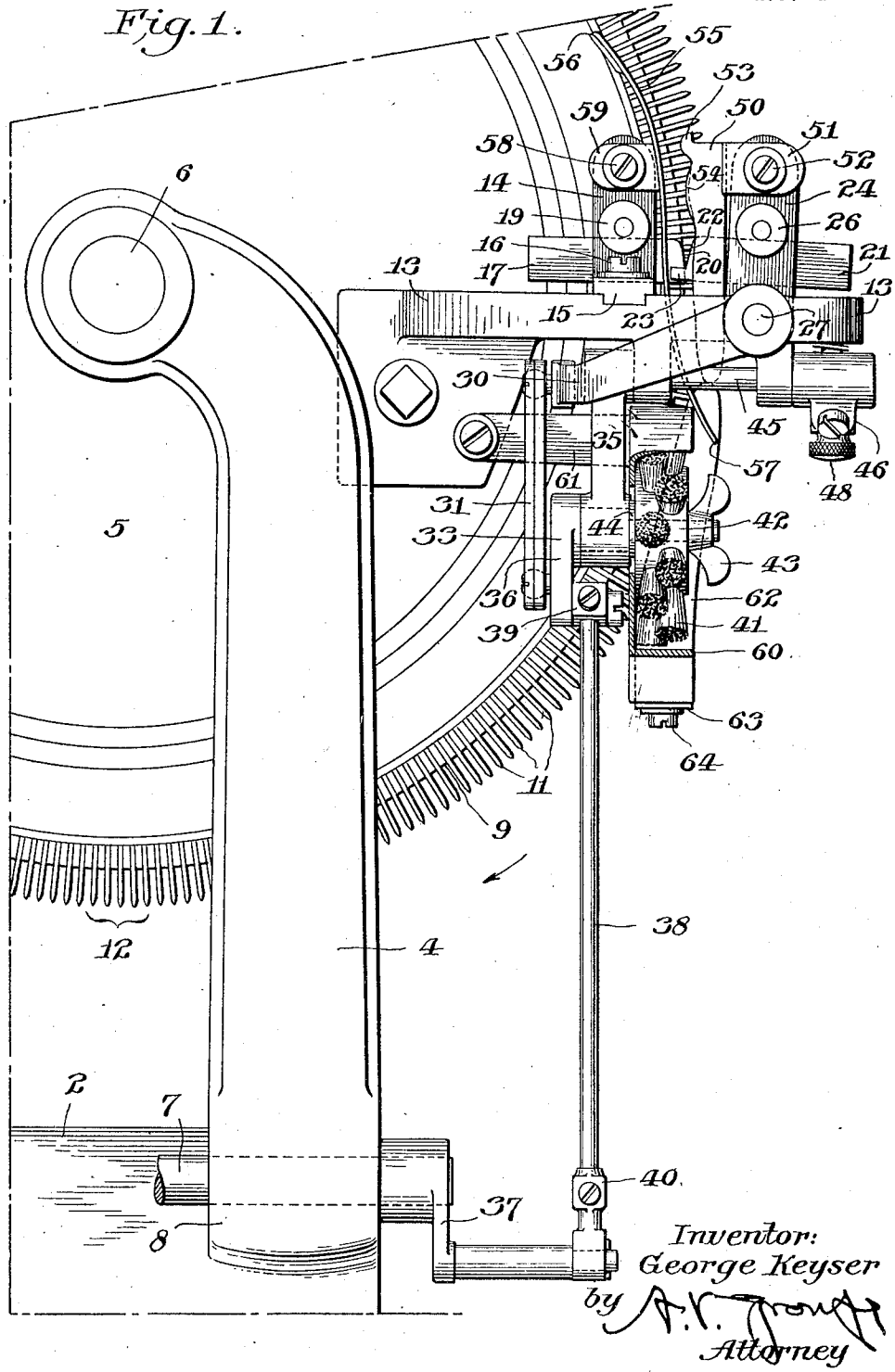
Oct. 19, 1926. 1,603,777

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TRIMMING MECHANISM FOR MACHINES FOR SEWING LOOPED FABRICS

Filed April 16, 1923 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

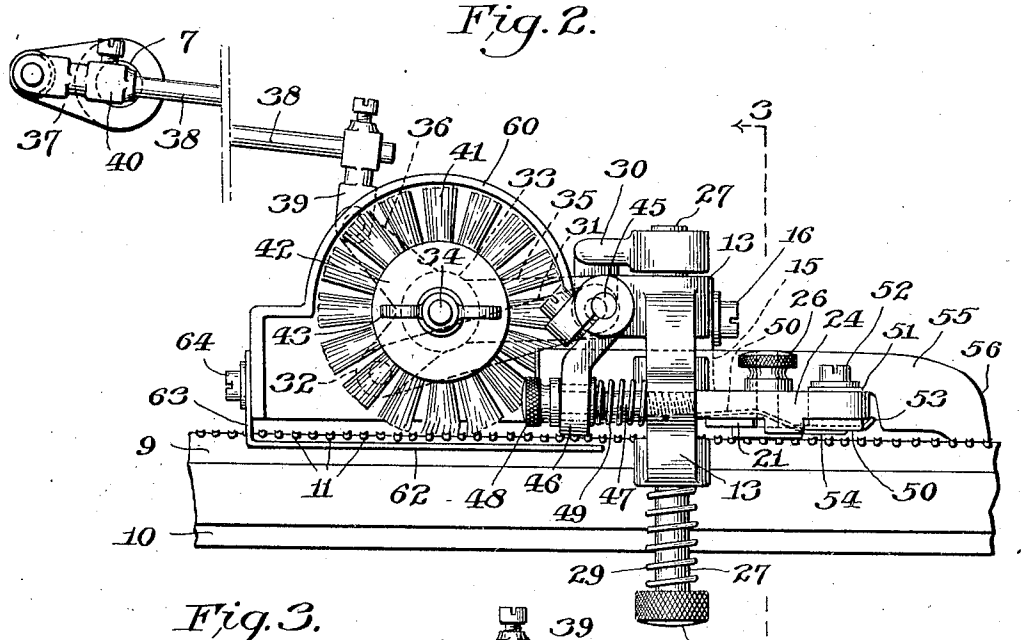
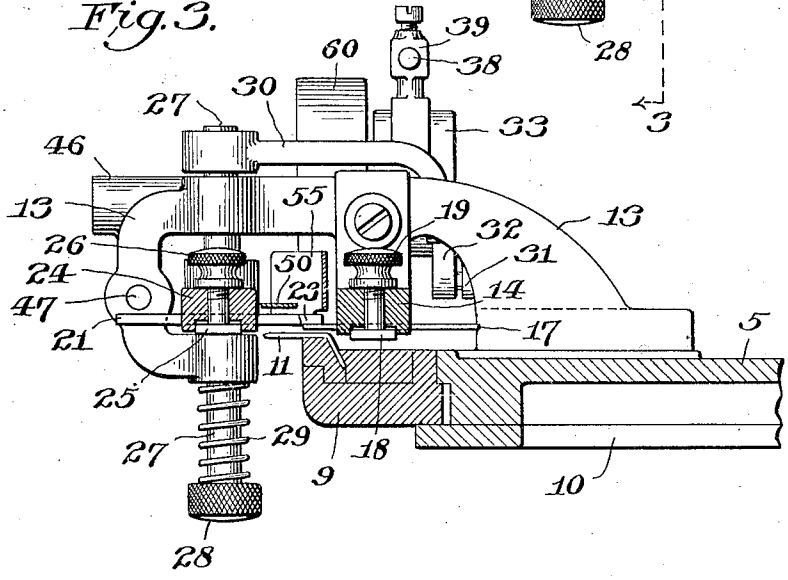


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TRIMMING MECHANISM FOR MACHINES FOR SEWING LOOPED FABRICS.

Application filed April 16, 1923. Serial No. 632,211.

This invention relates to improvements in trimming mechanism for machines for sewing looped fabrics and has for its object to provide a novel, simple and efficient construction and organization of parts, first, whereby a cutting device may be operated by a rotating driving shaft to produce a plurality of cutting operations for each revolution of the driving shaft; second, whereby the loose threads carried by the loops of thread on the impaling pins of the machine may be brushed therefrom after the trimming or cutting operation; third, whereby body portions of the fabrics accidentally impaled upon the impaling pine with the edge portions thereof desired to be trimmed may be shed or removed therefrom and thus prevented from reaching the cutting device; fourth, whereby the edge portions of the fabrics to be trimmed impaled upon the pins may be alined with the cutting device as they advanced thereto; and, fifth, whereby the strips of fabrics cut by the cutting device from the fabrics carried by the pins may be shed or moved outwardly and thereby be prevented from reaching the brushing device.

The invention consists of the elements and the combinations of them hereinafter described and claimed.

In the accompanying drawings, illustrating my invention,

Figure 1 is a top view of a portion of a machine for sewing looped fabrics provided with a trimming mechanism embodying my invention, part of the trimming mechanism being shown in section.

Figure 2 is a side view of the trimming mechanism and adjacent parts of the sewing machine.

Figure 3 is a vertical section of the parts shown in Fig. 2, on line 3—3 of Fig. 2.

Referring to the drawings, the main frame of the looper or machine for uniting looped fabrics comprises a bed plate 2 adapted to be secured upon a table or support, an overhanging arm 4 rising from and extending outwardly from the bed plate 2, and a disc like head 5 carried by a shaft 6 which is secured to and extends downwardly from the arm 4.

The main driving shaft 7 of the machine is journaled in a suitable bearing 8 formed by the arm 4, and the shaft 7 is adapted to be driven from a suitable source of power for the actuation of the mechanism of the looper and for the actuation of the trimming mechanism hereinafter described.

Surrounding the head 5 and rotatably fitted to the periphery thereof is a ring 9 supported by a ring plate 10 secured to the bottom of the head 5. The ring 9 is provided with a circular series of radially-projecting impaling pins 11 for receiving the loops of the edge portions of the fabrics to be united and supporting and advancing them to the sewing mechanism of the looper (not shown) which sews them together as they pass the region 12. The ring 9 and therewith the impaling pins 11 are rotated in the direction of the arrow in Fig. 1 to advance the impaled edges of the fabrics to and from the sewing mechanism by suitable devices actuated by the driving shaft 7.

The construction and operation of the parts thus far described are well known in this art and may be constructed as shown and described in detail in my patent application Serial No. 607,957, filed December 20, 1922.

I shall now describe the construction and operation of my improved mechanism for trimming the edges of the fabrics as they are supported and advanced by the impaling pins 11 to the sewing mechanism of the looper.

Secured upon the head 5, and forming, in effect, a part of the main frame of the looper, is a bracket 13 carrying a horizontal arm 14 provided with vertical limb 15. The limb 15 is fitted to slide vertically in a groove in the bracket 13 and it is secured thereto by a screw 16 which extends through a slot in the limb 15 and which is screwed into the bracket 13. The arm 14 carries a fixed cutting blade 17 which is seated in a transverse groove in the bottom of the arm 14 and held in place therein by a head 18 between which and the arm 14 the blade 17 is clamped. The head 18 is formed on the lower end of a clamping screw which extends upwardly through the arm 14 and has a clamping head 19 screwed on to the upper end thereof and adapted when screwed down upon the arm 14 to draw the screw upwardly and thereby clamp the blade 17. The blade 17 is ar-

ranged above the impaling pins 11 and it is provided with a cutting edge 20. The blade 17 may be adjusted vertically relatively to the pins 11 by loosening the screw 16 and raising or lowering the arm 14; and the blade 17 may be adjusted radially with respect to the pins 11 by loosening the head 19 and moving the blade 17 inwardly or outwardly.

Arranged above the blade 17 is a movable cutting blade 21 having a cutting edge 22 adjacent to the cutting edge 20 of the blade 17, and a projection 23 which extends inwardly over the blade 17. The blade 21 is seated in a transverse groove in the bottom of an arm 24 and held in place therein by a head 25 between which and the arm 24 the blade is clamped. The head 25 is formed on the lower end of the clamping screw which extends upwardly through the arm 24 and has a clamping head 26 screwed on to the upper end thereof and adapted when screwed down upon the arm 24 to draw the screw upwardly and thereby clamp the blade 21. The blade 21 may be adjusted radially with respect to the impaling pins 11 by loosening the head 26 and moving the blade 21 inwardly or outwardly.

The blade carrying arm 24 is secured to and projects from a vertical shaft 27 which is fitted to turn and slide vertically in bearings formed by the bracket 13. The shaft 27 extends below the bracket 13 and has a head 28 on the lower end thereof. Encircling the shaft 27 between the head 28 and bracket 13 is a spring 29 which exerts a downward pressure upon the shaft 27 and arm 24 carried thereby and presses the projection 23 of the blade 21 upon the blade 17. When the shaft 27 is rocked back and forth, as will be presently explained, the cutting edge 22 of the movable blade 21 sweeps over the cutting edge 20 of the fixed blade 17 in a manner to effect shearing actions and to cause the blades 17 and 21 to work like the blades of a pair of scissors to cut or shear the edge portions of fabrics passed between them. The engagement of the projection 23 of the blade 21 with the top of the blade 17, and the pressure of the spring 29 maintain the cutting edges 20 and 22 in proper shearing relation.

The shaft 27 extends above the bracket 13 and has an arm 30 secured to the upper end portion thereof and extending back over the impaling pins 11 and connected by a ball-and-socket joint to one end of a pitman 31. The other end of the pitman 31 is connected by a ball-and-socket joint to one arm 32 of a bell-crank lever 33 formed on or secured to a rockable shaft 34 which is mounted to turn in a bearing in an arm 35 which is supported in a manner hereinafter described. The other arm 36 of the lever 33 is connected to a crank arm 37 on the driving shaft 7 of the looper by a rod 38 and two end blocks or members 39 and 40 which are adjustably secured to the rod 38 and pivotally connected to the arms 36 and 37, respectively. The parts connecting the main driving shaft 7 of the looper and the vertical shaft 27 are so relatively arranged as to cause the shaft 27 to be rocked back and forth by the driving shaft 7 when it is rotated, for the actuation of the blade 21 of the cutting device, and to cause the pivotal connection between the lever arm 32 and pitman 31 to move substantially the same distance above and below the horizontal center of the shaft 34, each time the driving shaft 7 is turned a complete revolution, thus effecting a plurality or two forward and back movements of the cutting blade 21 during each revolution of the driving shaft 7.

The rockable shaft 34 extends out over the impaling pins 11 and carries a brush 41 comprising a cylindrical body 42 secured to the shaft 34 and two parallel rows of radially projecting bristle tufts extending around the same. The bristle tufts of the two rows thereof are arranged in staggered relation to each other, and the shaft 34 extends obliquely across the impaling pins 11 passing beneath the brush 41, for a purpose hereinafter described. The brush 41 is arranged in rear of the cutting blades 17 and 21 and the lower bristle tufts thereof are adapted to sweep back and forth over the trimmed edges of the fabrics carried by the pins 11 when the shaft 34 is rocked. The brush 41 is secured to the shaft 34 by having the cylindrical body 42 thereof clamped between a thumb nut 43 screwed on to the shaft 34 and a washer 44 resting against a shoulder portion of the shaft 34. By loosening the nut 43 and turning the brush 41 the same may be adjusted circularly upon the shaft 34 for any purpose and for bringing fresh bristle tufts thereof into play upon the impaling pins 11 after active bristle tufts have become worn.

The arm 35 carrying the shaft 34 which carries the brush 41 projects fixedly from a shaft 45 fitted to turn in bearings on the bracket 13. The outer end portion of the shaft 45 has an arm 46 secured thereon having a slot in the free end portion thereof through which passes a screw 47. The screw 47 is screwed into the bracket 13 and is provided with a head 48 fixed thereon and engaging the arm 46. The arm 46 is held against the head 48 by a spring 49 which encircles the screw 47 between the bracket 13 and a collar on the screw 47 and engaging the arm 46. It will now be understood that when the screw head 48 is turned forward and back the shaft 45 will be rocked, and that when the shaft 45 is rocked, the arm 35 and brush 41 carried thereby will be raised and lowered. The purpose of providing the means to raise or

lower the brush 41 is to adjust the same into proper working relation to the impaling pins 11.

Extending longitudinally between the arms 14 and 24 carrying the blades 17 and 21 of the cutting device is a plate 50 having an arm 51 extending over the movable blade carrying arm 24 and adjustably secured thereto by a screw 52. The plate 50 is arranged in close proximity to the impaling pins 11 and the end thereof in advance of the cutting blades 17 and 21 is provided with a projection 53 which extends forwardly therefrom or in the direction of the approach of the pins 11 to the blades 17 and 21 and which is turned upwardly from the body of the plate 50 to form a shedding device to shed accidentally impaled portions of fabrics from the pins 11, as will presently appear.

The body of the plate 50, between the projection 53 and blades 17 and 21, is provided with an inwardly extending portion 54 having a downwardly turned edge portion extending close to the path of the impaling pins 11 for beating up the impaled edges of the fabrics carried by the pins into close relationship with the ring 9 and into alinement with the space between the cutting edges 20 and 22 to enter the same.

The rearwardly extending end portion of the plate 50 is located rearwardly of the blades 17 and 21 and is moved back and forth over the pins 11 by the arm 24 and forms a shedding device to receive and shed from the pins 11 the strips of fabrics cut by the blades 17 and 21 from the fabrics carried by the pins.

The arm 14 fixed to the bracket 13 supports a guard plate 55 which extends from its forward end 56 in advance of the shedding projection 53 inwardly of the periphery of the pin carrying ring 9 until it passes the cutting blades 17 and 21. The guard plate 55 is gradually curved outwardly to a point beyond the impaling pins 11 from the blades 17 and 21 to the end 57 of the plate 55. The purpose of the guard plate 55 is to prevent the edge portions of the fabrics carried by and extending above the pins 11 from falling inwardly over the ring 9 and to direct the strips of fabrics cut from the frabrics carried by the pins 11 outwardly beyond the free ends of the pins. The guard plate 55 is secured to the arm 14 by means of a screw 58 which extends through an arm 59 formed on and projecting from the plate 55.

The brush 41 is housed within a projecting guard 60 supported by an arm 61 which is secured to and extends outwardly from the bracket 13. The guard 60 supports a guard plate 62 which is arranged beneath the path of the impaling pins 11 and which extends outwardly from the free ends of the pins 11, as clearly shown in Fig. 1, and prevents any parts of the severed edge portions of the fabrics from being carried toward the sewing mechanism of the looper by the points of the pins. The plate 62 has an upturned end portion 63 which is secured to the guard 60 by means of a screw 64.

The operation of the trimming mechanism is as follows:—

Power is applied to the shaft 7 to actuate the sewing mechanism of the looper and to turn the ring 9 carrying the impaling pins 11 in the direction of the arrow in Fig. 1, in the usual manner; and, as the driving shaft 7 is rotated, the brush 41 and cutting blade 21 are actuated as previously explained.

The looped fabrics to be united are impaled by hand upon the pins 11 forwardly of the plate 50 with the pins 11 extending through individual loops of the fabrics and with edge portions of the fabrics to be trimmed extending above the pins 11; and when herein I speak of forwardly or forward I mean in the direction opposite to that indicated by the arrow in Fig. 1.

As the impaled fabrics are moved by the pins 11 toward the sewing region 12, they pass between the periphery of the ring 9 and the plate 50 and between the cutting edges 20 and 22 of the blades 17 and 21, when the blade 21 is in the position shown in Fig. 1; and, as the cutting edge 22 is moved rapidly across the cutting edge 20, the edge portions of the fabrics passing above the cutting edges 20 and 22 are cut or severed thereby from the body portions of the fabrics directly above the loops of the fabrics through which the pins 11 carrying them extend, leaving U-shaped portions of cut loops within the loops upon the pins 11 and within the usual needle grooves in the tops of the pins 11.

As the impaled fabrics pass the outwardly and inwardly moving shedding projecting 53 it engages and sheds from the free ends of the pins any parts of the bodies of the fabrics which are accidentally impaled upon the pins outwardly of the edge portions of fabrics purposely impaled for trimming purposes and prevents the accidentally impaled portions from reaching the cutting edges 20 and 22.

As the impaled edge portions of the fabrics pass the downwardly turned edge portion 54 of the plate 50 the edge portion 54 beats the edge portions of the fabrics up toward the ring 9 and into alinement with the blades 17 and 21 or the space between the cutting edges 20 and 22 to ensure their entrance into the same to be cut or severed by the blades.

As the edge portions of the impaled fabrics extending above the cutting edges of the blades 20 and 22 pass the same they are

cut or severed from the body portions of the fabrics and they are directed outwardly beyond the free ends of the pins 11 by the guard 55 and shedding device 50 and outer edge of the guard 62, the several edge portions hanging down against the outer edges of the plates 50 and 62 and being thereby prevented from being engaged by the free ends of the pins 11, and finally dropping from the machine, while the trimmed edge portions of the fabrics are carried on to the sewing region 12 by the pins 11.

As the trimmed edge portions of the fabrics carried by the pins 11 pass beneath the brush 41, the forward and back movements of the lower bristle tufts thereof brush the waste, including the U-shaped portions of cut loops from the pins 11 and from the fabric loops impaled thereon, leaving the impaled loops clean and free to be united as they pass the sewing region 12.

I have discovered that the arrangement of the shaft 34 or axis of oscillation of the brush 41 to extend obliquely across the impaling pins 11 passing beneath the brush causes the bottom or effective portion of the brush to sweep back and forth obliquely across the impaling pins, and that this, assisted by the staggered relation of the bristle tufts of the brush 41 works the fabric loops impaled upon the pins in and out radially thereon and effectually works out from within the impaled loops the said U-shaped portions of cut loops which remain therein following the cutting operation, and which are difficult to dislodge; and I have also discovered that the timing of the operation of the cutting blade 21 to produce a plurality of in and out motions thereof for each forward and back motion of the active bristle tufts of the brush 41 results in a clean and sharp cutting operation followed by a thorough removal of all waste parts of the cut fabrics from the impaled fabric loops, so that they will be presented to the sewing mechanism free from all lint and waste.

I claim:—

1. The combination of a supporting frame, a rotatable ring carrying impaling pins, a fixed cutting blade, a movable cutting blade adapted when moved inwardly and outwardly to co-operate with the fixed blade to trim the edges of fabrics carried by the pins, a rotatable driving shaft, and means operated by the shaft when rotated to move the movable blade inwardly and outwardly a plurality of times during each revolution of the shaft.

2. The combination of a supporting frame, a rotatable ring carrying impaling pins, a rotatable driving shaft, a rockable shaft having an arm projecting therefrom, means operated by the driving shaft to move the rockable shaft forward and back during each revolution of the driving shaft, a second rockable shaft having an arm projecting therefrom, a pitman connecting said arms and passing the center of the first named rockable shaft during each inward and each outward movement thereof to effect two inward and outward movements of the second named rockable shaft for each forward and back movement of the first named rockable shaft, and a cutting device operated by the second named rockable shaft to trim the edges of fabrics carried by the impaling pins.

3. The combination of a supporting frame, a rotatable ring carrying impaling pins, a rotatable driving shaft, a rockable shaft having an arm projecting therefrom, means operated by the driving shaft to move the rockable shaft forward and back during each revolution of the driving shaft, a second rockable shaft having an arm projecting therefrom, a pitman connecting said arms and passing the center of the first named rockable shaft during each inward and each outward movement thereof to effect two inward and outward movements of the second named rockable shaft for each forward and back movement of the first named rockable shaft, a cutting device operated by the second named rockable shaft to trim the edges of fabrics carried by the impaling pins, and a brush associated with the first named rockable shaft and adapted to be operated thereby to brush the trimmed edges of the fabrics carried by said pins

4. The combination of a supporting frame, a rotatable ring carrying impaling pins, a rotatable driving shaft, a horizontally arranged, rockable shaft having an arm extending therefrom, means operated by the driving shaft to move the rockable shaft forward and back during each revolution of the driving shaft, a vertically arranged, rockable shaft having an arm extending therefrom, a pitman connecting said arms and passing the center of the first named rockable shaft during each inward and each outward movement thereof to effect two inward and outward movements of the second named rockable shaft for each forward and back movement of the first named rockable shaft, and a cutting device for trimming the edges of fabrics carried by the impaling pins and comprising a fixed blade supported by the frame and a movable blade carried by the vertically arranged shaft.

5. The combination of a supporting frame, a rotatable ring carrying impaling pins, a rotatable driving shaft, a horizontally arranged, rockable shaft having an arm extending therefrom, means operated by the driving shaft to move the rockable shaft forward and back during each revolution of the driving shaft, a vertically arranged,

rockable shaft having an arm extending therefrom, a pitman connecting said arms and passing the center of the first named rockable shaft during each inward and each outward movement thereof to effect two inward and outward movements of the second named rockable shaft for each forward and back movement of the first named rockable shaft, a cutting device for trimming the edges of fabrics carried by the impaling pins and comprising a fixed blade supported by the frame and a movable blade carried by the vertically arranged shaft, and a brush associated with the horizontally arranged, rockable shaft and adapted to be operated thereby to brush the trimmed edges of the fabrics carried by the impaling pins.

6. The combination of a supporting frame, a rotatable ring carrying impaling pins, a rotatable driving shaft, a supporting member pivotally connected to the frame, a horizontally arranged, rockable shaft carried by the member and having an arm extending therefrom, a brush carried by the rockable shaft and adapted to be operated thereby to brush the trimmed edges of fabrics carried by the impaling pins, means operable to adjust said member on its pivot to change the relation of the brush and the pins, means operated by the driving shaft to move the rockable shaft forward and back during each revolution of the driving shaft, a second rockable shaft having an arm projecting therefrom, a pitman connecting said arms and passing the center of the first named rockable shaft during each inward and each outward movement thereof to effect two inward and outward movements of the second named rockable shaft for each forward and back movement of the first named rockable shaft, and a cutting device operated by the second named rockable shaft to trim the edges of fabrics carried by the impaling pins.

7. The combination of a supporting frame, a rotatable ring carrying radially extending impaling pins, a brush mounted to oscillate above the pins on an axis which extends obliquely across the impaling pins passing beneath the brush, and means operable to oscillate the brush.

8. The combination of a supporting frame, a rotatable ring carrying impaling pins, a cutting device to trim the edges of fabrics carried by the impaling pins, a shedding device movable in advance of the cutting devices to shed from the pins body portions of fabrics accidentally impaled upon the pins with the edge portions thereof desired to be trimmed, and means operable to actuate the cutting device and the shedding device.

9. The combination of a supporting frame, a rotatable ring carrying impaling pins, a fixed cutting blade, a movable arm, a cutting blade carried by said arm and adapted to co-operate with the fixed blade to trim the edges of fabrics carried by the pins, a shedding device carried by said arm in advance of the blades to shed from the pins body portions of fabrics accidentally impaled upon the pins with the edge portions thereof desired to be trimmed, and means operable to actuate the arm and thereby actuate the blade and shedding device carried thereby.

10. The combination of a supporting frame, a rotatable ring carrying impaling pins, a fixed cutting blade, a movable arm, a cutting blade carried by said arm and adapted to co-operate with the fixed blade to trim the edges of fabrics carried by the pins, a plate carried by said arm above the impaling pins and having a projection forming a shedding device in advance of and spaced from the blades to shed from the pins portions of the fabrics accidentally impaled thereon, said plate having a downwardly turned edge portion between the shedding device and the blades forming a beater for beating up the impaled edges of the fabrics into alinement with the cutting blades, and means operable to actuate the arm and the plate and blade carried thereby.

11. The combination of a supporting frame, a rotatable ring carrying impaling pins, a fixed cutting blade, a movable arm, a cutting blade carried by said arm and adapted to co-operate with the fixed blade to trim the edges of fabrics carried by the pins, a plate carried by said arm above the impaling pins and having a projection forming a shedding device in advance of and spaced from the blades to shed from the pins portions of the fabrics accidentally impaled thereon, said plate having a downwardly turned edge portion between the shedding device and the blades forming a beater for beating up the impaled edges of the fabrics into alinement with the cutting blades, and said plate having a part extending over the impaling pins rearwardly from the blades to shed from the pins the strips of fabrics cut by the blades from the fabrics carried by the pins, and means operable to actuate the arm of the plate and blade carried thereby.

In testimony whereof I affix my signature hereto.

GEORGE KEYSER.