloth in such manner that it can be easily separated after the operation is performed.

The mode of operation is as follows: The upper and lower rolls of the calender being heated to a suitable temperature by steam to the degree and in the manner well known to india-rubber manufacturers, the calender is put in motion and the endless band moves with it beneath the sifting-machine, which is also put in motion, and the flocks and fiber fall upon the surface of the coating of india-rubber and are carried with the endless band between the rolls of the calender and are combined with the rubber softened by the heat. In order to give an even surface to the finished goods, more of the flocks or fiber must be sifted upon the rubber than can be advantageously combined with it, and these must be separated from that which should adhere. It is also desirable that the fiber should be laid as near as possible in parallel lines, so as to form a smooth and even nap. These two results are effected in a satisfactory manner, and the brush D, which is caused to revolve at a speed of about eight hundred times a minute and upon which the weight of the fabric is made to rest, by loosening the endless band. I have found the weight of the fabric sufficient for the purpose, but the pressure can easily be increased by a roller or weight. This brush D removes the surplus fiber and causes that which is combined with the softened india-rubber to lie in nearly parallel lines and be deflected in the same direction of inclination from the cloth. The upper brush, C, removes any flocks or fiber which may adhere to the cloth. This brush may revolve at a less speed than the other. All of the fiber or flocks thus brushed off is secured in the boxes M and N and reserved for future use. The stretcher E is a roll in a frame, E F, placed upon wheels on a

railway or guides, G G, and may be moved back and forth upon the rails or guides by a pulley or any other suitable means, so as to raise and depress the cloth in the endless band at pleasure. Any other suitable means for stretching or loosening the endless band may be substituted for the movable stretcher above described, and represented in the drawings hereto annexed.

What I claim as my invention is—

The combination of the calender-rolls, the machine for sifting fibrous flocks, and the brushes to cause the fibers to be laid straight and to remove the surplus, operating upon a fabric composed of a sheet or surface of india-rubber attached to cloth or other material as a base and producing a napped or flocked india-rubber fabric by one operation, substantially as described.

JOHN F. GREENE.

Witnesses:

JOHN BISSELL,

WM. B. TOBEY.