

June 17, 1930.

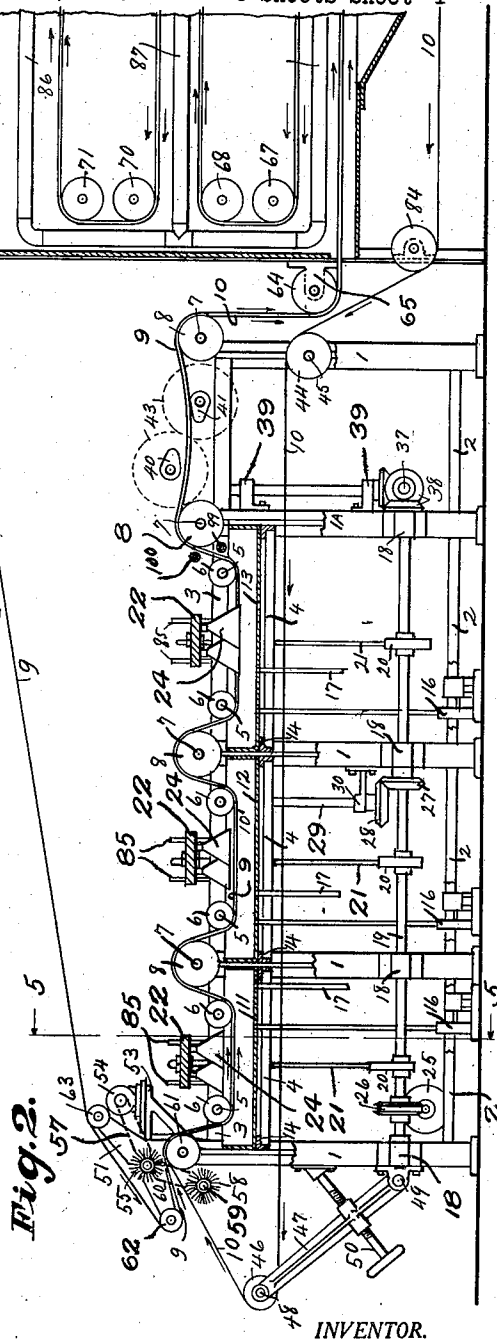
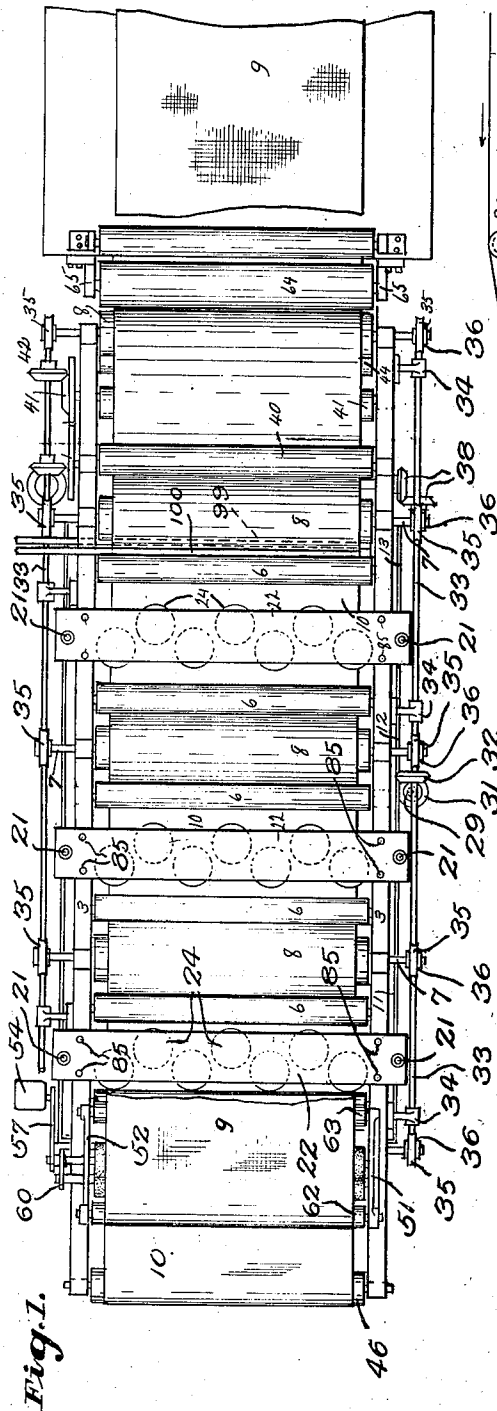
R. A. HUBINGER

1,764,631

WASHING MACHINE

Filed Oct. 5, 1926

3 Sheets-Sheet 1



INVENTOR.
Roland A. Hubinger,
BY
William W. French
ATTORNEY.

June 17, 1930.

R. A. HUBINGER

1,764,631

WASHING MACHINE

Filed Oct. 5, 1926

3 Sheets-Sheet 3

Fig. 5.

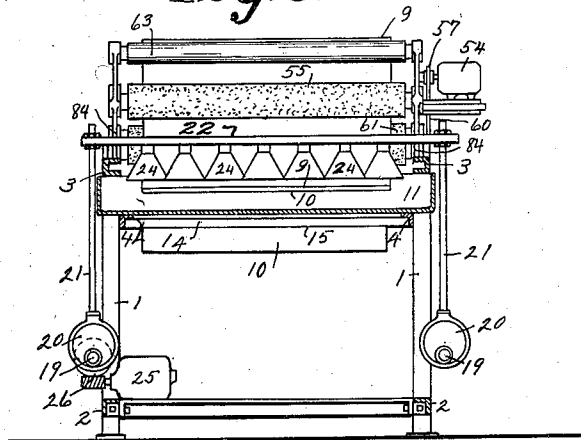


Fig. 6.

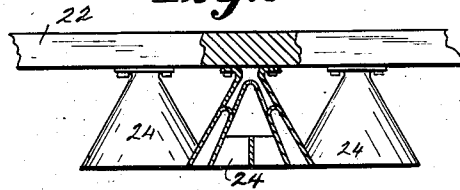
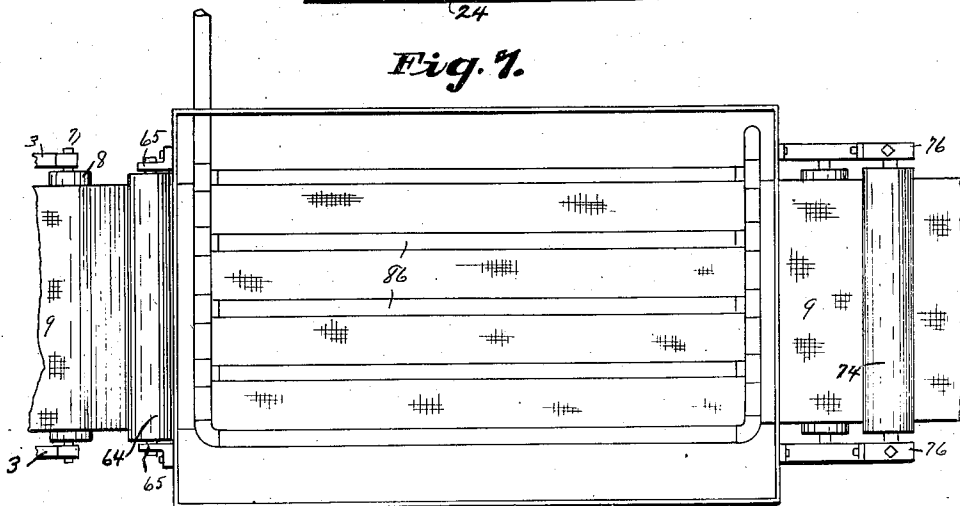


Fig. 7.



INVENTOR.

Roland A. Hubinger

BY

William W. French

ATTORNEY.

UNITED STATES PATENT OFFICE

ROLAND A. HUBINGER, OF MILWAUKEE, WISCONSIN

WASHING MACHINE

Application filed October 5, 1926. Serial No. 139,748.

My invention relates to a new and useful combination of mechanical and liquid elements to produce a wash, cleaning, drying bluing, starching, and ironing combination, whereby flat goods may be completely laundered without being touched by the hands after feeding into the machine until ready for use; and the objects of my invention are, first, to mount upon revoluble rollers two endless wire mesh conveyors adjacent and traveling in the same direction and in contact with each other for a portion of their length, thence separating and diverging, thence converging and again traveling parallel to each other; second, to have these conveyors so mounted upon the rollers that material fed between them will pass between brushes, then pass downward into the suds or first tank and under a series of beaters, thence upward over a roller, thence downward into a rinsing or second tank and under beaters as before, and so on until washed, rinsed, blued, and starched as desired, then through a drying compartment provided with steam coils, thence out of the compartment and delivered on the platen of a flat work ironing machine; third, to have the tanks containing the different cleansing and treating liquids project outward beyond the sides of the machine, so that the condition of the liquids may be seen while the machine is in operation; fourth, to provide means for regulating the force of the beaters, and the tension of the conveyors upon the rollers, also a practical transmission system for applying power to the several parts of the device; fifth, to provide a means for filling and emptying the tanks as the condition of the work requires.

I attain these objects by the mechanism shown in the accompanying drawings in which—

Fig. 1, is a plan of the washer and part of the drier;

Fig. 2, is a right side elevation of the same, partly in section;

Fig. 3, is a plan of the balance of the drier, and the rear end of the entire system.

Fig. 4, is a right side elevation of same, partly in section also flat work ironer.

Fig. 5, is a side elevation of the washer, showing the power transmission to the drive rollers.

Fig. 6, is a detail, showing the beaters.

Fig. 7, is a plan of the steam coils in the drying compartment.

Similar numerals refer to similar parts throughout the several views.

The specific construction of my present machine comprises a built up frame of wood and metal, for the purpose of mounting and operating the different elements, but I do not confine myself to this particular style of frame, as other constructions would be equally adapted to the purpose. In the present frame I employ a series of posts 1 with longitudinal side ribbons 2 outside and adjacent the bottom thereof. Upper ribbons 3 inside of the posts 1 are adapted for journaling the trunnions 5 of the idler rolls 6, and the shafts 7 of the drive rolls 8, for mounting the two wire mesh conveyors 9 and 10, hereinafter more particularly described. An intermediate ribbon 4 similar to 2 and 3 is disposed inside of the posts at a point adapted to support tanks or liquid containers 11—12 and 13. Transverse beams 14 extend from side to side and are secured to the edge of the posts 1, and similar beams 15 are located below and contiguous the ribbons 4 for adding rigidity to the frame, and an additional support for the tanks. Said tanks may be constructed of any suitable material, sheet copper preferred, and are of rectangular base and of sufficient depth for holding liquids for sudsing, rinsing, and bluing, also starching if required in treating the material to be laundered. Only three tanks are shown in the drawings, but it is obvious that any number may be employed. These tanks may be filled and emptied in various ways, but I prefer filling by a force pump 16 under each tank, and emptying through a drain pipe 17. To the posts 1 on the outside and adjacent the bottom, on both sides of the frame journal boxes 18 are secured, and within the boxes shafts 19 are revolubly disposed. Below the center of the tanks longitudinally of the machine, eccentrics 20

with upwardly extending cam rods 21 are mounted on the shafts 19 with the upper ends of the cam rods hingedly secured to the outer ends of plates 22. Depending from the lower surface of said plates are a plurality of bell shaped cups 24 functioning as beaters upon the material to be treated. Under the front end of the washer an electric motor 25 is located and connected by worm gear 26 to the shaft 19 on the right side of the machine. Upon the rear end of said shaft 19 a bevel gear 27 is secured which meshes with a similar gear 28 located at the lower end of a vertical shaft 29 which extends upward and is journaled in a bracket box 30. Upon the upper end of the shaft 29 a bevel gear 31 is secured which meshes with a pinion 32 secured to the rear end of a shaft 33 journaled in boxes 34 on the posts 1. Said shaft 33 extends from front to rear on the right side of the machine and is connected to the four drive roller shafts 7 by worm gears 35 on the ends of the shafts 7 and worms 36 on the shaft 33. To connect the shaft 19 on the left side of the machine with the one on the right which is in connection with the motor 25 a cross shaft 37 is connected by miter gears 38 to both shafts and journaled in boxes 39 secured to the central posts 1. A pair of shakers 40 above the conveyors, and 41 below them are revolvably mounted across the machine between the rear and next forward posts and are driven from a bevel gear 42 on the shaft 33 and a similar gear connected to 41 and the two are connected at the opposite end by a pair of spur gears 43. A roller 44 idles upon a shaft 45 secured in, and extending between the two rear frame posts 1. A tightener roller 46 is mounted at the upper end of a frame 47 by gudgeons 48 journaled in the frame, said frame is hinged to the front posts 1 by boxes 49, and an adjusting screw 50 provides a means for adjusting the tension of the lower conveyor belt 10. A side plate 51 is secured to the upper end of the front post 1 and to the front end of the right side ribbon 3, and a similar plate 52 is secured in a like manner to the left side of the machine with a shelf 53 projecting outward, and upon which an electric motor 54 is mounted. A revoluble brush 55 the shaft 56 of which is at the right end journaled in the plate 51, and the left end extends through the plate 52 and is connected by belt 57 to the motor 54, it is disposed above and in contact with the conveyor belt 9. A similar brush 58 is located below the conveyor belt 10 and the outwardly extending shaft 59 by means of the belt 60 is connected to the motor 54, thereby the motor 54 drives both brushes for cleaning the conveyors. An idler roller 61 is mounted adjacent the tops of the two front posts 1 for carrying the lower conveyor, and supporting both conveyors when material is fed between them, and idler rollers 62 and 63 are journaled in and between the plates 51 and 52 for carrying the front end of the conveyor belt 9. Said belt 9 is constructed of wire mesh and is mounted upon a train of power and idler rollers. Starting at idler 62 it passes downward and backward under said roller, thence over idler 61 and down into suds tank 11 under the first idler 6, thence backward under second idler 6, and upward out of suds tank and over the first drive roller 8, thence downward into and out of rinsing tank 12, and over the second drive roller 8, thence into the bluing tank 13 and out over the third drive roller 8, thence backward between the shakers 40 and 41 and over the fourth drive roller 8, thence downward and under an idler 64 journaled in boxes 65 upon the front and adjacent the bottom of the drying compartment, thence into the compartment and backward under an idler 66, thence forward and partly around an idler 67, thence upward and partly around a drive roller 68, thence backward and partly around a drive roller 69, thence forward and upward partly around an idler 70 thence over the top of an idler 71 and backward out of the dryer over an idler 72 journaled in boxes 73 secured to the back of the dryer, thence under a tightener roller 74 journaled in adjustable boxes 75 slidably disposed in a vertical frame 76, thence over a square shaft 77 and backward partly around an idler 78, thence forward over idlers 79 and 80 on the top of the dryer and idler 63 at the front end of the washer to place of beginning. The conveyor belt 10, is also of wire mesh, and starting at the idler roller 61 is under and in contact with the conveyor 9 until they separate for return at the square shaft 77, then 10 turns upward and forward around an idler 81 journaled in brackets 82 extending backward from the frame 76, thence forward and downward under tightener roller 83, thence forward under an idler roller 84 and upward over idler 44, and forward under the tightener roller 46, thence upward and backward to the place of beginning at roller 61. The aforesaid plates 22 adapted to carry the rubber cups or beaters 24 as they are reciprocated by the eccentrics 20 are mounted each upon four vertical guide rods 85 secured to the top of the ribbons 3, thereby steadying but not rigidly guiding the beaters. The drying compartment, which is a rectangular cabinet, is provided with a plurality of horizontal series of steam pipes 86—87 and 88 positioned between the lines of the conveyors and coupled to supply and discharge means in the usual manner. An exhaust fan 90 is located centrally under the dryer adapted to draw downward the heat from the pipes through

the conveyors as the goods are carried back and forth within the compartment.

Two circulating fans 91 and 92 are located across the compartment in vertical alignment with the fan 90, for distributing the hot air between the lines of the conveyors. An endless belt conveyor comprising a belt 93 mounted on rollers 94 and 95 revolvably disposed in a frame 96, between the rear end of the conveyors 9 and 10 and a flat work ironer B delivers the work to the platen of the ironer; power is transmitted to the conveyor through a spur gear 97 on the shaft of 94 meshing with a similar spur gear 98 on the shaft of roller 81, which is driven by the wire mesh conveyor belt 10. Two steam pipes 99 and 100 are located forward frame post 1A and extend across the machine, 99 above the conveyor 9, and 100 below the conveyor, 10, these pipes are perforated next to the conveyors, adapted to deliver jets of steam against material carried between the conveyors, thereby assisting in the process of cleansing. The steam may be supplied from any convenient source.

To use my machine, fill the tanks with liquids adapted to the purpose of laundering the particular articles; start all the motors and turn on the steam to the dryer and pipe 100, then feed the goods between the conveyors 9 and 10 at the front end of the machine, and the goods will take the course indicated by the line of double arrows, passing through the tanks of liquid and under the beaters as before explained. The single arrows point out the return of the conveyors after the goods have been delivered to the flat work ironer.

Having thus explained my invention, I claim:

In a washing machine, the combination of a pair of perforated, flexible belts adapted to receive articles to be washed between them, a liquid receiving compartment, means for guiding said belts into and out of said compartment a plurality of times, a pair of spaced rollers located outside of said compartment over which said belts pass, and means for shaking said belts between said rollers to remove liquid adhering to said belts and to the articles carried between said belts.

In testimony whereof I affix my signature.
ROLAND A. HUBINGER.