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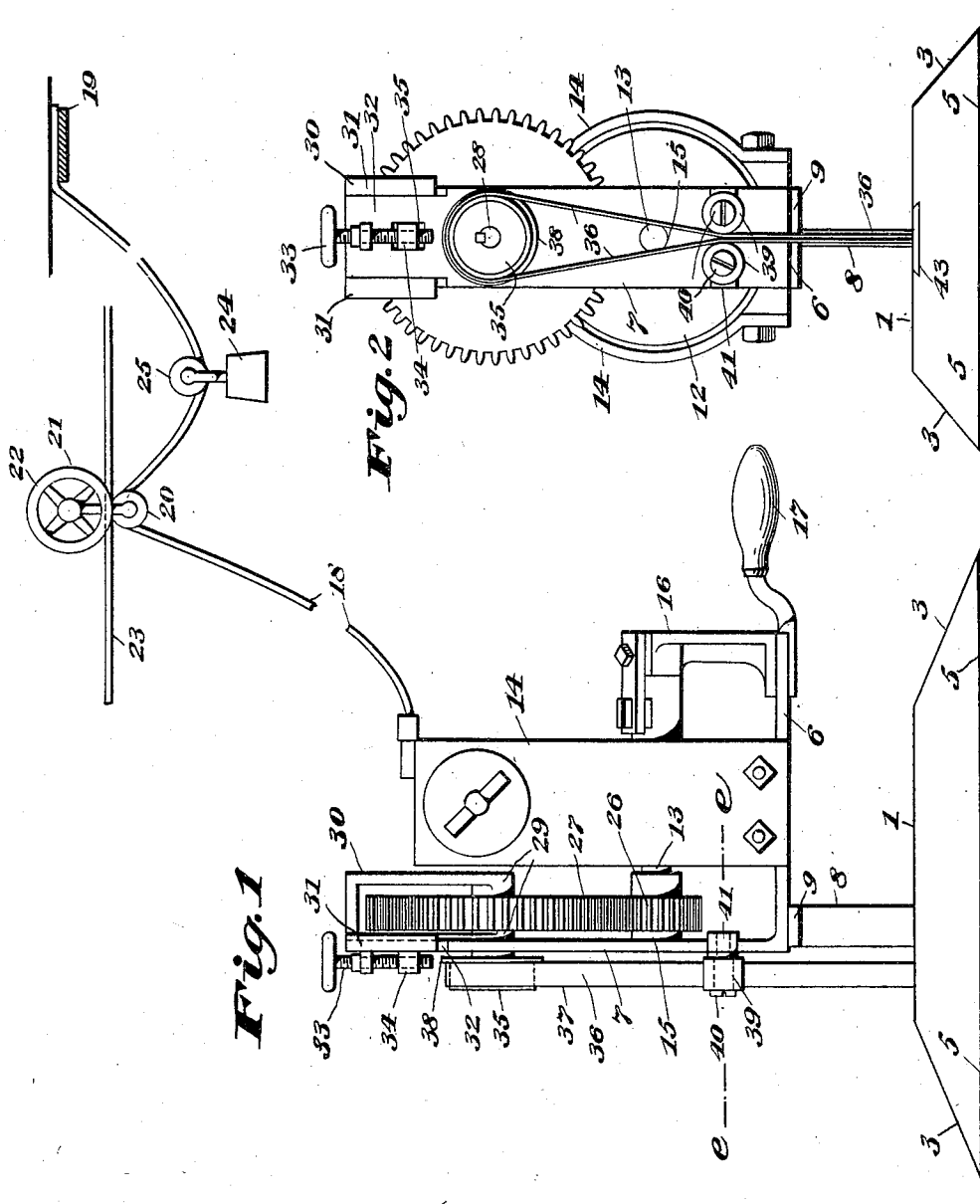
Patented July 1, 1902.

J. G. & H. H. GROSHEIM.
CLOTH CUTTING MACHINE.

(Application filed Aug. 10, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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Inventors

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by John Elias Jones,
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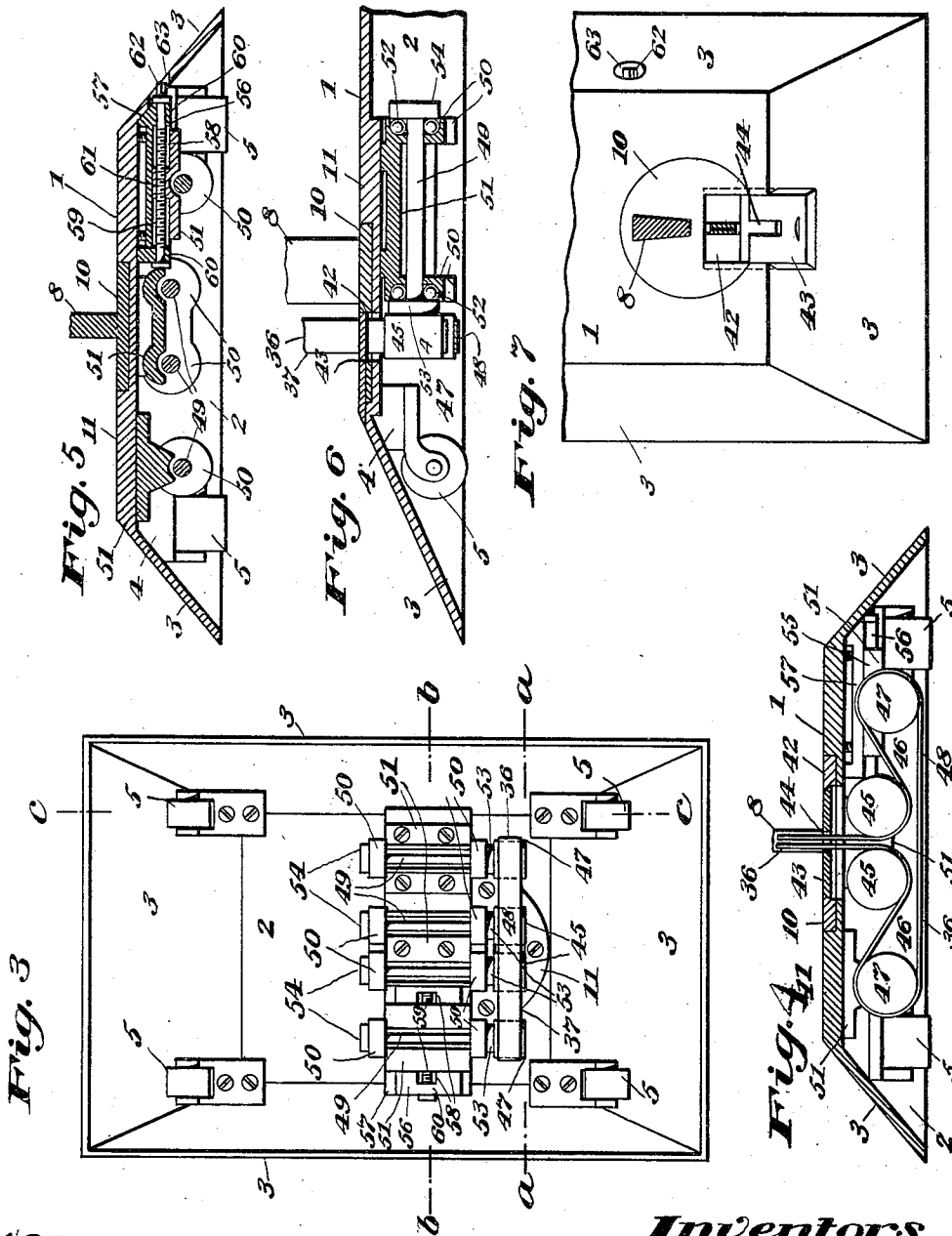
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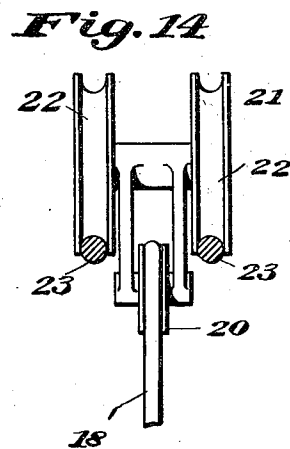
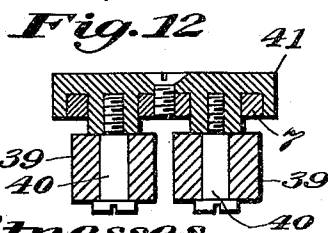
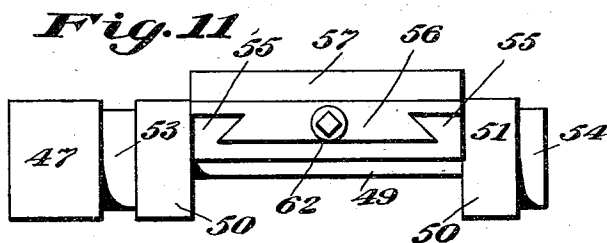
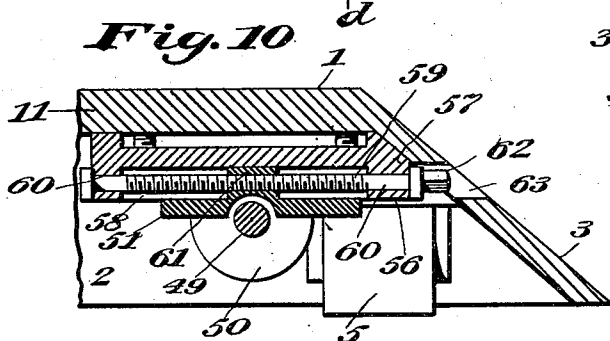
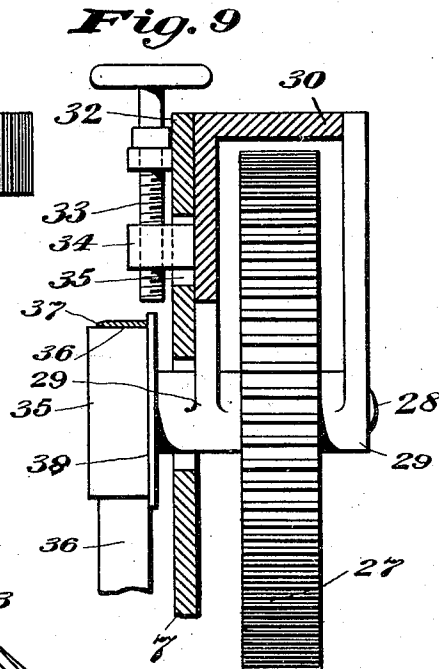
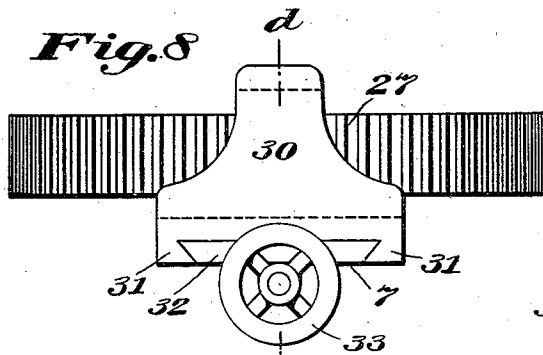
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JOHN G. GROSHEIM AND HARRY H. GROSHEIM, OF CINCINNATI, OHIO.

CLOTH-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 703,784, dated July 1, 1902.

Application filed August 10, 1901. Serial No. 71,578. (No model.)

To all whom it may concern:

Be it known that we, JOHN G. GROSHEIM and HARRY H. GROSHEIM, citizens of the United States of America, and residents of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cloth-Cutting Machines, of which the following is a specification.

This invention relates to certain improvements in machines for cutting cloth and similar materials, and has for its object to provide a machine of this character of a simple and inexpensive nature and of a strong, compact, and durable construction, so as not to be liable to become deranged or broken in use, and having cutting devices of an improved and novel character adapted to permit of cutting materials of any desired or ordinary thickness in a true and accurate manner.

The invention consists in part in a cloth-cutting machine comprising a base-plate, a frame extended above the base-plate, an endless cutting-band extended from the base-plate up to said frame and having its upper and lower rights held on wheels or rollers, an electric motor carried on the frame, gearing for driving said cutting-band from said motor, and flexible circuit connections for said motor.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the several parts of the improved cutting-machine whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate our invention, Figure 1 is a side elevation showing a machine constructed according to our invention and also illustrating certain features of the means for supplying electricity to the machine for its operation. Fig. 2 is a front elevation of the improved machine. Fig. 3 is an under side view of the bed or base plate of the improved cutting-machine. Fig. 4 is an enlarged sectional

view taken transversely through the said bed or base plate in the plane indicated by the line *a a* in Fig. 3. Fig. 5 is a view similar to Fig. 4, but taken through the base-plate in the plane indicated by the line *b b* in Fig. 3. Fig. 6 is a partial section taken in the plane indicated by line *c c* in Fig. 3 and showing certain features of the means for straining or tightening the cutting-band of the machine. Fig. 7 is a partial plan view of the bed or base plate of the machine, showing the means for supporting the parts above said base-plate. Fig. 8 is an enlarged plan view showing the construction of the adjustable bracket at the upper part of the machine. Fig. 9 is an enlarged sectional view taken in the plane indicated by line *d d* in Fig. 8 and showing certain features of the adjustable bracket. Fig. 10 is an enlarged partial section taken through the straining or tightening means for the cutting-band. Fig. 11 is an end view showing the said straining or tightening means detached and enlarged. Fig. 12 is a transverse and enlarged section taken through the frame in the plane indicated by line *e e* in Fig. 1 and showing the bearing-block on which the guide-sheaves for the cutting-band are carried. Fig. 13 is an enlarged section taken transversely through the cutting-band and showing the construction of the cutting edge thereof. Fig. 14 is a view drawn to an enlarged scale and showing in end elevation the trolley for carrying the conductors of the improved machine.

As shown in these views, the improved cutting-machine comprises a flat-topped bed or base plate 1, cut to form a hollow or chamber 2 upon its underside, in which hollow or chamber are housed certain devices to be hereinafter referred to. The bed or base plate is, as herein shown, of rectangular form and has its side walls inclined or sloped downwardly, as indicated at 3 3, so as to permit the device to be readily slipped along beneath the cloth or other material to be cut, the said material slipping up along said inclined or sloped portions 3 and passing across the flat top of the bed or base plate. The plate 1 is formed with integral thickened portions 4, extended in the hollow or chamber 2, and on said thickened portions are secured, by means of screws or the

like, wheels or rollers 5, the peripheries of which are extended slightly below the under side of the inclined edge walls 3 of the base-plate. The device when in use is supported
 5 by said wheels or rollers 5 upon a flat surface—such as a cutting board or table, for example—and is by reason of said wheels or rollers being provided adapted to be readily pushed along upon the supporting-surface by the operator, the cloth or other material to be cut
 10 passing over the base-plate and being cut by the devices above said plate, as will be hereinafter explained.

Above the bed or base plate 1 of the improved machine is supported an angular or
 15 L-shaped frame having a horizontal arm 6 extended parallel with the flat top of the base-plate and provided also with a vertical or upright arm 7, located near the forward
 20 edge of the bed or base plate. The L-shaped or angular frame is supported at its forward portion upon a pedestal 8, flanged at its upper end, as indicated at 9, for attachment to the frame, and having its lower end formed
 25 with a foot 10 of circular form, which is countersunk flush in the top of the base-plate, the said top of the base-plate being thickened, as shown at 11, to permit of being recessed to receive said foot. Screws or other means are
 30 employed for holding the foot 10 upon the base-plate. The body portion of the pedestal 8 is made as slender as possible consistent with strength, and the cutting device being located just in advance of said pedestal the
 35 side surfaces of the latter are inclined or at angles with respect to each other, so as to permit the cloth or other material after having been severed by the cutting device to pass readily along the opposite sides of the pedestal. The rear portion of the pedestal is by
 40 this means, as shown in Fig. 7, made thicker than the forward portion thereof, so that additional strength is afforded without too great thickness of the pedestal at its front edge,
 45 such as would interfere with the free passage of the device between the edges of the cut material.

Upon the horizontal arm 6 of the frame is supported a motor, comprising an armature
 50 12, held upon a shaft 13, and a field 14. The forward end of the armature-shaft 13 is journaled, as indicated at 15, in the upright arm 7 of the frame, and the rear end of said shaft is journaled in an upwardly-extended bracket
 55 16, held upon the rear end of the horizontal arm 6 of the frame. At the rear end of the said horizontal arm 6 of the frame is also secured a handle 17, rearwardly extended and adapted to be grasped by the operator for
 60 guiding the machine along over the cutting board or table.

The motor is connected with a source of electrical supply by flexible conductors 18, which are secured, as shown at 19, at the ceiling or other part of the building above the
 65 cutting-machine and are passed over a

grooved sheave 20, carried upon a trolley 21, which has grooved wheels 22, adapted to run along wires or tracks 23 above the cutting board or table whereon the machine is supported. A weight 24 is also provided for taking up the slack in the conductors 18, being provided with a grooved sheave 25, which rests and travels upon the conductors.

The armature-shaft 13 carries between its forward bearing 15 and the armature a pinion
 75 26, the teeth of which are in mesh with the teeth of a spur-gear 27, secured upon a shaft 28 above and parallel with the armature-shaft 13 and held in bearings 29 in the arms of a bracket 30, which is of inverted-U shape. The forward arm of the bracket 30 is formed with an undercut or dovetail guideway between forwardly-extended guides 31, extended
 80 along its opposite sides, and said guideway is adapted to receive a dovetail guide 32, formed upon the upper end of the vertical or upright arm 7 of the frame. By this construction it will be seen that the bracket 30 is permitted to slide or move vertically upon the
 90 frame, and in order to move said bracket and adjust the upper shaft 28 nearer to or farther from the armature-shaft and also for holding said bracket securely positioned when adjusted we provide an adjusting-screw 33, col-
 95 lared at its upper end upon the dovetail guide 32 of the frame and having at its lower end threaded engagement with a lug 34, forwardly extended from the bracket 30 and arranged to play through an opening 35, suitably formed
 100 in the guide 32, as clearly shown in Fig. 2.

The forward end of the upper shaft 28 is extended through an opening in the upright arm 7 of the frame, as shown in Fig. 9, and carries in front of the frame a wheel 35, preferably formed with a peripheral face of rubber or other material, over which is passed the upper bight of an endless cutting-band
 105 36, formed with a cutting edge 37, extended entirely along its forward portion. The cutting edge 37 is formed by beveling the opposite sides of the cutting-band 36, as indicated in Fig. 13. The wheel 35 has a flange 38 at its rear side to prevent the cutting-band from slipping back against the frame during the
 115 operation of the machine. Below the wheel 35 the two runs of the cutting-band 36 are carried down toward each other and between idler-sheaves 39, which are held to turn loosely upon studs 40, carried upon a block
 120 41, secured to the lower part of the frame, as shown in Figs. 1, 2, and 12, and below the said sheaves 39 the two runs of the cutting-band are extended down parallel and closely adjacent to each other, as indicated in Fig. 2,
 125 to the base-plate 1 of the machine.

In the circular foot 10 of the pedestal 8, upon which the frame of the machine is supported, is formed an elongated rectangular opening 42, which affords access to the hollow or chamber 2 from above the base-plate, the greater length of said elongated opening
 130

being extended in a direction at right angles to the line of the cut made by the cutting-band 36. The top of the base-plate 1 is formed with a similar and coinciding opening, and the two openings are adapted to be closed when the machine is in use by a slide 43, movable in an undercut guideway partly formed in the base-plate and partly in the foot 10, said slide 43 being formed with a slit 44 in its rear end for the passage of the two runs of the endless cutting-band 36, as shown in Fig. 7 of the drawings.

In the hollow or chamber 2 of the base-plate and immediately beneath the opening 42 at the top of said plate are arranged wheels or rollers 45, spaced apart to receive between them the two runs of the cutting-band 36 after it has passed through the slit 44, the said two runs being bent in opposite directions around and under the said rollers or wheels 45, and being carried thence outward in opposite directions and slightly upward, as indicated at 46 in Fig. 4, over and around other wheels or rollers 47, which are set slightly lower in the chamber or hollow 2 than the central wheels or rollers 45, so as to permit the lower bight 48 of the endless cutting-band to move freely between them, as shown in Fig. 4.

The several inner and outer wheels or rollers 45 and 47 are each held on a shaft 49, extended horizontally in the space or chamber 2, as shown in Figs. 3 and 6, each shaft being extended rearwardly behind its wheel or roller, so that the endless cutting-band may be slipped on and off the said wheels or rollers by moving it toward the forward edge of the base-plate 1. Each shaft 49 is passed through circular bearing-lugs 50 on a bearing-block 51, secured to the top of the base-plate within the hollow or chamber 2. Raceways are formed in the bearing-lugs 50 to receive balls 52, the balls at the forward ends of the shafts working against bosses 53 on the wheels or rollers and those at the rear ends of the shafts working against annular collars or nuts 54 on the shafts. By this construction it will be seen that the wheels or rollers are permitted to turn easily and the friction and wear of the parts are greatly lessened.

To permit of straining or tightening the endless cutting-band 36, one of the wheels or rollers in the hollow or chamber 2 of the base-plate is made adjustable toward and away from the other wheels or rollers. As herein shown, one of the outer wheels or rollers 47 is made so adjustable, being the one seen at the left in the inverted view, Fig. 3, and at the right in Fig. 4. For the purpose of adjustment the bearing-block 51, in which the shaft of this wheel or roller is held, is not secured directly to the base-plate 1, as are the other bearing-blocks, but is provided with upwardly-extended undercut or dovetail guides 55, forming between them a guideway, in which is slidably held a guide-block 56, the

upper part 57 of which is secured to the top of the base-plate 1, as shown in Figs. 3, 4, 5, and 10. The guide-block has a longitudinal groove or channel 58 produced in it and carries a screw 59, extended lengthwise in said groove or channel, with its ends collared in the guide-block, as shown at 60 in Fig. 10, and its central portion having threaded engagement with a lug 61, extended upwardly from the central portion of the bearing-block 51. The screw 59 has a squared end 62, which is extended into an opening 63 in the adjacent sloping side wall 3 of the base-plate, so as to be in convenient position to receive a key of suitable construction by means of which the screw 59 may be turned to move the bearing-block 51 transversely of the base-plate and adjust the wheel or roller 47, carried on said bearing-block, nearer to or farther away from the other wheels or rollers 47 and 45.

In the operation of the machine when power is supplied to the motor for driving it the rotary motion of the armature-shaft 13 is communicated through the gearing to the upper shaft 28 and by the wheel 35 on the forward end of said upper shaft is communicated to the endless cutting-band 36 to drive the same continuously, the two runs of said cutting-band moving in opposite directions through the slit 44 of the slide 43 and serving to cut the cloth or other material lying over the base-plate in a smooth and accurate manner. Since the cutting edge of the band 36 extends along the entire forward edge of said band and moves in a direction at right angles to the plane in which the cloth or other material lies on the base-plate, it will be seen that the machine permits of cutting the goods nearer to the pattern, especially at sharp turns and angles, and insures that each of several layers of goods cut at one single operation shall have exactly the same contour. The cutting-band 36 and pedestal 8 being of comparatively little width do not materially interfere with the turning of the machine during the cutting operation to conform to curves and angles of the pattern, and the base-plate being imperforate at its top insures against clogging of the operative parts beneath it with dust from the cut cloth. The parts of the improved machine are also readily removable, so that the machine may be repaired in case of breakage with very little labor.

In applying the cutting-band to the machine the slide 43 is drawn out to the position shown in Fig. 7, so as to uncover the opening 42 and permit the lower bight of the endless band to be passed down through said opening into the hollow or chamber 2 of the base-plate, wherein it is passed around the several wheels or rollers 45 and 47, the adjustable roller 47 being of course moved over toward the other rollers to permit of placing the band thereon. The upper bight of the endless band is then passed over the wheel 35 on

shaft 28, the two runs of the band being passed between the idler-sheaves 39 and the slide 43 being pushed back to close the opening 42 in the top of the base-plate. The screw 59 is then turned to cause the wheel or roller 47 connected with it to be drawn over in the space or chamber 2 away from the other wheels or rollers, whereby the band will be strained tightly upon the wheels or rollers, so that when movement is applied to the upper wheel 35 the said band will be caused to move endwise to cut the cloth. The adjustable upper bracket 30 may also be employed for tightening the cutting-band in some cases and may likewise be used for taking up wear to a limited extent of the gears 27 and 26.

From the above description it will be seen that the improved cutting-machine constructed according to our invention is of an extremely simple and inexpensive nature and is especially well adapted for use, since it permits of cutting the cloth or other materials in a smooth and accurate manner, so that each layer cut shall be exactly similar to each other layer. It will also be obvious from the above description that the improved machine is capable of some modification without material departure from the principle and spirit of the invention, and for this reason we do not wish to be understood as limiting ourselves to the precise form and arrangement of the several parts as herein shown in carrying out the invention in practice.

Having thus described our invention, we claim—

1. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band having its runs extended between the frame and base-plate, a device at the base-plate and around which the lower bight of said endless cutting-band is passed, a motor, a shaft held to turn on the frame and driven from the motor and having one end extended in front of the frame, a driving-wheel held on the extended end of said shaft and adapted to receive and removably hold the upper bight of said endless cutting-band, and means for tightening said endless cutting-band, substantially as set forth.

2. In a cutting-machine, the combination of a base-plate over which materials to be cut are adapted to be passed, an endless cutting-band passed through the base-plate and extended above and below the same, a plurality of rollers or wheels beneath the base-plate for carrying the lower bight of the cutting-band, means to move one of said wheels or rollers for tightening the endless cutting-band, a wheel above the base-plate for carrying the upper bight of the base-plate, and driving means for imparting endwise movement to the cutting-band, substantially as set forth.

3. In a cutting-machine, the combination of a base-plate having an opening, a frame above the base-plate, a cutting device extend-

ed from the frame and having a lower bight passed through the opening in the base-plate and having actuating mechanism carried by the frame, a pedestal for supporting the frame above the base-plate and a part movable on the base-plate for closing the opening therein after the lower bight of the cutting device has been passed therethrough, substantially as set forth.

4. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band extended between the base-plate and frame, and means, located beneath the base-plate, for tightening said cutting-band, substantially as set forth.

5. In a cutting-machine, the combination of a base-plate, an endless cutting-band having a bight below the base-plate, two sheaves below the base-plate and around which the bight of the cutting-band is passed and two idler-sheaves arranged between the first-named sheaves and arranged to bear on the two runs of the cutting-band for pressing said runs toward each other, substantially as set forth.

6. In a cutting-machine, the combination of a base-plate, an endless cutting-band having a bight formed in it, two sheaves held to turn and around which said bight of the cutting-band is passed and means for moving one of said sheaves relatively to the other for tightening and loosening said cutting-band, substantially as set forth.

7. In a cutting-machine, the combination of a base-plate, an endless cutting-band having a bight below the base-plate, sheaves around which said bight is passed, a part mounted for sliding movement and on which one of the said sheaves is carried, and a screw collared on the base-plate and having threaded engagement with said sliding part for moving the sheave carried thereon to tighten or loosen the cutting-band, substantially as set forth.

8. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band extended between the frame and base-plate, a motor, a shaft held to turn on the frame and having one end extended in front of said frame, gearing for driving said shaft from the motor, a driving-wheel on the extended end of said shaft and adapted to receive and removably hold the upper bight of said endless cutting-band, a plurality of shafts at the base-plate, each shaft being held to turn in bearings and having one end extended beyond its bearings and wheels or rollers on the extended ends of said shafts and adapted to receive and removably hold the lower bight of said endless cutting-band, substantially as set forth.

9. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band extended between the frame and base-plate, a motor, a shaft held to turn on the frame and driven from said motor and having one end extended in front of the frame and provided with a driving-wheel on

which the upper bight of said endless cutting-
band is removably held, a plurality of shafts
at the base-plate, each shaft being held to
turn in bearings and having one end extended
5 beyond its bearings, wheels or rollers on the
extended ends of said shafts and adapted to
receive and removably hold the lower bight
of said endless cutting-band, and means for
moving one of said lower shafts toward and

away from the other, substantially as set forth.

Signed at Cincinnati, Ohio, this 31st day of
July, 1901.

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