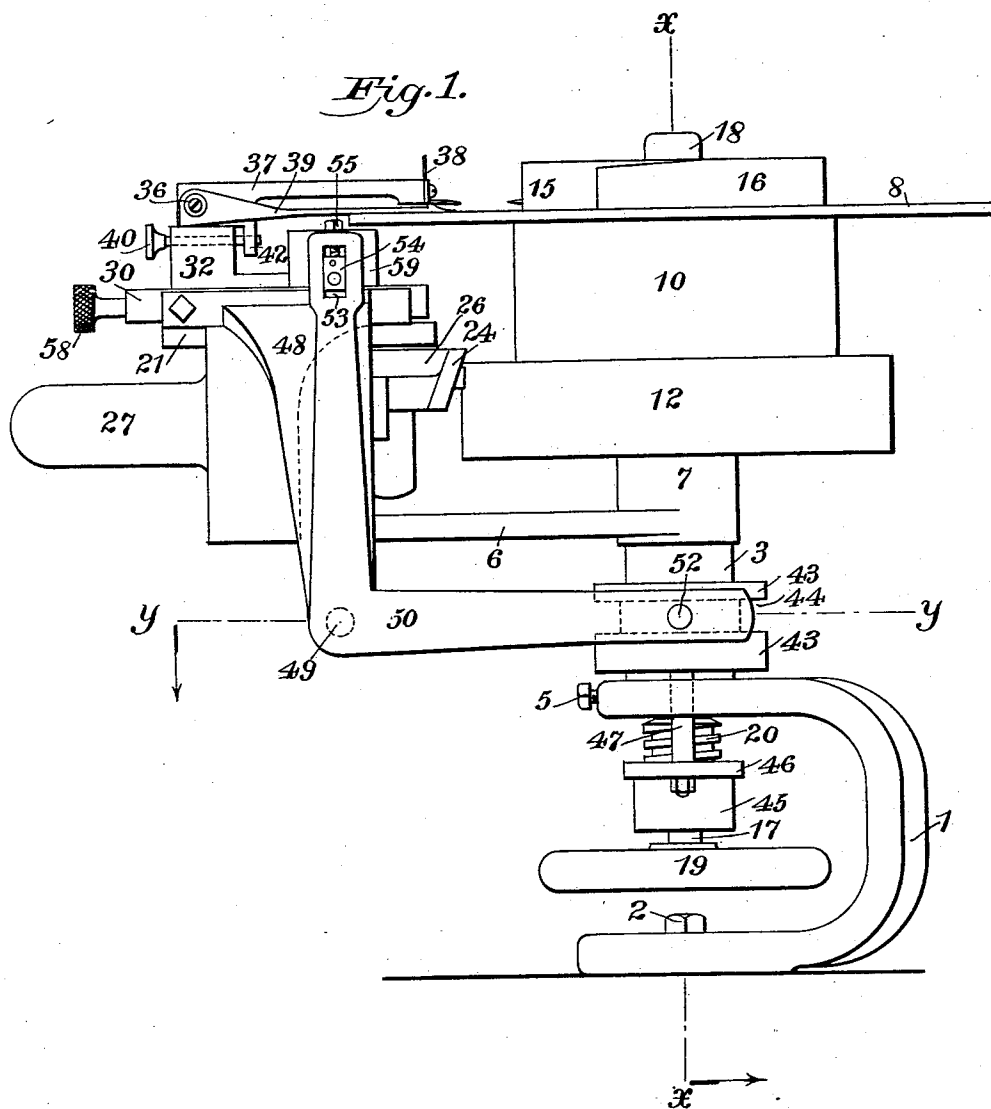


5 Sheets—Sheet 1.

HAND OPERATED HAT ROUNDING MACHINE.

Patented Nov. 3, 1896.



J. F. Finch.
M. T. Longden.

INVENTOR
Charles A. Reil
BY J. M. [Signature]
ATTORNEY

(No Model.)

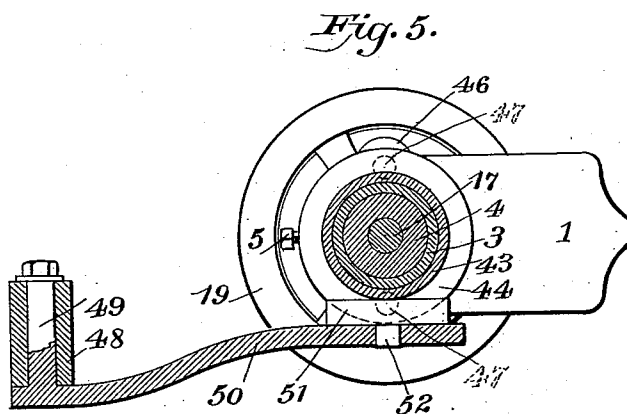
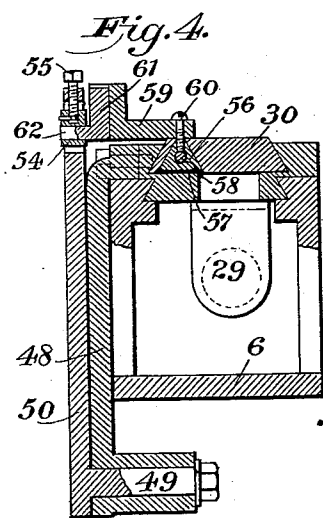
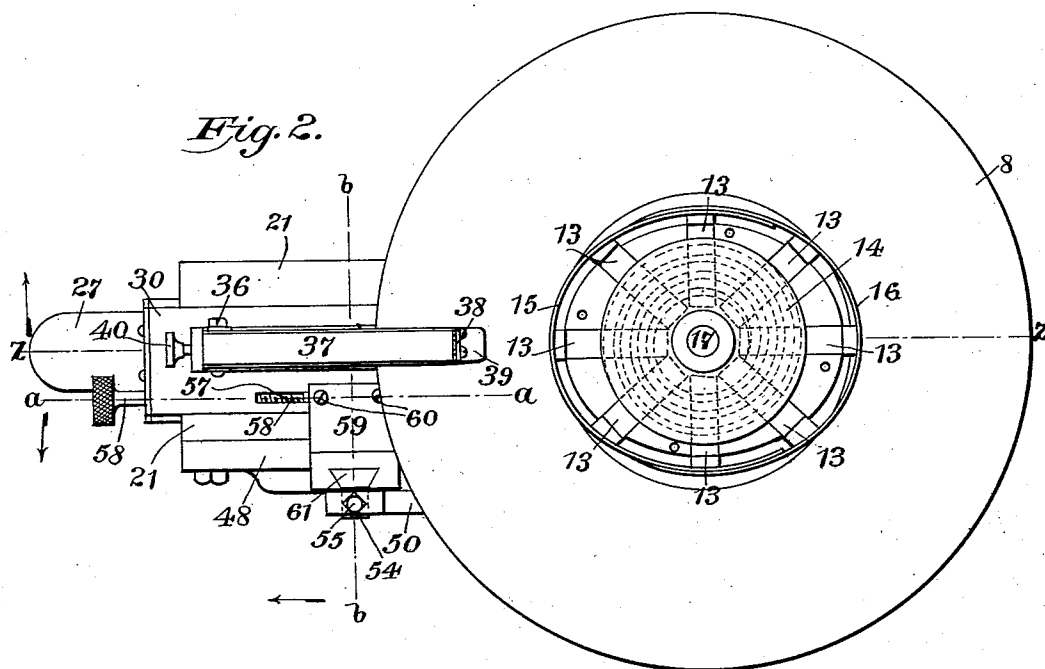
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C. H. REID.

HAND OPERATED HAT ROUNDING MACHINE.

No. 570,734.

Patented Nov. 3, 1896.



WITNESSES:

J. F. Smith.
M. L. Longden.

INVENTOR

Chas. H. Reid
BY *J. M. Smith*
ATTORNEY

(No Model.)

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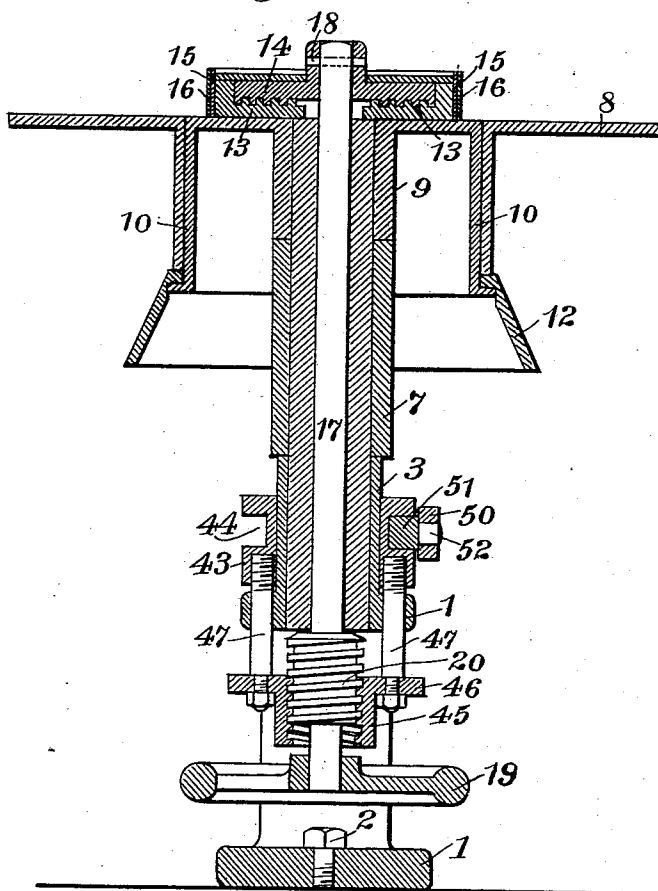
C. H. REID.

HAND OPERATED HAT ROUNDING MACHINE.

No. 570,734.

Patented Nov. 3, 1896.

Fig. 3.



WITNESSES:

J. F. Kline
M. T. Longden

INVENTOR

Charles H. Reid
BY *J. M. Smith*
ATTORNEY

(No Model.)

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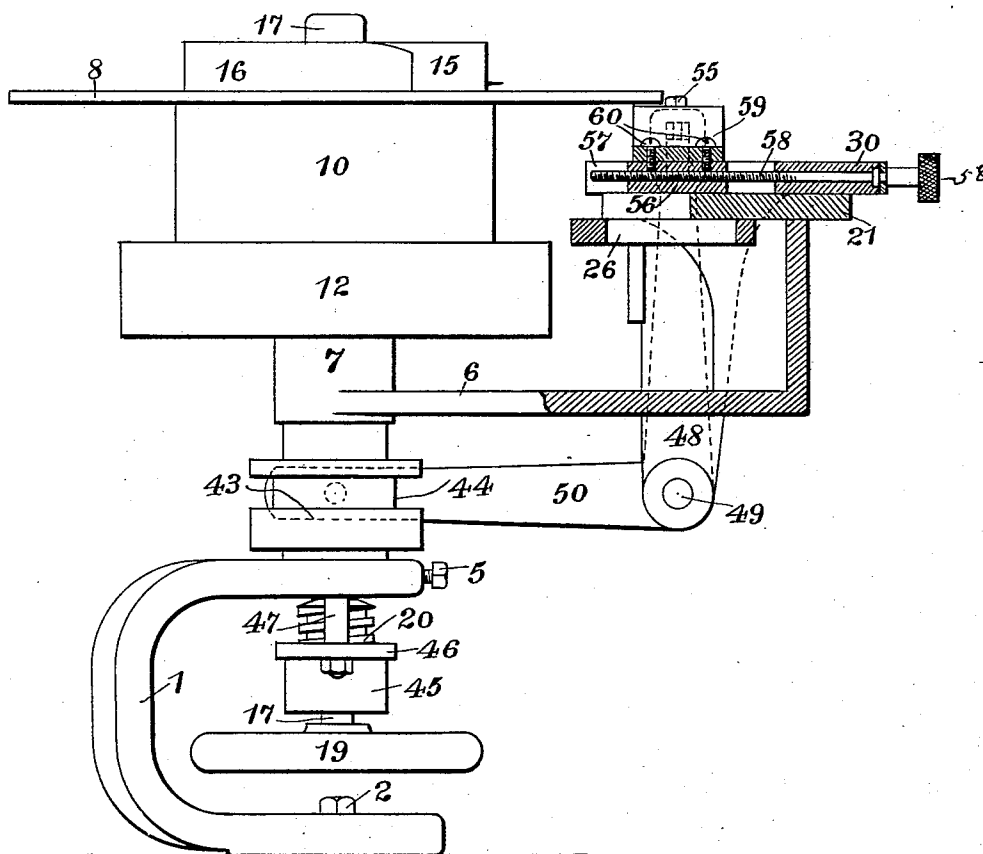
C. H. REID.

HAND OPERATED HAT ROUNDING MACHINE.

No. 570,734.

Patented Nov. 3, 1896.

Fig. 6.



WITNESSES:

J. F. Finch
M. T. Longden

INVENTOR

Charles Reid
BY *J. M. Smith*
ATTORNEY

(No Model.)

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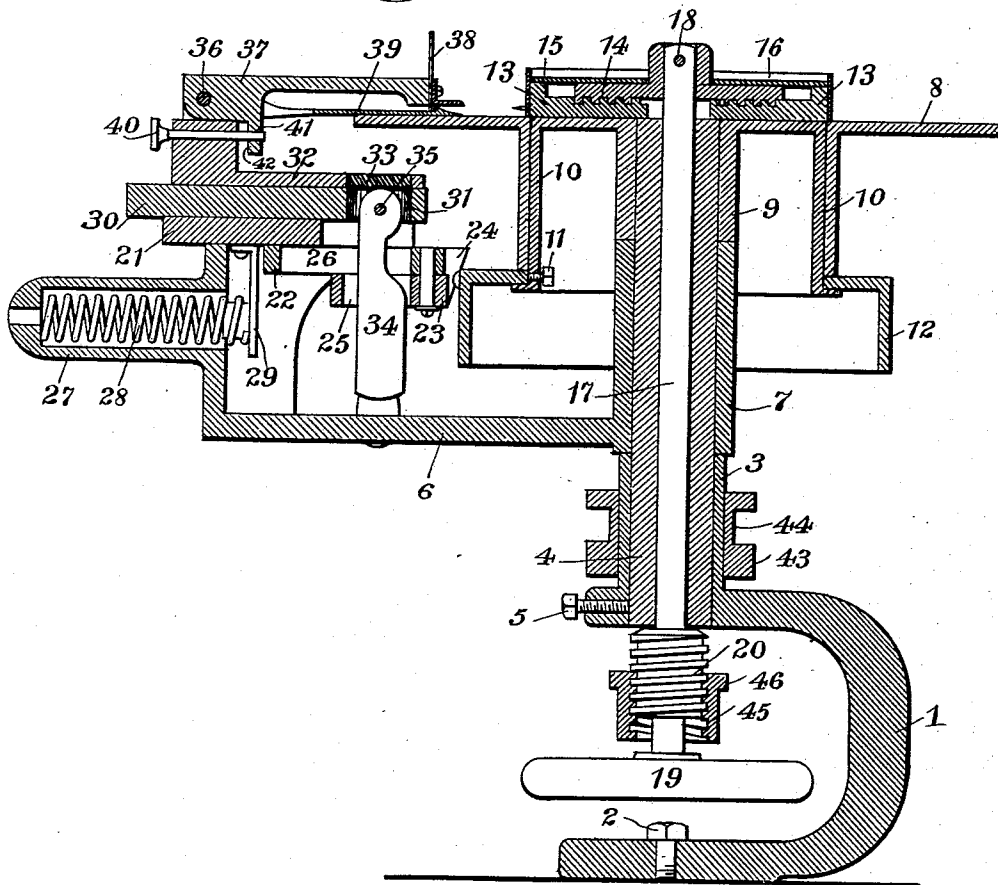
C. H. REID.

HAND OPERATED HAT ROUNDING MACHINE.

No. 570,734.

Patented Nov. 3, 1896.

Fig. 7.



WITNESSES:

J. F. Smith.
M. T. Longden.

INVENTOR

Charles H. Reid
BY *J. M. Smith*
ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES HENRY REID, OF DANBURY, CONNECTICUT.

HAND-OPERATED HAT-ROUNDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 570,734, dated November 3, 1896.

Application filed August 7, 1895. Serial No. 558,504. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY REID, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hand-Operated Hat-Rounding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in hat-rounding machines, but more particularly relates to machines of this description which are operated by hand as distinguished from power-machines.

In hand-machines considerable time is lost in properly adjusting the rounding-knife with respect to the brims of hats of different sizes, since after a rounded hat has been removed from the clamp and another hat of a different size substituted thereon the operator is obliged to adjust the rounding-knife so that it will trim off the brim to the proper width, and such adjustment must necessarily be dependent upon the judgment of the operator.

As a rule the brims of hats are uniformly proportionate to the sizes of the hats, and it is only when the general style of the hat is changed that it becomes necessary to make any alterations in the brims irrespective of the sizes of the hats.

It is the object of my present improvement to insure uniformity in the rounding of hat-brims upon machines in which the adjustment of the rounding-knife is automatically dependent upon the size of the hat, a further object of my improvement being to improve upon the construction shown and described in Letters Patent No. 237,128, issued to me on February 1, 1881.

In order that those skilled in the art to which my invention appertains may more fully understand its construction and operation, I will proceed to describe the same in detail, referring by numbers to the accompanying drawings, forming a part of this application, in which—

Figure 1 is an elevation of my improved machine; Fig. 2, a plan view; Fig. 3, a section at the line *x x* of Fig. 1; Fig. 4, a section at

the line *b b* of Fig. 2; Fig. 5, a section at the line *y y* of Fig. 1; Fig. 6, an elevation, partly sectioned away, at the line *a a* of Fig. 2; and Fig. 7 a section at the line *z z* of Fig. 2.

Similar numbers of reference denote like parts in the several figures of the drawings.

All the parts of my improved machine, with the exception of those that are immediately connected with the proper movements of the rounding-knife, are the same both as to construction and operation as the corresponding parts shown and described in my Letters Patent above referred to, and I will not enter into any description of said parts, but will merely refer to the same by numbers of reference and will briefly state their function.

1 is the standard of the machine, of any suitable shape, which is attached to any ordinary bench or supporting-platform by means of a bolt 2. This standard is provided with a vertically-disposed hollow hub 3, within which is secured, by means of the set-screw 5, the vertically-extending hollow bushing 4.

6 is a swinging frame which supports the appliances for rounding the hat, which frame has a hollow hub 7, that loosely surrounds the hollow bushing 4, so as to be capable of a free swinging movement, and rests upon the hub 3.

8 is the hat-supporting platform, which has depending therefrom a hollow hub 9, which latter is tightly secured around the bushing 4. Depending from this platform is an annulus 10, to which is secured by means of a set-screw 11 the templet 12. I prefer to secure the templet to the platform in this manner, although of course these parts may be cast integral, if desired.

The hat-clamping device is supported directly upon the platform 8 and is of a well-known and ordinary construction, and consists of a series of radial arms 13, engaged in a proper manner with a rotating scroll-wheel 14, and elastic steel plates 15 16, attached in the usual manner to the outer extremities of the arms, so that when the latter are projected said plates will conform to the inner contour of the hat-body and securely hold the same.

17 is a spindle within the hollow bushing 4 and capable of a free rotation, the upper end of said spindle being secured by means of a

pin 18 to the scroll-wheel 14, whereby when said spindle is revolved in opposite directions the clamp-plates will be expanded or contracted, as the case may be.

19 is a hand-wheel secured to the lower extremity of the spindle for convenient operation of the same, and 20 is a screw secured around said spindle immediately below the bushing 4, so that it will be readily understood that said spindle is confined as against any lengthwise movement by means of the screw and the scroll-wheel.

21 is the main slide, which is capable of a free horizontal movement within suitable bearings in the frame 6, and secured to the bottom of said slide in the usual manner, as set forth in said Letters Patent, is the shoe-block 22.

23 is the shoe, which is pivoted to the block 22 and whose toe 24 is normally in engagement with the templet and whose heel is slotted, so as to afford a vertically-extending elongated gate 25, which normally registers with a similar gate 26 in the shoe-block.

27 is a hollow handle which extends from the frame 6, and within this handle is a coil-spring 28, confined at its extremities between the outer end wall of said handle and an angle-plate 29, which depends from the slide 21, so that it will be readily understood that the action of this spring will tend to normally force the slide 21 forward, so as to keep the shoe 24 in constant engagement with the templet.

30 is a carriage adapted to slide in suitable ways in the main slide 21 and having in its inner end and extending therethrough from top to bottom a circular perforation 31.

32 is a head-block which rests upon the carriage 30 and has depending from its inner end a stud 33, which closely fits within the circular hole 31, so that said block will be capable of a free swinging movement. This stud is slotted, (not shown,) and within this slotted portion a flat bar 34 is pivoted, as shown at 35, and extends downwardly through the gates 26 and 25 in the block 22 and shoe 23, respectively. The width of the slots 26 and 25 is such that the bar 34 is closely embraced by the side walls of the slot 25, while considerable clearance is left between said bar and the side walls of the slot 26, so that it will be clear that any rocking movement of the shoe around its pivotal point will be communicated through the medium of said bar to the block 32, all of which forms no part of my present invention, but is clearly set forth in my Letters Patent above referred to.

Pivoted at 36 to the block 32 is the knife-carrier 37, in the inner end of which is secured the knife 38 in the usual manner. 39 is the usual latch-bar secured around the pivot 36, and 40 is a lock-pin which extends loosely through the head-block 32 and engages with a notch or suitable opening 41 in a downward extension 42 from the carrier, in order to lock the latter in its lowest or operative position.

When the rounding of a hat-brim is completed, the pin 40 is simply withdrawn from the extension 42 and the carrier swung back out of the way preparatory to the placing of a succeeding hat in proper position for rounding.

With the exception of the screw 20, secured around the spindle 17, all the parts which I have heretofore described are the same both as to their construction and function as the corresponding parts shown and described in my Letters Patent above referred to, and I will now describe my present improvement, which latter is identified solely with the rounding-knife and the manner of adjusting the same independent of the general movements which are imparted to the knife directly from the templet.

Besides the general movements of the knife in performing the rounding operation and controlled directly from the templet I provide for two adjustments of said knife, as follows:

It is a well-known fact that the greater the size of the hat the farther around the scroll-wheel 14 must be turned in order to effect the clamping, and it is also true that in the same style or block of hats the width of the brim increases in proportion to the size of the hat.

43 is a collar loose around the bushing 4 and capable of a vertical sliding movement, and 44 is a groove in the periphery of said collar.

45 is a nut around the screw 20 and having a flange 46. 47 are bolts which connect said flange and collar, so that any travel of the nut 45 will be communicated to said collar. These bolts pass loosely through the standard 1 in order to lock the nut and collar as against rotary movement, while at the same time permit their free vertical travel.

48 is a bracket which depends laterally from the main slide 21, and to the lower end of this bracket at 49 is pivoted a bell-crank lever 50, one leg of which latter extends in a vertical plane, while the other leg extends in a horizontal plane.

51 is a shoe pivoted at 52 to the inner face of the horizontal leg of this lever and extending within the groove 44 in the collar 43, so that it will be readily understood that said shoe is capable of a free movement lengthwise of said groove, while at the same time the lever 50 and the shoe are free to rock relatively owing to the pivotal connection with the shoe. The upper end of the vertical leg of this bell-crank lever is provided with an elongated vertically-disposed slot 53, within which is a block 54, capable of a free sliding movement.

55 is a small screw-bolt which passes through a properly-threaded opening in the top of said vertical leg and is swiveled at its lower end in any suitable manner to the block 54, whereby when said screw is operated the block will be adjusted up and down within the slot 53 for the purpose presently explained.

56 is a block within a suitable elongated

guideway 57 in the sliding carriage 30, and 58 is a screw which extends loosely through said carriage and passes through a properly-threaded opening in said block, said screw being confined at the outer end of the carriage as against any lengthwise movement in the usual manner, so that it will be clear that the turning of this screw will cause the carriage to slide, while the block will of course remain stationary.

59 is a head-block which is secured by means of screws 60 to the top of the block 56, and 61 is a slide adapted to reciprocate in suitable vertical ways in the block 59 and provided with a circular stud 62, which extends through a corresponding opening in the block 54. It will therefore be clear that when the lever 50 is rocked around its pivotal point 49 the sliding carriage 30 will thereby be reciprocated in its ways, the slide 61 rising or falling, as the case may be, to compensate for the variation in the horizontal level of the block 54.

The operation of my improvement during the rounding of a hat is as follows: The hat is placed upon the clamp, the hand-wheel 19 operated to force the plates 15 16 firmly against the inside of the hat-crown, the brim of the hat placed between the carrier 37 and latch-bar 39, and said carrier dropped to its lowest position and locked by means of the pin 40. The screw 58 is now operated to adjust the sliding carriage 30, so that the knife 38 will be brought into its proper normal position with respect to the width of brim to be rounded. The operator now grasps the handle 27 and swings the frame 6 around, the templet 12 and spring 28 meanwhile cooperating in connection with the shoe-block 22 to effect the proper ovoidal contour described by the knife. When the hand-wheel 19 is operated to release a hat, the screw 20 will force the nut 45 downward, thereby lowering the collar 43 and causing the upper or vertical leg of the lever 50 to swing inward, carrying with it the sliding carriage 30, and thus bring the knife 38 to the limit of its inward or projected movement. When a succeeding hat is placed upon the clamp, the hand-wheel 19 is operated to force the plates 15 16 against the hat to hold the same, thereby causing the sliding carriage 30 and the knife 38 to be retracted to their normal outermost positions. In rounding hats of the same style and size the extent throughout which the spindle 17 must be turned is fixed and positive; that is to say, the scroll-wheel 14 is turned throughout the same arc; but when hats of the same style but of different sizes are rounded the arcs throughout which the scroll-wheel is turned vary according to the size of the hat. For instance, if a larger size follows a smaller size the hand-wheel 19 must be turned throughout a greater extent to properly operate the scroll-wheel to clamp the hat, and therefore in clamping such a hat the collar 43 will be carried farther upward and the up-

per leg of the lever 50 will be swung farther backward, thus carrying the cutting-knife farther out on the brim. As before stated, however, there is a certain proportion between the size of the hat and the width of the brim in the various sizes of the same style of hat, and therefore there is a fixed proportion between the extent throughout which the scroll-wheel is revolved to clamp a hat and the extent of movement of the knife effected primarily from the spindle 17. It will thus be readily understood that the knife always moves automatically in harmony with the clamping mechanism and that the normal inner and outer positions of said knife, after the proper adjustment with respect to a certain style of hat has once been made, are automatically effected by the operation of the clamping mechanism.

In building a machine, were it practical to make the upper end of the vertical leg of the lever 50 solid without the slot 53 and to simply tap a round hole through said end for the stud 62, it would not be necessary to provide any adjustable connection between the upper leg of this lever and the slide 61, but it will be obvious that it would be quite out of the question to make a machine of this description in which most of the parts are cast, so that when assembled the round hole tapped in the upper leg of the lever 50 would always be precisely the same distance from the pivotal point 49. It will also be clear that in such proposed construction a slight variation in the horizontal plane of this hole would effect a marked variation from the proper and uniform movement of the knife, since the distance between the stud 62 and the pivotal point 49 would be variable, and therefore the movement of the sliding carriage 30, caused by the swing of the lever, would sometimes be more and sometimes be less in rounding the same size and style of hat. I have therefore provided for an adjustable connection between the block 61 and the upper leg of the lever 50, so that by elevating or lowering the block 54 by means of the screw 55 I obtain a greater or lesser movement of the sliding carriage.

In rounding some styles of hats the brims of the same styles increase in width in the various sizes precisely as much as the crowns of the hats enlarge radially, and in such hats if the crown of a hat increased radially an eighth of an inch all around the brim would likewise increase an eighth of an inch all around; but this is not true of hats, generally speaking, for the brims increase in width a trifle more than the diameter of the hat-crowns, and this proportion, whatever it may be, is fixed and is preserved in the rounding of hats of various sizes.

Referring to Fig. 1 of the drawings, it will be seen that the effective lengths of the two legs of the lever 50 are measured by the distances, respectively, between the pivotal points 49 and 52 and the pivotal points 49

and 62, and in the particular arrangement shown the effective lengths of these legs are the same; but since the block 54 has a vertical adjustment within the upper extremity of the vertical leg it will be readily understood that the effective length of this leg can be increased or shortened by the adjustment of said block.

In rounding a hat, should it be ascertained that the movement of the clamping mechanism in securing a hat does not carry the knife quite as far back as desired, the operator will readily understand that the throw of the upper vertical leg of the lever 50 is a trifle short, and therefore he merely corrects the error by backing the screw 55, thus normally elevating the block 54 and giving to the sliding carriage 30 the benefit of a longer radial swing of said leg.

It will thus be seen that delicate adjustments of the knife may be effected, not only independent of the templet, but also independent of the screw 58.

The adjustment of the sliding carriage by means of the screw 58 is also an independent adjustment and is very quick and efficient when it becomes necessary to adjust the knife for rounding special widths of brims, as well as in effecting the initial adjustment of the knife, as hereinbefore set forth.

It will thus be seen that in addition to the general movements of the knife in traversing an ovoidal circuit during a rounding operation the knife has two adjustments that are independent of each other, each of which is of great value in hat-rounding machines.

During the operation of rounding a hat the shoe 51 slides freely through the groove 44 in the collar 43, and all the movable parts supported on the frame 6 will of course be carried back and forth in harmony with the movements of the main slide 21.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hand-operated rounding-machine, the combination of the main slide, the knife-carriage capable of sliding in ways in said main slide, the block 59 rigid with said carriage as to the general sliding movements of the latter, the slide 61 having a vertical reciprocation within ways in said block and provided with circular stud 62, the bell-crank 50 pivoted to an extension from the main slide and having near the extremity of its upper leg an elongated slot, the block 54 capable of sliding freely within said slot and having a circular aperture within which the stud 62 extends, the adjusting-screw 55 connected to the block 54, the spindle for operating the hat-clamping mechanism, and operative connections between the lower leg of the bell-crank and said spindle whereby said knife-carriage and clamping mechanism will move in harmony, substantially as set forth.

2. The combination of the standard hav-

ing secured thereto the hollow bushing 4, the swinging frame loosely journaled around said bushing, the rotatory spindle 17 within said bushing and carrying the screw 20, the hat-supporting platform and the templet secured around said bushing at the upper end thereof, the clamping mechanism supported on said platform and operatively connected to said spindle, the nut engaging said screw, the grooved collar 43 loose around the spindle and capable of a reciprocatory sliding movement, connections between said nut and collar whereby sliding movements are communicated to the latter from the former, the main slide adapted to reciprocate in suitable ways in the swinging frame, mechanism for imparting reciprocation to said slide directly from said templet, the carriage capable of reciprocation within said slide, the head-block supported on said carriage, the knife-supporting carrier properly mounted on said block, the block 56 within suitable ways in said carriage, the head-block 59 secured to the block 56, the slide 61 capable of reciprocation in vertical ways in the block 59 and having a laterally-extending round stud 62, the bell-crank 50 pivoted to an extension from the main slide and having near the extremity of its upper leg an elongated slot and provided with a shoe which is pivoted to the extremity of its lower leg and extends within the groove in the collar 43, the block 54 capable of sliding freely within said slot and having a circular aperture within which the stud 62 extends, and the adjusting-screw 55 swiveled to the block 54, substantially as set forth.

3. The combination of the sliding carriage 30 having ways 57, the block 56 within said ways, the head-block 59 secured to the block 56, the slide 61 capable of reciprocating within vertical ways in the block 59 and having a laterally-extending circular stud 62, the sliding grooved collar 43, the main slide within which said carriage is adapted to reciprocate, the bell-crank lever pivoted to said slide and provided with a pivoted shoe at its lower leg extending within a groove in said collar and having a vertically-disposed slot in its upper leg, the adjustable block within said slot and having a circular aperture within which the stud 62 extends the clamping mechanism, the spindle for operating the clamping mechanism, and means automatically operated and controlled by said spindle for effecting the sliding movements of said collar whereby the bell-crank lever is rocked and the sliding carriage reciprocated, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES HENRY REID.

Witnesses:

URBANE B. DUNAWAY,
JENNIE B. WHITE.