

A. H. MORRISON.

MACHINE FOR TRIMMING AND CUTTING PLACKET OPENINGS IN UNDERGARMENTS.

APPLICATION FILED JAN. 10, 1910.

979,684.

Patented Dec. 27, 1910.

5 SHEETS-SHEET 1.

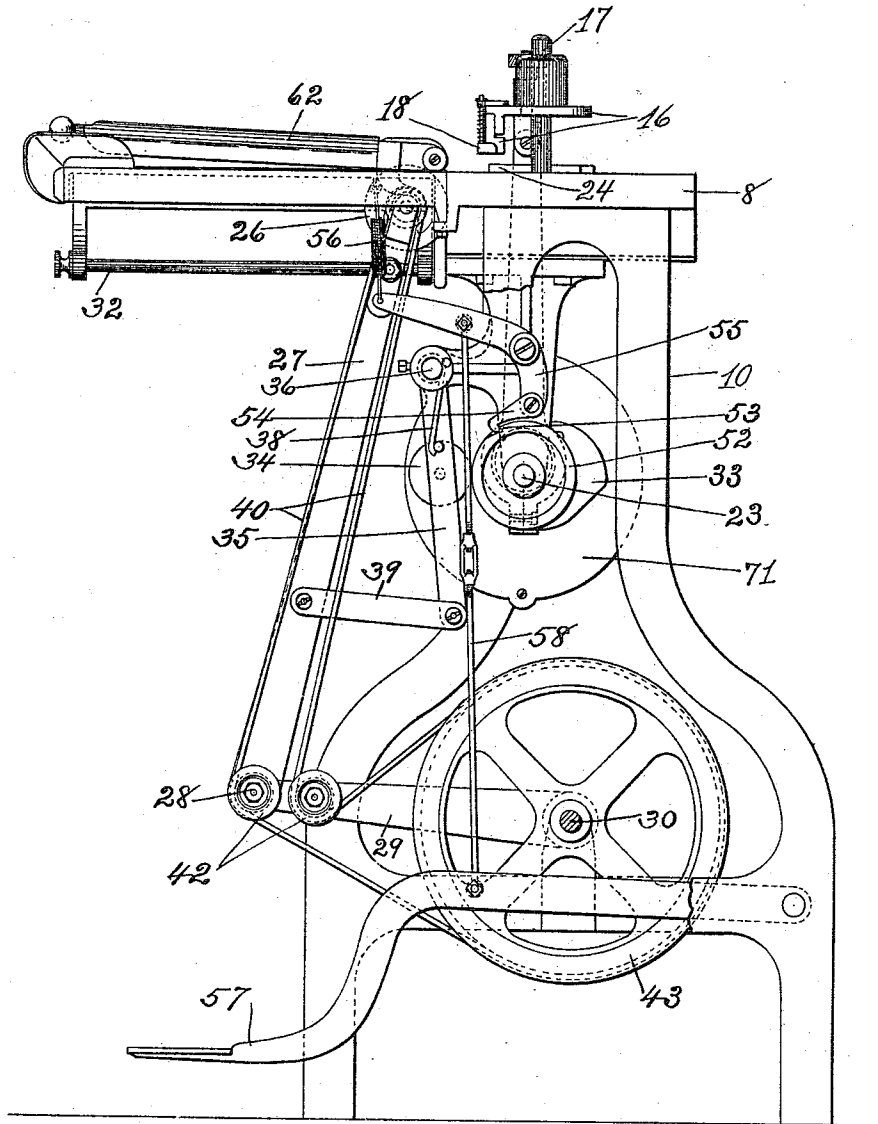


FIG. 1

WITNESSES
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E. Bakeman.

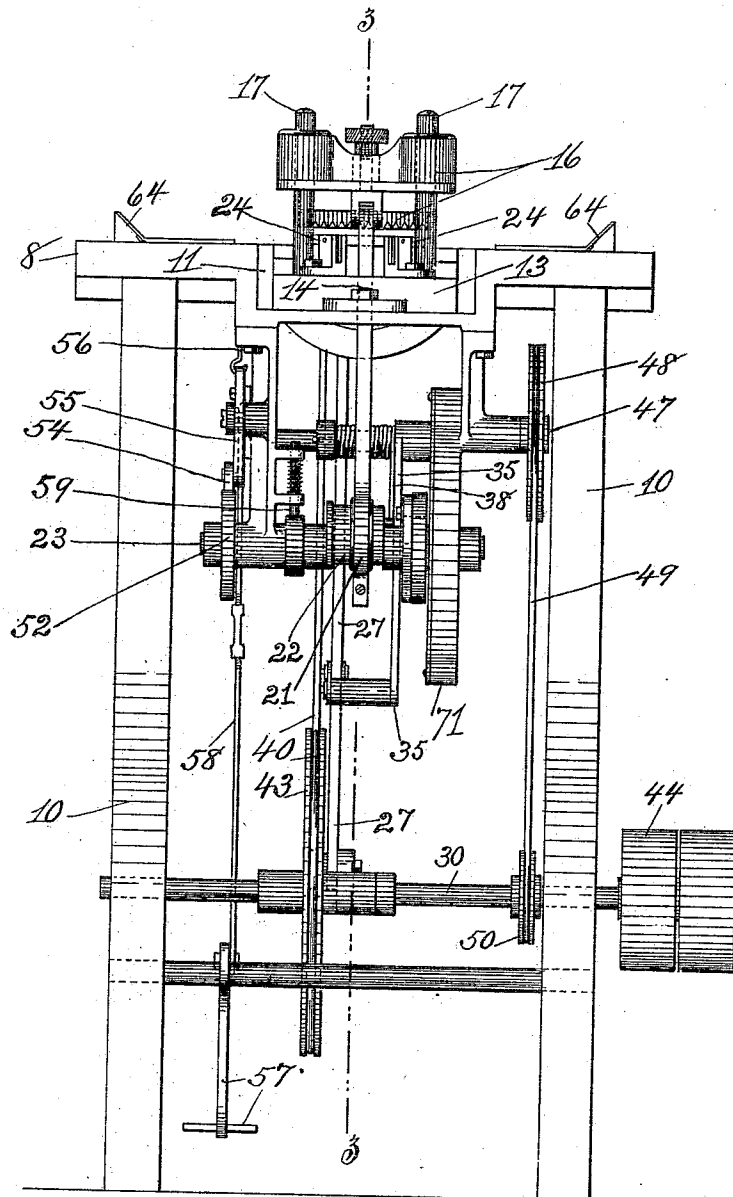
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5 SHEETS—SHEET 2.



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FIG. 2

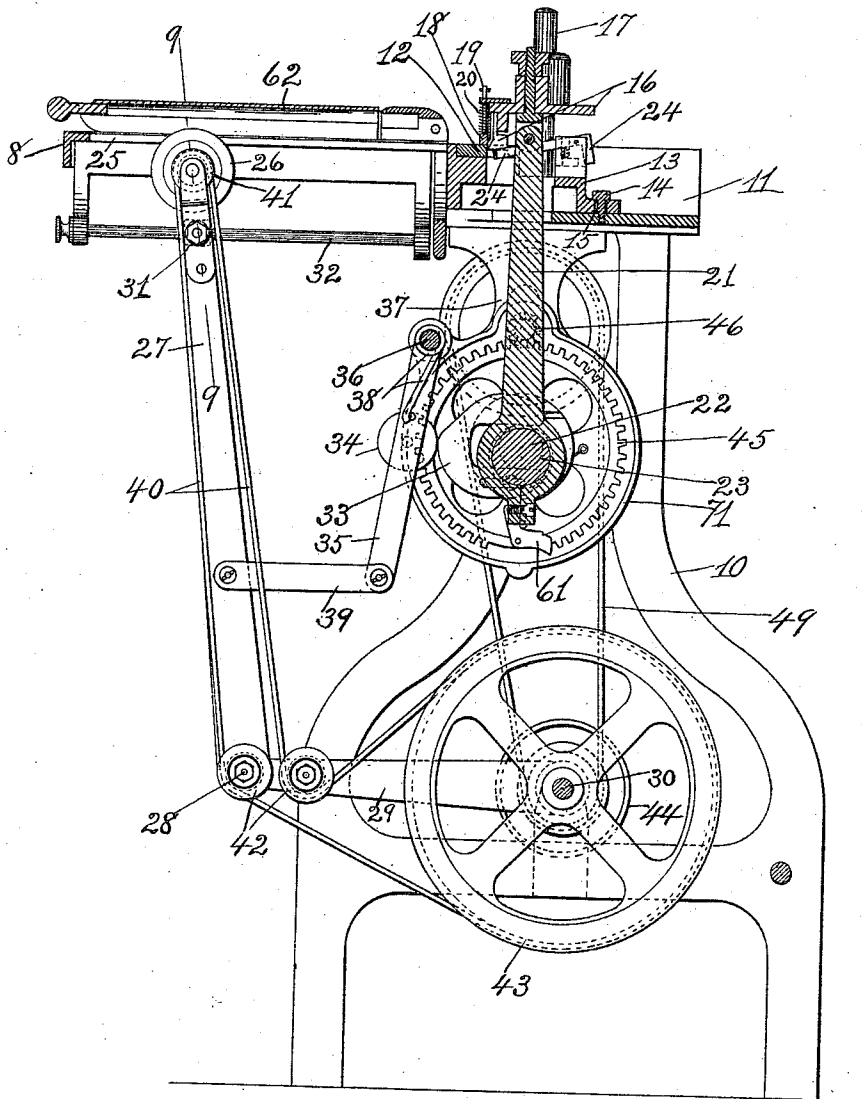
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5 SHEETS-SHEET 3.



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FIG. 5

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5 SHEETS—SHEET 4.

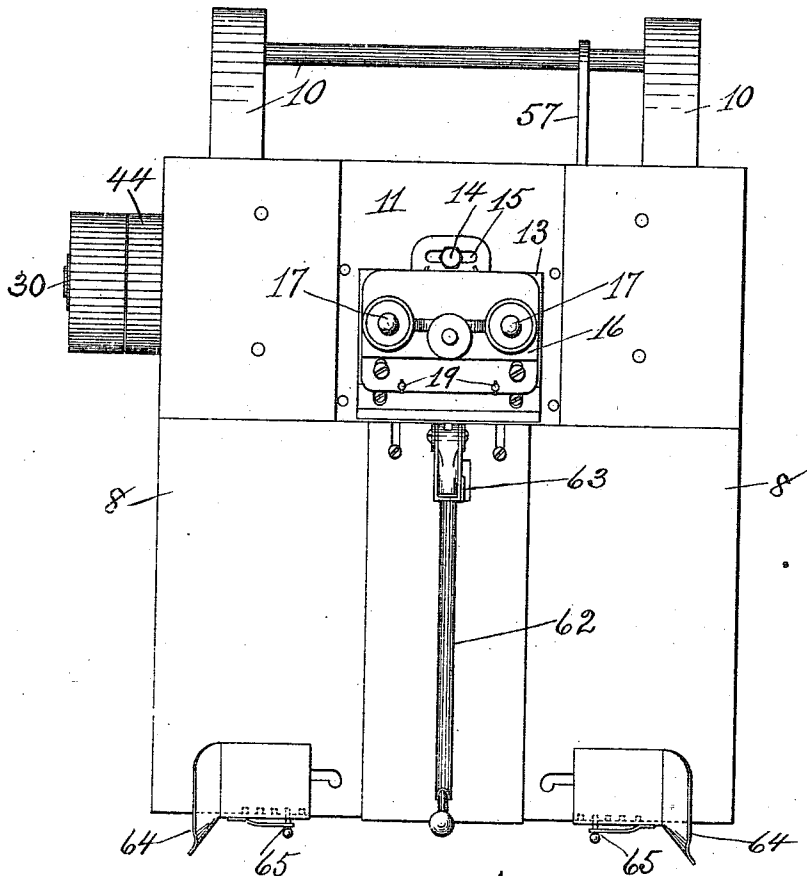


FIG. 4

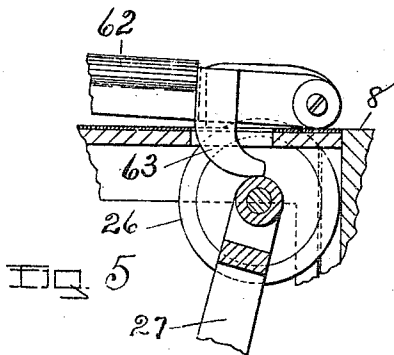


FIG. 5

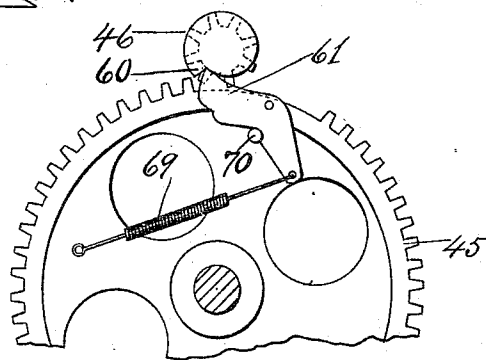


FIG. 6

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5 SHEETS—SHEET 5.

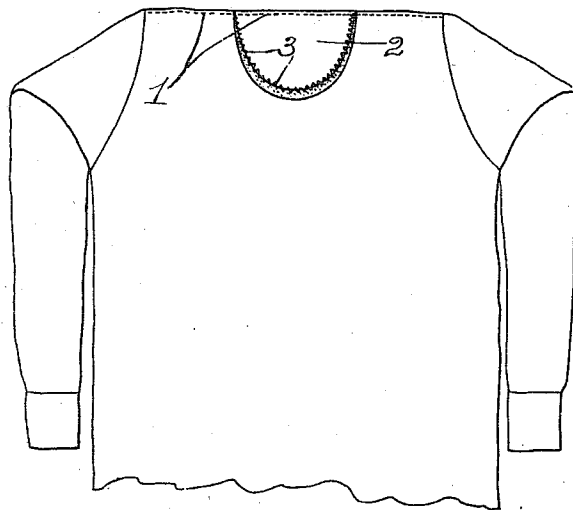


FIG. 7

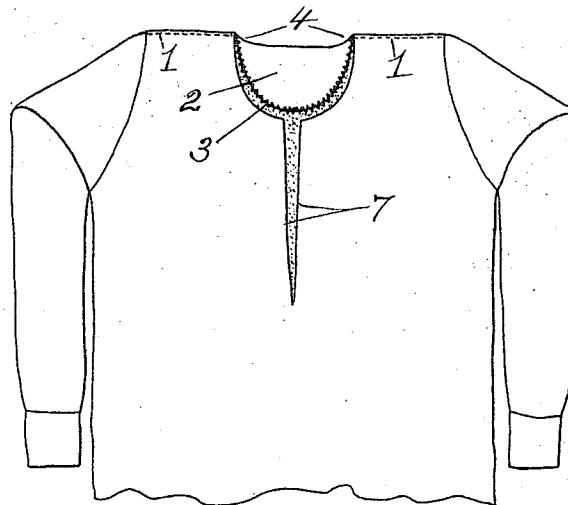
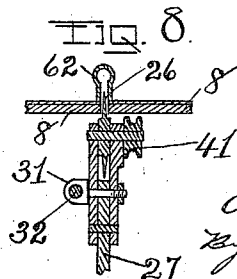


FIG. 8

FIG. 9



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UNITED STATES PATENT OFFICE

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MACHINE FOR TRIMMING AND CUTTING PLACKET-OPENINGS IN UNDERGARMENTS.

979,684.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed January 10, 1910. Serial No. 537,161.

To all whom it may concern:

Be it known that I, AUGUSTUS H. MORRISON, a citizen of the United States, residing at Amsterdam, county of Montgomery, and State of New York, have invented certain new and useful Improvements in Machines for Trimming and Cutting Placket-Openings in Undergarments, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of my improved machine for trimming and cutting placket-openings in undergarments. Fig. 2 is a rear elevation of the same. Fig. 3 is a vertical section of the same from front to rear, taken on the broken line 3—3 in Fig. 2. Fig. 4 is a top plan view of the machine. Fig. 5 is a view partly in vertical section and partly in elevation showing the cam-projection adapted to be engaged by the slit-cutter-carrier for the purpose of automatically raising the channeled shield for the cutter. Fig. 6 is a view on a somewhat enlarged scale of the pinion and a portion of the mutilated gear carrying the pilot-tooth forming part of the intermittent gear of my improved machine. Fig. 7 is a plan view of an undershirt in process of manufacture, for the treatment of which my machine is adapted. Fig. 8 is a similar view of the undershirt after treatment by my machine. Fig. 9 is a vertical cross-section on the broken line 9—9 in Fig. 3.

One of the objects of my invention is to facilitate cutting the placket-openings or slits in the fronts of undershirts in the process of manufacture.

Another object is to facilitate trimming the top of the neck-openings of such undershirts.

Other objects will appear in connection with the following description.

In the manufacture of certain kinds of knitted undershirts, it is customary to reinforce the garment by attaching to the inner side of the back thereof at the neck-open-

ing a substantially semicircular patch. In the manufacture of garments of this kind from tubular knitted fabric, it has been found to be advantageous to close the top of the tube-section of fabric by a seam extending entirely across the same, and thereafter to cut from the front ply such substantially semicircular patch, which by means of machines now known and in use is simultaneously with the cutting operation stitched along its edge to the back ply. In Fig. 7 I have shown an undershirt which has been thus treated, 1, representing the cross line of stitching, 2, the patch cut from the front ply, and, 3, the stitching securing the edge of said patch to the back ply. The garment thus prepared requires to be further treated by trimming the top of the neck-opening to concave form, as shown at, 4, in Fig. 8, and by slitting the front ply as at, 7, to form the front placket-opening.

I have shown in the drawings a preferred form of my invention adapted for trimming to concave form the top of the neck-opening, and for slitting the front ply of the garment to form a placket-opening therein, both at a single operation.

Referring to the drawings, 8, is the bed or table of the machine mounted upon a frame 10. In a depression, 11, at the rear end of the table is mounted a stationary cutting-die, 12, with its top-surface in substantially the same plane as the top of the table. This stationary die is mounted upon a bracket, 13, which rests upon the bottom of said depression, 11, and is capable of adjustment transversely of the machine, said bracket being locked in adjusted position by means of a bolt, 14, passing through a slot, 15, in the base of the bracket, whereby such adjustment is permitted. A movable die-member, 16, is slidably mounted upon a pair of studs, 17, projecting upward from said bracket. Said movable die-member is adapted to coöperate with said fixed die-member to trim the back of an undergarment at the top of the neck-opening to the desired shape, as above explained.

A clamp, 18, corresponding substantially in form with the cutting-edges of the die-members is mounted to be carried with the movable die-member by means of a pair of slide-rods, 19, to the lower ends of which said clamp is fixed, said clamp being yield-

ingly held depressed by means of coil-springs, 20, embracing said slide-rods, whereby the clamp is adapted to engage the garment in advance of the cutting-operation of the die, and to hold the engaged portion of the garment securely clamped between the stationary die-member and said clamp throughout the cutting-operation. The movable die is adapted to be reciprocated at certain times by means of a pitman, 21, connected with an eccentric, 22, upon a cam-shaft, 23, to which shaft rotative movements are from time to time imparted, as will be presently explained. At each rotation of said cam-shaft a complete downward and upward movement is imparted to the movable die-member. The eccentric is shown of a sufficient width to permit the pitman, 21, to properly engage the same in the different positions resulting from adjustment of the bracket, 13, which carries the die-mechanism. The placing of the garment in proper relation to the die-members is facilitated by means of adjustable guides, 24, which may be of any known form.

For the purpose of cutting the front slit or placket-opening in the garment, I have shown the bed formed with a slot, 25, adapted to permit the upward projection therethrough of a rotary-cutter, 26, mounted in bearings beneath said bed upon the upper end of a lever, 27, fulcrumed at its lower end at, 28, upon an arm, 29, pivotally mounted upon the main drive-shaft 30, the upper end of said lever having pivotally mounted thereon an eye, 31, adapted to receive a swiveled slide longitudinally to and fro upon a rod, 32, fixedly mounted upon, and extending longitudinally beneath, the slotted portion of the bed, whereby when a to-and-fro movement is imparted to said lever the rotary cutter will be carried to and fro in said slot at substantially the same level throughout its movement. As a means for imparting to-and-fro movements to said lever, I have shown a cam, 33, fixed upon the cam-shaft, 23, which cam is adapted to be engaged by a follower-roller, 34, rotatively mounted upon a rocker-arm, 35, pivotally mounted upon the fixed shaft, 36, supported in bearings in the hangers, 37, depending from the bed of the machine, in which hangers the cam-shaft is rotatively mounted. A coil-spring, 38, tends to hold the follower-roller, 34, in engagement with said cam. The lower end of said rocker-arm, 35, is connected by link, 39, with an intermediate part of the cutter-carrying lever, 27. Each rotation of said cam-shaft thus induces a complete forward and return movement of said rotary cutter.

The rotary cutter is continuously rotated by means of a belt, 40, passing over a pulley, 41, on the cutter-shaft, and intermediate pulleys, 42, and over a driving-pulley, 43, on

the main drive-shaft. The main drive-shaft has fixed thereon a driving-pulley, 44, adapted to receive a driving-belt not shown.

I have provided means for intermittently operating the cam-shaft, 23, comprising a mutilated gear, 45, fixed upon the cam-shaft and adapted to be intermittently engaged by a pinion, 46, on the shaft, 47, having a pulley, 48, connected by belt, 49, with a pulley, 50, on the main drive-shaft. Rotation of the cam-shaft is automatically discontinued as soon as the mutilated portion of the gear, 45, is brought opposite the pinion 46. As a means for thereafter bringing the unmutilated portion of the gear into mesh with said pinion, I have shown a wheel, 52, fixed upon the cam-shaft and having a peripheral tooth, 53, adapted to be engaged by a pawl, 54, pivotally mounted on the end of a lever, 55, yieldingly supported by a coil-spring, 56, and adapted to be depressed by means of a foot-lever, 57, with which said pawl-carrying lever is connected by a link 58.

At the completion of each operation of the cam-shaft, the toothed wheel, 52, is left with its tooth in the path traversed by the pawl, 54, when the foot-lever, 57, is depressed, whereby a partial rotation is imparted to said cam-shaft by the foot-lever when desired, sufficient to bring a toothed portion of the mutilated gear, 45, opposite and into mesh with the pinion 46. To prevent accidental displacement of the cam-shaft between successive intended operations of the same, I have shown said shaft formed with a flattened surface on its periphery adapted to be engaged by a spring-actuated bolt, 59, which frictionally holds the cam-shaft from rotating.

As a means for insuring the accurate intermeshing of the teeth of the mutilated gear, 45, and of the pinion, 46, I have shown the pinion provided with a fixed tooth, 60, adapted to engage a pilot-tooth, 61, yieldingly pivotally mounted upon the mutilated gear, 45, in position to be thrown into the path of the fixed tooth, 60, on said pinion, when the cam-shaft is partly rotated by means of the foot-lever as above described. The fixed tooth, 60, and the yielding pilot-tooth, 61, are so located with respect to each other, and to the gear-teeth on the mutilated gear and pinion, that the mutilated gear is guided into such a position that its gear-teeth are caused to accurately intermesh with those of its operating pinion, when the pilot-tooth, 61, is held by its spring, 69, against the stop-pin 70. Any known form of intermittent connection between the main drive-shaft and said cam-shaft may be employed in place of that described.

Pivotally mounted upon the bed or table at the rear end of the slot, 25, is a channeled shield and work-holder, 62, adapted to overlie the slotted portion of the bed and to

hold the front ply of the garment upon the slotted portion of the bed during the passage of the rotary-cutter along said slot, and also to protect the back ply of the garment from engagement with the cutter.

In the operation of the machine, the garment is placed face down and drawn from front to rear along the bed or table, with the channeled shield inserted between the plies. The garment is thus drawn rearwardly until the neck-portion is properly placed with relation to the cutting-die, whereupon the foot-lever, 57, is depressed and the operation upon the garment is begun. As above explained, a single rotation of the cam-shaft serves to draw the movable die-member downward to trim the engaged portion of the garment, and causes a forward movement of the rapidly rotating cutter, and then returns the movable die-member to raised position and the cutter to its original position, whereupon the operation is automatically discontinued as above described. The channeled shield has a cam-arm, 63, projecting down through an aperture in the bed into the path of the upper end of the cutter-carrying lever, which by engagement with said cam-projection at the end of the return-movement of said lever serves to automatically lift the channeled shield slightly above the bed to facilitate the insertion of the next garment to be operated upon. As soon as the forward movement of the cutter-carrying lever is begun, said lever is moved out of engagement with said cam-projection, permitting the channeled shield to descend and rest upon the front ply of the garment which is to be slit.

I have shown separately adjustable guides, 64, at the front end of the bed, which may be used to assist the operator in properly placing the garment upon the bed. Each of said guides has a spring-actuated pin, 65, adapted to enter one of a series of holes in the edge of the bed. By having the die-carrying bracket, 13, adjustable transversely of the machine, I am able to locate the slit in the front ply of the garment in line with the center of the neck-opening or at either side of the same, as may be desired by the maker of the garment.

The intermittent gear-mechanism shown in the drawings, and above described, for operating the cam-shaft, is adapted for use in various machines where it is desired to cause one rotatory member to intermittently operate another. For certain purposes of the invention any known form of slit-cutting mechanism may be employed. I prefer to have the movement of the parts so timed that the clamp, 18, carried by the movable die-member will engage and clamp the work not only in advance of the cutting-operation of the die, but also in advance of the slit-

ting-operation, whereby said clamp is adapted to cooperate with the channeled shield to clamp and support the garment upon the bed during the slitting and trimming operation. The pinion, 46, and the mutilated gear, 45, are contained within a gear-case 71.

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

1. In a machine of the class described, and in combination, slit-cutting mechanism and a trimming-die located for simultaneous operation upon the same garment; means for simultaneously operating said die and slit-cutting mechanism, and means for supporting a garment stationary during the operation of said die and slit-cutting mechanism.

2. In a machine of the class described, and in combination, a movable slit-cutter; a trimming-die located near one end of the path of said slit-cutter; means for supporting a garment in position to be simultaneously acted upon by both said trimming-die and said slit-cutter; means for operating said die and said slit-cutter, and means for supporting a garment stationary during the operation of said die and slit-cutting mechanism.

3. In a machine of the class described, and in combination, a slotted bed; a trimming-die located near one end of the slot in said bed; a rotatory-cutter adapted to play in said slot; a carrier for said cutter movable beneath the bed along said slot; means for moving said carrier along said slot; means for rotating said carrier; and means connected with said carrier-moving means for operating said trimming-die.

4. In a machine of the class described, and in combination, a slotted bed; a channeled shield supported above the slot in said bed; a slit-cutter; means for moving the same to and fro along said channeled shield and said slot; a trimming-die located near one end of said slot; and means for operating said trimming-die.

5. In a machine of the class described, and in combination, a slotted bed; a channeled shield pivotally mounted above the slot in said bed; a slit-cutter; a carrier for said slit-cutter; means for imparting to said carrier a to-and-fro movement along the slotted portion of the bed; and a projection on said channeled shield located in the path of said carrier at the end of its return movement, whereby said shield is automatically raised by said carrier.

6. In a machine of the class described, and in combination, slit-cutting mechanism; a trimming-die; a support for said trimming-die adjustable transversely with relation to said slit-cutting mechanism; means for securing said support in adjusted position; and means for operating said slit-cutting mechanism and said die.

7. In a machine of the class described,

- and in combination, a slotted bed; a slit-cutter; means for moving the same to and fro along the slot in said bed; a bracket supported near one end of said slot and adjustable transversely with reference thereto; means for maintaining said bracket in adjusted position; and a trimming-die carried by said bracket.
8. In a machine of the class described, and in combination, a slit-cutter; a movable carrier therefor; means for moving said carrier; a trimming-die located near the path of said slit-cutter; a drive-shaft; and means for at will connecting said drive-shaft with said carrier-operating and die-operating mechanisms, and for automatically disconnecting said drive-shaft therefrom at the end of a complete operative movement thereof.
9. In a machine of the class described, and in combination, an intermittent gear-mechanism comprising a mutilated gear-wheel; a pinion adapted to mesh with the toothed portion of said gear-wheel; and a yielding pilot-tooth carried by said mutilated gear adapted to engage a tooth on said pinion, and guide said gear into position for its teeth to mesh with the teeth of said pinion.
10. In a machine of the class described, and in combination, slit-cutting mechanism and a trimming-die located for simultaneous operation upon the same garment, said trimming-die having one of its members movable relatively to the other; and a yielding

clamp for said garment carried by said movable die-member in advance of its cutting-edge.

11. In a machine of the class described, and in combination, a support for the work; a channeled shield coöperative with said support to clamp the work thereupon; a slit-cutter; and means for moving the slit-cutter along the channel in said shield.

12. In a machine for cutting a placket-opening in one ply only of a garment, and in combination, a support for the ply to be cut; a rotary cutter projecting through a slot in said support; a shield adapted to occupy a position between the plies of the garment and between the cutter and the other of said plies; and a gage for locating in proper lateral relation to the cutter the end of the garment.

13. In a machine for cutting a placket-opening in the front of a garment, and in combination, a support for the front ply of the garment; a cutter projecting upward through a slot in said support; a shield adapted to overhang said cutter between the same and the back of the garment; and a gage for locating the top end of the garment in proper lateral relation to the cutter.

In testimony whereof, I have hereunto set my hand this 24th day of December, 1909.

AUGUSTUS H. MORRISON.

Witnesses:

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W. G. WALDRON.