Dec. 10, 1940. S. S. HOLLAND 2,224,347

COMBINATION IRONER AND WASHING MACHINE

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Fig. 1.

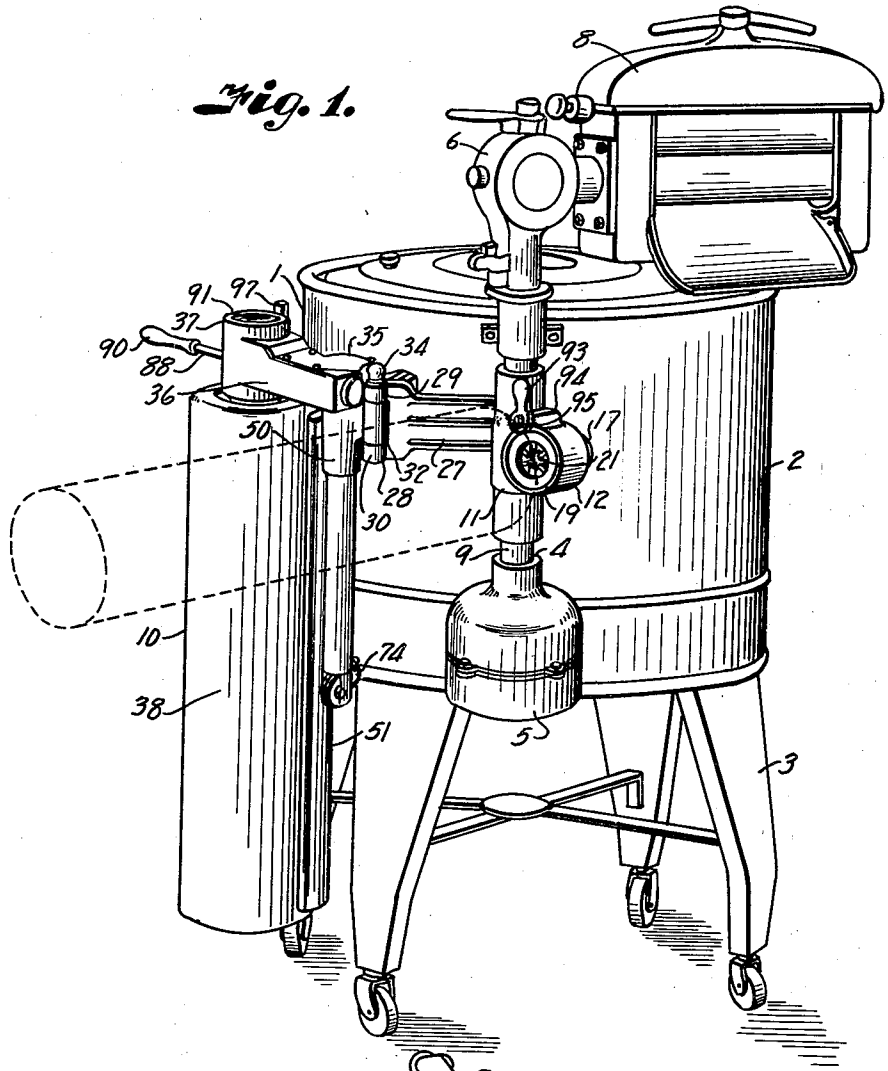
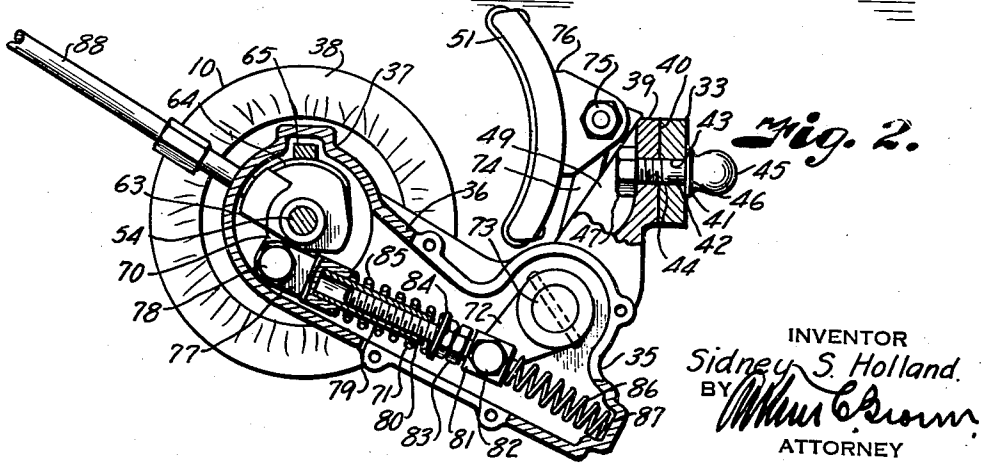


Fig. 2.



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Fig. 3.

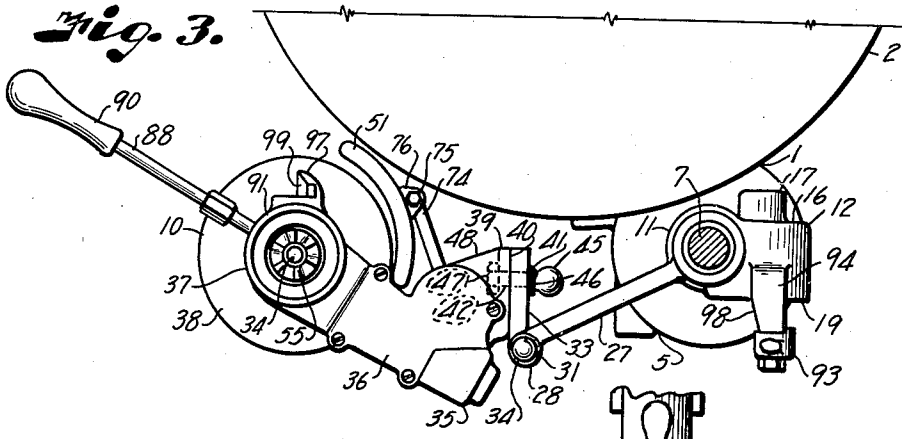
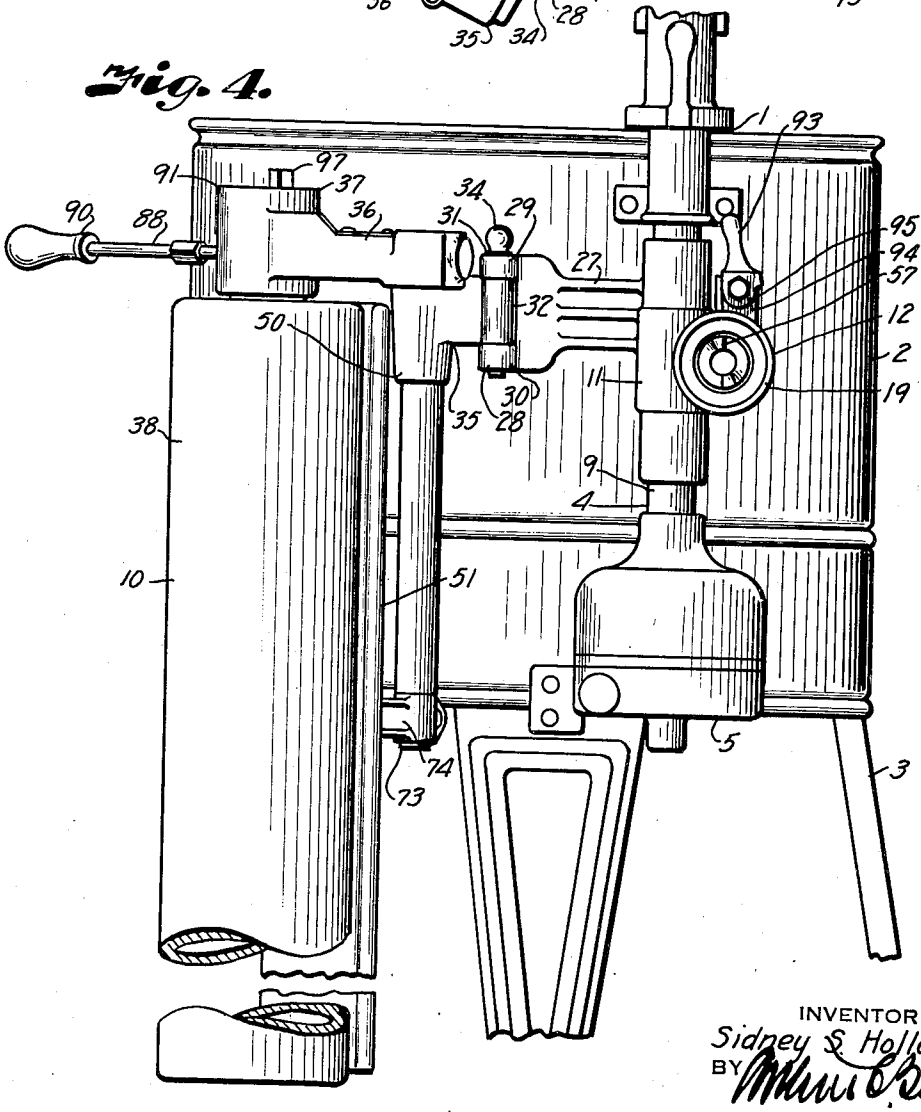


Fig. 4.



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Fig. 5.

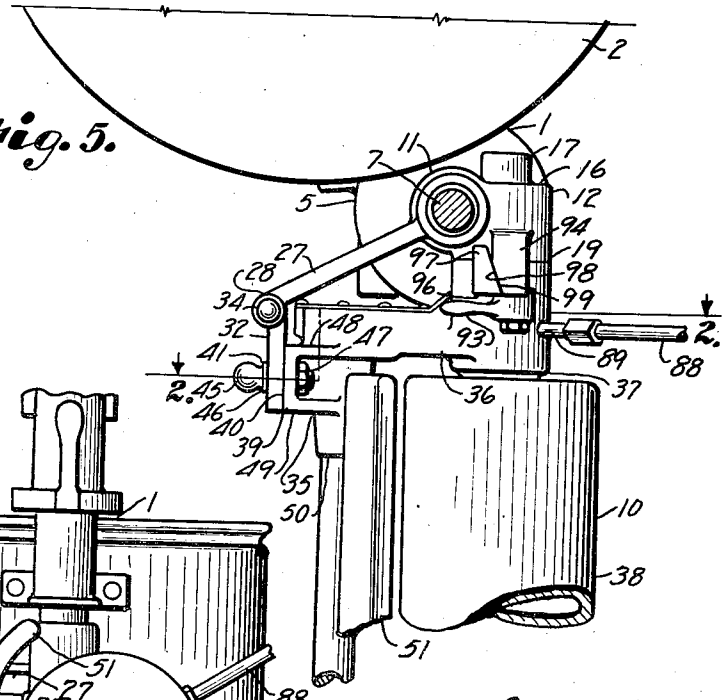


Fig. 6.

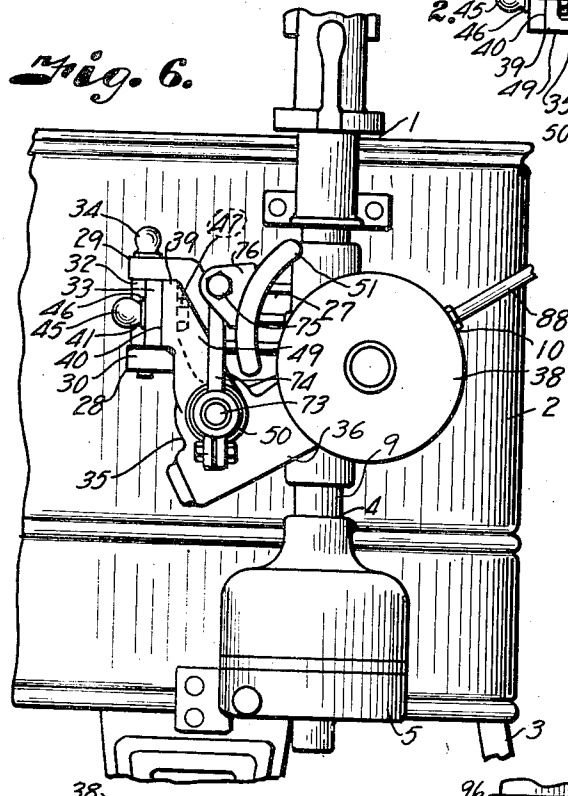


Fig. 7.

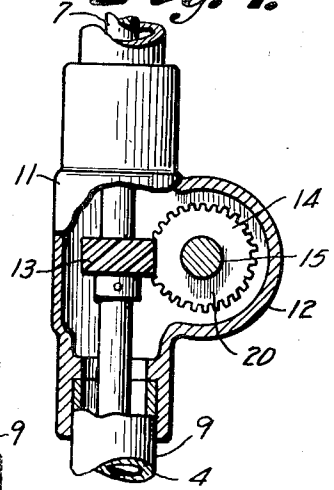
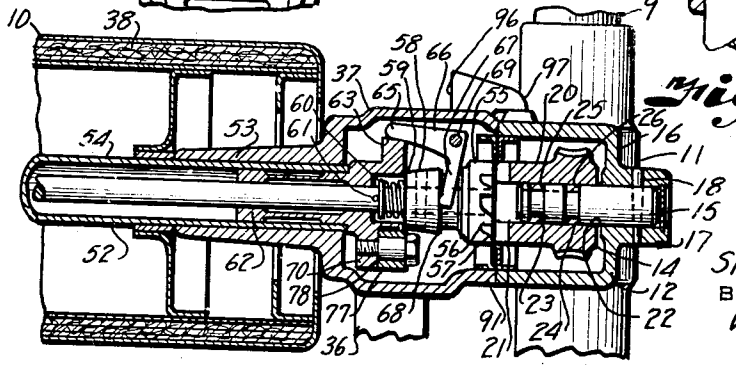


Fig. 8.



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Patented Dec. 10, 1940 2,224,347

UNITED STATES PATENT OFFICE

2,224,347

COMBINATION IRONER AND WASHING MACHINE

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Application July 6, 1936, Serial No. 88,986

9 Claims. (Cl. 38—60)

This invention relates to ironers and particularly to a combination ironing and washing machine. Ironers of this type are usually mounted for swinging movement in a horizontal plane so that they may be moved from ironing position to a position adjacent the side of the washing machine tub in order that they will be as much out of the way as possible, however, in this position the end of the ironer projects a material distance beyond the tub so that it is in the way of the operator when the machine is used for washing clothes.

It is, therefore, a principal object of the present invention to provide an ironer of the attached type having universal mounting on the washer whereby the ironer may be moved from a horizontal operating position to a vertical position alongside the wall of the tub.

Other important objects of the invention are to provide a simple, relatively inexpensive ironer mounting; to provide an ironer mounting which locates the ironer at a convenient height so that it may be used by the operator in seated position; to provide an ironer mounting that is readily moved into and out of ironing position with little effort on the part of the operator; and to provide a mounting which is substantially rigid and stable when in ironing position.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a combination washer and ironer embodying the features of the present invention and showing the ironer swung to vertical position alongside the tub, the operating position of the ironer being shown in dotted lines.

Fig. 2 is a section through the ironer on the line 2—2 of Fig. 5, particularly illustrating the shoe actuating mechanism and the pivotal connection on which the ironer is moved to vertical position.

Fig. 3 is a plan view of a portion of the tub and ironer, the ironer being shown in the position illustrated in Fig. 1.

Fig. 4 is a side elevational view with the ironer out of operating position.

Fig. 5 is a view similar to Fig. 3 but showing the ironer in operating position.

Fig. 6 is an end elevational view of the ironer attachment when in operating position.

Fig. 7 is a detail fragmentary view of the ironer support, a part of which is broken away to better illustrate the ironer driving gears.

Fig. 8 is an enlarged section through a portion of the ironer attachment, particularly illustrating the clutch connection between the ironing roll and driving gears.

Referring more in detail to the drawings:

1 designates a combination washing and ironing machine embodying the features of the present invention and which is shown as including a tub 2 supported at a convenient height from the floor on roller mounted legs 3. Supported from the side of the tub 2 is a tubular housing 4 connecting a transmission gearing indicated by the housing 5 with a wringer gear housing 6. Rotatably mounted within the tubular housing 4 is a vertically arranged wringer actuating shaft 7 for operating a wringer 8 through the driving connection located in the housing 6 as in conventional washing machine construction. The tubular housing 4 forms a support or post 9 on which the ironer 10 is mounted in accordance with the present invention as now to be described.

Connected in the tubular housing and forming a part thereof is a gear housing 11 (Figs. 7 and 8) having a lateral, substantially cylindrical extension 12 cooperating with the vertical section thereof to enclose a driving gear 13 that is fixed to the shaft 7 and a meshing driven gear 14 that is rotatably mounted on a stub shaft 15 arranged transversely of the shaft 7. The extension 12 has a closed end 16 provided with a boss 17 in which the stub shaft 15 is secured by means of a tapered pin 18 extending through the boss and through the shaft as clearly illustrated in Fig. 8. The housing is preferably mounted on the tubular post 4 so that the opposite end 19 of the cylindrical extension faces away from the tub 2.

The driven gear 14 includes a hub 20 provided with a clutch engaging face 21. The hub is provided with an axial bore 22 to accommodate the stub shaft 15 and is retained thereon by means of rings 23 and 24 engaged in spaced grooves 25 and 26 of the stub shaft, the rings being loosely mounted in the grooves and having pressed fit within the bore 22.

Projecting laterally from the gear housing 11 at a point slightly above the axis of the extension 12 is an arm 27 arranged substantially tangential to the wall of the tub, as best shown in Fig. 5. Formed on the outer end of the arm 27 is a yoke shaped head 28 having spaced bearing bosses 29 and 30 provided with aligning openings to accommodate a hinge pin 31. Hingedly mounted on the hinge pin between the bearing bosses 29 and 30 is a barrel portion 32 of a hinge plate 33 that is adapted to swing in a horizontal plane about

the axis of the pin 31. The pin 31 is preferably loosely mounted in the bearing bosses of the yoke and has a head 34 on its upper end whereby it may be readily withdrawn to remove the hinging plate and the ironer 10 that is attached thereto.

The ironer 10 includes a frame 35 having a hollow arm portion 36 carrying a tubular housing 37 at its outer end on which the ironer roll 38 is rotatably mounted. Forming a part of the arm 36, and extending in a plane parallel with the axis of the housing 37, is an ear 39 having a face 40 abutting against the hinge plate 33 as shown in Figs. 3 and 5, and which is pivotally connected therewith by a hinge pin 41 including a shank 42 extending through an opening 43 in the hinge plate and into an opening 44 of the ear, as best shown in Fig. 2.

The hinge pin includes a head 45 having a flange collar 46 engaging against the opposite face of the hinge plate. The hinge pin is retained from rotation within the threaded opening of the ear by a jam-nut 47 that is threaded on the end of the shank 42 of the pin. The ear 39 is braced from the arm by spaced ribs 48 and 49 as best shown in Fig. 5, to provide a rigid construction. Also formed as a part of the arm and extending in parallel alignment with the axis of the cylindrical housing 37 is a cylindrical boss 50 for mounting the ironing shoe 51 of the ironer.

The ironing roll 38 is journalled on a tubular arm 52 pressed within a tubular boss 53 extending from the cylindrical housing 37. Rotatably mounted within the tubular arm 52 is an ironer shaft 54 having driving connection with the ironer roll at the outer end thereof, as in conventional ironer construction. The inner end of the shaft projects into the housing 37 and mounts a clutch collar 55 having teeth 56 thereon engageable with teeth 57 on the clutch face 21 of the hub 20. The clutch collar is slidably pinned in driving relation with the shaft 54 by means of a pin 58 as indicated in Fig. 8 so that the clutch collar may be moved into and from driving connection with the driven gear 14. The clutch collar is normally urged into clutching engagement by means of a coil spring 59 sleeved over the shaft 54 and having one end bearing against a washer 60 that is backed by a pin 61 extending through the shaft 54, as shown in Fig. 8.

Journalled within the tubular arm 52 and forming a bearing for the inner end of the shaft 54 is a sleeve 62 carrying a cam head 63 that is positioned within the housing 37 and which has an arcuate shaped cam 64 engaged with an arm 65 of a bell crank 66, the other arm 67 of which is engaged in an annular groove 68 of the clutch collar, the bell crank being pivotally mounted within the housing 37 on a pin 69. It is thus obvious that when the cam head is rocked about the axis of the ironer shaft to carry the arcuate shaped portion of the cam into engagement with the arm 65, the bell crank lever is rocked on the pin 69 to withdraw the clutch collar from engagement with the driven gear 14, when the ironer is in operative position as later described.

Also formed as a part of the cam head is a depending ear 70 having pivotal connection 71 with a rocker arm 72 that is fixed to a shaft 73 journalled within the boss 50 and which extends in parallel spaced alignment with the ironing roll to mount the ironing shoe 51, the shaft 73 being provided with a laterally extending arm 74 that is pivotally connected, as at 75, with ears 76 on the ironing shoe 51. The connection 71 includes a head 77 pivoted to the ear 70 by means of a pin 78 and has a tubular shank 79 to telescopingly mount a threaded rod 80 having a head 81 that is pivotally connected with the arm 72 by a pin 82.

Threaded on the rod 80 are stop nuts 83 for supporting a washer 84 in bearing engagement with the end of a spring 85 that is sleeved over the tubular shank and has its opposite end bearing against the head 77. The construction thus described forms a yieldable joint between the cam head and the rock lever 72 to accommodate articles of varying thickness which might be run through the ironer.

The ironing shoe is normally retained away from the ironing surface of the ironing roller by means of a coil spring 86 having one end seated in a socket 87 of the hollow arm and its opposite end bearing against the head 81 of the telescoping connection 71. The cam head 63 is actuated by means of a lever arm 88 that projects through a slot 89 in the cylindrical housing 37 and carries a handle 90 on its outer end. It is thus obvious that when the lever 88 is actuated to move the cam head in an anti-clockwise direction (Fig. 2), the arcuate cam is moved from under the arm of the bell crank to allow engagement of the clutch collar with the driven gear under action of the coil spring 59. Simultaneously the ironing shoe is brought into ironing engagement with the ironing roller through the telescoping connection 71. The housing 37 conforms in diameter to the cylindrical extension 12 when the ironer is in operative position so that the outer end 91 thereof seats against a corresponding end face 19 of the cylindrical extension 12.

When in this position the ironer frame is latched against swinging movement on the hinge arm 28 by means of a clamp 93 which is pivotally mounted on a lug 94 projecting from the top of the extension 12. The clamp 93 has a wing-like depending portion 95 that engages against the face 96 of a lug 97 projecting from the cylindrical housing 37. The lugs 94 and 97 preferably have wedge shaped contacting sides 98 and 99, which engage when the ironer is in operative position to enhance the clamping action exerted by the member 93.

When the ironer is in operative position it extends laterally from the side of the tub in axial alignment with the axis of the driven gear 14. In this position the hinge plate is in parallel alignment with substantially the center of the washing machine tub and the frame is prevented from hinging movement on the hinge pin 41 by abutment of the housing 37 against the cylindrical extension 12 so that the ironing roll is retained in horizontal position, however, when the clamp is released and the ironer is swung on the pivot pin 31, the ironer frame is free to pivot on the pin 41 so that the lower end thereof swings downwardly to suspend the ironer in vertical position as shown in Fig. 1. The ironer may then be swung back against the side of the tub so that it is substantially out-of-the-way of the operator when the machine is used for washing clothes.

To return the ironer to operative position the lower end of the ironing roll is swung upwardly on the hinge pin 41 until it is in a horizontal position. The entire ironer may then be swung in a horizontal plane on the hinge pin 31 until the seating end of the housing 91 is in aligning

engagement with the cylindrical extension 12, and so that the wedge face on the lug 97 engages the corresponding face on the lug 94. The clamp lever may then be swung into clamping engagement with the lug 97 to retain the ironer in operative position.

From the foregoing, it is obvious that I have provided an ironer mounting which is readily operated and whereby the ironer may be moved to an out-of-the-way position alongside the wall of the tub.

What I claim and desire to secure by Letters Patent is:

1. An ironer including a support, a bracket on the support, an ironer frame, pivotal means mounting the ironer frame on the support in downwardly spaced relation to the upper end of the support for swinging movement from a horizontal to a vertical position relative to said support, an ironing roll carried by the ironing frame, driving means carried by the support, and manually operated clutch means connected with the ironing roll and engageable with the driving means when the ironer is supported in a horizontal position relative to the support.

2. An ironer including a support, a gear housing carried by the support, a driven gear in the gear housing having a clutch face, a bracket on the support, an arm having one end pivotally mounted on the bracket to swing in a horizontal plane relatively to the support, an ironer frame, means hinging the ironer frame to the opposite end of said arm to swing about an axis transversely of the pivotal axis of the arm, an ironing roll carried by the ironer frame, a driving connection for the ironing roll including a clutch collar engageable with the clutch face on the driven gear, and means for selectively retaining the clutch collar in driving or non-driving relation with the clutch face.

3. An ironer including a support, a driving connection on the support, a bracket on the support, an arm having one end pivotally mounted on the bracket to swing in a horizantal plane relatively to the support, an ironer frame, means hinging the ironer frame on the opposite end of said arm to swing about an axis transversely of the pivotal axis of said hinge member, an ironing roll carried by the ironer frame, a driving connection for the ironing roll engageable with the driving connection on the support, and means for releasably retaining the driving connections in driving relation and the ironer frame from movement relatively to the support.

4. An apparatus of the character described including a support, an ironer, a driving shaft vertically mounted on the support, means mounting the ironer for horizontal swinging movement on the support and about a pivotal axis offset from the axis of the driving shaft, an ironer driving mechanism connected with the shaft, means on the ironer engageable with the ironer driving mechanism when the ironer is in horizontal position to actuate said ironer, and a pivotal connection in said mounting means for moving the ironer into vertical position when the ironer is swung away from said driving mechanism.

5. An ironer including a support, a bracket on the support, an arm having one end pivotally mounted on the bracket to swing in a horizontal plane relatively to the support, an ironer frame, means hinging the ironer frame to the opposite end of said arm whereby said ironer frame is adapted to swing about an axis transversely of the pivotal axis of said hinge member to a vertical position, an ironing roll carried by the ironer frame, an ironer roll driving connection on the support, and a cooperating driving connection on the roll adapted to engage the first named connection when the ironer frame is swung from said vertical to horizontal positions.

6. An apparatus of the character described including a support, an ironer, a driving shaft vertically mounted on the support, means mounting the ironer for horizontal swinging movement on the support and about a pivotal axis offset laterally from the axis of the driving shaft, a pivotal connection on said mounting means for moving the ironer into substantially parallel relation with said shaft, a driving mechanism connected with said shaft, and a driven mechanism on said ironer for connecting the ironer with said shaft when the ironer is moved horizontally to engage said mechanisms.

7. An ironer comprising a supporting structure having a vertically extending wall, a bracket having one end thereof fixed to the supporting structure adjacent the wall and a free end terminating at a distance from the wall, a member pivoted at said free end to swing about a vertical axis from a position between said free end and the wall to a position at the opposite side of said free end, ironer driving means carried by said supporting structure, and an ironer roll assembly provided with driven means, said assembly pivoted to said member on a horizontal axis whereby said assembly may be moved with respect to said axes from storage position adjacent the wall to a position extending laterally with respect to the wall, effecting an engagement between said driving and driven means.

8. In combination with a vertically extending supporting structure, a power shaft vertically arranged thereon, an ironer driving means in geared engagement with said shaft, a bracket carried by said supporting structure adjacent said shaft, a member connected to said bracket to swing with respect thereto about an axis, and an ironer roll assembly provided with driven means, said assembly pivoted to said member to swing about an axis extending transversely with respect to said first named axis whereby the assembly may be bodily moved about both of said axes to bring the ironer roll assembly from a vertical storage position to a horizontal position, effecting engagement between said driving and driven means.

9. An ironer comprising a supporting structure having a vertically extending wall, a bracket having one end thereof fixed to the supporting structure adjacent the wall and a free end terminating at a distance from the wall, a member pivoted at said free end to swing about a vertical axis from a position between said free end and wall to a position at the opposite side of said free end, an ironer driving means carried by said supporting structure including a frame and provided with driven means, and means pivoting said frame at a point intermediate the ends thereof with the pivot member to swing about a horizontal axis whereby said assembly may be moved on said axes from a storage position vertically of said wall to a horizontal position with respect to said wall effecting an engagement between the driving and driven means and means to secure said driving and driven means in said engaged position.

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