

5 Sheets—Sheet 1.

No. 459,725.

Patented Sept. 15, 1891.

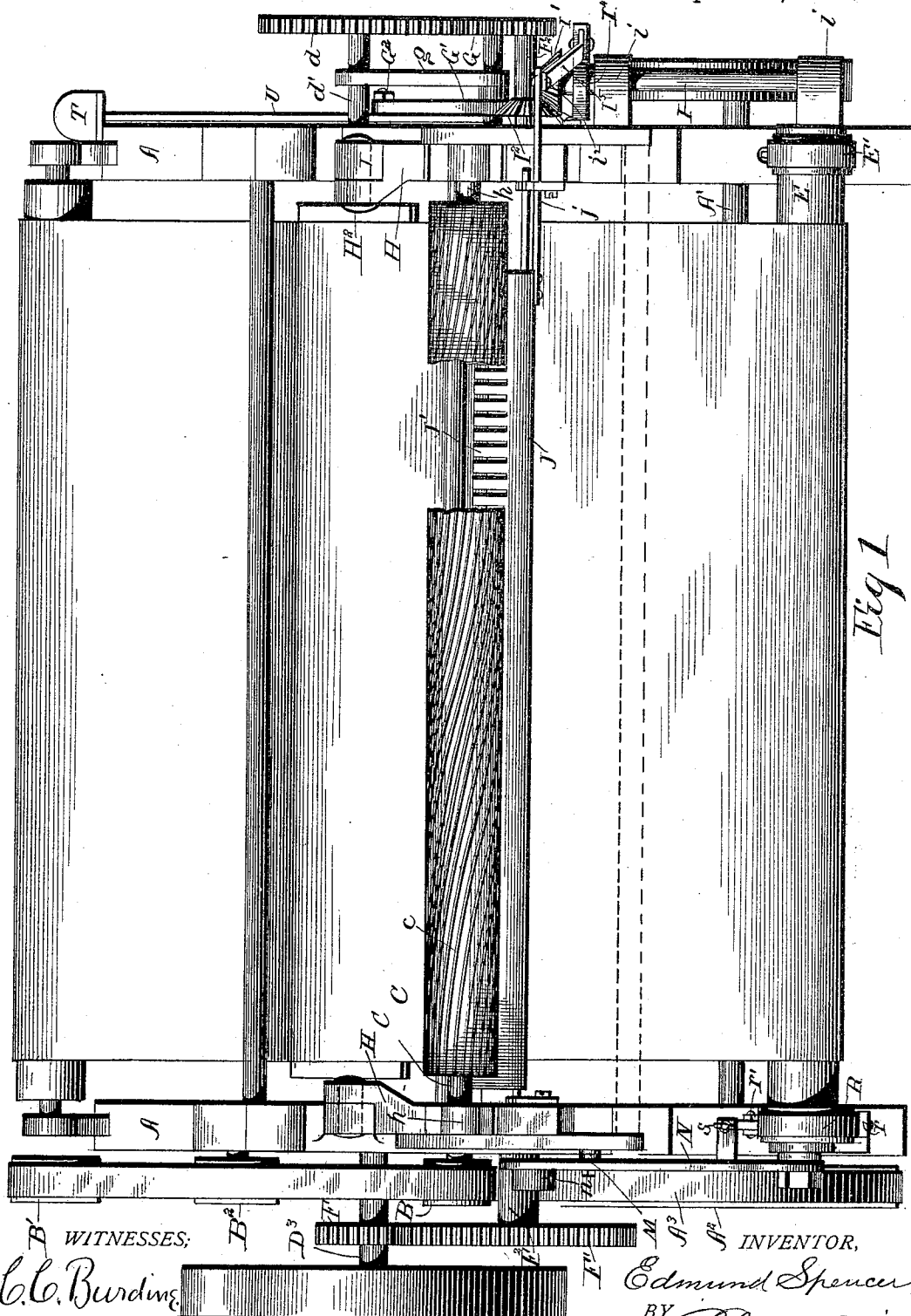


Fig 1

WITNESSES;

INVENTOR,

C. C. Burdine.

Edmund Spencer

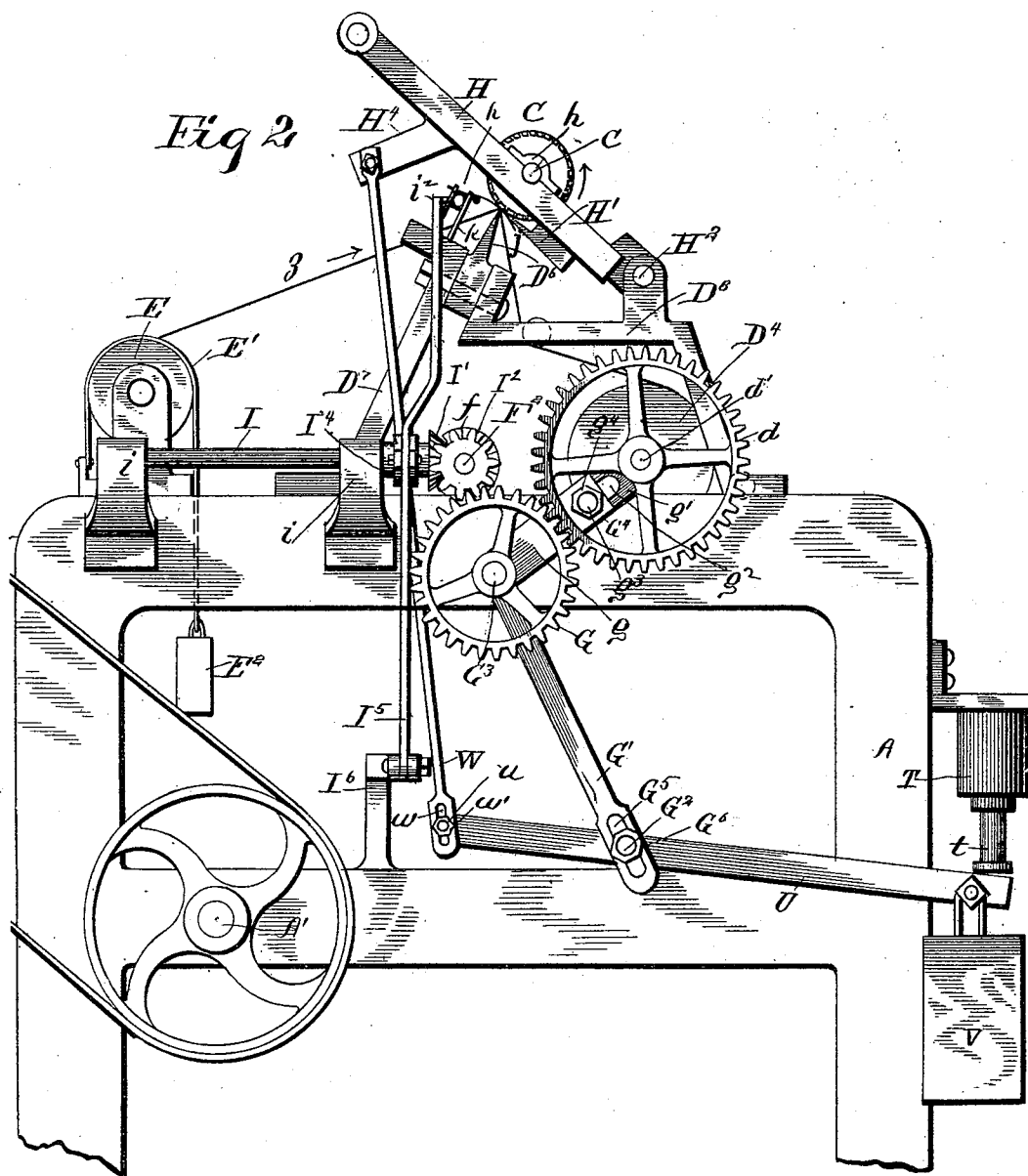
BY *R. L. Young*

his ATTORNEY.

5 Sheets—Sheet 2.

No. 459,725.

Patented Sept. 15, 1891.



WITNESSES;

C. C. Burdine.
James T Dent Bro

INVENTOR,

INVENTOR,
Edmund Spencer

BY

BY: *R. L. D. Boie*
ATTORNEY.

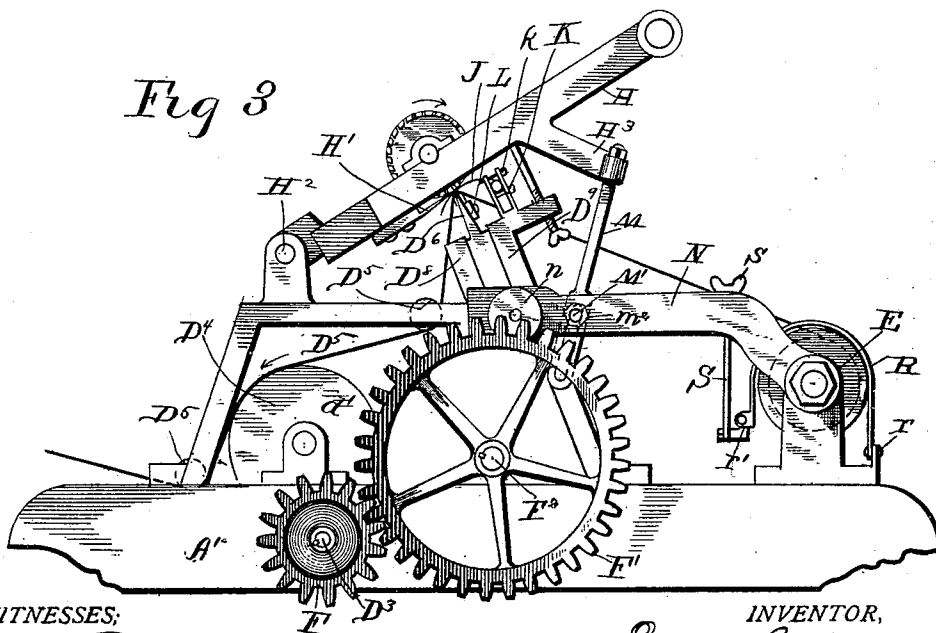
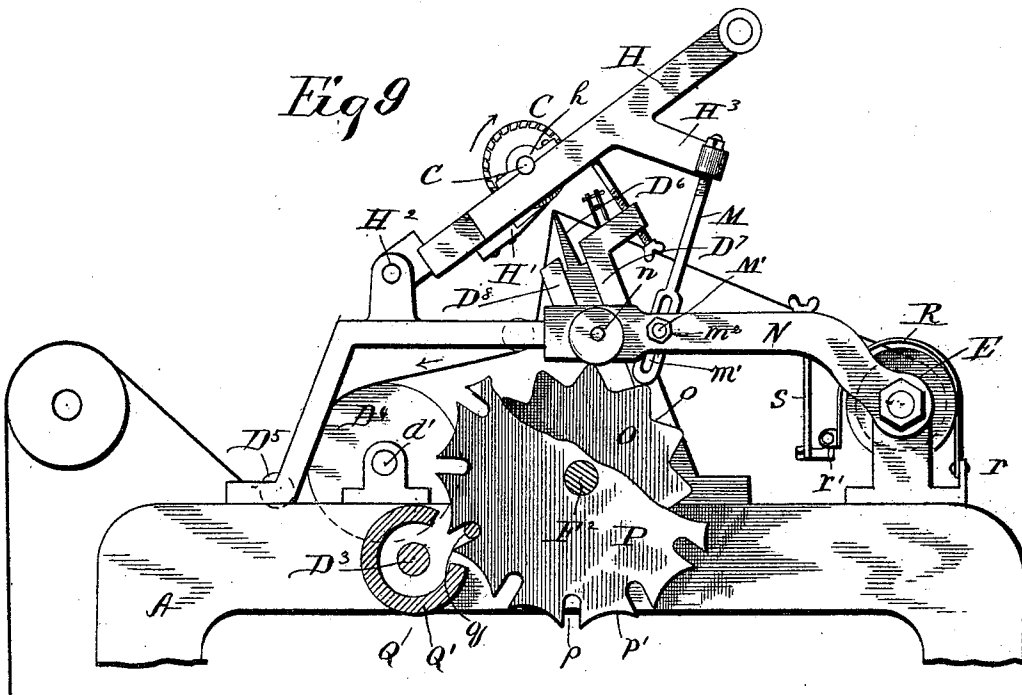
(No Model.)

5 Sheets—Sheet 3.

E. SPENCER.
CLOTH SHEARING MACHINE.

No. 459,725.

Patented Sept. 15, 1891.



WITNESSES:

C. C. Burdette
James T. Duff

INVENTOR,

Edmund Spencer

BY

Reynolds
his ATTORNEY.

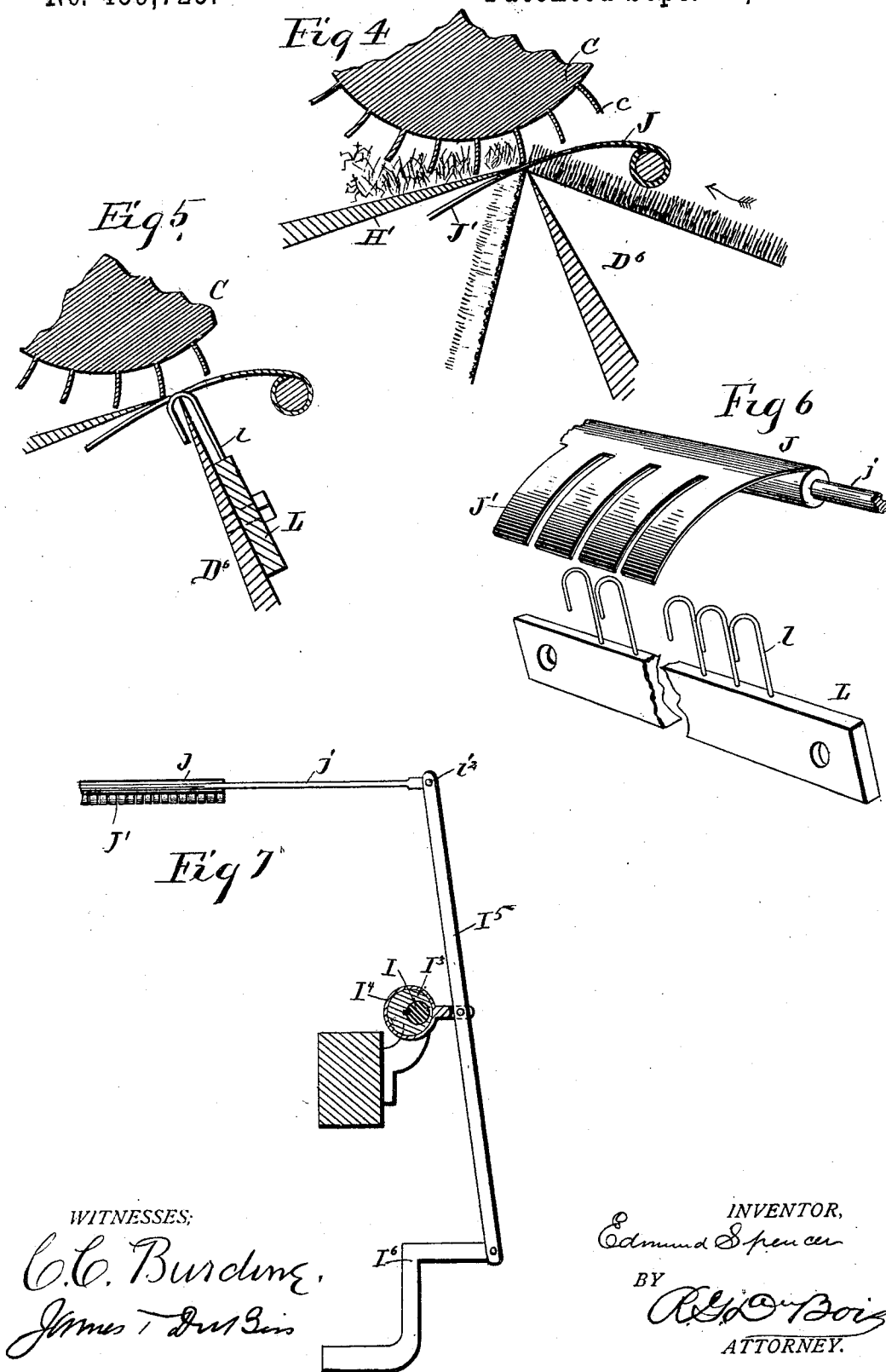
(No Model.)

5 Sheets—Sheet 4.

E. SPENCER.
CLOTH SHEARING MACHINE.

No. 459,725.

Patented Sept. 15, 1891.



WITNESSES:

C. C. Burdine,
James T. Davis

INVENTOR,
Edmund Spencer

BY

A. G. Davis
ATTORNEY.

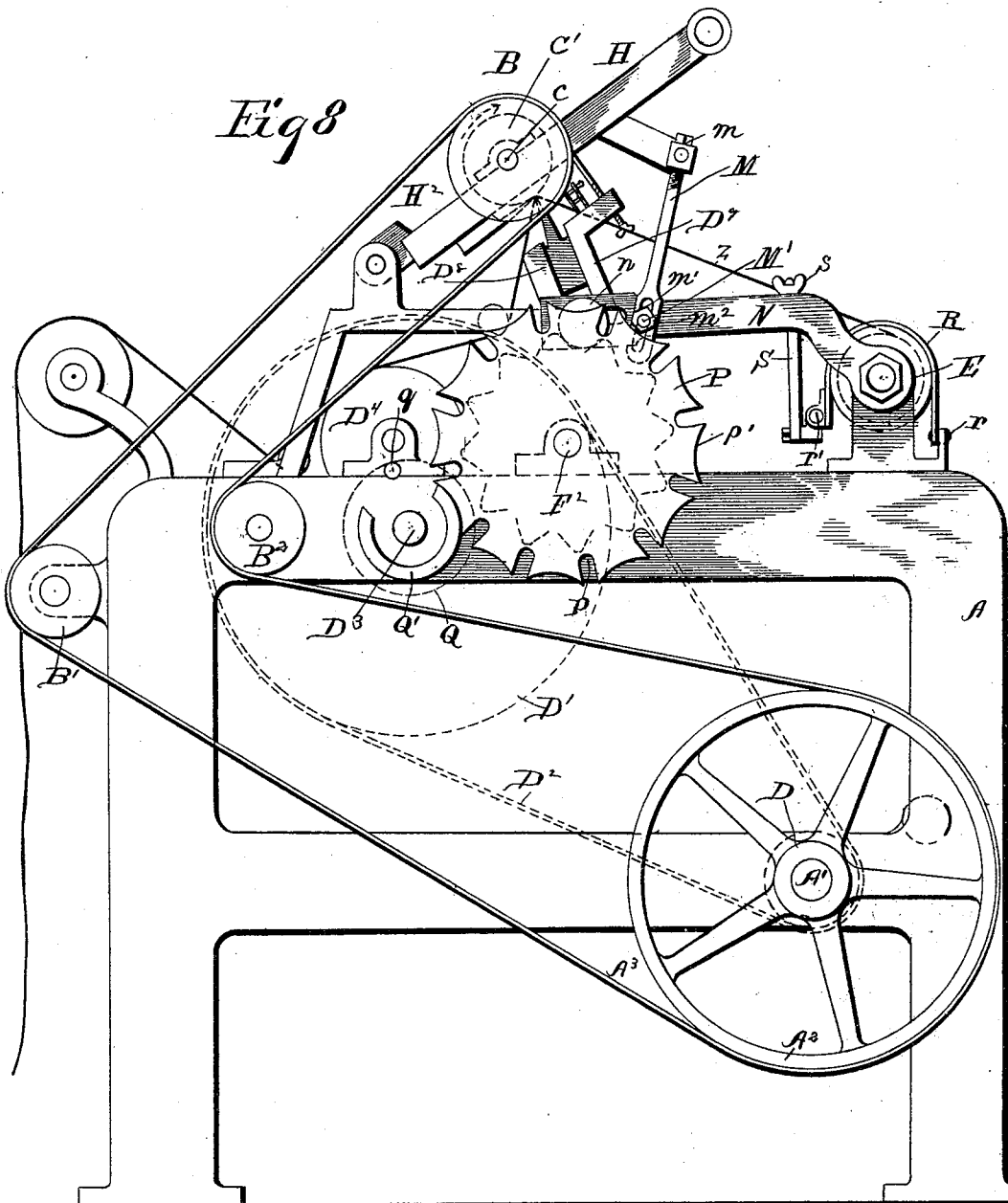
(No Model.)

5 Sheets—Sheet 5.

E. SPENCER.
CLOTH SHEARING MACHINE.

No. 459,725.

Patented Sept. 15, 1891.



WITNESSES:

C. C. Burdine
James T. Durbur

INVENTOR,

Edmund Spencer

BY *Reynolds*
his ATTORNEY.

UNITED STATES PATENT OFFICE.

EDMUND SPENCER, OF NEWBURG, NEW YORK.

CLOTH-SHEARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,725, dated September 15, 1891.

Application filed December 5, 1890. Serial No. 373,675. (No model.)

To all whom it may concern:

Be it known that I, EDMUND SPENCER, a citizen of the United States, residing at Newburg, in the county of Orange and State of New York, have invented certain new and useful Improvements in Cloth-Shearing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a cloth-shearing machine of that class in which a cylinder having cutters is operated conjointly with a ledger-blade; and its objects are to effect the ornamentation of pile or nap fabrics by cutting away portions of the piled or napped surface thereof as the fabric is passed over a suitable guide or support, and this is accomplished in a very thorough and efficient manner.

To these ends my invention consists in certain novel features of construction to be hereinafter described, and then particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my machine as it is when serpentine and longitudinal cuts are made. Fig. 2 is a view looking toward the right-hand end of the machine. Fig. 3 is a view of the upper part of the machine, looking toward the left-hand end thereof. Fig. 4 is an enlarged detail sectional view showing the manner in which the serpentine and longitudinal cuts are made. Fig. 5 is a similar view showing an attachment adaptable when longitudinal cuts only are made. Fig. 6 is a detail perspective view. Fig. 7 is a detail view of the combined vibrating mechanism. Fig. 8 is a view looking toward the left-hand end of the machine, showing it in one position when used for making transverse cuts alone; and Fig. 9 is a similar view of the upper parts of the machine, showing another position.

A indicates the frame of the machine; A', the main driving-shaft journaled therein; A², the main belt-pulley mounted on the shaft, and A³ the belt thereon. The belt A³ passes at its upper end over a pulley B, and between the pulleys A² and B the outer and inner laps of the belt pass, respectively, over idle-pulleys B' and B². Pulley B is fixed on a

shaft C, on which is placed the revolving cutter or shearing-cylinder C', constructed with a parallel series of spirally-arranged radial blades *c*. The backs of the blades are convex and their faces concave, as clearly shown in Figs. 4 and 5. The cylinder is mounted, as hereinafter described.

Shaft A' carries a small pulley D, over which and over a large pulley D' passes a belt D². Pulley D' is mounted on a short shaft D³, journaled in the left-hand end of the frame.

The cloth *z* is fed through the machine by a feed-roller D⁴, and is guided in its passage under guide-rollers D⁵ and over the usual guide or cloth-support D⁶, clamped between brackets D⁷ and D⁸, projecting upwardly from the frame A.

E is a retarding or cloth-stretching roller arranged at the front of the machine, and over one end of which is a brake-strap E', held against the roller by a weight E².

F is a small cog-wheel keyed on shaft D³ and meshing with a larger cog-wheel F', keyed on one end of shaft F², extending across and journaled in the frame.

On the other end of the shaft F² is a pinion *f*, that meshes with a cog-wheel G, which in turn meshes with a cog-wheel *d* on the feed-roller shaft *d'*.

G' is an upwardly-extending link pivoted at its lower end on a stud G², and at its upper end it is connected by means of a pivot-pin G³ to a two-part link G⁴, extending rearwardly at an angle to the link G' and pivoted on shaft *d'*.

The link G⁴ consists of two members *g* and *g'*, one of which is provided with a longitudinal slot *g*² and the other with a bolt *g*³, passing through the slot *g*², and the members are retained in adjusted position by the nut *g*⁴, screwed onto the bolt *g*³. In this way the link G⁴ may be lengthened or shortened, so that a larger or smaller wheel G may be mounted on the pin G³, thus accelerating or slowing the rate at which the feed-roller revolves. The link G' is also provided with a slot G⁵, so that it may be adjusted on the stud G², passing through the slot, and be held in adjusted position by means of nut G⁶ screwed on the stud.

The shearing-cylinder C' is carried by a frame or support H, its shaft having bearing

in boxes h at each end. The construction and operation of this frame will be particularly described hereinafter. The ledger-blade H' is secured to the frame underneath the cylinder C' , as usual.

I is a shaft arranged transversely of the machine in bearings i at the right-hand end thereof and having at one end a bevel-pinion I' , which meshes with a bevel-pinion I^2 on shaft F^2 , by means of which shaft I is turned.

I^3 is an eccentric on shaft I , which moves inside a collar I^4 , that is pivoted intermediately of a lever I^5 , which in turn is pivoted at its lower end to a bracket I^6 .

At i^2 the lever I^5 is connected by means of a pivot-pin with one end of a comb or reed plate J , that is provided with fingers J' and with end projections or rods j , by which the comb-plate is supported in slotted brackets K , through which pass pins k for holding the comb-plate in such position that its fingers will extend rearwardly between the cloth-support D^6 and the ledger-blade H' .

The machine, as far as has been described, is capable of making serpentine and longitudinal cuts. Its operation for this purpose will now be described.

The main shaft A' being driven from a suitable source of power, the gearing $F F'$ will be set in motion, as well as the gearing $f g d$ and belt A^3 , whereby the feed-roller D^4 and the shearing-cylinder are caused to revolve in the directions of the arrows, thus causing the cloth to pass over the supporter-guide D^6 in the direction of the arrow and the parts of the pile or nap which project through between the fingers J' of the comb-plate to be cut off by the conjoint shearing action of the shearing-cylinder C' and the ledger-blade H' , as seen in Figs. 2, 3, and 4. The oscillation of the comb-plate J , effectuated by the oscillating lever I^5 , which is moved by the eccentric on shaft I , causes the cutting mechanism to produce a serpentine cut in the piled or napped surface of the cloth or fabric. When longitudinal cuts are to be made, the pin i^2 , connecting the oscillating lever I^5 with the comb-plate, is removed, and by this means while all the other moving parts of the machine above described are in motion the comb-plate is allowed to remain stationary. An attachment that can be used when longitudinal cuts only are being made is shown in Figs. 5 and 6, and consists of a bar or plate L , secured removably across the cloth-support D^6 , and a series of hook-shaped or equivalent projections l , that constitute what I will hereinafter term "presser-fingers," which protude into the spaces between the fingers of the comb-plate, their function being to press the parts of the cloth that pass over them through the said spaces, so that the piled or napped surface thereof will be sheared off close to the body of the same.

Having described the parts of the machine which by themselves are adapted to produce serpentine and longitudinal cuts, I will now

proceed to describe the attachments which are used in connection with the presser-bar to produce transverse cuts.

The frame H of the shearing-cylinder is pivoted at H^2 to brackets D^3 , and is provided with arms H^3 and H^4 , respectively, at opposite ends.

M is a downwardly-extending rod, which is screw-threaded at its upper end and is screwed into the arm H^3 and held by a nut m . The lower end of the rod is provided with a slot m' , which receives a screw-bolt M' near the outer end of the rock-arm N , so that the latter may be adjusted on the rod and held by a nut m^2 . The inner end of the rock-arm is pivoted on one of the journals of the cloth-retarding roller E , and its outer end carries at one side an anti-friction roller n . In place of the cog-wheels F and F' are substituted devices now to be described, with reference to Figs. 8 and 9.

On shaft F^2 is placed an inner corrugated disk or cam-wheel O and an outer disk P . The anti-friction roller n of rock-arm N rests upon and is engaged by the cam-wheel O . The outer disk P is provided with a series of radial notches p , between all of which the disk is formed with concave edges p' , that conform to and engage with the convex surface of a concentric C -flange Q' on one side of the disk Q , that is fitted on the shaft D^3 . This flange Q' is set some distance in from the periphery of the disk Q , and between the ends of the same and nearer the periphery of the disk is a lateral pin q , that is adapted to take into the radial notches in the disk P when the shaft D^3 turns.

An actuated brake-strap R , secured to the frame at r at the left-hand end of roller E , passes over the latter and is secured at r' to the lower end of a rod S . The upper end of this rod is screw-threaded and screwed into a lug S' on the rock-arm N and held adjustably by means of a nut s .

At the right-hand end and at the rear of the machine is a dash-pot T , the piston t of which is engaged by the rear end of a lever U , fulcrumed intermediately of its length on the stud G^2 . From the rear end of the lever U is suspended a weight V , and the front end of the lever is connected adjustably with the lower end of a rod W by means of a bolt u passing through a slot w in the rod and held by a nut w' .

The operation of the machine when making transverse cuts in pile fabrics is as follows: The comb-plate first being removed the machine is set in motion, thus operating the shearing-cylinder and the feed-roller as before. The disk P and the shaft F^2 , on which it is fixed, are rotated intermittingly by means of the disk Q on the rotary shaft D^3 by reason of the engagement of the pin q with the notches p , one at a time. When the pin takes into a notch, it turns the disk P a short distance, and when it passes out of each notch the flange or delay portion of the disk Q engages

contiguous concave edge and prevents further rotation of the disk P until the pin engages the next notch. The intermittent rotation of the shaft F², acting through the medium of the gearing f G d, causes the feed-roller D⁴ to revolve and the cloth to be fed thereby intermittingly. After each movement of the cloth the roller n of the rock-arm N falls into one of the notches o of the cam-wheel O, permitting the rock-arm to lower and depress the frame H, and hence the shearing-cylinder journaled thereon. In this manner each time the shearing-cylinder is lowered a transverse cut is made in the pile surface of the cloth.

When the rock-arm rises to interrupt the action of the cutting mechanism, the brake-strap R is moved away from the cloth-retarding roller E, permitting the cloth to move freely, and during the cutting operation, when the brake-strap is applied, the movement of the cloth is retarded and the cloth stretched, said roller having the usual burred or equivalent surface. Each time the frame H lowers it is eased by means of the dash-pot T, acting through the medium of lever U and rod W. The depth of cut may be regulated by adjusting the rod W.

Slight changes apparent to any skilled mechanic may be made in the machine without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An attachment for a cloth-shearing machine, the same consisting of a plate provided with fingers and constituting a comb-plate, substantially as and for the purpose set forth.

2. An attachment for a cloth-shearing machine, the same consisting of a bar provided

with presser-fingers and constituting a presser-bar, substantially as and for the purpose set forth.

3. The herein-described attachment for cloth-shearing machines, the same consisting of a comb-plate, in combination with a bar provided with presser-fingers, substantially as and for the purpose set forth.

4. In a cloth-shearing machine, the combination, with the cloth support or guide and the ledger-blade, of a laterally-movable shearing-cylinder and a dash-pot for easing the movement of the cylinder, substantially as set forth.

5. In a cloth-shearing machine, the combination, with the cloth support or guide and the ledger-blade, of a laterally-movable shearing-cylinder, a frame in which the said cylinder is supported, a dash-pot, for easing the movement of the cylinder and frame, a lever for acting on the dash-pot, and a rod connecting the lever and the support of the cylinder, as set forth.

6. In a cloth-shearing machine, the combination, with the movable frame and a shearing-cylinder journaled therein, of means for moving the frame, comprising a cam-wheel having a series of notches, means for intermittently turning said wheel, a rock-arm operated at its free end by said wheel, and a connection between the arm and frame, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDMUND SPENCER.

Witnesses:

WM. TAYLOR,
HERBERT MITCHELL.