(No Model.) 3 Sheets—Sheet 1.

J. E. LEE.

MACHINE FOR APPLYING POWDER TO FABRICS.

No. 533,305. Patented Jan. 29, 1895.

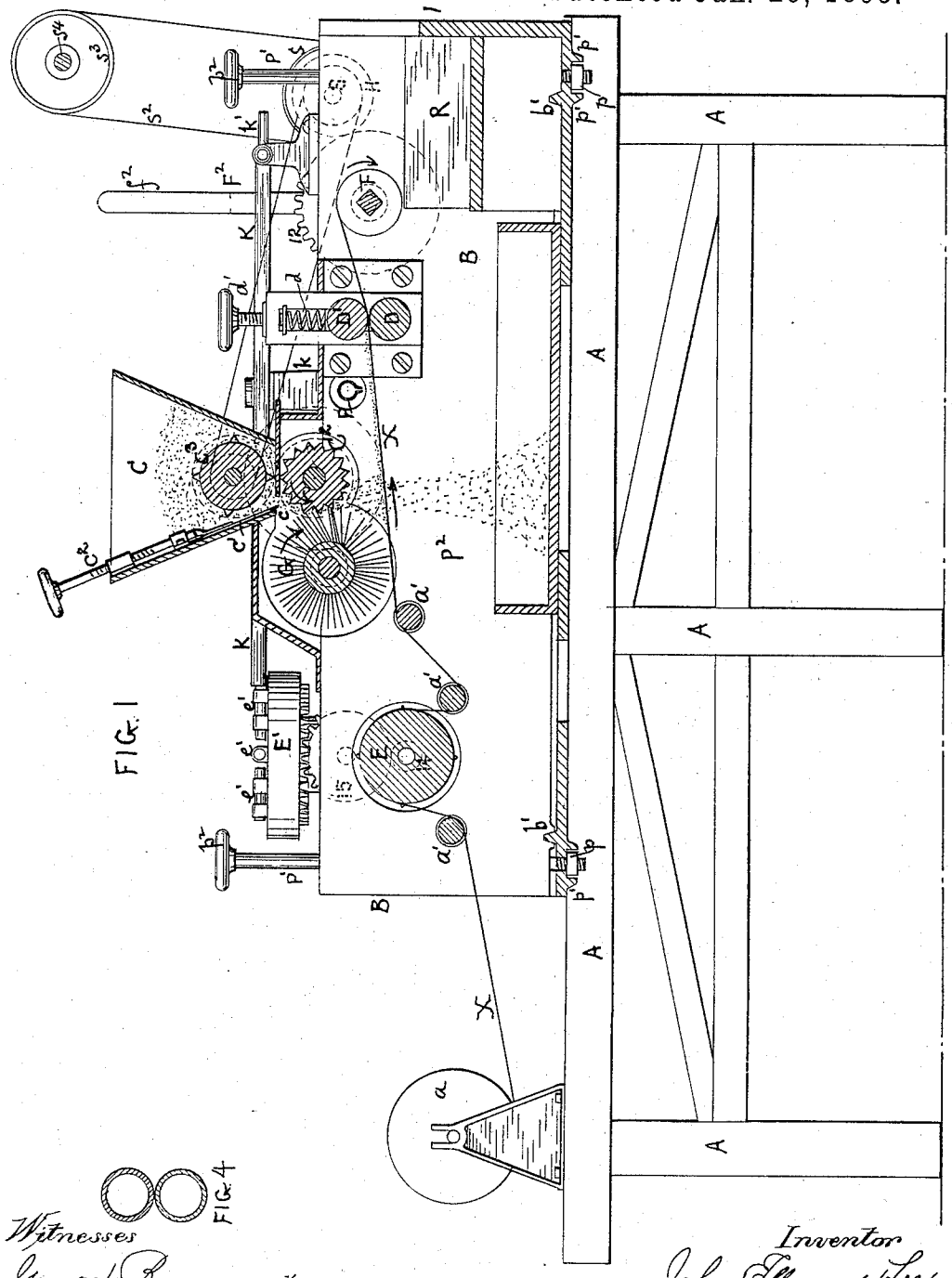

FIG. 1

FIG. 4

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(No Model.) 3 Sheets—Sheet 2.

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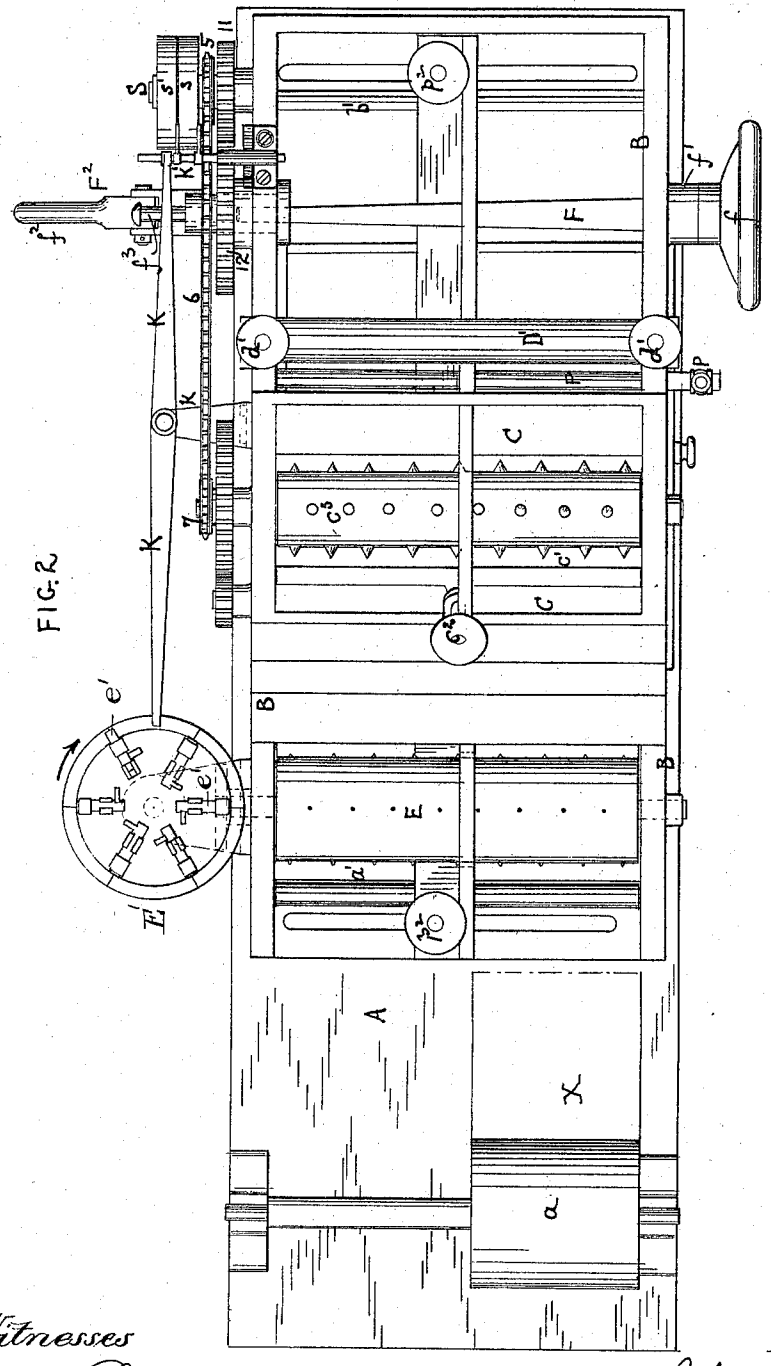

FIG. 2

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(No Model.) 3 Sheets—Sheet 3.

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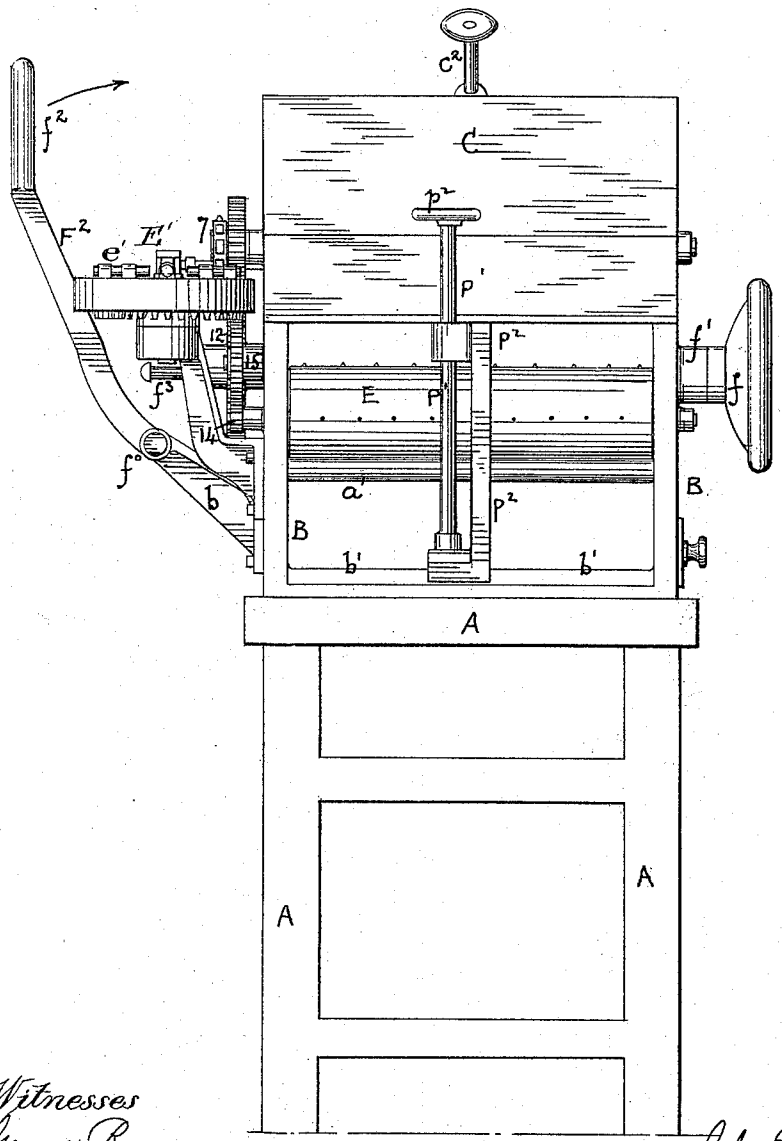
FIG. 3



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN ELLWOOD LEE, OF CONSHOHOCKEN, PENNSYLVANIA.

MACHINE FOR APPLYING POWDER TO FABRICS.

SPECIFICATION forming part of Letters Patent No. 533,805, dated January 29, 1895.

Application filed July 3, 1894. Serial No. 516,466. (No model.)

To all whom it may concern:

Be it known that I, JOHN ELLWOOD LEE, a citizen of the United States, and a resident of Conshohocken, Montgomery county, Pennsylvania, have invented an Improved Machine for Applying Powder or other Substances to Fabrics, of which the following is a specification.

My invention consists of an improved machine for automatically applying powder or other substances to fabrics, and is more particularly designed for use in the making of plaster bandage material or mustard plaster or sized material designed especially for surgical and medical uses.

In the accompanying drawings Figure 1 is a longitudinal vertical section of a machine constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is an end view, and Fig. 4 is a view of a modification.

In the construction of my machine I prefer to make use of some of the principles of construction and operation of the bandage rolling machine for which I have filed an application for a patent June 28, 1894, Serial No. 515,961. That bandage rolling machine has among its important feature measuring devices combined with a polygonal winding spindle detachable from its driving wheels and a knock-out device to free it from the bandage rolled up, and in connection with the measuring devices an automatic stop motion to arrest the winding action when a roll of the desired length of fabric has been wound up. As will be hereinafter seen, I have in the construction of the machine shown in the drawings embodied these several features, in a modified construction as to some of the features. It should be understood however that the features of the bandage rolling machine referred to, are not all essential to my present machine, as the present invention may be used in some cases without the rolling and measuring attachments.

As shown in the drawings, my machine is mounted upon suitable legs or frame-work A and the fabric X, such as surgical bandage gauze, is delivered from a roll *a* at one end of the machine, to, and through a box-like part B of the frame wherein the powdered material is to be applied to the fabric as it is fed through this box. The fabric passes around suitable tension or guide rollers *a'* and a measuring roll E, which may be provided with suitable pins *e* to prevent slipping of the gauze. The fabric thence passes to the polygonal winding spindle F, which may be driven by any suitable means in the direction of the arrow, and on its way to the winding spindle the fabric passes below the powder distributing appliances and between a pair of compression rollers D, D'.

The powder distributing appliances consist of a hopper C provided with an outlet *c* at its lower end, the size of which outlet can be regulated to a greater or less extent by adjustable gate *c'* controlled by a handled screw c^2 at the top of the hopper. In the lower part of the hopper there is a toothed stirring wheel or drum c^3 to be rotated when the machine is in operation. Immediately below the bottom of the hopper and partly under the outlet from the hopper there is provided a rotary grooved cylinder C^2, the grooves, as the cylinder rotates in the direction of its arrow, receiving the powder dropped out of the hopper. Adjacent to that side of the grooved cylinder which receives the powder, there is a distributing brush G adapted to be rotated in the direction of its arrow at a somewhat greater speed than the grooved cylinder, the effects being to brush the powder off the grooved cylinder and distribute it, in a uniform manner, over the fabric passing immediately below. By this means powder, such as plaster of paris, mustard or sizing, or whatever it may be, is laid onto the gauze or other fabric in a light uniform layer, and the superfluous part passing either through the gauze or over the sides or ends, falls into a suitable tray or receptacle *t* below. The fabric thus covered then passes to the compression rollers D D' by which the powder will be impressed into and caused to adhere firmly to the gauze or other fabric, which is then wound up onto the winding spindle F.

In the case of making mustard plasters or sized fabric, a perforated pipe P in front of the rolls D D' is brought into use to throw a spray of liquid, such as water or medicant, or steam, upon the powder to moisten it before it is impressed into the fabric by the rolls.

The lower roll D of the compression rollers

preferably turns in fixed bearings, while the upper roll D′ turns in movable bearings acted on by springs *d*, the pressure of which is adjustable by means of screws *d′* as is common in wringing machines, for instance. In some cases it may be desirable, as for instance in sizing fabrics, to heat the compression rollers D D′, and in that event it will be convenient to make the rollers hollow as represented in Fig. 4, and supply them with steam in any well known way.

The various operative parts of the machine may receive their motion from a shaft S carrying fast and loose belt pulleys *s s′*, driven by a belt s^2 and pulley s^3 (Fig. 1) on a driving or countershaft s^4. This shaft S is shown in the present instance as carrying a chain wheel 5 transmitting motion by a chain 6 to a chain wheel 7 on the shaft of the stirring drum c^3. From the shaft of this drum, motion is transmitted to the grooved cylinder C^2 and the distributing brush G by any suitable gear wheels as indicated in Figs. 2 and 3, and by dotted lines in Fig. 1. The compression rollers D D′ need not have any positive motion imparted to them. It will suffice that they turn under the friction of the fabric drawn through them.

As I have already said, the winding spindle F is of polygonal section (square in the present instance) and tapering, with its smaller polygonal end entering a corresponding polygonal opening in the hub of a wheel 12 turning in a bearing in the frame and geared to a wheel 11 on the shaft S and through this gearing the desired rotary motion is imparted to the spindle. At the operator's side of the machine, the winding spindle F is provided with a suitable handle or hand-wheel *f* and adjacent to the handle, the spindle is made cylindrical and adapted to turn in a bearing *f′* in the side of the box B. As in my beforementioned bandage rolling machine, a knock-out device is combined with this winding spindle, but in this instance it is shown in a somewhat simplified form, as consisting of simply a hand lever F^2 pivoted at f^0 to a bracket *b* on the frame. (See Fig. 3.) The upper end of this lever is provided with a handle f^2 which can be grasped by the operator on the opposite side of the machine and on being pulled over with a sharp movement toward the box in the direction of its arrow, Fig. 3, it will strike against the plunger f^3 and through the latter will knock the spindle F free of the roll of fabric which has been wound up, so that then the operator can readily pull out the spindle by its handle *f* and remove the roll, and then replace the spindle ready for another length of fabric to be wound upon it.

There is an adjustable partition P^2 to aid in guiding the fabric to wind up the roll with straight ends, as in my above mentioned bandage winding machine, and it is mounted upon V-shaped guides *b′* in the bottom of the box B and has vertical securing bolts P′ adapted to turn in the bearings in the partition with threaded lower ends passing through slots in the bottom of the box B and provided upon the under side of the bottom of the box with nuts *p*, (Fig. 1). On the under side of the box are guides *p′* against which the flat sides of the nuts *p* bear to prevent them from turning, so that by turning the bolts P′ in one direction or the other by means of their handles p^2 at the top the partition P can be clamped to or released from the bottom of the box in any of the positions to which it may be desired to adjust it.

As in my above mentioned bandage winding machine, I have provided this present machine with a measuring device and automatic stop motion, but in a somewhat simplified form. The measuring drum E before referred to is geared through wheels 14, 15, to a rotary indicator or measuring disk E′ provided with a series of radially adjustable stopping pins *e′*. When any one of these stopping pins *e′* is adjusted to its outward position as is indicated in Fig. 2, it will project into the path of a horizontal lever K pivoted to a bracket *k* on the frame, the opposite end of this lever being provided with a belt-shifting device *k′* co-operating with the belt passing around the pulleys *s s′*. The indicating measuring disk is adapted to rotate in the direction of its arrow, Fig. 2 and is so geared to the measuring drum E that each revolution or part revolution of the indicator measuring disk will be equal to a certain number of revolutions of the measuring drum E and therefore equal to a certain known length of the fabric fed through the machine. For convenience the equal divisions between the stopping pins may be taken as indicating yards of fabric and one or the other of the stopping pins is to be adjusted by the operator so as to act upon the stopping lever K after the desired number of yards of fabric have been fed through the machine, and when one of these stopping pins strikes the end of the lever K the belt will be thrown over from the fast to the loose pulley and the winding stopped.

As in my above described bandage winding machine, compression blocks R of varying size may be provided below the winding spindle F and bearing such relation thereto as to compress the roll of fabric as the winding is being completed to give compactness to the roll.

I claim as my invention—

1. The combination of a box or frame and powder-distributing devices with means for passing fabric through the box or frame below the powder-distributing devices, a spraying device to moisten the powder upon the fabric, and compression rollers to compress the fabric and moistened powder thereon.

2. The combination of a box or frame and powder-distributing devices with means for passing fabric through the box or frame below the powder-distributing devices, a spraying device to moisten the powder upon the fabric, compression rollers to compress the

fabric and moisten the powder thereon and means for heating the compression rollers.

3. The combination of a box or frame and powder distributing devices with means for passing the fabric through the box or frame below the powder distributing devices, compression rollers to press or embed the layer of powder on the fabric and a winding spindle for winding up the treated fabric into a roll.

4. The combination of a box or frame and a powder distributing device comprising a hopper with grooved distributing cylinder to receive the powder from the hopper and a distributing brush at the side of the grooved cylinder to distribute the powder over the fabric passing below, and compression rollers to compress or embed a layer of powder on the fabric, substantially as set forth.

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

JOHN ELLWOOD LEE.

Witnesses:
C. D. WYNKOOP,
H. A. SCHWARZE.