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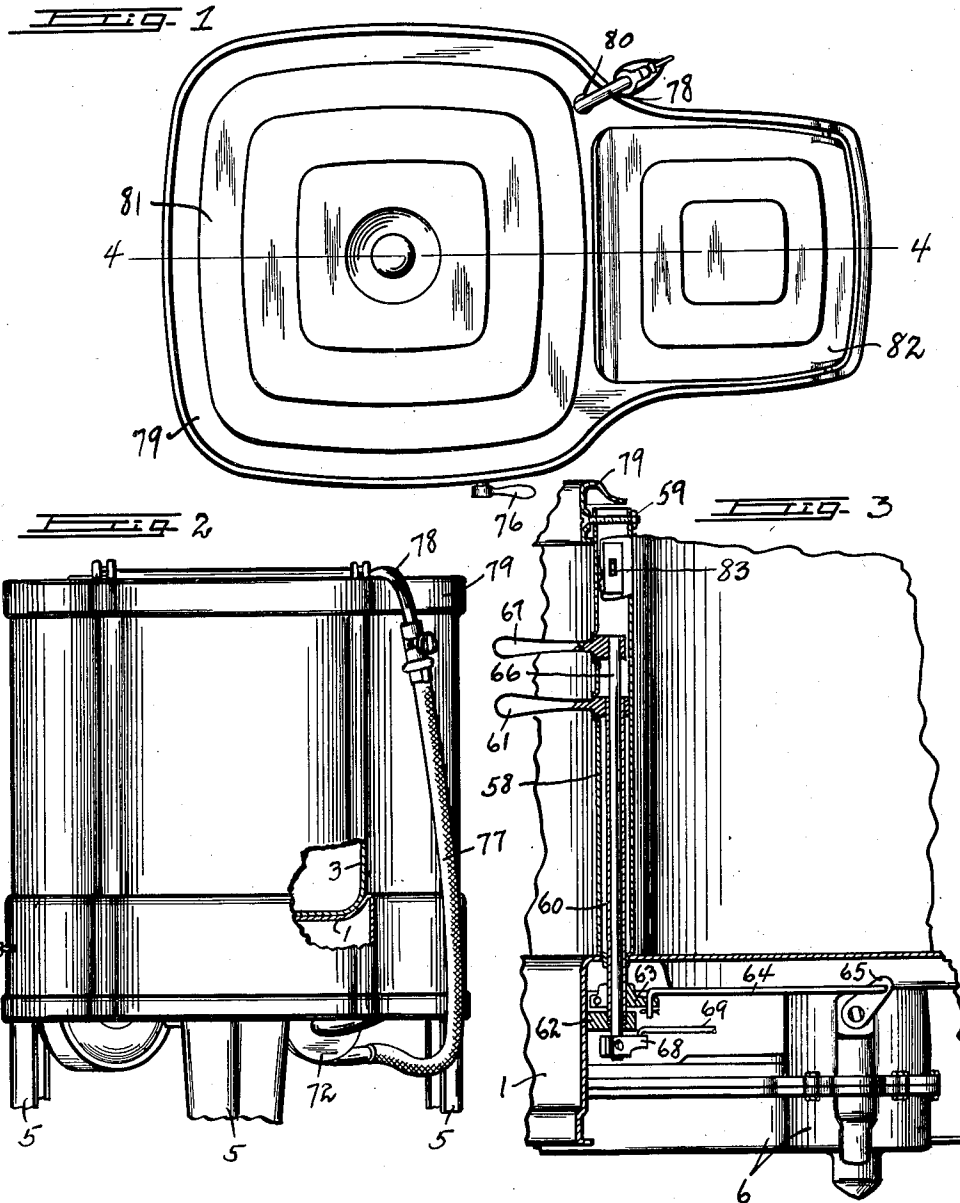
J. C. NELSON

2,029,937

COMBINED WASHING AND DRYING MACHINE

Filed May 6, 1931

4 Sheets-Sheet 1



WITNESS
H. L. Meade.

INVENTOR
J. C. Nelson
BY
Devision & Thompson
ATTORNEYS

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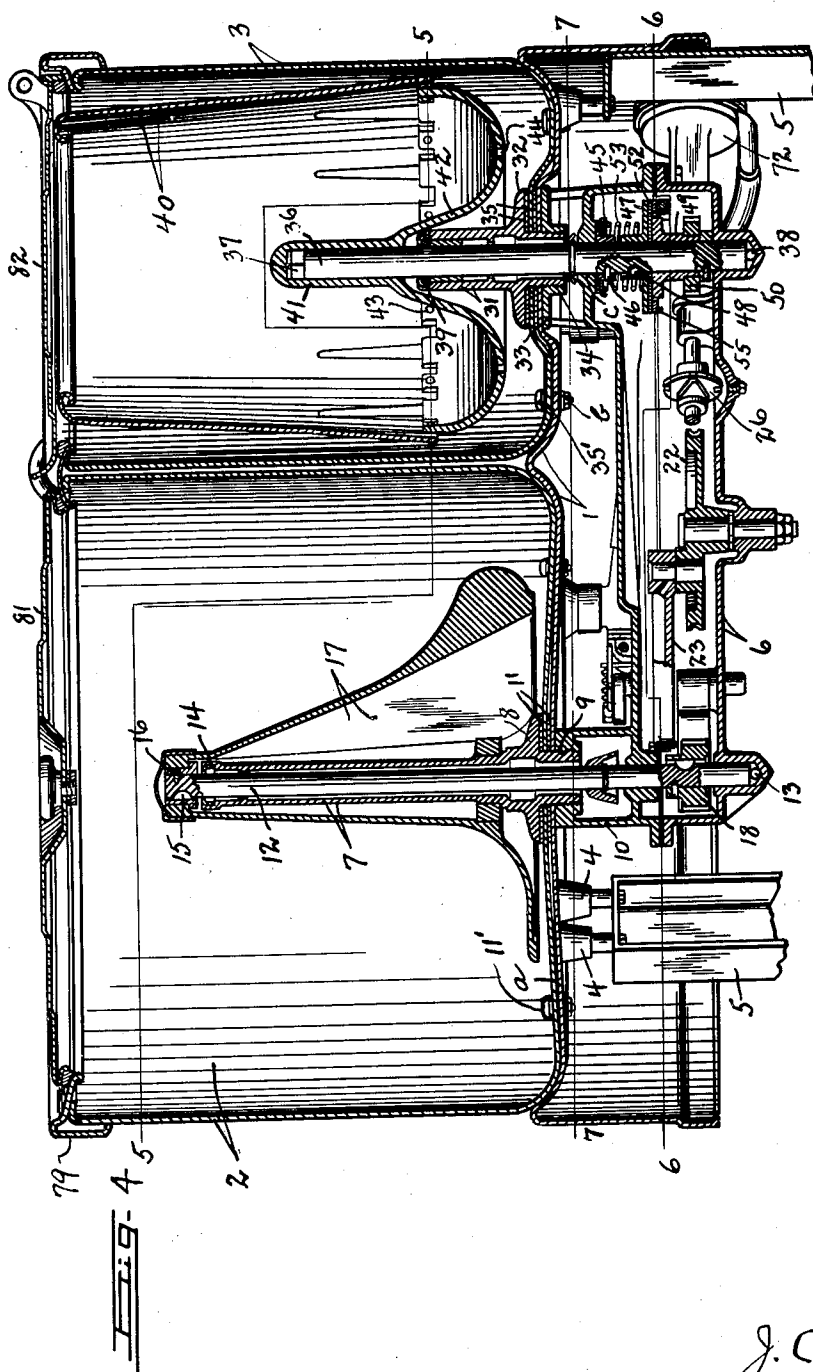
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COMBINED WASHING AND DRYING MACHINE

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4 Sheets-Sheet 2



WITNESS
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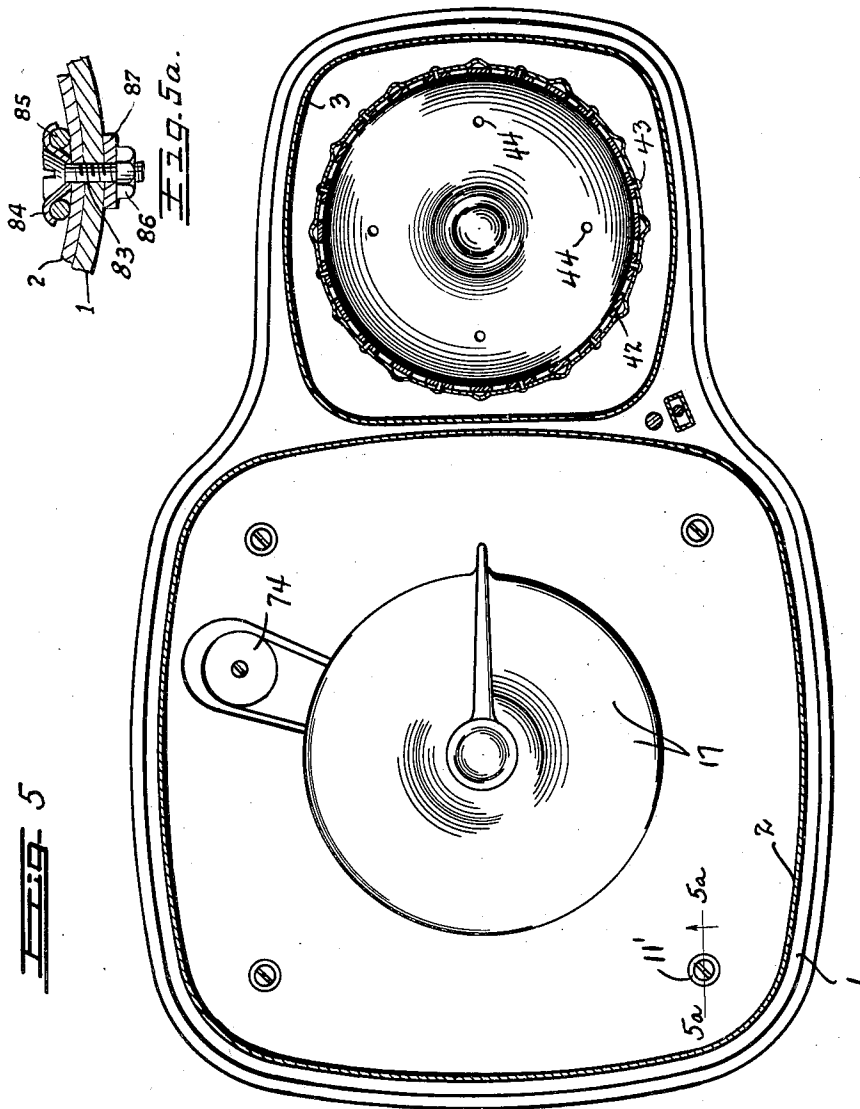
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COMBINED WASHING AND DRYING MACHINE

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4 Sheets-Sheet 3



WITNESS

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COMBINED WASHING AND DRYING MACHINE

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Fig-6

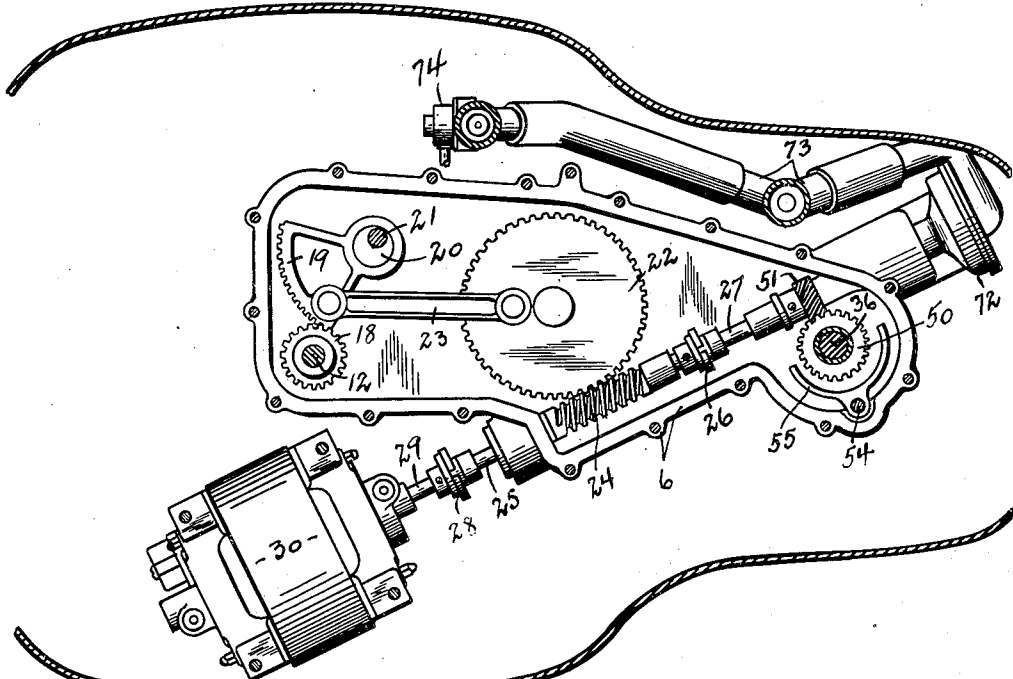
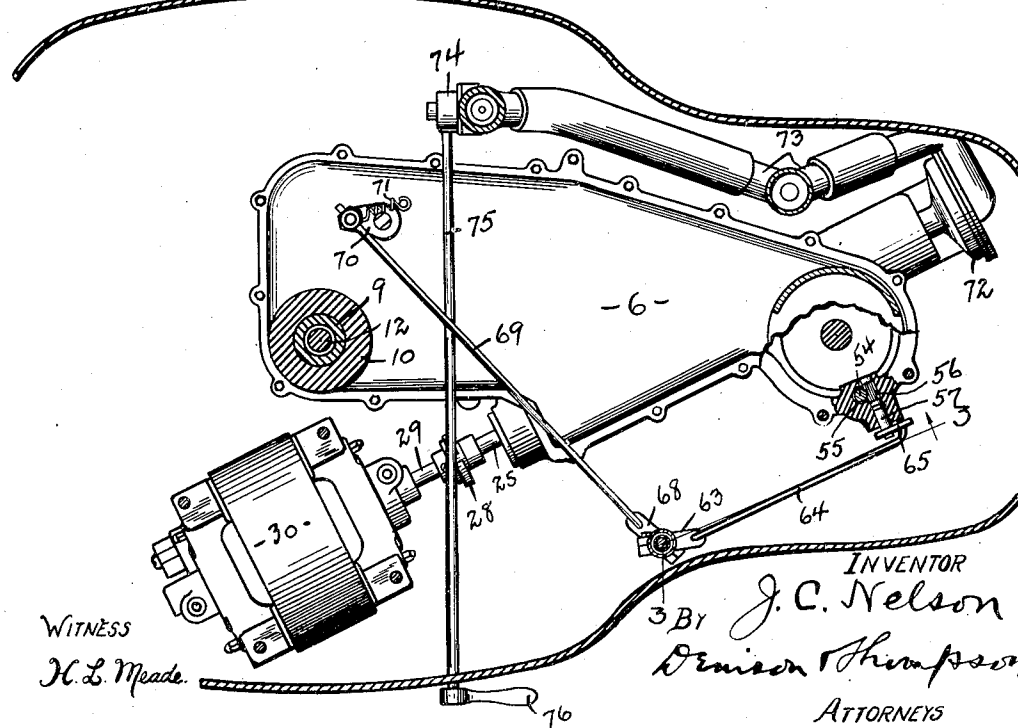


Fig-7



UNITED STATES PATENT OFFICE

2,029,937

COMBINED WASHING AND DRYING
MACHINE

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N. Y., a corporation of Delaware

Application May 6, 1931, Serial No. 535,543

5 Claims. (Cl. 68—15)

This invention relates to a new and improved combined washing and drying machine.

The main object of my invention is to provide a machine of this character in which the parts are so arranged that the vats for the washing and drying mechanisms are nested in a single supporting member.

A further object resides in the provision of a supporting form having two substantially square recesses of different areas for receiving and supporting two substantially square tubs or vats of different sizes corresponding to respective recess areas.

Another object is to provide a supporting and locating member for the vats which is so formed as to provide a concealing skirt for the operating mechanism of the device.

Other objects and advantages relate to the size, shape and arrangement of parts all as will more fully appear from the following description taken in connection with the accompanying drawings, in which:—

Figure 1 is a top plan view of the device.

Figure 2 is a side elevation, partially broken-away and partially in section.

Figure 3 is a section on line 3—3 of Figure 7.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a section on line 5—5 of Figure 4.

Figure 5a is a section on line 5a—5a of Figure 5.

Figure 6 is a section on line 6—6 of Figure 4.

Figure 7 is a section on line 7—7 of Figure 4.

My invention comprises a main supporting member 1 preferably stamped from sheet metal and having at one end a recess *a* in which is seated a vat 2 adapted to receive a washing mechanism.

Adjacent recess *a* is a second recess *b* in which is seated a vat 3 adapted to receive a centrifuge. On the under side of the member 1 are secured spaced bosses 4 preferably having a pair of such bosses 4 at three points on the under face of member 1. To each pair of bosses 4 is secured a supporting leg 5.

The operating mechanism for the washing mechanism and the drying mechanism is contained in a gear casing 6 supported at two points on the under face of member 1.

An aperture is provided through the central point of the bottom of the vat 2 and recess *a* through which extends a tubular member 7 having an annular flange 8 adjacent its lower end and having a downwardly extending externally threaded portion 9 which engages a tubular internally threaded boss 10 on one end of gear casing 6 thereby securing vat 2 in recess *a*, and also

securing one end of gear casing 6 on the under face of member 1.

For the purpose of preventing leakage from the vat 2, I prefer to provide between flange 8 and vat 2, and also between the under face of vat 2 and recess *a*, gaskets as 11.

As an additional means for securing vat 2 in position in recess *a* I provide a plurality, in this case shown as four, of bolt assemblies 11' which pass through the bottom of vat 2 and supporting member 1.

A vertical shaft 12 has its lower end journaled in the bottom of gear casing 6, an end thrust bearing ball 13 being positioned between the end of shaft 12 and the bottom of gear casing 6.

The tubular member 7 extends upwardly a considerable distance in vat 2 to a point above the normal level of the washing liquid in such vat.

The shaft 12 extends upwardly beyond a journal 14 in the upper end of tubular member 7 and is secured as by a key 15, and a set screw 16 to the upper end of an agitator 17 conventionally mounted on the tubular member 7 for oscillatory motion.

Referring to Figure 6, the shaft 12 carries on its lower end a gear 18 in mesh with a segment 19. The segment 19 is pivotally mounted on a circular member 20 which in turn is eccentrically mounted on a shaft 21 which is journaled in gear casing 6.

The rotation of shaft 21 carrying member 20 will cause segment 19 to be moved into and out of engagement with gear 18 as desired.

A second gear 22 is rotatably mounted in gear casing 6, and carries one end of a link 23 eccentrically mounted thereon. The other end of link 23 is mounted on one end of segment 19 so that the rotary motion of gear 22 will cause a reciprocating motion of segment 19, which motion will in turn be transmitted to gear 18 and thence through shaft 12 to agitator 17.

Gear 22 is in mesh with a worm 24 carried on a shaft 25 which has one end journaled in gear casing 6, and which has its other end joined as by a coupling 26 to a second shaft 27. Shaft 27 has its other end journaled in gear casing 6.

The end of shaft 25 extends outwardly beyond gear casing 6, and is joined as by a coupling 28 to the armature shaft 29 of an electric motor 30, which electric motor 30 is secured on the under face of supporting member 1.

Referring to Figure 4, there is provided an aperture through the central points of vat 3 and recess *b*. A tubular member 31 is provided adja-

cent its lower end with an annular flange 32 and with a depending externally threaded portion 33, which extends downwardly through the apertures in vat 3 and recess b into engagement with the tubular internally threaded boss 34 carried on one end of gear casing 6 so that the engagement of parts 33 and 34 will secure vat 3 in recess b, and will also secure one end of gear casing 6 to the under surface of supporting member 1.

For the purpose of preventing leakage from vat 3, I prefer to provide gaskets 35, one interposed between annular flange 32 and vat 3, and the other interposed between vat 3 and recess b.

As an additional means for securing vat 3 in position in recess b I provide a plurality, two only being shown, of bolt assemblies 35' which pass through the bottom of vat 3 and supporting member 1.

The bolt assemblies 11' and 35' are similar and a description of one is a description of the other. Bolt assembly 11', see Figure 5a, comprises a bolt 33 having its head seated in a dish shaped washer 34 beneath which and the bottom of tank 2 is interposed a rubber gasket 35. The bolt 33 is held in position by a nut 36 between which and the under face of supporting member 1 is interposed a washer 37.

A shaft 36 having a square upper end 37 has its lower end journaled in gear casing 6 with a thrust ball bearing 38 interposed between the lower end of shaft 36 and gear casing 6.

Shaft 36 extends upwardly beyond the upper end of member 31 and supports a rotatable basket 40, the square end 37 of shaft 36 being seated in a square recess in a tubular portion 41 of the bottom portion 42 of basket 40.

As may best be seen from Figures 4 and 5, the lower end of the side wall of the basket 40 is corrugated in shape and is secured as by bolts 43 to the bottom portion 42 of basket 40.

The side wall of the basket 40 is imperforate and tapers slightly upwardly and inwardly so that any liquid thrown by centrifugal force against the side wall of basket 40 will move downwardly and pass outwardly between the side wall of the basket 40, and the bottom portion 42 and be deposited in the bottom of the vat 3. The bottom portion 42 of the basket 40 is provided with a plurality of apertures 44 to permit the escape of any liquid which may be deposited in the bottom portion 42 into the vat 3.

As may be seen from Figures 4 and 5, the upper edge of bottom portion 42 is castellated to provide additional ports for the passage of liquid into the vat 3.

Intermediate its ends and beneath supporting member 1, shaft 36 is journaled as at c in the top of gear casing 6. A flanged member 45 is secured on shaft 36 as by a set screw 46, and abuts against gear casing 6.

Beneath the flange member 45 and slidably mounted on shaft 36 is a flanged clutch member 47 secured against rotary motion in relation to shaft 36, as by a key 48.

Beneath clutch member 47 and rotatably mounted on shaft 36 is a second clutch member 49, which has secured thereto a gear 50, which gear 50 (see Figure 6) is in mesh with a spiral gear 51 carried on shaft 27.

Interposed between clutch members 47 and 49 is a clutch and brake lining 52. A spiral spring 53 encircles flanged member 45 and clutch member 46, and normally urges clutch member 47 downwardly into clutching relation with clutch member 49. When in such clutching relation,

the rotary motion of gear 50 will cause the rotary motion of clutch member 47 and such clutch member 47 being keyed to shaft 36, shaft 36 will be caused to rotate, and this in turn, will cause the rotation of basket 40.

Referring to Figures 6 and 7, a vertical shaft 54 is slidably mounted in gear casing 6, and carries a fork 55 adapted to engage the under face of lining 52 to carry such lining and clutch member 47 vertically out of engagement with clutch member 49.

The upper end of shaft 54 is provided with rack teeth 55 in mesh with a toothed end 56 of a shaft 57 rockingly mounted in gear casing 6 so that when shaft 57 is rocked, it will carry shaft 54 vertically in the direction desired.

For the purpose of providing a convenient means for controlling the operation of the washing mechanism and of the drying mechanism, I provide a tubular member 58 having its lower end formed with a shoulder and inserted through an aperture in supporting member 1, and having its upper end secured as by a bolt 59 to a cover plate hereinafter to be described.

A second tubular member 60 is positioned in member 58 and has secured to its upper end, a crank arm 61, the inner end of which is journaled in member 58 and the outer end of which extends outwardly through a slot in member 58.

The lower end of tubular member 60 is journaled in a lug 62 secured to the depending skirt of supporting member 1.

On the lower end of tubular member 60 is secured a crank arm 63 connected, as by a link 64, to a crank arm 65 which is secured to the outer end of shaft 57 so that the rocking of crank 61 will, through the oscillation of tubular member 60, cause crank arm 65 to be rocked to cause shaft 57, through teeth 56, to raise and lower shaft 55 to clutch and un-clutch the members 47 and 49, and thus control the operation of the basket 40.

A shaft 66 is journaled in tubular member 60 with its upper end extending upwardly therefrom and secured to a crank 67 which extends outwardly through a slot in the tubular member 58.

The lower end of shaft 66 extends downwardly beyond the lower end of tubular member 60 and has secured thereto, a crank arm 68 which is secured on the upper end of shaft 21 so that the rocking of crank 67 will, through the oscillation of shaft 66, cause shaft 21 to be partially rotated to carry segment 19 into and out of engagement with gear 18 and thus control the operation of the agitator.

A spring 71 has one end secured to crank case 6, and has the other end secured to the outer end of crank arm 70 to normally rotate shaft 21 in a direction to hold segment 19 in mesh with gear 12.

For the purpose of disposing of liquid in vats 2 and 3, I provide on the outer end of shaft 27, a centrifugal pump 72. The intake of pump 72 is connected by a conduit 73 to an aperture in the bottom of vat 3 and conduit 73 is continued and is in communication with a valve 74 leading into the bottom of vat 2.

Valve 74 is controlled through a rock shaft 75 having a convenient handle 76.

The discharge opening from the pump 72 is connected to a flexible conduit 77 having on its upper end a valve controlled spout 78.

For the purpose of appearances and also for the purposes of holding the upper ends of vats 76

2 and 3 in fixed relation, I provide a cover plate or binding strip 79 having apertures over vats 2 and 3, and being beaded over the inturned top edges of vats 2 and 3.

5 Cover plate 79, constituting a frame member for the upper ends of the vats, is provided with an auxiliary aperture 80 leading into vat 2 through which spout 78 may be inserted if it is desired to transfer the liquid in vat 3 into vat 2, 10 as is frequently done in the case of suds when it is desired to re-use them on a new batch of clothes.

When it is desired to dispose of rinsing water from vat 3, the spout 78 may be directed into 15 a sink or other receptacle, and when it is desired to reclaim blueing water from vat 3, the spout 78 may be directed into blueing receptacle.

Valve 74 controlling the opening between vat 2 and conduit 73 is normally closed, but when 20 it is desired to dispose of the liquid in vat 2, valve 74 is opened and spout 78 is directed to a sink or other receptacle.

A removable cover 81 is provided for vat 2, and a hinged cover 82 is provided for vat 3.

25 Although not here shown, it will be understood that means are provided for connecting the motor 30 to a source of potential, and in order that the operator may control the operation of the motor when connected to a source of potential, 30 a switch 83 is provided.

As best shown in Figure 5, the vats and the recesses in the supporting member are approximately square in shape so that when the vats are seated in the recesses they will be restrained 35 from radial and rotary movement with respect to the supporting member 1.

It will be understood that various changes may be made in the shape and relation of the various parts of the device without departing from the spirit of my invention, for although I have shown 40 and described a specific structure and form and relation of parts as an exemplification of an embodiment of my invention, I do not desire to restrict myself to the exact size, shape or relation of parts, as various changes may be made 45 within the scope of the appended claims.

I claim:

1. In a device of the class described, a washing vat substantially square in cross section in which 50 an agitator is oscillatably mounted, a drying vat substantially square in cross section in which a centrifuge is mounted, a common base for the washing and drying vats whereby they may be mounted in juxtaposition and through which the 55 drive shafts for the agitator and centrifuge pass, said common base having depressed portions conforming in shape to and being adapted to receive, the bottoms of the vats.

2. In a device of the class described, a washing 60 vat substantially square in cross-section in which an agitator is oscillatably mounted, said washing vat having substantially vertical side walls and a bottom rounded upwardly towards the side walls, a drying vat substantially square in cross section 65 in which a centrifuge is mounted, said drying vat having vertical side walls and a bottom rounded upwardly towards the side walls, a common base for the washing and drying vats whereby they may be mounted in juxtaposition and through

which the drive shafts for the agitator and centrifuge pass, said common base having curved marginal outer portions conforming to the curvature of the bottom of the vats extending upwardly to meet the sides of the vats and then extending downwardly in substantial alignment 5 with the sides of the vat and forming a depending skirt adapted, at least partially, to enclose the operating mechanism for the washing and drying machine.

3. In a device of the class described, a washing 10 vat in which an agitator is oscillatably mounted, said washing vat being substantially square in cross section and having a rounded bottom, a drying vat in which a centrifuge is 15 mounted, said drying vat being substantially square in cross section and having a rounded bottom, a common base for the washing and drying vats whereby they may be mounted in juxtaposition and through which the drive shafts for the 20 agitator and centrifuge pass, said common base having depressed portions conforming in shape to and adapted to receive the bottoms of the vats, and a frame member conforming substantially to the square shape of the vats, having openings 25 therein conforming to the openings in the vats, said frame member being fitted on the rims of the vats.

4. In a device of the class described, a washing 30 vat in which an agitator is oscillatably mounted, said washing vat being substantially square in cross-section and having substantially vertical side walls and a bottom rounded upwardly towards the side walls, a drying vat in which a centrifuge is mounted, said drying vat being substan- 35 tially square in cross section and having substantially vertical side walls and a bottom rounded upwardly towards the side walls, a common base for the washing and drying vats whereby they may be mounted in juxtaposition and 40 through which the drive shafts for the agitator and centrifuge pass, said common base having curved marginal outer portions conforming to the curvature of the bottoms of the vats extending 45 upwardly to meet the sides of the vats and then extending downwardly in substantial alignment with the sides of the vat and forming a depending skirt, at least partially, to enclose the operating mechanism for the washing and drying machine, 50 and a frame member having openings therein and conforming substantially to the square shape of the vats, said frame member being fitted on the tops of said vats.

5. In a device of the class described, a washing 55 vat having substantially vertical side walls and having a bottom rounded upwardly towards the side walls, a drying vat of substantially similar shape, a common base for the washing and drying vats whereby they may be mounted in juxtaposition, said common base having curved marginal outer portions conforming to the curvature of 60 the bottoms of the vats extending upwardly to meet the vertical side walls and then extending downwardly in substantial alignment therewith and forming a depending skirt partially to enclose the operating mechanism for the washing 65 and drying machine.

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