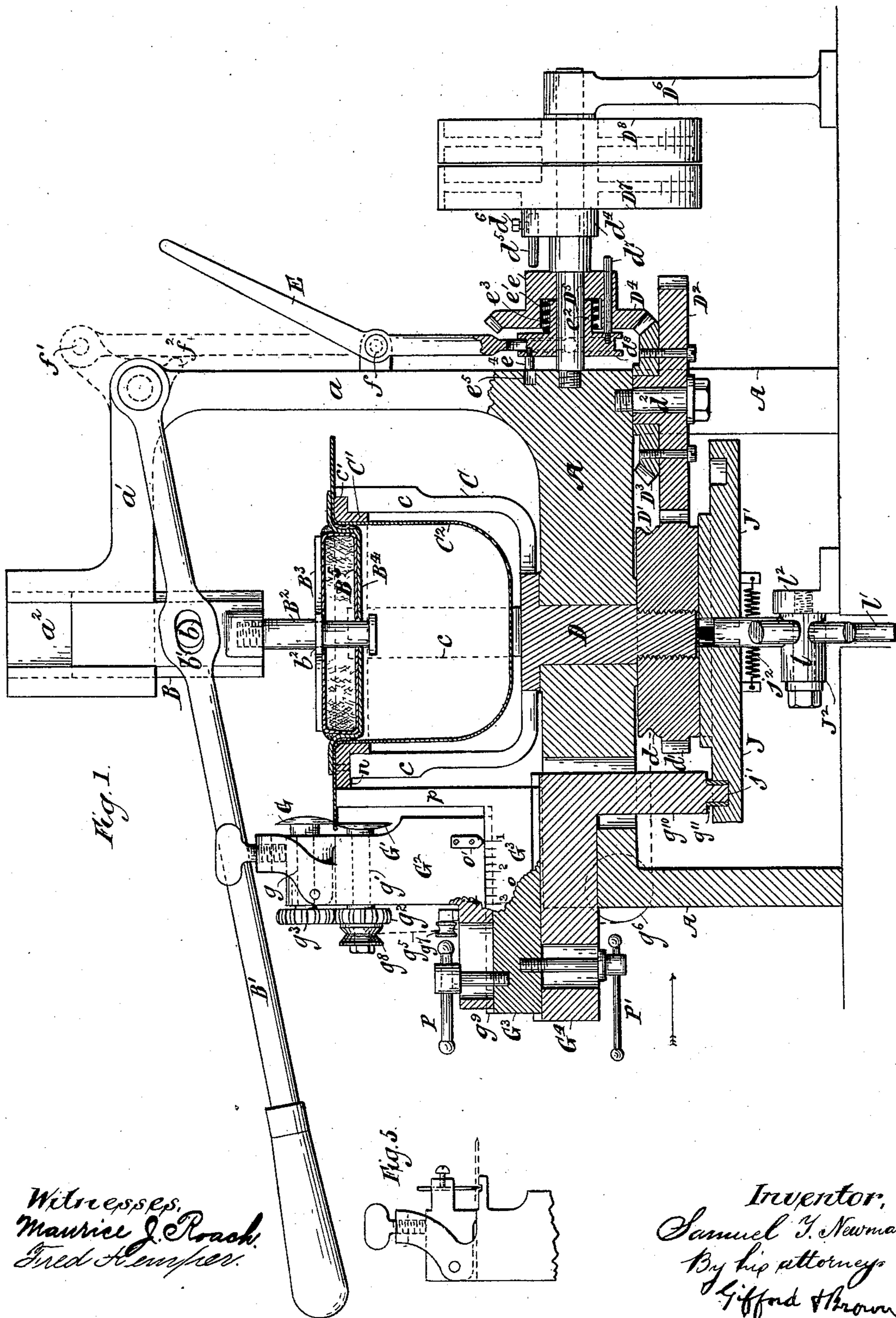


S. T. NEWMAN.
HAT TRIMMING MACHINE.

No. 387,692.

Patented Aug. 14, 1888.



Witnesses,
Maurice J. Roach,
Fred Hempfer.

Inventor,
Samuel T. Newman
By his attorneys
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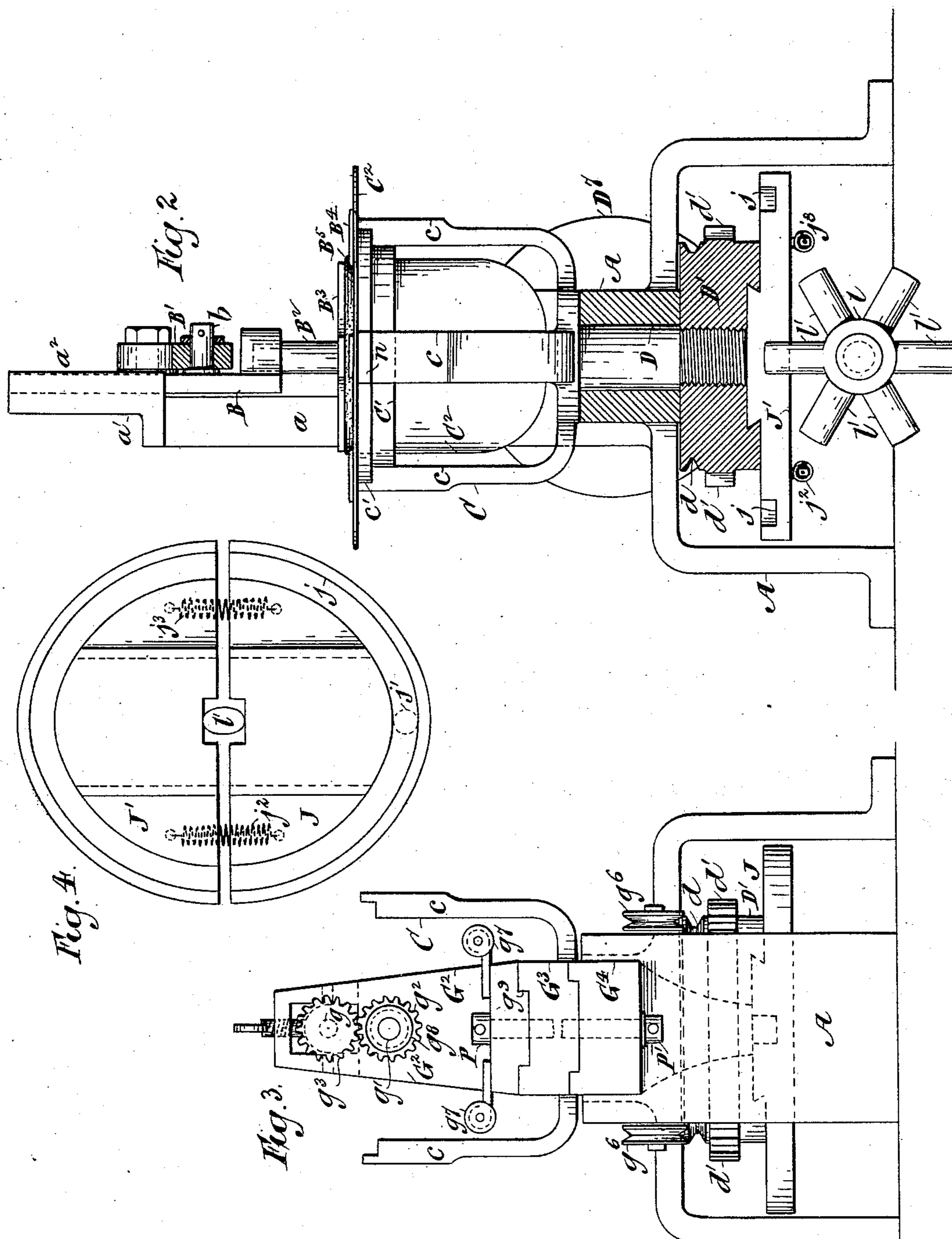
(No Model.)

2 Sheets—Sheet 2.

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Fred Kemper

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UNITED STATES PATENT OFFICE.

SAMUEL T. NEWMAN, OF DANBURY, CONNECTICUT, ASSIGNOR OF ONE-
FOURTH TO CHARLES H. MERRITT, OF SAME PLACE.

HAT-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 387,692, dated August 14, 1888.

Application filed March 19, 1888. Serial No. 267,713. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. NEWMAN, of Danbury, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Improvement in Hat-Trimming Machines, of which the following is a specification.

My improvement relates to the class of hat-machines employed for trimming the brims of hats.

I will describe a machine embodying my improvement in detail, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a hat-machine embodying my improvement. Fig. 2 is an end view of the same, also partly in section, and looking in the direction of the arrow, Fig. 1. Fig. 3 is also an end view looking in the same direction. Fig. 4 is a detail view of a certain pattern-cam employed in the machine. Fig. 5 shows a slight modification of certain parts.

Similar letters of reference designate like parts in all the figures.

A designates the frame of the machine. Extending from the frame is an upright, *a*, from which upright extends horizontally an arm, *a'*. The arm *a'* has an upwardly-extending portion, *a''*, in which is formed a slideway. Adapted to be slid up and down within the slideway is a slide, B. This slide is manipulated by means of a lever, B', fulcrumed upon the portion *a* of the frame. The lever B' is loosely connected to the slide B by means of a pin, *b*, extending from the slide into a slot, *b'*, formed in the lever. Secured to the slide B is a rod, B². This rod is provided at its lower end with a circumferential flange, *b''*. Mounted loosely upon the rod B² is a spider, B³. Below the spider B³ is another spider, B⁴. This latter spider is also loose upon the rod. Between the spiders B³ B⁴ is arranged an expansible and contractible cushion, B⁵. This cushion is preferably made of india-rubber and is hollow. It is to be filled with air and hermetically sealed.

C designates a frame, shown as comprising four upright arms, *c*. These arms are rabbeted near their upper ends and upon their inner sides. A ring, C', provided with a cir-

cumferential flange, *c'*, is supported by the arms *c* at their upper ends, the flange *c'* extending into the rabbets formed in said arms. The ring C' constitutes in effect part of the frame C. It is of the shape and size circumferentially of the hat-body to be manipulated. I have shown a hat-body, C², arranged within and supported upon the ring. It will be seen that the hat-body is inverted. The ends of the arms of the spider B⁴ are bent in such manner that when moved downwardly by means of the lever B' they will extend over the brim of the hat and its support and will operate to secure the brim. Further downward movement of the spider B⁴ is therefore prevented. The continued movement of the rod B² causes the cushion B⁵ to be compressed between the spiders B³ B⁴. Its sides are thereby distended and come into contact with the hat-body, securing it firmly in position on the ring C'. When the lever B' is moved in the other direction, the parts supported by the slide B are moved away from the hat-body, and the latter may then be easily removed from the frame. The parts supported by the rod B² constitute a securing device. The use of an expansible and contractible cushion is advantageous, because, while it firmly secures the hat-body in position when compressed, it will not mark or deface the hat body. At the same time it will readily accommodate itself to hats of different sizes.

Extending downwardly from the frame C is a shank or stem, D. This shank extends loosely through a suitable aperture in the frame A. Below the frame A the shank bears a wheel, D'. This wheel is provided with a circumferential groove constituting a pulley, *d*, and with a circumferentially-extending series of gear-teeth, *d'*. Engaging the gear-teeth *d'* is a gear-wheel, D². This gear-wheel is loosely mounted upon a stud, *d''*, extending from the frame A. Secured upon the upper side of the gear-wheel D² is a bevel gear-wheel, D³. This gear-wheel meshes with a bevel gear-wheel, D⁴, loosely mounted upon a shaft, D⁵, secured at one end in the frame A and at the other end in a standard, D⁶. Upon the shaft D⁵ are loosely mounted a driving-pulley, D⁷, and a loose pulley, D⁸. The driving-pulley is provided with a hub, *d'*. A pin, *d''*, extends

from the hub d^4 . This pin extends loosely into a socket in the hub and is secured in position by a set-screw, d^6 . Its extent beyond the hub may therefore be varied. When the driving-pulley is rotated, the pin d^5 will, when it is desired to drive the machine, come in contact with a pin, d^7 , extending beyond the side of the gear-wheel D^4 . The frame C, bearing the hat body, will then be rotated. The pins d^5 d^7 constitute in effect a clutch.

I desire to automatically stop the machine each time the frame C has made one complete rotation. To accomplish this I cause the withdrawal of the pin d^7 out of the path of the pin d^5 . The rotation of the gear-wheel D^4 will therefore at once cease. The pin d^7 is rigidly mounted at one end in a sliding piece, d^8 , (here shown as in the form of a wheel. It is loosely mounted on the shaft D^5 . The pin d^7 extends loosely through an aperture in the gear-wheel D^4 . This last-named gear-wheel is provided with an enlarged hub, e . This hub has an internal recess, e' . Upon the sliding piece d^8 is a sleeve, e^2 , which extends into the recess e' . A coil-spring, e^3 , surrounds this sleeve. The tendency of this spring is to force the sliding piece d^8 away from the gear-wheel D^4 and toward the frame A. The sliding piece d^8 is provided with a pin or projection, e^4 . Normally this pin or projection will extend into a recess, e^5 , in the frame A. The sliding piece d^8 will then be retracted far enough to withdraw the pin d^7 from the path of the pin d^5 . When it is desired to start the machine, the sliding piece d^8 is moved outwardly against the resistance of the spring e^3 until the pin or projection e^4 is clear of the recess e^5 . The parts will then occupy the position shown in Fig. 1. The gear-wheel D^4 and the sliding piece d^8 will thus be enabled to make a single complete rotation. When the pin e^4 again comes opposite the recess e^5 , it will be sprung into such recess and the machine will thus be at once stopped. I have shown two means for manipulating the sliding piece d^8 to cause the withdrawal of the pin from the recess. In one of these I employ a lever, E, constituting a shipper, fulcrumed upon a pin or stud, f , extending from a projection on the main frame of the machine. The lower portion of this lever is bifurcated and the bifurcated portions extend downwardly about the sliding piece d^8 . The sliding piece d^8 is provided with a peripheral groove, into which extend pins or projections upon the bifurcated portions of the lever E. When the upper or free portion of the lever is moved in one direction, the sliding piece is moved outwardly against the resistance of the spring. By the other means which may be employed, and which is shown in dotted outline, the lever E, instead of being fulcrumed upon the pin or stud f , is fulcrumed near its upper end upon a pin or stud, f' . Upon the lever B' is a toe or projection, f^2 , which, when the lever is moved in a direction to effect the securing of the hat-body, as described, will come in contact with the lever E, moving the latter outwardly, and

thereby causing the operation of the sliding piece.

I will now describe the means for trimming the brim of the hat, in which G G' designate rotary knives, between which the brim of the hat will pass as the latter is rotated in manner described. These knives trim off the brim to the desired width. The knives are mounted upon short shafts g g' , mounted in suitable bearings in a sliding piece, G^2 . Rotary motion is transmitted to the shafts g g' , and consequently to the knives, by gear-wheels g^2 g^3 , which mesh and are mounted upon said shafts, respectively. Motion is transmitted to the gear-wheels by means of a belt, g^5 , passing about the pulley d , pulleys g^6 , mounted on the main frame, pulleys g^7 on the sliding piece G^2 , and over a pulley, g^8 , on the shaft g' . The portion of the sliding piece G^2 in which is mounted the shaft g has a hinged connection with the main portion of the sliding piece. It may therefore be rocked backwardly, so as to raise the knife G to admit of the insertion of the hat-brim. I have shown the gear-wheels g^2 g^3 as provided with curved gear-teeth to admit of rocking one gear-wheel upon the other without impairing the engagement of the teeth.

The sliding piece G^2 is mounted in a sliding piece, G^3 , and is adapted to be slid to and fro in a slideway, g^9 , formed in the sliding piece G^3 . The sliding piece G^3 is similarly mounted on a sliding piece, G^4 , which latter is adapted to be slid to and fro in a slideway formed in the frame A. The sliding piece G^4 is provided with a downwardly-projecting portion, g^{10} . Upon this downwardly-projecting portion, and near the lower end thereof, is mounted a roller or bowl, g^{11} . This roller or bowl extends into an elliptical groove, j , formed in the face of an expanding and contracting pattern-cam, J J'. I designate this a "pattern-cam" because during its rotation it causes the movement of the knives G G' nearer to or farther from the hat-body, thus causing the knives to cut more or less material from the brim at different parts of the brim, as desired. The pattern-cam is composed of two portions, J J', each of which forms, approximately, one-half of an ellipse. These two portions are supported by the wheel D' . This support is effected as follows: Upon the under side of the wheel D' is a V-way groove extending diametrically across the wheel. Into this groove extends a V-shaped projection on the parts J J' of the pattern-cam. The parts J J' may be slid to and fro in the V-way toward and from each other. The parts J J' are united by springs j^2 j^3 , extending between them, the tendency of which springs is to draw said parts toward each other. Of course as the pattern-cam is supported by the wheel D' when the latter is rotated rotary motion is imparted to the cam. As the roller or bowl g^{11} on the portion g^{10} of the sliding piece G^4 extends into the elliptical groove j , the cam as it rotates will cause the roller or bowl to be moved nearer to or farther from the center of rotation of the cam and the sliding piece G^4 to

be slid to and fro. As the sliding piece G^4 carries with it in its reciprocations the sliding pieces $G^2 G^3$, and consequently the knives $G G'$, the latter are caused to trim a greater or less width of material from the brim of the hat.

I not only desire to cause the knives to cut a greater or less width of material from the brim, but I also desire to be able to vary the points in the circumference of the brim where the variations of depth of cut shall occur. Some shapes of hats require the brim to be wider in front and narrower at the sides than others, and it is to effect these desired variations that I employ the mechanism about to be described.

J^2 designates a pattern device. This device comprises, essentially, a hub, l , and a number of projections or spokes, l' . The hub is mounted upon a stud extending from an upright or standard, l'' , which latter is secured to the floor or other support beneath the machine. The projections or spokes l' vary in thickness, but are of uniform width. The variations in thickness are more clearly shown in Fig. 1. The uniformity of width is more clearly shown in Fig. 2. All of the projections or spokes are elliptical in the cross-section. This pattern device co-operates with the pattern-cam $J J'$. The adjacent edges of the two portions $J J'$ of the latter are provided with notches l^4 , which notches are rectangular in outline. If the two parts $J J'$ were brought into contact, these notches would form a substantially square opening through and at about the center of the cam. Each of the projections or spokes l' on the pattern device is adapted, as occasion may require, to be inserted near its free end into such notches, and the springs $j^2 j^3$ will force the portions $J J'$ into intimate and constant contact with the projection or spoke. As the pattern-cam rotates, its parts $J J'$ will be permitted to come more or less close together, according to the thickness of the projection or spoke within the notches, whereby the degree of reciprocation of the sliding piece G^4 , and consequently the movement of the knives $G G'$, toward or from the hat-body is increased or decreased at the time and places desired.

It will be seen that when desired the sliding pieces $G^2 G^3 G^4$ may be locked together by clamping-pieces $P P'$. They then move as one piece. By loosening the clamping-piece P the sliding piece G^2 may be moved nearer to or farther from the hat-body, so as to cause the initial cut of the knives to be made at the desired distance from the hat-body. A gage, o , on one of the sliding pieces and a pointer, o' , on the other will indicate the proper position of the knives. By loosening the clamping-piece P' the sliding piece G^3 may be moved into such a position that an upwardly-projecting portion, p , thereon may be brought into contact with a projection, n , extending from the side of the ring C' . This adjustment takes place when the machine is being set for operation. As the rings C' vary in diameter according to the sized hat to be operated upon,

it is desirable that when said rings are changed the parts may be brought into such position relatively to each ring that there will not be differences in widths of brim between hats of different sizes but of the same kind, and this is effected by adjusting the sliding piece G^3 as described.

Of course it is to be understood that, the parts having been properly adjusted to a given size and kind of hat, the brims of all the hats subjected to the trimming will receive the same cut until the parts receive different adjustment.

Instead of using rotary knives to cut the brim of the hat, I may use a single stationary knife, as shown in Fig. 5. In this case, also, the swinging section of the sliding piece G^2 bears the knife. Beneath the knife and extending from the sliding piece G^2 is a cutter-bed, s . The hat-brim as the hat is rotated passes beneath the knife, severing the desired portion from the brim.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hat-trimming machine, the combination, with a rotary frame adapted to receive a hat-body, of an expansible and contractible cushion for securing the hat-body in the frame, and a longitudinally-movable device upon which said cushion is mounted adapted to compress the cushion, substantially as specified.
2. In a hat-trimming machine, the combination, with a rotary frame adapted to receive a hat-body, of an expansible and contractible cushion for securing the hat-body in the frame, a longitudinally-movable device upon which the said cushion is mounted for compressing the cushion, and a spider or like device for securing the brim of the hat and forced downwardly by said cushion, substantially as specified.
3. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of a knife for trimming the brim of the hat, a sliding piece in which said knife is mounted, an expansible and contractible pattern-cam for causing a reciprocating motion to be imparted to said knife, and a connection between said pattern-cam and said sliding piece, substantially as specified.
4. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of a knife for trimming the brim of the hat, a sliding piece in which said knife is mounted, a pattern-cam comprising two sections for causing a reciprocating motion to be imparted to said knife, a pattern-changing device extending between the two sections of the cam for causing an expansion of the cam, a spring or springs for causing a contraction of the cam, and a connection between the cam and said sliding piece, substantially as specified.
5. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of knives for trimming the brim of the hat, a pattern-cam comprising two sections

for causing a reciprocating motion to be imparted to the knives, and an adjustable pattern device comprising a number of projections or spokes of different sizes, each of which is adapted to be inserted between the portions of the cam to cause an expansion of the cam and by which the degree of such expansion may be varied, substantially as specified.

6. In a hat-trimming machine, the combination, with a rotary frame for supporting a hat-body, of knives for trimming the brim of the hat, a wheel imparting motion to said frame, a pattern-cam supported by and having a sliding connection with said wheel, and a sliding piece operated by the pattern-cam to cause a reciprocating motion to be imparted to the knives, substantially as specified.

7. In a hat-trimming machine, the combination, with a frame comprising a ring for sup-

porting a hat-body, said ring being provided with a projection, of securing devices for retaining the hat-body in position in the frame, a sliding piece having a portion adapted to be moved into contact with the projection on the ring, a second sliding piece mounted upon the sliding piece first named and bearing knives, a gage on one of said sliding pieces and a pointer on the other, a third sliding piece supporting both the sliding pieces previously named, means for securing all said sliding pieces together, and a pattern-cam for causing the reciprocation of all the sliding pieces, substantially as specified.

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Witnesses:

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