

(No Model.)

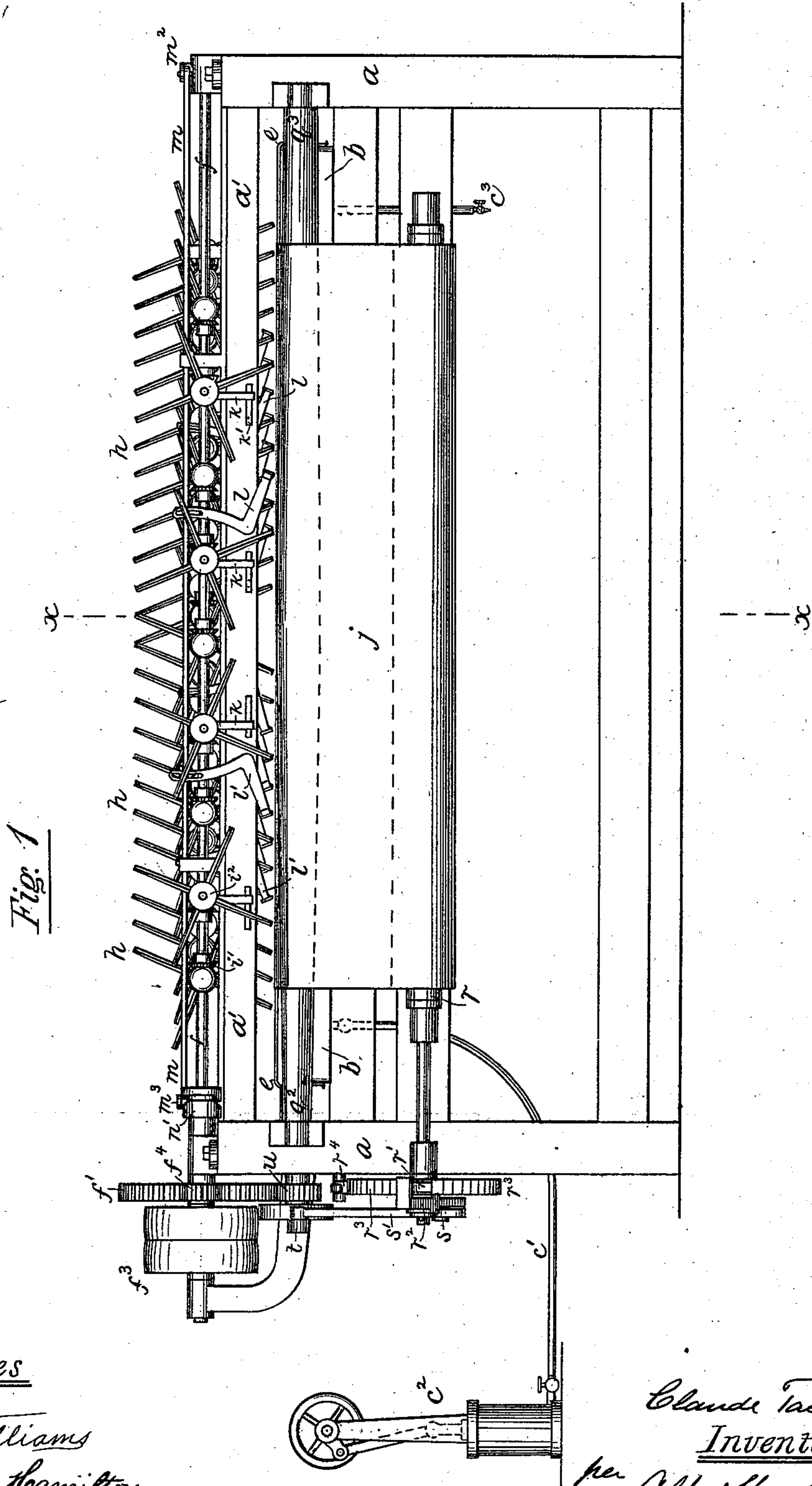
4 Sheets—Sheet 1.

C. TACHON.

MACHINE FOR FINISHING AND POLISHING TEXTILE FABRICS.

No. 376,993.

Patented Jan. 24, 1888.



Witnesses

H. D. Williams

John A. Hamilton.

Claude Tachou,
Inventor

per Alfred Hedrick
Atty.

(No Model.)

4 Sheets—Sheet 2.

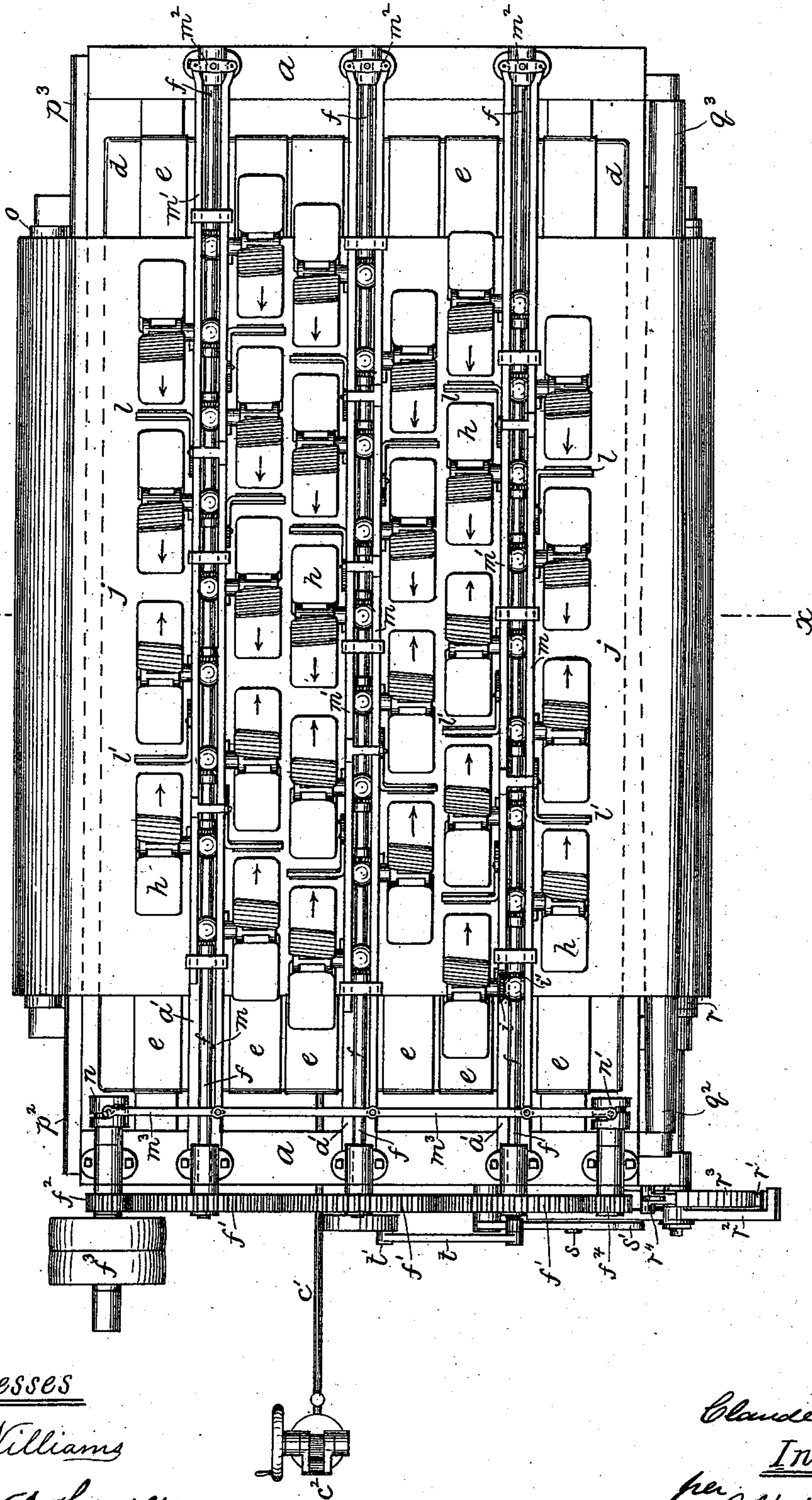
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Fig. 2



Witnesses

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att'y.

(No Model.)

4 Sheets—Sheet 3.

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Fig. 4

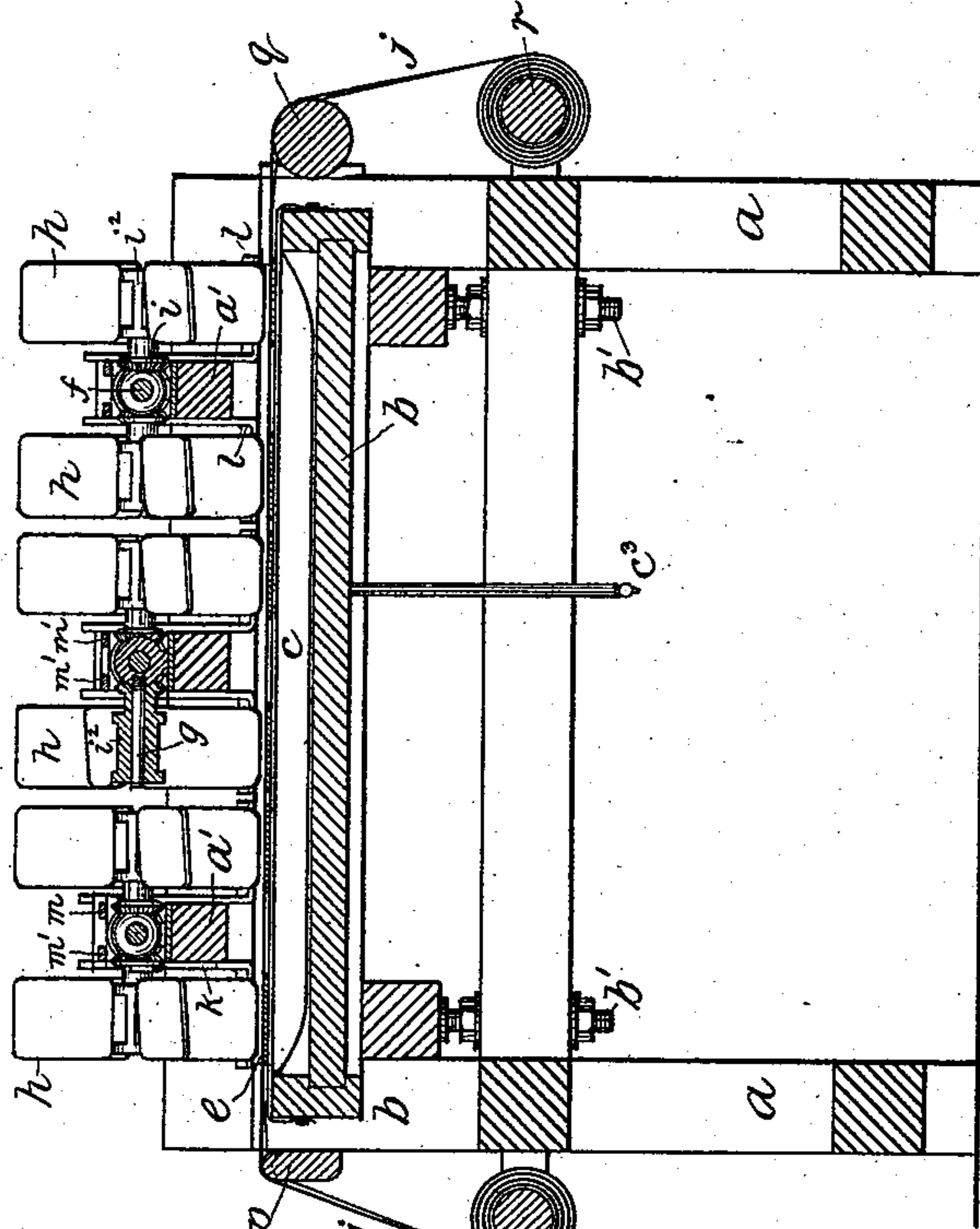
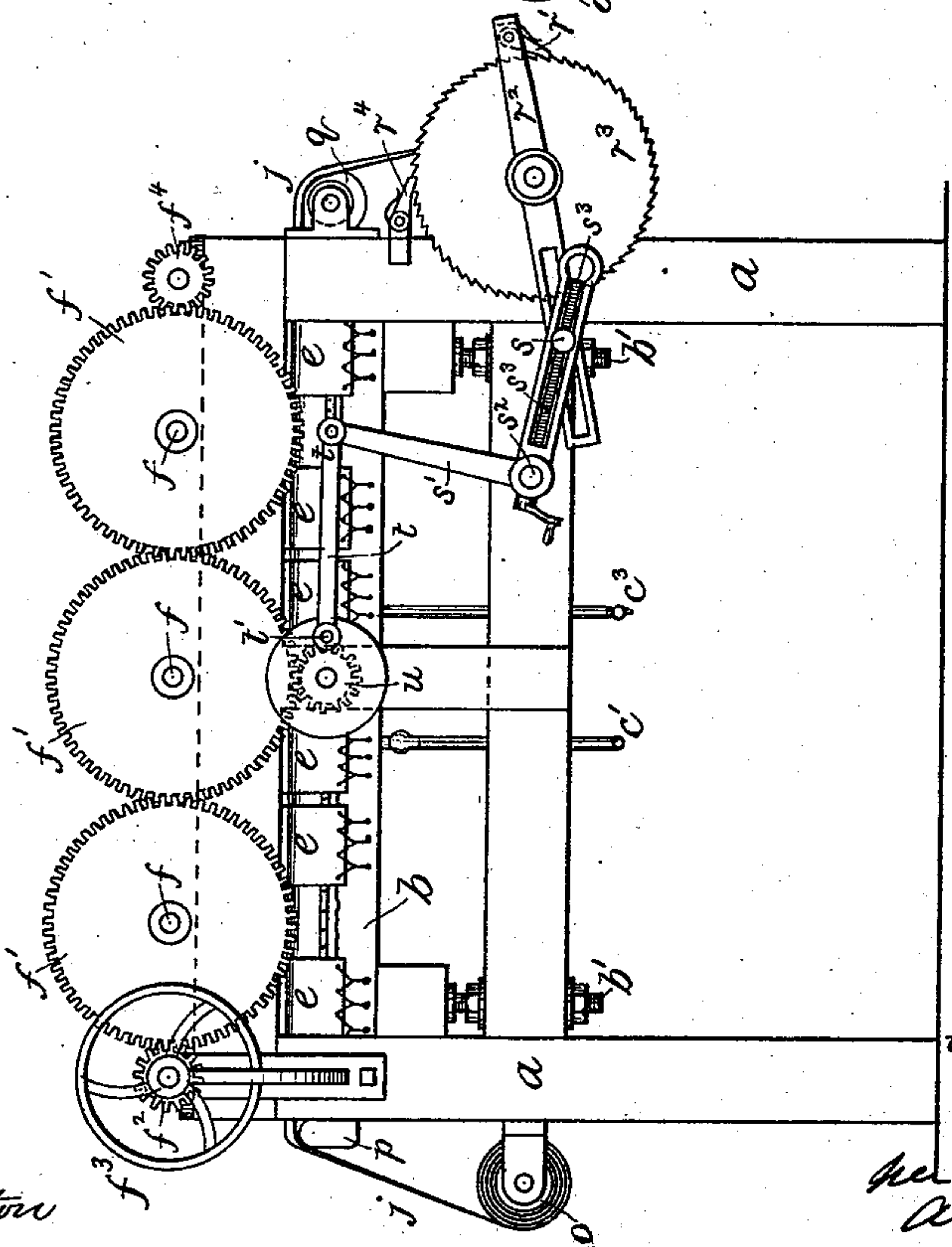


Fig. 3



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(No Model.)

4 Sheets—Sheet 4.

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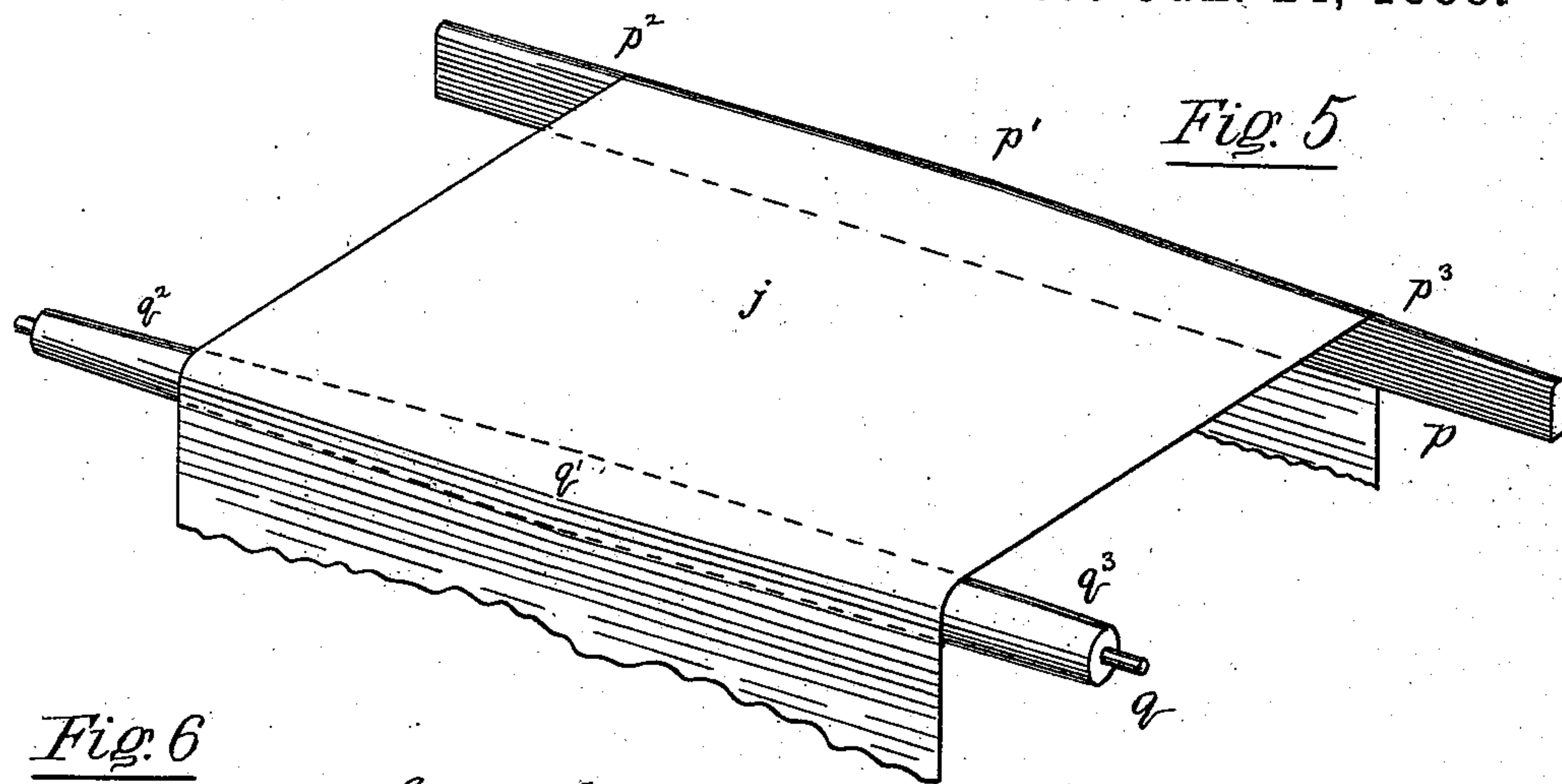


Fig. 6

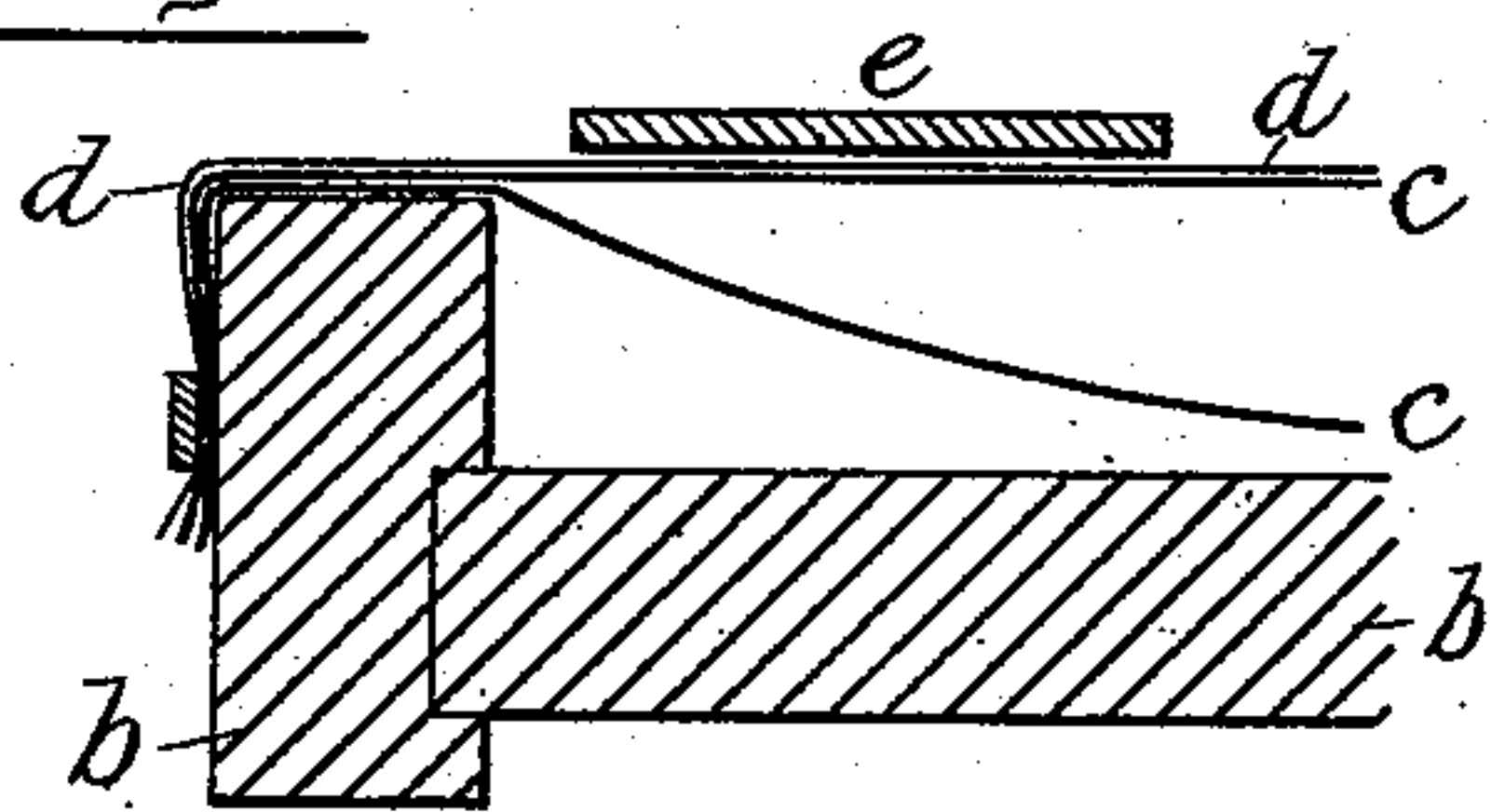


Fig. 7

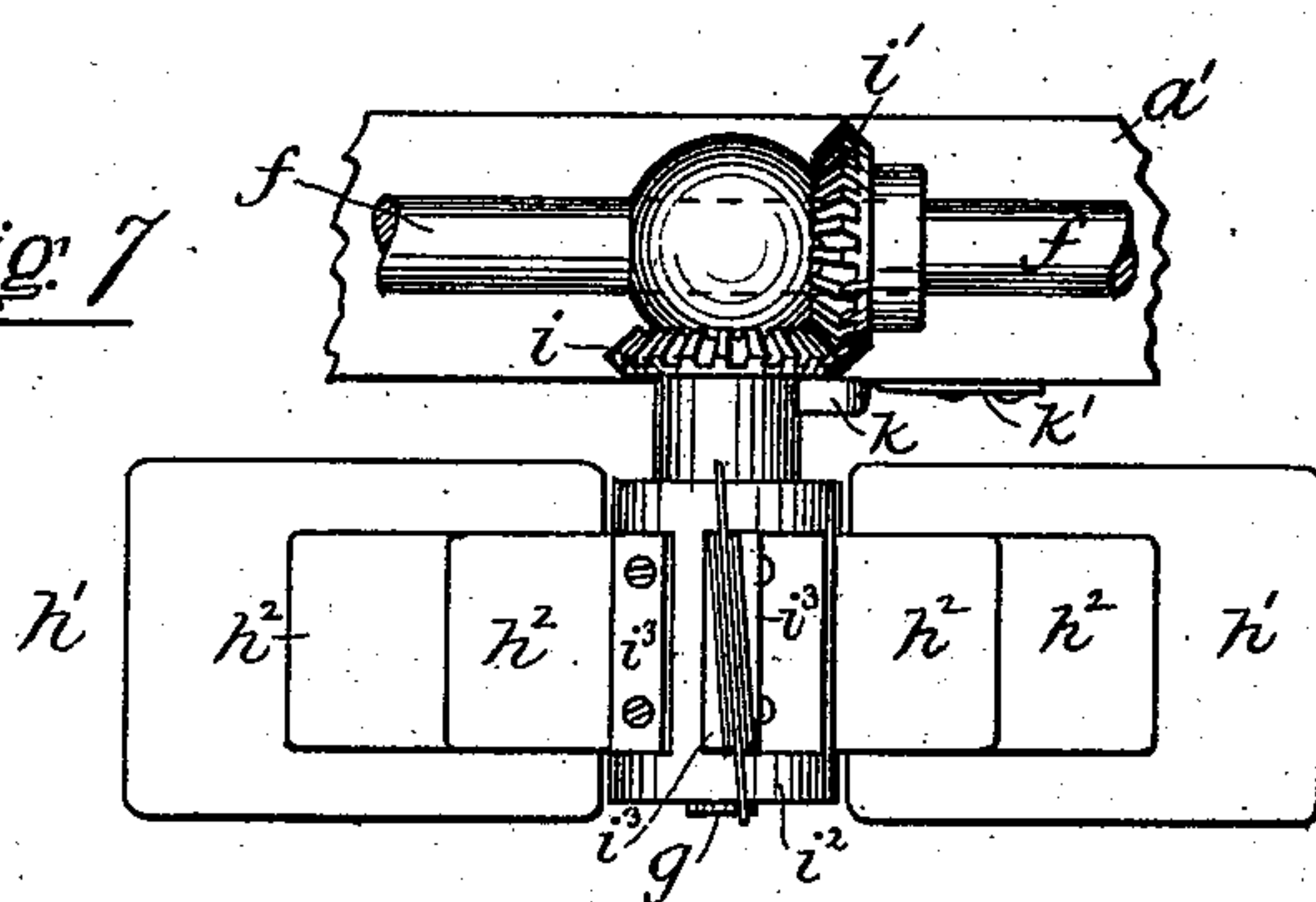
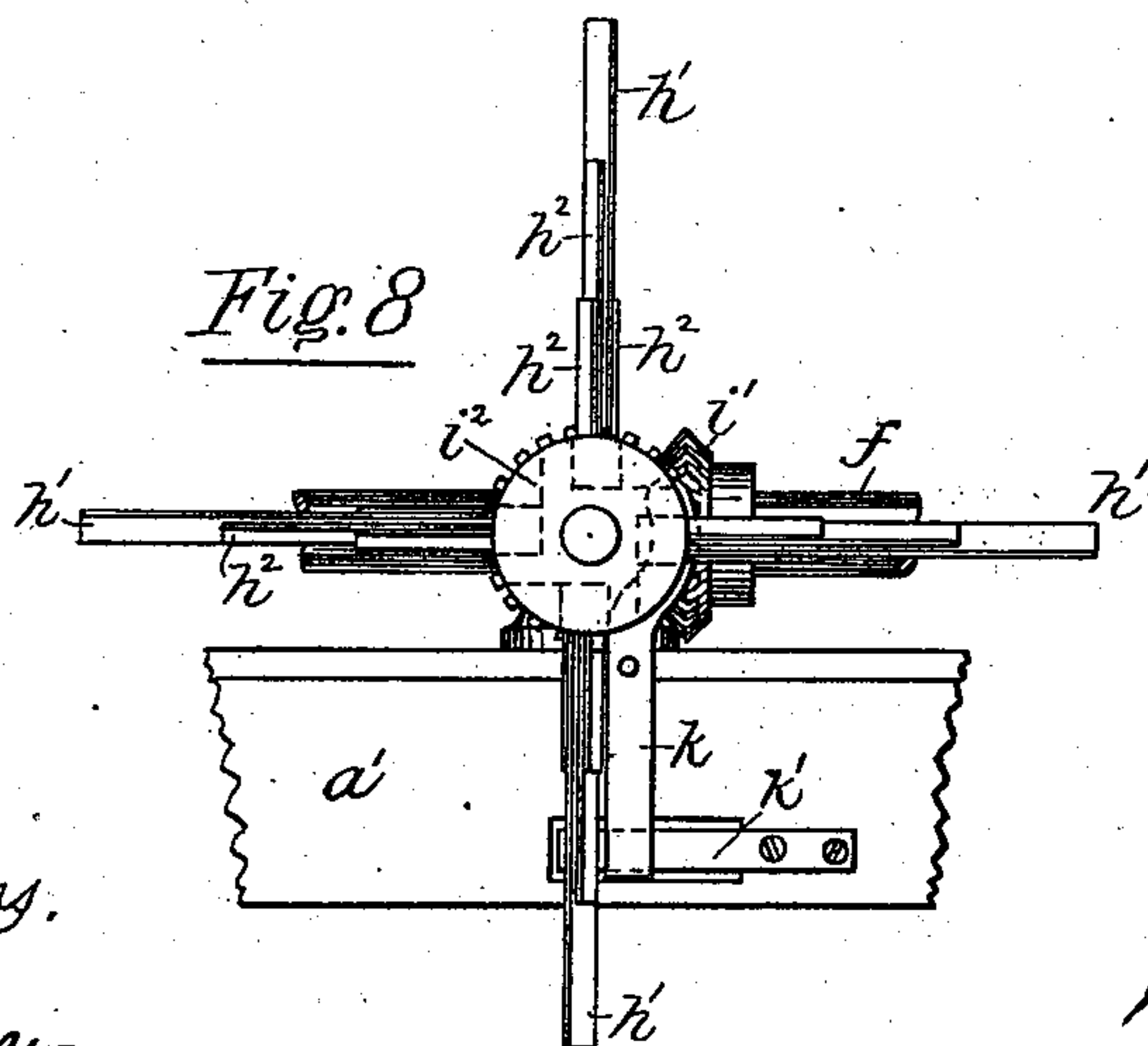


Fig. 8



Witnesses

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John A. Hamilton.

Claude Tachon.

Inventor

per Alfred Hedlock.
Atty.

UNITED STATES PATENT OFFICE.

CLAUDE TACHON, OF CHARLIEU, LOIRE, FRANCE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HERMAN SPAHN, OF NEW YORK, N. Y., AND EDOUARD G. LANDRU, OF UNION, NEW JERSEY.

MACHINE FOR FINISHING AND POLISHING TEXTILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 376,993, dated January 24, 1888.

Application filed May 7, 1887. Serial No. 237,404. (No model.) Patented in France January 15, 1880, No. 134,542.

To all whom it may concern:

Be it known that I, CLAUDE TACHON, a citizen of the Republic of France, residing at Charlieu, Department of Loire, France, have invented certain new and useful Improvements in Machines for Finishing and Polishing Textile Fabrics, (for which I obtained a patent in France, No. 134,542, dated January 15, 1880,) of which the following is a specification.

The object of this invention is to provide a means for finishing and polishing textile fabrics in a more perfect manner than has heretofore been done.

My improved finishing and polishing machine involves a rubbing action on the surface of the fabric whereby the weft and warp threads are smoothed down and spread out uniformly and all irregularities removed therefrom, thus condensing the surface of the goods and closing the interstices without injury thereto.

The essential features of a machine adapted to perform this work are: an elastic or yielding bed upon which the goods are held; means for rubbing all parts of the exposed surface of the goods uniformly, preferably composed of a series of rotating flexible blades; feeding mechanism and means for drawing the goods over the bed and applying tension in all directions thereto to prevent creasing during the action of the blades thereon. In submitting some classes of goods to this process it is desirable that the rubbing action should take place transversely on the goods—that is, in the direction of the weft. In other goods the rubbing is preferably applied longitudinally, or in direction with the warp; and in some goods it may be desirable to apply the finishing and polishing operations in both directions thereon, for which reasons I make two distinct machines, one having the flexible blades arranged to act transversely and the other having the flexible blades arranged to act longitudinally on the goods.

The longitudinal finishing and polishing machine forms the subject of another application for Letters Patent filed simultaneously herewith under Serial No. 237,405. The transverse finishing and polishing machine is hereinafter fully described and shown in the ac-

companying drawings, to which I will refer, and in which—

Figure 1, Sheet 1, is a front elevation thereof. Fig. 2, Sheet 2, is a plan view. Fig. 3, Sheet 3, is an end elevation. Fig. 4, Sheet 3, is a sectional elevation taken on the line *x x*, Figs. 1 and 2. Fig. 5, Sheet 4, is a perspective view of the guides over which the goods are drawn. Fig. 6, Sheet 4, is a detached sectional view of a part of the elastic bed, on an enlarged scale. Fig. 7, Sheet 4, is a plan view of one of the polishing devices and attending mechanism, on an enlarged scale; and Fig. 8, Sheet 4, is a front elevation of the same.

The main frame *a* is rectangular in form, and in the upper part thereof is located the box *b*, which holds the elastic bed and which is supported on the leveling-screws *b' b'*. The elastic bed is composed of the india-rubber air-chamber *c*, secured to the edges of the box *b*, a cloth covering, *d*, preferably made of mole-skin, extending over the whole upper surface of the air-chamber *c*, and strips of leather *e e*, located under the polishing device. (See Fig. 6.) The strips of leather *e e* are drawn taut by means of lacings at their ends. (See Fig. 3.)

Air is forced into the elastic bed, through the pipe *c'*, from any suitable source—as, for instance, an air-pump, *c''*, which may be operated by manual or other power—and the elasticity of the bed is regulated by the manipulation of the cock *c''*. Across the machine, just above the elastic bed, are placed the girders *a' a'*, on which are secured the bearings for the shafts *f f*. These shafts have secured to their ends the gear-wheels *f' f'*, meshing into one another and driven by the pinion *f''*, fastened on a short shaft provided with the pulleys *f'''* and carried in a bracket at the end of the frame *a*.

From the bearings of the shafts *f f* project the studs *g g*, alternately arranged on either side thereof and on which are fitted to rotate the polishing devices *h h*, the hubs of which are provided with the miter-wheels *i i*, meshing into corresponding wheels *i' i'*, secured to the shafts *f f*.

By referring to Fig. 2 it will be observed

that the arrangement of the polishing devices h in the rows or different series on either side of the shafts f is such that all parts of the goods j , as they are drawn under the polishing devices, are uniformly acted on by them. The direction of rotation of each of the polishing devices h is indicated by an arrow.

The enlarged views, Figs. 7 and 8, more clearly show the construction of these polishing devices, which consist of flat blades h' h' , of spring-tempered steel, re-enforced by side springs h^2 h^2 , and held in positions oblique to their axes in recesses formed in the hubs i^2 i^2 by means of screws passing through them and wedge-shaped pieces i^3 i^3 . By using clamping-pieces i^3 i^3 of more or less obliquity the angular positions of the blades h' h' may be varied at pleasure to cause them to act properly on different goods. The object of arranging these blades so that the whole of their edges do not strike the goods at once is to remove any creases from or tendency to crease of the goods; and it will be observed that where adjacent polishing devices move in opposite directions on the goods their blades are inclined in opposite directions, so that the dragging action of one of the blades is opposed by that of the other, and where adjacent polishing devices move in the same direction on the goods grippers are placed between them to press the goods firmly onto the elastic bed during the polishing action of the blades thereon.

To hold the polishing devices on the studs g g , one end of each of the levers k , which are pivoted on the girders a' , passes behind the back of each of the miter-wheels i , and they are held in this position by means of the spring-catches k' acting on their other ends. These holding devices permit ready removal of the polishing devices for adjustment, &c.

All of the polishing devices are set so that their blades act on the goods together.

In the main views of the drawings the blades and the grippers have just left the goods to allow them to be fed forward without obstruction. These grippers consist of bars extending from the ends of bell-crank levers l l' , pivoted to the girders a' a' . They are arranged to hold the goods on the bed so that the dragging action of the polishing devices shall be opposed similarly by them—that is, they are made right and left and are marked, respectively, l and l' . They are actuated by studs projecting from the bars m and m' and fitting into slots formed in the vertical arms of the bell-cranks. These pairs of bars m and m' slide in bearings above the shafts f f , and are at one end of the machine connected together by short levers m^2 , by means of which a reciprocating motion applied to one of them is imparted to the other with reversal of direction. The bars m actuate the grippers l and the bars m' the grippers l' . The bars m are joined at their other ends to the bar m^3 , which is provided with pins or rollers at its ends arranged to work in the cams n and n' , one of which is secured to the shaft of the driving-

pinion f^2 , at the rear end of the train of gears f' , and the other one to the shaft of the pinion f^4 , at the front end of the train of gears. These cams n and n' work in unison, so as to move the bars m uniformly together, and they are so set as to cause all the grippers l l' to grip the goods just before the blades of the polishing devices act thereon and to raise them therefrom after the blades leave the goods.

The goods to be treated are placed on the roller o at the rear of the machine. They pass over the guide-bar p , the elastic bed, and the guide-roller q , and are wound up on the roller r at the front of the machine. This roller r is actuated intermittently to free the goods, when free of the polishing blades and grippers, by means of the pawl r' , carried on the end of the lever r^2 , so as to work in the ratchet-wheel r^3 , secured to the shaft of the roller r . r^4 is a retention-pawl. The other arm of the lever r^2 is slotted and provided with a sliding block forming a part of or connected to the nut s , fitted to slide in the slotted arm of the bell-crank lever s' , which is pivoted at s^2 to the frame a . The upper end of the vertical arm of the bell-crank lever s' is connected by the rod t to the crank t' , carried on the shaft of the pinion u , which meshes into one of the wheels of the train of gears f' . This crank t' makes a full revolution for each action of the blades of the polishing devices h on the goods. The length of goods fed forward by each revolution of the crank t' is determined by the position of the nut s in the slotted arm of the bell-crank lever s' , which is set by the manipulation of the screw s^3 , having bearings in the slotted arm and passing through the nut s . (See Fig. 3.)

To insure that the goods are fed forward and held during the finishing and polishing operation without irregularities or creases, a peculiar form is given to the guide bar p and the guide-roller q , viz: They are both higher at their central parts p' and q' than at their ends, thereby imparting to the goods while being drawn over them a tendency to move laterally from the center to both sides. The end p^2 of the bar p is higher than the corresponding end q^2 of the roller q , and the other end, p^3 , of the bar is lower than the other end, q^3 , of the roller, as shown in the perspective view, Fig. 5. Thus a slightly-retarding action is imparted to one edge of the goods as they approach the elastic bed and a similar action imparted to the other edge of the goods as they leave the bed, which opposing actions, somewhat of a twisting nature, combined with the spreading action due to the high central parts of the guide-bar p and roller q , cause the goods to lie perfectly flat on the elastic bed. This is very essential for the proper finishing and polishing of the goods by means of edge rubbers acting thereon to smooth down and spread out the threads in an efficient and uniform manner.

The combination of the devices here described, while performing all the functions for which it is designed, acts so gently on the

goods that all knots and excessive irregularities are eliminated, as far as appearance goes, without breaking or otherwise injuring the weft and warp of the goods.

5 The cloth covering *d* over the air-chamber *e* constitutes a soft yielding surface, and the strips of leather *e e* form a durable smooth surface for the polishing-blades to press the goods against, and they are capable of being
10 submitted to sufficient strain under tension to prevent excessive raising of the air-chamber at the central part of the bed.

Having now described the nature of my invention and ascertained the manner in which
15 it is operated, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for finishing and polishing textile fabrics, in combination, an elastic or yielding bed on which the goods under treat-
20 ment are held, feeding mechanism for drawing the goods over the bed, and rotary rubbing devices arranged to act transversely on the goods, substantially as and for the purpose set forth.

25 2. In a machine for finishing and polishing textile fabrics, the combination, with an elastic or yielding bed, of several series of polishing devices provided with flexible blades arranged to act on all parts of the goods held
30 on the bed and rotated in opposite directions, and connecting devices for imparting a continuous rotary motion to the polishing devices, substantially as and for the purpose set forth.

3. In a machine for finishing and polishing
35 textile fabrics, in combination, an elastic or yielding bed, rotating rubbing devices provided with flexible blades and arranged to act on all parts of the goods held on the bed, grippers located between the rubbing devices, and
40 mechanism, substantially as described, for actuating the grippers and causing them to hold the goods on the bed when the rubbing devices are acting thereon.

4. In a machine for finishing and polishing
45 textile fabrics, in combination, an elastic or yielding bed, rotating rubbing devices provided with flexible blades and operated to act simultaneously on the goods held on the bed, grippers located between the rubbing devices,
50 mechanism, substantially as described, for actuating the grippers and causing them to hold the goods on the bed when the rubbing devices are acting thereon, and an intermittently-actuated feeding device for drawing the
55 goods forward when the flexible blades of the rubbing devices and the grippers leave the goods.

5. In a machine for finishing and polishing textile fabrics, the combination, with an elastic bed, of rotary rubbing devices having flexi- 60 ble blades arranged obliquely to their axes and actuated to rotate in opposite directions on the goods held on the bed, the inclination of the flexible blades being in opposite directions on the oppositely-moving rubbing devices, 65 whereby creasing of the goods is avoided, and connecting devices for imparting continuous rotary motion to the rubbing devices.

6. In combination, an open-top box, an elastic air-chamber, a cloth covering placed over 70 the same, strips of leather placed and stretched over the cloth covering, and means for supplying the air-chamber with air under pressure, substantially as set forth.

7. In a machine for finishing and polishing 75 textile fabrics, the combination, with an elastic bed, a feeding roller for drawing the goods over the bed, and flexible rubbing devices, of two curved guides, one at the entrance side and one at the exit side of the bed over which 80 the goods pass, said guides being higher at their central parts than at their ends, and each higher at one of its ends than at the other end, the high end of the one being opposite the low end of the other, substantially as and for the 85 purpose set forth.

8. In combination, the shafts *ff*, gear-wheels *f' f'*, secured to their ends, miter-wheels *i' i'*, secured to the shafts *ff*, the studs *g g*, arranged on either side of and at right angles to the 90 shafts *ff*, and the rubbing devices *h h' h'*, fitted to rotate on the studs *g g* and provided with miter-wheels *i i*, meshing into the miter-wheels *i' i'*, substantially as set forth.

9. The combination, with an elastic bed, ro- 95 tating rubbing devices *h h' h'*, and connecting devices for imparting a continuous rotary motion to the rubbing devices, of the pivoted grippers *l* and *l'*, the bars *m* and *m'*, provided with projecting pins for actuating the grippers *l* and 100 *l'*, short levers *m³*, for connecting the ends of each pair of bars *m m'* together, the bar *m³*, to which the other ends of the bars *m* are connected, and the cams *n n'*, acting on the bar *m³*, so as to impart a reciprocating movement to the 105 bars *m* and *m'*, substantially as set forth.

In witness whereof I have hereunto set my hand this 23d day of March, A. D. 1887.

CLAUDE TACHON.

Witnesses:

FRANÇOIS PAYSAC,
YANT YARELLE.