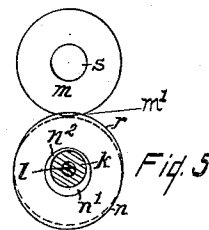
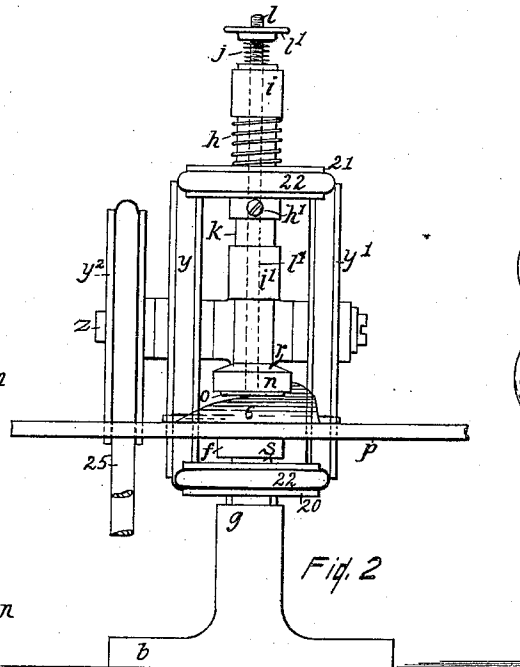
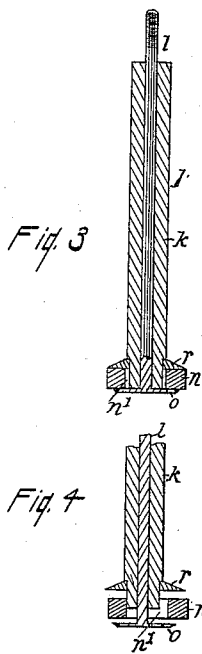
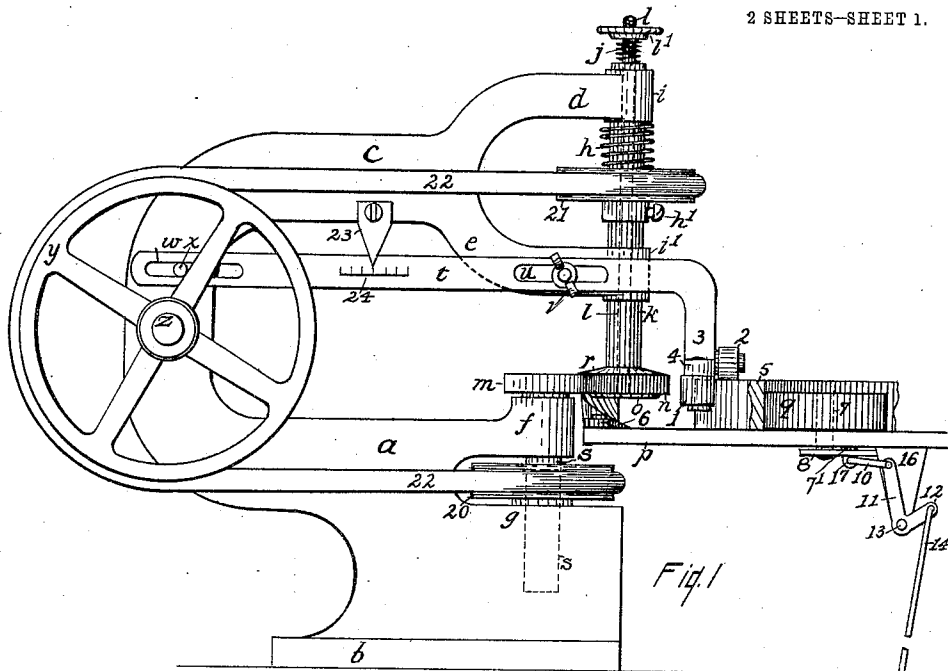


E. M. LYMAN.
HAT ROUNDING MACHINE.
APPLICATION FILED DEC. 20, 1910.

1,047,543.

Patented Dec. 17, 1912.

2 SHEETS-SHEET 1.



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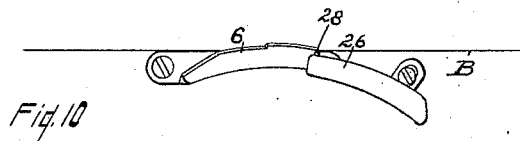
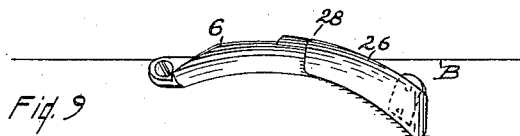
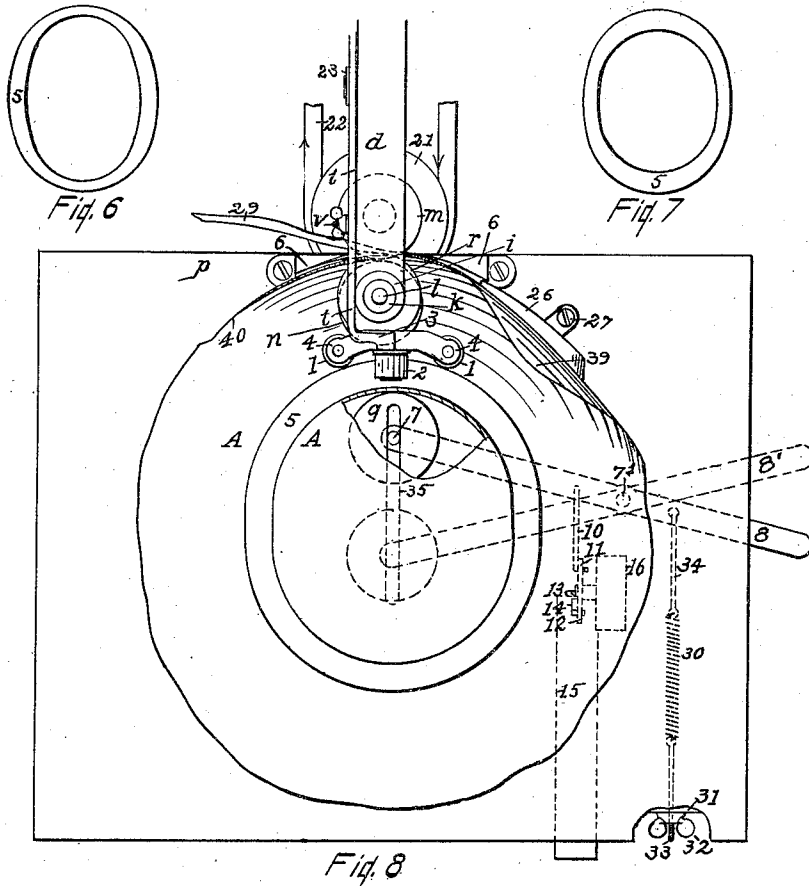
ATTORNEY

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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

EDWARD M. LYMAN, OF PEEKSKILL, NEW YORK.

HAT-ROUNDING MACHINE.

1,047,543.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed December 20, 1910. Serial No. 598,430.

To all whom it may concern:

Be it known that I, EDWARD M. LYMAN, a citizen of the United States, and resident of Peekskill, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Hat-Rounding Machines, of which the following is a specification.

This invention relates to the manufacture of hats, and is what is known as a rounding machine, for rounding the rims of hats, that is, of trimming the rim smoothly and evenly, equal distances all around from the crown of the hat, or unequal distances as may be required; and its object is, to provide a more expeditious and reliable means of performing the operation of rounding than any now employed.

The objects are attained by the means set forth in the accompanying drawings, in which—

Figure 1 is a side elevation of the rounding machine. Fig. 2 is a front elevation of the machine, without any of the devices in front of the cutter. Figs. 3 and 4 are details in cross section relating to the cutting devices. Fig. 5 shows in plan the feeding rollers and hat rim cutter. Figs. 6 and 7 are plans of templets used in the hat rounding. Fig. 8 shows in plan the devices that cooperate in rounding, and the operation of rounding a hat. Fig. 9 shows a feeding gage perspectively, and Fig. 10 is a plan of the parts shown in Fig. 9.

The particular parts of this hat rounding machine are centered around the rounding cutter, and the machine in its driving parts is not necessarily confined to the design and plan herein shown. The machine as illustrated, is, however, a simple and inexpensive form of construction, and comprises a frame *a c*, Fig. 1, upon a spreading base *b*. The upper arm *c* of the machine is bifurcated vertically to afford bearings *i, i'*, for the cutter shaft *k*. Upon the shaft is the driving pulley 21, provided with a screw fastening *h* by means of which the tension of a spring *h* above the pulley may be varied, by raising or lowering the pulley, the round driving belt 22 admitting of such adjustment without interfering with the proper belt movement.

The lower part *a* of the frame is slotted to receive a pulley 20 that is supported on a vertical shaft *s*, the shaft having support in the bearing *f* above the slot, and in the

projection below the slot. Midway of the rear curve of the frame a shaft *z* has a transverse bearing, and its outer ends support pulleys *y, y'*, shown in Fig. 2. One of these pulleys is fast upon the shaft, and the other is loose, serving as an idle pulley for the guidance of the belt 22. The belt is an endless belt, and passes over the pulleys *y, y'*, and 20, 21, being driven by the pulley fast upon the shaft, in this instance the pulley *y*, and driving pulleys 20 21 in reverse directions. Upon an extension of the shaft *z* as shown in Fig. 2 is a main driving pulley *y'*, driven by the belt 25.

The main shaft *k* has a circular knife or cutter *r* fast to the lower end of it, particularly shown in Figs. 3 and 4. The shaft has a hole through its center lengthwise, and contains a rod *l* that has a large, thin head *o* upon its lower end. A ring or roller *n*, knurled on its face, occupies an end of the shaft that extends below the cutter *r*, and the bore *n'* in the roller is considerably larger than the shaft. In Fig. 4 these several parts are shown loosely put together. The rod *l* extends above the upper end of the shaft, as in Figs. 1, 2, 3, is threaded upon the extension and is provided with a thumb-nut *l'*, Figs. 1 2. A spring *j* between the thumb-nut and the end of the shaft draws the head of the rod against the roller *n*, as in Fig. 3.

The roller *n* constitutes one of the feed rollers for carrying the hat rim in the operation of rounding, and it revolves in juxtaposition with a roller *m* on the vertical shaft *s*, Figs. 1, 5 and 8. The rollers *m* and *n* are of the same diameters, and in setting the shafts *s* and *k* they are distanced apart so that the cutter *r*, which is of the same diameter of the rollers, will lap over the roller *m*, as in Figs. 1, 5 and 8, the effect of which is to cause the roller *n* to assume a position eccentric to its shaft, as clearly shown in Fig. 5. When the cutter *r* has a sufficient lap over the roller *m*, as in Fig. 5, there is still a space left between the bore of the roller and its shaft, as at *n'*. This admits of the entry between the rollers of the edge of the hat brim, and the roller *n* is held against a moving hat brim by means of the pressure of the head *o* against the roller, which pressure or tension is produced and regulated by means of the spring *j* and the nut *l'*.

The cutting of the hat rim is done at the point *m'*, Fig. 5, the cutter *r* lapping over

the roller *m*, and the rollers revolving in opposite directions. A proper contact of the cutter with the roller for cutting, is maintained by the spring *h* upon the shaft *k*, see Fig. 1, which, pressing upon the pulley 21, presses the cutter downward, and, as has been described, the tension of the spring is regulated by adjustment of the pulley 21 upon the shaft.

10 This machine may be set upon any convenient form of table, and in front of the machine a plate *p* is placed to serve as a table for the support and manipulation of the hat, as in Fig. 8, Sheet 2. The plate may be of metal, as zinc. In front of the machine, on a line with the cutting edge of the cutter, the plate is slotted as at 35. On the under side of the plate a lever 8 is pivoted, as at 7' and extended to the slot 35 at one end, and, preferably, beyond the plate as at 8 to form a handle for operating the lever by hand. Upon the inner end of the lever a pin 7 is attached and stands vertically in and above the slot 35. Upon this pin is a roller 9, Figs. 1 and 8, the purpose of which will be described farther on. A spring 30, Fig. 8 is attached to the outer end of lever 8 and to a threaded rod passing through a bracket 31 on the under side of the table. A thumb nut 32 on the end of the rod at 33 is a means of regulating the tension of the spring. This lever 8 and roller 9 may be moved to the position 8', shown in broken lines, by the hand upon the outer end of the lever, or by means of a foot treadle 15, Figs. 1 and 8. The lever is connected by a rod 14 to a bell-crank 11, pivoted upon a bracket 16 at 13, and the crank is connected with the lever 8 by a rod 10 and lug 17, most clearly shown in Fig. 1.

40 A circular guide 6, Figs. 1, 2, 8, 9, 10, having a curve vertically, serves as a guide to the hat rim, and is secured to the plate at a point to properly guide the hat rim between the rollers *m n*.

45 A gage *t*, Figs. 1 and 8, is secured on the side of the machine frame by a wing-nut and stud *v*, and is steadied at its extreme end by a pin *x*. Slots *w* and *u* make this gage laterally adjustable. The forward end of the gage is provided with a central roller 2, parallel with the table plate, and extensions beyond the central roller are provided with rollers 1, 1, suspended vertically with respect to the table plate. These rollers are movable toward or from the feeding rollers. To facilitate the adjustment of these gage rollers for differing widths of hat rims, a scale 24 is provided on the gage arm, and a pointer, 23, is affixed to the frame of the machine, as shown in Fig. 1.

60 In Fig. 8, A' and A represent a hat, A' the rim, A the crown of the hat, and the crown is shown as partly cut away to reveal clearly the action of the roller 9 in keeping the templet 5 against the guide rollers 1, 1.

Templets 5, Figs. 1, 6, 7, 8, are provided to pass over the hat crown as in Fig. 8. The templets may vary in contour, but they are made of a uniform thickness, to adapt them to the gage roller 2, and the gage roller 2 is set to admit the templet under it when the templet is on the hat. In action the templet rests against the rollers 1, 1, as in Figs. 1 and 8. These templets are made in sizes for the various sizes of hats, and in various shapes, and preferably, for durability, lightness, and to retain their forms, they are cast of aluminium. In Fig. 8 a templet is shown with parallel inner and outer sides. Fig. 6 shows one thicker at the sides than at the ends, and in Fig. 7 the ends are shown to be thicker than the sides. Whatever difference there may be in the widths of the templet will be shown in the rounded hat rims.

The machine is operated in the manner shown in Fig. 8, as follows: Pressure upon the treadle 15 draws the roller 9 away from the machine. The hat is placed over the roller, and a templet around the crown of the hat down close to the rim. The treadle is released and the roller carries the hat forward until the periphery of the templet meets the gage rollers 1, 1, which brings the roller 2 on top of the templet. The top roller keeps the templet from lifting, and the distance between the face of the templet and the cutting point of the cutter regulates the width of the hat rim, and the form of the templet regulates the form of the hat rim. The pressure of the roller 9 against the inside of the hat and the templet keeps the templet against the gage rollers. The operator starts the edge of the hat rim between the feeding rollers *m n*, which readily take hold of the rim, and the feed rollers revolve the hat, while the cutter takes off the superfluous edge of the rim, the trimmed off edge being shown at 29, and the finished edge of the rim at 40. The upward fold 39 of the hat rim is made by the operator, to start the movement of the rim, and to facilitate the passage of the rim over the table guide 6 the operator keeps the rim thus turned until the revolution of the rim is completed.

By the addition of a flexible guide to the guide 6, as shown in perspective in Fig. 9, and in plan in Fig. 10, the manipulation of the rim of the hat by the operator may be avoided, making the feeding of the rim entirely automatic after it is started by the operator. The supplementary guide 26 is also shown in Fig. 8. The guide 26 consists of a plate of thin steel, preferably curved at the inner end to conform to the upward curve of the guide 6, and is straight at its outer surface, but is wider at its beginning and has an outward inclination. It is raised above the table plate, as shown in Fig. 9, and the inner end does not touch the guide 6, so

that the guide 26 is free to assume, to some extent, its own position relative to the guide 6. This supplementary guide may be used or not, as the operator desires.

5 As a means of distinguishing between the feed rollers *m n*, the former is designated as the "fixed" roller, and the latter as the "movable" roller, by reason of the diametral movement of the roller *n*.

10 Regarding the spring *h*, it is plain that the pulley 21 is used as a thrust bearing for the spring by reason of the convenience of such use, and that other means of spring adjustment might be substituted for the pulley.

15 Claims:

1. In a finished hat rounding machine, the combination, with trimming devices in juxtaposition to a table to receive a hat, a templet to be placed on the crown of the hat
20 and means on the table operative within the hat for moving the hat toward the trimming devices, of a guide for the templet comprising an arm adjustable on the frame of the machine and rollers on the arm to
25 receive the forward thrust of the templet, and a roller above the templet to prevent the lifting of the templet.

2. The combination in a machine for
30 trimming finished hat rims comprising a two armed frame, the upper arm of the frame bifurcated and provided with bearings for a shaft, the lower arm of the frame integral with the base of the frame of the machine and provided with a shaft bearing,
35 a shaft in said bearing and a roller on the upper end of the shaft, a roller and cutter on

the lower end of the shaft first described to coact with the roller on the lower shaft, a driving pulley and an idle pulley supported at the bend in the arms of the frame, an
40 endless belt over said pulleys and pulleys on the cutter roller shafts giving reverse motions to the rollers and cutter, a table in front of and below the cutters, a slidable
45 roller on the table with means for pushing the roller toward the cutter, a templet for use on the hat, a guide adjustable on the frame of the machine to receive the forward and upward thrust of the templet, and
50 a guide on the table to turn the hat rim up to the cutting devices.

3. In a finished hat rounding machine, the combination, with trimming devices in juxtaposition to a table to receive a hat, a
55 templet to be placed on the crown of the hat and means on the table operative within the hat for moving the hat toward the trimming devices, of a guide for the templet comprising an arm adjustable on the frame
60 of the machine and rollers on the arm to receive the forward thrust of the templet, and a roller above the templet to prevent the lifting of the templet, and a guide on the
65 table to lift and guide the hat rim to the rim feeding and trimming devices.

Signed at Peekskill in the county of Westchester and State of New York this 13th day of December A. D. 1910.

EDWARD M. LYMAN.

Witnesses:

ALLEN BARGER,
ELBERT KIPP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."