

(No Model.)

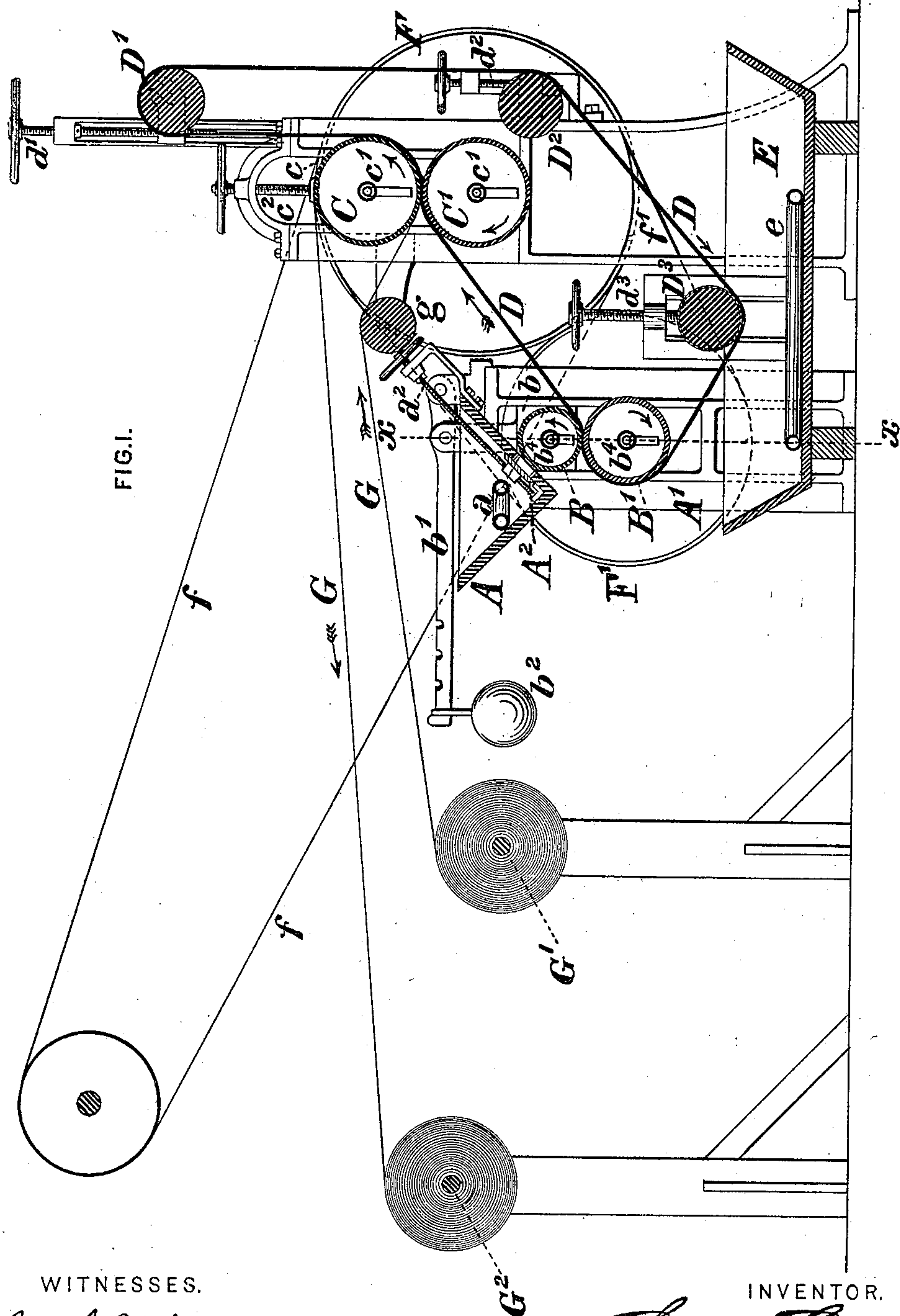
2 Sheets—Sheet 1.

S. GARRETT.

Apparatus for Treating Fabrics, &c., with
Waterproofing Materials.

No. 236,489.

Patented Jan. 11, 1881.



WITNESSES.

Geo. A. Vaillant.
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INVENTOR.

Sylvester Garrett,
by Collier & Bell,
attys.

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FIG. 3.

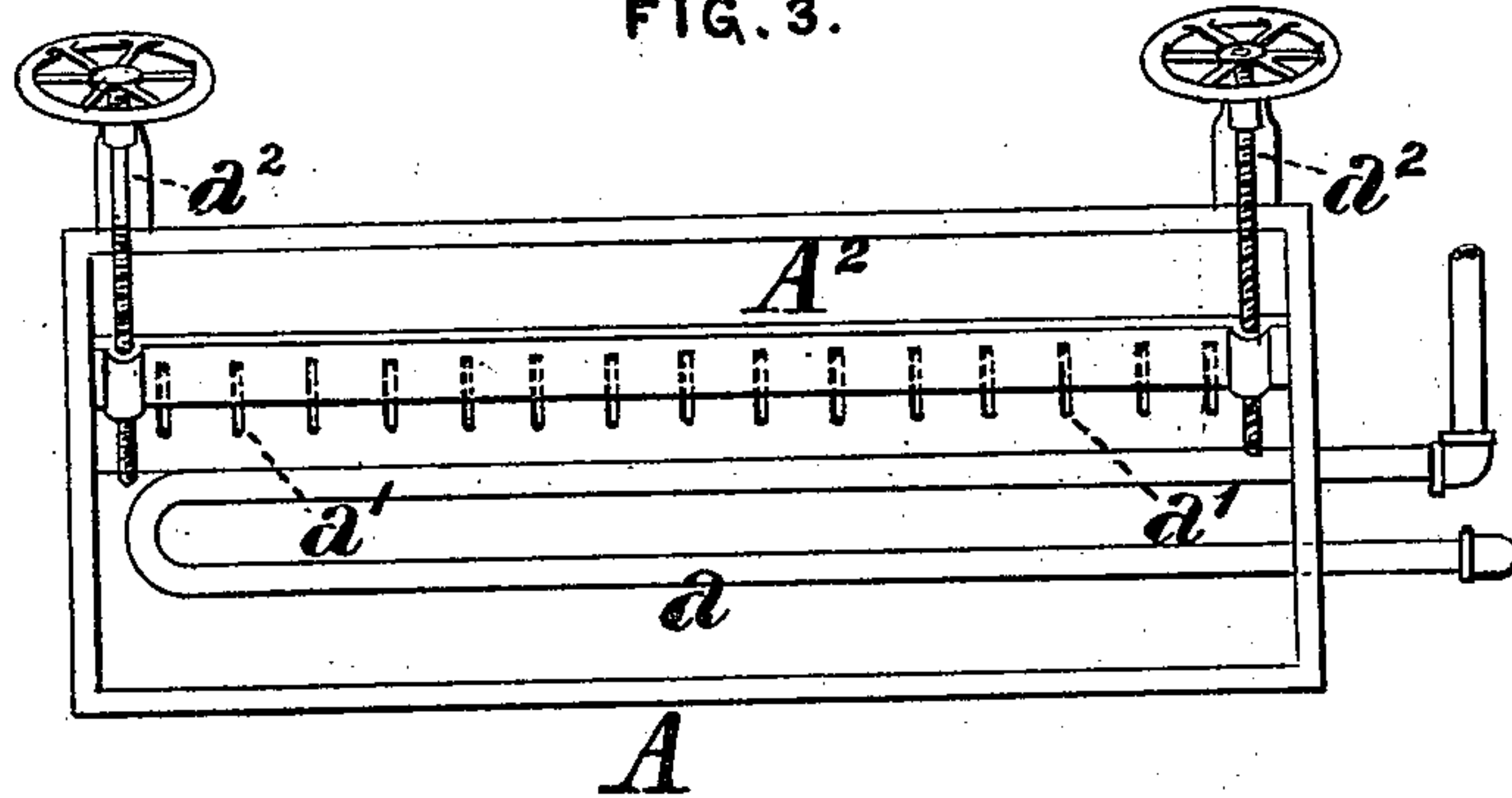
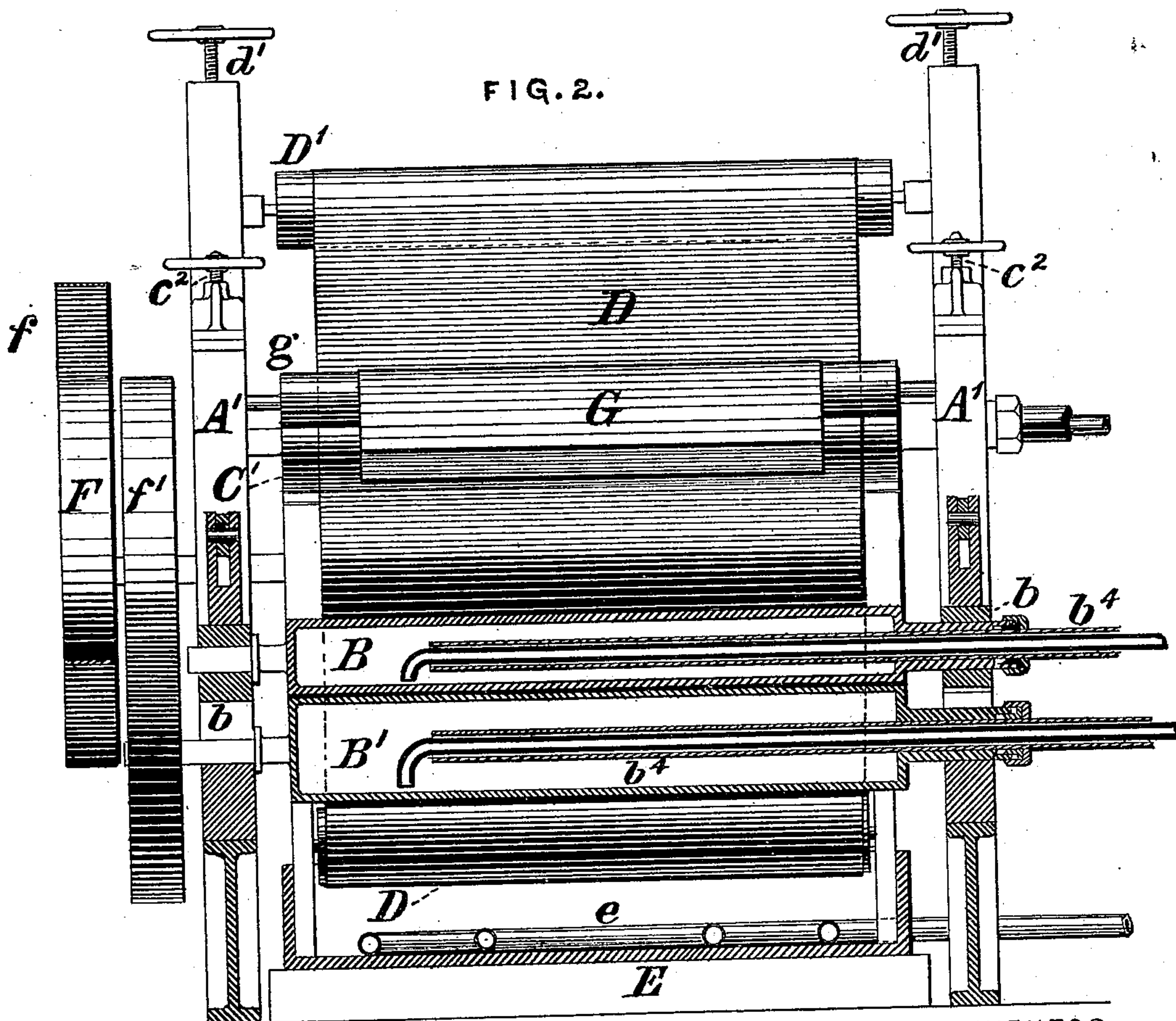


FIG. 2.



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UNITED STATES PATENT OFFICE.

SYLVESTER GARRETT, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR TREATING FABRICS, &c., WITH WATERPROOFING MATERIALS.

SPECIFICATION forming part of Letters Patent No. 236,489, dated January 11, 1881.

Application filed March 22, 1880. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER GARRETT, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Treating Fabrics, &c., with Waterproofing Materials, of which improvements the following is a specification.

My invention relates to the art of waterproofing paper, leather, or textile fabrics by coating and saturating the same with paraffine, wax, stearic acid, or other analogous material applied to the surface of the fabric to be treated while in a liquid state.

The object of my invention is to enable such waterproofing operation to be conducted with greater economy and useful effect than heretofore by the provision of improved means for liquefying and maintaining the waterproofing material at a proper degree of heat, properly feeding the same to and evenly distributing it over the surface of the fabric to be treated, and causing it to thoroughly permeate and be incorporated into the texture of said fabric.

To these ends my improvements consist in sundry combinations of devices organized into an apparatus whereby waterproofing materials may be first liquefied and heated in a vat or tank, then supplied to the surface of an endless absorbent felt or carrier, and finally applied to and incorporated into the fabric to be treated by the joint agency of heat and pressure, the several operations being continuously performed in the apparatus on a commercial scale in the manufacture of waterproofed fabrics.

The improvements claimed are hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal central section through an apparatus embodying my invention; Fig. 2, a vertical transverse section through the same at the line $x x$ of Fig. 1, and Fig. 3 a plan or top view of the supply-vat.

To enable those skilled in the art to practice my invention, I shall describe the same as conducted by the use of an apparatus which I have found, by practical operation, to be well adapted for the purpose.

The paraffine, wax, stearic acid, or other material employed as a waterproofing agent is

placed in a supply vat or tank, A, within which it is liquefied and maintained in a heated condition by a heater-coil or series of return-bends of pipes, a , which is fed with steam from a boiler.

The vat A is, in the instance shown, of triangular section, having a wide open mouth or top, and is secured to the side frames or housings, A', of the machine at the upper part and near one end thereof.

Two hollow metallic primary or couch rolls, B B', are mounted horizontally in bearings in the housings A', with their axes in the same vertical plane. The bearings b of the upper roll, B, are movable vertically in the housings, and the roll B is pressed downward against the roll B' by levers b' , pivoted to the frames A', said levers bearing on stems or projections on the upper sides of the bearings or boxes b , and having weights b^2 suspended upon them, by alterations in the position of which the pressure upon the boxes b may be varied, as required.

The rolls B B' are heated by steam supplied by pipes b^4 , passing through proper stuffing-boxes in their end journals.

Two hollow metallic secondary or press rolls, C C', having smooth and highly-polished surfaces, are mounted in bearings near the opposite end of the frame, in a similar manner to the rolls B B', and are similarly heated by steam-pipe c' .

Pressure is applied to the movable bearings c of the upper press-roll either by screws c^2 , as shown, or by weighted levers similar to those of the rolls B B'.

An endless feeding and distributing felt or carrier, D, of cotton, woolen, or other fabric of a soft, yielding, and absorbent description, is passed between the rolls B and B', and extending therefrom to and between the rolls C and C', passes around guide or carrying rollers D', D², and D³, each mounted in movable bearings in the frame, said bearings being adjustable by screws d' d^2 d^3 , so as to maintain the felt at a constant degree of tightness upon the rolls around which it passes. The periphery of the lowermost of the carrying-rollers, D³, extends into a vat or trough, E, through the interior of which passes a heater-coil, e , of steam-pipe. The vat E serves for the reception of

any surplus liquefied matter that may drop from the felt, or may, if desired, perform the additional function of a supply-vat, from which the felt, in its traverse around the roller D³, will absorb and carry up said liquefied material to the rolls B B' and C C'. Rotary motion in the direction of the arrows is imparted to the press-roll C' by a belt, *f*, passing around a pulley, F, on one of the journals of said roll, and transmitting power thereto from a prime mover, and the lower roll, B', is rotated at the same speed as the roll C' by a belt, *f'*, passing around a pulley, F', on one of its journals and around a pulley on the shaft of the roll C'. The rolls B and C are rotated in the opposite direction by their frictional contact with the felt D.

A series of perforations or narrow slots, *a'*, is formed in the side of the vat A adjacent to and above the axis of the receiving-roll B, and on one side of the vertical center line thereof, said perforations extending for a length in the vat about equivalent to that of the roll B, and being covered by a sliding gate or valve, A², which is movable and adjustable by screws *a*², so as, either wholly or to any partial extent, to uncover the perforations *a'*, and thereby admit of the escape of any desired quantity of liquefied material therefrom, said material passing in a series of streams or jets directly to and being distributed over the periphery of the upper roll, B, and thence to the felt D.

If desired, a fibrous strip or mop may be attached to the exterior of the vat, upon which the escaping material may fall or through which it may pass, so as to be more uniformly distributed over the length of the roll B.

The fabric to be treated is wound in a continuous sheet or sheets, G, upon a supply roller or reel, G', adjacent to the machine, from which, passing over a guide-roller, *g*, it is led to and between the upper press-roll, C, and the felt D, thence partially around the roll C and to a delivery-roll, G², or to mechanism for cutting it into desired lengths.

In treating fabrics according to my invention the method of procedure and the operation of the apparatus hereinbefore described are as follows: Paraffine, wax, stearic acid, or other selected waterproofing or sizing material is supplied to the vat A, and, by the heat imparted from the heater-coil, is liquefied and maintained at a proper temperature therein. Steam is admitted to heat the rolls B B' C C', and the gate A² is adjusted to give a proper discharge-area from the vat A for the liquid material. Rotation being imparted to the rolls and interposed felt D, the material in the vat A is supplied to the periphery of the upper primary roll, B, upon which it forms a thin coating. In the passage of the felt D between the primary rolls B and B' it is, by the conjoint effect of the heat of said rolls and the pressure imparted to the bearings of the

upper roll, thoroughly and evenly saturated with the liquid material which it receives from the roll B, and in this condition passes to the secondary or press rolls C C', where it meets the sheet of fabric G, led from the supply-roll. By the action of the heat of the rolls C C' the material with which the felt is saturated is prevented from chilling or solidifying, and by the united effect of such heat and the pressure applied to the upper roll the fabric G is thoroughly impregnated with the waterproofing material conveyed by the felt, the result being to uniformly diffuse said material over the surface of and into the texture of the fabric, and at the same time to impart a smooth and calendered surface thereto. The pressure of the rolls B B' and C C' effectually removes any surplus material from the felt and promotes materially the uniform saturation thereof, which may be further facilitated by permitting the felt to dip into the overflow of liquid material contained in the lower vat, E.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, in a machine for waterproofing fabrics, of a supply-vat and a heating device fixed thereto, a pair of hollow primary rolls, one of which receives upon its periphery a supply of liquid material from the supply-vat, said rolls being provided with pipes for applying heat to their inner surfaces and screws or weighted levers for applying pressure to their bearings, one upon the other, a pair of hollow secondary or press rolls, similarly provided with mechanism for the application of heat and pressure, and an endless felt or carrier traversing between the members of each pair of rolls, substantially as set forth.

2. The combination, in a machine for waterproofing fabrics, of a supply-vat and a heating device fixed thereto, a pair of hollow primary rolls and a pair of hollow secondary rolls, each pair being provided with mechanism, as set forth, for the application of heat and pressure, an endless felt or carrier traversing between the members of each pair of rolls, an adjustable guide roller or rollers over which said carrier passes and by which its tension may be regulated, and an overflow or surplus-receiving vat, substantially as set forth.

3. The combination, in a machine for waterproofing fabrics, of a supply-vat having a connected heating device and a series of grated side or bottom openings or perforations, a valve or gate sliding over said openings and serving to vary and regulate the divided discharge of liquid material therefrom, and an internally-heated roll located beneath and adjacent to the perforations of the supply-vat, substantially as set forth.

SYLVESTER GARRETT.

Witnesses:

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ERASTUS POULSON.