3 Sheets—Sheet 1.

(No Model.)

E. TILSTON.

APPARATUS FOR AUTOMATIC SUPPLY OF FIBROUS MATERIALS TO PREPARING MACHINES.

No. 551,800. Patented Dec. 24, 1895.

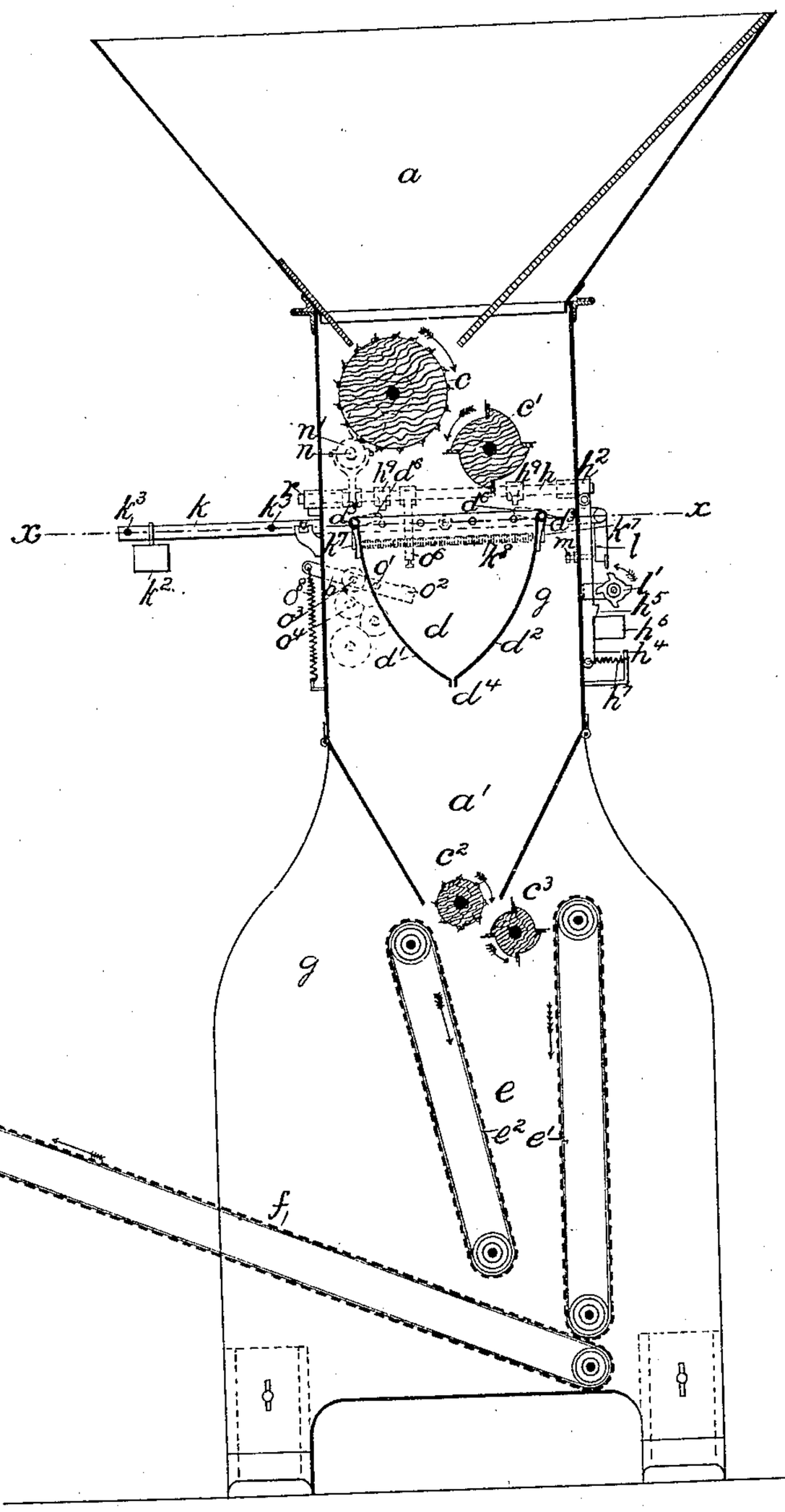

FIG. 1.

Witnesses.
Desider Szanka
Chas. A. Wrigley.

Inventor
Edward Tilston
by Wm H Babcock
Attorney

(No Model.) 3 Sheets—Sheet 2.

E. TILSTON.

APPARATUS FOR AUTOMATIC SUPPLY OF FIBROUS MATERIALS TO PREPARING MACHINES.

No. 551,800. Patented Dec. 24, 1895.

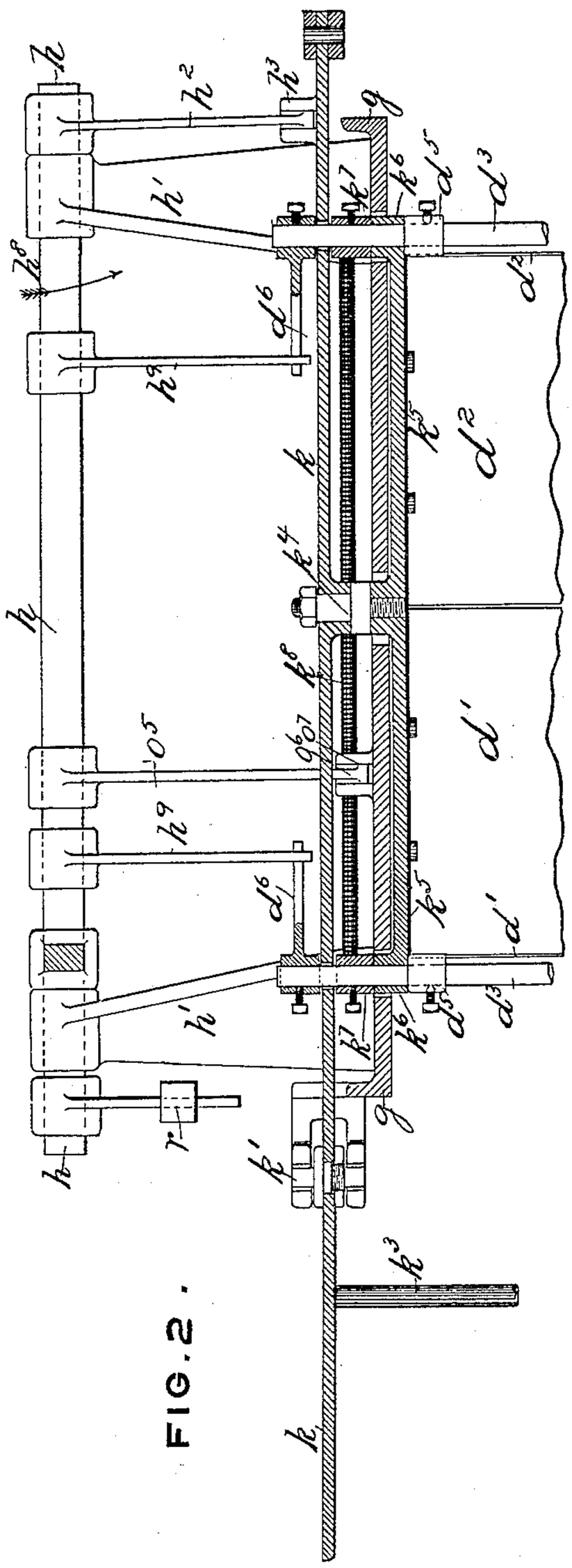

FIG. 2.

Witnesses.
Desider Szanka
Chas. A. Muzzy.

Inventor
Edward Tilston
by Wm H Babcock
Attorney

(No Model.) 3 Sheets—Sheet 3.

E. TILSTON.

APPARATUS FOR AUTOMATIC SUPPLY OF FIBROUS MATERIALS TO PREPARING MACHINES.

No. 551,800. **Patented Dec. 24, 1895.**

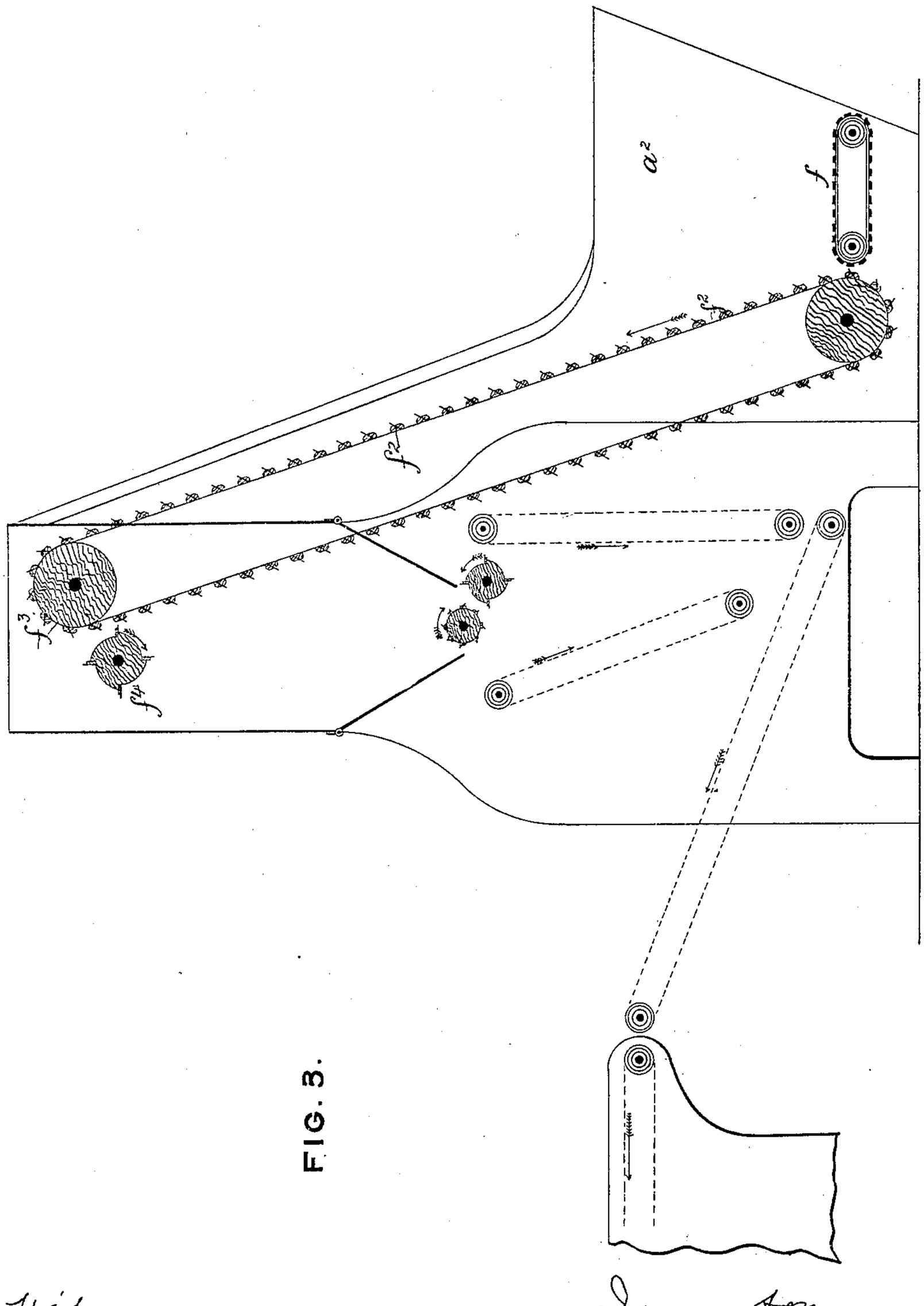

FIG. 3.

Witnesses.
Desider Szanka
Chas. A. Murray.

Inventor
Edward Tilston
by Wm H Babcock
Attorney

UNITED STATES PATENT OFFICE.

EDWARD TILSTON, OF MANCHESTER, ENGLAND.

APPARATUS FOR AUTOMATIC SUPPLY OF FIBROUS MATERIAL TO PREPARING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 551,800, dated December 24, 1895.

Application filed August 26, 1895. Serial No. 560,562. (No model.)

To all whom it may concern:

Be it known that I, EDWARD TILSTON, a subject of the Queen of Great Britain and Ireland, and a resident of 2 Bates Street, Longsight, Manchester, county of Lancaster, England, have invented certain Improved Apparatus for the Automatic Supply of Fibrous Material to Preparing-Machines, of which the following is a specification.

My said invention relates to improvements in machinery for the automatic supply of definite quantities of raw or partly-prepared fibrous materials, such as cotton and wool, to the lattice or feed-table of machines used in opening, beating, cleaning, or otherwise preparing such materials.

For more clearly setting forth my said invention I will describe the same with reference to the accompanying drawings, in which—

Figure 1 represents a vertical central section of a machine embodying my invention. Fig. 2 represents a plan view, partly in section, of the mechanism for operating the scale-pan; and Fig. 3 represents a vertical section of a modified combination and arrangement of the hopper and its feeding devices.

The hopper for the fibrous material to be acted on is designated *a*.

The material is drawn from the hopper *a* by the roller *c* and clearer *c'*, whence it falls into the closed balance or scale-pan *d*. The latter is made in two halves d' d^2, each mounted on a rocking shaft d^3. When a certain predetermined quantity of material has accumulated in the scale-pan *d* the shafts d^3 make a partial rotation about their axes (by the means hereinafter described) in such a manner as to cause the two halves d' and d^2 of the scale-pan to diverge, whereupon the material falls through at d^4 into the lower hopper or chute a', whence it is drawn by the spiked roller c^2 and stripper c^3 and delivered to the feed-box *e*. The sides e' e^2 of the feed-box are in some cases inclined toward each other in such a way as to make the lower part of the feed-box narrower than the upper part. It frequently happens that the material varies much in bulk for a given weight, while it is desirable to deliver it to the feed-lattice of as uniform density as possible.

By having a feed-box with inclined sides the combined effect of gravity and the inclined planes thus presented will tend to force the heterogeneous layers together, compressing all and increasing the approach to uniformity in density. To facilitate the descent and discharge of the material one or both sides of the box may be provided, as shown in Fig. 1, with moving devices—for example, endless traveling sheets or lattices. As the said material leaves the box *e* it falls on a creeper or conveying-lattice *f*, which carries it to the feed-table g' of the opening or other machine to which the material has to be supplied.

It will usually be most convenient to arrange the hopper *a* under an opening in an upper floor through which the material is discharged. Where this is not convenient I adopt the arrangement shown in Fig. 3. The hopper is placed at a^2 and the material therein is led by a creeper *f* to a spiked traveling sheet or lattice f^2, which carries the material upward over the roller f^3, where the material is stripped by a stripper f^4. The rest of the machine is as herein described with reference to Fig. 1.

The mechanism for operating the scale-pan is shown in elevation in Fig. 1 and in plan to a larger scale in Fig. 2. In these figures *g* is one of the main side frames of the machine between which the hopper, the rollers, and the feed-box lie. There is one such side frame at each side, to one of which the mechanism for operating the scale-pan is attached.

Fig. 2 is a section on the line *x x* of Fig. 1; but for facility of description the shaft *h* and the levers thereon are also shown, although they are above the level of the plane represented by *x x*.

The scale-pan lever or beam *k* has its fixed fulcrum at k' on a bracket secured to the side of the machine. A sliding balance-weight k^2 is provided, which not only balances the weight of the lever *k*, the scale-pan and all the mechanism connected therewith, but besides furnishes an excess weight corresponding to the weight of material which it is desired to accumulate in the scale-pan *d* before the latter opens.

There is a balance-beam *k* at each side of the machine connected to each other by cross-bars or stretchers k^3 to insure their parallel action.

The cross-shafts d^3 are carried by the beams

k, in which they can freely rotate. A bolt k^4 pivoted in the beam k carries a bar k^5, through the ends k^6 of which the shafts d^3 can freely rotate. A sheet curtain k^7 is secured by screws to the bar k^5 and prevents the material from falling out at the sides of the scale-pan d. The scale-pans d' d^2 are secured to brackets d^5 mounted on the shafts d^3 and secured thereto by set-screws, so as to oscillate therewith. Suitable slots are provided in the frame sides g to admit the bosses of the bar k^5 and to allow them to freely rise and fall therein as the beam k oscillates about its fulcrum.

Levers k^7 are secured by set-screws to the shafts d^3 and have their ends connected by a spring k^8, so as to keep the scale-pan closed, unless some force is applied to open them positively against the action of the spring k^8.

Hinged at one end of the beam k is a swing-bar l, which when the scale-pan is closed is held up so that its lower end is just out of reach of a revolving spider-shaft l'.

At one side only of the machine is a shaft h free to rotate in bearings h' secured to the side frame g.

Secured to one end of the shaft h is a lever h^2, having a universal joint h^3, from which depends a strut h^4, having a projection h^5 resting on a block h^6. A spring h^7 tends to keep the projection h^6 in position. The weight of the levers and other parts connected to the shaft h tends to cause the shaft to turn in the direction of the arrow h^8. (Shown in Fig. 2.) A spring or weighted lever r may, however, be applied to augment this tendency and prevent sticking.

When the weight of the material in the pan d has reached such a point as to overcome the weight k^2, the latter will rise and the other end of the beam k will fall, bringing the lower end of the hang-bar l into contact with the rotating spider-shaft l'. The bar l will then be driven in toward the machine, and, meeting a bolt m on the strut h^4, the projection h^5 will slip off the block h^6, whereupon the strut h^4 will no longer prevent the turning of the shaft h in the direction of the arrow h^8. On the turning of the shaft h in the said direction the arms h^9 of the shaft h will strike the arms d^6 and depress them, thereby partially rotating the shafts d^3 and causing the scale-pans d' d^2 to diverge and to discharge their contents into the hopper a'. The turning of the shaft h also stops the rotation of the spiked roller c, (or the roll f^3 of Fig. 3.) The roller c is driven by toothed gearing from a rotating shaft n, on which is a clutch n', controlled by a lever from the shaft h in such a way that as the shaft turns to open the scale-pan the clutch is disengaged and as the shaft is put back the clutch engages again and the spiked roller (or the roller f^3) again rotates. After having discharged its contents the pan d remains open a certain predetermined time, when it is automatically closed by means about to be described.

A lever o, having a fixed fulcrum at o' on the same side of the machine as the shaft h, is provided with a spring o^8, which continually tends to pull down the outer end of the lever o and to elevate the inner end o^2. On the lever o is a roller o^3, taking onto a slowly-rotating cam o^4. On the shaft h is a lever o^5 connected to a plunger o^6 working in guides o^7. So long as the strut h^4 is in engagement with the block h^6 and the lever o^5 is up the plunger o^6 is kept clear of the end of the lever o^2. The swell of the cam o^4, pressing on the roller o^3, keeps the end of the lever o^2 depressed; but when the depression in the cam comes under the roller o^3 the spring o^8 elevates the point of the lever o^2. By the opening of the scale-pan d through the rocking of the shaft h the plunger o^6 is depressed, and the period of rotation of the cam o^4 is so arranged that at any given interval of time after the opening of the scale-pan d the depression of the cam shall come under the roller o^3, when the point o^2 of the lever instantly rises and lifts the plunger o^6, thereby rocking the shaft h backward. By this backward rocking the scale-pan is closed, the strut h^4 is lifted into its first position, the clutch n' is brought into engagement, all parts revert to their original positions, and the supply of material recommences.

By varying the toothed change-wheels which drive the cam o^4 the rotation of the latter and thereby the interval of time elapsing between the successive closings of the pan d can be regulated at will to suit the particular rate of feed suitable for the machine to be supplied or the material operated upon.

The arrangement of gearing for driving the various rollers from the main driving-shaft, (other than that described,) the feed-lattices, and the construction of these elements are not shown, as they may be arranged in various well-known ways and form no part of my said invention.

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

1. In a machine for automatically supplying weighed quantities of fibrous materials the combination of the diverging scale pans d' d^2 the hopper a' the continuously rotating roller and stripper c^2 c^3 and the feed box e having sides inclined to each other substantially as set forth and shown.

2. In a machine for automatically supplying fibrous materials the combination of an intermittently acting weighing apparatus with a feed box having sides inclined downward toward each other and provided with traveling sheets for taking forward and delivering the material continuously substantially as set forth.

3. The scale-pan consisting of two independently pivoted sections held together by a spring, in combination with means of supplying the same with material and devices for opening the said scale-pan at intervals to discharge the material therefrom, the said de-

vices consisting of a lever k, a weight k^2 balancing the said pan and lever as well as the connected mechanism and a predetermined amount of material to be held in the said pan, the hang bar l, the spider-shaft l' arranged to be struck by the said hang bar as the scale pan descends, a rock-shaft h provided with arms h^9 and also with a stop which is withdrawn by the action of the said hang bar, and shafts on which the sections of the scale-pan are respectively pivoted, these shafts being arranged to turn so as to open the said scale-pan and provided with arms d^6 arranged to be struck by the said arms h^9 substantially as set forth.

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

EDWARD TILSTON.

Witnesses:

JOHN HALL,

JOSEPH BENTON.