Feb. 6, 1951 C. E. MORGENSTERN 2,540,749

IRONER

Filed April 30, 1948 5 Sheets-Sheet 1

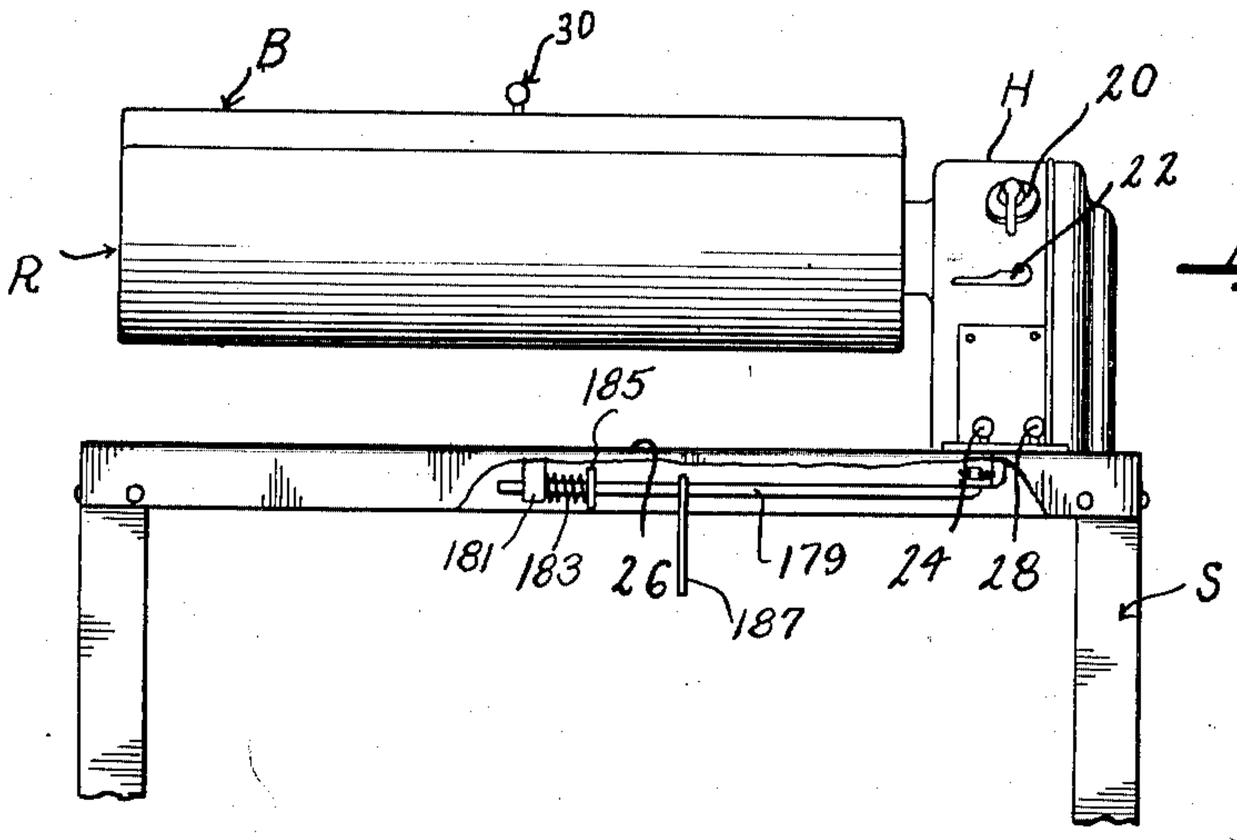

Fig. 1.

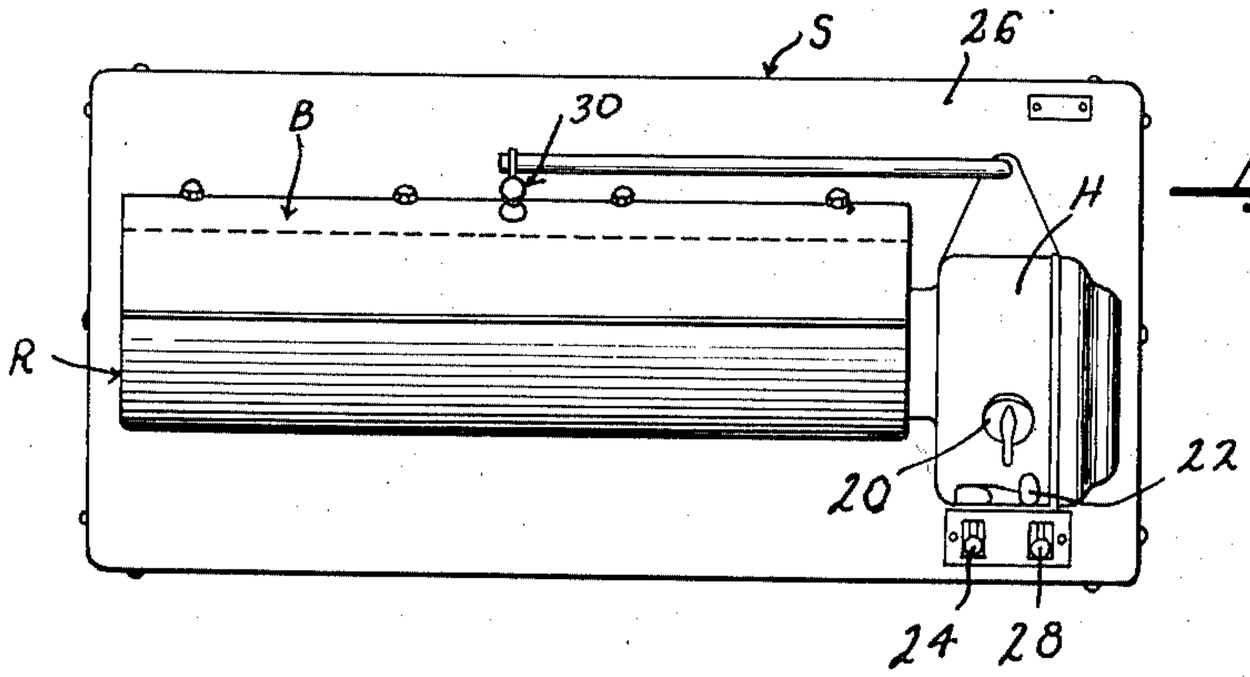

Fig. 2.

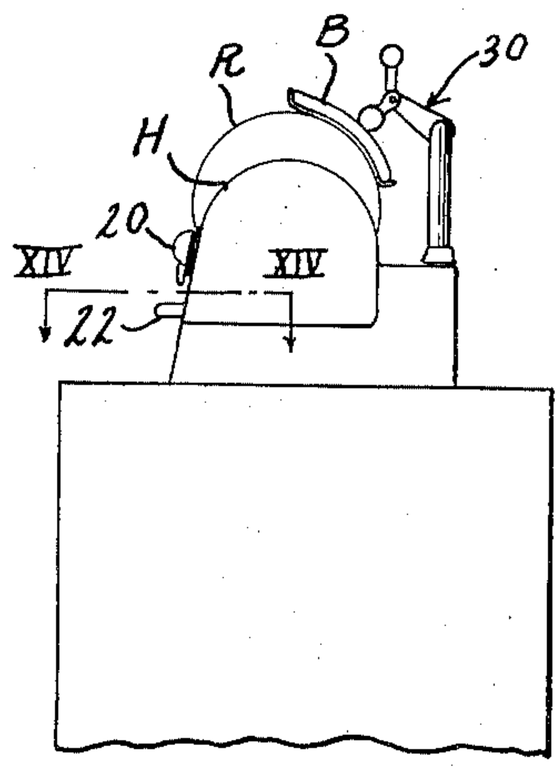

Fig. 3.

Inventor
CHARLES E. MORGENSTERN

by The Firm of Church & Kidd Attys.

Feb. 6, 1951

C. E. MORGENSTERN

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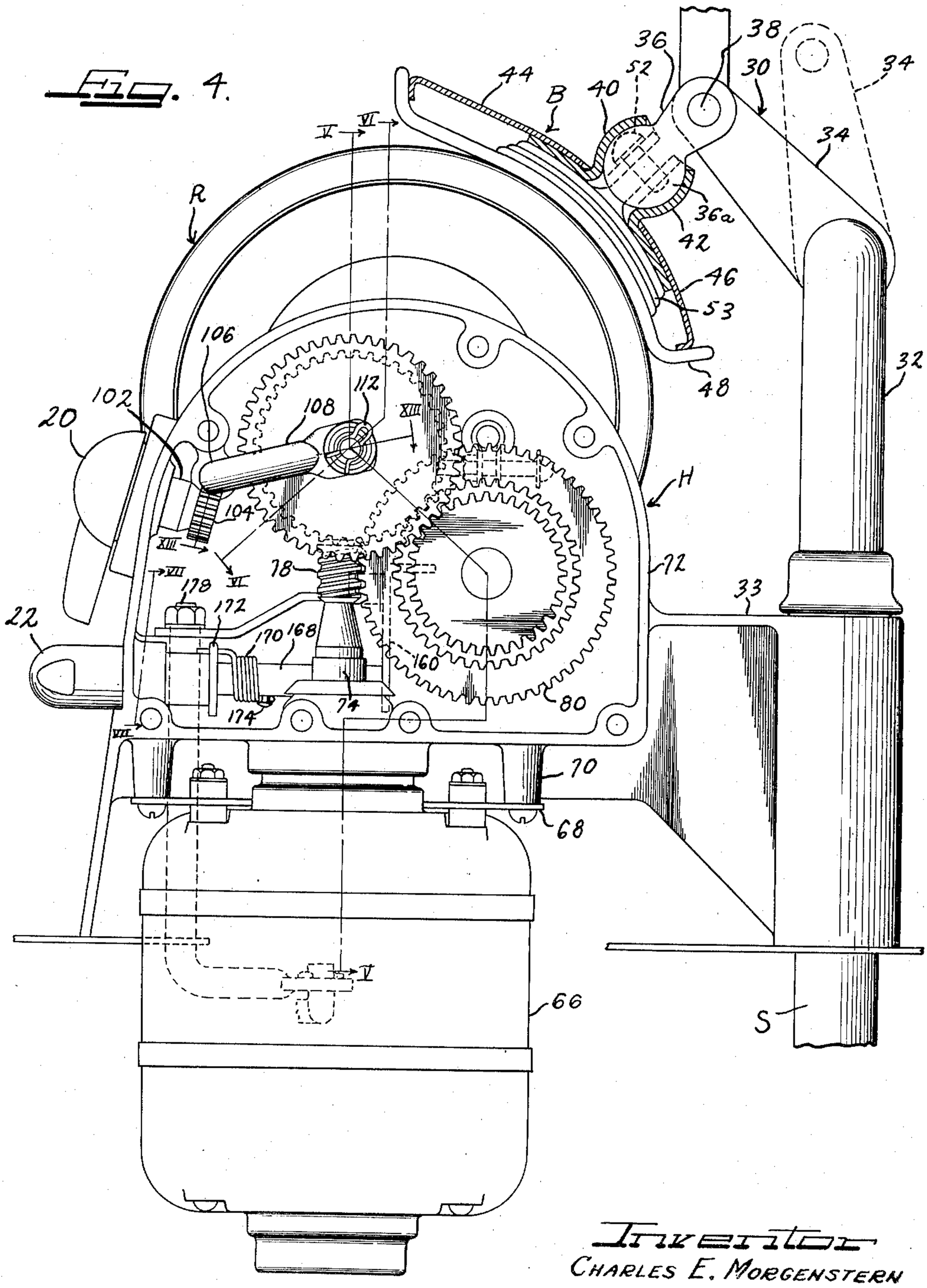
FIG. 4.



Inventor
CHARLES E. MORGENSTERN

by The Firm of Charles E. Hill

Attys.

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IRONER

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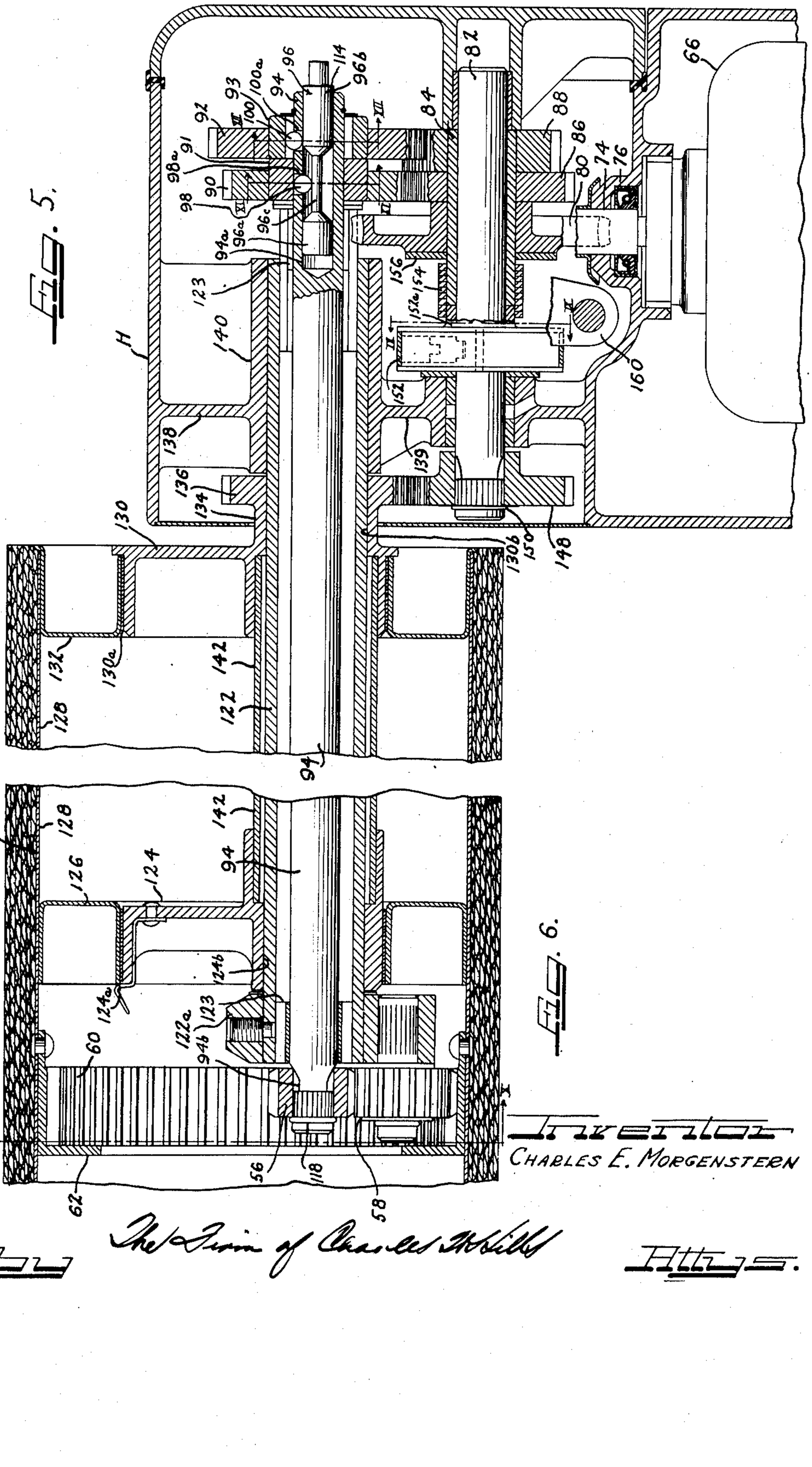

FIG. 5.

FIG. 6.

Inventor
CHARLES E. MORGENSTERN

by The Firm of Charles A. Wilkes Attys.

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Fig. 10.

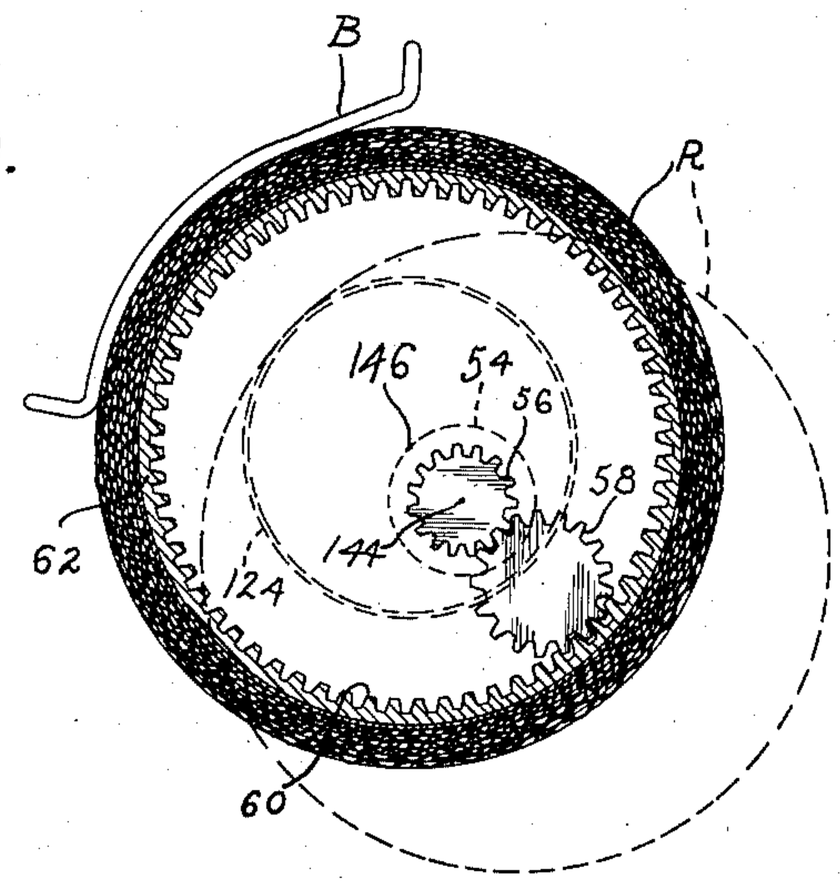


Fig. 7.

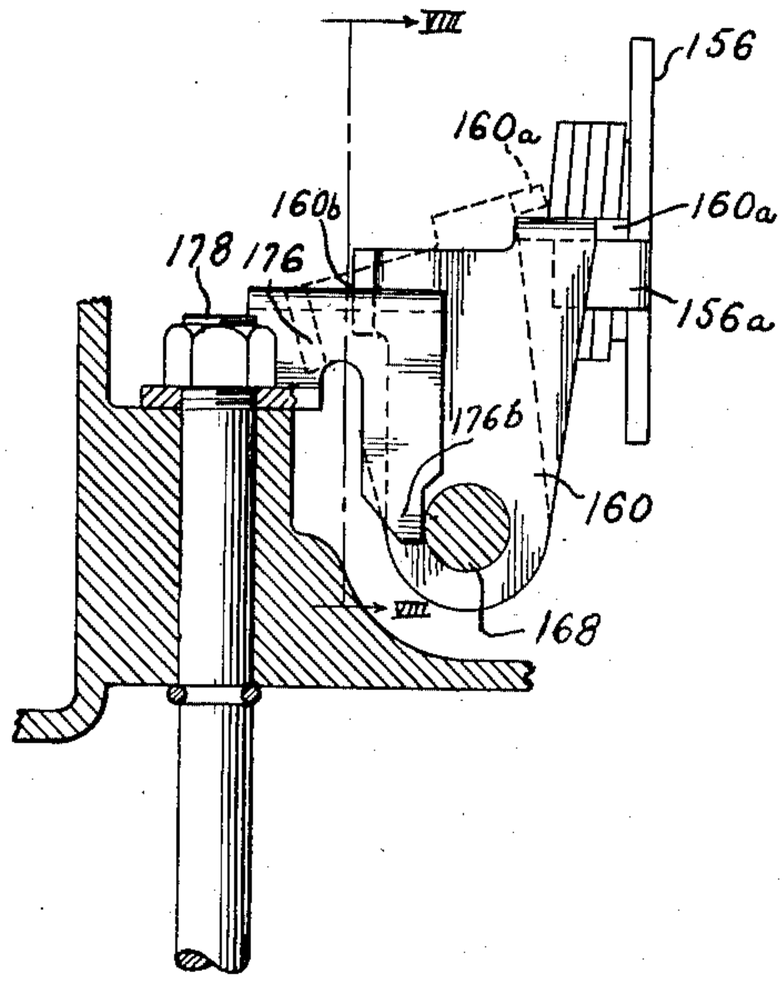
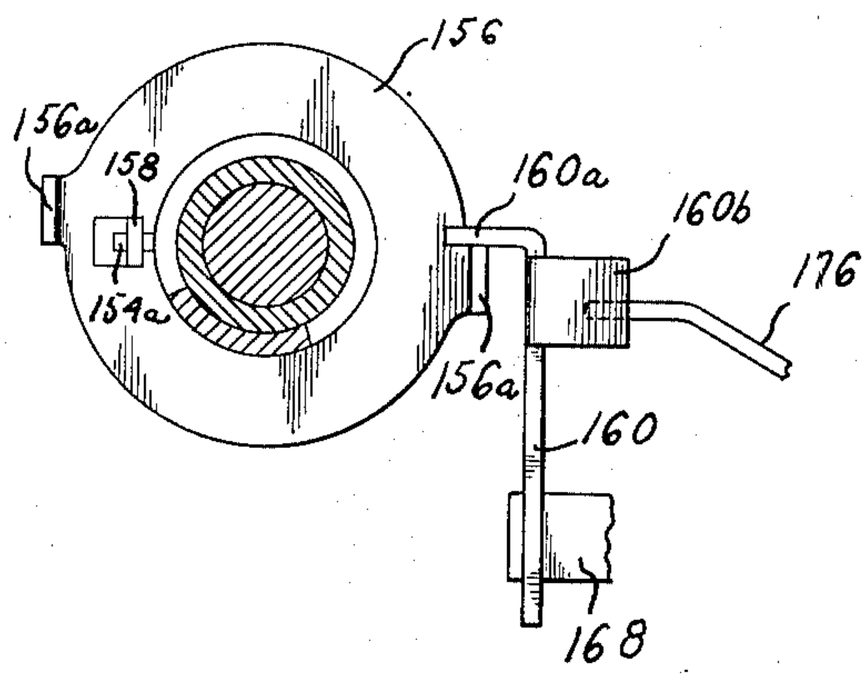


Fig. 8.



Inventor
CHARLES E. MORGENSTERN

by The Firm of Charles Hobbs Attys.

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IRONER

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Fig. 11.

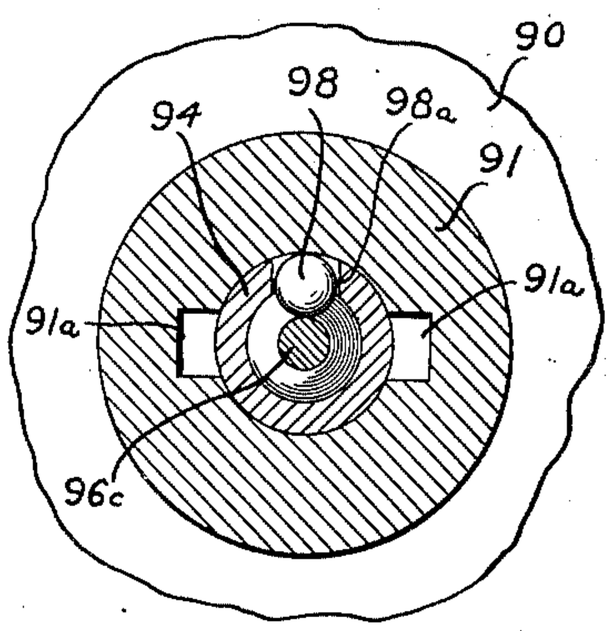


Fig. 12.

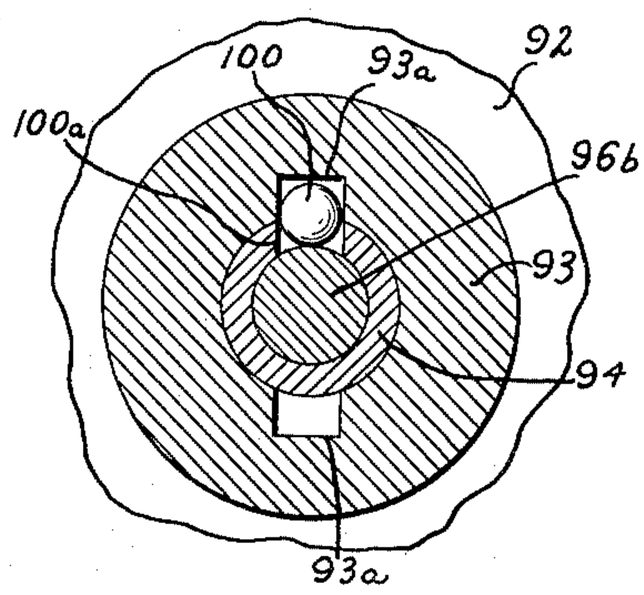


Fig. 14.

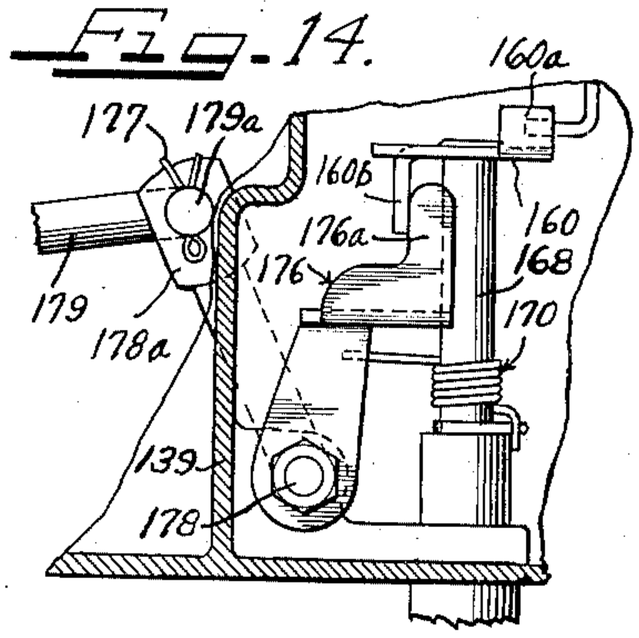
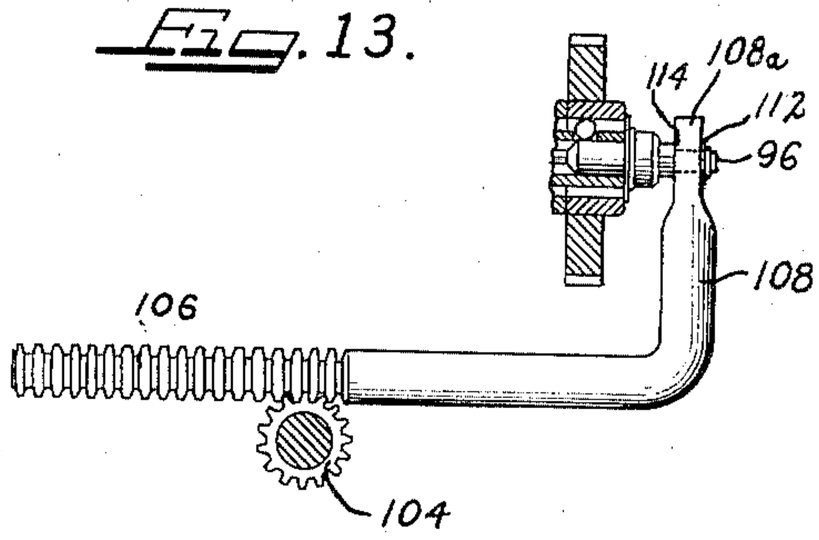
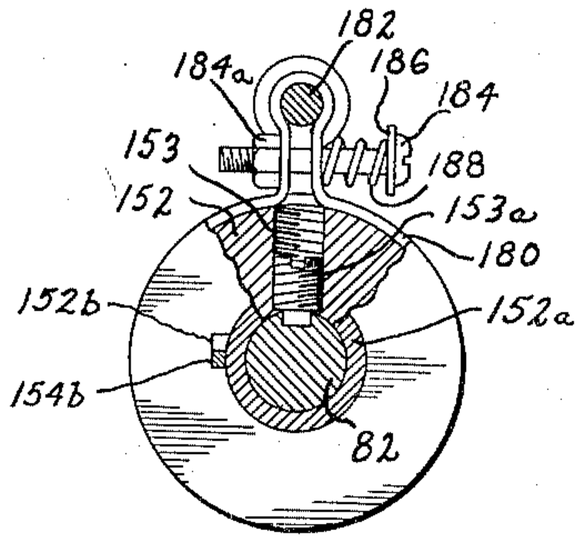


Fig. 9.

Fig. 13.





Inventor
CHARLES E. MORGENSTERN

By The Firm of Charles G. Miller Attys.

Patented Feb. 6, 1951

2,540,749

UNITED STATES PATENT OFFICE

2,540,749

IRONER

Charles E. Morgenstern, St. Joseph, Mich., assignor to Nineteen Hundred Corporation, a corporation of New York

Application April 30, 1948, Serial No. 24,207

6 Claims. (Cl. 38—59)

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My invention relates to ironing machines and has for its particular object the provision of an improved ironer of the type having a rotating roll, the axis of which may be selectively shifted about an orbital path to engage or disengage a shoe to accomplish ironing action.

In one type of ironer, a roller is supported for rotation about a horizontal axis and drives the clothes to be ironed against a stationary shoe which bears thereagainst. The shoe is usually provided with heating elements to warm the clothing to be ironed or pressed as it passes between the roller and the shoe. In accordance with the present invention, elements are provided to shift the axis of rotation of the roller over an orbital path from a position against the shoe wherein ironing action is accomplished to a position spaced from the shoe to discontinue ironing action. Further, in accordance with the present invention, the elements to shift the axis of rotation of the roller are operable by a simple trip handle located in a conveniently accessible position on the machine and which utilizes the energy of the drive mechanism to shift the axis of rotation of the roller, thereby minimizing the effort required of the operator.

It is, therefore, a general object of the present invention to provide an improved ironer.

A further object of the present invention is to provide an improved ironer of the type using a rotating roller the axis of rotation of which may be shifted about an orbital path to engage or disengage the cooperating shoe.

It is still another object of the present invention to provide an improved ironer wherein the axis of rotation of the roller is shifted by a simple operation and the energy therefor is derived from an automatic drive mechanism.

Another object of the present invention is to provide an improved ironer wherein a common drive mechanism imparts rotational driving movements to the roller and is selectively operable to shift the axis of the roller over predetermined increments about an orbital path into and out of engagement with the shoe.

Yet another object of the present invention is to provide an improved drive mechanism for an ironer.

My invention further resides in features of construction, combination and arrangement whereby inexpensive and reliable elements to shift the axis of rotation of the roller of an ironing machine are provided to achieve a unit of maximum utility.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings in which:

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Figures 1, 2 and 3 are front elevational, top plan, and side elevational views, respectively, of an ironer constructed in accordance with the principles of the present invention;

Figure 4 is an enlarged fragmentary side view, like Figure 3, but with the cover portion of the mechanism removed to expose mechanical drive elements to view;

Figure 5 is a fragmentary cross-sectional view taken along the axis V—V, Figure 4;

Figure 6 is a fragmentary cross-sectional view taken along the axis VI—VI, Figure 4;

Figure 7 is a fragmentary enlarged cross-sectional view taken along the axis VII—VII, Figure 4, showing the catch plate in the engaged and disengaged position;

Figure 8 is a fragmentary cross-sectional view taken along the axis VIII—VIII, Figure 7, showing the construction of the catch plate and the associated mechanism;

Figure 9 is a fragmentary cross-sectional view taken along the axis IX—IX, Figure 5, and showing the construction of the brake mechanism;

Figure 10 is a view through the axis X—X, Figure 6, showing the roll in the engaged and disengaged positions and the orbital path traversed in passing therebetween;

Figures 11 and 12 are cross-sectional views through the axis XI—XI, Figure 5, and axis XII—XII, Figure 5, respectively;

Figure 13 is a view along axis XIII—XIII, Figure 4; and

Figure 14 is a greatly enlarged fragmentary view through axis XIV—XIV, Figure 3.

Referring now to the views of Figures 1, 2 and 3, there is shown a stand or table S upon which is mounted an ironing machine having a rotatable roll R which engages the shoe B to accomplish clothes ironing action. The roll R is supported for rotation by the housing H.

The control mechanism for the ironer includes the finger tip control **22** which is selectively shiftable to swing the roll R into or out of engagement with the shoe B and the speed selection control **20** which controls the rotational velocity of the roll R. Moreover, a heater control switch **24** is mounted in the top panel **26** of the support

S to control the application of heating energy to the shoe B. The switch **28** controls the application of electrical power to the complete mechanism.

The mechanism indicated generally at **30** sustains the shoe B in position to engage the roll R and contains handle operated release elements to swing the shoe B rearwardly out of engagement with the roll R in case of emergency.

The shoe release mechanism **30** includes a support arm **32** (Figure 4) which is received in bracket **33** to be held in vertical position and which sustains the rotatable arm **34** at its upper end. The far end of the arm **34** is pivotally attached to the ball arm **36** by the pivot **38**. The ball arm **36** is received in the ball socket formed by the two opposed socket forming members **40** and **42**. Studs (not shown) extend from shoe **48** to back cover plates **44** and **46** which are held thereto by screws, thus clamping the shoe assembly together.

The engagement between the ball **36***a* and the end of the ball arm **36** and the socket forming members **40** and **42** is controlled by a pair of bolts **52**.

An electric heating element, shown in side view at **53**, is received between the back members **44** and **46** and the shoe facing member **48**, and is electrically connected to a suitable source of energizing power through the switch **24** which controls the degree of heating of the shoe and thus determines the ironing temperature.

The pivotal connection between the support arm **32** and the releasable arm **34** includes elements (not shown) engageable to bias the arm **34** in the counter-clockwise direction as seen in Figure 4. These elements are cooperatively associated with trigger mechanism (not shown) which releases this pressure upon predetermined movement of the release handle (not shown), thereby permitting the arm **34** to swing to the position shown in the dotted lines of Figure 4 and thus releasing the pressure exerted between the shoe B and the roll R. The trigger mechanism may, for example, include a spring biased latch operable to disengage upon predetermined force to release the biasing elements.

The view of Figure 10 shows the roller R in the engaging and released position relative to the shoe B, the dashed lines indicating the position of the roller R when in the released position. In shifting between these two positions, the axis of the roll R travels along the orbital path **54** in a manner to be described in further detail hereafter. Torque for driving the roll R when in the engaged position is derived from the pinion gear **56** which mates with the idler gear **58** which, in turn, rides on the inwardly extending gear face **60** of the end cap **62** of the roll R. The gear **56** is mounted coaxially with the axis of the orbit **54** and remains in fixed position as the axis of roll R is shifted. Gear **58** is fixedly supported relative to gear **56** and rides free of the gear face **60** when the axis of roll R is shifted about orbit **54**.

The driving engagement for the mechanism of the present invention is best seen from the views of Figures 4, 5 and 6. The view of Figure 6 is shown in aligned relationship with the view of Figure 5 to illustrate better the relationship of the elements, although it will be understood that these views are along different cross-sections through the mechanism. The driving torque for the unit is derived from the motor **66** which is electrically connected to the switch **28** to rotate when that switch is turned to the "on" position.

The motor **66** is supported from the bracket **68** (Figure 4) which is in turn supported from the downwardly extending projections **70** which are formed in the casting **72** which defines the housing H. The shaft **74** of the motor **66** is supported therefrom by the oil seal bearing **76** (Figure 5) and extends upwardly to the worm gear **78** (Figure 4). This worm gear meshes with the worm wheel **80** to drive the mechanism.

As is best seen in Figure 5, the worm wheel **80** is press-fitted to sleeve **84** which is supported from shaft **82** for rotations relative thereto. The gears **86** and **88** are also press-fitted to sleeve **84** to rotate with the gear **80**. The gears **86** and **88** mesh with the gears **90** and **92**, respectively, which ride on the shaft **94**.

The gears **90** and **92** may be selectively engaged to drive the shaft **94** by shifting plunger **96** which is shown in elevational view in Figure 5 and which is received in the cylindrical cavity **94***a* of the shaft **94**. This plunger comprises two enlarged portions **96***a* and **96***b* which fit snugly in the cavity **94***a* and which are connected by a portion **96***c* of relatively small diameter. Balls **98** and **100** ride in suitable circular openings **98***a* and **100***a* in the wall of the shaft **94** and are of diameter to be retracted within the shaft **94** when the portion **96***c* of the plunger **96** is in axial alignment with them.

The gears **90** and **92** are supported from the shaft **94** by the hubs **91** and **93**, respectively. Each of these hubs contains a plurality of axially extending grooves or notches, **91***a* and **93***a*, which are best seen in the view of Figures 11 and 12. As shown in Figure 12, these grooves receive the associated balls **98** or **100** when the portion **96***a* or **96***b* of the plunger **96** is in axial alignment therewith and act to key the opening **98***a* or **100***a* of the shaft **94** to the associated gear **90** or **92** to drive the shaft **94** in accord with the rotations of that gear.

Figures 11 and 12 are cross-sectional views through the axis XI—XI and XII—XII of Figure 5, respectively showing the position assumed by the balls **98** and **100** in the disengaged and engaged positions, respectively. In the cross-sectional view of Figure 11, the ball **98** is shown in the retracted position relative to the shaft **94** and rests against the narrow portion **96***c* of the plunger **96**. In this condition there is no engagement between the gear **90** and the shaft **94**, and the latter rides free of motion imparted to the gear **90** by the gear **86**.

In the view of Figure 12, the ball **100** is shifted away from the surface of the shaft **94** by the enlarged portion **96***b* of the plunger **96** and slides into the groove **93***a* of the hub **93**. As the shaft **94** rotates, therefore, the ball **100** acts as a key to engage the edge of the grooves **93***a* and **100***a* and causes the gear **92** to drive the shaft **94**.

When the plunger **96** is shifted on the left, as seen in Figure 5, the ball **100** rides on the enlarged portion **96***b* of the plunger **96** and keys the gear **92** to shaft **94** whereas the ball **98** falls to the retracted position within shaft **94** to permit gear **90** to ride free of the rotations thereof.

The axial position of the plunger **96** is controlled by the speed control knob **20**. As shown in Figure 4, a bushing **102** sustains a shaft extending from knob **20** to the pinion **104**. As is best seen in the cross-sectional view of Figure 13, this pinion rides on the rack **106** which is bent to form the arm **108**. At its remote end, the arm **108** has a portion **108***a* with an opening to receive the plunger **96** which is fixed for axial

movement in accordance with the shifting movement of the rack 106 by the snap ring 112 and the shoulder 114 on plunger 96. The ring 112 may be seen in elevational view in Figure 4.

From the foregoing it may be seen that as the speed control knob 20 is rotated, the rack 106 is shifted to shift the plunger 96 and cause the gears 90 and 92 selectively to drive the shaft 94. Inasmuch as the ratios between the gears 88 and 92 and between the gears 90 and 86 are of different values, this shifting varies the speed of rotation of the shaft 94 relative to the motor 66 and thereby controls the speed or rotation of the roll R.

As is best seen in Figure 6, the shaft 94 terminates at its remote end in the splined hub portion 94*b*, gear 56 rides on these splines and is held thereon by the snap ring 118 which is received in an appropriate groove in the end portion of the hub 94*b* of shaft 94. When the roller R is in an engaging position relative to the shoe B, the gear 60 engages the idler gear 58 which is supported in an engaging relationship with the gear 56 by the hub 122*a* of the shaft 122. This shaft is mounted coaxially with the shaft 94 by sleeve bearings 123. The idler gear 58 further rides on the internal gear face 60 of the cap 62 on the end of the roller R. Thus, as the shaft 94 rotates, the idler gear 58 likewise rotates, and the roller R is driven. The hub 122*a* of the shaft 122 is held against rotation by a brake mechanism to be described in further detail hereafter, so that the velocity of the inner periphery of the gear formed on the cap 62 is equal to the peripheral velocity of the gear 56.

The roller R is eccentrically supported from the shaft 122 at its remote end by the bushing 124. This bushing has a bearing surface 124*a* upon which rides the annular member 126 which is spot-welded or similarly attached to the inner cylindrical portion 128 of the roll R. The inner periphery of member 126 rides on the bearing surface 124*a*. The roll R is similarly supported at the end adjacent housing H by the bushing 130 which has a bearing surface 130*a* at its outer periphery and which supports the annular member 132. The latter member is spot-welded at its outer periphery to the inner cylindrically shaped portion 128 of the roll R and at its inner periphery rides on the bearing surface 130*a*.

The bushing 130 forms a sleeve 134 about shaft 122 which extends within the housing H to define the gear 136. It is this gear that is rotated to shift the axis of the roll R along an orbital path to engage or disengage this roll relative to the shoe B.

The bushings 124 and 130, together with the gear 136, are rotatably supported relative to the shaft 122 by sleeve bearings 124*b* and 130*b* and are connected to each other by the sleeve 142.

It will be observed that the bushings 124 and 130 are of circular shape for free rotation in the corresponding annular members 126 and 132. However, these bushings are eccentrically supported from the shaft 122 as is best seen by the dotted lines of Figure 10 which show the bushing 124 in outline form. Thus, when the hollow shaft 142 is rotated, as by the rotation of the gear 136, the centers of the bushings 124 and 130 are shifted in an orbital path about the axis of rotation of shaft 122, thereby causing the axis of roll R to shift along the orbital path 54 (Figure 10).

The housing H has an inwardly extending web 138 (Figure 5) which defines a hollowed-out portion 140 which receives the shaft 122. This shaft is press-fitted to the portion 140 of the housing H and does not rotate relative thereto, thus holding the bushing 122*a* and the gear 58 in fixed position.

The operation of the automatic control mechanism for selectively shifting the axis of the roll R about an orbital path will now be described. As will be evident from Figure 5, the gear 136 meshes with the gear 148 which is splined to the shaft 82 which extends within the sleeve 84. This gear is held axially relative to shaft 82 by the snap ring 150. Also in engagement with the shaft 82 is the brake drum 152 which has hub 152*a* extending beneath the spring 154. This drum is keyed to shaft 82 by key 153 which is best seen in the view of Figure 9.

The spring 154 coacts with sleeve 84 and the hub 152*a* to form a spring clutch for selective driving engagements therebetween. It is made of wire of rectangular cross-section to have a maximum area of engagement with the bushing 152*a* and the sleeve 84, and is of sufficient axial length to extend over both the bushing 152*a* and a portion of the sleeve 84. The spring 154 is further constructed to wind in the released condition to a diameter less than the diameter of sleeve 84 and the bushing 152*a*, and is mounted on these parts by first unwinding it until it assumes a diameter greater than these parts, slipping the parts into the spring and then releasing the spring to engage them.

When the spring 154 rides free on the sleeve 84 and the hub 152*a* of the brake drum 152, it frictionally grips the surface of the sleeve and the hub and causes the shaft 82 to be driven from the sleeve 84. This causes rotation of the gear 148 to rotate the gear 136 and thereby shift the axis of the roller R in an orbital path 54 (Figure 10).

The spring 154 is held in a normally unwound and inoperative condition by the collar 156 which may be seen in plan view in Figure 8 and side elevational view in Figure 7. As will be evident from these views, this collar has an upstanding ear 158 in which the radial extending end portion 154*a* of the spring 154 extends. The collar 156 further has a pair of axially extending ears 156*a* which may be engaged to hold this collar against rotation.

It is the function of the dog 160 selectively to engage the lips 156*a* of the collar 156 to prevent rotation thereof. To this end, the dog 160 is mounted for rotation with the shaft 168, which shaft extends outside of the housing H to the control knob 22 (Figure 4). The dog 160 is made of sheet metal and has a bent-over end portion 160*a* extending to an engaging position relative to the lip 156*a* of the collar 156. As indicated by the dotted lines of Figure 7, the dog 160 may be tilted to shift the extension 160*a* out of engagement with the lip 156*a* of the collar 156, thus permitting rotation of that collar and causing the spring 154 to snap tight to drive the hub 152*a* from the sleeve 84.

The shaft 168 and the operating knob 22 are normally biased to the position of the solid lines of Figure 7 by the torsion spring 170 (Figure 4). The axially extending end portion of this spring is held by the stationary collar 172 whereas the opposite end thereof is held on the shaft 168 by the screw 174. This spring is coiled to bias the shaft 168 in the clockwise direction as seen in Figure 7 to swing the dog 160 into an engaging position relative to collar 156.

Movement of the dog 160 under the bias of the spring 170 is limited by the catch 176. As is best shown in Figure 14, this catch includes an extending portion 176*a* which engages the lip 160*b* of the dog 160. Moreover, this catch includes a downwardly extending portion 176*b* which extends to an engaging position relative to the shaft 168 to form a positive stop against which the catch 176 bottoms under the spring action described hereafter. The catch 176 is mounted on the shaft 178 and is held for rotation therewith.

In addition to supporting the catch 176 for positive catch action when the portion 176*b* rides against the shaft 168, the shaft 178 provides selective knee control of the engagement of dog 160. This is achieved through the linkage that may be traced from the catch 176 which, is will be evident from Figure 14, acts as a crank arm relative to shaft 178, through shaft 178 to the crank arm portion 178*a* thereof. This portion has an opening to receive the upturned end 179*a* of the knee operating shaft 179 which is held thereon by the cotter pin 177. As is best shown in the broken away portions of the view of Figure 1, the shaft 179 is supported at its remote end by the bearing 181 in which it is received for sliding movement. This bearing also forms a member against which the spring 183 bottoms to urge the shaft 179 in the right-hand direction (Figure 1), thereby urging shaft 178 for clockwise rotation as shown in Figure 14. This causes the portion 176*b* of the catch 176 to engage the shaft 168 (Figure 7) to sustain the catch 176 in position to limit the movements of the dog 160. The spring 183 (Figure 1) bottoms at its opposite end on the washer 185 which is mounted in fixed position on the shaft 179.

The knee operating member 187 extends below the table surface of the support S (Figure 1) in position for engagement by the knee of the operator to permit selective movements of the shaft 179 to disengage the latter to swing the catch 176 in the counter-clockwise direction (Figure 14) to swing the dog 160 to a spaced relationship relative to the collar 156. This action results from the engagement of the portion 176*a* of the catch 176 with the portion 160*b* of the dog 160.

When the dog 160 restrains the collar 156 against rotation, one end of the spring 154 is held stationary. Frictional engagements with the rotating sleeve 84 cause the spring 154 to unwind, thereby increasing its diameter and decreasing the frictional engagements between the inner periphery of this spring and the sleeve 84. In addition, spring 154 has a radial extension 154*b* which engages the ear 152*b* (Figure 9) of brake drum 152 to provide a positive drive. This reduces the driving action of the spring 154 against the hub 152*a* to a negligible amount and discontinues the driving torque on shaft 82. When the dog 160 is shifted against the bias of spring 170 to the position of the dotted lines of Figure 7, the collar 156 is released and the spring 154 snaps tight to drive the shaft 82.

In operation of the mechanism of the present invention, the operator flips the knob 22 or the knee control 187 to cause the dog 160 to swing free of one of the lips 156*a* of the collar 156. The knob is then released and the spring 170 returns the dog 160 to an engaging position. The dog thereupon engages the other lip 156*a* of the collar 156 and thereby discontinues rotation of the shaft 82. Since the projections or lips 156*a* of the collar 156 are at 180° spacing relative to each other, the shaft 82 rotates 180° each time the control knob 22 is flipped. This causes the roll R to shift between the position of the dotted line of Figure 10 and the position of the solid lines thereof, and thus swings the roll R from a disengaged to an engaged position relative to the shoe B.

A brake band engages the drum 152 to restrain the shaft 82 against rotation to hold the axis roll R against movement away from shoe B. To avoid confusion, this brake mechanism is not shown in the view of Figure 5 but is shown in the view of Figure 9 which is a view as seen from the axis IX—IX, Figure 5. As will be seen from the view of Figure 9, the brake band 180 extends about the outer periphery of the cylinder or drum 152. This band further extends about the pin 182 which is attached to the web 139 of the housing H. The band 180 is provided with aligned openings to receive the screw 184. This screw has a washer 186 in engagement with its head portion and a spring 188 bottomed against that washer and the band 180. At its opposite end, the screw 184 receives a nut 184*a* which is tightened to achieve the desired tension on the band 180.

While I have shown a particular embodiment of my invention, it will of course be understood that I do not wish to be limited thereto since many modifications both in the elements employed and their cooperative structure may be made without departing from the spirit and scope of my invention. I, of course, contemplate by the appended claims to cover all such modifications as fall within the true spirit and scope of my invention.

I claim as my invention:

1. In an ironer of the type wherein a roll is rotated to press clothing against a shoe and is shifted about an orbital path into and out of engagement with said shoe, a shaft, a sleeve on said shaft supported for rotation relative thereto, said shaft having a hub portion of diameter substantially equal to the outer diameter of said sleeve and positioned in abutting relation to one end of said sleeve, drive elements interconnecting said sleeve and said roll to rotate said roll in accord with the rotation of said sleeve, a drive to rotate said sleeve, drive elements interconnecting said shaft and said roll to shift the axis of said roll about a center eccentric from the center of rotation of said roll to swing said roll into and out of engagement with said shoe when said shaft executes 180° rotation, a spring clutch encircling said sleeve and said shaft including a spur gear on the end of said shaft, a brake on said shaft constantly applied to restrain rotation thereof, a helical spring encircling said sleeve and hub and connected between said collar and brake and catch elements operable to engage said collar at points spaced 180° relative to each other whereby rotations of said sleeve with respect to said collar unwind said spring to release the driving engagement between said sleeve and said shaft, said catch elements being selectively operable to release said collar to rotate with said sleeve and effect rotation of said shaft over 180° of rotation.

2. In an ironer of the type wherein a roll is rotated to press clothing against a shoe and is shifted about an orbital path into and out of engagement with said shoe, a shaft, a sleeve on said shaft supported for rotation relative thereto, said shaft having a hub portion of diameter substantially

equal to the outer diameter of said sleeve and positioned in abutting relation to one end of said shaft, drive elements interconnecting said sleeve and said roll to rotate said roll in accord with the rotations of said sleeve, a drive to rotate said sleeve including a gear mounted thereon, drive elements interconnecting said shaft and said roll to shift the axis of said roll about a center eccentric from the center of rotation of said roll to swing said roll into and out of engagement with said shoe when said shaft executes predetermined rotation, a friction brake in engagement with said shaft to restrain rotation thereof and oppose shifting of the axis of said roll, a spring clutch encircling said sleeve and said shaft and including a flat helical spring engageable with said brake at one of its ends, a collar freely mounted on said sleeve, an interengaging connection between said spring and said collar and engaging said collar with a side of said gear to effect rotation of said collar, and catch elements operable to engage said collar at points spaced 180° apart, spring means constantly urging said catch elements into position to engage said collar, manually operable means for moving said collar against said spring means whereby rotation of said sleeve with respect to said collar unwinds said spring to release the driving engagement between said sleeve and said shaft, said catch elements being selectively operable to release said collar and effect rotation of said shaft over said predetermined rotation.

3. In an ironer of the type wherein a roll is rotated to press clothing against a shoe and is shifted about an orbital path into and out of engagement with said shoe, a shaft, a sleeve on said shaft supported for rotation relative thereto, said shaft having a hub portion of diameter substantially equal to the outer diameter of said sleeve, and positioned in abutting relation to one end of said sleeve, drive elements interconnecting said sleeve and said roll to rotate said roll in accord with the rotations of said sleeve, a drive to rotate said sleeve, drive elements interconnecting said shaft and said roll to shift the axis of said roll about a center eccentric from the center of rotation of said roll to swing said roll into and out of engagement with said shoe when said shaft is rotated 180° including a gear on the end of said shaft and another gear driven thereby, a spring clutch encircling said sleeve and said shaft and including a flat helical spring, a rotatable collar on said sleeve engaged by said spring and having ears extending radially therefrom and spaced 180° apart, a dog having a catch portion and rotatably supported to catch one of said ears and hold said collar from rotation and effect unwinding of said spring, yieldable means urging said dog in position to be engaged by one of said ears, and manually operable means releasing said dog to permit rotation of said collar 180°, whereby rotation of said sleeve relative to said collar unwinds said spring to release the driving engagement between said sleeve and said shaft, and said dog may be rotated against the action of said spring and then released to cause engagement of said spring clutch to rotate said shaft over 180° of rotation.

4. In an ironer, a fixedly supported shoe. a roll for engagement with said shoe, a sleeve positioned within said roll, a pair of spaced bushings interposed between said sleeve and said roll, said bushings having said roll journaled thereon and being eccentrically mounted on said sleeve, whereby rotation of said bushings about said

sleeve shifts the axis of said roll about an orbital path into and out of engagement with said shoe, a drive mechanism operably associated with one of said bushings, a sleeve connecting said bushings together, said mechanism including a brake to oppose rotations of said bushing to sustain said roll in position, a spring clutch including a flat helical spring, a driven member connected with said spring, a sleeve encircled thereby, a collar on said sleeve, a gear on said sleeve, said collar abutting the face of said gear and being yieldably held in engagement therewith by said spring and having ears extending radially therefrom spaced 180° apart, and a dog operable to engage one of said ears at positions spaced 180° relative to each other to release said collar and cause said spring to drive said drive member over 180° rotation to shift said roll into and out of engagement with said shoe, a drive shaft disposed within said sleeve and extending beyond each end thereof, a gear on the end of said shaft opposite said one bushing, an internal gear on said roll driven from said first mentioned gear to rotate said roll about its axis as said shaft is rotated, and drive elements connected to the opposite end of said shaft to drive said shaft to rotate said roll.

5. In an ironer, a fixedly supported shoe, a roll for engagement with said shoe, a sleeve positioned within said roll, a pair of spaced bushings mounted on said sleeve eccentric of their centers and having said roll journaled thereon, one of said bushings having a gear portion to receive driving torque, whereby rotation of said gear portion and bushing shifts the face of said roll about an orbital path into and out of engagement with said shoe, a drive mechanism operably associated with said one bushing, said mechanism including a gear to engage the gear portion of said bushing, a brake coaxial with said gear and connected therewith to oppose rotation of said bushings and to sustain said roll in position and including a drum and hub operatively connected with said gear, a sleeve coaxial with said gear, a spring clutch connecting said sleeve with said hub and including a flat helical spring encircling a portion of said sleeve and said hub, and having interengaging connection with said brake drum at one of its ends, elements to drive said sleeve and spring clutch including a worm gear on said sleeve and a positive drive connection to said worm gear, a collar held in engagement with the face of said worm gear by said helical spring and having ears projecting therefrom in positions spaced 180° relative to each other, a dog positioned to engage one of said lugs and manually movable out of engagement therewith to release said spring clutch to drive said gear portion and bushing over 180° of rotation and shift said roll into and out of engagement with said shoe, a drive shaft disposed within said first mentioned sleeve and extending beyond each end thereof, a gear on the end of said shaft opposite said one bushing, a gear mounted on said first mentioned sleeve eccentrically of the center thereof for engagement with said last gear, an internal gear on said roll operable to engage said last gear to rotate said roll about its axis as said shaft is rotated, and drive elements connected to the opposite end of said shaft to drive said shaft to rotate said roll.

6. An ironer comprising an ironing shoe, a power-driven roll movable into engagement with said shoe, means for mounting said roll for rotation about its center and for step-by-step rotation about an axis eccentric of its center into and out of engagement with said shoe including a support

frame, an overhanging sleeve mounted thereon and forming a support for said roll, a sleeve coaxial therewith and two spaced eccentric bushings connected between opposite ends of said second-mentioned sleeve and mounted on said first-mentioned sleeve for rotation with respect thereto about coaxial axes eccentric of their centers, bearing means journaling said roll on said bushings, a support arm secured to the overhanging end of said sleeve and extending radially therefrom, an idler journaled thereon, an internal gear within said roll and meshed with said idler, a shaft journaled within said first sleeve and projecting from opposite ends thereof, a pinion on the overhanging end of said shaft meshing with said idler, a parallel sleeve, a motor, a drive connection from said motor to said parallel sleeve including a worm gear on said parallel sleeve and driven by said motor and change speed reduction gearing connected between said parallel sleeve and said shaft for driving said shaft and said roll at a plurality of speeds, means for rotating

said bushings about their eccentric axes and bringing said roll into engagement with said shoe including a shaft freely mounted within and extending from said parallel sleeve, a brake drum on said last-mentioned shaft and a brake band constantly engaging said drum and restraining rotation thereof to hold said roll in position, a one-way selectively operable step-by-step drive from said parallel sleeve to said last-mentioned shaft, and a single-geared reduction drive from said shaft to said bushings.

CHARLES E. MORGENSTERN.

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The following references are of record in the file of this patent:

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