

(No Model.)

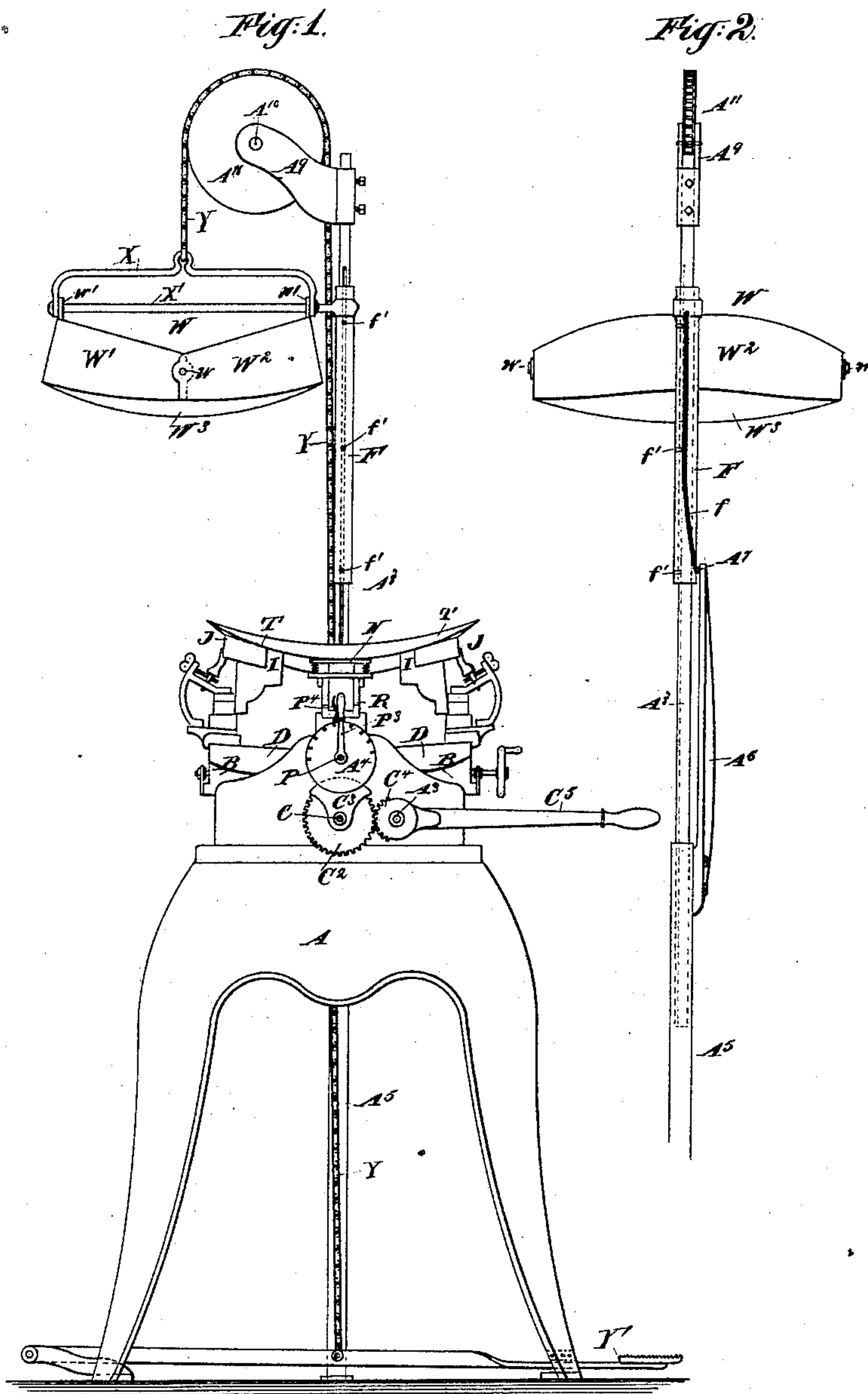
3 Sheets—Sheet 1.

L. H. HOYT.

APPARATUS FOR SHAPING HAT BRIMS.

No. 338,272.

Patented Mar. 23, 1886.



Witnesses:

Charles K. Searle,
C. Brooks

Inventor:

Louis H. Hoyt
by his attorney
Thomas Drew Stearns

(No Model.)

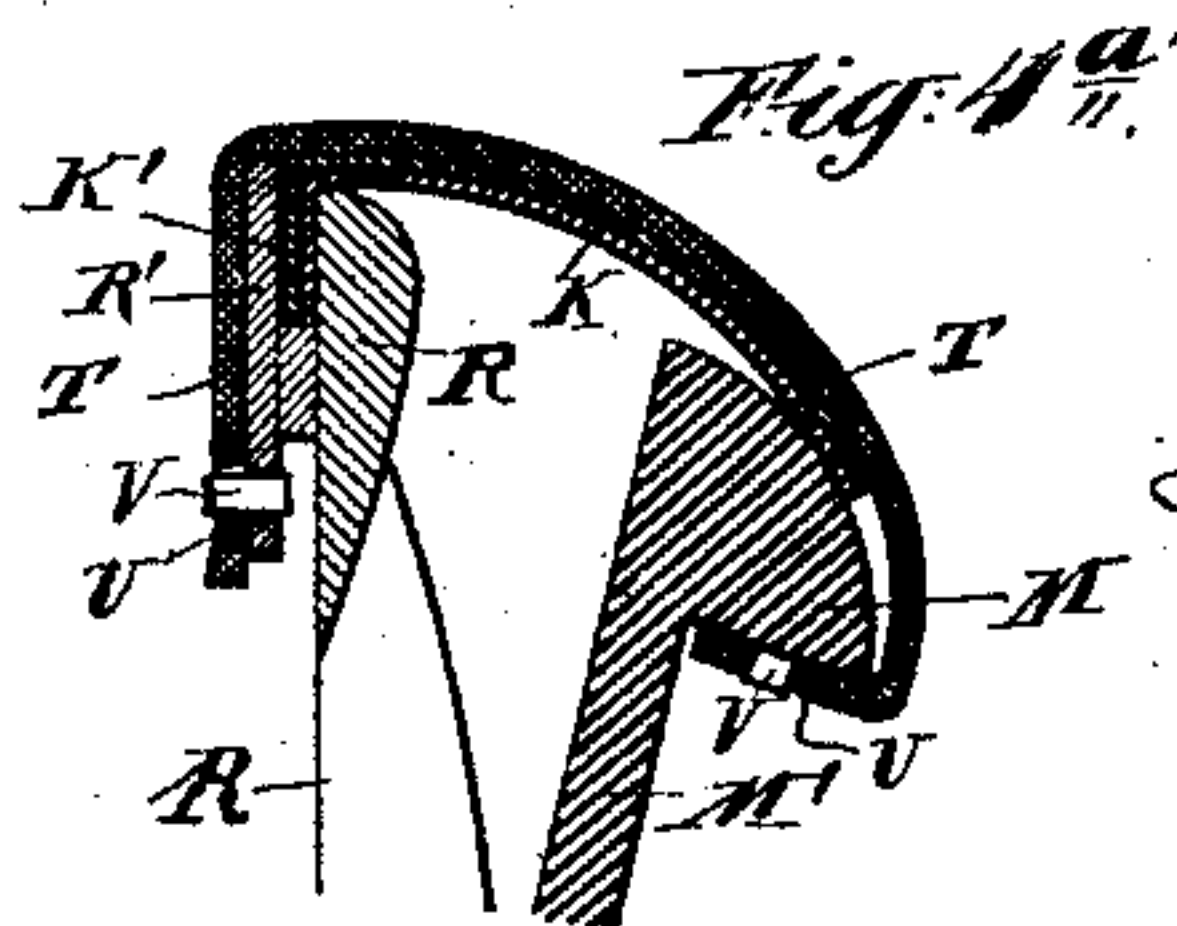
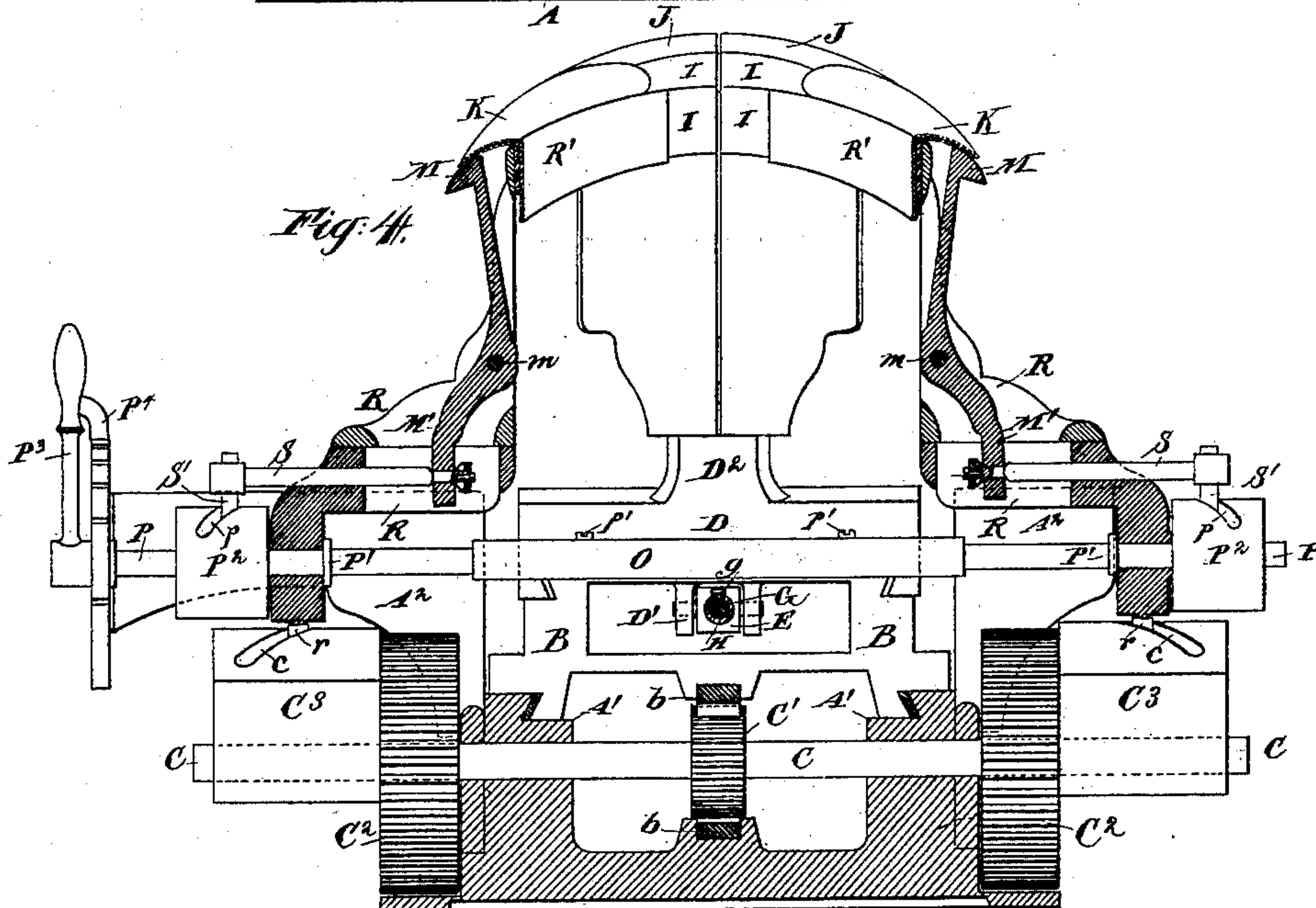
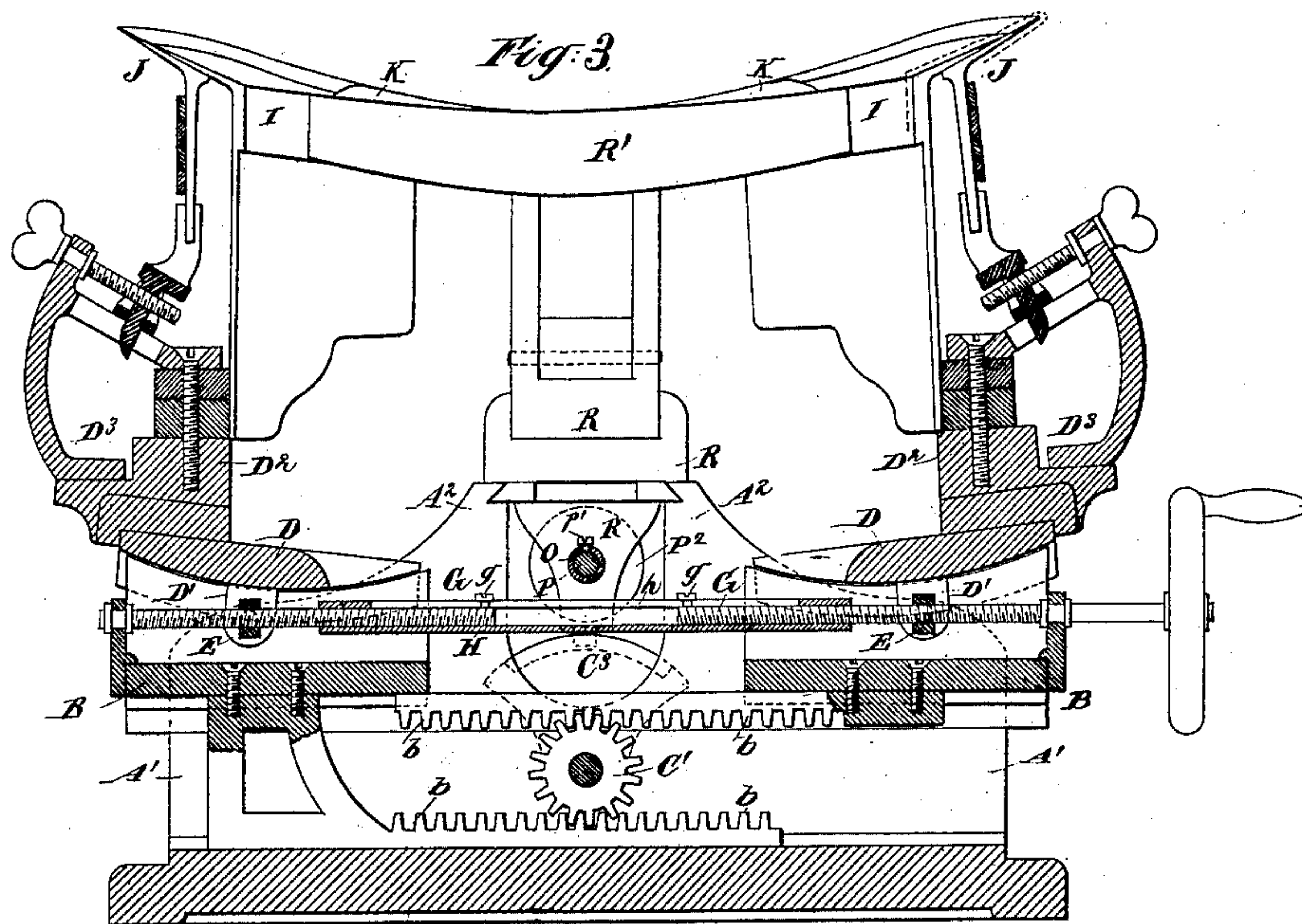
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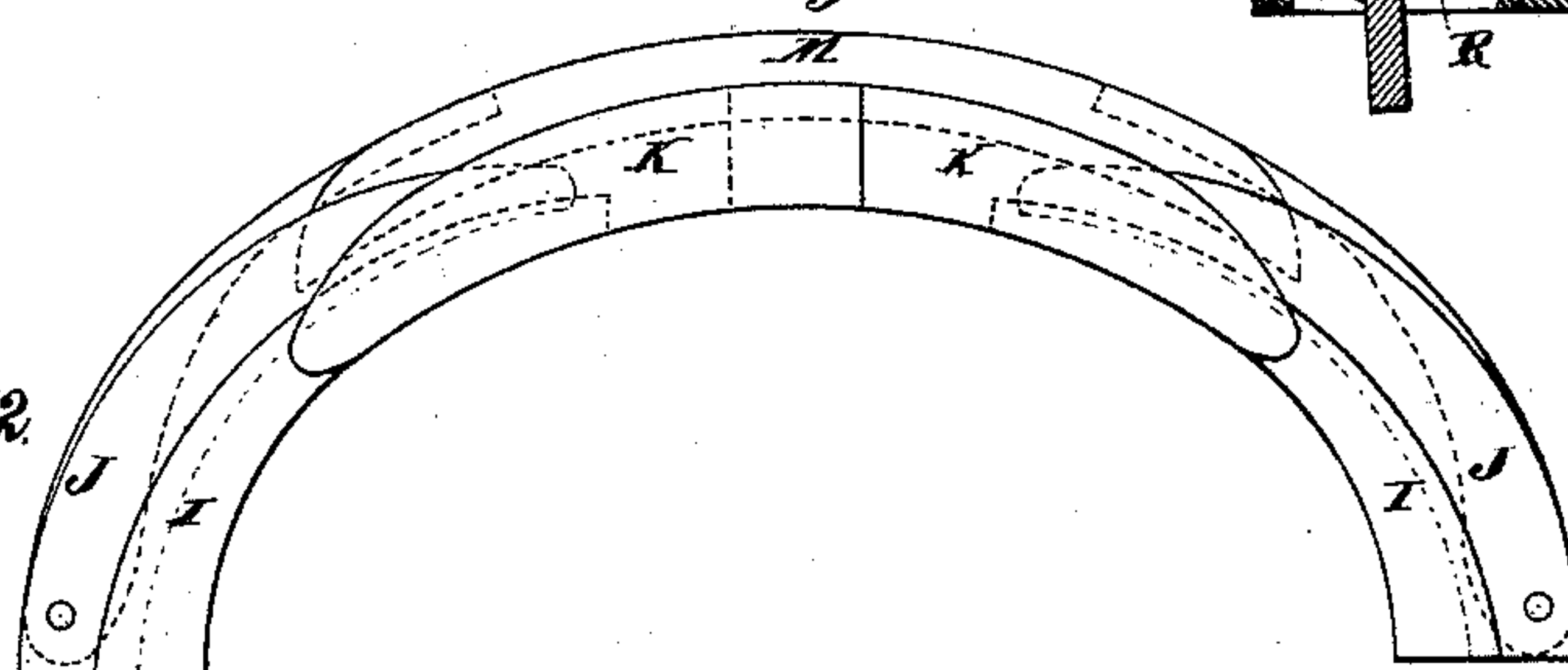
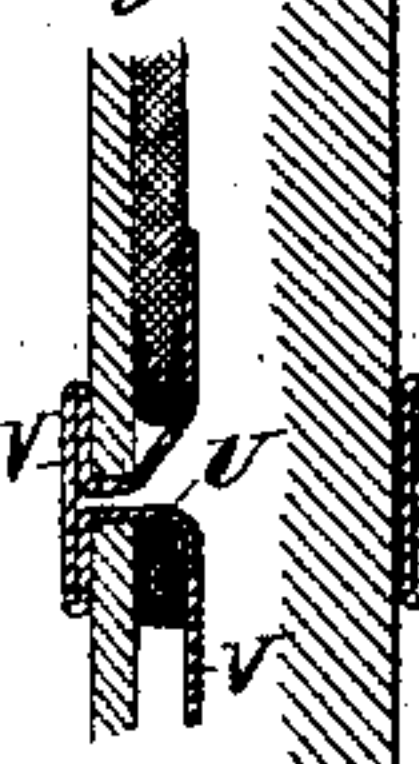
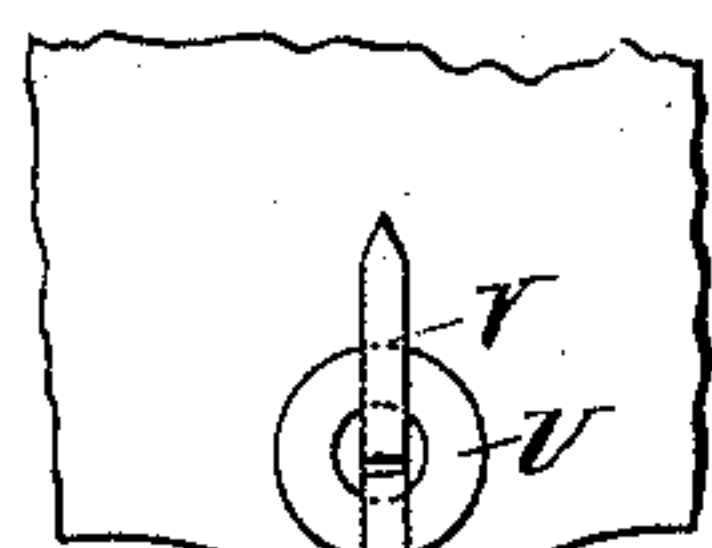
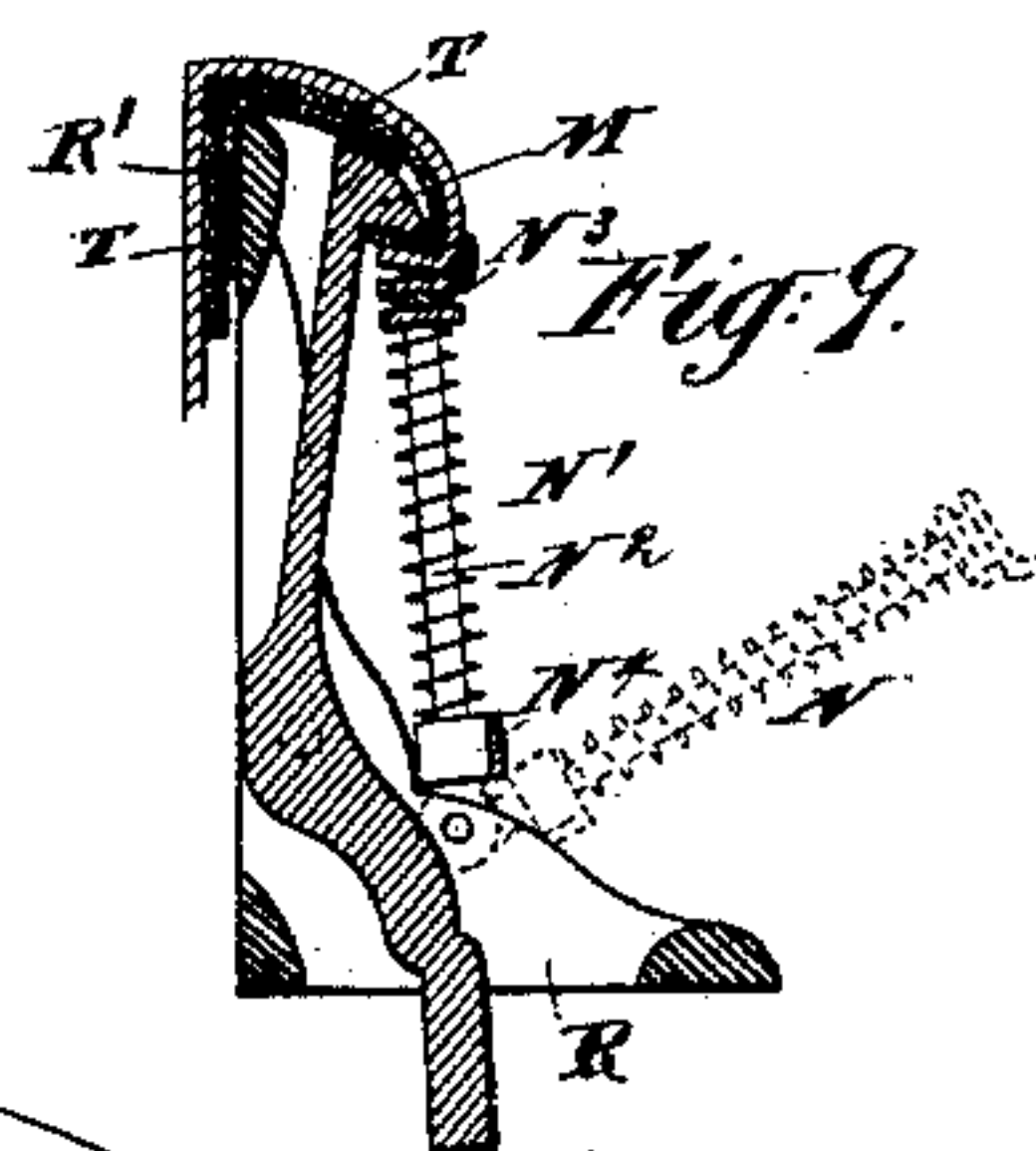
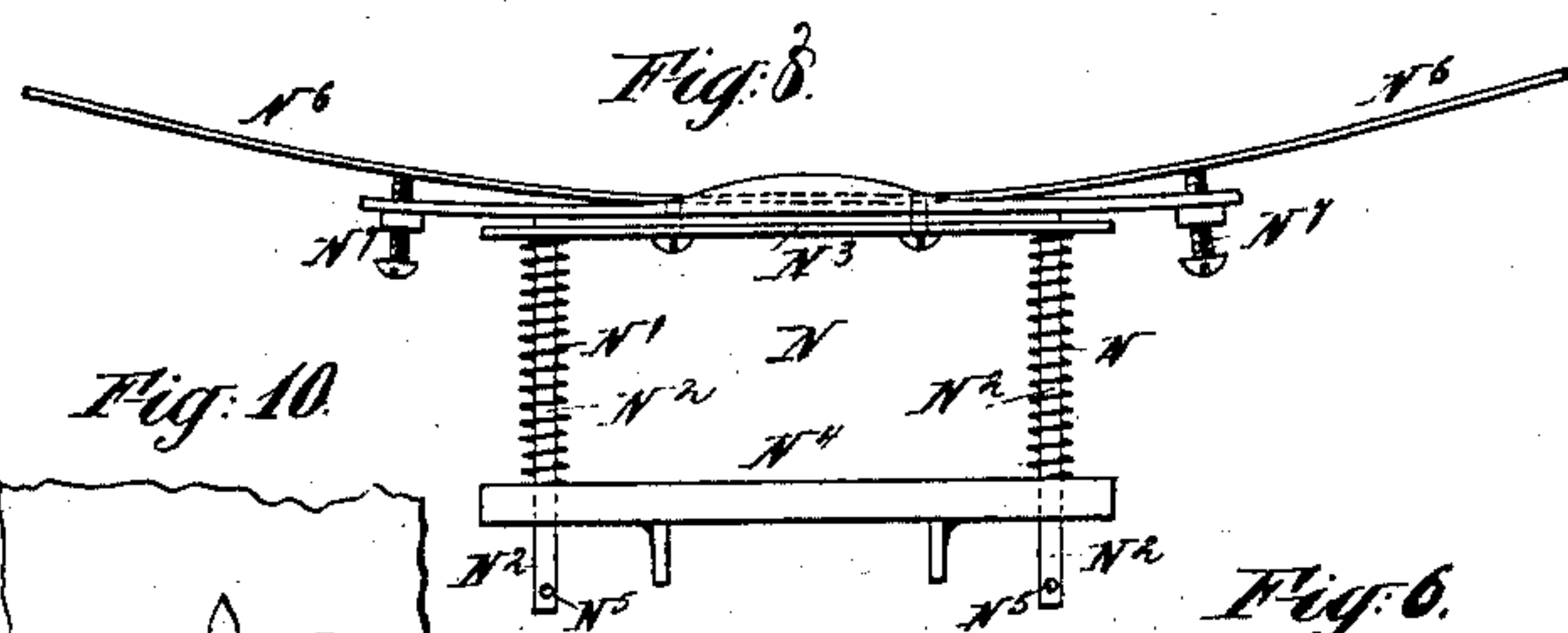
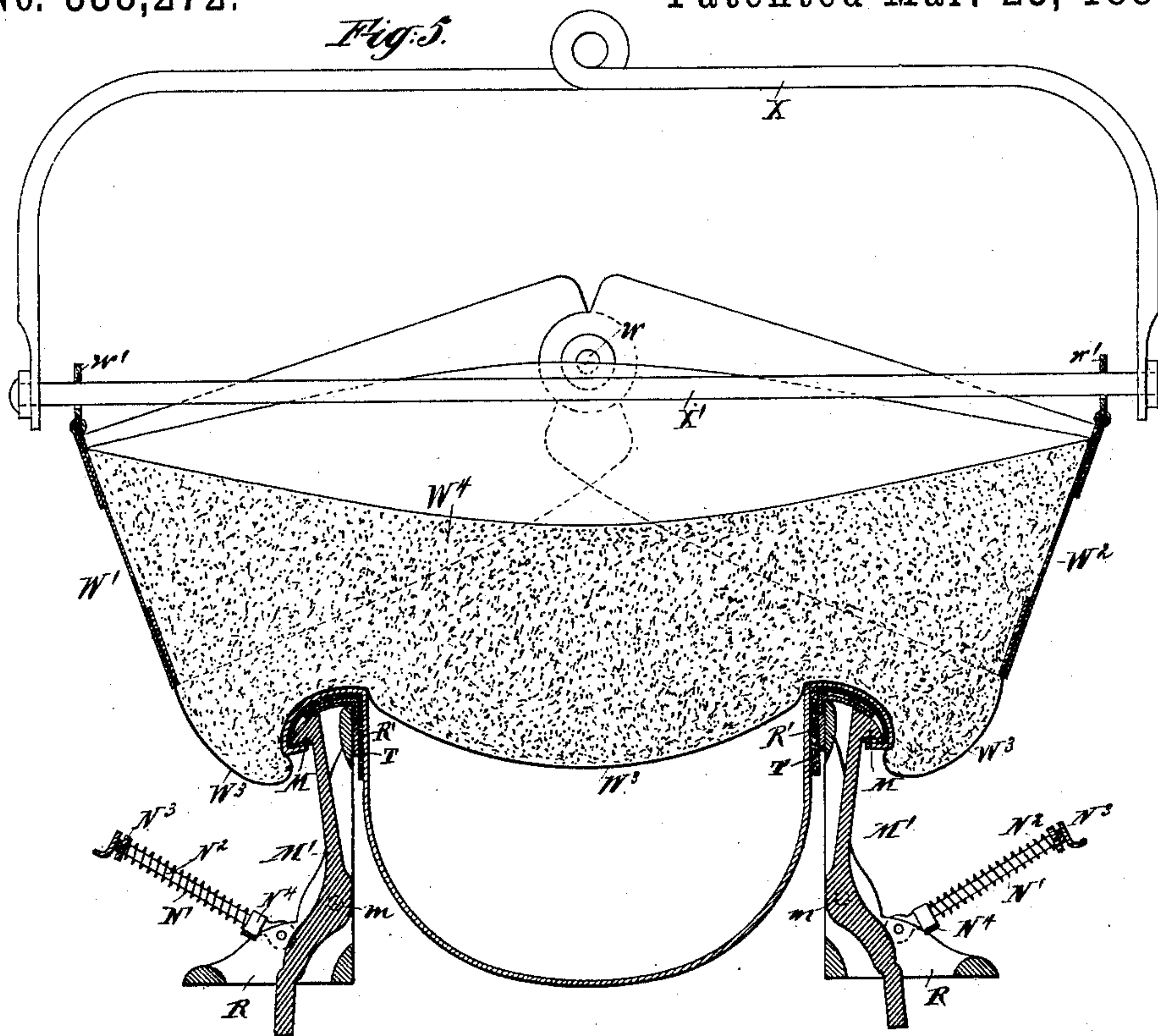
Inventor:

Lincoln H. Hoyt
by his attornys
Thomas Dyer Stebbins

3 Sheets—Sheet 3.

APPARATUS FOR SHAPING HAT BRIMS.

Patented Mar. 23, 1886.



Witnesses:

Charles R. Searle,
E. Brooks

Inventor:

L. J. Hoyt
by his attorney
Thomas Dyer Nelson.

UNITED STATES PATENT OFFICE.

LUCIUS H. HOYT, OF DANBURY, CONNECTICUT.

APPARATUS FOR SHAPING HAT-BRIMS.

SPECIFICATION forming part of Letters Patent No. 338,272, dated March 23, 1886.

Application filed June 9, 1885. Serial No. 168,108. (No model.)

To all whom it may concern:

Be it known that I, LUCIUS H. HOYT, of Danbury, Fairfield county, in the State of Connecticut, have invented a certain new and
5 useful Improvement in Apparatus for Shaping Hat-Brims; and I do hereby declare that the following is a full and exact description thereof.

I have in Letters Patent issued to me dated
10 June 3, 1884, No. 299,644, set forth a combination of parts which has proved eminently useful. My present improvement is in the same general direction; and it consists of modifications of the mechanism and of additions
15 thereto, hereinafter fully set forth.

A prominent feature of the present improvement is a means of conveniently applying and removing the sand-pan referred to in my previous patent.

20 Sand-pans have been long employed to exert, by the gravity of their yielding contents, a uniform pressure over the whole or a large portion of hat-brims. Such bags, technically "sand-pans," are usually operated by hand.
25 I have devised means for operating such a bag by a treadle, allowing the hands to be otherwise engaged.

The following is a description of what I consider the best means of carrying out the
30 invention.

The accompanying drawings form a part of this specification.

Figure 1 is an elevation showing the entire machine. Fig. 2 is an elevation of a portion
35 at right-angles thereto. It is a view from the right-hand side of Fig. 1. In these views the sand-pan is elevated and turned out of use. The remaining figures show certain portions on a larger scale. Fig. 3 is a central longitudinal section. This figure shows the metallic shaping parts and a thin rubber covering, which performs an important function. The rubber is indicated by dotted lines on the right-hand side in Fig. 3. Fig. 4 is a central
40 cross-section. Fig. 4^a is a portion of the same on a larger scale. Fig. 5 is a central transverse section through the sand-pan and the adjacent parts in the act of shaping a hat-brim. In this view the rubber covering is in place,
45 but the means for holding it are not fully shown. Fig. 6 is a plan view, and Fig. 7 a side elevation showing the metallic parts un-

der the rubber, against which the hat-brim is forced by the yielding pressure of the sand-pan. Fig. 8 is a side view showing one of the
55 removable side supports, which apply, when desired, under the rolled edge of the hat-brim, one on each side of the hat. Fig. 9 is a cross-section showing the same and some of the adjacent parts. The remaining figures are on a
60 still larger scale. Fig. 10 is an interior face view showing the means for attaching the rubber covering. Figs. 11 and 12 are sections showing two modes of attaching the paper-fasteners which secure the rubber.
65

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the fixed frame-work, of cast-iron or other suitable material, made in as many
70 pieces as may be required, and bolted firmly together. Certain portions will be designated, when necessary, by additional marks, as A' A². There are parallel ways A', on which are supported two slides, B B, which respectively
75 carry the mechanism for shaping the fronts and backs of the brims. These are moved backward and forward at will by a gear-wheel, C', fixed on the shaft C and engaging with
80 racks b b, one mounted lower than the other, with the wheel C' standing between them. A top slide, D, at each end, formed with a curved base, is supported on corresponding curved
ways, and carries the mechanism which supports and shapes the brim at that end, each
85 being operated by a rocking nut, E, which is provided with trunnions mounted in a downwardly-projecting fork, D', from the slide D, and which engages a screw, G, provided with
90 a pin, g. The two screws G g are engaged together by a tube, H, having a slot, h, so that turning one turns both, and through the nuts E and forks D' changes the positions of the slides D equally at each end to increase or
95 diminish the scope. Each top slide D supports, by an inner post, D², and an exterior bracket, D³, and their connections, the adjustable parts I J, which respectively shape the inner and outer portions of the brim at the front and back. The inner parts, I, and the
100 outer parts, J, are each divided longitudinally. They are formed of strong and elastic material, as hard brass or steel, and can thereby accommodate themselves a little to each other

and to the other parts. The sides of the brim are shaped, mainly, by thin side shaping-pieces, K, which extend along, each in two parts, lapping one upon the other, and attached, respectively, to the front and rear pieces I. They are kept out to their proper places by what I will term "lining-pieces" R', which are parts of the side pieces R, and are thus held in place independently of the front and rear shaping-parts I, against which they apply smoothly. The two parts of K on each side increase or diminish their lap one upon the other as the machine is elongated or contracted. Each is formed with a deep lip, K', at its inner edge, which engages in a corresponding deep and narrow recess or pocket between the main side carriage R and the lining piece R'. (See Figs. 4 and 4'.) These parts and the others to be described on the two sides are counterparts each of the other, and a description of one will suffice for both. The main side supports R move only in a right line apart and together. Each is supported and guided on a portion of the fixed frame-work A'. Each is provided with a pin, r, which, with an anti-friction roller carried thereon, is received in an inclined or spiral groove, c, in a cam, C', which latter is keyed or otherwise firmly set on the transverse shaft C.

The gear-wheels C', fixed on the shaft C, serve as means by which the required partially-rotating motion is imparted to it through a hand-lever, C', turning on a fixed stud, A', and carrying a gear-wheel or partial gear-wheel, C'. (See Fig. 1.) Turning the lever C' gives a corresponding but smaller angular motion to the shaft C. This, by the gear-wheel C' and racks b, moves longitudinally the end slides, B, and increases or diminishes the length of the space for the hat. The same movement, by means of the cams C' and their spiral grooves c, moves the main side carriage R simultaneously apart or together. Each main side carriage R is traversed by a shaft, P, on which is fixed a small collar, P', and also a large and thick collar, which I will term a "cylinder," P', having an inclined spiral groove, p. The shaft P on one side—the left side in Fig. 4—is equipped with a lever, P', and engaging dog P', (see Figs. 1 and 4,) by which it may be turned and secured at will, the dog P' being engaged in any one of the notches in the fixed segment A'. The two shafts P turn together while free to increase and diminish their distance axially each from the other, being connected by a longitudinally-slotted tube, O, with which they engage through pins p'.

S are slides fitted in the main side pieces R and carrying pins S', which engage in the spiral grooves p. The inner end of each slide S engages with the lower end of a lever, M', which turns on a center, m, carried in the corresponding side carriage R. The upper end of M' carries a shaping-piece, M, which has the requisite form to shape the inside of the

roll or curl of the brim. Under the brim on each side is a removable side support, N, pivoted on the side carriage R and exerting a gentle but sufficient upward pressure through springs N', encircling the rods N', which are fast to the upper portion, N', and play through the lower portion, N'. Each rod N' is fitted with a cross-pin, N', at its lower end, which restrains the action when the support is thrown out of use by being turned into the position shown in dotted lines in Fig. 9. The upper and effective portion, N', of each side support is formed with elastic arms N', provided with adjusting-screws N', which allow the upward force to be graduated along a considerable portion of the brim. Whenever the operator wishes to avail himself of this side support he depresses the bar N', with its attached springs N', against the force of the spiral springs N' and swings the entire device up into the position shown in strong lines in Fig. 9, where it remains, and exerts a gentle but firm pressure against the adjacent portion of the brim, holding it firmly against the part M.

I use language throughout this specification implying that the shaping of the brim is effected by the metallic parts I J at the front and back, and by the metallic parts K M and N' N' at the sides. This is literally true in a certain sense; but I cover all these shaping-surfaces except the removable side support last described with a thin envelope of vulcanized rubber, which will now be described.

T is a sheet of rubber, in the form of a broad belt of a little greater diameter than the interior of the hat. Its elastic nature allows its form to be changed within wide limits.

U are eyelets, of brass or other suitable material, set at moderate distances apart along each of its edges. The rubber in the immediate vicinity of each eyelet is re-enforced by a thin piece of fabric. This rubber is applied so as to form a smooth continuous surface over the entire working-faces of the shaping-pieces I J K M.

I have in my patent of 1884, above referred to, set forth an analogous rubber covering and explained the advantages thereof—that it prevents the hat-brim from being marked or deformed by the joints between the several shaping-pieces. I have devised peculiar means for attaching such rubber. I employ paper-fasteners or small pieces of tough and sufficiently flexible metal correspondingly formed. Such are indicated by V in Figs. 10, 11, and 12. They hold the inner edge of the rubber to the lining metal R' and the outer edge of the rubber to the shaping-piece M. Where the metal is thin the paper-fastener V is inserted through, as shown in Fig. 12. This mode of attachment is adopted in attaching the inner edge of the rubber to the lining metal R' along the sides and to the parts I at the front and back.

The mode of fastening shown in Fig. 11 is by soldering or brazing the paper-fasteners to the face of the metal, the soldering metal be-

ing indicated by *v*. This mode of joining is employed to connect the outer edge of the rubber to the under face of the part M. It may also be employed in any of the other situations where it shall be found preferable. However the paper-fastener V is secured to the metal its mode of engaging with the rubber is the same. The points of the paper-fastener are received through a corresponding eyelet and engaged by spreading the points of the paper-fastener apart.

My experiments indicate that good rubber will endure a long period of active service on this machine. Whenever the rubber fails, the fasteners may have their points again straightened and the rubber taken off and a new one applied and correspondingly secured. When the fasteners break, they can be easily replaced.

A⁵ is a vertical bar, of steel or iron, carrying on its upper end at one side a rigid extension, A⁶, which carries an inwardly-projecting pin, A⁷, provided with an anti-friction roller. The whole or a considerable portion of A⁵ is hollow and receives the lower end of a smaller bar, A⁸, of steel or iron, which extends up to a sufficient height above the machine and carries a rigidly-connected arm, A⁹, carrying on a suitable pin, A¹⁰, a sheave, A¹¹. A sleeve, F, fits easily on the rod A⁸ and is capable of rising and sinking thereon. The inner face of this sleeve carries one or more pins, *f*', which engage in a straight longitudinal groove or spline in the rod A⁸. A groove, *f*, extending longitudinally and somewhat spirally on the exterior of this sleeve F, receives the pin A⁷. As the treadle Y' is operated and the sand-pan raised and lowered, the pin A⁷ stands in the groove *f* and compels a partial turning motion of the sleeve F and its attachments. These parts are proportioned as shown, so that the sleeve and its connected sand-pan perform about a quarter-revolution each time it is elevated or depressed. This leaves the space over the hat entirely clear each time the sand-pan is elevated. On liberating the treadle Y', which should be done by an easy movement, the sand-pan and its connections sink by gravity, and at the same time are caused to turn to the proper extent around the axis of the bar A⁵, bringing it in the exactly right position over the hat. The upper portion of the groove *f* is straight. This insures that the sand-pan shall in the last portion of its descending motion descend truly and act equally on all parts of the brim.

W is the sand-pan, certain portions being designated when necessary by additional marks, as W' W². Bent frames W' W², of sheet metal or other suitable material, are loosely connected by rivets *w* at the front and back, respectively. To the lower edge of both W' and W² is attached a flexible fabric, which I will term a "bag," W³, in which is placed a peck or other sufficient quantity of sand, W⁴. The entire sand-pan is hung by hinged eyes *w*' to a round transverse rod, X',

which is supported by a bail, X. A chain, Y, attached to the bail, runs over the pulley A¹¹, and connects to a treadle, Y', which, being operated by the foot of the attendant, raises and lowers the bail X and the connected sand-pan at will.

To operate the invention, the parts being previously brought to the proper temperature by any ordinary or suitable means, and the sand-pan being in the position shown in Fig. 1, the hat is introduced, having the roll or curl at each side of the brim previously initiated by other treatment, and the edges are caused to engage under the proper portions of the side shaping-pieces, M. Next the lever C⁵ is operated to induce a partial revolution of the shaft C, which moves the slides B and end pieces, J, and their connections I together to press firmly against the front and back of the hat-body. The same movement by the cams C³ and their grooves *c* moves the main side pieces, R, inward to correspondingly press the lining-pieces R' or other suitable surface against the sides of the body. Next the shafts P are turned by turning the lever P³ into the upright position. This movement by the action of the cams C³ and their connections turns each lever M, carrying its upper end outward into firm engagement within the curl of the brim. Next the operator liberates the treadle Y', which he has been previously holding down by the continued pressure of his foot or by a suitable dog or catch, as will be understood, and the sand-pan, descending by its gravity, turns in the first part of its descent until it is directly over the hat, and then descends squarely without any turning movement and presses fairly on the whole exposed surface of the hat-brim. In coming to rest the front and rear are first stopped, the sides continue to sink farther, the parts W' and W² turn considerably on their loose connecting-rivets *w*, and cause the bag W³ to firmly and fairly press on the brim, not only over the whole surface which is presented upward, but also on that portion which is presented outward, with a tendency to act a little under the curl, as shown somewhat exaggerated in Fig. 5. If the side supports, N, are required, they are brought up into the required position and caused to press upward against the curl of the brim on each side before the sand-pan is lowered. After waiting a brief period, depending on the style and character of the hat and the nature of the material, and somewhat on its condition with regard to thickness and temperature and the temperature of the sand and other parts, the shaping will be sufficiently effected. Now, the entire series of operations is reversed. The attendant depresses the treadle Y' and raises and turns aside the sand-pan. Next he turns the shaft P by operating the lever P³, giving it a quarter-revolution, (more or less,) so that by the action of the spiral grooves *p* on the pins S' he turns the levers M, moving the upper ends of said levers inward as far as they can go, or so as to greatly relax the hold of

these parts within the curl or roll at each side of the brim. Next by raising the lever C⁵ he turns the shaft C and by the racks *b* moves apart the slides B, and consequently the front and rear pieces I and their immediately adjacent parts. The same partial rotation of the shaft C acts through the cams C³ and their grooves *c* on the main side pieces R, moving them also apart. If the side supports, N, are in use, these must be depressed and disengaged, leaving them in the position shown in dotted lines in Fig. 9. Now, the hat, having its brim completely shaped, is lifted out and a fresh hat introduced. It is with a little assistance from the attendant brought into the required position with the curl engaging a little under the part M on each side.

Modifications may be made in the forms and proportions without departing from the principle or sacrificing the advantages of the invention. Parts may be used without the whole. I can dispense with the rubber covering T, the metal portions being shaped with sufficient care to impart just the proper form and avoid any objectionable marks at the several lines of junction. The notched segment A⁴ and its connections may be omitted, and the shaft P may be turned and the place of stopping at each movement determined by other means. I can dispense with the side supports, N.

I claim as my invention—

1. In a hat-brim-shaping apparatus, in combination with the means, C C' B *b*, for enlarging the hat-space longitudinally, the cams C³ *c*, engaging with the side carriage R, for enlarging the same laterally by the same motion, as herein specified.

2. In a hat-brim-shaping apparatus, the side carriages R R' and side shaping-pieces, M, movable thereon, in combination with the cross-shaft P and suitable connections for operating both simultaneously, as herein specified.

3. In a hat-brim-shaping apparatus, the combination of the shaping parts I J K M, lever P³, dog P⁴, and notched segment A⁴, arranged as shown and adapted to aid in determining the points to which the pieces M shall be expanded at each operation, as herein specified.

4. In a hat-brim-shaping apparatus, the side shaping parts, K K', each in two parts lapping one upon the other, engaged, respectively, with the shaping parts, as I I, at the front and back in combination therewith, and with the side carriages R R', and suitable means for moving them, as herein specified.

5. In a hat-brim-shaping apparatus, in combination with thin movable parts, as I J K, and a yielding continuous covering, T, of rubber or analogous material, the folding fastenings V, arranged to serve as herein specified.

6. The folding sand-pan described, having the frames W' W², loose connections *w*, flexible bottom W³, and sand W⁴, adapted to serve with suitable hat-shaping parts, as I J K M, as herein specified.

7. In a hat-brim-shaping apparatus, the combination, with suitable shaping parts, as I J K M, of a sand-pan, W, treadle Y', chain or flexible connection Y, pulley A¹¹, turning-arm A⁹, and guiding means, as A' F *f*, arranged for joint operation as herein specified.

8. In a hat-brim-shaping apparatus, the removable side support, N, having springs arranged to act on the curl of the brim, in combination with the side shaping-piece, M, as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, this 1st day of June, 1885, in the presence of two subscribing witnesses.

LUCIUS H. HOYT.

Witnesses:

MANIERRE ELLISON,
CHARLES R. SEARLE.