No. 624,690. Patented May 9, 1899.

G. SEGSCHNEIDER.

MACHINE FOR FLANGING HAT BRIMS.

(Application filed Dec. 21, 1898.)

(No Model.) 6 Sheets—Sheet 1.

Fig. 1.

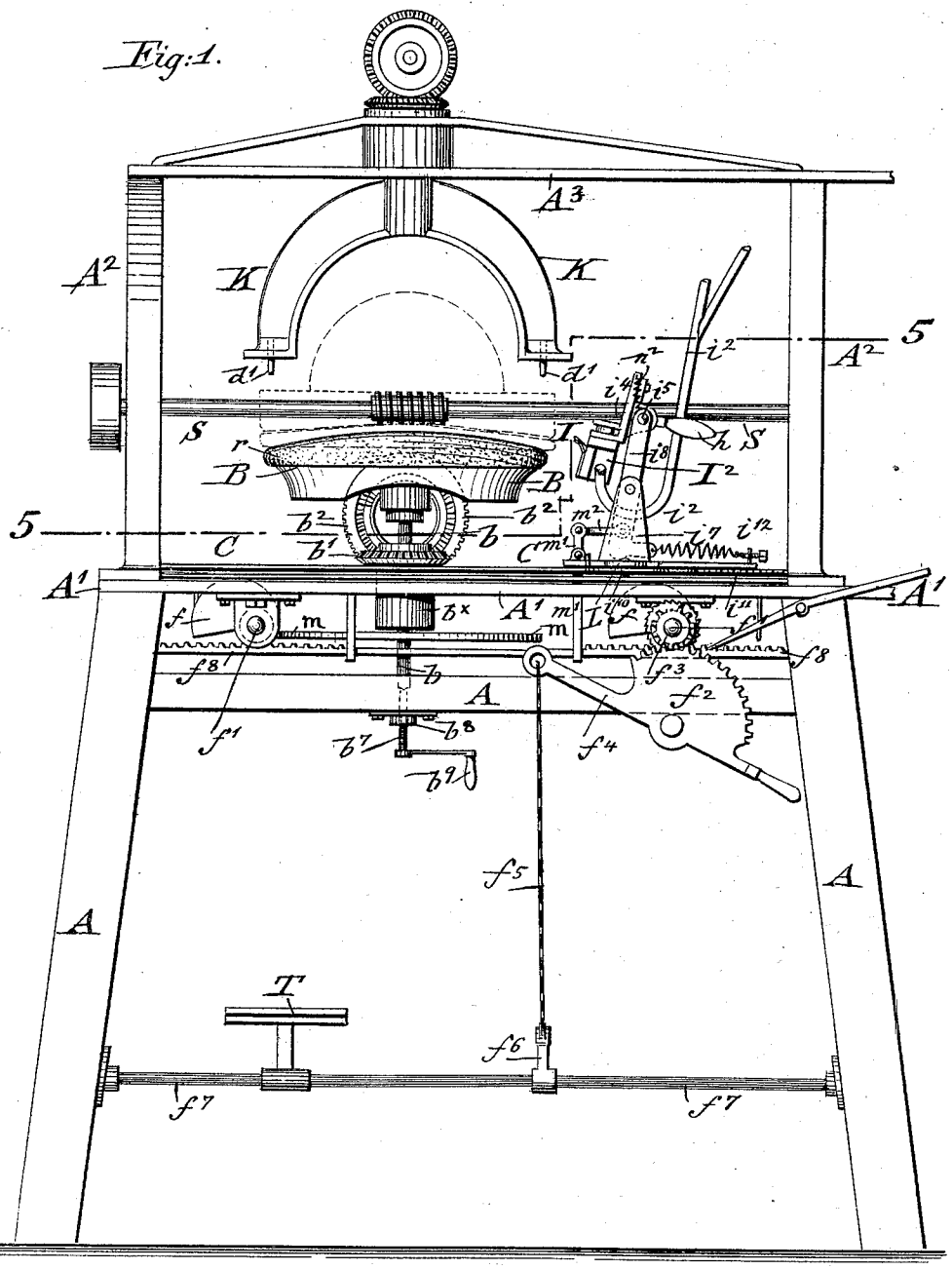

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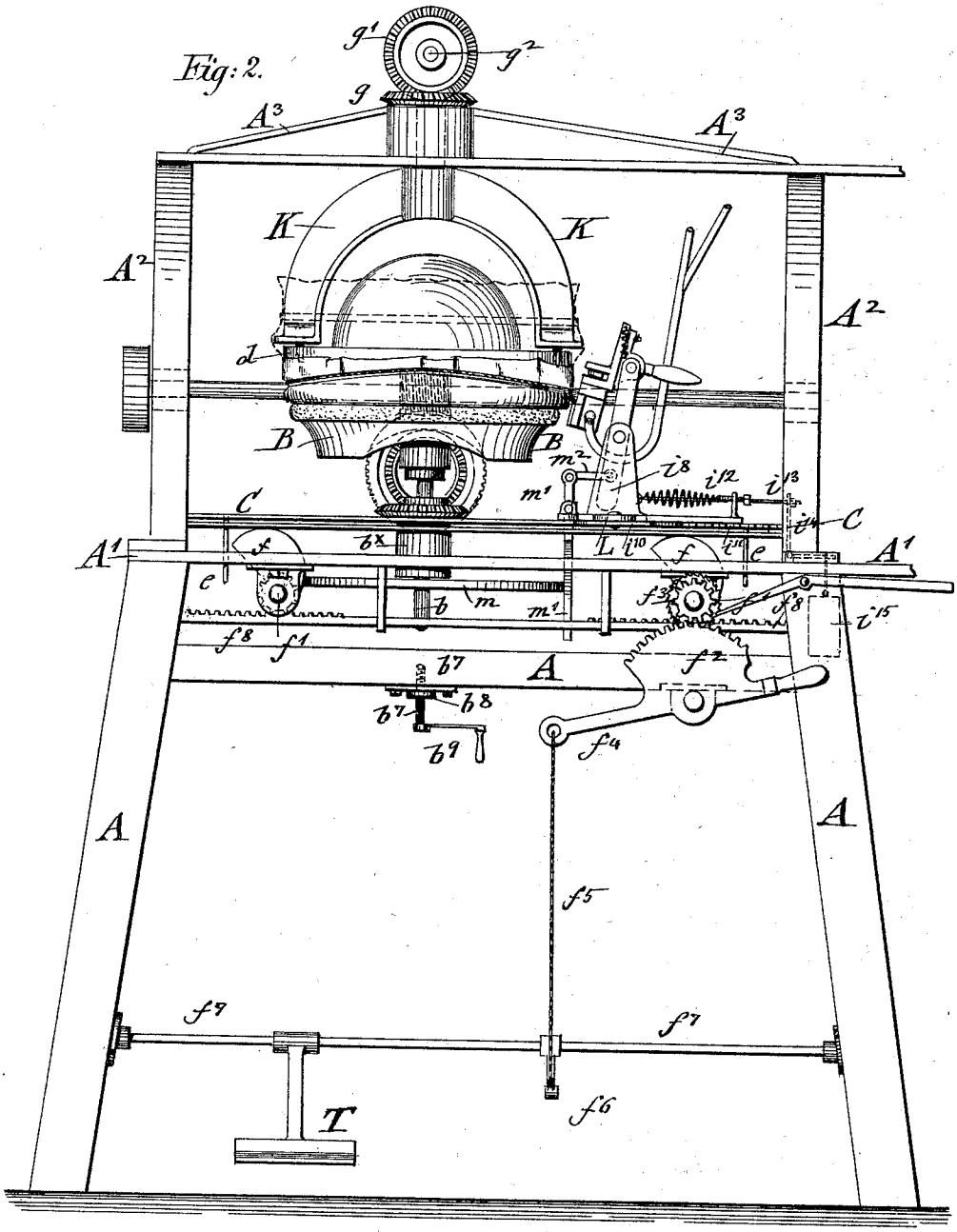
Fig. 2.



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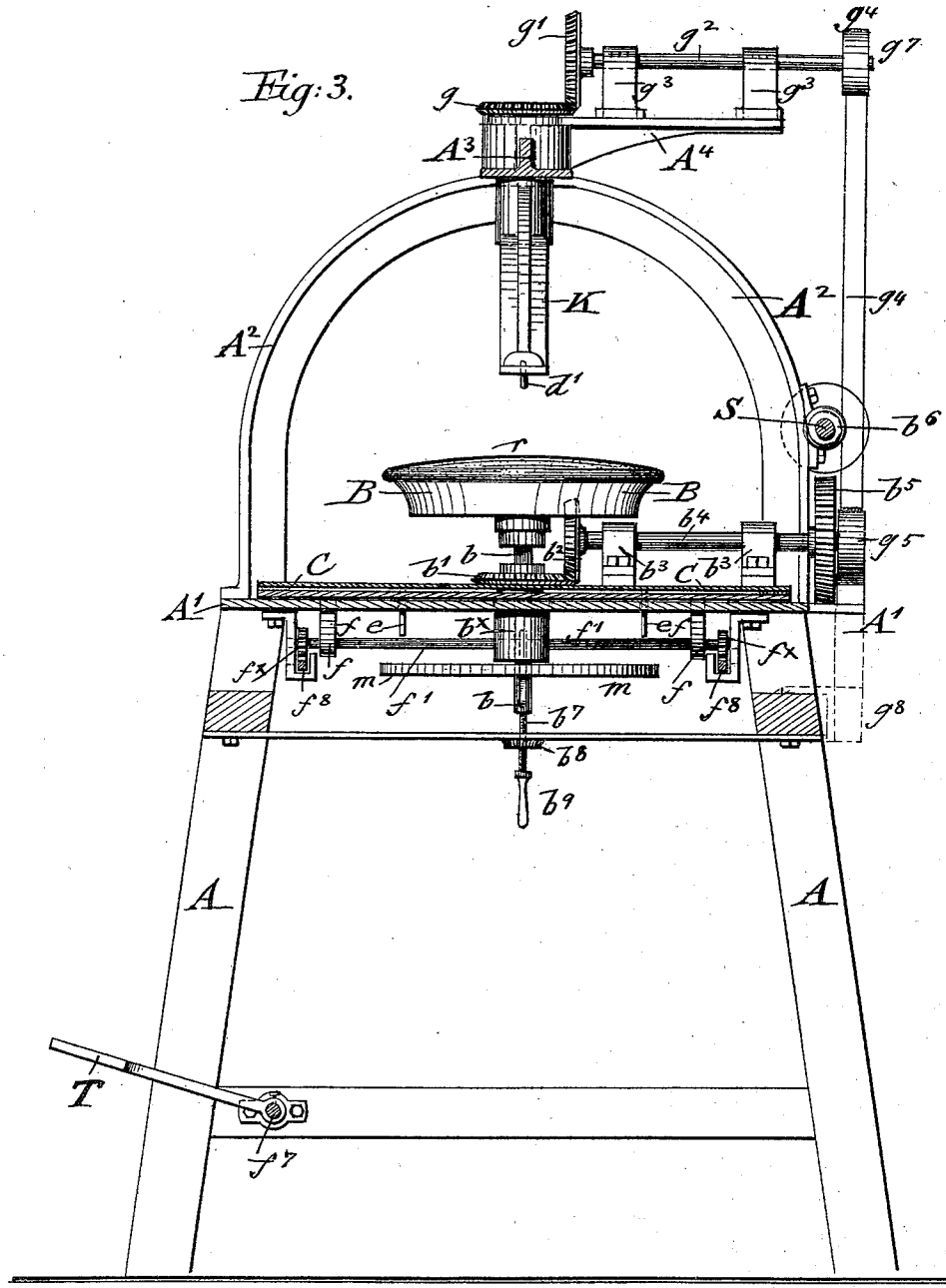
(No Model.) 6 Sheets—Sheet 3.

Fig: 3.



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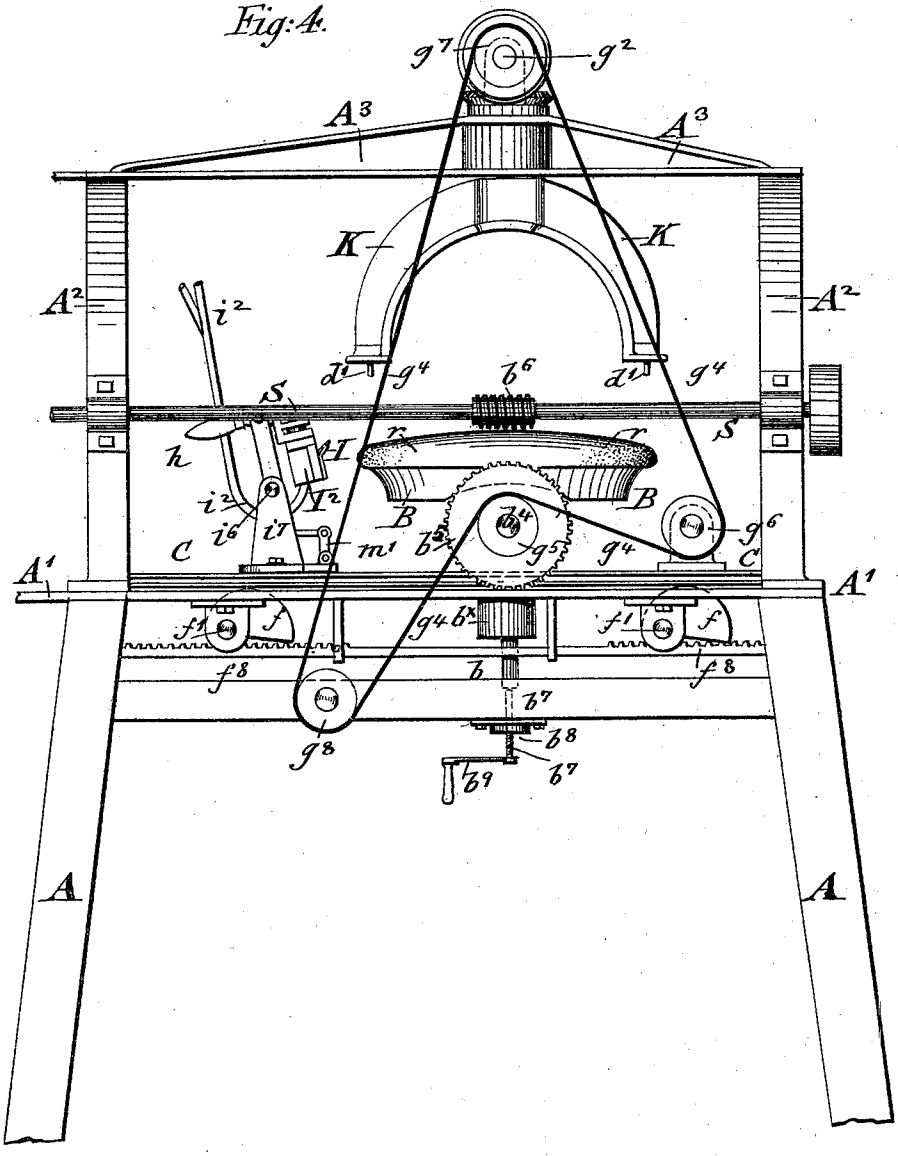
(Application filed Dec. 21, 1898.)

(No Model.) 6 Sheets—Sheet 4.

Fig: 4.



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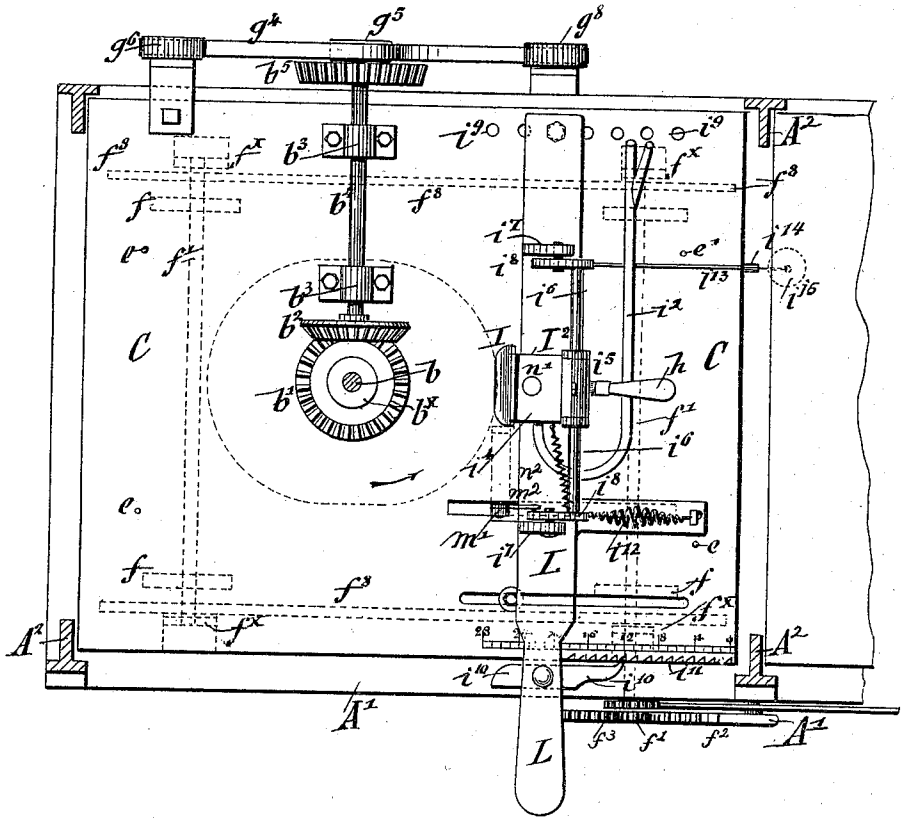
(Application filed Dec. 21, 1898.)

(No Model.) 6 Sheets—Sheet 5.

Fig: 5.



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MACHINE FOR FLANGING HAT BRIMS.

(Application filed Dec. 21, 1898.)

(No Model.) 6 Sheets—Sheet 6.

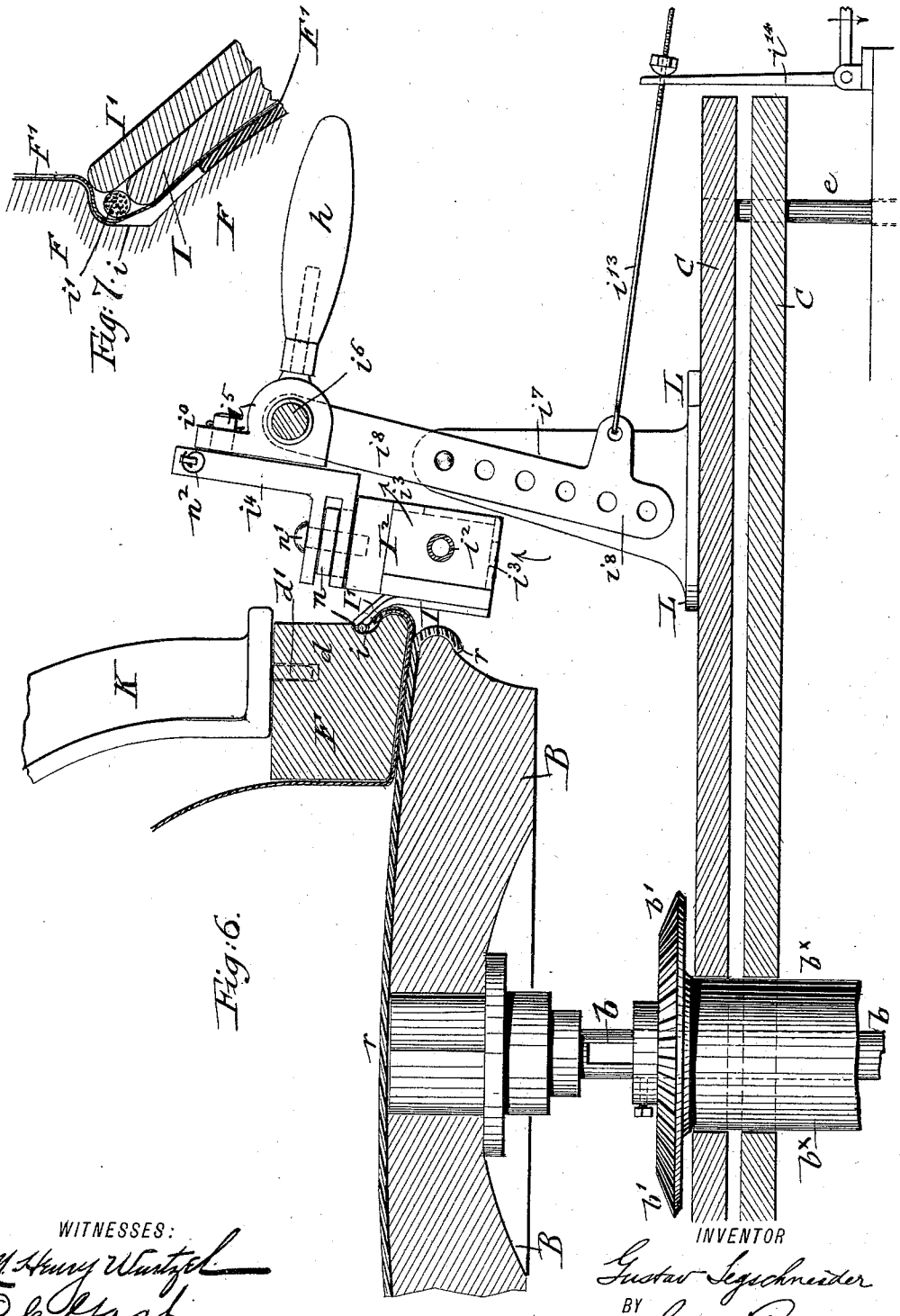

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

GUSTAV SEGSCHNEIDER, OF YONKERS, NEW YORK.

MACHINE FOR FLANGING HAT-BRIMS.

SPECIFICATION forming part of Letters Patent No. 624,690, dated May 9, 1899.

Application filed December 21, 1898. Serial No. 699,920. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV SEGSCHNEIDER, a citizen of the United States, residing in Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Machines for Flanging Hat-Brims, of which the following is a specification.

This invention relates to certain improvements in machines for flanging hat-brims. In the manufacture of hats the brims are first curled in a curling-machine. After the curl has been imparted to the brim the hat is placed on a flanging-block, known as a "flange," and the curl set on said flange by a heated iron operated by hand. This is very exhausting work, especially in the hot summer months, and various attempts have been made heretofore to supply machines for ironing or "flanging" the curled hat-brims, but without success, for the reason that the peculiar motion that is imparted by the hand to the ironing-tool could not be produced by mechanical means.

The object of this invention is to furnish a machine for flanging the hat-brims after they are curled and setting them in a very reliable manner by mechanical means without the use of hand-ironing the curls; and the invention consists of a hat-brim-flanging machine, which comprises a flange-support, means for imparting rotary motion to the same, a yoke-shaped keeper rotating with the flange-support, and a heated ironing-tool which is curved so as to correspond with the shape of the curl and which is capable of yielding motion in every direction, so that it adapts itself to the shape and curve of the curl, said ironing-tool being supported on a laterally-movable, vertically-oscillating, and spring-actuated frame that is capable of adjustment toward the curled hat-brim.

The invention consists, further, of mechanism for raising and lowering the flange-support, so as to permit the insertion or removal of the hat-carrying flange into or from the machine.

The invention consists, further, of mechanism by which the pressure of the ironing-tool is positively reduced at such points on the circumference of the brim where decreased pressure is required; and the invention consists, lastly, of certain details in the construction and modifications of the ironing-tool and its supporting-frame, as will be fully described hereinafter, and finally set forth in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of my improved machine for flanging hat-brims, showing the parts in position before the flange, with a hat, is placed in the machine. Fig. 2 is also a front elevation of the machine, showing the flange and hat inserted and in position for the flanging operation. Fig. 3 is a side elevation of the machine. Fig. 4 is a rear elevation of the same. Fig. 5 is a plan view of Fig. 1, partly in horizontal section, on line 5 5, Fig. 1. Fig. 6 is a vertical central section through the flange-support and flanging-iron, drawn on a larger scale and showing the flanging-iron in operation; and Fig. 7 is a detail section of a portion of the flange and of the flanging-iron, drawn on a still larger scale, so as to clearly show the guide-groove and cord along which the flanging-iron is guided during the flanging operation.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the lower part of the supporting-frame of my improved machine for flanging hat-brims. The lower part A supports the table A′, on which the heated flanging-iron and its adjustable support is arranged. To the table A′ are attached two yoke-shaped standards A^2, that are connected at their upper part by a cross-piece A^3, which serves to support the shaft of a yoke-shaped keeper K, that is located above the flange-support B of the machine. The flange-support B is applied at its center to the square upper end of a vertical shaft *b*, turning in neck and step bearings of the frame A. The shaft *b* of the flange-support B passes through a movable table C, which is located above the table A′, and which serves for the purpose of raising or lowering the flange-support B. The flange F, with the hat in position thereon, is placed on said support, raised and lowered with the same, and removed therefrom after the flanging action is completed. To the shaft *b* of the support B is splined the hub $b^\times$ of a bevel gear-wheel *b*′, so that the latter can be moved with the mov-

able table C when it is raised or lowered. Rotary motion is imparted to the flange-support B by a bevel-wheel b^2, which meshes with the bevel-wheel b'. The shaft b^4 of the bevel-wheel b^2 is supported in suitable bearings b^3 on the movable table C. At the rear end of the shaft b^4 is arranged a worm-gear b^5, which meshes with a worm b^6 on the driving-shaft S, to which continuous rotary motion is imparted by belt-and-pulley transmission or in other suitable manner. The movable table C is guided by downwardly-extending pins e in the stationary table A', and raised or lowered by the action of four cams f f, which extend through slots in the table A', said cams being applied to transverse shafts f', that are supported in bearings below the table A'. Motion is imparted to the cams f by means of a toothed segment f^2, which meshes with a pinion f^3 on one of the shafts f', the shaft of said segment being supported in suitable bearings of the frame A and provided with a crank-arm f^4, that is connected by a pivot-rod f^5 with a crank f^6 on the treadle-shaft f^7, which turns in suitable bearings at the lower part of the supporting-frame A, and which is provided with a treadle T, that is operated by the foot of the operator whenever the flange F is to be raised for subjecting the curl of the hat-brim to the action of the flanging-iron I. For imparting rotary motion to the second shaft f', which carries the second pair of cams f, two additional pinions $f^\times$ on the first shaft f' mesh with two horizontally-guided rack-bars f^8, which again mesh with pinions f^9 on the second shaft f', so as to impart to the latter rotary motion simultaneously with the first shaft and turn both pairs of cams f simultaneously either in one or the opposite direction, according as the treadle is depressed or released. When the movable table C is to be raised together, with the flange-support B, the treadle E is depressed. This produces the turning of the cams f and thereby the raising of the table C.

The hat-carrying flange F is provided with sockets d, which are engaged by pins d' at the lower ends of the yoke-shaped keeper K, the interlocking of the flange and keeper taking place when the flange is raised sufficiently. Simultaneously therewith the worm-gear b^5 is placed in mesh with the worm b^6 on the continuously-rotating driving-shaft S, so that rotary motion is transmitted to the support B, the flange F supported thereon, and the keeper K. As soon as the table C has been raised, together with the flange-support B and flange F, to the proper height, a suitable pawl-and-ratchet mechanism arranged on the toothed segment f^2 prevents the return of the table C, so that the foot can be removed from the treadle T without producing the lowering of the table C, flange-support B, and flange F by gravity. When the flanging action is completed, the pawl is released and the movable table and the parts supported thereon are returned by gravity to their lower position. This can be regulated by hand, the operator taking hold of the handle on the segment f^2 for this purpose. The lower part of the frame A is provided with a set-screw b^7 for the shaft b of the bevel-wheel b', so as to arrest the shaft b in its downward motion with the movable table C. The set-screw b^7 turns in a stationary nut b^8, attached to a cross-bar of the lower part A, said set-screw being provided with a crank b^9, so that the set-screw b^7, and thereby the flange-support B, can be adjusted higher or lower, so as to provide for the differences in height of the flanges and the proper thickness of the hat-brims. Before the adjustment takes place, however, it is necessary to loosen the spline connection of the hub of the gear-wheel b' with the shaft b of the support and to reëstablish the spline connection between the hub and shaft after the adjustment has been made. By this means the proper intermeshing of the driving worm-gear of the flange-support B is always secured. It is preferable that the yoke-shaped keeper K rotates with the flange-support and flange, so as to prevent any dragging action thereon, and for this purpose a positive rotary motion is imparted to the keeper K simultaneously with the flange-support B. For this purpose the keeper K is provided at its upper end with a bevel-wheel g, which meshes with a second bevel-wheel g' on a shaft g^2, which is supported in suitable bearings g^3 on a bracket A^4. Rotary motion is imparted to the shaft g^2 by a belt-and-pulley transmission from the shaft b^4, as shown in Fig. 4. The belt g^4 is passed over a driving-pulley g^5, located on the shaft b^4, then over a second pulley g^6 on the movable table C sidewise of the driving-pulley, then over a pulley g^7 at the rear end of the shaft g^2 and over a pulley g^8, supported on a stationary lower part of the frame A below the table C, as shown in Fig. 4. The driving-belt g^4 is kept taut by the relative arrangement of the four pulleys during the up-and-down motion of the table C. Any other mechanism by which rotary motion is imparted to the keeper simultaneously with the flange-support can be used.

The construction of the block or flange F on which the hat to be flanged is supported is clearly shown in Figs. 2, 6, and 7. The hat after being curled on the curling-machine is dropped with its crown into the open central part of the flange while the latter is in an inverted position, after which the flange is reversed and placed on the support B, so that the brim of the hat is between the support and the flange and the curled portion of the brim at the outside of the flange F. When the hat and its brim are in this position, a covering-cloth F' is placed over the same. The flange F is provided at its circumference with a groove i, which serves for guiding the flanging-iron. This groove also serves for retaining the cord i', by which the covering-cloth F' is tied around the grooved flange. The

groove i is provided with four recesses $i^{\times}$ at diametrically opposite points, as shown in Fig. 7, which serve for taking up the knot of the cloth-retaining cord. When this is accomplished, the hat and flange are ready to be transferred to the support B of the flanging-machine. The face of the support is covered by a rubber plate r, as shown in Fig. 6, so that when the flange F and keeper K are tightly pressed together the flange F is firmly held in position on the support B. The loose upper portion of the covering-cloth F′ is then wrapped around the keeper and held thereon by a suitable elastic cord, as shown in Fig. 2. The flanging-iron I is arranged sidewise of the flange-support B and is curved at its upper part, so as to fit over the curled brim of the hat and abut against the cord i', by which the covering-cloth is tied to the flange, as shown in Fig. 7. To the upper part of the flanging-iron I is applied a guide-piece I′, which projects beyond the iron and which moves along the upper part of the guide-groove i on the circumference of the flange, so that the flanging-iron is held in contact with the curl of the brim. The flanging-iron I is attached to an oblong heating-box I^2, to which a mixture of gas and air is supplied by suitable tubes i^2, said heating-box being provided in the usual manner with openings i^3 for the admission of air and the exit of the gases of combustion. At the interior of the box I^2 is a burner-tube, the heating-jets of which heat the box, and thereby the flanging-iron. The upper part of the heating-box is provided with a keeper n, which is connected by a pivot n' to the forked lower part of a bracket i^4, which is again pivoted to a flange i^0 of a sleeve i^5. This sleeve is applied to a transverse shaft i^6 and provided with a handle h, by which the flanging-iron I is introduced into the guide-groove i of the flange. The forked bracket i^4 is connected by a helical spring n^2 with a stationary point on the shaft i^6, so that the bracket is held in tension against the direction of motion of the flange. The transverse shaft i^6 is supported in bearings at the upper ends of fulcrumed links i^8, which are pivoted to uprights i^7, that are attached to a lever-bar L, the rear end of which is pivoted adjustably to holes i^9 in the movable table C, while the front end projects beyond the front of the main frame A and is made in the shape of a handle, as shown in Fig. 5, for taking hold of the lever-bar and moving it either toward or away from the flange. The lever L is provided at its front end with a pivoted pawl i^{10}, that is made to engage a rack i^{11} in the front edge of the movable table C, so that the lever-bar L is retained in position after the flanging-iron is properly adjusted toward the brim. The lower parts of the fulcrumed links i^8 are perforated, so as to permit their being adjusted higher or lower on the uprights i^7, as required. The links i^8 are acted upon at their lower ends either by helical springs i^{12}, attached to said links, and lugs on the bases of the uprights i^7, the tension of said springs being adjusted by suitable thumb-screws at the ends of the springs, or the links are connected by pivot-rods i^{13} and bell-crank levers i^{14}, fulcrumed to the main frame, with suitable counterweights i^{15}, or a spring and a weight may be used, as shown in Fig. 6. The lever-bar L, that carries the flanging-iron, is made laterally adjustable on the table C, so that the iron can be applied to any size of hats, each size requiring a special position of the lever-bar and being indicated by suitable numbers on a graduated scale near the rack i^{11}, as shown in Fig. 5. By pivoting the heating-box I′ to its supporting-bracket i^2 the flanging-iron can turn on the pivot, so as to oscillate laterally, while by hinging the box to the transverse shaft i^6 at the upper end of the spring-actuated links i^8 a forward-and-backward motion or oscillation is imparted to the flanging-iron, so that the same can be moved laterally as well as forward and backward toward the flange, so as to give thereby the free motion required by the flanging-iron in ironing the curled brim. The motion of the flanging-iron is in close imitation of the hand in ironing the curl of the hat-brim during the turning of the hat with the flange and support. When a flanging-iron at one side of the flange is used, it requires a full rotation of the flanged support for producing the flanging of a hat; but when it is desired to shorten the time in which the flanging operation is to be performed a second flanging-iron may be arranged on the opposite side of the support, in which case only one-half of a rotation is necessary for producing the complete flanging of a hat, inasmuch as two irons acts imultaneously at diametrically opposite points on each half of the brim.

In addition to the yielding motion of the flanging-iron, which is due to the pressure of the iron on the curl by the tension of the helical springs or the counterweights, a positive yielding action may be imparted to the flanging-iron, so as to prevent a too great pressure of the same on the curl of the brim at certain points—as, for instance, in the case of felt hats, at the extreme ends of the brim. For this purpose a horizontal cam m is applied to the lower end of the shaft b of the flange-support B, which cam acts by its circumference on a fulcrumed lever m', the upper end of which is connected by a pivot-link m^2 with the lower end of one of the fulcrumed links i^8, carrying the flanging-iron. The shape of the cam corresponds to the oval shape of the hat-flange and is located below the same, so that when the points of greatest eccentricity of the cam m act on the lever m' the fulcrumed links are moved at their lower ends against the tension of their springs or weights, so that the flanging-iron supported by the upper ends of the links is applied with decreased pressure to the curl, and thereby a diminished pressure exerted on the curl of

the brim at such points as require a smaller pressure—namely, the smaller curls at the front and rear ends of the hat-brim.

Operation: After the brim of the hat has been curled it is transferred onto the flange by placing the same upside down, so that the crown of the hat is dropped into the opening of the flange, while the brim is applied to the circumference of the same. The covering-cloth is then placed over the brim and tied down into the guide-groove of the flange by the cord. The flange, with the hat, is then placed in position on the flange-support and the latter raised by the pressure of the foot on the treadle until the connection of the flange and keeper is established. When this is accomplished, the lever-bar is adjusted on the table according to the size of the hat and the flanging-iron introduced in the groove of the flange, the left hand taking hold of the end of the lever-bar, while the right hand takes hold of the handle of the iron, so that by the joint action of the two hands the proper adjustment of the flanging-iron to the hat-brim is obtained. During this time the support and keeper have commenced their rotary motion, which is continued while the curl of the brim is subjected to the pressure of the heated flanging-iron until the entire curl has been ironed. The flanging-iron is then removed from the hat by taking hold of the handle of the lever-bar, releasing its pawl from the rack, and moving the lever-bar away from the flange, after which the support is lowered, so as to permit the removal of the flange with the hat and the replacing of another new hat and flange on the support.

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

1. The combination of a rotary flange-support, a hat-carrying flange, a rotary keeper for holding the latter in position on the said support, mechanism for imparting rotary motion to the flange-support, mechanism, equally timed with the latter mechanism, and connected with the keeper above the said flange, for imparting rotary motion to the keeper, and a yielding flanging-iron, substantially as set forth.

2. The combination of a rotary flange-support, a hat-carrying flange, a rotary keeper for holding the latter in position on the said support, shafts supporting the flange-support and keeper, mechanism for imparting simultaneous and equally-timed rotary motion to said support and keeper, said mechanism including bevel-gearing connected with each of said shafts, and a yielding flanging-iron, substantially as set forth.

3. The combination of a rotary flange-support, having an elastic covering-plate, means for rotating said flange-support, a hat-carrying flange placed on the latter above the elastic covering-plate, a rotary keeper for said flange, means for imparting a positive rotation to said keeper, at its upper end, and a yielding flanging-iron, substantially as set forth.

4. The combination of a stationary table, a movable table above the same, means for raising or lowering said movable table, a rotary flange-support supported on said movable table, means for rotating said flange-support, a keeper for retaining the flange on said support, and a yielding flanging-iron also supported on said movable table, substantially as set forth.

5. The combination of a stationary supporting-table, a movable table guided on said stationary table, means for raising or lowering said movable table, a rotary flange-support on said movable table, means for rotating said flange-support, a hat-carrying flange placed on said support, a keeper engaging said flange and adapted to rotate therewith, a flanging-iron, and means for adjusting said flanging-iron to said flange, substantially as set forth.

6. The combination of a rotary flange-support, a hat-carrying flange supported thereon and provided with a circumferential guide-groove, a rotary keeper engaging said flange and retaining it on its support, means for positively rotating all said parts, a yielding flanging-iron, a guide-piece extending beyond said iron, and means for adjusting said flanging-iron and guide-piece into the said guide-groove, substantially as set forth.

7. The combination of a rotary flange-support, a hat-carrying flange supported thereon, means for rotating said parts, a yielding flanging-iron, supports for the latter, an upright lever-bar to which said supports are pivoted, means for setting the upper end of the lever-bar and the flanging-iron toward or away from the flange and means for locking said lever-bar after the flanging-iron is placed in position, substantially as set forth.

8. The combination of a rotary flange-support, means for rotating the same, a hat-carrying flange retained thereon, a flanging-iron, a heating-box supporting said iron, a bracket to which said heating-box is pivoted, a horizontal sleeve to which the bracket is pivoted, fulcrumed and spring-actuated links provided with a transverse shaft on which said sleeve is mounted, and means for adjusting said links and the flanging-iron, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GUSTAV SEGSCHNEIDER.

Witnesses:
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M. HENRY WURTZEL.