Sept. 9, 1952 A. MILLER 2,609,623

TOWEL WASHING AND IRONING MACHINE

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Fig. 1.

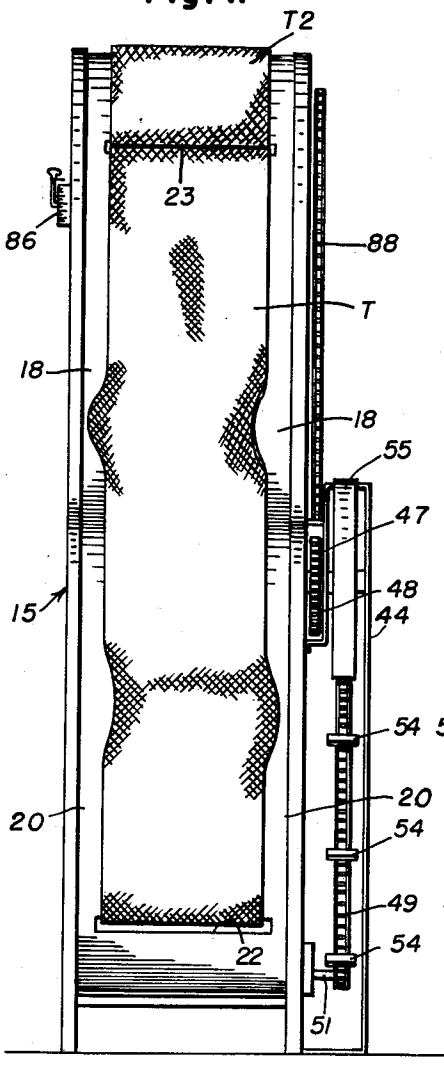
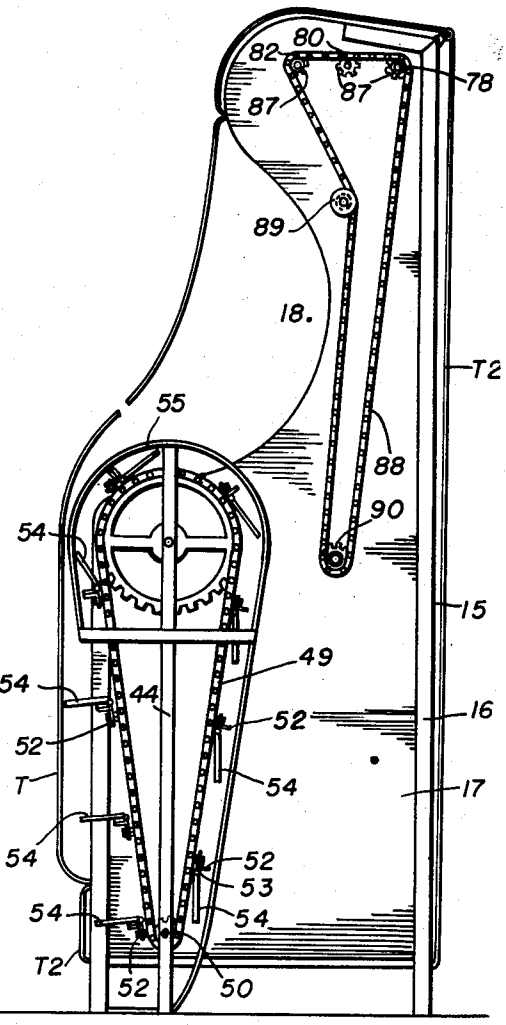


Fig. 2.



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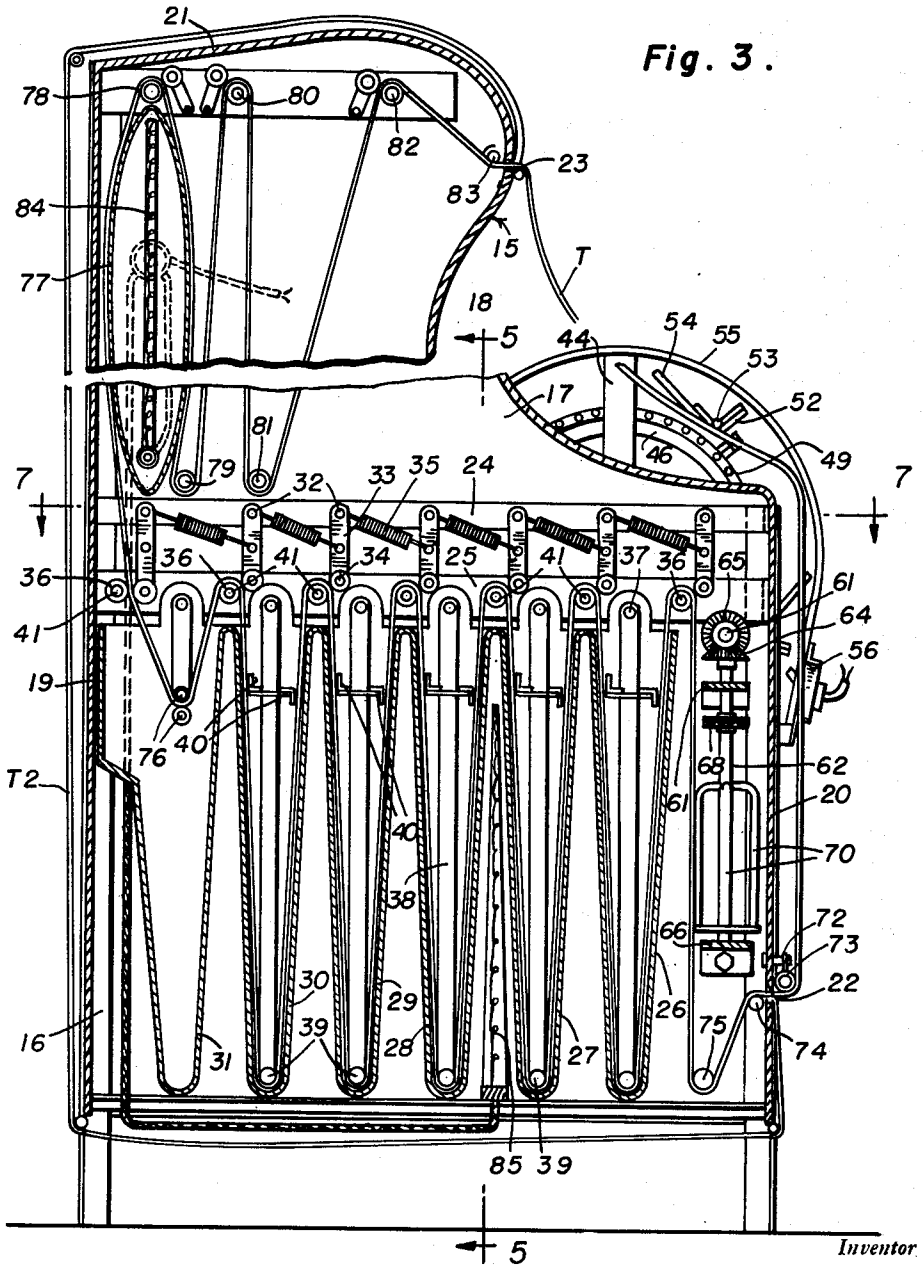
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TOWEL WASHING AND IRONING MACHINE

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Fig. 3.



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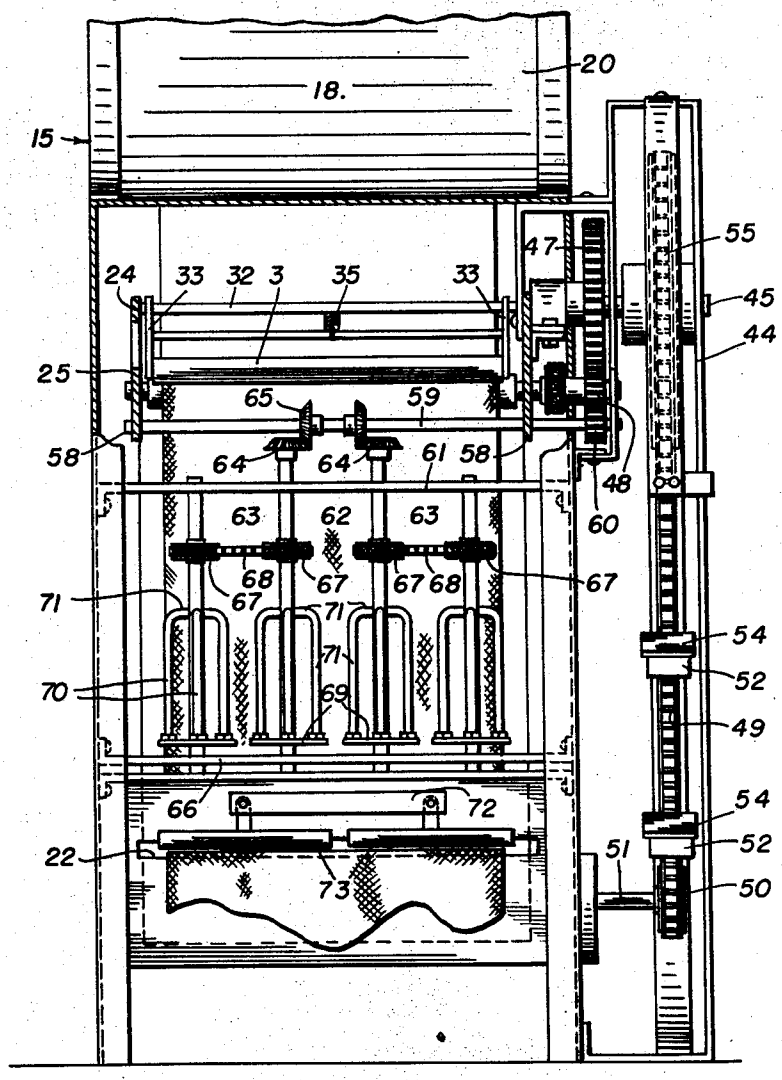
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TOWEL WASHING AND IRONING MACHINE

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Fig. 4.



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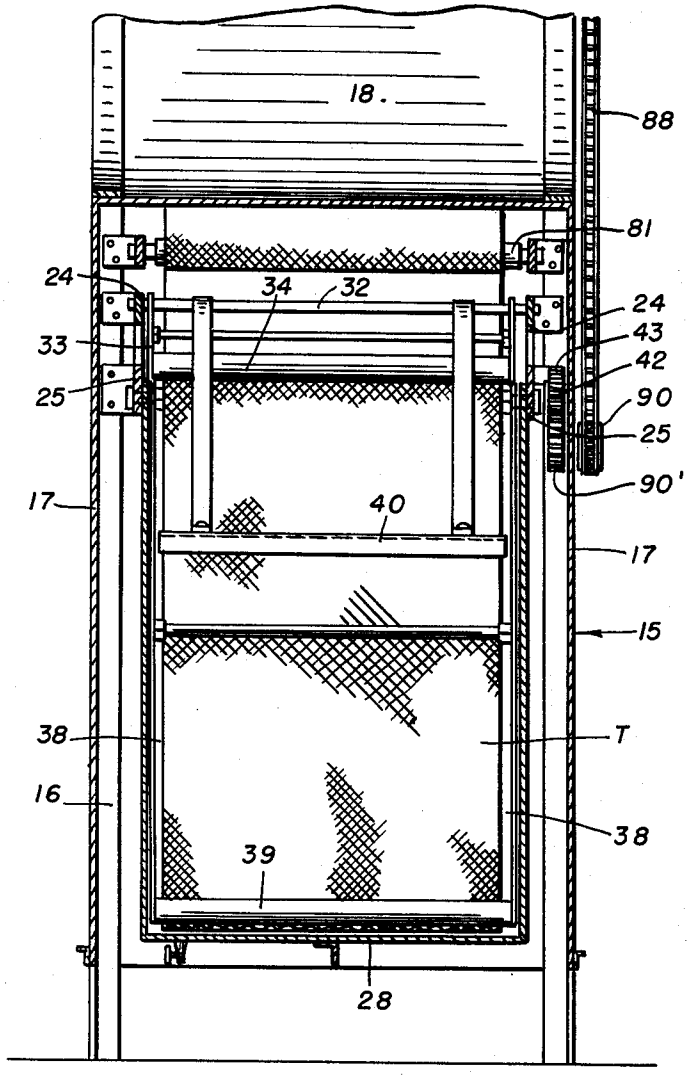
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TOWEL WASHING AND IRONING MACHINE

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Fig. 5.



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TOWEL WASHING AND IRONING MACHINE

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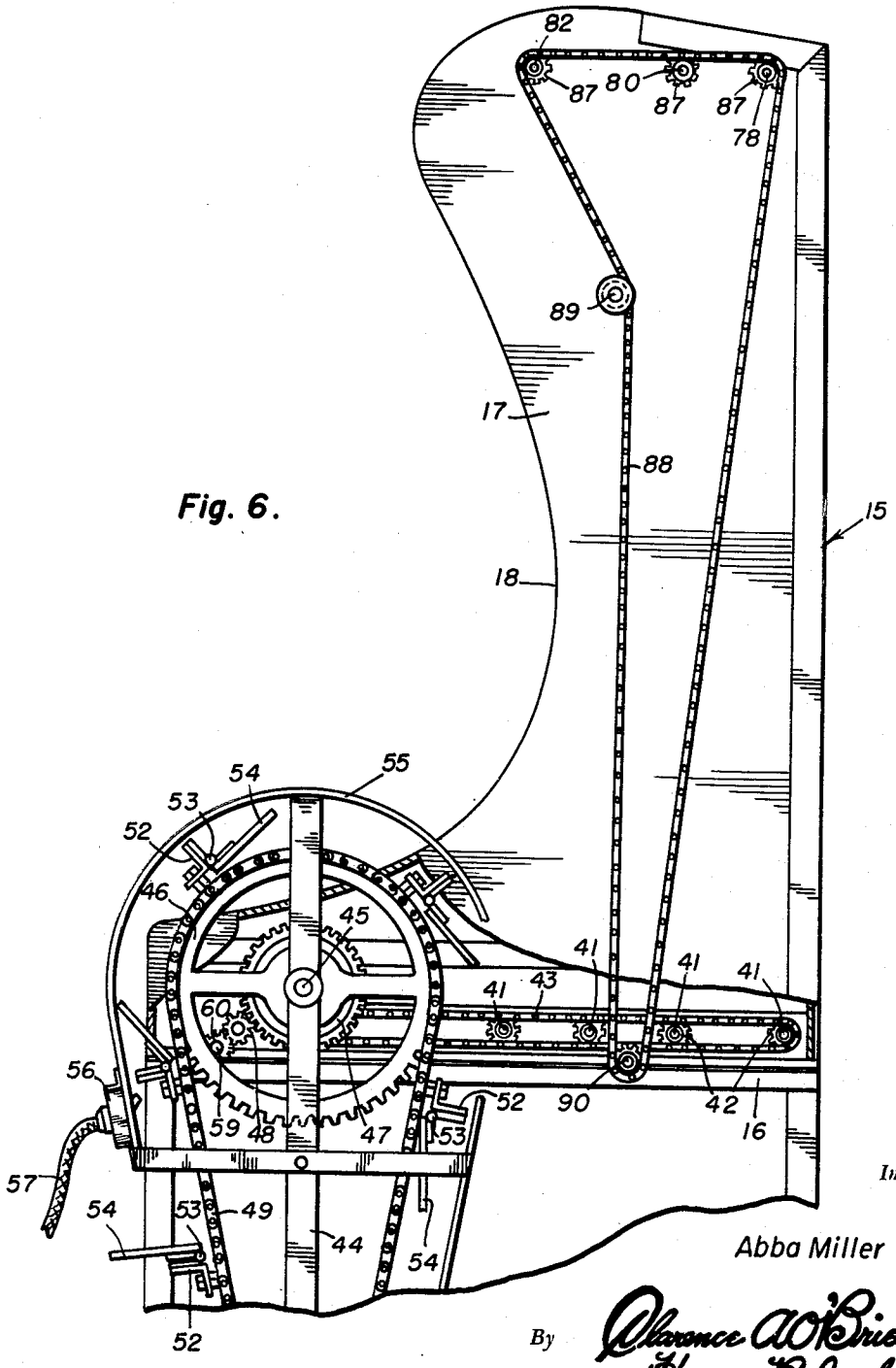


Fig. 6.

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TOWEL WASHING AND IRONING MACHINE

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Fig. 7.

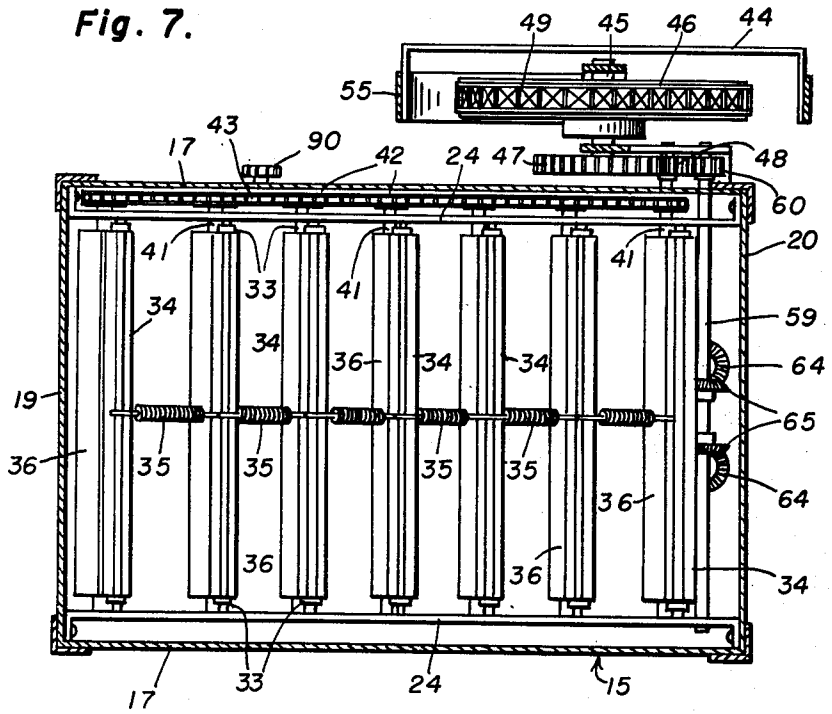
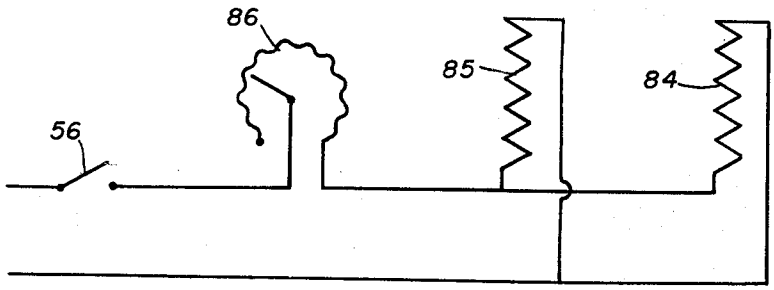


Fig. 8.



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Patented Sept. 9, 1952 2,609,623

UNITED STATES PATENT OFFICE

2,609,623

TOWEL WASHING AND IRONING MACHINE

Abba Miller, Cleveland, Ohio

Application March 17, 1947, Serial No. 735,269

2 Claims. (Cl. 38—2)

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This invention relates to a towel washing and ironing machine and more particularly to a machine for ironing an endless towel. In many places, such as public or industrial washrooms, it has been found expedient to employ dispensing machines by which a portion of an endless towel is advanced into a position for use by a person or persons using the washroom. In machines of this nature the towels are usually introduced by a serviceman and when the towel becomes soiled throughout its length, a fresh towel must be introduced while the soiled towel is transferred to the laundry for washing and ironing ready for replacement in the machine. As a consequence continuous servicing of the machine is required, and labor is expended in transporting the soiled towels to the laundry and returning the laundered towels to the machine.

The primary object of this invention is to effect economies in both time and labor, by eliminating the periodic servicing required by machines of the type to which this invention relates.

Another object is to present to each user a clean, fresh surface of the towel.

A further object is automatically to energize the heating of the unit through the action of a prospective user of the towel.

The above and other objects may be attained by employing this invention which embodies among its features a towel washing unit, a towel ironing unit, a heating element for each unit and means operated automatically by a prospective user of the towel to energize the heating elements.

Other features include a cabinet having a front and back wall, the front wall of the cabinet having a slot through which the endless towel is advanced, a slot through which the towel enters the cabinet after having been used, a towel washing unit into which the soiled portion of the towel is introduced and washed, and an ironing unit through which the towel passes after leaving the washing unit and from which the freshly laundered towel is fed through the first mentioned slot for use.

Still other features include a wringer unit between the washing and ironing units and a treadle within easy reach of the prospective user of the towel by which a clean towel is advanced into position for use, while a soiled towel is moved toward the washing unit preparatory to its treatment thereby.

In the drawings:

Figure 1 is a front view of a towel laundering

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cabinet equipped with an endless towel and embodying the features of this invention,

Figure 2 is a side view of the right side of the cabinet when viewed as illustrated in Figure 1,

Figure 3 is an enlarged fragmentary vertical sectional view through the towel cabinet,

Figure 4 is a fragmentary enlarged sectional view through the forward end of the lower portion of the cabinet,

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 3,

Figure 6 is a fragmentary enlarged side view, similar to Figure 2, certain portions of the cabinet broken away more clearly to illustrate certain details of construction,

Figure 7 is a horizontal sectional view taken substantially along the line 7—7 of Figure 3, and

Figure 8 is a view illustrating the wiring diagram for the heating unit.

Referring to the drawings in detail a cabinet designated generally 15 is constructed of a suitable frame 14 upon which side panels 17 are supported in any suitable manner. These side panels are cut away at their upper portions as at 18 to form a recess which extends across the front face of the machine. The rear side of the machine is closed by a rear panel 19 and a front panel 20 closes the front side of the machine and follows the contour of the forward edges of the side panels 17 as will be readily seen upon reference to Figure 3. A cap 21 closes the upper end of the cabinet and is formed as a continuation of the front panel 20. Formed in the front panel near its lower edge is a transversely extending slot 22, and a similar slot 23 is formed near the upper end of the front panel as will be readily understood upon reference to the drawings. Extending from the front to the back of the cabinet adjacent opposite side panels and immediately below the lower end are horizontally extending supporting bars 24, and spaced a short distance below the bars 24 are horizontally extending supporting bars 25. Suspended from the supporting bars 25 and extending transversely of the machine is a series of transversely V-shaped tubs 26, 27, 28, 29, 30 and 31 constituting respectively tubs for containing water for soaking the towel, a tub containing washing fluid for the towel, a tub for containing rinsing fluid for the towel, a tub for containing bleach, a second rinsing tub, and a receptacle into which the drippings from the towel are deposited in the wringing process.

Extending transversely between the upper bars 24 are longitudinally spaced supporting rods 32 upon which are pivotally mounted adjacent op-

posite ends, arms 33 carrying at their lower ends pressure rolls 34, and coupled to a cross bar 33' extending between each pair of arms 33 is one end of a retractile coil spring 35, the opposite end of which is attached to a bar 32 of an adjacent pair of arms. Extending transversely of the machine and mounted to rotate between the bars 25 are guide rolls 36 each of which aligns with the vertical axis of the apex formed by the junction of the divergent walls of the tubs previously referred to and the rolls 34 are yieldingly held by the spring 35 against a towel which is trained over the guide rolls 36. Suspended on longitudinally spaced bars 37 which align with the vertical axis of the tubs previously mentioned are frames 38 which project downwardly into their respective tubs and support at their lower ends guide rollers 39 over which the towel is trained. Supported by the frames near their upper ends are rubbers 40 which are adapted to engage the towel as it is fed through the respective tub to rub the surface thereof.

Each roller 36 is driven by a drive shaft 41 which is mounted to rotate in suitable bearings carried by opposite bars 25, and attached to one end of each drive shaft 41 is a drive sprocket 42 (Fig. 6). An endless drive chain 43 is trained over the drive sprockets 42 so that when the chain is moved, the shafts 41 will be driven in unison so as to rotate the rollers 36 in unison therewith. It will thus be seen that a towel trained over the rollers 36 and the rollers 39 will be passed from one tub to the other in sequence.

Mounted in a suitable frame 44 on the right side of the machine when viewed from the front is a drive shaft 45 to which is fixed a large drive sprocket 46. A drive gear 47 is mounted on the shaft 45 to rotate therewith which meshes with a drive pinion 48 carried at the outer end of the foremost shaft 41, so that when the sprocket 46 is rotated the rolls 36 will be driven. As illustrated the drive sprocket 46 is mounted near the lower end of the cut out portion 18 adjacent the front face of the machine, and trained over this sprocket is a drive chain 49 which runs over an idler sprocket 50 mounted to rotate about a shaft 51 carried on the right side of the machine near the base thereof. Attached to the drive chain 49 at spaced intervals are angle brackets 52 which project outwardly therefrom and pivotally connected as at 53 to each angle bracket is a treadle 54. A curved guard plate 55 extends around the upper portion of the frame 44 in which the sprocket 46 operates, and serves as a cam surface to guide the outer edges of the treadles 54 as they move around with the chain. As will be readily understood upon reference to Figure 6 the guide plate 55 terminates slightly below the bottom of the sprocket 46 at the forward side of the machine so that as a treadle passes the lower end of the guard plate it will fall into the position shown and form a foot rest upon which the prospective user of the machine exerts downward pressure in order to set the feed mechanism into operation. Mounted on the guard plate adjacent the lower forward end is a suitable switch 56 which is coupled through the medium of a conventional cable 57 to the heating elements of the machine to be more fully hereinafter described.

Mounted for rotation in depending ears 58 carried by the lower bars 25 near their forward ends is a shaft 59 which projects outwardly beyond the right side of the machine and carries a drive pinion 60 which meshes with the pinion 48 so that when the drive gear 47 is rotated the shaft 59 will rotate in unison therewith. Extending transversely of the machine adjacent its forward end and near the upper and lower ends thereof are supporting bars 61 in which vertically extending shafts 62 and 63 are mounted to rotate. The shafts 62 are provided at their upper ends with beveled pinions 64 which mesh with beveled pinions 65 carried by the shaft 59 intermediate its ends. The lower ends of these shafts 62 and 63 are mounted to rotate in a transversely extending supporting bar 66, and carried intermediate the ends of the shafts 62 and 63 are sprockets 67 over which drive chains 68 are trained. Mounted to rotate with each shaft 62 and 63 adjacent its lower end is a plate 69 which is provided with an annular row of openings into which the lower ends of wiper arms 70 are received. The upper ends of the wiper arms are bent inwardly as at 71 and attached to the shafts 62 and 63 between the sprockets 67 and the plates 69. These wiper bars are adapted to rub against the towel as it is being fed into the machine in order to spread it transversely and avoid the formation of longitudinal wrinkles therein. Mounted on a suitable bracket 72 (Fig. 3) near the slot 22 in the front wall 20 are guide bars 73 which serve to direct the towel into the slot. A guide bar 74 extends transversely of the machine immediately inside of the slot 22 and the towel is directed downwardly over an idler roll 75 and then upwardly toward the foremost roll 36, and in the path of the rotary spreaders 70. It will thus be seen that the towel will be spread before it enters the first tub 26.

Upon leaving the last tub 30 the towel passes over the roll 36 adjacent the upper rear end thereof and thence downwardly between a pair of wringer rolls 76 from whence it passes upwardly between the last feed roll 36 and its respective pressure roll 34. Upon leaving the washing and wringing portion of the machine, the towel passes upwardly over a transversely elliptical ironing surface 77 and drive roll 78 and thence downwardly over an idler roll 79 from whence it passes through a tortuous path over drive rolls 80 and idler roll 81 and a drive roll 82 to pass outwardly of the machine through the slot 23 over suitable guides 83. The elliptical ironing surface 77 contains a suitable heating element 84 of conventional form and mounted between the tubs 27 and 28 is a heating unit 85 of any suitable type. These heating units are coupled through a suitable cable of conventional form with the switch cable 57 and through a thermostat 86 and the switch 56 to any suitable source of power supply. It will thus be seen that when the switch 56 is closed, the heating units 84 and 85 will be energized, and the temperature will be governed by the setting of the thermostat 86.

In order that the towel may properly be fed and held under correct tension while passing over the elliptical ironing surface 77 the shafts of the rolls 78, 80 and 82 are extended through a side wall of the machine and are equipped with sprockets 87. An endless chain 88 is trained over the sprockets 87 and a suitable guide roller 89, and this chain runs over a drive sprocket 90 which is driven by a sprocket 90' (Figure 5) which meshes with the lower run of the chain 43. It will thus be seen that the towel feed rollers 78, 80 and 82 will be driven in unison with the rollers 36.

In use, it will be understood that a strip of

toweling of the desired width is introduced into the machine through the slots **22** and **23** and threaded over the rollers **36** and **39** of the tubs, and thence through the wringer rolls **76** and over the elliptical ironing surface **77**. Leaving the ironing surface, the towel continues over the guide rollers **79** and **81** and the feed rolls **78**, **80** and **82**, to be fed outwardly through the slot **23**, and joined to the opposite end of the strip, thus forming an endless towel. Obviously, if so desired, a second towel T^2 may be entered in like fashion through the slots **22** and threaded through the various rolls to pass outwardly through the slots **23**, but instead of passing downwardly over the front of the machine, the towel T^2 is carried upwardly over the back of the machine to pass beneath the bottom thereof as illustrated in Figure 3 and enter the slots **22**. Like the towel T, the ends of the towel T^2 are joined to form an endless belt so that both towels may continuously be fed through the machine.

In use, the user steps on a treadle **54** to cause the sprocket **46** to rotate and drive the sprockets **42** and **90**, thus driving the rolls **36**, **78**, **80** and **82**, and feeding the endless towel through the machine. Such operation automatically closes the timing switch **56** and energizes the heating elements **84** and **85**, and at the same time feeds a freshly laundered surface of the towel T and the towel T^2 out of the slot **23**. The machine is then ready for a second operation and by the repeated feeding of the soiled surfaces of the towels into the slot **22** and spreading the towels by the spreaders **70** they will be ready for introduction into the tub **26** which, as previously explained, preferably contains a soaking fluid such as water. The dirt loosened from the towels in the soaking fluid may readily be washed out in the tub **27** which contains the washing fluid and is heated so that by the time the towel reaches the first heated rinsing vat contained in the tub **28**, the dirt will readily be removed in the rinsing solution. The towel is next presented into the bleaching solution contained in the tub **29** and finally rinsed in the tub **30** in clear water. Upon leaving the tub **30**, the towel passes through the wringer rolls **76** by which excess moisture is expelled and deposited into receptacle **31**. The partially dried towel is then passed to the ironing surface **77**, and thus prepared for reuse. Obviously, the machine may be equipped with coin actuated mechanism, or may be left free for use by the public in general.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

I claim:

1. A machine for washing, ironing and dispensing an endless towel comprising a plurality of adjacent vertical tubs open at their upper ends into which successive portions of an endless towel are introduced, an ironing unit mounted within the machine above the tubs over which successive washed portions of a towel are passed, means mounted in each tub for rubbing the surface of a towel as it is fed through the tubs, means for feeding a towel progressively and sequentially through said tubs, means mounted within the machine in advance of the tubs for spreading a portion of a towel before it enters the tubs, and a heating unit mounted within the machine between an adjacent pair of tubs.

2. A washing machine for endless towels comprising a plurality of adjacent tubs through which a towel is adapted to be passed, means mounted above each tub for feeding a towel through the tubs, means associated with the feeding means for pressing a towel against said feeding means, means within each tub for rubbing a towel, an ironing means about which a towel passes after leaving the tubs, means mounted in advance of the tubs for spreading a towel prior to the feeding of a towel into said tubs, and an electrical heating unit mounted in the machine between an adjacent pair of tubs.

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