

No. 633,321.

Patented Sept. 19, 1899.

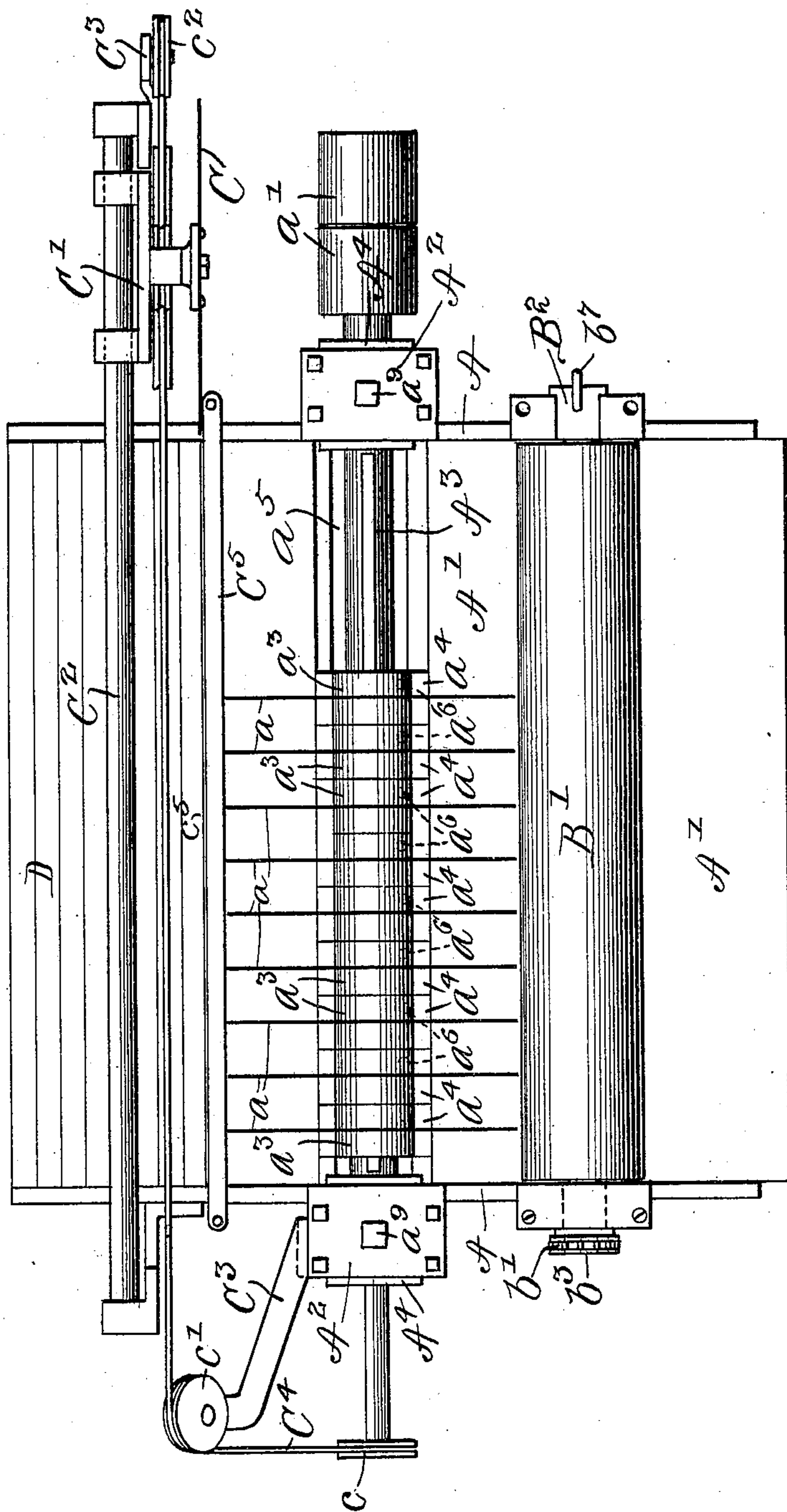
M. D. KITCHEN.
CLOTH CUTTER.

(Application filed Apr. 24, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses.

Wm. M. Rheem.

Ryrouck Carter

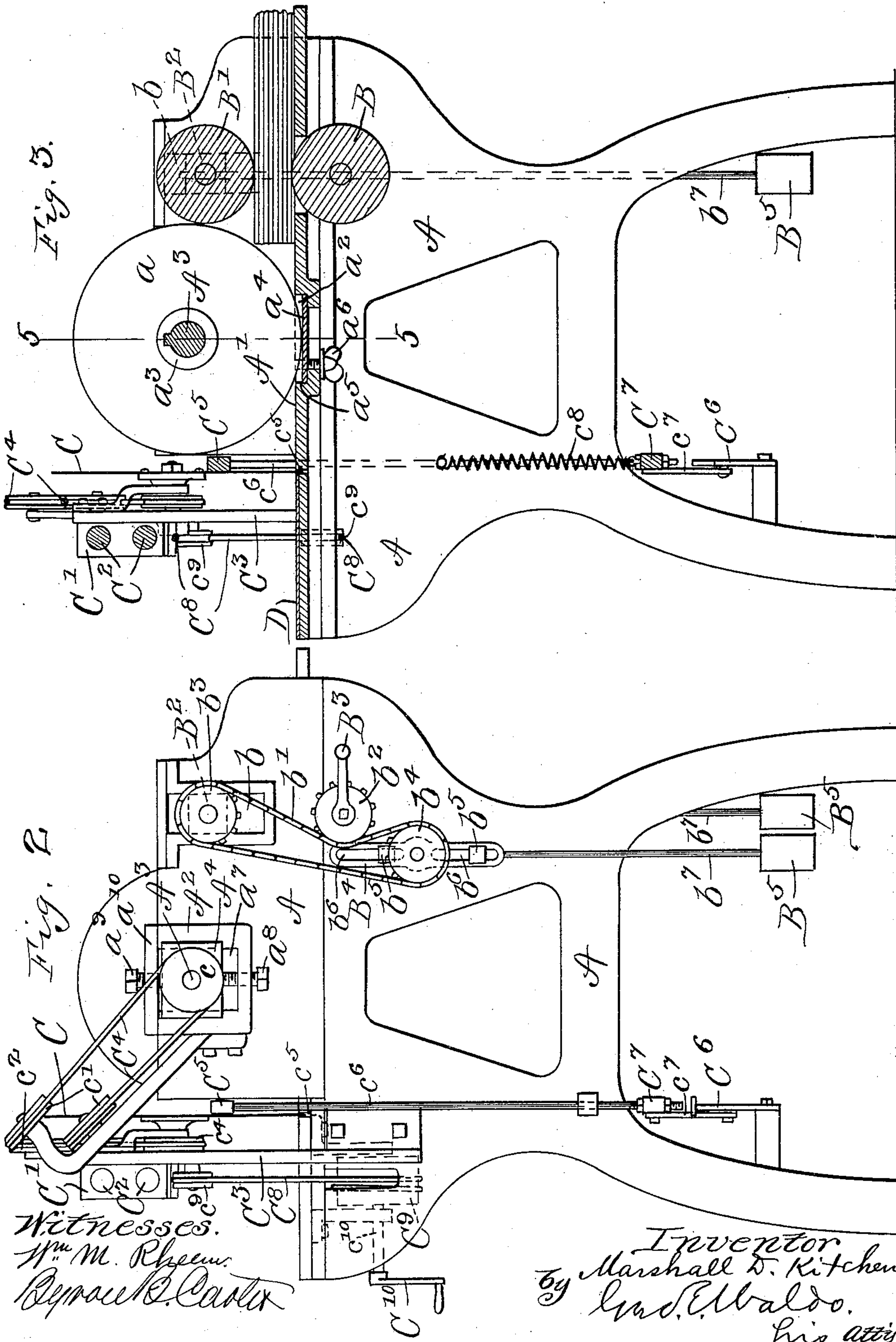
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3 Sheets—Sheet 2.



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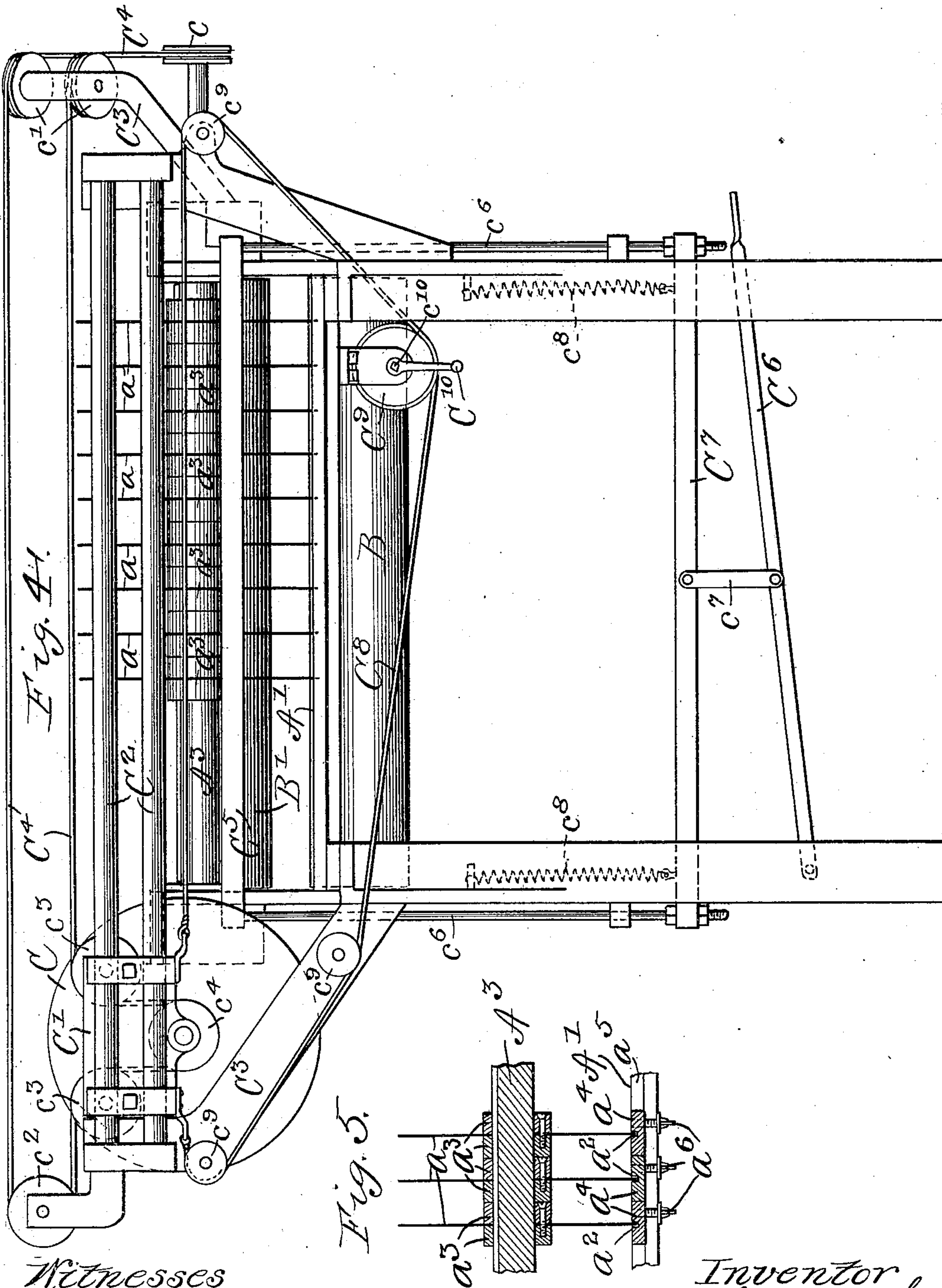
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3 Sheets—Sheet 3.



Witnesses

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UNITED STATES PATENT OFFICE.

MARSHALL D. KITCHEN, OF CHICAGO, ILLINOIS.

CLOTH-CUTTER.

SPECIFICATION forming part of Letters Patent No. 633,321, dated September 19, 1899.

Application filed April 24, 1899. Serial No. 714,174. (No model.)

To all whom it may concern:

Be it known that I, MARSHALL D. KITCHEN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented an Improved Cloth-Cutting Machine, of which the following is a specification.

This invention relates to cloth-cutting machinery, and relates particularly to machinery especially designed and adapted for cutting pieces of cloth, usually delivered thereto in a plurality of superposed layers, into samples of desired size and shape.

The object of the invention is to provide a machine for this purpose which will be of simple and cheap construction and will have large capacity, by means of which samples may be cut in large quantities at a comparatively small expense.

In the preferable form thereof now known to me a machine of my invention comprises a bed or table, circular cutters secured so as to be longitudinally adjustable on a shaft revolubly mounted in suitable bearings on the machine-frame transversely of said bed or table, slots or grooves formed in said bed or table adapted to receive the lower edges of said circular cutters, feed-rolls adapted to deliver the goods to said circular cutters, a transverse guide supported on the machine-frame at the rear of said circular cutters which extends parallel with the shaft of said cutters, a cross-head or carriage fitted to and longitudinally movable on said guide, a circular cutter revolubly mounted on said cross-head or carriage and adapted to cut the goods transversely, a transverse groove or slot in the bed or table adapted to receive the lower edge of said transverse cutter, means to rotate said cutter, means to impart movement to said carriage longitudinally of said transverse guide, and a transverse bar or foot adapted to be depressed upon the goods to maintain the same in position during the operation of the transverse cutter. In the preferable construction shown the grooves or slots which receive the longitudinal cutters instead of being formed directly in the bed or table of the machine are formed in separate plates fitted to a transverse groove formed in said bed or table, the dimension of which transversely of the machine is greater than

the aggregate dimension of said plates transversely of the machine. Provision is thus made for adjusting the positions of said cutters relatively to each other to provide for cutting the goods into strips of different widths. Preferably also said longitudinal cutters are splined to the shaft on which they are carried so as to be freely movable longitudinally thereof and are maintained in desired adjustment thereon by clamping said grooved or slotted plates to the machine-frame in positions to bring said cutters in desired adjustment, the grooves or slots in said plates forming guides which maintain said cutters in position. In the preferable construction shown also rotation is imparted to the transverse cutter directly from the shaft which carries the longitudinal cutters by means of a belt, preferably round in cross-section, which is adjusted to a grooved pulley secured to the shaft of said longitudinal cutters, passes thence around an idle pulley revolubly mounted on the machine-frame, across the machine, around an idle pulley mounted on the opposite side of the machine from said driving-pulley, back across the machine, around another idle pulley to the driving-pulley, the lower lap of said belt passing over idle pulleys mounted on the cross-head or carriage on which the transverse cutter is mounted, above the shaft of said transverse cutter, and between said idle pulleys, passing around a pulley secured to the shaft of said transverse cutter. The relative positions of the idle pulleys on the machine-frame are such that the lower lap of said belt between the idlers on the cutter-carriage and on the machine-frame will be parallel with the guide on which said carriage moves. It is thus obvious that the tension on said belt, and hence its frictional engagement with the pulley on the shaft of the transverse cutter, will be the same for all points in the travel of said carriage.

The invention also consists of the various other features, combinations of features, and details of construction hereinafter shown and described.

In the accompanying drawings a machine embodying my invention is fully illustrated.

Figure 1 is a top plan view of a machine of my invention. Fig. 2 is a side elevation there-

of. Fig. 3 is a longitudinal sectional view. Fig. 4 is a rear view, and Fig. 5 is a partial sectional view on the line 5 5 of Fig. 3.

Referring now to the drawings, A designates the frame of the machine, the top of which forms a stationary bed or table A', on which the goods are supported during the operation of the machine. Mounted above and transversely of the bed A' in suitable bearings formed in standards or brackets A², preferably formed integral with the machine-frame, is a shaft A³, to which are secured circular cutters a. Rotation is imparted to the shaft A³, and thus to the cutters a, from any suitable source of power by means of a belt (not shown) applied to pulleys a', secured to said shaft A³. The lower edges of the cutters a run in slots or grooves a², formed in the bed or table A', thus insuring that said cutters will cut entirely through the goods supported on said bed or table as they pass said cutters.

In the preferable construction shown the cutters a are splined to the shaft A³ and are freely movable longitudinally thereof and are maintained in proper adjustment transversely of the bed or table A' by means of the slots or grooves a² in said bed or table in which said cutters run. In this manner the cutters are maintained in proper position without the use of set-screws or other agency liable to catch in the goods and wind them about the shaft and cutters. The cutters a being thin, collars a³ are secured to the sides thereof, which provide bearings of sufficient length to maintain the cutters true on the shaft. In the preferable construction shown also the slots or grooves a² are formed in plates a⁴, which are fitted to a transverse groove a⁵, formed in the bed or table A', the upper surfaces of which are substantially flush with the surface of said bed or table A'. Preferably, also, the dimension of the groove a⁵ transversely of the bed or table A' is greater than the aggregate dimension of the plates a⁴ or of the cutters a and the collars a³ transversely of said bed or table, and said plates a⁴ are adapted to be secured to said bed or table A' in any desired adjustment. As shown, said plates a⁴ are secured in position by means of clamping-screws a⁶, threaded into the under sides of said plates a⁴, collars on which engage a ledge on the bed or table A'. As shown, also, the screws a⁶ are wing-screws, which are readily manipulated, and thus facilitate the adjustment of the plates a⁴. The slots or grooves a² forming guides for the cutters a, it is obvious that adjustment of said cutters may be effected by proper movement of the plates a⁴ and that they may be maintained in any desired adjustment by securing said plates in positions corresponding to such adjustment.

In order to adapt the machine for use with cutters of different diameters, the bearings for the shaft A³ are formed in blocks A⁴, which are fitted to and movable toward and from the bed or table A' in slots a⁷, formed

in the standards or brackets A². Adjustment of the bearing-blocks A⁴ toward and from the bed or table A' is effected and said blocks are maintained in desired adjustment by means of screws a⁸, which are threaded through the ends of the slots a⁷ and bear against the under sides of the blocks A⁴ and screws a⁹, threaded through caps a¹⁰, secured across the ends of said slots and adapted to bear against the upper sides of said blocks.

The goods are delivered to the cutters a by means of feed-rolls B B', of which the feed-roll B is mounted in fixed bearings in such position that the top thereof will project slightly above the bed or table A', and the roll B' is mounted in suitable bearings formed in blocks B², fitted to and movable toward and from the roll B in guide-slots b, formed in the machine-frame. Positive rotary movement is imparted to the rolls B B' in the following manner: The roll B is rotated by means of a hand-crank B³, secured directly to the shaft thereof. The roll B' is driven from the roll B through the medium of a chain belt b', which engages a sprocket-wheel b² on the shaft of the roll B and is adjusted to sprocket-wheels b³ b⁴, one secured to the shaft of the roll B' and the other being mounted on a stud secured in a plate B⁴, which is supported upon the machine-frame so as to be movable toward and from the roll B' by means of studs b⁵, secured in the machine-frame, which engage slots b⁶ in said plate, the relation being such that the rolls B B' will rotate in opposite directions. Necessary frictional engagement of the rolls B B' with the goods to insure the feeding of the goods by the rotation of said rolls is effected by means of weights B⁵, applied to the roll B'. Said weights may be applied directly to the bearing-blocks B² of the roll B', or, as shown, the weight on one side of the machine may be applied directly to the bearing-block B² and on the opposite side of said machine to the plate B⁴, in which the stud on which the sprocket-wheel b⁴ is mounted is secured. As shown, also, said weights are suspended upon rods b⁷, and the pressure of the roll B' upon the goods may be varied as desired by increasing or decreasing the weights on said rods.

My improved machine also comprises a circular cutter C, which is supported so as to be movable transversely of the bed or table A' in a direction substantially parallel with the shaft A³. In the preferable construction shown said cutter C is secured to a shaft or spindle revolvably mounted in a suitable carriage C', supported upon and longitudinally movable on guide-rods C², which extend parallel with the shaft A³ and are supported at their ends in brackets C³, rigidly secured to the machine-frame A in proper position. In the preferable construction shown the cutter C is driven directly from the shaft A³ by means of a belt C⁴, preferably circular in cross-section, which is adjusted to a driv-

ing-pulley c , secured to said shaft A^3 , thence around guide-pulleys c' , across the bed or table A' , and around an idle pulley c^2 . The lower lap of said driving-belt C^4 passes over 5 guide-pulleys c^3 , revolubly mounted on the cutter-carriage C' , and between said guide-pulleys c^3 passes around a driving-pulley c^4 , secured to the shaft or spindle of the transverse cutter C . The relative positions of the 10 guide-pulleys and idlers are such that the lower lap of the driving-belt C^4 will extend substantially parallel with the guide rods or bars C^2 , thus insuring a constant tension on said belt C^4 regardless of the position of the 15 carriage on said guides C^2 and a constant frictional engagement of said belt with the driving-pulley c^4 on the shaft or spindle of the transverse cutter C . The lower edge of the cutter C runs in a transverse groove or 20 slot c^5 , formed in the bed or table A' , thus insuring that said cutter will cut entirely through the goods supported on the bed or table of the machine. During the operation of the transverse cutter C the goods are held 25 in position upon the bed or table A' by means of a suitable clamping-foot, which is adapted to be depressed upon said goods with necessary force when desired. As shown, said clamping-foot consists of a bar C^5 , which is 30 secured to the upper ends of upright rods c^6 , fitted to and longitudinally movable in suitable bearings formed on the machine-frame. The clamping foot or bar C^5 is maintained normally in raised position by means of a 35 spring applied thereto, so as to allow the free passage of the goods beneath it, and said clamping foot or bar is depressed when desired by means of a foot lever or treadle C^6 , pivoted to the machine-frame, which is connected by a link c^7 with a bar or rod C^7 , secured to the lower ends of the upright rods 40 c^6 . As shown, the clamping-foot C^5 is maintained normally in raised position by means of the coiled springs c^8 , which connect the 45 bar C^7 with rigid portions of the machine-frame. Movement of the carriage C' transversely of the machine is effected by means of a cord or cable C^8 , the ends of which are secured to said carriage and which passes 50 over guide-pulleys c^9 at the sides of the machine and around a drum C^9 , secured to a shaft c^{10} , mounted in suitable bearings in the machine-frame. Said shaft is turned to rotate the drum C^9 by means of a hand-crank 55 C^{10} on said shaft.

To facilitate the cutting of the goods into samples of desired size, I provide a scale on the bed or table of the machine, by means of which the operator is readily enabled to feed 60 the goods uniform distances through the longitudinal cutters between successive operations of the transverse cutter.

During the operation of the machine the cutters, both longitudinal and transverse, 65 run continuously. The goods, having been placed in the machine between the feed-rollers $B B'$, are fed through the slitting-cutters

a a desired distance. The clamping foot or bar O^5 is then depressed in order to secure the goods in position upon the bed or table 70 A' , and the transverse cutter C is advanced from its position of rest across the bed or table A' , thus severing pieces of desired length from the strips of goods formed by the cutters a and is again returned to its po- 75 sition of rest.

To facilitate the handling of the pieces of goods and their removal from the machine after they have been severed by the transverse cutter C , a removable tray D is pro- 80 vided in the rear of said cutter, upon which said pieces are delivered. As shown, said tray consists of a suitable piece of sheet metal or the like which rests upon the bed of the machine and forms, in effect, a removable sec- 85 tion of the bed or table A' , said bed or table being cut away where said tray rests upon it, so as to bring the upper surface of said tray substantially flush with or slightly below the surface of said bed or table A' . 90

I claim—

1. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of cutters revolubly mounted transversely of said bed or table, a feed mechanism which 95 controls the delivery of goods to said cutters, transverse guides or ways at the rear of said gang of cutters, a carriage mounted thereon and movable longitudinally thereof, a cutter revolubly mounted on said carriage, driving 100 connection between the shaft of said longitudinal cutters and said transverse cutter and a clamping-foot adapted to be depressed upon the goods during the operation of said transverse cutter, substantially as described. 105

2. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of cutters revolubly mounted transversely of said bed or table, a feed mechanism, which 110 controls the delivery of goods to said cutters, transverse guides or ways at the rear of said gang of cutters, a carriage mounted thereon and longitudinally movable thereof, a cutter revolubly mounted on said carriage, driving 115 connection between the shaft of said longitudinal cutters and said transverse cutter, means to impart movement to said carriage in both directions on said guides and a clamping-foot adapted to be depressed upon the goods during the operation of the transverse 120 cutter, substantially as described.

3. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of longitudinal cutters mounted transversely of said bed or table, feed-rolls which control 125 the delivery of goods to said longitudinal cutters, transverse guides or ways at the rear of said longitudinal cutters, a carriage mounted thereon and longitudinally movable thereof, a transverse cutter revolubly mounted on 130 said carriage, means to rotate said longitudinal and transverse cutters, means to impart movement to said carriage in both directions along its guides and a clamping-foot adapted

to be depressed upon the goods during the operation of the transverse cutter, substantially as described.

4. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of longitudinal cutters mounted transversely of said bed or table, feed-rolls, which control the delivery of goods to said longitudinal cutters, transverse guides or ways at the rear of said longitudinal cutters, a carriage mounted thereon and movable longitudinally thereof, a transverse cutter revolvably mounted on said carriage, means to impart movement to said carriage in both directions along its guides, a clamping-foot adapted to be depressed upon the goods during the operation of the transverse cutter, means to rotate said longitudinal cutters and driving connection between said longitudinal cutters and the transverse cutter, comprising driving-pulleys on the shafts of said longitudinal and transverse cutters, idle pulleys mounted on opposite side of the machine-frame and on the carriage of the transverse cutter and a belt adjusted to said pulleys passing around the driving-pulley on the shaft of the transverse cutter between the idle pulleys on the carriage of said transverse cutter, substantially as described.

5. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of longitudinal cutters mounted transversely of said bed or table, transverse guides or ways at the rear of said longitudinal cutters, a carriage mounted thereon and movable longitudinally thereof, a transverse cutter revolvably mounted on said carriage, means to rotate said longitudinal and transverse cutters, means to impart movement to said carriage in both directions along its guides, a clamping-foot adapted to be depressed into contact with the goods during the operation of the transverse cutter and a feed mechanism adapted to control the delivery of goods to said longitudinal cutters, said mechanism comprising a lower feed-roll mounted in stationary bearings, an upper feed-roll movable toward and from said lower roll, means to rotate said lower roll and driving connection between said rolls, said connection comprising a sprocket-wheel secured to the shaft of each roll and an idle sprocket-wheel mounted on a plate supported in suitable guides on the machine-frame so as to be movable toward and from the movable feed-roll, a chain belt adjusted to said sprocket-wheel so as to rotate said feed-rolls in opposite directions and weights or their equivalents applied to said movable feed-roll and to the plate on which said idle sprocket-wheel is mounted, substantially as described.

6. In a machine for cutting cloth and the like, the combination of a bed or table, a shaft

mounted above and transversely of said bed or table, cutters splined to said shaft, a transverse groove formed in said bed or table, plates fitted to and movable in said groove transversely of said bed or table, the aggregate dimension of said plates transversely of said bed or table being less than the dimension of said groove transversely of said bed or table, means to secure said plates in any desired adjustment in said groove and grooves in said plates in which the lower edges of the cutters run, substantially as described.

7. In a machine for cutting cloth and the like, the combination of a bed or table, a shaft mounted above and transversely of said bed or table, cutters secured to collars splined to said shaft, a transverse groove formed in said bed or table, plates fitted to and movable in said groove transversely of said bed or table, the aggregate dimension of said plates and of the cutters and collars on the shaft transversely of the machine being less than the dimension of said groove transversely of the machine, means to secure said plates in any desired adjustment in said groove and grooves in said plates in which the lower edges of said cutters run, substantially as described.

8. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of longitudinal cutters, a feed mechanism which controls the delivery of goods to said longitudinal cutters, guides or ways in the rear of said longitudinal cutters, a carriage mounted thereon and movable longitudinally thereof, means to rotate said longitudinal and transverse cutters and means to impart movement in both directions to said transverse cutter-carriage along its guides, said means comprising a cable attached to said carriage, a drum around which said cable passes and guide-pulleys at both sides of the machine to which said cable is adjusted, substantially as described.

9. In a machine for cutting cloth and the like, the combination of a bed or table, a gang of longitudinal cutters mounted transversely of said bed or table, transverse guides or ways at the rear of said longitudinal cutters, a carriage mounted thereon and movable longitudinally thereof, a transverse cutter revolvably mounted on said carriage, means to rotate said longitudinal and transverse cutters, a clamping bar or foot and a tray supported on said bed or table in the rear of said transverse cutter, substantially as described.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 20th day of April, 1899.

MARSHALL D. KITCHEN.

Witnesses:

C. J. BROUGHTON,
BYRON B. CARTER.