Sept. 15, 1936. R. W. JANDA 2,054,631

IRONING MACHINE

Filed Sept. 21, 1933 5 Sheets-Sheet 1

Fig. 1.

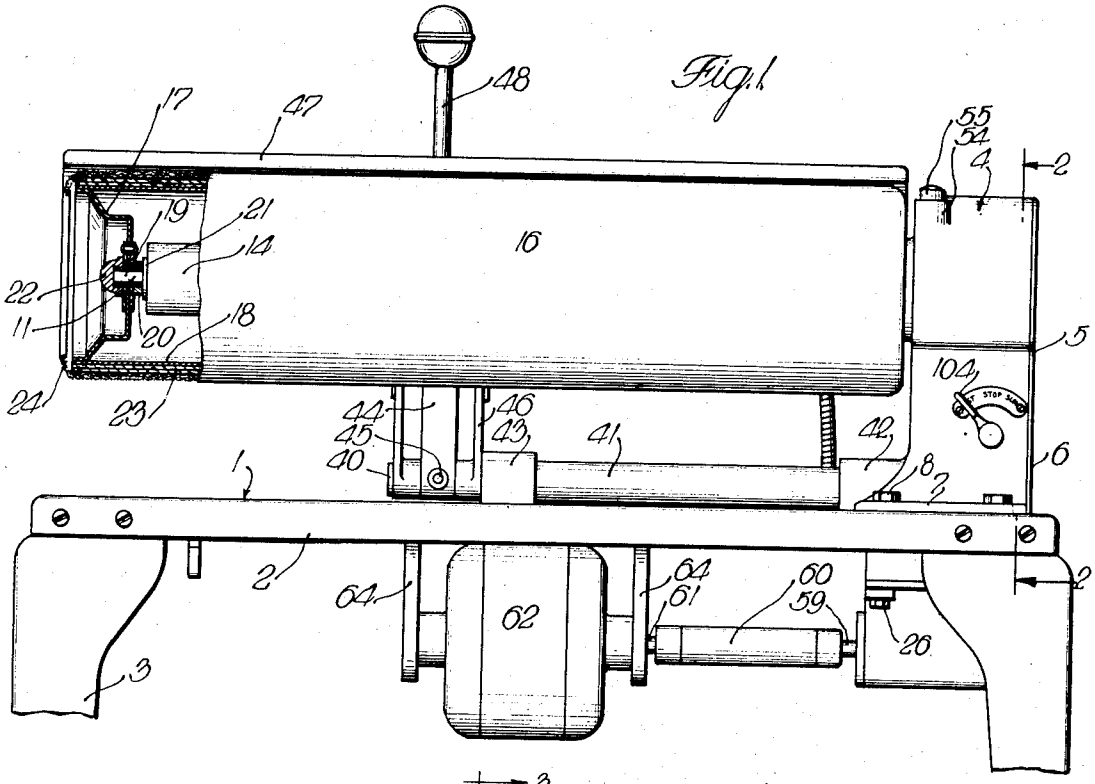
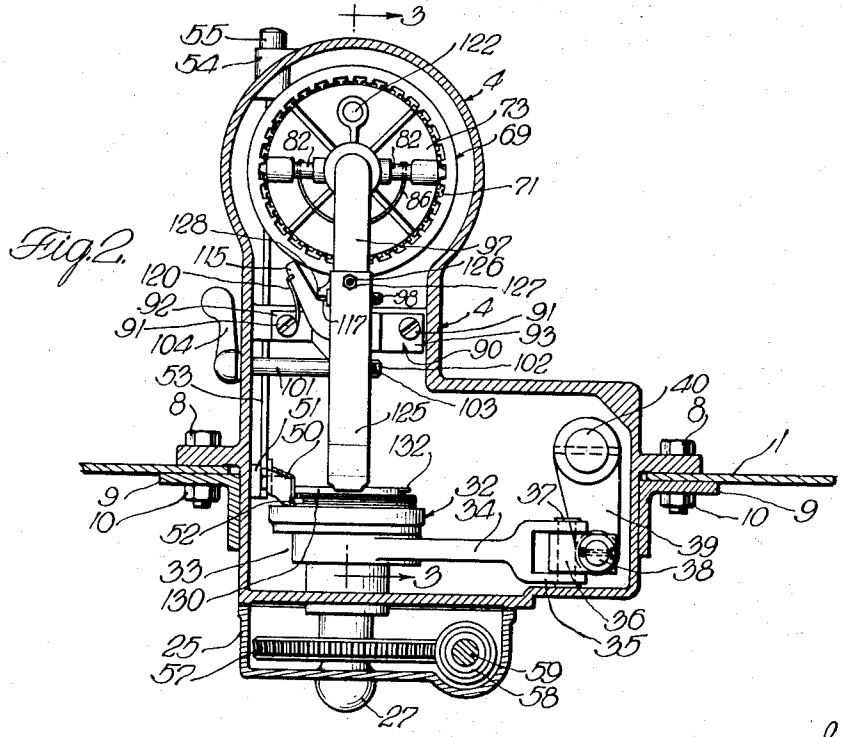


Fig. 2.



Inventor:
Rudolph W. Janda
By Brown, Jackson, Boettcher & Dienner,
Attys.

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Fig. 4.

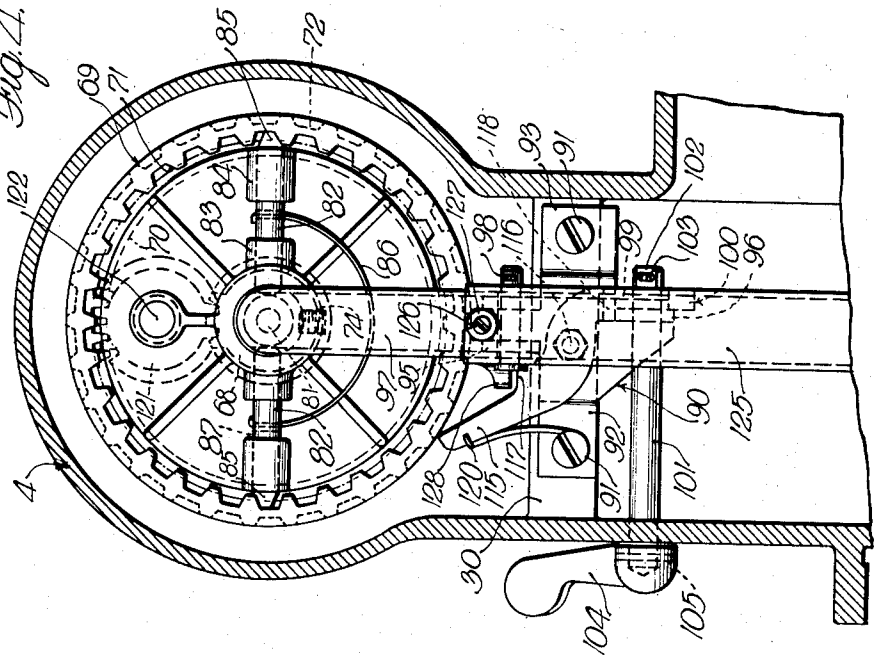
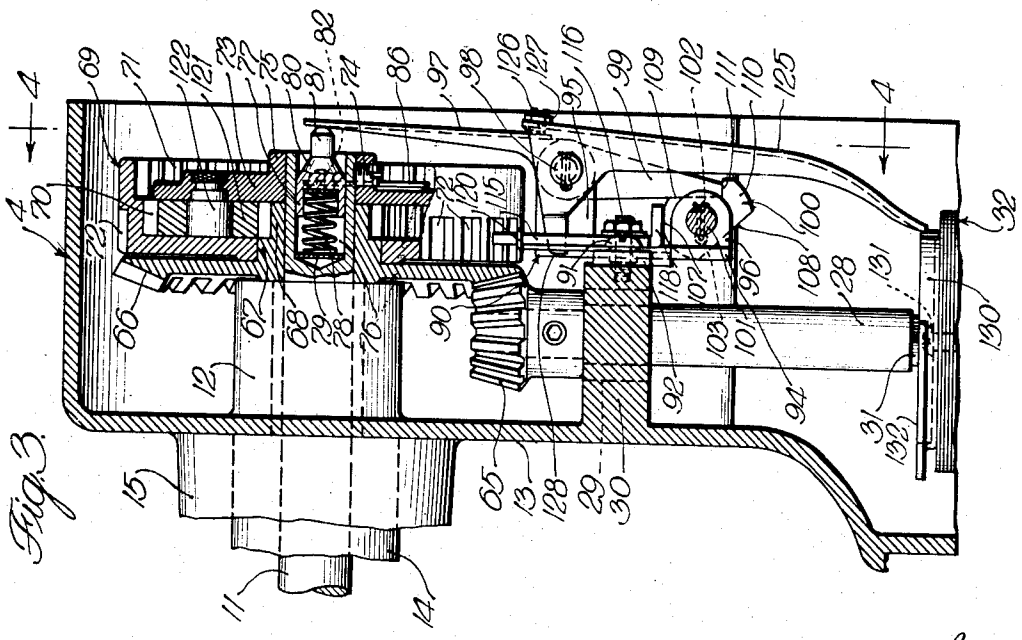


Fig. 3.



Inventor:
Rudolph W. Janda
By Brown, Jackson, Boettcher & Dienner,
Attys.

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IRONING MACHINE

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Fig. 6.

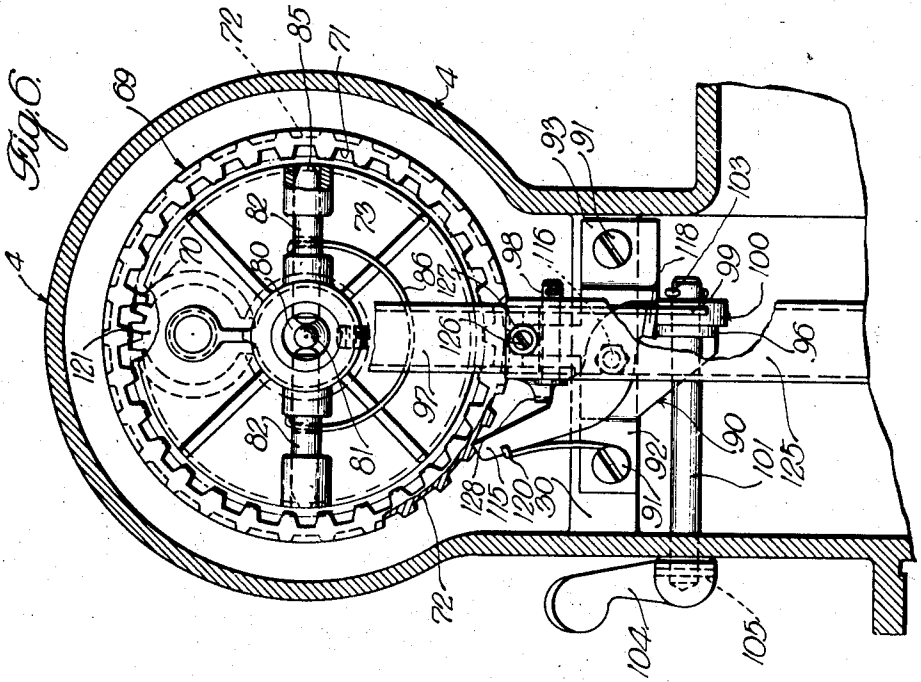
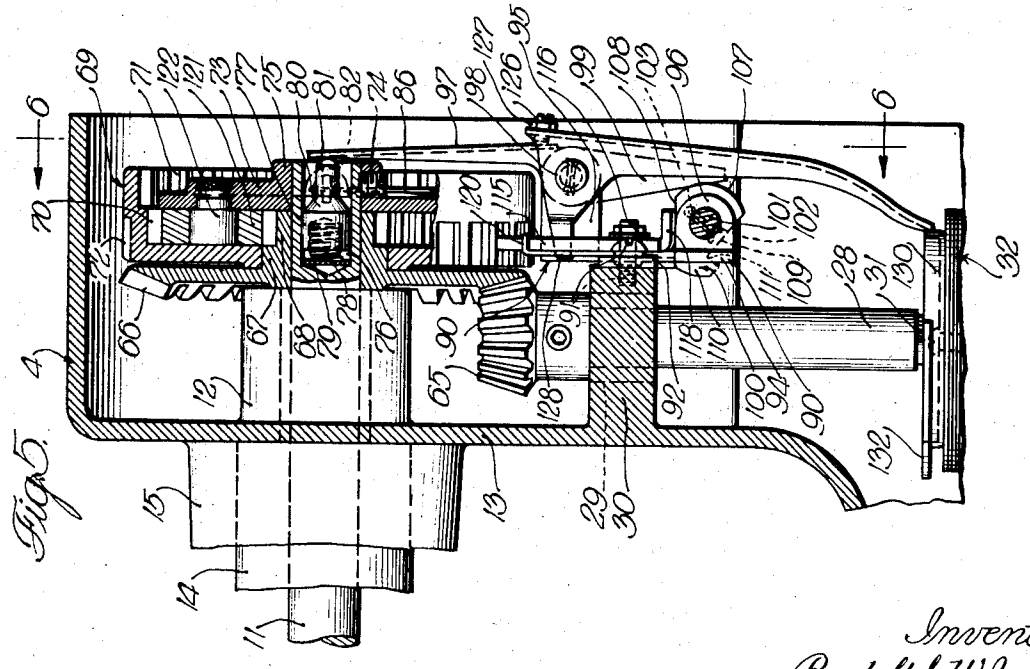


Fig. 5.



Inventor:
Rudolph W. Janda
By Brown, Jackson, Boettcher & Dienner,
Attys.

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IRONING MACHINE

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Fig. 8.

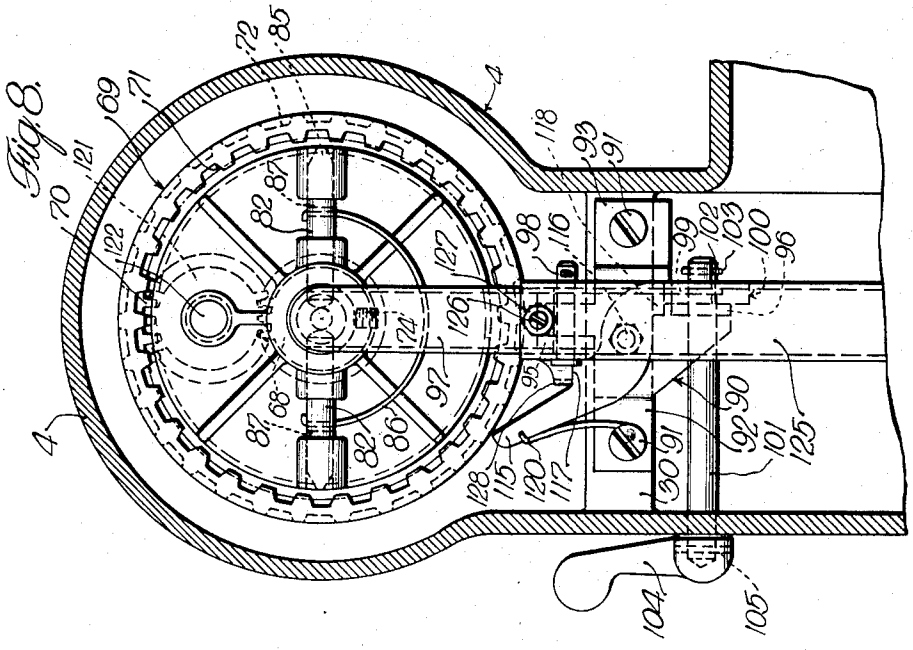
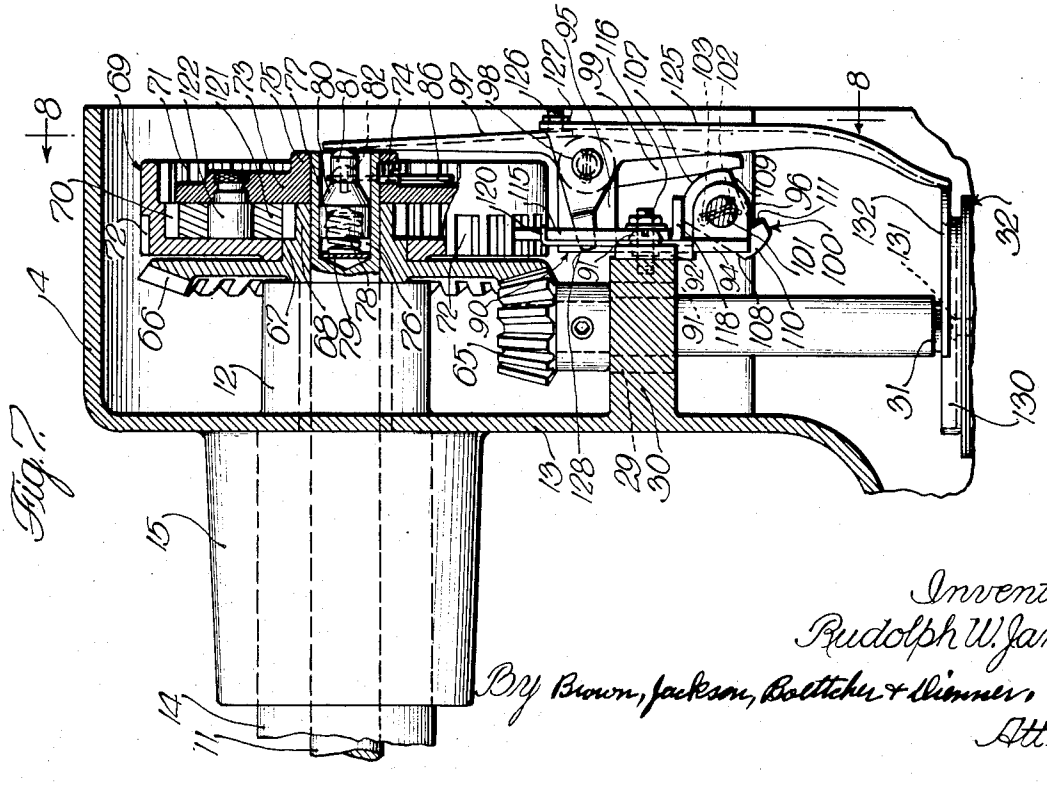


Fig. 7.



Inventor.
Rudolph W. Janda
By Brown, Jackson, Boettcher & Dinner,
Attys.

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IRONING MACHINE

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Fig. 9.

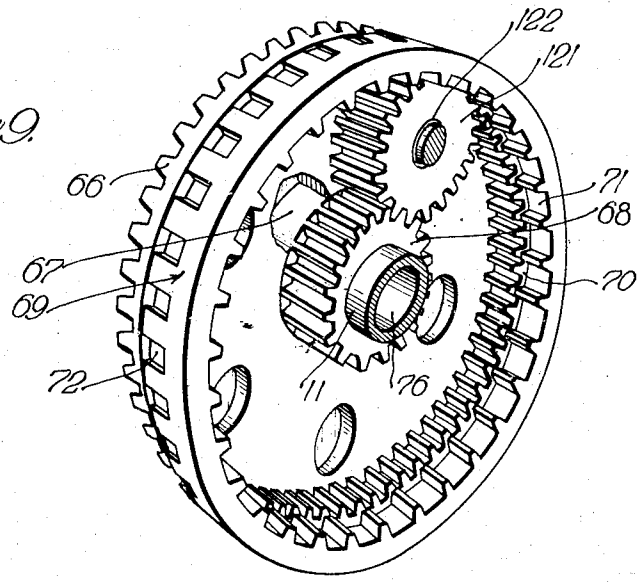


Fig. 10.

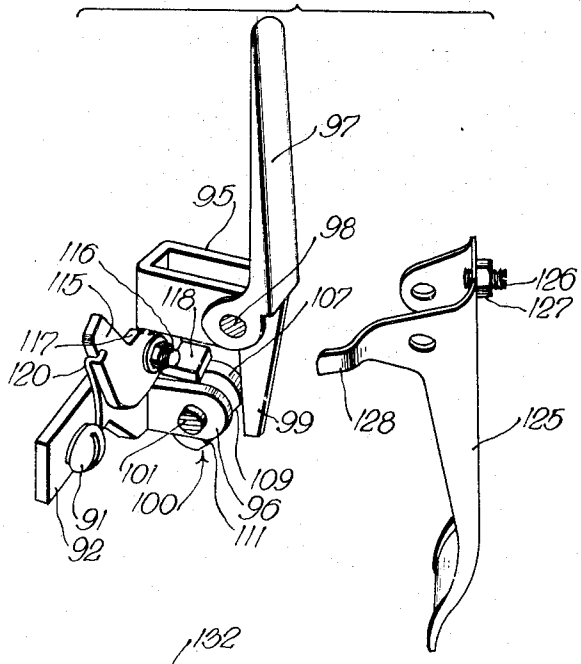


Fig. 11.

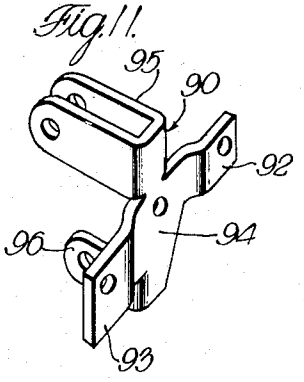
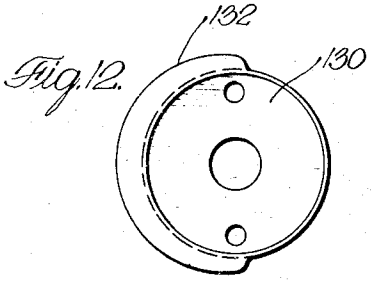


Fig. 12.



Inventor.
Rudolph W. Janda
By Brown, Jackson, Boettcher & Dienner,
Att'ys.

Patented Sept. 15, 1936

2,054,631

UNITED STATES PATENT OFFICE

2,054,631

IRONING MACHINE

Rudolph W. Janda, Berwyn, Ill., assignor to Conlon Corporation, Cicero, Ill., a corporation of Illinois

Application September 21, 1933, Serial No. 690,302

12 Claims. (Cl. 38—61)

This invention relates to ironing machines, and has to do with an ironing machine intended for domestic use.

It is a common practice to dampen clothes and other articles before ironing the same. It frequently happens that the articles to be ironed are considerably damper at some portions thereof than at others. If such articles are passed through the ironing machine at a uniform rate, the excessively damp portions thereof may not be thoroughly dried. In ironing relatively large articles, such as bed sheets and the like, the article may be folded before being passed through the ironing machine and, in this folded condition, is relatively thick. Also, it is frequently desired to iron articles which are of comparatively heavy or thick material. Such relatively thick articles, or articles which have been folded, should be passed through the ironing machine relatively slowly so as to assure thorough drying thereof.

One of the objects of my invention is to provide mechanism for driving the roll of the ironing machine, such mechanism being adjustable at will for driving the roll at any selected one of a plurality of speeds when the shoe is in cooperating relation to the roll, the driving mechanism also being adjustable for momentarily stopping the roll so as to assure thorough drying of excessively damp portions of an article confined between the roll and the shoe. A further object is to provide an improved driving mechanism of simple and compact construction which can be disposed with facility in limited space. It is also an object of my invention to provide, in conjunction with the roll driving mechanism, means for operating the shoe and for stopping the roll when the shoe is moved into inoperative position. Further objects and advantages of my invention will appear from the detail description.

In the drawings:—

Figure 1 is a front view, partly broken away and in section, of an ironing machine embodying my invention;

Figure 2 is a section taken substantially on line 2—2 of Figure 1;

Figure 3 is a section taken substantially on line 3—3 of Figure 2, on an enlarged scale, parts being broken away and parts being shown in elevation, showing the relative positions of the parts of the driving mechanism and control means when the roll is driven at high speed;

Figure 4 is a section taken substantially on line 4—4 of Figure 3;

Figure 5 is a view similar to Figure 3 showing the relative positions of the parts of the driving mechanism and the control means for driving the roll at low speed;

Figure 6 is a section taken substantially on line 6—6 of Figure 5;

Figure 7 is a view similar to Figure 3, but showing the relative positions of the parts of the driving mechanism and the control means when the roll is disconnected from the drive shaft by the release lever and incident to movement of the shoe away from the roll into inoperative position;

Figure 8 is a section taken substantially on line 8—8 of Figure 7;

Figure 9 is a perspective view of the drive gear and ring assembly;

Figure 10 is a detail perspective view, partly disassembled, of the locking pawl, control lever and release lever and associated parts;

Figure 11 is a perspective detail view of the supporting bracket for the locking pawl, operating lever and release lever and associated parts;

Figure 12 is a detail plan view of the cam plate for actuating the release lever.

The ironing machine comprises a bed plate 1 of rectangular shape in plan and provided with a peripheral depending flange 2, supporting legs 3, conveniently formed of sheet metal and of angle cross-section, being secured to this flange in any convenient manner, as by means of nuts and bolts. Plate 1 is provided, adjacent one end thereof, with an opening which accommodates a gear housing 4, the outer end of which is closed by upper and lower plates 5 and 6, respectively, secured to the housing in any suitable manner. The housing is provided with a flange 7 extending thereabout and seating upon the upper face of plate 1, this flange being secured to the plate by bolts 8 which pass through the plate and through reenforcing angle strips 9 disposed at the under face of the bed plate, these bolts receiving nuts 10.

A roll shaft 11 is rotatably mounted through a boss 12 projecting from the inner face of inner wall 13 of housing 4. This shaft extends through a supporting sleeve 14 secured in a boss 15 projecting from the outer face of wall 13 and aligned with boss 12. A roll 16 is rotatably mounted on sleeve 14 adjacent boss 15 and is provided, at its end remote from housing 4, with a reenforcing ring 17 spot-welded or otherwise suitably secured to body 18 of the roll, which is conveniently formed of sheet metal. Shaft 11 projects beyond the end of sleeve 14 remote from housing 4 and is flattened at 19 and threaded for reception of a

nut 20 disposed at the inner face of ring 17 and at the outer face of a ball bearing structure 21 of suitable type mounted in the outer end of sleeve 14. A cap nut 22 screws upon the outer end of shaft 11 and coacts with nut 20 for clamping ring 17 to the shaft. This ring is provided with a slot which corresponds to the flattened portion 19 of the shaft, thus establishing a driving connection between the shaft and the roll for rotating the latter. The roll is provided with a suitable pad 23 and a protecting cover 24.

A worm gear housing 25 is suitably secured to the bottom of housing 4 (Figure 2) as by means of bolts, one of which is designated 26 in Figure 1. The housing 25 is provided with a depending boss 27 adapted for rotatably supporting the lower end of a shaft 28 which is rotatably supported, adjacent its upper end, in a bushing 29 suitably secured in a relatively thick rib 30 extending inward from wall 13 of housing 4. (Figure 3.)

Shaft 28 is provided with a squared lower portion 31 about which is disposed an eccentric and clutch assembly 32. This assembly is similar to the eccentric and clutch assembly illustrated and described in detail in my Patent No. 1,867,839, dated July 19, 1932, and need not be here described in detail. The assembly 32 comprises an eccentric about which extends a strap 33, from which strap extends an arm 34 provided with a fork 35 which receives a block 36 pivotally secured in the fork on a vertical axis by a pin 37. Block 36 is pivoted on a horizontal axis, by a pin 38, to an arm 39, which arm is pinned or otherwise suitably secured upon a shoe operating shaft 40 mounted for rocking movement. This shaft extends through and projects beyond a sleeve 41 secured at one end in a tubular boss 42 projecting from housing 4, the sleeve 41 extending through a supporting member 43 suitably secured to bed plate 1 adjacent the back and the center thereof, the sleeve and the shaft being disposed in parallelism to this plate. An arm 44 is suitably secured to shaft 40, as by means of a pin 45, between the legs of a shoe supporting arm 46 loose on shaft 40. Arm 46 is suitably connected to and supports a shoe 47 which cooperates with the roll 16, and means is provided for coupling the arms 44 and 46 together so as to cause movement of the shoe toward and away from the roll in accordance with rocking of shaft 40, this coupling means being provided with a release lever 48 accessible from in front of the machine. The means for coupling the arms 44 and 46 together is illustrated and described in detail in my above identified patent and need not be further described here, it sufficing to note that any suitable means may be provided for connecting the shoe to the shaft 40 for movement therewith.

The assembly 32 also comprises clutch means cooperating with the squared portion 31 of shaft 28 for clutching the eccentric of this assembly to shaft 28 for rotation therewith through approximately 180 degrees, and then declutching the eccentric from the shaft. This clutch means is controlled by a trip finger 50 pivoted on a boss 51 projecting from the inner face of housing 4, this finger normally being disposed for contact with an element 52 of the clutch assembly for declutching the eccentric member from shaft 28. A rod 53 is connected to finger 50 and extends upward therefrom through a boss 54 formed on housing 4, this boss receiving a button 55. When the shoe is in either of its extreme positions, element 52 is in contact with finger 50 and the assembly 32 is declutched from shaft 28, which shaft rotates without operating the shoe. Upon depression of button 55, with corresponding downward movement of rod 53, finger 50 is raised so as to release element 52, thus clutching the assembly 32 to squared portion 31 of shaft 28, so that the eccentric member of this assembly is turned through 180 degrees so as to move the shoe either to or from the roll, as the case may be. In Figure 2 the shaft 40 is in the position it occupies when the shoe is in cooperating relation to the roll. As above noted, the construction and operation of the assembly 32 is disclosed in detail in my Patent No. 1,867,839 and need not be here described in greater detail, it sufficing to note that suitable means is provided for establishing operating connection between the shaft 28 and the shoe shaft 40 for actuating the latter so as to move the shoe to and from the roll as conditions require.

A worm wheel 57 is suitably secured on shaft 28 adjacent the lower end thereof and is disposed within the housing 25. This worm wheel meshes with a worm 58 fixed to a shaft 59 rotatably mounted in housing 25 and connected by a suitable coupling 60 (Figure 1) to armature shaft 61 of an electric motor 62 supported by brackets 64 depending from bed plate 1. Suitable means of known type is provided for connecting the motor to a source of electrical energy, and the shoe 47 is preferably heated by electrical means, it being understood that the provision of a suitable switch for controlling the motor and the shoe circuit is contemplated.

A bevel pinion 65 is secured upon the upper end of shaft 28 and meshes with a bevel gear 66 loose upon roll shaft 11 and abutting the outer end of boss 12. The gear 66 is provided with a hub 67 and with a spur pinion 68 projecting outward from this hub. A ring member 69 is mounted for relative turning movement on hub 67 and is provided with a plurality of teeth defining an internal gear 70. This member 69 is further provided, beyond teeth 70, with a plurality of teeth providing an internal clutch element 71 and, adjacent its inner end, with a plurality of teeth providing an external ratchet element 72. A disc 73 is fixed upon shaft 11 at the outer end thereof, by means of a set screw 74 which screws through hub 75 of the disc and engages into a corresponding recess in the shaft.

Shaft 11 is provided with a concentric bore 76 extending from its outer end and slidably receiving a plunger 77 which is urged outward of the shaft by an expansion coil spring 78 confined between a disc 79 seating in the inner end of bore 76 and the plunger 77, which is recessed for reception of the outer end portion of the spring. The plunger is provided with an outwardly tapering frusto-conical element 80 and a reduced tip element 81 projecting from element 80. The body portion of plunger 77 is cylindrical and, in the outer position of the plunger, shown in Figure 3, contacts the inner ends of two clutch dogs 82 slidably mounted in bosses 83 and 84 formed integrally with hub 75 of disc 73 and with disc 73, respectively, these bosses and the dogs being aligned diametrically of the disc. Hub 75 and shaft 11 are provided with aligned bores which slidably receive the inner end portions of the dogs. When the dogs are projected, the outer ends 85 thereof, which are tapered correspondingly to the teeth of clutch element 71, engage between the teeth of this clutch element, and clutch disc 73 and ring member 69 together for rotation as a unit, as in Figure 4. An arcuate

wire spring 86 passes loosely through bores 87 through the dogs 82 and yieldingly urges these dogs toward each other while also holding the dogs against turning movement. When the plunger 77 is moved inward into its inoperative position shown in Figure 5, spring 86 acts to retract the dogs and move them into inoperative position, shown in Figure 6, at which time the disc 73 and the ring member 69 are free for relative turning movement.

A bracket 90 is suitably secured, as by means of screws 91, to rib 30 at the outer face thereof. This bracket comprises (Figure 11) two arms 92 and 93 through which the screws 91 pass, a body portion 94 offset outwardly from the arms 92 and 93, a U-shaped element 95 at the upper end of body 94 and projecting outward therefrom, and an ear 96 projecting outward from the lower end of body 94 at right angles thereto. An operating lever 97 is pivoted at its lower end, at 98, on the outer end of element 95. This lever is of channel cross-section and tapers in depth toward its upper end, where it contacts the terminal element or tip 81 of plunger 77. By rocking this lever about its pivot axis in proper direction, the plunger 77 may be moved into operative and inoperative position for projecting and retracting the clutch dogs 82 in the manner above referred to.

Lever 97 is provided, at one side thereof, with a depending finger 99. Spring 78 coacts with plunger 77 for holding the inner edge of finger 99 in contact with a cam member 100 mounted upon the rearward end of a control shaft 101 which is rockably mounted through the front wall of gear housing 4 and through ear 96 of bracket 90. The rearward portion of shaft 101 is flattened at 102 and cam member 100 is provided with an opening therethrough corresponding to the cross-section of the rearward portion of the shaft upon which the cam member fits snugly for turning movement therewith. The cam member is confined between ear 96 and a cotter pin 103 secured through shaft 101 at the rearward end thereof, and shaft 101 is held against movement inward of housing 4 by a suitable handle 104 fixed upon the forward end of the shaft, as by means of a pin 105, this handle contacting the outer face of the front wall of housing 4. The front wall of housing 4 is provided, on the outer face thereof and adjacent handle 104, with suitable legends such as "Fast", "Stop" and "Slow", over which the handle 104 is moved to indicate the proper adjustments of the control means for driving the roll at high speed, stopping the roll and driving the roll at slow speed.

The cam member 100 is of approximately triangular shape and comprises an arcuate cam surface 107 which connects two straight edges 108 and 109, and a nose element 110 having a straight edge 111 extending from straight edge 109 perpendicular thereto. A pawl 115 is pivotally mounted on body 94 of bracket 90, by means of a pivot screw 116 and associated nut and washer, this pawl being provided with a shoulder 117 and, at its lower end, a tab 118 extending outward from the pawl perpendicular thereto. A wire spring 120 is secured, at its lower end, to bracket 90 by means of screw 91 which passes through arm 92 of the bracket. This spring bears against the pawl adjacent the upper end thereof and yieldingly urges the pawl into engagement with the ratchet element 72 of ring member 69. Tab 118 is disposed for contact with either cam surface 107 or straight edge 108 of the cam member 100, and finger 99 of lever 97 is so disposed that the inner edge of this finger contacts either straight edge 109 or cam surface 107 of the cam member, depending upon the adjustment of the latter.

In Figures 3 and 4, handle 104 is adjusted so that the cam member 100 occupies the proper position for "Fast" or high speed operation of the roll. In this position of the cam member, cam surface 107 contacts tab 118 so as to hold pawl 115 in inoperative position and out of engagement with ratchet element 72 of ring member 69. The inner edge of finger 99 of lever 97 is in contact with the straight edge 109 of cam 100, so that the upper end of the lever occupies its outer position and the plunger 77 is held in operative or projected position by spring 78. The dogs 82 are projected into engagement with clutch element 71 of ring member 69 so that disc 73 and the ring member are thus clutched together for rotation as a unit, and the pawl 115 is held out of engagement with ratchet element 72. Under such conditions, relative rotation between the disc 73 and the ring member is prevented so that the disc is locked to pinion 68 for rotation therewith, through a pinion 121 mounted for rotation on a stud 122 suitably secured in disc 73, pinion 121 meshing with pinion 68 and internal gear 70 of the ring structure. This provides a direct drive between gear 66 and roll shaft 11 for driving the latter at high speed.

By turning the cam member 100 in a clockwise direction, as viewed in Figure 3, into its other extreme position shown in Figure 5, cam surface 107 of the cam member contacts finger 99 so as to force the latter outward, and straight edge 108 is disposed beneath tab 118 of pawl 115, which latter is then moved into operative position and engages the teeth of ratchet element 72 of ring member 69, as shown in Figure 6. Outward movement of finger 99 results in inward movement of the upper end of lever 97 so that, with the cam member 100 in the position shown in Figure 5, clutch dogs 82 are retracted so as to declutch disc 73 from ring member 69, and pawl 115 engages a tooth of the clutch element 72 so as to hold the ring member 69 against rotation in a counterclockwise direction, as viewed in Figure 6, it being noted that gear 66 is driven in a clockwise direction, as viewed in Figures 4 and 6, by drive shaft 28 and pinion 65. Under such conditions, pinion 121 is driven in a counterclockwise direction as viewed in Figure 6, and this pinion travels around the internal gear 70 in a clockwise direction, the counterclockwise reaction between pinion 121 and internal gear 70 serving to hold the tooth of the ratchet element 72 in contact with the nose of pawl 115. In this manner, a change speed driving connection is established between gear 66 and roll shaft 111 so that the latter is driven at low speed. Preferably, the gear ratios are such that, at fast or high speed the roll is driven at approximately 6 R. P. M., and at slow speed it is driven at approximately 3 R. P. M. It will be understood, however, that any suitable or desired speeds of drive for the roll may be employed. With the cam member 100 in the position shown in Figure 3, straight edge 111 of nose 110 contacts the lower end of finger 99 and effectively prevents further movement of the cam member in a counterclockwise direction. In the position of the cam member shown in Figure 5, straight edge 108 contacts the lower edge of body 94 of bracket 90, adjacent nose element 110, thus preventing move-

ment of the cam member in a clockwise direction beyond the position of Figure 5. In this manner, travel of the cam member in either direction beyond proper operative position is prevented.

In Figure 7 the cam member 100 is shown in its intermediate position which corresponds to the "Stop" legend on the front wall of gear housing 4. In this position of the cam member, cam surface 107 thereof is in contact with both the inner edge of finger 99 and the lower face of tab 118 of pawl 115. The lever 97 holds plunger 77 in inoperative position, as in Figure 5, so that the disc 73 is declutched from ring member 69, as in Figure 6, and pawl 115 is held in inoperative position as in Figure 8. Since the ring member 69 is now free to rotate in a counterclockwise direction, as viewed in Figure 8, such rotation of the ring member, at relatively low speed, will occur in the continued rotation of gear 66 and the roll shaft will remain stationary. As a result, the roll will not be driven and, due to the pressure of the cooperating shoe, will also remain stationary. It is particularly pointed out that the several adjustments of the cam member 100 can be effected while the shoe is in cooperating relation to the roll, so that the roll can be driven at either "Fast" or "Slow" speed, or stopped, while the roll and the shoe are in cooperating relation. In this manner, the rate at which articles are passed between the roll and the shoe may be varied to suit conditions and, if desired, rotation of the roll may be stopped with an article between the roll and the shoe, to assure that excessively damp portions of the article are thoroughly dried.

A release lever 125, of channel cross-section, has its upper end disposed to straddle the lower end of operating lever 97, this release lever being pivoted on pin 98 on which the operating lever is pivoted. A set screw 126 threads through the upper end of lever 125 and is secured in adjustment by a jam nut 127. This screw is disposed to contact lever 97 above pin 98. Lever 125 is further provided with a trip finger 128 disposed to contact shoulder 117 of pawl 115 and hold the latter in inoperative position when lever 125 is moved into operative position. A cupped cam plate 130 of disc form is suitably secured, as by means of screws 131, on the upper end of the clutch and eccentric assembly 32 previously referred to. This plate is provided with a cam element 132 disposed to contact the lower end of lever 125 and move the same outward into operative position, when shoe shaft 40 is turned in a clockwise direction, as viewed in Figure 2, for moving the shoe from the roll into inoperative position. When the shoe is in this position, release lever 125 is in its operative position shown in Figure 7, the movement of the release lever into this position serving to move lever 97 and pawl 115 into the positions shown in Figures 7 and 8, thus stopping rotation of the roll. This stopping of the roll by the release lever is independent of the adjustment of cam 100. This will be clear from Figures 3 and 5, from which it will be obvious that movement of the release lever into operative position may occur without affecting adjustment of the cam members. It will also be obvious from these two figures that, when the shoe is again moved to the roll and into cooperating relation therewith, cam element 132 of plate 130 is moved out of contact with the lower end of lever 125, which is returned to inoperative position, in which position of the lever 125 pawl 115 and operating lever 97 are released and assume their former positions. In this manner, when the shoe is moved to the roll, the latter is driven at a speed corresponding to the adjustment of the cam 100 so that, if this cam were adjusted for driving the roll at either fast or slow speed and the shoe is then moved from the roll without changing the adjustment of the cam member, the roll will again be driven at the same speed upon movement of the shoe to the roll. On the other hand, if the cam member 100 be set at "Stop" position, and the shoe is moved from the roll without changing the adjustment of the cam member, the roll will not be driven upon return of the shoe to operative position. This is advantageous in that it adapts the machine for use in pressing suits and like articles by movement of the shoe to and from the roll while the latter remains stationary. It is pointed out that, with the cam member 100 in "Stop" position, or the shoe in inoperative position away from the roll, the roll shaft 11 and the roll may be turned by hand as desired, which is a convenience in changing the roll pad and cover, and under other conditions where this ability to turn the roll by hand may be desirable.

What I claim is:—

1. In an ironing machine, a rotatably mounted roll shaft, an ironing roll connected to said shaft for rotation therewith, a shoe cooperating with said roll, said shoe and said roll having relative movement one to and from the other into and out of cooperating relation, a drive shaft, a gear loose on said roll shaft and driven by said drive shaft, a driven member fixed on the roll shaft, means for establishing a change speed driving connection and a direct driving connection between the driven member and said gear, selectively, when the shoe and the roll are in cooperating relation to each other, and means for automatically disabling the driving connection between said gear and said driven member responsive to relative movement of said roll and said shoe one from the other into non-cooperating relation to each other.

2. In combination, a driven shaft, a drive shaft, a gear loose on the driven shaft and driven by said drive shaft, a disc fixed on said driven shaft, a ring member between said gear and said disc and rotatable about the axis of said driven shaft, said member having an internal gear, a ratchet element and a clutch element; a pinion secured to said loose gear, a pinion rotatably mounted on the disc and meshing with said gear pinion and with said internal gear, a pawl movable into engagement with said ratchet element and disposed to hold said ring member against rotation contra to the direction of rotation of said gear, clutch means carried by said disc and movable into and out of engagement with said clutch element, and control means for moving said pawl into operative position and said clutch means into inoperative position and vice versa.

3. In combination, a driven shaft, a drive shaft, a gear loose on the driven shaft and driven by said drive shaft, a disc fixed on said driven shaft, a ring member between said gear and said disc and rotatable about the axis of said driven shaft, said member having an internal gear, a ratchet element and a clutch element; a pinion secured to said loose gear, a pinion rotatably mounted on the disc and meshing with said gear pinion and with said internal gear, a pawl movable into engagement with said ratchet element and disposed to hold said ring member against rotation contra

to the direction of rotation of said gear, clutch dogs slidable on the disc and cooperating with said clutch element, yielding means for retracting said dogs, a plunger slidable in the driven shaft and yieldingly urged outward thereof, said plunger when projected acting to project the clutch dogs into engagement with the clutch element, an operating lever contacting the outer end of said plunger, and control means comprising a cam member cooperating with said pawl and said lever for moving the pawl into inoperative position and the plunger into operative position and vice versa.

4. In combination, a driven shaft, a drive shaft, a gear loose on the driven shaft and driven by said drive shaft, a disc fixed on said driven shaft, a ring member between said gear and said disc and rotatable about the axis of said driven shaft, said member having an internal gear, a ratchet element and a clutch element; a pinion secured to said loose gear, a pinion rotatably mounted on the disc and meshing with said gear pinion and said internal gear, a pawl movable into engagement with said ratchet element and disposed to hold said ring member against rotation contra to the direction of rotation of said gear, clutch dogs slidable on the disc and cooperating with said clutch element, yielding means for retracting said dogs, a plunger slidable in the driven shaft and yieldingly urged outward thereof, said plunger when projected acting to project the clutch dogs into engagement with the clutch element, an operating lever contacting the outer end of said plunger, and control means comprising a cam member cooperating with said pawl and said lever for moving the pawl into inoperative position and the plunger into operative position and vice versa and for optionally holding both said pawl and said plunger in inoperative positions.

5. In an ironing machine, a roll shaft, an ironing roll connected to said shaft for rotation therewith, a drive shaft, a gear loose on the roll shaft and driven by said drive shaft, a disc fixed on said roll shaft, a ring member between said gear and said disc and rotatable about the axis of said roll shaft, said member having an internal gear and a ratchet element, a pinion secured to said gear, a pinion mounted on the disc and meshing with said gear pinion and said internal gear, a pawl yieldingly urged into engagement with said ratchet element and disposed to hold said ring member against rotation contra to the direction of rotation of said gear, a plunger slidable in the roll shaft and yieldingly urged outward thereof, means controlled by the plunger for clutching and declutching said disc to and from said ring member, an operating lever contacting the outer end of said plunger, control means comprising a cam member cooperating with said lever and said pawl for moving the pawl into operative position and the plunger into inoperative position and vice versa, a shoe cooperating with and movable to and from the roll, operating connections between said shoe and said drive shaft comprising a cam plate, and a release lever having an element disposed to contact said control lever and a trip finger disposed to contact said pawl and thereby move both the pawl and the plunger into inoperative position, when said release lever is moved into operative position, the release lever being operable independently of said cam member and the cam element of said cam plate being disposed to contact said release lever and move it into operative position when the shoe is moved from the roll and to permit return of the release lever to inoperative position when said shoe is moved to said roll.

6. In driving means of the character described, a driven shaft, a drive shaft, a gear loose on the driven shaft and driven by said drive shaft, a disc fixed on said driven shaft, a ring member between said gear and said disc and rotatable about the axis of said driven shaft, said member having an internal gear, a pinion secured to said first gear, a pinion rotatably mounted on said disc and meshing with said internal gear and with said gear pinion, and means for clutching and declutching the disc to and from the ring member and for holding said ring member against rotation contra to the direction of rotation of said gear and permitting rotation of said ring member in said contra direction, optionally.

7. In driving means of the character described, a driven shaft, a drive shaft, a gear loose on the driven shaft and driven by said drive shaft, a disc fixed on said driven shaft, a ring member rotatable about the axis of said driven shaft, said member having an internal gear, a pinion secured to said loose gear, a pinion rotatably mounted on said disc and meshing with said internal gear and with said gear pinion, and means for clutching and declutching the disc to and from the ring member and for holding said ring member against rotation contra to the direction of rotation of said loose gear and permitting rotation of said ring member in said contra direction, optionally, during rotation of said loose gear.

8. In driving means of the character described, a drive shaft, a driven shaft, a gear loose on the driven shaft and driven by said drive shaft, a disc fixed on said driven shaft, a ring member rotatable about the axis of said driven shaft, a speed reducing gear drive from said loose gear through said ring member to said disc, means for clutching and declutching said disc to and from said ring member, and means for holding said ring member against rotation by the reaction of said gear drive and for permitting rotation of said ring member by said reaction, optionally, when said disc is declutched from said ring member and during rotation of said loose gear.

9. In driving means of the character described, a driven shaft, a continuously rotating drive member loose on said shaft, a disc fixed on said shaft, a ring member rotatable about the axis of said shaft, a gear drive from said drive member through said ring member to said disc, means for clutching and declutching said disc to and from said ring member, and means for holding said ring member against rotation by the reaction of said gear drive and for permitting rotation of said ring member by said reaction, optionally, when said disc is declutched from said ring member and during continued rotation of said drive member.

10. In driving means of the character described, a driven shaft, a continuously rotating drive member loose on said shaft, a disc fixed on said shaft, a ring member rotatable about the axis of said shaft, a speed reducing drive from said drive member through said ring member to said disc, means for clutching and declutching said disc to and from said ring member, and means for holding said ring member against rotation by the reaction of said speed reducing drive and for permitting rotation of said ring member by said reaction, optionally, when said disc is declutched from said ring member and during continued rotation of said drive member.

11. In driving means of the character described,

a driven shaft, a continuously driven gear loose on said shaft, a disc fixed on said driven shaft, a ring member rotatable about the axis of said driven shaft, said member having an internal gear, a pinion secured to said loose gear, a pinion rotatably mounted on said disc and meshing with said internal gear and with said gear pinion, means for clutching and declutching the disc to and from said ring member, and means for holding said ring member against rotation contra to the direction of rotation of said loose gear and for permitting rotation of said ring member in said contra direction, optionally, when said disc is declutched from said ring member and during continued rotation of said loose gear.

12. In driving means of the character described, a shaft, a continuously rotating gear loose on said shaft, a driven member fixed on said shaft, and means for establishing a change speed driving connection and a direct driving connection between the driven member and said gear, selectively, said means comprising a ring member rotatable about the axis of said shaft and tending to rotate contra to the direction of rotation of said gear, by the reaction of said change speed drive, and means for holding said ring member against rotation in said contra direction for enabling the change speed drive and for permitting rotation of said ring member in said contra direction for disabling said change speed drive, optionally, during continued rotation of said gear.

RUDOLPH W. JANDA.