

(No Model.)

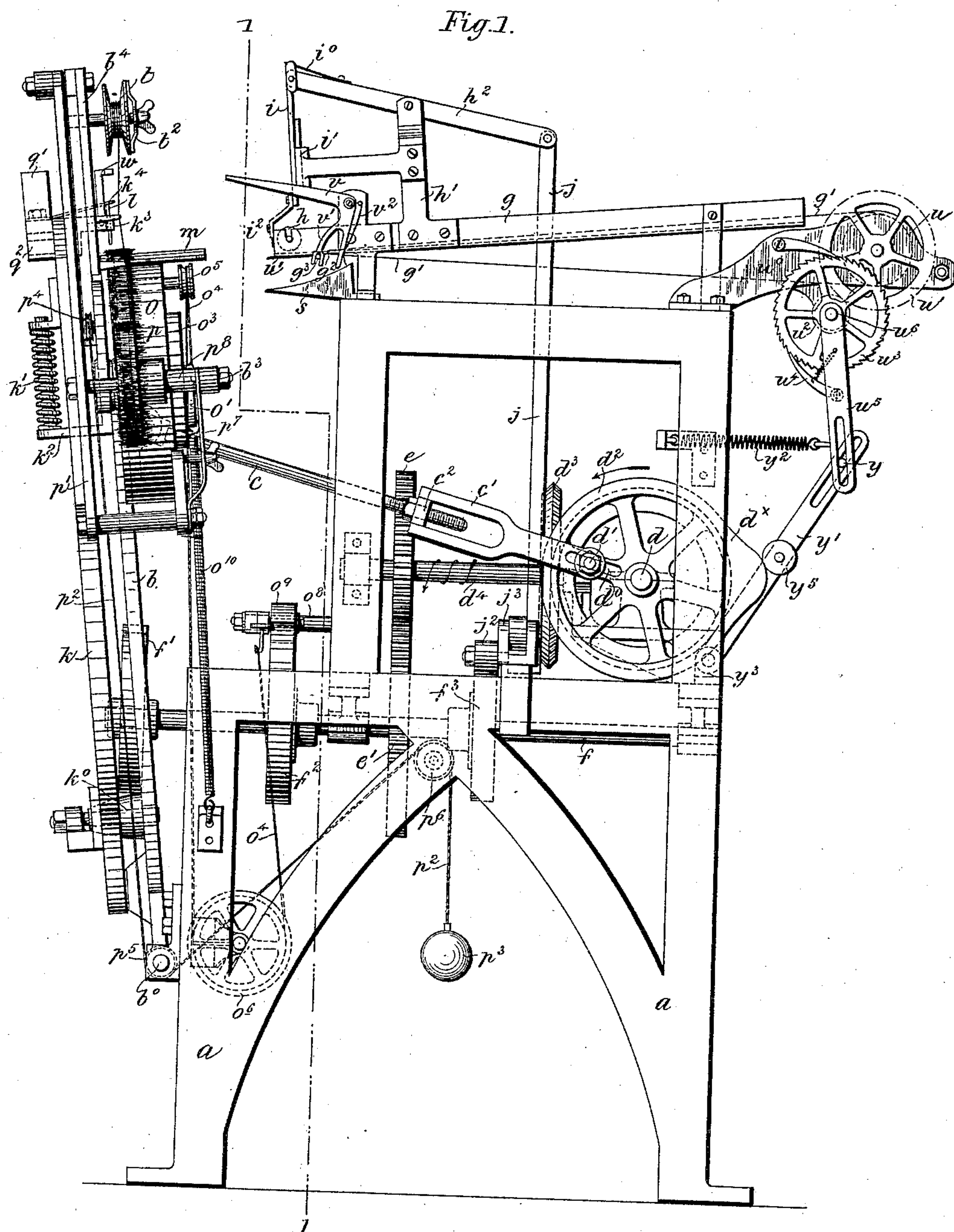
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J. T. TUSSAUD.

APPARATUS FOR APPLYING FUR, &c., TO WOVEN FABRICS, &c.

No. 436,390.

Patented Sept. 16, 1890.



Witnesses.  
*Philip Ingham*  
*Allen Jones*

Inventor:  
*John T. Tussaud*

(No Model.)

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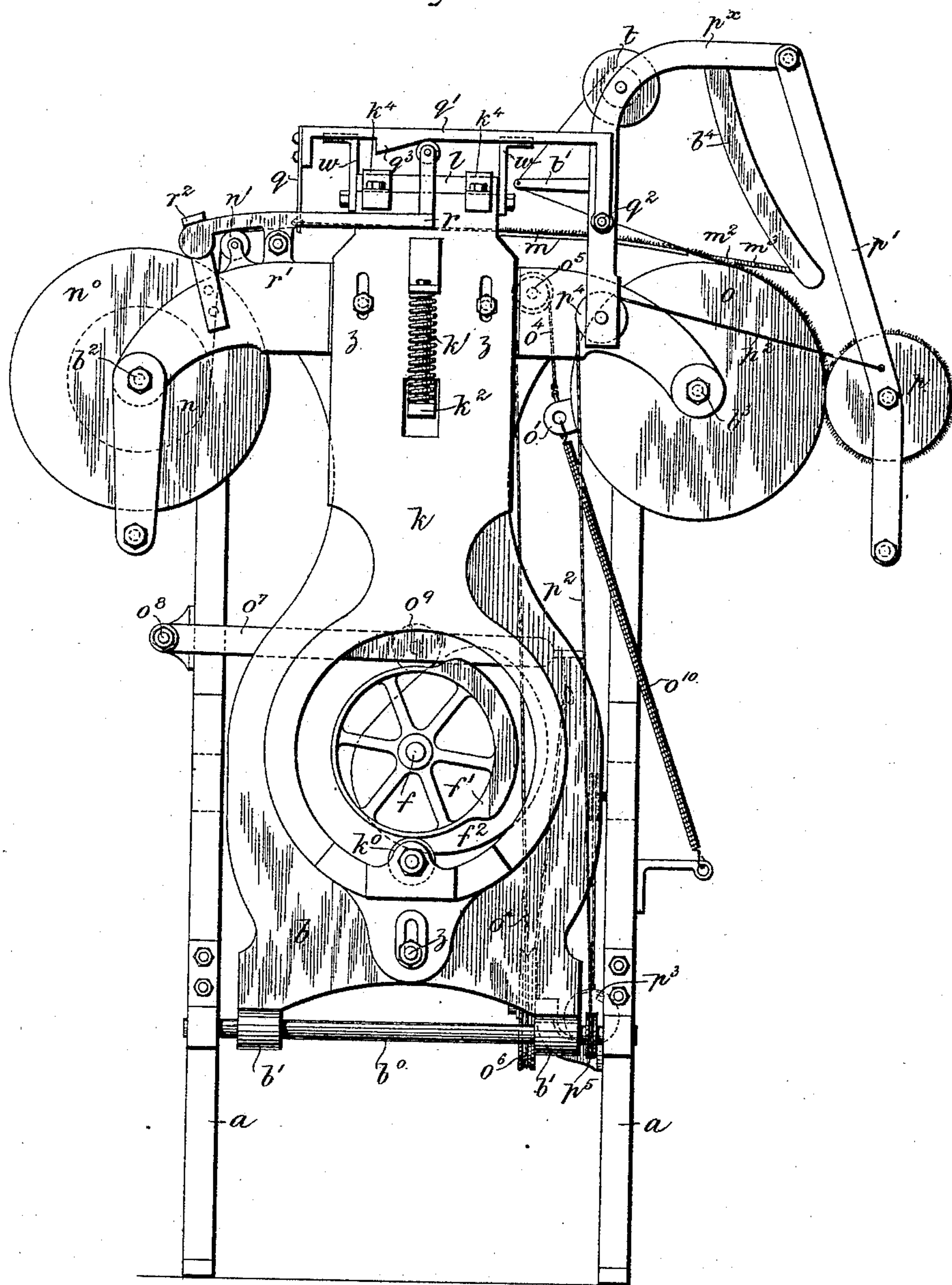
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*Fig. 2.*



Witnesses.  
Philip A Justice  
Allent Jones

Inventor:  
John W. Maund



(No Model.)

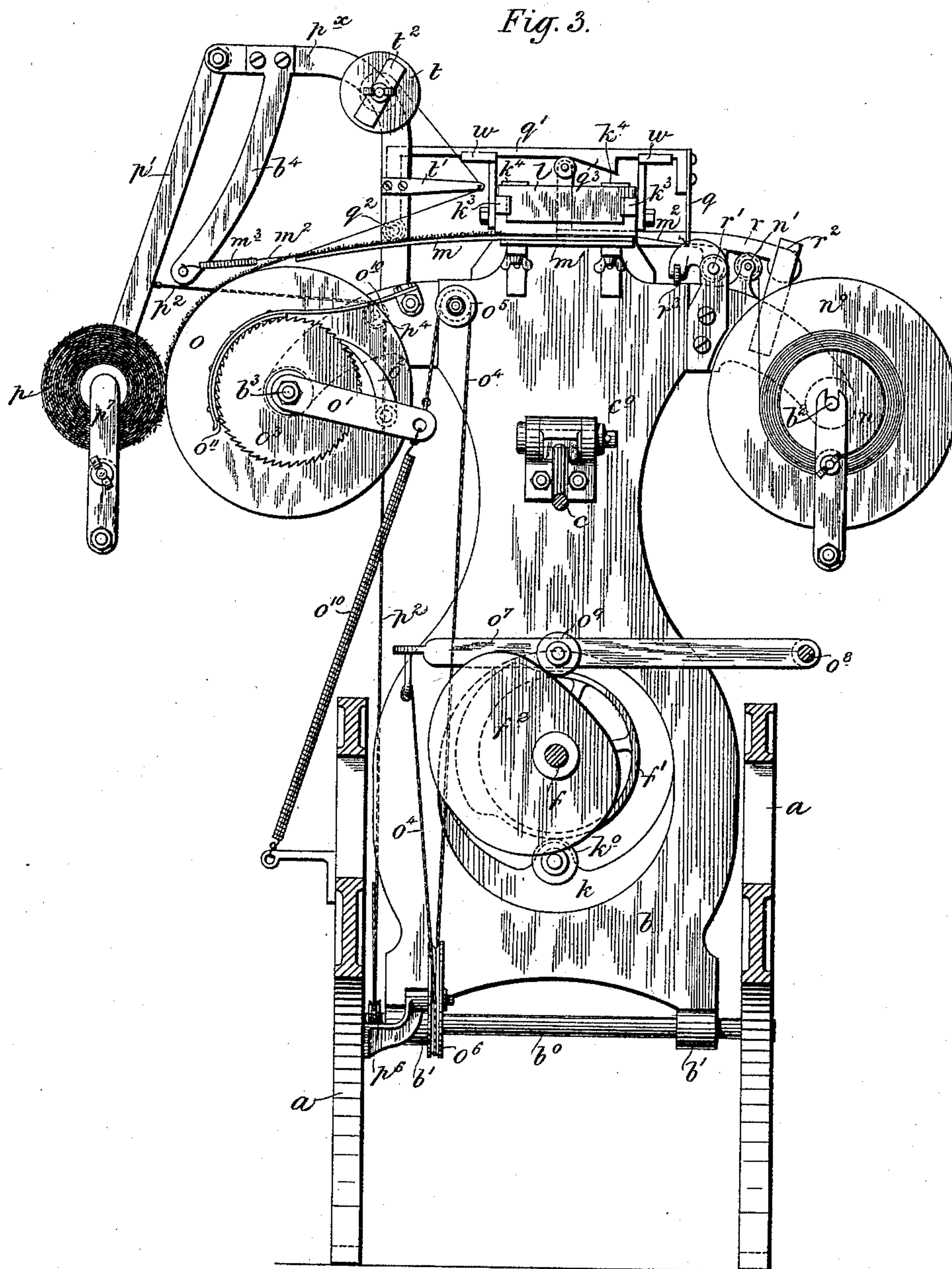
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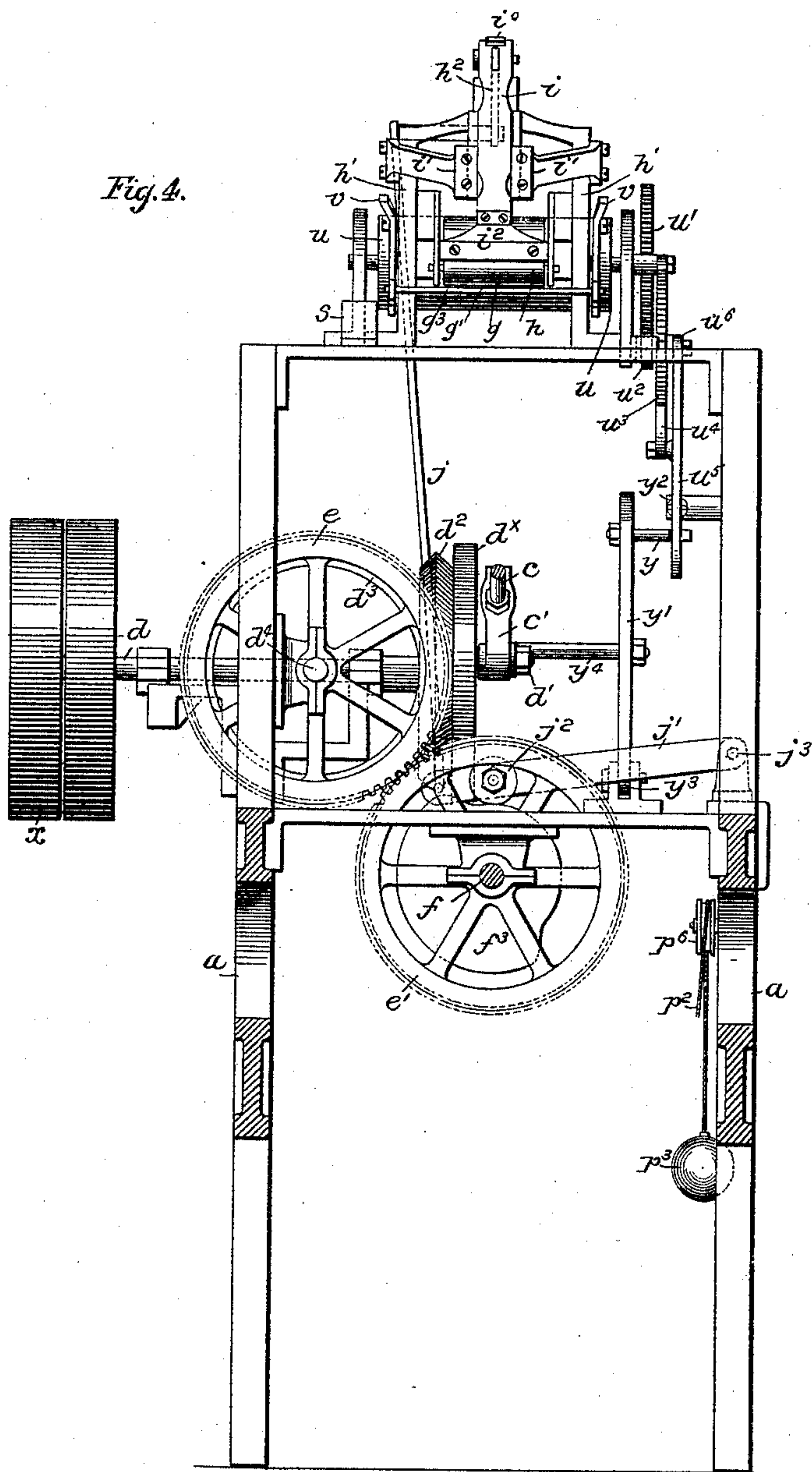
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WITNESSES

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INVENTOR

*John T. Tussaud,*  
*By Foster Freeman*  
Attorneys



# UNITED STATES PATENT OFFICE.

JOHN THEODORE TUSSAUD, OF LONDON, ENGLAND.

## APPARATUS FOR APPLYING FUR, &c., TO WOVEN FABRICS, &c.

SPECIFICATION forming part of Letters Patent No. 436,390, dated September 16, 1890.

Application filed March 7, 1889. Serial No. 302,365. (No model.) Patented in England November 8, 1886, No. 14,414; in France September 14, 1887, No. 185,840; in Germany October 4, 1887, No. 45,743; in Belgium October 7, 1887, No. 79,115, and in Canada December 5, 1888, No. 30,332.

*To all whom it may concern:*

Be it known that I, JOHN THEODORE TUSSAUD, a subject of the Queen of Great Britain, residing at Marylebone Road, London, England, have invented certain new and useful Improvements in Apparatus for Applying Fur, Hair, Wool, or other Fiber or Feathers to Woven Fabrics or other Receiving-Surfaces, (for which I have obtained Letters Patent in Great Britain, No. 14,414, dated November 8, 1886; in France, No. 185,840, dated September 14, 1887; in Germany, No. 45,743, dated October 4, 1887; in Belgium, No. 79,115, dated October 7, 1887, and in Canada, No. 30,332, dated December 5, 1888,) of which the following is a specification.

This invention relates to machinery to be used in applying fur, hair, wool, or other fiber or feathers to woven fabrics or other receiving-surfaces. This machinery is to be employed in carrying out, in part, a process which forms the subject of another patent-application filed by me on November 1, 1877, Serial No. 253,966. The purpose which the machinery serves is to accumulate in a continuous line upon a tape of velveteen or other receiving-surface tufts naturally arranged of the fur or other material, from which receiving-surface the fur or other arranged material is transferred to a receiving fabric or surface coated with cement, whereby a product is obtained which closely resembles a natural skin.

In order that my invention may be fully understood and readily carried into effect, I will proceed to describe the same with reference to the drawings hereunto annexed.

Figure 1 is a side elevation of the machine by which the fur is accumulated on the tape of velveteen or like material. Fig. 2 is an end elevation of same, the rear portions of the machine, however, being omitted. Fig. 3 is a vertical transverse section taken on the line 1 1 in Fig. 1 and as seen looking to the left. Fig. 4 is a similar view as seen looking to the right.

In the drawings, *a a* represents the fixed framing of the machine, and *b* is a swinging frame pivoted on the bar *b<sup>o</sup>* of the frame *a* at

the points *b' b'*. This frame *b* is capable of movement to and from the frame *a*, and is connected by the rod *c* and arm *c'* (the former of which is hinged to the frame *b* at the point *c<sup>o</sup>*) with the crank-pin *d'* on a cam *d<sup>x</sup>*, affixed to the back of or forming part of the beveled wheel *d<sup>2</sup>* of the main shaft *d*, which is driven in any convenient manner, but preferably by the pulley *x* shown. The crank-pin *d'* is adjustable in the slot *d<sup>o</sup>* in one of the spokes of the cam *d<sup>x</sup>*, and the rod *c* is adjustable in the forked arm *c'* at the point *c<sup>2</sup>* by the set-nut, as shown, in order that the throw of said rod, and consequently the movement of the frame *b*, may be regulated. The beveled wheel *d<sup>2</sup>* serves to drive a second beveled wheel *d<sup>3</sup>* at right angles thereto, the shaft *d<sup>4</sup>* of which carries a gear-wheel *e*, which in turn drives a second wheel *e'*, which operates what I term the "cam-shaft" *f*, which is thus rotated at the same speed as the main shaft. The cam-shaft carries three cams *f' f<sup>2</sup> f<sup>3</sup>*, which control the movements of various parts of the machine, as hereinafter described.

*g* is a sloping feed-trough mounted on the frame *a*. It is rectangular in form and open at the top. The tufts of fur are laid in the trough by hand in the state as nearly as may be in which it lies on the back of the animal, excepting only that it has been removed from the skin by machinery or otherwise with as little derangement as possible. It is, however, divided into widths such as the trough can receive, and it is laid in the trough with the roots of the hair downward and the points inclining upward and to the rear. In this trough is an endless belt *g'*, traveling around a roller *u* at one end and passing at the other through a slot in the trough *g* at the point *g<sup>2</sup>*. The bottom of the trough is continued beyond this point, as shown by the dotted lines, and in the side walls of the same is supported a loose roller *h*, beneath which the fur passes, and which serves to keep it down. Beneath this portion of the bottom of the trough is a thin plate *u'*, to the bottom of which is soldered or secured a pin *g<sup>3</sup>*, which engages with slots in the forked arms *v' v'* of cranked levers *v v*, pivoted in the supports of the trough.



The end of this plate  $u'$  projects like a lip, as shown, a short distance in front of the trough  $g$ , and it is normally kept in this position by means of the spring  $v^2$  pressing against one

5 of the levers  $v$ .  
The roller  $u$ , and consequently the band  $g'$ , is operated intermittently by the gear-wheel  $u'$ , turned by the ratchet-wheel  $u^3$  through the pinion  $u^2$ . The ratchet-wheel  $u^3$  has a step-  
10 by-step movement imparted to it by means of the pawl  $u^4$  on the arm  $u^5$ , said arm being pivoted at the point  $u^6$ . This arm is connected by the pin  $y$  with a second arm  $y'$ , both arms having slots in which the pin  $y$  can be moved,  
15 and consequently the travel of the pawl adjusted. The upper arm  $u^5$  has attached to it a spring  $y^2$ , which connects it to the framing and keeps the pawl up to its work. A second pawl  $u^0$  is pivoted to the frame-work of the  
20 trough to prevent any back motion of the ratchet-wheel. The arm  $y'$  is pivoted at the point  $y^3$  to the frame-work, and at an intermediate point carries on an arm  $y^4$  a friction-roller  $y^5$ , which bears upon the cam  $d^x$  of the  
25 beveled wheel  $d^2$ . In this way upon the revolution of the cam the roller  $u$  is operated intermittently through the mechanism described, and the fur lying upon the surface of the band  $g'$  is advanced intermittently to  
30 the mouth of the trough.

At each side of the trough  $g$  there is secured an upright  $h'$ , between which uprights is pivoted an arm  $h^2$ , which carries a bar  $i$ , sliding up and down a short distance in stationary guides  $i'$ . The bar  $i$  carries at its  
35 lower edge a comb  $i^2$ , the pins or teeth of which enter among the fur in front of the loose roller  $h$ . This comb is down in the fur at the time when, as hereinafter described, the tuft of fur is robbed from the trough; but  
40 it is raised out of the fur at the time when the band  $g'$  moves to drive the fur forward. Its purpose when in the fur is to permit of only the quantity which projects being taken from the trough and to keep back the rest.  
45 The bar  $i$  is loosely pivoted at its upper end to the lever  $h^2$ , and a spring  $i^0$  is provided at the joint to avoid the necessity for accurately adjusting the stroke of the lever. This lever  
50 is connected by a rod  $j$  to the end of a lever  $j'$ , Fig. 4, carrying a friction-roller  $j^2$ , which rests constantly upon the periphery of the cam  $f^3$ . In this way the cam  $f^3$ , through the parts described, imparts a rocking motion to  
55 the arm  $h^2$ , and consequently an up-and-down movement to the comb  $i^2$ . The other end of the lever  $j'$  is pivoted at  $j^3$  to a block on the frame  $a$ .

Upon the swinging or rocking frame  $b$  a  
60 sliding plate  $k$  is mounted, as best shown in Fig. 2. To a bracket on this is attached a spring  $k'$ , the other end of which is secured to a bracket-arm  $k^2$ , which passes through a slot in the frame  $k$ , and is attached to the  
65 frame  $b$ , as seen in Fig. 1. The expansion of this spring causes the frame  $k$  to be forced up, and thus presses a conical roll  $k^0$  (which

it carries in an open or cut-away part) constantly upon the face of the cam  $f'$  on shaft  $f$ . This frame  $k$  is held to the frame  $b$  by the  
70 bolts  $z z z$ , which pass through slotted openings in the same.

$l$  is a nipping-blade, which is carried by the frame  $k$  in guides  $k^3 k^3$ , in which it can rise and fall. This blade is attached to and held  
75 by the springs  $k^4 k^4$ , which yield when the lower edge of the blade is firmly pressed upon a surface beneath. This surface is a curved strip or table  $m$ , fixed to the rocking frame  $b$  by a bracket  $m'$ , as shown in Fig. 3. When  
80 the frame  $b$  is advanced to the fixed frame  $a$  by the pull of the rod  $c$ , this table  $m$  passes beneath the lip or plate  $u'$  of the feed-trough  $g$ . The frame  $b$  has arms upon it which carry the two stud-axes  $b^2$  and  $b^3$ . On the first the  
85 drum  $n$  is mounted, which carries the velveteen tape upon which the tufts of fur are to be laid. Said drum  $n$  has a disk or flange  $n^0$  attached to it, which keeps the tape in position. The tape from this drum passes over  
90 a roller  $n'$  along the surface of the table  $m$  and over a drum  $o$ , which has a roughened file-like surface, and which, being driven with a step-by-step motion, draws the tape forward, until finally the tape with the fur upon  
95 it is wound upon the drum  $p$ . The drum  $p$  is carried by a pendulous arm  $p'$ , supported by a bracket-arm  $p^x$ , said arm  $p'$  having a cord  $p^2$  attached to the same. This cord passes over guide-pulleys  $p^4 p^5 p^6$  to a weight  
100  $p^3$ , which holds the drum  $p$  up to the face of the roller  $o$ , the latter thus frictionally imparting its movement to it. The roller  $o$  is driven by a lever  $o'$ , pivoted to the axis of the same and carrying a driving-pawl  $o^2$ , engaging with a ratchet-wheel  $o^3$ . This lever  
105  $o'$  is actuated by a cord  $o^4$ , passing over pulleys  $o^5 o^6$  to the end of a lever  $o^7$ , pivoted on a rod  $o^8$  attached to the frame  $a$ . On this lever is a friction-roller  $o^9$ , bearing on the periphery of the cam  $f^2$ , the operation of which,  
110 as will be seen, imparts a step-by-step movement through the ratchet and pawl to the drum  $o$  when assisted by the action of a spring  $o^{10}$  attached between the arm  $o'$  and a bracket  
115 on the frame  $a$ , and which serves to return the pawl. A curved spring  $o^{10}$  is attached to the arm which carries the drum  $o$ , and carries a leather or similar face  $o^{11}$ , which acts as a brake on the ratchet  $o^3$ . The pendulous arm  
120  $p'$  carries an adjustable spring  $p^7$ , which, pressing against the extended axis  $p^8$  of the drum  $p$ , keeps it in place and applies a suitable friction. The manner in which this spring is attached to the arm  $p'$  is clearly  
125 shown in Fig. 1. When the spring is slackened, the drum  $p$ , when full, can be taken out and another put in its place.

In connection with the drum  $n$  similar means of applying a slight friction to the  
130 same are provided, as shown in Fig. 3, so that the drum may not unwind too freely.

By the mechanism which I have described for each to-and-fro movement of the rocking



frame *b* the velveteen tape is moved a step forward equal about to the width of the feed-trough *g*, so that each tuft of fur may be deposited in a fresh place. On the arm  $p^x$  of the rocking frame there is also an arm  $b^4$ , to which a wire  $m^2$  is attached by a spring  $m^3$ , which keeps it constantly tight. The other end of the wire is attached to the end of the arm *q*, which is attached to a cranked lever  $q'$ , pivoted at  $q^2$  to the bracket-arm  $p^x$ . The arm  $q'$  has at one point an inclined face  $q^3$ , which rests upon a roller at the extremity of another cranked arm *r*, pivoted on an axis  $r'$ , the other extremity of same passing under a stop  $r^2$ , which serves to limit its movement. On the same axis  $r'$  and affixed to the arm *r* is a short curved arm  $r^3$ , Fig. 3, carrying a roller, and this, when the rocking frame advances to the feed-trough, comes against the incline *s*, fixed to the frame *a*. *t* is a bobbin mounted on the arm  $p^x$ , from which a thread passes through an arm  $t'$ , which carries a guide-eye for the same, and from thence down onto the face of the velveteen tape. The tension of the thread can be adjusted by the nut securing the spring  $t^2$  of the bobbin.

The action of the machine is as follows: The frame *b* advances to the feed-trough until the plate  $u'$  at the end of the trough projects over the table *m* and rests just upon the velveteen tape. This forward movement of the frame *b* causes the curved arm  $r^3$  to strike the incline *s* on the frame *a*, and so to elevate the end of the arm *r*, carrying the roller, which strikes the incline  $q^3$  of the arm  $q'$ , thus causing the same to lift and so raise the wire  $m^2$  (which normally lies on the surface of the tape) off from the tape. At the same time the rotation of the cam-shaft causes the cam  $f'$ , through the roller  $k^o$ , to force down the frame *k*, and so depress the blade *l*, which nips a tuft of hair projecting from the trough between its edge and the surface of the velveteen tape lying on the table *m*, the plate  $u'$  having been momentarily withdrawn to expose the ends of the hair for this purpose by means of the cranked arms *v*, which have been struck by the arms *u*, mounted alongside of the blade *l*. It will be understood that the band  $g'$  is intermittently advanced and carries the fur along with it, and that directly after the fur is robbed from the trough the comb  $i^2$  is raised out of the hair to enable more to be pushed forward. The moment the rocking frame commences to retire, taking with it the tuft, the comb begins to descend and holds the next tuft of fur projecting over the plate  $u'$ , which has been advanced for this purpose by the release of the arm *v*. The tuft taken away by the rocking frame now rests upon the velveteen tape, with the roots of the fur well over to the farther edge of the tape. The fur naturally clings to the surface of the velveteen, but is held also by the wire  $m^2$ , which descends upon it as the frame retires by the falling of the arm  $q'$  be-

fore the nipping-blade rises and releases it. The wire, however, does not impede the onward movement of the fur when the tape travels on. As the tape, with the fur upon it, advances it meets the threads from the bobbin *t*, which lies upon the face of the same across the tufts and binds them down onto the tape, which is advanced by the step-by-step movement of the drum *o* over the same until both the tape and thread are wound together onto the drum *p*. The entire operation is repeated with each forward motion of the rocking frame, so that a continuous line of fur is arranged upon the velveteen tape. As soon as a sufficiently-large roll of the tape and fur has accumulated the drum *p*, with the tape and fur thereon, may be removed from the machine and transferred to another machine, (not shown,) when the fur is transferred from the tape to a cemented back or surface prepared to receive it.

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

1. In apparatus for applying fur, hair, wool, or other fiber or feathers to woven fabrics or other receiving-surfaces, the combination of a guide-trough containing the fur or material, a frame oscillating to and from the mouth of said guide-trough, a carrying tape or surface of velveteen or like material carried on the oscillating frame, and a nipping-blade also carried on the oscillating frame, the whole so arranged that successive tufts of the fur or material are taken from the trough and accumulated in a continuous line upon the carrying tape or surface, substantially as set forth.

2. The combination, with apparatus for intermittently delivering tufts of fur or like material, of an oscillating frame carrying an automatically-operated nipping-blade, a table, a roll of tape on which the tufts of fur are placed by the nipping-blade, means for holding the fur temporarily in position on said tape, a thread-bobbin with means for laying its thread upon the tape, and means for rolling up said tape and fur, substantially as herein set forth.

3. The combination, with a guide-trough containing an intermittently-operated band for carrying the tufts of fur or the like and having a projecting plate with means for withdrawing and advancing the same, and an intermittently-operated comb for holding the fur in the trough, of an oscillating frame adapted to operate the withdrawing mechanism of the projecting plate and adapted to receive the fur and lay it in a continuous line upon a tape, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN THEODORE TUSSAUD.

Witnesses:

PHILIP M. JUSTICE,  
ALLEN P. JONES.