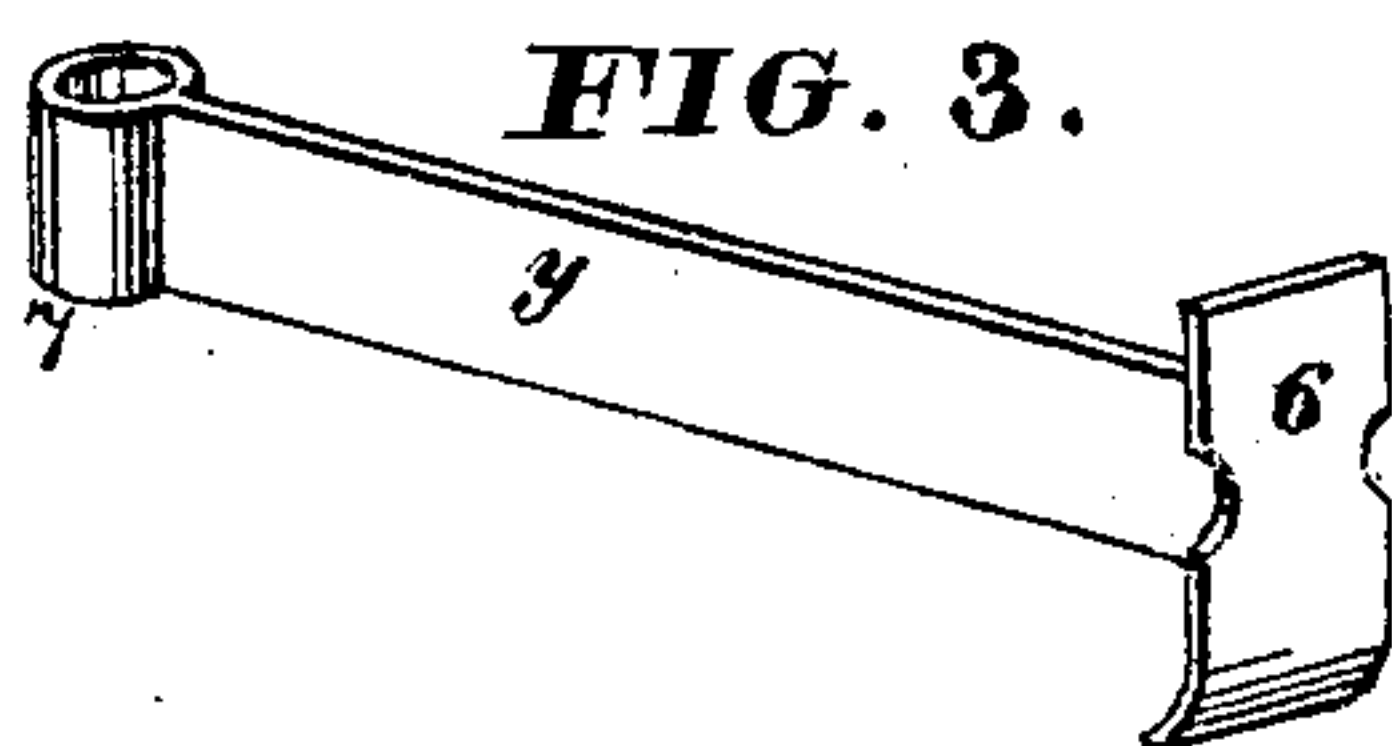
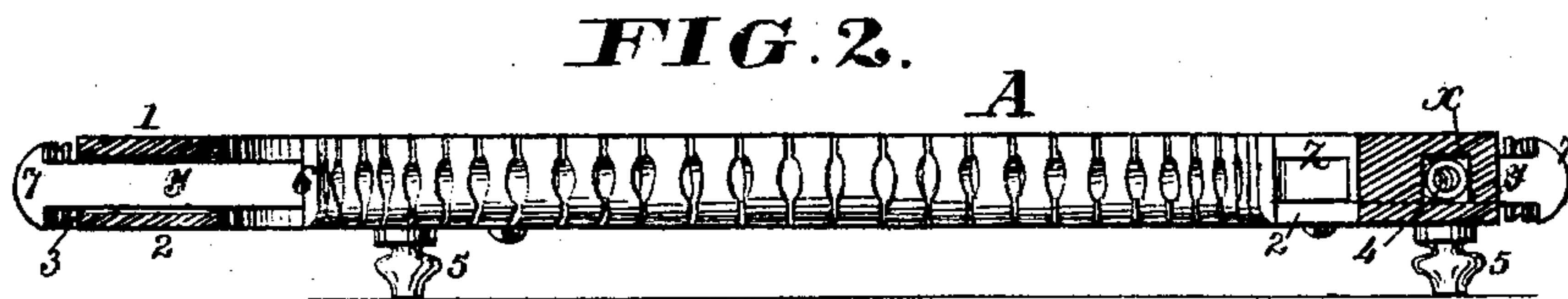
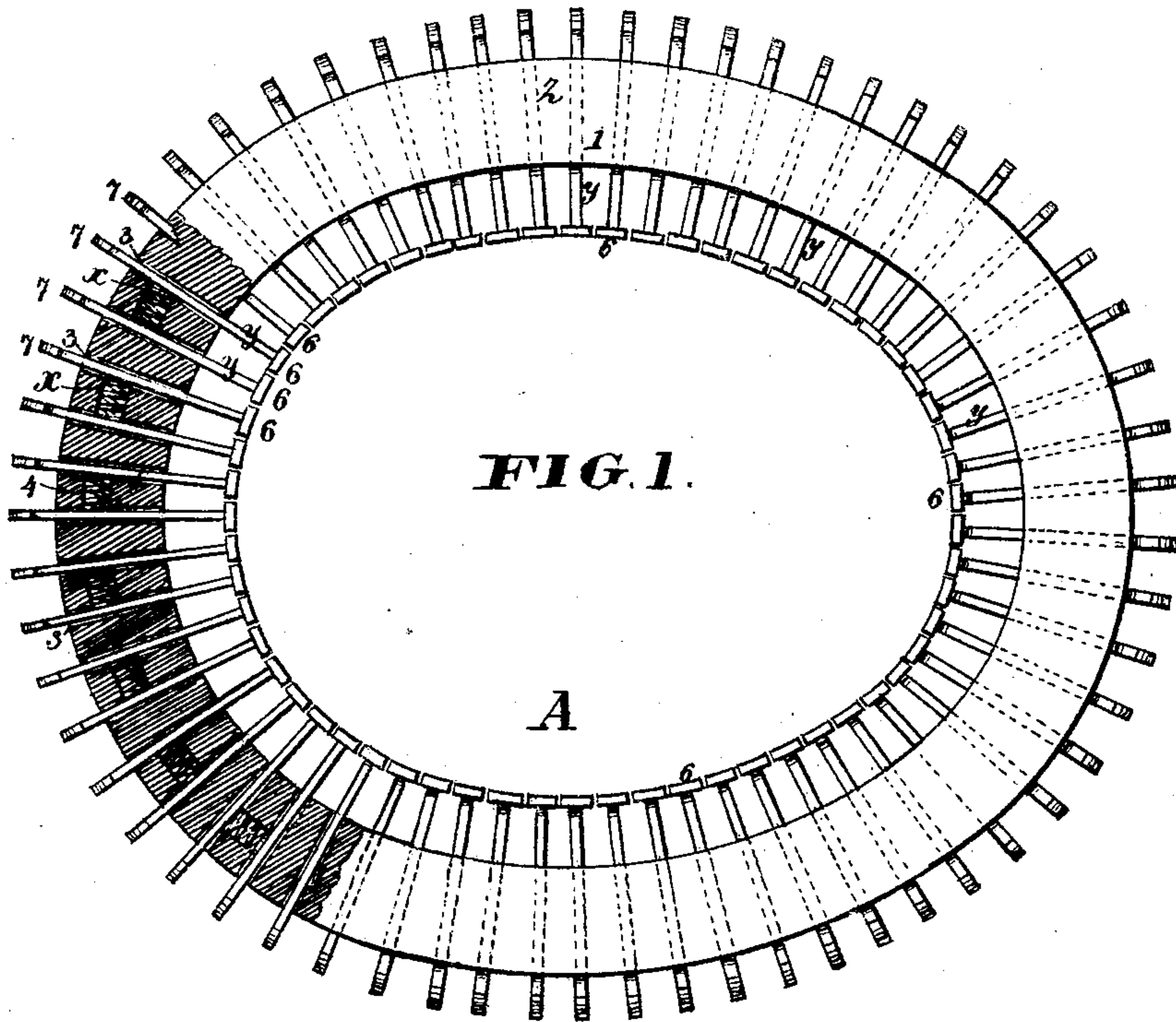


J. J. McKNIGHT.
Hat-Conformators.

No. 144,855.

Patented Nov. 25, 1873.



WITNESSES:
Walter Allen
W. H. Pearce

INVENTOR:
John J. McKnight
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FIG. 4.

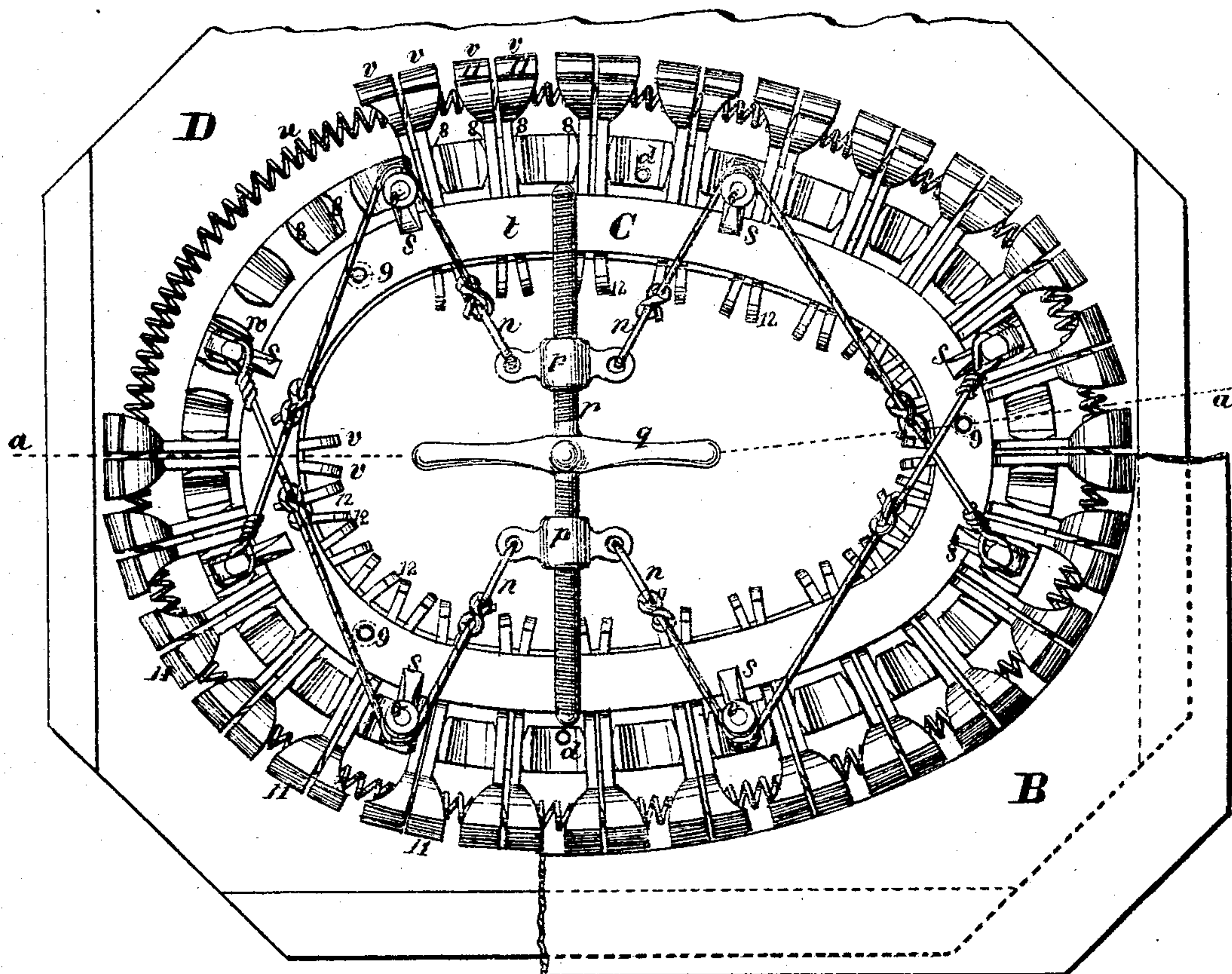
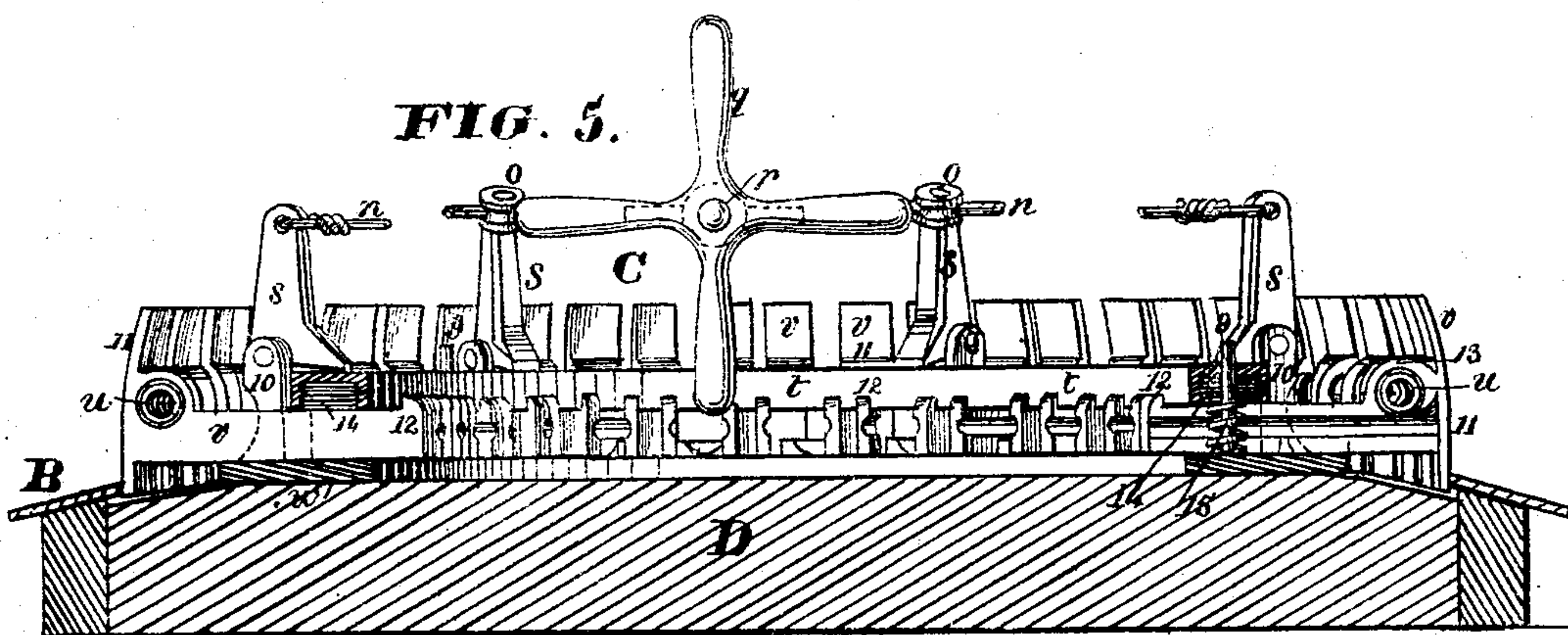


FIG. 5.



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UNITED STATES PATENT OFFICE.

JOHN J. McKNIGHT, OF TARRYTOWN, NEW YORK, ASSIGNOR TO HIMSELF
AND ABRAM STORMS, OF SAME PLACE.

IMPROVEMENT IN HAT-CONFORMATORS.

Specification forming part of Letters Patent No. **144,855**, dated November 25, 1873; application filed
August 21, 1873.

To all whom it may concern:

Be it known that I, JOHN J. McKNIGHT, of Tarrytown, in the county of Westchester, New York, have invented an Improved Hat-Conformator, of which the following is a specification:

This invention relates to the apparatus for fitting hats termed "conformators," and particularly to the two principal parts of such apparatus, termed, respectively, first, the conformator, as the means for taking and transferring the size and shape of the head; and, second, the "conform" or "band-block," which receives the conformation, and constitutes the pattern on which the hat is blocked, so as to secure an exact fit. The first part of the invention consists in constructing the conformator with loose feeler-slides, working in grooves in the supporting-band, constructed with short feelers, and held from displacement individually by frictional spring-stops. The second part of the invention consists, first, in the employment, in the conform or band-block, of curved slides guided by pivotal studs or pins; second, in the employment of an endless spiral spring for expanding the conform-slides; third, in the employment of a single tightening-screw in combination with presser-levers and equalizing connections, consisting of chains or their equivalents. Both parts of the apparatus are self-adjusting, operate positively, and are so simple as to be free from liability to get out of order with ordinary care. The operations of preparing and setting the apparatus may be performed in considerably less time than with other apparatus. The conformator is adapted to be made very light, and does not forcibly gripe the head; consequently, when it is placed on the head, the proper position may be ascertained at once. The conform or band-block has the advantage of a smooth outer surface of the exact contour of the original, owing to the lateral freedom of the sections or slides, which adjust themselves, moving on their pivotal guides. The greatest saving of time is also attained in its operation, the sections being all secured in position by the manipulation of a single tightening-screw in lieu of several.

Figure 1 is a plan view, partly in section, of a conformator illustrating the first part of this invention. Fig. 2 is a vertical longitudinal

section of the same. Fig. 3 is a perspective view of one of the feeler-slides of the same, as made of sheet metal. Fig. 4 is a plan view of the conform or band-block, and the pattern-band and set-block used therewith, some of the slides of the conform being omitted. Fig. 5 is a vertical longitudinal section of the conform or band-block, pattern-band, and set-block, on the line *a*, Fig. 4. Figs. 3, 4, and 5 are drawn to a larger scale than Figs. 1 and 2. In relative size, the internal diameters of the conformator correspond with the external diameters of the conform or head-block.

Referring to the drawing, A, Figs. 1 and 2, represents a conformator, by which the size and shape of the head may be readily ascertained, so that a pattern for an accurately-fitting hat may be constructed therefrom. B, Figs. 4 and 5, represents a pattern-band of card or pasteboard thus produced. C, Figs. 4 and 5, represents a conform or band-block, which receives the conformation from the conformator A by means of the pattern-band B, and itself constitutes a positive pattern, on which the hat is blocked. D, Figs. 4 and 5, represents a set-block, which gives the curve of the rim, and constitutes the support of the conform or band-block C. The conformator A, Figs. 1 and 2, is composed of a ring or band, *z*, radial feeler-slides *y*, and frictional stop-springs *x*. The band *z* is oval or egg-shaped, and of sufficient size to pass over the largest heads. It may be rectangular in cross-section, more or less wide and thick, as preferred, and is made in two parts, 1 2, united in a plane parallel to the faces of the band. Radial grooves 3 and recesses 4, between the successive pairs of grooves, are formed in the under side of the part 1 of the band, and closed by the part 2, to form, respectively, guideways for the feeler-slides *y* and chambers for the springs *x*.

The band is preferably made of laminated wood, with grain crossed, or of "hard rubber," and its parts are united by screws introduced through the part 2, which is furnished with supporting-feet 5, and constitutes the bottom of the band.

The feeler-slides *y* may be made of wood, hard rubber, or any preferred metal. They are preferably made of sheet-brass, of the form

represented in Fig. 3, and are constructed with short "feelers" 6 at their inner ends, and heads 7 at their outer ends for moving the same and limiting their movements, the bodies of the slides being thin, flat, and of uniform diameter throughout. The feelers proper are curved outward at their lower ends, which first engage with the head. Their lower ends are square, constituting the gage-line. The shape of the intermediate portion is unessential. The springs x are short coils of brass or steel wire, and operate by pressing on the feeler-slides with sufficient force to hold the same against accidental displacement.

The pattern-band B, Figs. 4 and 5, may be of any convenient paper-board, and constitutes a temporary negative pattern formed at each operation.

The conform or head-block C, Figs. 4 and 5, is of the same general shape as the conformator A, the external diameters of the former corresponding with the internal diameters of the latter, as before stated. This apparatus comprises an annular base plate or band, w , radial slides v , an endless spring, u , for expanding the slides, and a retaining-band, t , for holding or locking them. The base-band w is perforated to receive position-pins d on the set-block D, and may be flat, as represented, or bent to conform to the upper surface of the set-block, on which it rests. It is made sufficiently wide and thick to give the required strength. On its upper surface, at or near its outer edge, this is furnished with rounded or round projections 8, which constitute pivotal guides, between which the slides are arranged in pairs. The base-band is further provided with vertical pins 9 and pillars 10, serving, respectively, to guide the retaining-band t , and to form bearings for elbow-levers s , for applying the pressure.

The outer ends 11 of the slides v constitute sections of the effective blocking-surface. They are properly shaped to thus serve. The inner ends of the slides are furnished with retaining-lugs 12. The shanks of the slides are curved laterally, so that each slide may adjust itself independently of the others. The slides are constructed with perforated enlargements 13 to receive the spring v , which serves to unite the same, as well as to force them outward when they are released. This spring is, by preference, an endless wire coil, which may be formed by soldering or otherwise uniting the ends of an ordinary spiral spring of sufficient length. The lower surface of the retaining-band t is, by preference, recessed to receive a packing or facing, 14, of leather or equivalent soft frictional material. The retaining-band is made of proper size and shape to correspond with the base-band, in connection with which it operates, and it is perforated to receive the guide-pins 9. On these pins, beneath the retaining-band, springs 15 are arranged to lift the retaining-band when released.

The preferred mechanism for actuating the

presser-levers s is clearly illustrated in Figs. 4 and 5, as applied thereto. r represents a right-and-left screw; q , a central hand-wheel applied to the same; $p p$, traversing nuts on its respective ends; $o o$, grooved rollers on the upper ends of certain of the levers s ; and n , flexible connections between the levers as a whole and the nuts.

In the illustration, four pairs of levers are employed, and one of each pair is furnished with a roller, o , around which the flexible connection n passes from the other lever of the pair to one of the nuts. By these means the several levers are actuated by a single screw, and the force applied to the respective levers may be equalized to any required extent.

The bands, slides, levers, hand-wheel, and nuts of this apparatus are, by preference, made of cast-brass; the springs of brass or steel wire; the pivots and bearings of levers, steel; the screw, iron; the flexible connections, brass wire and catgut, as in the illustration, or small brass chains. These and similar details are not, however, essential to the invention.

To prepare the apparatus for employment, the edge of the conformator A is rolled on any convenient flat surface, and a leather strap or its equivalent is tightened around the conform or head-block C to force the slides $y v$ inward to their fullest extent. The slides of the conformator are retained by friction; those of the conform by tightening the retaining-band t , which is accomplished by turning the hand-wheel q in the proper direction. The leather strap may then be removed.

To use the conformator A it is held near the center with both hands on opposite sides, the thumbs being placed under and the fingers on top of the band z ; and it is applied to the head with the small end in front, and pressed down to the position which the hat-band is to occupy. As the conformator is lowered on the head, the feeler-slides y are forced outward until the feelers form a temporary band, conforming to every curve, at the proper position. The frictional spring-stops x now operate to prevent the accidental displacement of the slides, while the conformator is lifted in upright position from the head, and inverted onto a sheet of card or pasteboard, B. The outline of the feelers is next traced with a pencil on the card-board, and the center thus indicated is cut out, forming the pattern-band B. To apply the pattern to the conform or band-block C, the conform being in position on the set-block D, the pattern-band B is placed over the same with the marked side down, as illustrated in Figs. 4 and 5. The slides v are now released by turning the hand-wheel q , when they are immediately projected outward by the endless spring u , until arrested by the pattern edge, on which they arrange themselves under the pressure of the spring, being free to accommodate themselves perfectly thereto by reason of their curved shape and the pivotal form of their guides. The

slides are now locked by means of the retaining-band *t*, actuated by turning the said hand-wheel, after which the conform or band-block may be used in the ordinary way as a pattern on which to block a hat to an exact fit.

The employment of frictional holding devices is not broadly claimed under the arrangement of my conformator; neither do I broadly claim the employment in hat-conformators of an endless spring; and I particularly disclaim any features of my conformator which may be shown or described in Miller's expired patent No. 14,984, dated May 27, 1856.

The following is claimed as new:

1. The conformator A, composed of the recessed supporting-band *z*, the radial feeler-slides *y*, and the frictional spring-stops *x*, the latter being so combined with the feeler-slides as to press laterally against the same, in the manner and for the purpose specified.

2. The pivoted guides *8* and curved conform-slides *v*, constructed and operating, in combination with each other, substantially as herein described, for the purposes set forth.

3. The endless expanding-spring *u*, in combination with conform-slides *v*, perforated to receive the same, as described, for the purposes specified.

4. The single tightening-screw *r*, traversing nuts *p*, grooved rollers *o*, and flexible connections *n*, in combination with the presser-levers *s*, for tightening the retaining-band *t*, and thereby fastening the conform-slides, as set forth.

JOHN J. McKNIGHT.

Witnesses:

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W. R. COLLINS.