

No. 789,835.

PATENTED MAY 16, 1905.

C. BLAIR.

MACHINE FOR RAISING PILE ON FABRICS.

APPLICATION FILED DEC. 5, 1903.

3 SHEETS—SHEET 1.

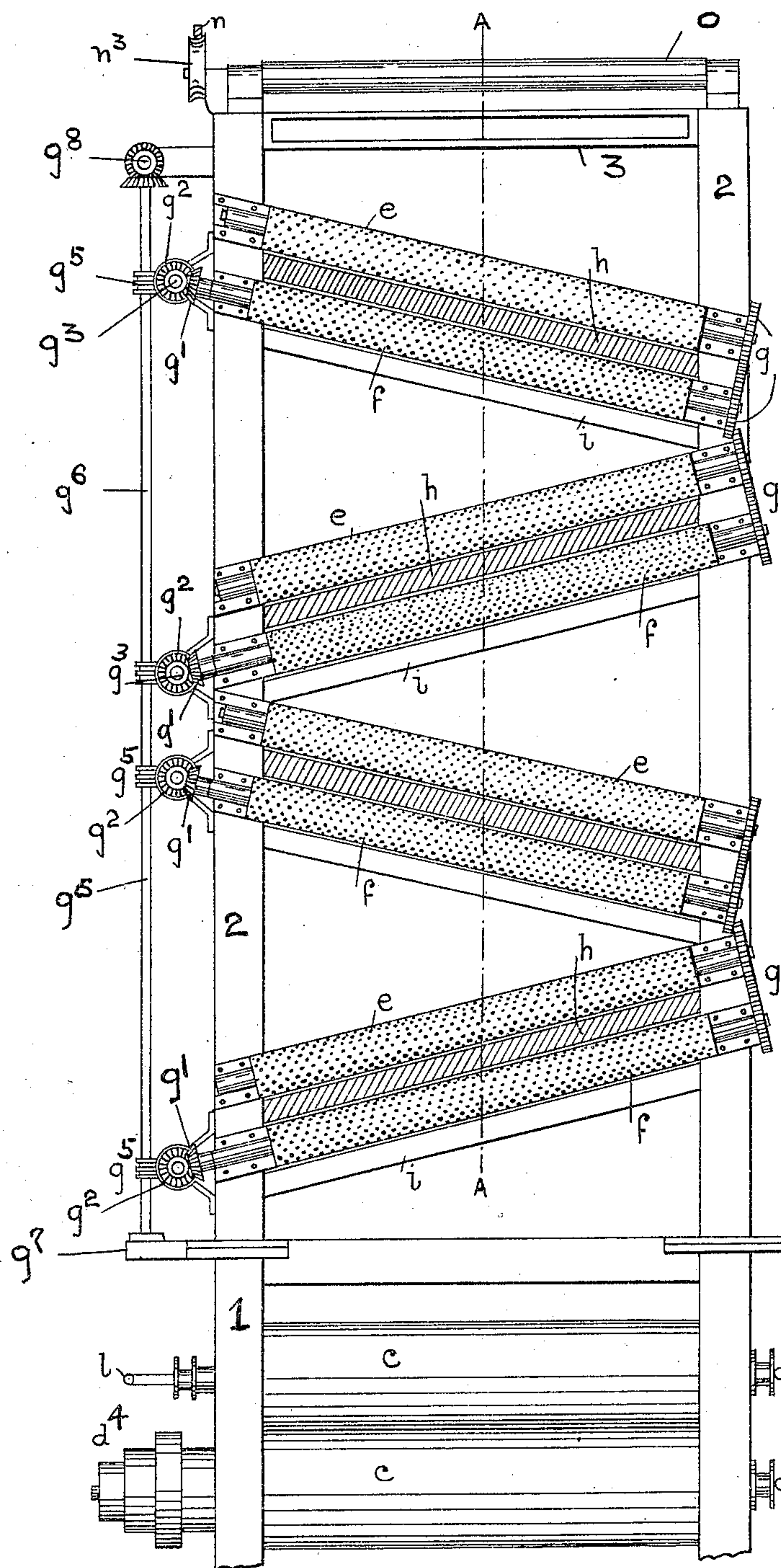


FIG. 1.

Witnesses

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3 SHEETS—SHEET 2.

FIG. 2.

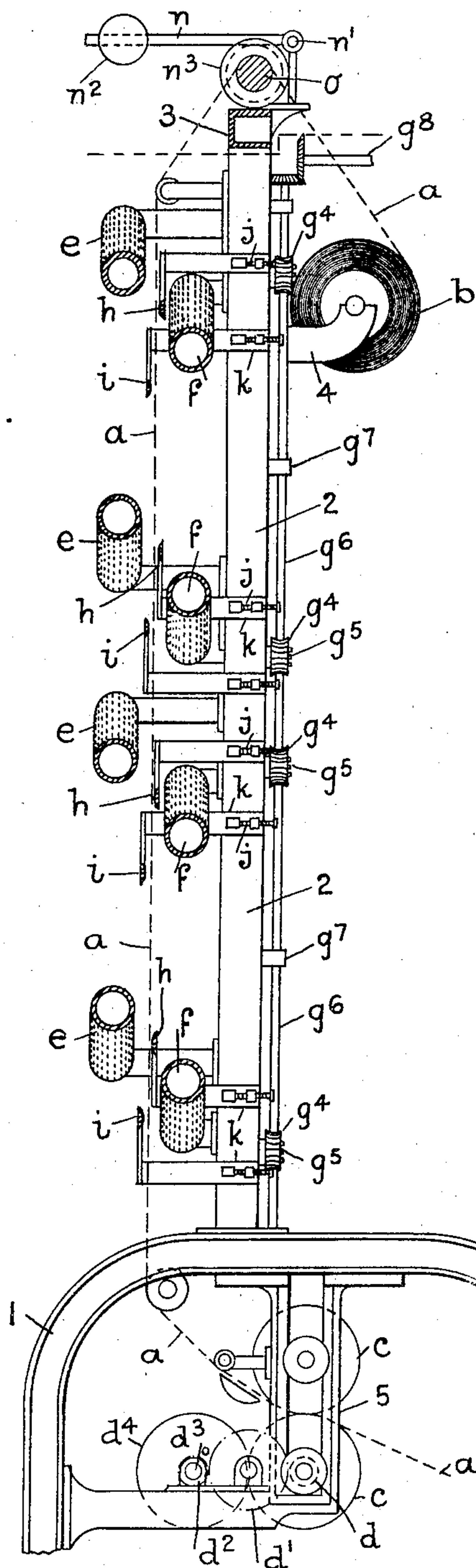
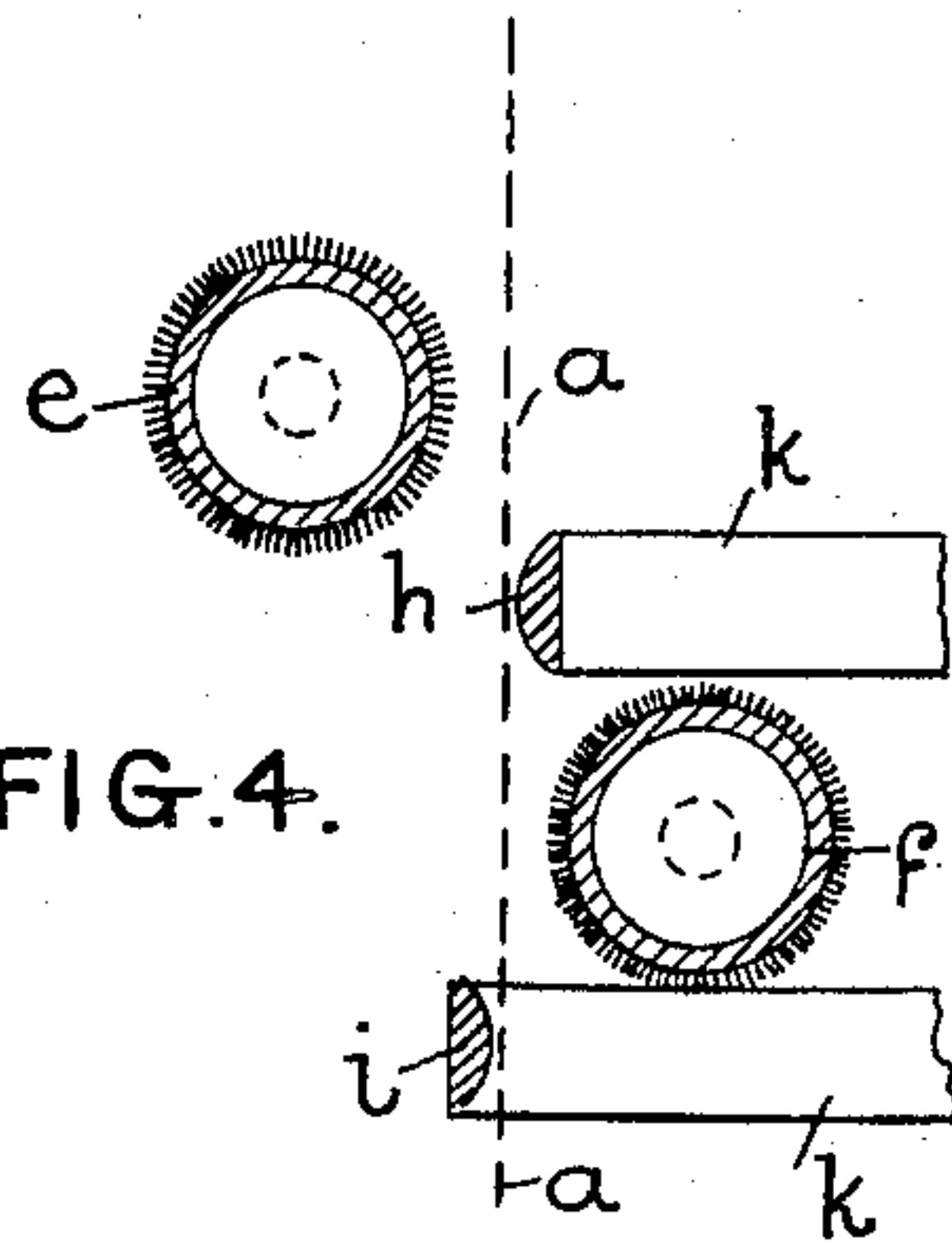


FIG. 4.



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3 SHEETS—SHEET 3.

FIG. 3.

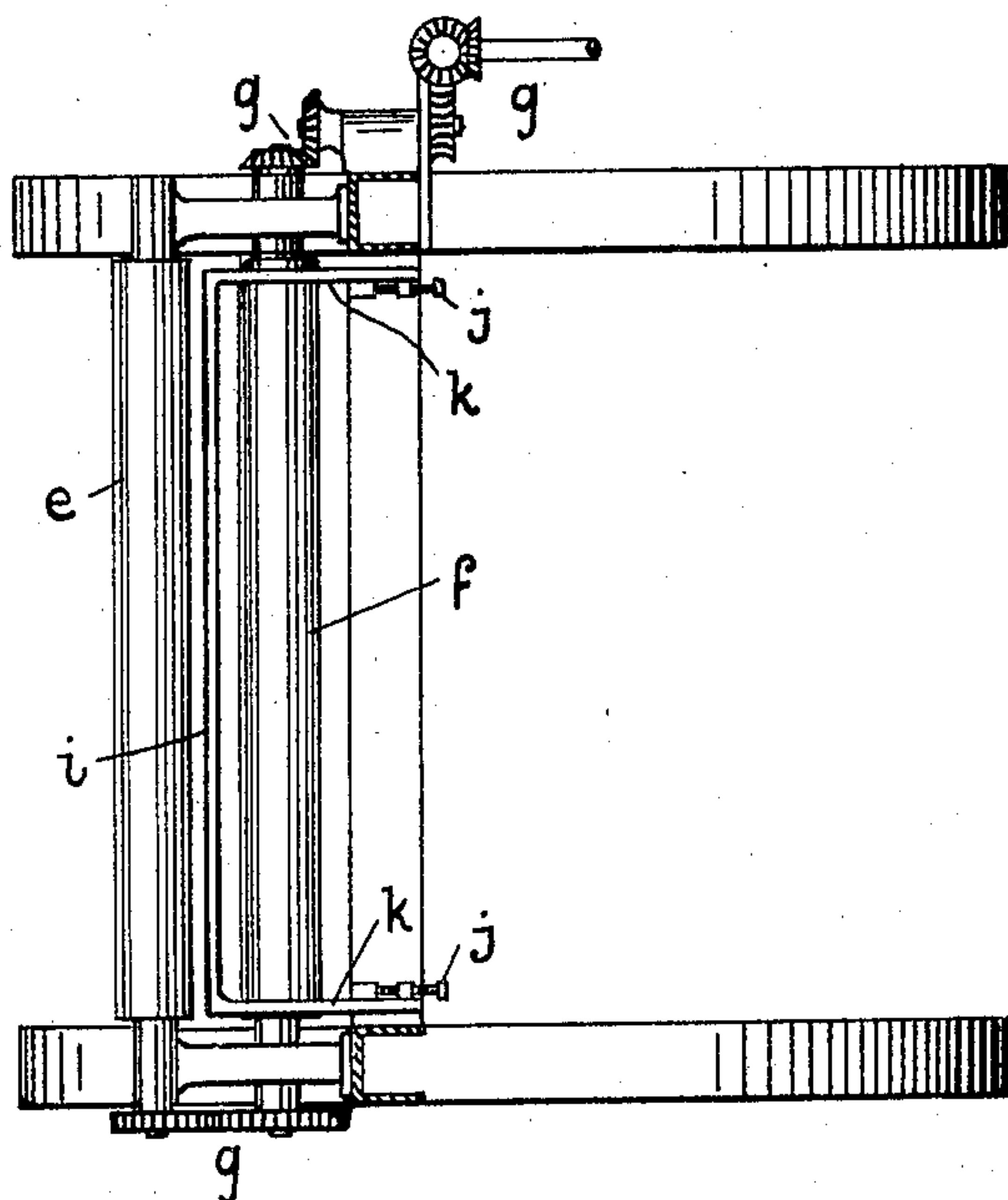


FIG. 5.

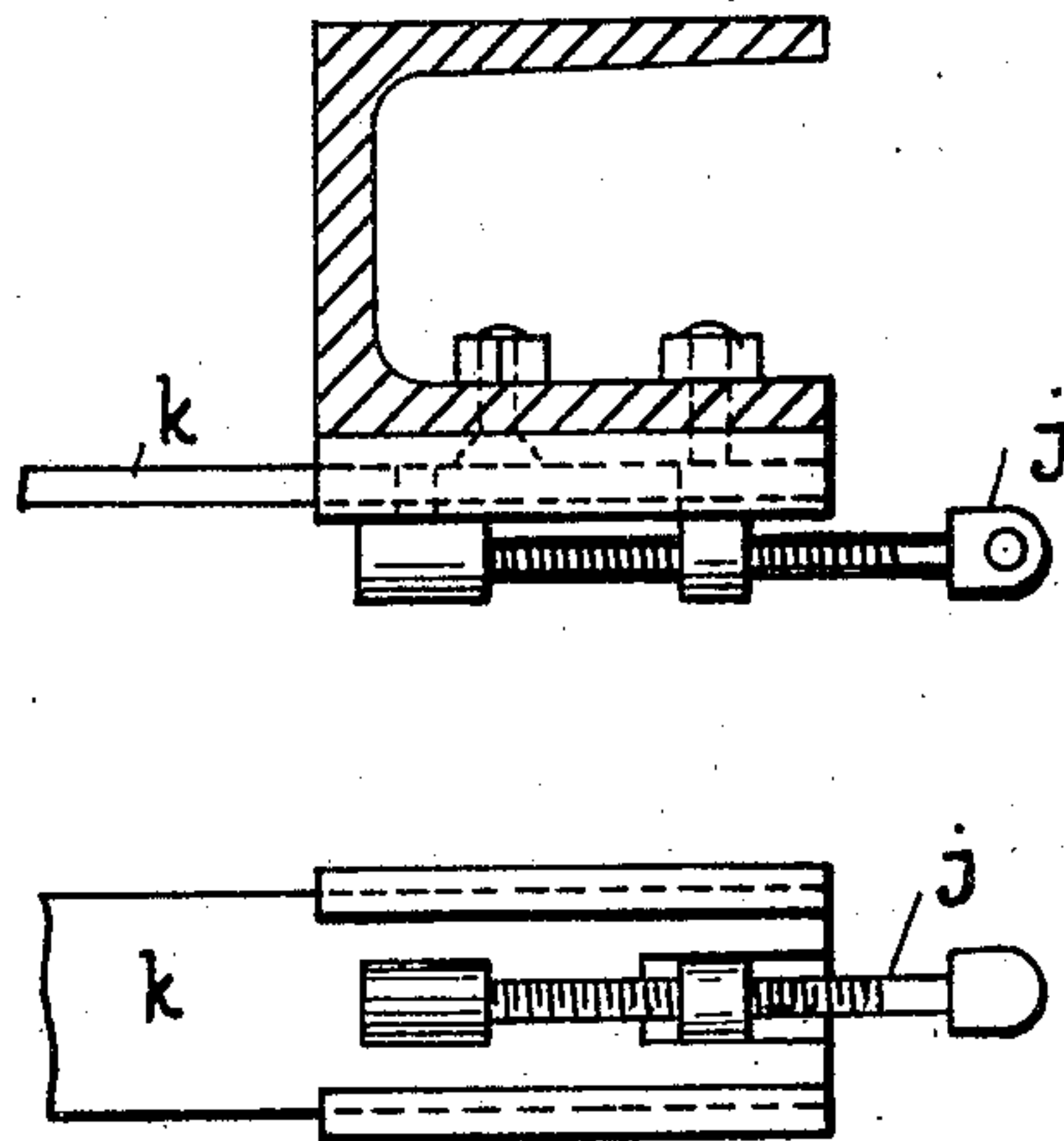


FIG. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

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MACHINE FOR RAISING PILE ON FABRICS.

SPECIFICATION forming part of Letters Patent No. 789,835, dated May 16, 1905.

Application filed December 5, 1903. Serial No. 183,945.

To all whom it may concern:

Be it known that I, CHARLES BLAIR, a subject of the King of Great Britain and Ireland, residing at 1 School Lane, Penwortham Hill, near Preston, in the county of Lancaster, England, have invented a new and useful Improvement in Machines for Raising Pile on Fabrics, of which the following is a specification.

10 This invention has for its object an improved machine for raising pile or "nap" on fabrics at both sides at one operation.

15 An important feature of my invention is that while the cloth is passing through the machine to have the pile raised on both sides (as distinguished from passing it twice through a machine, once for each side) both sides are in view practically all the time, so that the raising of the pile may be constantly watched and regulated, all as hereinafter described, and specifically pointed out in the claims.

20 In the drawings, Figure 1 is a front view of a machine constructed in accordance with my invention. Fig. 2 is a sectional elevation on line A A of Fig. 1. Fig. 3 is a sectional plan of portions of the machine, taken as on line B B of Fig. 2 looking downward. Fig. 4 is an enlarged view of portions of Fig. 2. Fig. 5 is a sectional plan, on an enlarged scale, of the adjusting device hereinafter described; and Fig. 6 is a side elevation of Fig. 5.

25 The framework of the machine comprises two arch-shaped base-pieces 1 1, which support two upright pieces 2 2, and these are connected at top by a transverse girder 3. (See Figs. 1, 2, and 3.) The piece of cloth *a* which is to have a pile raised on both sides is drawn from a roll *b*, supported in brackets 4, attached near the top of uprights 2 2 by means of ironing-rollers *c*, journaled in hangers 5 near the bottom of the machine, and these rollers *c* grip it and drag it downward. The bottom ironing-roller *c* is revolved by means of a pinion *d* on its shaft meshing with a toothed wheel *d'*, and this is in turn revolved by means of a toothed pinion *d''* on a shaft *d'''*, which carries stepped belt-pulleys *d''''*. (See Figs. 1 and 2.) The object of employing stepped pulleys is that the speed of rotation of the ironing-rollers *c c* may be varied ac-

30 cording to the material under treatment and the atmospheric or weather conditions. The cloth passes between a series of rollers *e* and *f*, placed, respectively, in front of and behind it. The rollers *e* and *f* are covered with wire filleting or wire spikes, as shown in Fig. 4. It will be seen that the wire-covered rollers *e* are placed alternately at opposite angles, as also are the wire-covered rollers *f*, the advantage of this arrangement being that the pile is raised "on the twist"—that is, at an angle to the warp or weft of the cloth—and this gives a better product than if the rollers were placed straight across and also gives the finished material a greater strength, because the threads are teased out sidewise to form the pile or nap instead of being slit longitudinally or cut transversely. The front rollers *e* raise the pile on the front of the cloth, and the back rollers *f* raise the pile on the back of the cloth.

35 The wire-covered rollers *e* and *f* are arranged in parallel pairs, as clearly shown in Fig. 1, and each roller is connected to its fellow—that is, one front roller and one back roller—by intermeshing gear-wheels *g*. The lower or front roller *f* of each pair carries a bevel-pinion *g'*, which is turned by a bevel-wheel *g''*, and *g''' g''''* show spindles on which said bevel-wheels *g''* are mounted. These spindles *g'''* have worm-wheels *g''''* at their other ends, and said worm-wheels are turned by a series of worms *g''''''*, carried on an upright shaft *g'''''''*, supported in collars *g''''''''*, attached to the upright 2. The upright shaft *g'''''''* preferably receives motion from a counter-shaft *g''''''''*, as clearly shown in Figs. 1, 2, and 3, which counter-shaft is driven from any suitable source of power.

40 A series of fluted rails *h* and *i* are arranged adjacent to the rollers *e* and *f* and correspond in number therewith. Any desired number of these rails may be pressed against the cloth, and they cause it to keep stretched or taut sidewise and also press it against the rollers *e* and *f*. The rails *h* press the cloth against the front rollers *e*, while the rails *i* pull the cloth against the back roller *f*. These rails *h* and *i* may each be independently adjusted to put more or less pressure on the cloth by means of screw adjusters *j*, which

slide the arms h , that carry the said fluted rails h and i . It will thus be seen that the cloth may be pressed with any desired degree of force against any or all of the rollers. The
 5 number of rollers actually in operation at one time will vary according to the amount of pile to be raised and also according to the nature of the cloth being treated.

l is a steam-pipe for heating the ironing-
 10 rollers c c , and m , Fig. 2, is a steam-jet for damping the cloth. These, however, form no part of my invention.

The cloth leaving the roll b passes over a roller o , and in order to retard or put a drag
 15 on said cloth (which is being dragged downward by the rollers c) I provide a brake, which comprises a lever n , pivoted, as at n' , carrying a weight n^2 , which latter may be slid along said lever n , so as to vary the pressure
 20 in obvious manner. The lever n rests (near its fulcrum or pivot) in a groove in a friction-wheel n^3 , mounted on the spindle of the roller o . The roller o may be roughened or covered with spikes, if desired.

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

1. In a vertical machine for raising pile on fabrics the combination of a series of rollers

adapted to raise the pile on one side of the cloth the alternate rollers of the series being 30 set at an angle to each other, a similar series of rollers adapted to raise the pile on the other side of the cloth, and adjustable fluted rails by means of which the pressure of the cloth against the rollers may be regulated one 35 by one, substantially as described.

2. In a machine for raising pile on fabrics the combination with means adapted to cause the cloth to travel of a plurality of rollers in front of the cloth said rollers being arranged 40 at an angle with each other alternately, another plurality of rollers at the back of the cloth also arranged alternately at an angle with each other and parallel to the front rollers, and adjustable fluted rails whereby the 45 pressure of the cloth against each of said rollers may be regulated, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two sub- 50 scribing witnesses.

CHARLES BLAIR.

Witnesses:

CHAS. COVENTRY,
 THOMAS NUGENT.