July 25, 1933. H. A. MEYER ET AL 1,919,899

ROTARY CLOTH CUTTING AND SEVERING MACHINE

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Fig. 1

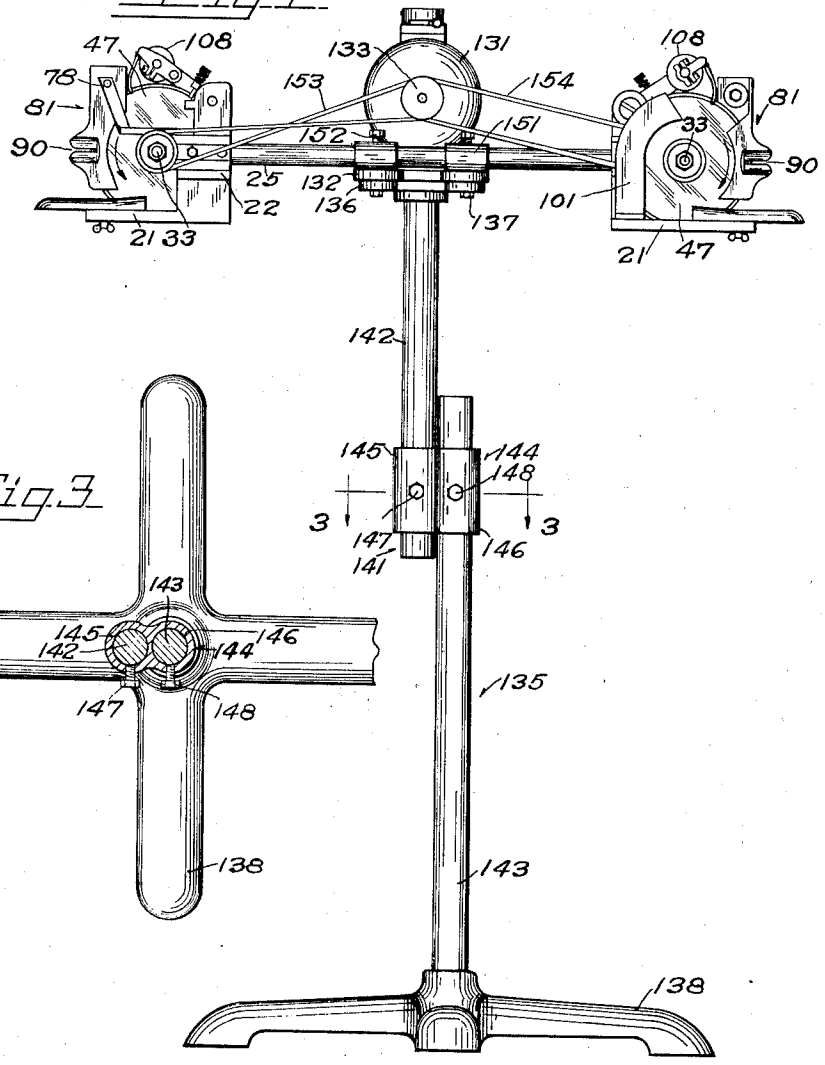
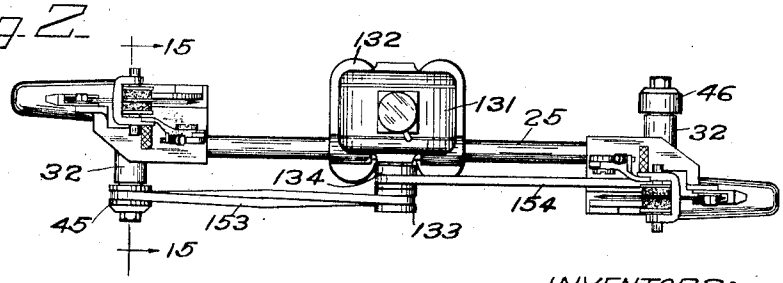


Fig. 3

Fig. 2



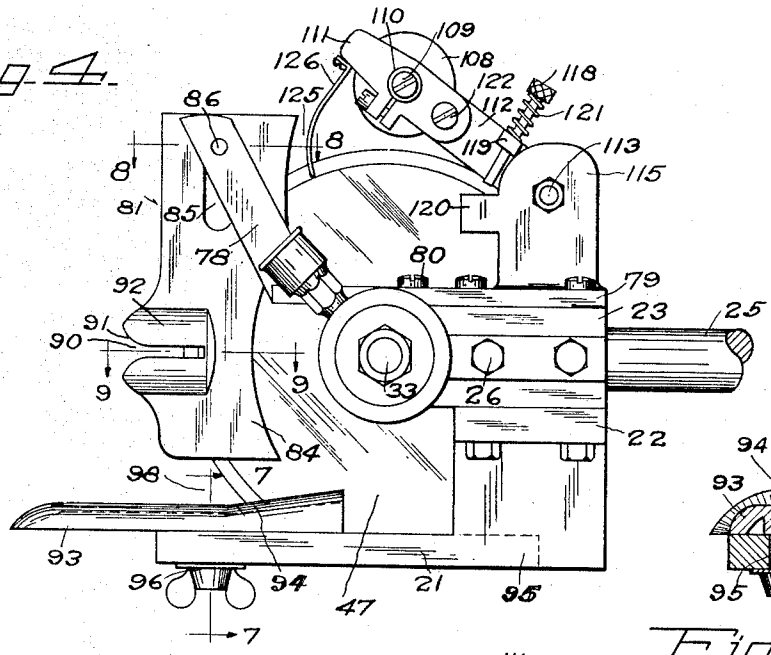
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ROTARY CLOTH CUTTING AND SEVERING MACHINE

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Fig. 4.



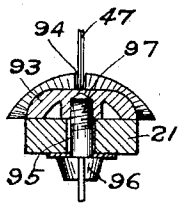


Fig. 7.

Fig. 8.

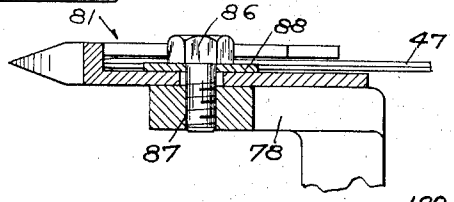


Fig. 6.

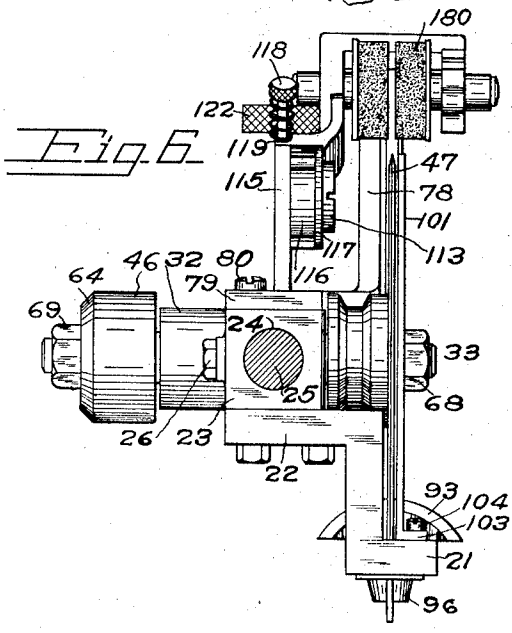


Fig. 5.

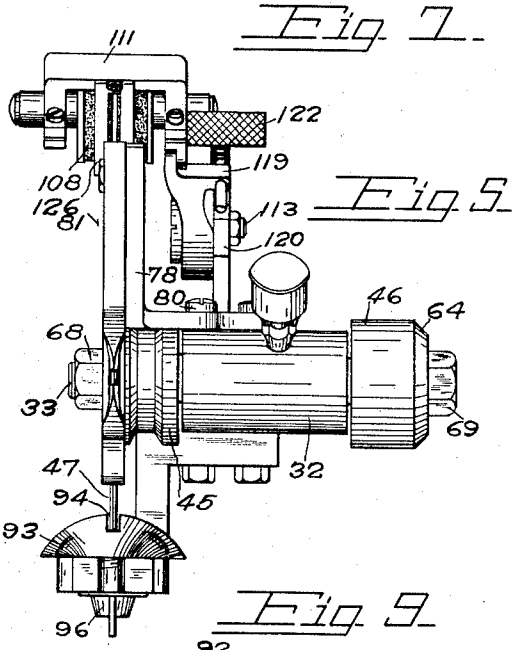
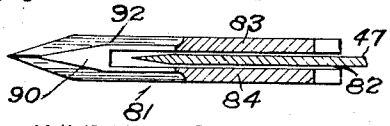


Fig. 9.



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ROTARY CLOTH CUTTING AND SEVERING MACHINE

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Fig. 12.

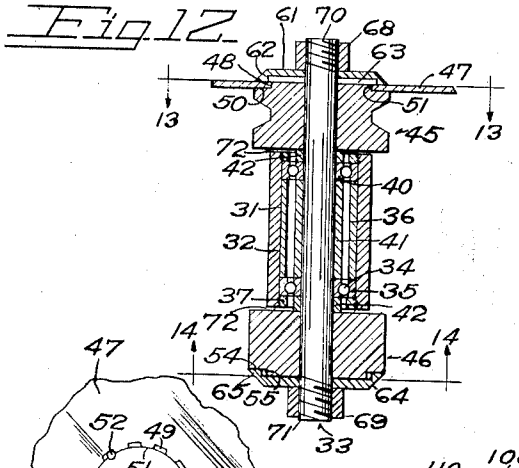


Fig. 16.

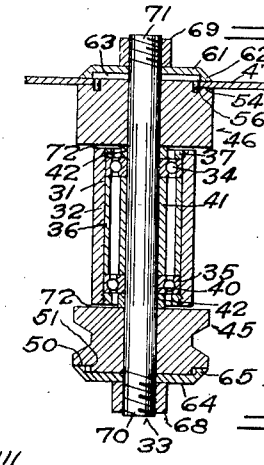
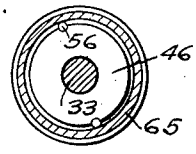


Fig. 14.



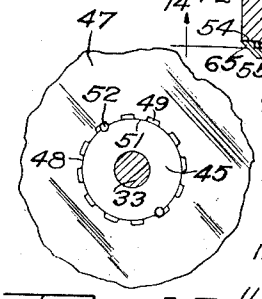


Fig. 13.

Fig. 10.

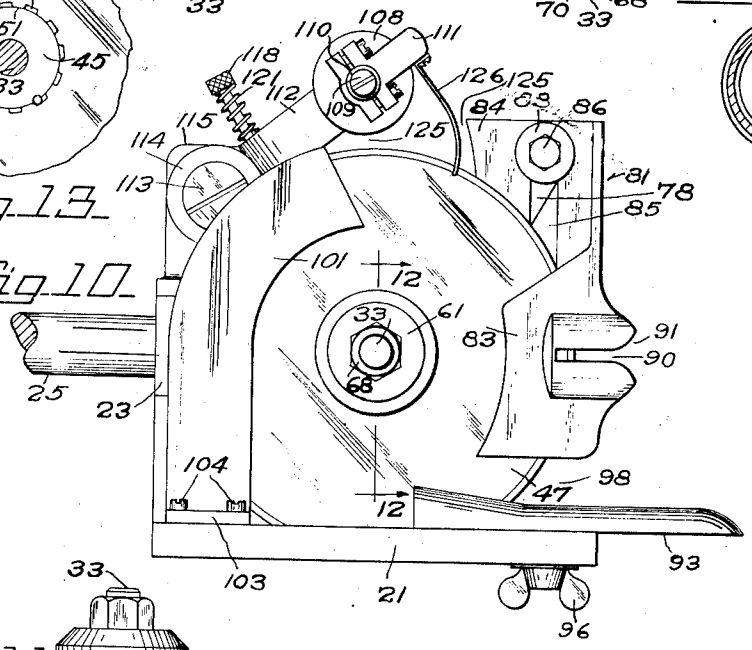
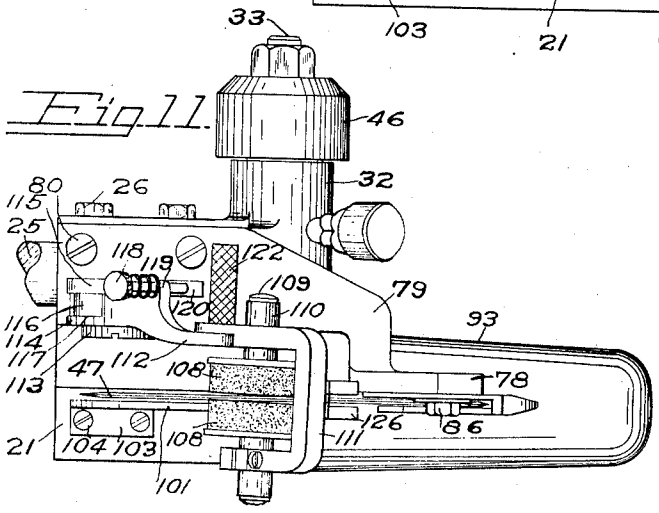


Fig. 11.



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Patented July 25, 1933 1,919,899

UNITED STATES PATENT OFFICE

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ROTARY CLOTH CUTTING AND SEVERING MACHINE

Application filed November 3, 1930. Serial No. 493,112.

Our invention relates to rotary cloth cutting and severing machines employable for instance in cutting cloth and rags into pieces suitable for wiping cloths, and for removing buttons, buckles, hooks and eyes, and other hard articles from the cloth and rags, for instance discarded clothing, so as to provide wiping cloths devoid of foreign articles which would have a tendency to scratch or mar the surface being wiped.

It is the object of our invention to provide novel means whereby a plurality of such machines may be mutually supported and driven; further, to provide novel means whereby the parts of the cloth cutting and severing machine may be interchanged for various positional relations with the driving means; and, further, to provide novel means and arrangements of parts whereby a compact, simple and economical machine for the purpose is obtained.

The invention will be further readily understood from the following description and claims, and from the drawings, in which latter:

Fig. 1 is a side elevation of our improved device.

Fig. 2 is a plan view of the same.

Fig. 3 is a cross-section of the same, taken on the line 3—3 of Fig. 1.

Fig. 4 is a side elevation of one of the cutter units.

Fig. 5 is a front elevation of the same.

Fig. 6 is a rear elevation of the same.

Figs. 7, 8 and 9 are cross-sectional detail views of the same, respectively taken on the section lines 7—7, 8—8 and 9—9 of Fig. 4.

Fig. 10 is a side elevation of one of the cutter units.

Fig. 11 is a plan view of the same.

Fig. 12 is an axial sectional detail view of the same, taken on the line 12—12 of Fig. 10, and partly broken away.

Fig. 13 is a cross-section of the same, taken in the plane of the line 13—13 of Fig. 12.

Fig. 14 is a cross-section of the same, taken in the plane of the line 14—14 of Fig. 12.

Fig. 15 is an axial section similar to Fig. 12, taken on the line 15—15 of Fig. 2, showing the rearrangement of the parts for the other cutter unit.

A base 21 is provided with a shelf 22 on which there is a bearing-piece 23. This bearing-piece has a bore 24 in which a supporting rod 25 is received. The bearing-piece is adjustable on the rod, and is fixed in adjusted positions by bolts 26 threaded in the wall of the bore and clamped against the rod. (See Figs. 4 and 6).

The bearing-piece has a bore 31 which is at right angles to the bore 24, this part of the bearing-piece being formed as a bearing-shell 32. A spindle 33 is journaled in the bearing-shell in ball-bearings 34. The outer raceways 35 of the ball-bearings are spaced apart by a spacing collar 36 located in the bearing-shell between the outer raceways, the outer raceways and outer spacing collar being clamped together in the shell by means of threaded collars 37, having threaded connections in the respective ends of the shell. (See Figs. 5, 6 and 12).

The inner raceways 40 of the ball-bearings are spaced apart by a spacing collar 41, spacing collars 42 being located about the spindle at the respective outer ends of the inner raceways. (See Fig 12).

A pulley 45 and a filler-block 46 are received about the spindle at the respective ends of the bearing-shell.

A rotary cutter-blade 47 is located centrally about the spindle. It is provided with a central hole 48, the wall of which is provided with serrations 49. (Fig. 13). The pulley is provided with a rabbet 50 forming an annular shoulder 51, at the outer periphery of which there are outwardly extending projections 52, exemplified as formed by pins driven into the pulley. The cutter-blade is received in the rabbet with the inner ends of the inwardly projecting teeth of the serrations resting on the annular shoulder 51, and the projections 52 received in spaces between said teeth, for centrally locating the cutter-blade on the pulley and forming driving connection between the pulley and the cutter-blade.

The filler-block 46 is provided with a similar rabbet 54, forming an annular shoulder

55 provided with projections 56. (Fig. 14). The cutter-blade may be selectively received in the rabbet 54, the inner ends of the teeth of the serrations resting on the annular shoulder 55 for centrally locating the cutter-blade on the filler-block with the projections 56 received in spaces between the teeth, for forming driving connection between the filler-block and the cutter-blade. This is the relation of the parts shown in Fig. 15.

The cutter-blade can therefore be secured either to the pulley 45 or the filler-block 46. (Compare Figs. 12 and 15).

A clamping plate 61 is received about the spindle and is provided with an endwise extending annular flange 62 received against the inner portion of the cutter-blade, and forming a space 63 between the clamping plate and the part to which the cutter-blade is clamped.

A clamping-plate 64 is received about the other end of the spindle and is provided with an endwise extending annular flange 65. This flange is protectingly received in the rabbet 54 of the filler-block, or in the rabbet 50 of the pulley 45.

Nuts 68, 69, are threaded over the threaded ends 70, 71, of the spindle toward each other for clamping the inner raceways 40, the inner spacing collar 41, the end spacing collars 42, the pulley 45, the filler-block 46, the cutter-blade 47, and the clamping plates 61, 64, together on the spindle, for rotating in the balls of the ball-bearings. There is sufficient clearance, as shown by the spaces 72, between the respective ends of the bearing-shell and the pulley and filler-block, to permit such rotation.

The pulley 45 and the filler-block 46 are arranged to be interchangeably positioned on the spindle, with the projections 52, 56, respectively thereon extending outwardly. The cutter-blade is received about the projections on the pulley or on the filler-block to which it is secured, at one end of the bearing-shell, the projections on the other of said parts extending endwise outwardly at the other end of the bearing-shell and having the annular flange 65 of the clamping plate 64 received thereover for forming a smooth outer face for the rotating assembly. (Figs. 12, 14 and 15).

The parts are made interchangeable for reasons to be presently described.

An arm 78 extends upwardly and forwardly from a plate 79 fixed to the bearing-piece by screws 80. This arm extends alongside the cutter-blade. (See Figs. 4, 5 and 6).

A guard 81 is secured to the arm and is provided with a groove 82 in which the outer periphery of the cutter-blade is received, the guard having side plates 83, 84, at the respective sides of the cutter-blade. (Fig. 9). The plate 84 is extended beyond the cutter blade and is provided with a slot 85. through which a clamp-bolt 86 extends into a threaded bearing 87 at the outer end of the arm, a washer 88 being received between the head of the bolt and the plate. (Figs. 4, 8 and 10). The slot extends lengthwise of the plate, for permitting adjustment of the guard up and down with relation to the axis of the rotary cutter-blade. The guard is also adjustable in and out toward and from the axis of the rotary cutter-blade, which adjustment is exemplified as a pivotwise adjustment on the bolt 86.

The adjustment permits the guard to be adjusted toward the axis of the cutter-blade as the cutter-blade is worn or becomes smaller in diameter during use.

The guard is provided with a notch 90 intermediate of its ends. This notch extends inwardly past the outer periphery of the cutter-blade. It is provided with a flaring mouth 91 and the walls 83, 84, at said notch may be tapered, as at 92, for readily directing the parts to be cut into the notch. The notch extends through both walls of the guard. (Figs. 4 and 9).

A finger 93 is on the base 21 and is provided with a slot 94 into which the rotary cutter-blade extends. The slot 94 is in the same plane with a slot 95 in the base 21, the outer periphery of the rotary cutter-blade rotating in both said slots. (Figs. 4 and 7). The finger is adjustable toward and from the cutter-blade, as by having a clamp-bolt 96 located in the slot 95 and having threaded connection 97 with the finger for clamping the finger in adjusted positions to the base. The finger may be adjusted in or out toward or from the rotary cutter-blade for locating the outer end of the slot 94, a desired distance from the outer periphery of the cutter-blade and for accommodating the position of the finger with relation to the diameter of the rotary cutter-blade.

The lower end of the guard is spaced from the finger by a feeding-space 98, (Figs. 4 and 10), and the height of this feeding-space is adjusted by up and down adjustment of the guard 81.

A rear guard 101 is provided for the rotary cutter-blade. It is shown as a plate about the outer periphery of the cutter-blade. It has a flange 103 through which clamp-bolts 104 are received into threaded apertures in the base for clamping the rear guard to the base. (Figs. 6, 10 and 11).

Grinding wheels 108 are mounted on axles 109, journaled in bearings 110, on a yoke 111 of an arm 112, pivoted on a pivot-bolt 113 received through a flange 114 on said arm and a flange 115 extending upwardly from the plate 79. (Figs. 4, 6, 10 and 11). A spring 116 is located in a recess 117 between said flanges for normally raising the arm 112 and normally raising the grinding

wheels away from the cutter-blade. An adjustable stop-screw 118 is threaded in a lug 119 on said arm and is arranged to contact a lug 120 on the flange 115. The stop-screw is held in adjusted positions by a spring 121. The arm 112 is provided with a handle 122 for depressing said arm and moving the grinding wheels against the peripheral cutting edge of the cutter-blade when it is desired to sharpen the latter. The movement of the grinding wheels toward the cutter-blade is limited by said stop.

The grinding wheels are arranged to move in a grinding space 125 between the upper ends of the guards 81 and 101. Protecting fingers 126 extend from the yoke 111 at the respective sides of the cutter-blade.

Our invention contemplates the use of a plurality of the cutter units on a cutter-stand and presenting said cutter units in opposite directions, so that they may be simultaneously used from opposite sides of the stand. It further contemplates the rotation of the various cutter-blades from an intermediate driving agency. (Figs. 1, 2 and 3.) The driving agency is exemplified as an electric motor 131, mounted on a support 132 to which the motor is adjustably secured. The rotor of the electric motor is provided with pulleys 133, 134, located side by side. The support is mounted on a floor-stand 135 provided at its upper end with a seat 136 to which the support is secured by bolts 137.

The floor-stand comprises a base 138, which is preferably heavy and of large diameter to rigidly support the parts mounted thereon. It is shown with wide spread feet of which there may be for instance four spread equal distances from the middle of the base. The floor-stand is provided with an adjustable post 141, shown formed in two sections 142, 143, united by a clamp bearing-piece 144 having bearings 145, 146, therein for the respective sections of the post, the sections of the post being clamped in the bearing-piece by set-bolts 147, 148. The upper post-section extends downwardly from the seat 136 and is fixed to said seat, and the lower post section extends upwardly from the base 138 and is fixed to said base.

The supporting rod 25 is located in bearings 151 in the support 132, and is fixed in said bearings by set-bolts 152. This rod extends to both sides of the support and forms branches for said support. The outer ends of said rod are respectively received in the bores 24 in the bearing-pieces 23 of the respective cutter units at the respective ends of said bar.

These cutter units have their parts interchangeably arranged so that they may be located at the outer ends of either of the branches of said support and be driven by the intermediate motor. Belts 153, 154, are received about the respective motor pulleys and about the pulleys 45 of the respective cutter units. The pulleys on the motor shaft are located side by side. In order to locate the pulleys of the respective cutter units in line with the respective pulleys on the motor shaft, the pulley 45 on one of the cutter units is located at one end of the bearing shell 32. The other cutter unit is located in opposite arrangement and its pulley 45 is located at the other end of said bearing shell. This brings the pulleys of the respective cutter units in line with the respective pulleys on the motor shaft, so that the respective belts may be received thereover and run true therewith.

The pulleys are shown as grooved pulleys, the grooves thereof tapering inwardly, and the belts are preferably rubber belts of triangular cross-section. One of the belts may have the stretches of its loop crossed so as to rotate both cutter-blades with the outer portions of their outer peripheries moving downwardly.

In operation an operator may stand at each side of the stand in front of the respective cutter units. The cloth or rags which it is intended to cut into wiping cloths are fed by the operators upon the fingers 93 through the feeding spaces 98. In case an operator finds any buttons, hooks, buckles or any other hard articles on the material which he is cutting, he feeds the connecting portion between such articles and the cloth or rag into the feeding notch 90, the button or other article being at one side of the guard 81 and the body of the cloth or rag at the other side of said guard, the cloth or rag being pushed rearwardly so that the button or other article is severed from the cloth or rag. The button or other article may be at either side of the guard.

Suitable safety guards, not shown, are provided for the belts and pulleys.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is:

1. In a device of the character described, the combination of an intermediate electric motor comprising a motor shaft, oppositely extending supporting branches extending oppositely from the motor position and substantially perpendicular to said motor shaft, a rag cutter at the outer end of each of said supporting branches spaced from said motor position and respectively comprising driven shafts parallel with said motor shaft and a rotary cutter and a pulley on each of said driven shafts, pulleys located in endwise relation on said motor shaft, said pulleys on said driven shafts located in spaced apart positions in endwise relation to each other and respectively in the transverse planes of

the pulleys on said motor shaft, oppositely extending flexible driving loops between said pulleys, and means for adjusting to the distance between said rag cutters and said motor for stretching said driving loops.

2. In a device of the character described, the combination of an arm projecting into space, a base fixed to said projecting arm, a bearing supported thereby, a spindle journaled in said bearing, a rotary cutter-blade on said spindle, said rotary cutter-blade having a peripheral cutting edge whose diameter varies with the wear thereof, said base having a slot, a finger having a slot provided with a front wall, said slots forming a combined slot into which said cutter-blade extends, said finger adjustable on said base toward and from said cutter-blade, and means for securing said finger in adjusted positions to said base, so as to adjust said front wall toward and from said peripheral cutting edge and to adjust the length of said combined slot.

3. In a device of the character described, the combination of an arm projecting into space, a base fixed to said projecting arm, a bearing thereon, a spindle journaled in said bearing, a rotary cutter-blade on said spindle, said cutter-blade having a peripheral cutting edge whose diameter varies with the wear thereof, an arm rigid with said bearing and extending alongside said cutter-blade, a guard for the front of said cutter-blade, said guard provided with a narrow notch having a rear wall within the cylindrical projection of said peripheral cutting edge and button-arresting complemental side walls extending proximate to each other outwardly from said rear wall past said cylindrical projection, a finger on said base spaced from the lower end of said guard to provide a feeding space to said cutter-blade between said guard and said finger, and means for adjustably positioning said guard on said arm up and down and toward and from said cutter blade for changing the height of said feeding space and adjustably positioning said rear wall and said side walls with relation to said varying peripheral cutting edge.

4. In a device of the character described, the combination of a support projecting into space, a cutter on its outer end, a part provided with a guide for sewed buttons and the like arranged for guiding the attaching means of the buttons and the like against the cutter for cutting said attaching means and severing said buttons and the like from the material, a narrow material guide projecting into space proximate to said part arranged for having portions of the material depend at both sides thereof and with said part forming a material receiving mouth between said part and said narrow projecting material guide, and means for adjusting the distance between said part and said narrow projecting material guide for adjusting the height of said mouth for passing greater or less bulk of material thereinto against said cutter with greater or less bulk of portions of said material depending at both sides of said narrow projecting material guide.

5. In a device of the character described, the combination of a cutter, a support therefor projecting into space, a part provided with a guide for sewed buttons and the like arranged for guiding the attaching means of the buttons and the like against said cutter for cutting said attaching means and severing said buttons and the like from the material, a narrow material guide projecting into space proximate to said part forming a material receiving mouth between said part and said narrow projecting material guide and arranged for having portions of the material depend at both sides of said narrow projecting material guide, and means for adjusting said part with its said guide toward and from said cutter and toward and from said narrow projecting material guide for adjusting the size of said mouth so as to pass greater or less bulk of material into said mouth against said cutter with greater or less bulk of portions of said material depending at both sides of said narrow projecting material guide.

6. In a device of the character described, the combination of a base, a bearing-shell supported thereby, a rotatable spindle in said shell, ball-bearings comprising inner raceways and outer raceways between said spindle and said bearing-shell, a rotary cutter-blade, a pulley and a filler-block on said spindle and arranged for interchangeably positioning said pulley and said filler-block on said spindle at the respective ends of said bearing-shell, an outer spacing collar in said bearing-shell for said outer raceways, means for clamping said outer spacing collar and said outer raceways to said bearing-shell, inner spacing collars about said spindle for said inner raceways, and means for clamping said rotary cutter-blade, said pulley, said filler-block, said inner spacing collars and said inner raceways to said spindle for rotation of said spindle in said outer raceways and collar.

7. In a device of the character described, the combination of an intermediate electric motor comprising a motor shaft, oppositely extending supporting branches extending oppositely from the motor position and substantially perpendicular to said motor shaft, a rag cutter at the outer end of each of said supporting branches spaced from said motor position and respectively comprising driven shafts parallel with said motor shaft and a rotary cutter and a pulley on each of said driven shafts, pulleys located in endwise relation on said motor shaft, said pulleys on

said driven shafts located in spaced apart positions in endwise relation to each other and respectively in the transverse planes of the pulleys on said motor shaft, and oppositely extending flexible driving loops between said respective pulleys on said driven shafts and said respective pulleys on said motor shaft.

8. In a cutting machine, the combination of an overhanging arm projecting outwardly from its support and having a knife housing at its outer portion, a knife journaled in said housing, said housing being formed with an opening in its outer end in which the edge of the knife is exposed for engaging the work and with a work support extending outwardly beyond said knife, a member arranged in front of said exposed portion of the knife, and means for adjusting said member vertically toward and from said work support.

9. In a cutting machine, the combination of a knife-supporting arm having a knife housing at its outer portion, a knife journaled in said housing, said housing having an opening in its outer end in which the edge of the knife is exposed for engaging the work, and a work support extending outwardly beyond said knife, and a member arranged in advance of the exposed edge of said knife, said member having an open-ended slot extending from the outer edge thereof toward said knife to permit material inserted in said slot to engage said knife, said member being adjustable in said housing to a position spaced upwardly away from said work support.

10. In a cutting machine, the combination of a knife-supporting arm having a knife housing at its outer portion, a knife journaled in said housing, said housing having an opening in its outer end in which the edge of the knife is exposed for engaging the work, and a work support extending outwardly beyond said knife beneath said opening, and a work-guide arranged in advance of said knife within said opening of the housing and above said work support and having an open-ended slot extending from the outer edge of said work-guide toward the exposed edge of said knife to permit material inserted in said slot to engage said knife, and means for adjustably securing said work-guide at different distances from said work support to accommodate work of different thicknesses.

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