Jan. 1, 1935. H. SCHLESINGER 1,986,364

HAT IRONING MACHINE

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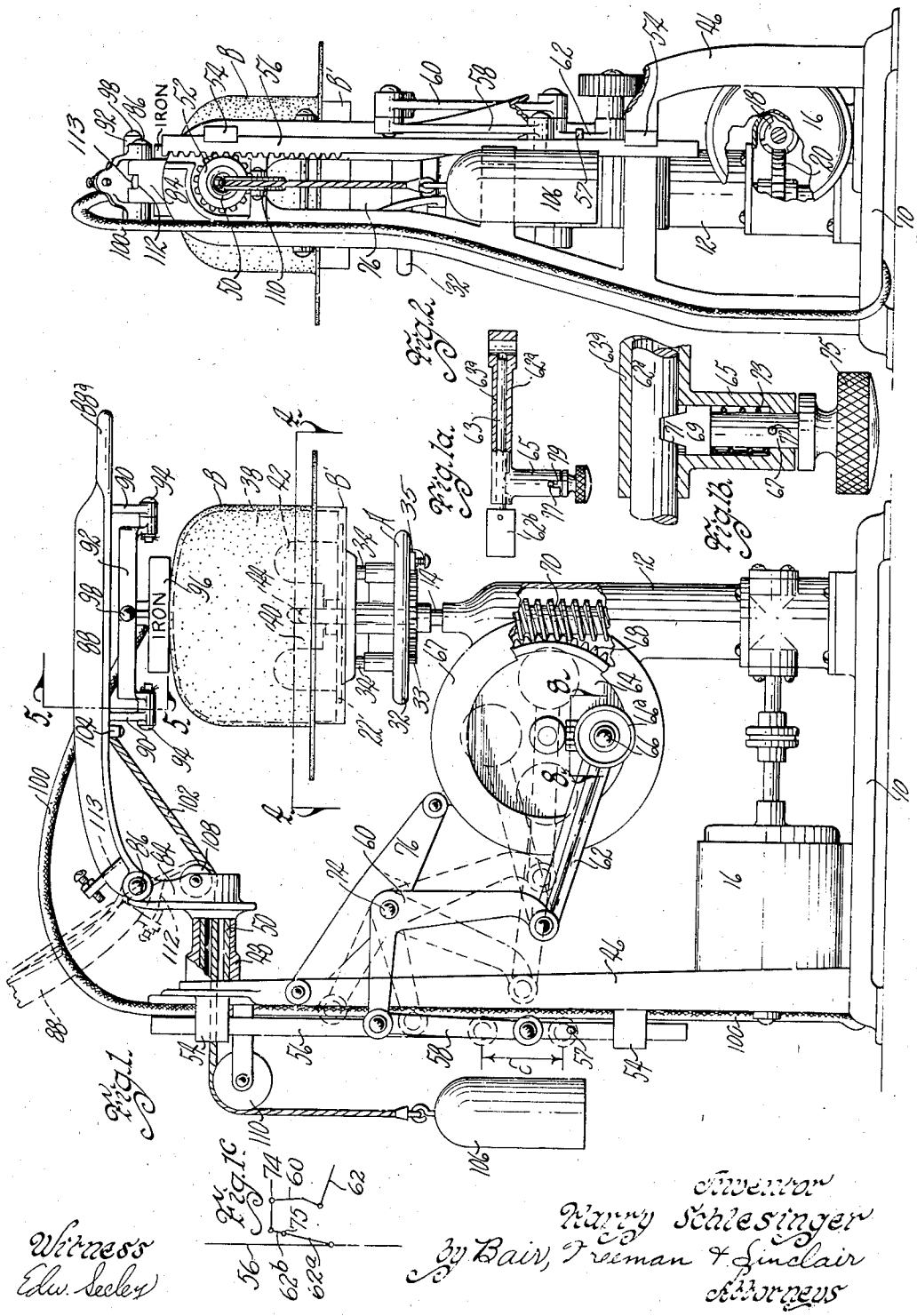



Fig. 2.

Fig. 1a.

Fig. 1b.

Fig. 1.

Fig. 1c.

Witness
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Fig. 3.

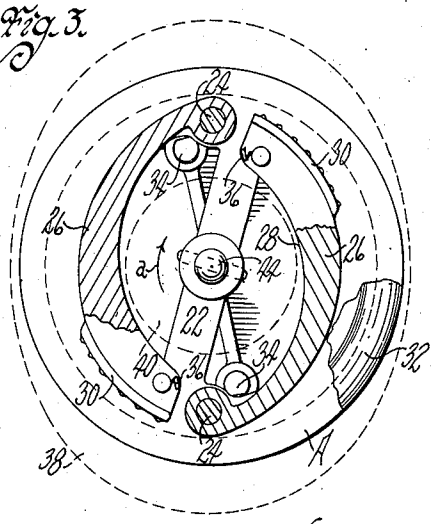



Fig. 4.

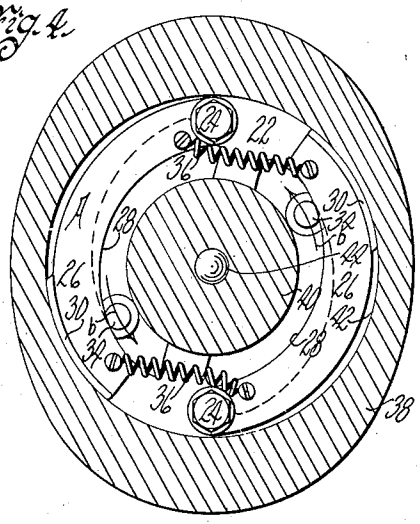
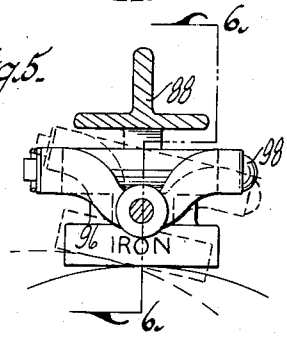



Fig. 5.



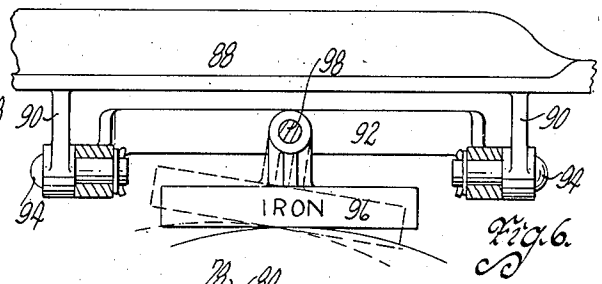




Fig. 6.

Fig. 8.

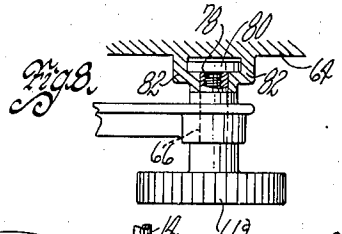






Fig. 7.

Fig. 9.

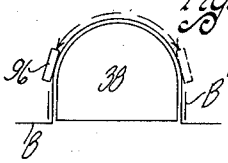
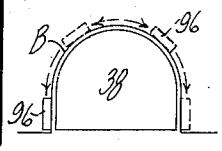



Fig. 10.




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# UNITED STATES PATENT OFFICE

1,986,364

## HAT IRONING MACHINE

Harry Schlesinger, Des Moines, Iowa, assignor of seventy-four one hundred and eighty-thirds to Alfred F. Yoerg and thirty-five one hundred and eighty-thirds to Jack Goldberg, both of Des Moines, Iowa

Application November 23, 1931, Serial No. 576,683

10 Claims. (Cl. 223—28)

The object of my invention is to provide a hat ironing machine which is simple, durable and comparatively inexpensive to manufacture.

A further object is to provide a hat ironing machine of automatic character in which a hat may be easily placed for ironing purposes and adjustment of the iron to iron only desired portions of the hat may be readily and quickly made.

A further object is to provide a hat ironing machine in which a hat chuck and the shaft for rotating it are mounted vertically so that a hat block and hat may be placed on the hat chuck in the most natural manipulating position for the operator.

A further object is to provide a hat iron so mounted that it can be easily manipulated to position for ironing the hat and maintains tangent contact therewith at all positions of the mechanism, with a minimum of parts being used in the construction of the machine.

More particularly, it is my object to provide a hat ironing machine in which a hat block chuck shaft is vertically mounted and a hat iron is supported by a single pivoted oscillatably mounted arm and maintains perfect tangent contact with the hat by reason of a universal mounting for the iron.

Still a further object is to provide the hat block chuck of such character that it can be readily manipulated while the machine is in motion for chucking or unchucking a hat block, the iron being also easily manipulated from inoperative to operative position and vice versa and readily adjusted so as to iron only the desired portion of the hat.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of my improved hat ironing machine.

Figure 1*a* is a plan view of a link connection in the machine.

Figure 1*b* is an enlarged view of a portion of Figure 1*a*, showing the parts in section.

Figure 1*c* is a diagrammatic view of the link connection of Figures 1*a* and 1*b* applied to the machine.

Figure 2 is a rear elevation of my hat ironing machine.

Figure 3 is a plan view partly in section of the hat block chuck showing it on an enlarged scale and in unchucked position.

Figure 4 is a somewhat similar view showing the hat block in section, as for instance on the line 4—4 of Figure 1 and showing the parts in chucked position.

Figure 5 is a sectional view on the line 5—5 of Figure 1 showing the action of one pivot for the iron.

Figure 6 is a sectional view on the line 6—6 of Figure 5 showing the action of another pivot for the iron.

Figure 7 is a side elevation of a portion of Figure 1 showing the parts in a different adjusted position.

Figure 8 is a sectional view on the line 8—8 of Figure 1 showing parts for accomplishing adjustment; and

Figures 9 and 10 are diagrammatic views illustrating the effect of the different adjustments on the hat iron relative to the hat.

On the accompanying drawings, I have used the reference numeral 10 to indicate a base. An upright housing 12 is mounted on the base 10 for housing a hat block chuck shaft 14. The shaft 14 is driven by a motor 16 through the medium of a worm 18 and worm gear 20.

The shaft 14 it will be noted is vertically mounted and has thereon a hat block chuck A. The chuck A comprises a base member 22 secured to the shaft 14 and having pivoted at 24 thereon, hat block engaging members 26. The members 26 are provided with cam surfaces 28 and with hat block engaging surfaces 30.

Rotatably mounted on the shaft 14 is a control disk 32 having pins 34 for engagement with the cam surfaces 28. Springs 36 retain the cam surfaces 28 in engagement with the pins 34.

The shaft 14 rotates in the direction of the arrow *a* (see Figure 3). A hat block 38 having a central hub 40 and a bore 42, may be positioned on the hat block chuck A, with a bore 44 of the hat block receiving the upper end of the shaft 14. The parts are in the position of Figure 3 during this operation.

To cause rotation of the hat block 38 with the chuck A, the control disk 32 may be grasped by the operator to prevent or partially prevent rotation thereof, which will cause the pins 34 to rotate in the direction of the arrows *b* (relative to the cam surfaces 28). This causes the engaging surfaces 30 to engage the bore 42, as shown in Figure 4 and due to the circumferential incline of the cam surfaces 28, the surfaces 30 may be as tightly engaged with the bore 42 as desired.

For positively retaining the engaging members 26 in engaged position with the bore of the hat block, I provide a ratchet wheel 33 secured to the shaft 14 and a spring pressed pawl 35 pivoted to the disk 32. The ratchet and pawl, of course, are of the one-way type so that they automatically engage to prevent reverse rotation of the disk 32 relative to the shaft 14, but reverse rotation is permitted whenever the pawl is manually released from the ratchet.

When it is desired to unchuck the hat, the pawl 35 is released from the ratchet wheel 33 and the control member 32 may then be rotated in the same direction that the shaft 14 rotates for moving the pins 34 in directions opposite the arrows *b* for releasing the engaging members 26 to the position shown in Figure 3.

Spaced from the housing 12 is an upright frame 46. The frame 46 has a horizontal hub 48 in which a tubular shaft 50 is oscillatably mounted. The tubular shaft 50 has a pinion 52 secured thereto.

Slidably mounted in guides 54 is a rack 56. The rack 56 meshes with the pinion 52 for imparting oscillation thereto upon reciprocation being imparted to the rack 56.

For imparting reciprocation to the rack 56, I provide a link 58, a bell crank 60, a pitman 62 and a crank disk 64 having an adjustable crank pin 66. The crank disk 64 is mounted in a housing 67 and has a worm gear 68 meshing with a worm 70 on the vertical shaft 14. The bell crank 60 is pivoted at 74 to a connector arm 76 connected with the upright frame 46 and the crank disk housing 67. The crank pin 66, as best shown in Figure 8, has a control knob 66*a* and is tubular in form. It is interiorly screw-threaded to coact with a threaded stud 78 which has a head 80 slidable in radial guides 82 formed on the crank disk 64. Thus the throw of the crank pin 66 can be regulated.

A bracket or mounting 84 is secured to the tubular shaft 50 and has pivoted thereto at 86, an ironing arm 88. The ironing arm 88 is provided with brackets 90 to which a rectangular frame 92 is pivoted on pins 94. An iron 96 is pivoted on pins 98 which are supported by the frame 92. The pins 94 and 98 are at right angles to each other, thereby giving a universal movement to the iron 96.

The iron 96 may be of the ordinary electric hat iron type supplied with current from a cable or the like 100 which may be controlled by a switch and a rheostat with a pilot light for indicating whether the iron is on in the ordinary manner.

As shown in Figure 1, the iron is in contact with the top of a hat B. It is retained in such contact by a cable 102 secured at 104 to the arm 88 and having a weight 106 connected thereto.

The cable 102 extends under a pulley 108 through the tubular shaft 50 and over a pulley 110. This arrangement for keeping the iron in contact with the hat is especially necessary when the iron is in contact with the side of the hat, as will hereinafter be described.

The arm 88 may be moved to an inoperative position, as shown by dotted lines in Figure 1 and will be retained in such position by the weight 106, because of the cable 102 passing overcenter relative to the pivot pins 86. A notch 112 is provided in the barcket 84 and a notch 113 is provided in the arm 88 for the purpose of permitting the cable to assume such position (see Figures 1 and 2).

I have heretofore described a construction in which the bell crank 60 operates continuously whenever the crank pin 66 is in tightened position and the crank disk 64 is rotating. In Figure 1*a*, I have shown a link which may be substituted for either the 62 or the link 58 and which comprises two parts, 62*a* and 62*b* telescopically arranged relative to each other. The part 62*a* has a bore 63*a*, while the part 62*b* has a rod 63 slidable in the bore 63*a*. The rod 63 is pinned or otherwise secured to the part 62*b*.

The part 62*a* has a hub 65 in which is slidably mounted a pin 67. The pin 67 has a lug 69 adapted to engage a notch 71 of the rod 63. A spring 73 normally tends to cause such engagement.

A pin 77 extends transversely through the pin 67 and is adapted to coact with opposite notches 79 of the hub 65. This construction forms a clutch, the purpose and operation of which will hereinafter be fully described. Its relation to the rest of the machine is shown diagrammatically in Figure 1*c*.

*Practical operation*

In the operation of my device, the motor 16 may be energized for operating the machine and with the arm 88 in inoperative position, a hat block with a hat therein may be chucked for ironing the hat (see Figure 9). In this figure, a band B′ is shown on the hat. With the guides 82 in alignment with the pitman 62, as in Figure 7, the knob 66*a* may be loosened and the handle 88*a* of the arm 88 grasped by the operator and swung to position with the iron 96 in contact with the hat. The iron is adjusted to a position adjacent the band B′, as shown at the left of Figure 9, this being possible while the machine is in motion because the crank disk 64 rotates very slowly.

The knob 66*a* may then be tightened, whereupon the bracket 84 will automatically oscillate so that the iron 96 will travel from the left to the right side as shown in Figure 9 and back again, this cycle being repeated as long as the machine is left in operation. Where the band is removed from the hat, the stroke of the pitman 62 can be increased so that the iron will travel as shown at the lower left and lower right of Figure 10, or where only the top of the hat is to be ironed, the stroke can be shortened as illustrated at the top of Figure 10.

Sometimes it is desired to rotate the hat block chuck A but not oscillate the iron 96. This operation, for instance, facilitates certain cleaning operations on the hat when it is desired to have the hat rotate and hold a cleaner sponge against it for instance.

It is also desirable to have the hat rotate while holding a damp sponge against it just prior to ironing the hat. The clutch I have shown in Figures 1*a* and 1*b* serves to disconnect the hat iron 88 from the crank disk 64 as will now be described.

The head 75 of the pin 67 may be pulled outwardly against the action of the spring 73 for disengaging the lug 69 from the notch 71. The pin 67 may then be given a half turn so that the pin 77 is out of the notches 79 and on the end of the hub 65. Thereafter the link portion 62*a* may reciprocate without imparting reciprocation to the rack 56, which then will not impart oscillation to the arm 88. As a matter of fact, the arm 88 will have a tendency to either lower or raise the rack 56, depending on which side of the machine the arm happens to be. During the rota-

tion of the disk 64, the part 62a will engage the part 62b if the arm 88 is on the right and the rack is thereby in raised position. The rack will then be lowered by rotation of the disk until the arm 88 passes over center, whereupon the weight of the arm, as it swings to the left, lowers the rack still further and to prevent excessive movement thereof, a pin 57 may be provided to act as a stop. The pin 57 engages the lower guide 54 to limit the upward movement of the rack as the arm 88 raises the rack.

When it is desired to again connect the clutch, the knob 75 may be rotated until the pin 77 enters the notches 79 and thereafter when the rotating disk 64 brings the link part 62a to such position that the lug 69 registers with the notch 79, the lug will snap into engaged position. Automatic oscillation of the iron arm 88 will then commence.

Hat ironing machines have heretofore been used, but most of them lack the convenience and precision embodied in my invention.

Particularly with reference to the vertical mounting of the hat chuck, the details of the hat chuck itself and the universal mounting of the iron, I have provided a very efficient machine. By arranging the shaft 14 vertically, the hat block can be chucked in a vertical position, which is the most natural position for the operator. The hat block chuck is arranged so that it can be readily manipulated for either chucking or unchucking the hat block. With a minimum number of parts for mounting the iron 96 (a single pivoted arm 88 being provided) I am able to provide accurate tangent relation of the iron 96 to any point of the hat B by the universal mounting provided by the pivots 94 and 98. Also the same weight which maintains the iron in contact with the hat serves effectively to retain the arm 88 in inoperative position while one hat is being unchucked and another is being chucked.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a hat ironing machine, a hat block chuck rotatable on a vertical axis, a hat block thereon and an ironing fixture oscillatable on a horizontal axis which extends through said hat block, said ironing fixture comprising a mounting, an ironing arm pivoted thereto on an axis which is horizontal when said ironing fixture is at the center between its limits of oscillation and which is at right angles to the axis of said ironing fixture, a hat iron universally pivoted on said ironing arm for contact with a hat on said hat block and weight means to constrain said iron toward engagement with said hat, said ironing arm being swingable to inoperative position whereupon said weight means assumes an overcenter position to retain the arm in such inoperative position.

2. A hat block chuck comprising a shaft, a base member secured thereto, hat block engaging members pivoted to said base member and a control member rotatable on said shaft, said hat block engaging members having cam surfaces and abutments on said control member to engage said cam surfaces when said control member is rotated relative to said hat block engaging members and thereby force them into engagement with a hat block.

3. A hat block chuck comprising a shaft, a base member secured thereto, hat block engaging members pivoted to said base member and a control member rotatable on said shaft, said hat block engaging members having cam surfaces, abutments on said control member to engage said cam surfaces when said control member is rotated relative to said hat block engaging members and thereby force them into engagement with a hat block and ratchet and pawl means to prevent disengaging movement of said engaging members.

4. In a device of the class described, a rotatable shaft, a hat block chuck thereon comprising a base member secured thereto, hat block engaging members pivoted to said base member and a control member rotatable on said shaft, said hat block engaging members having cam surfaces and said control member having abutments to engage said cam surfaces and force said hat block engaging members into engagement with a hat block upon the control member being held against rotation and whereby rotation of the control member in the direction that the shaft normally rotates will release said hat block engaging members from engagement with said hat block.

5. In a hat ironing machine, a vertical shaft, a hat block chuck thereon, a hat block on said chuck, a geared down crank disk operatively associated with said shaft, a crank pin on said disk, an upright frame spaced from said vertical shaft and having a horizontal hub, a horizontal shaft oscillatable in said hub, a pinion on said horizontal shaft, a rack meshing with said pinion, a pitman connecting said rack with said crank pin to impart reciprocation to said rack and oscillation to said horizontal shaft, a bracket on said horizontal shaft, an arm pivoted to said bracket on an axis at right angles to both the horizontal shaft and the vertical shaft and a hat iron carried by said arm.

6. In a hat ironing machine, a vertical shaft, a hat block chuck thereon, a hat block on said chuck, a geared down crank disk operatively associated with said shaft, a crank pin on said disk, an upright frame spaced from said vertical shaft and having a horizontal hub, a horizontal shaft oscillatable in said hub, a pinion on said horizontal shaft, a rack meshing with said pinion, a pitman connecting said rack with said crank pin to impart reciprocation to said rack and oscillation to said horizontal shaft, a bracket on said horizontal shaft, an arm pivoted to said bracket on an axis at right angles to both the horizontal shaft and the vertical shaft and a hat iron carried by said arm and universally mounted relative thereto for tangent contact with a hat on said hat block in all positions of the iron and hat relative to each other.

7. In a hat ironing machine, a vertical shaft, a hat block chuck thereon, a hat block on said chuck, a geared down crank disk operatively associated with said shaft, a crank pin on said disk, an upright frame spaced from said vertical shaft and having a horizontal hub, a horizontal shaft oscillatable in said hub, a pinion on said horizontal shaft, a rack meshing with said pinion, a pitman connecting said rack with said crank pin to impart reciprocation to said rack and oscillation to said horizontal shaft, said pitman being made in two parts slidable relative to each other and means normally operable to prevent such slid-

ing movement but capable of adjustment to a position permitting in it, a bracket on said horizontal shaft and an arm pivoted to said bracket and a hat iron carried by said arm.

8. In a hat ironing machine, a vertical shaft, a hat block chuck thereon, a hat block on said chuck, a geared down crank disk operatively associated with said shaft, a crank pin on said disk, an upright frame spaced from said vertical shaft and having a horizontal hub, a horizontal shaft oscillatable in said hub, a pinion on said horizontal shaft, a rack meshing with said pinion, a pitman connecting said rack with said crank pin to impart reciprocation to said rack and oscillation to said horizontal shaft, said pitman being made in two parts telescopically arranged relative to each other, spring pressed and releasable pin means to normally prevent telescopic movement thereof.

9. In a hat ironing machine, a shaft, a hat block chuck thereon, a hat block on said chuck, a crank disk operatively associated with said shaft, a crank pin on said disk, an oscillatable shaft, a pitman connecting said oscillatable shaft with said crank pin to impart oscillation to said oscillatable shaft upon rotation of said crank pin, said pitman being made in two parts telescopically arranged relative to each other and spring pressed, releasable pin means to normally prevent telescopic movement thereof.

10. In a hat ironing machine, a shaft, a hat block chuck thereon, a hat block on said chuck, a crank disk operatively associated with said shaft, a crank pin on said disk, an oscillatable shaft, a pitman connecting said oscillatable shaft with said crank pin to impart oscillation to said oscillatable shaft upon rotation of said crank pin, said pitman being made in two parts telescopically arranged relative to each other and selectively operable means to prevent or permit telescopic movement thereof.

HARRY SCHLESINGER.