April 17, 1934. P. E. BARKER 1,955,403

WASHING APPARATUS

Filed Oct. 8, 1930 5 Sheets-Sheet 1

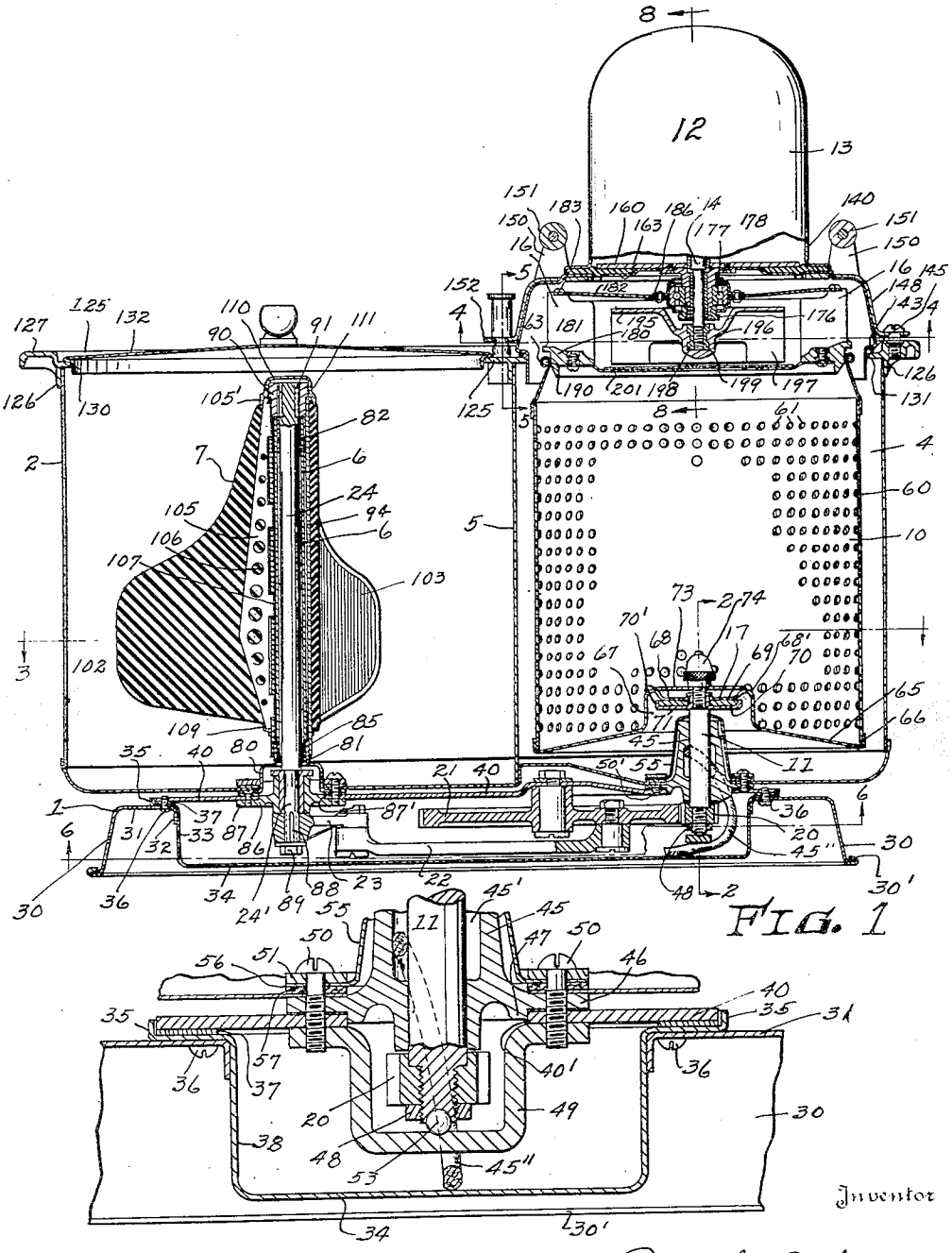


FIG. 1



FIG. 2

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WASHING APPARATUS

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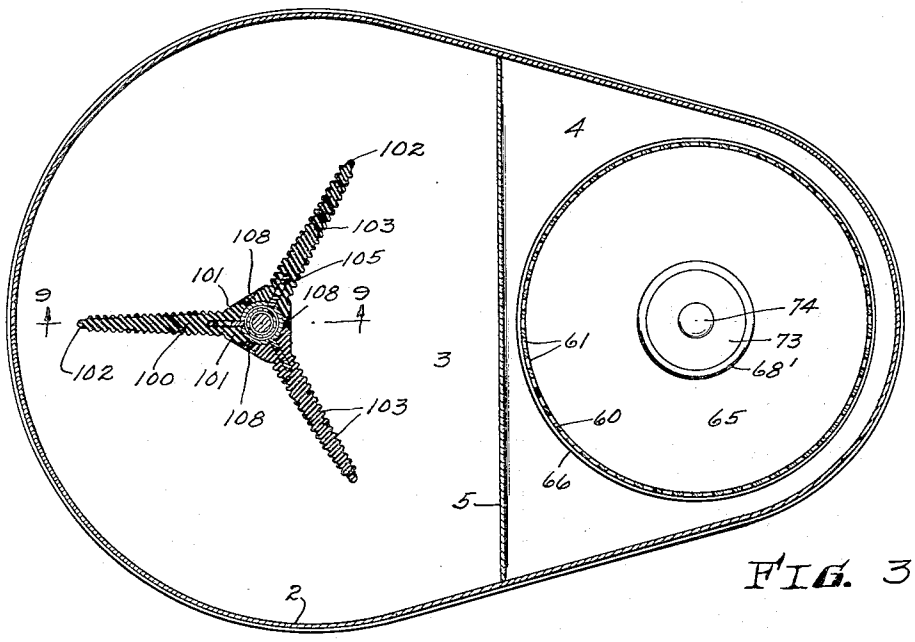



FIG. 3

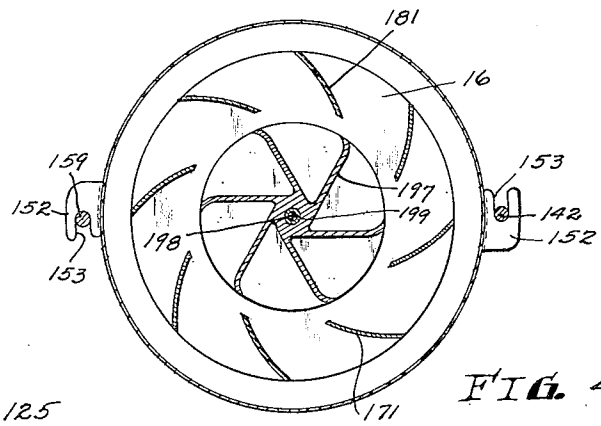



FIG. 4

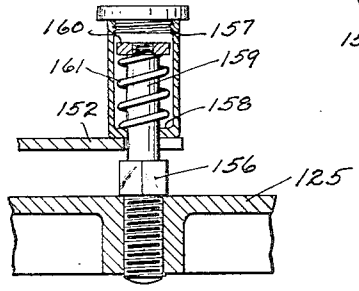



FIG. 5

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WASHING APPARATUS

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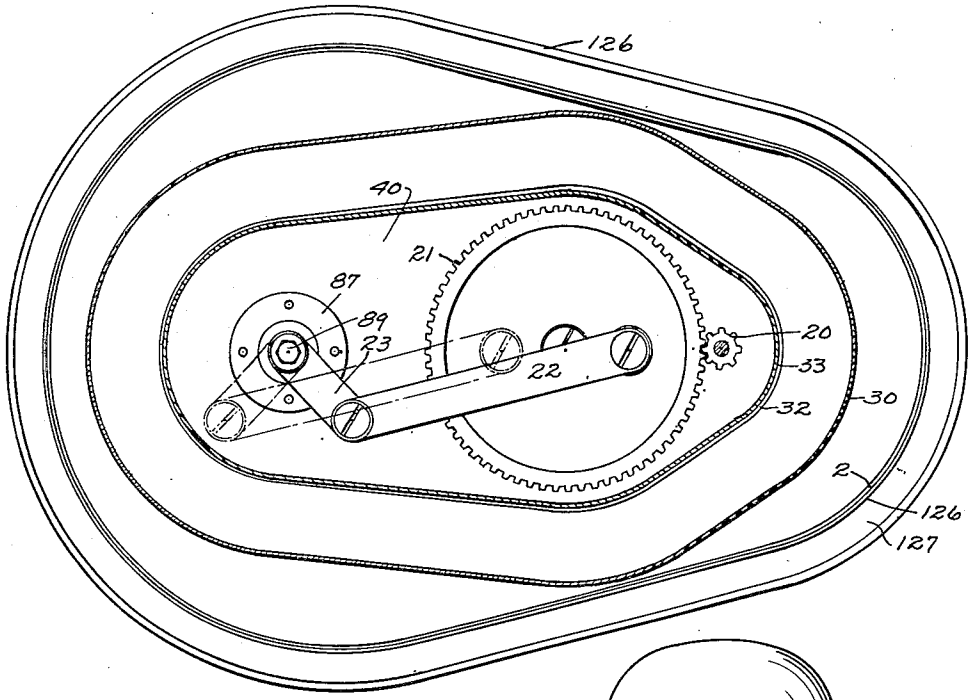



FIG. 6

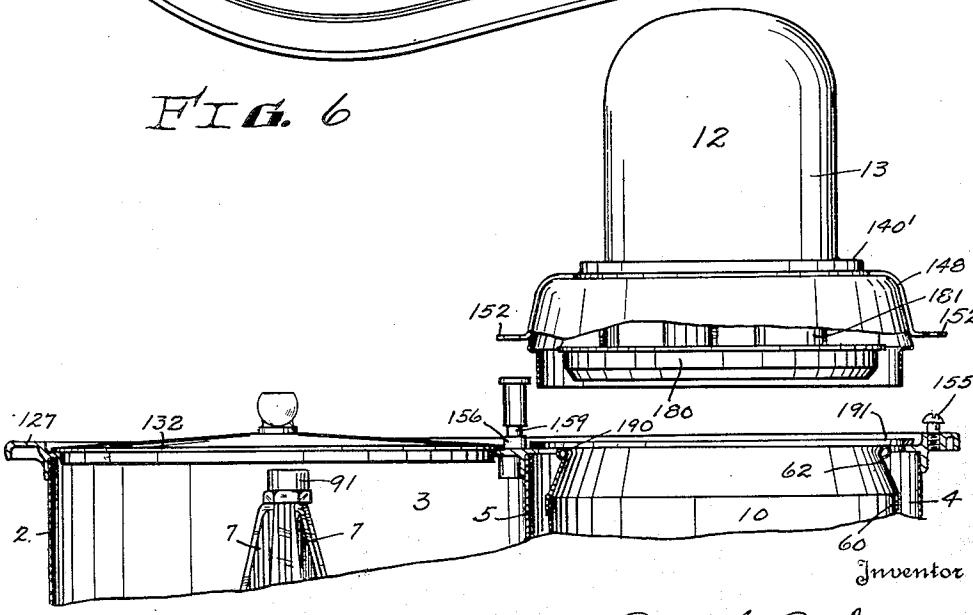



FIG. 7

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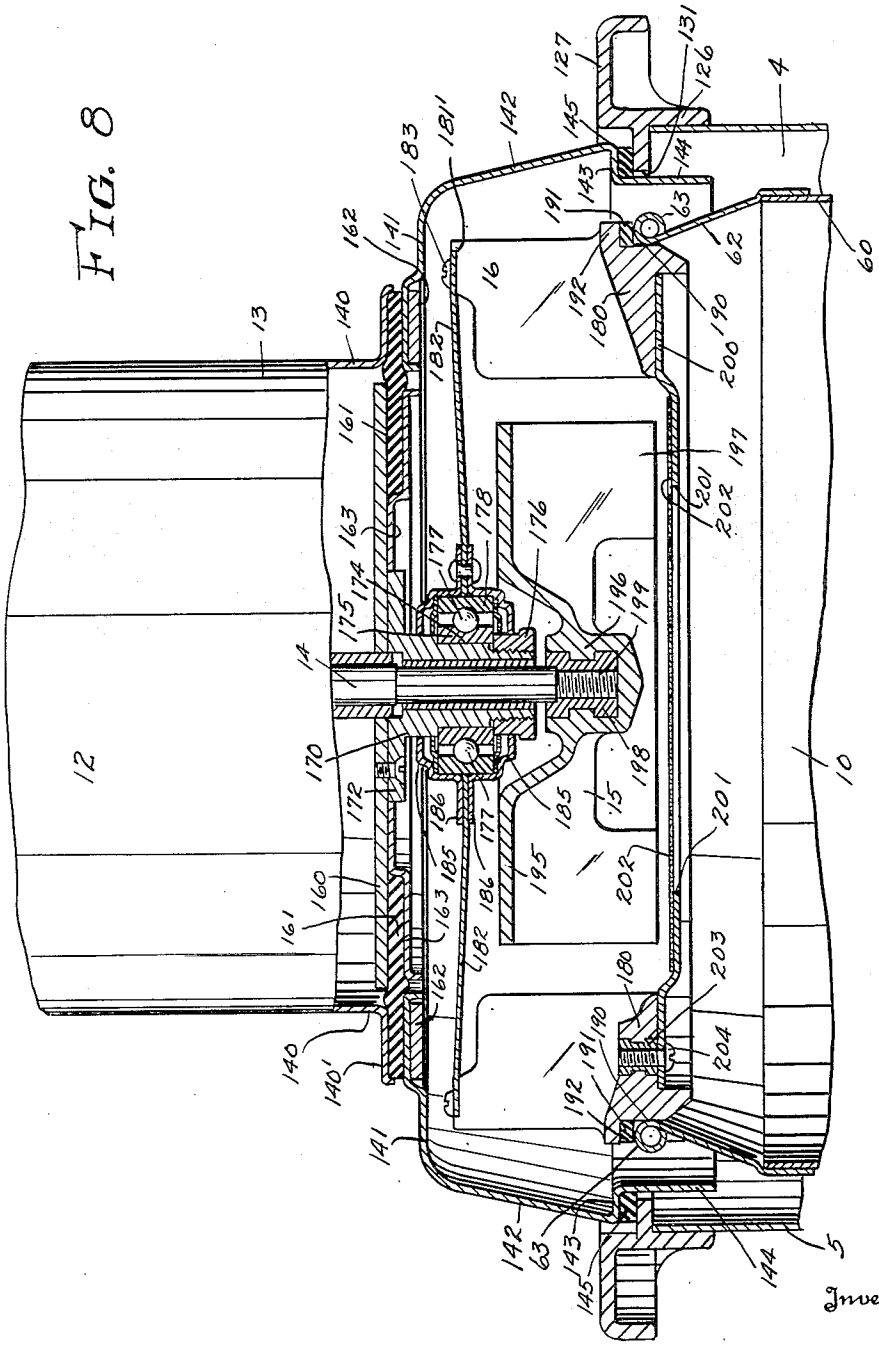
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WASHING APPARATUS

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FIG. 8




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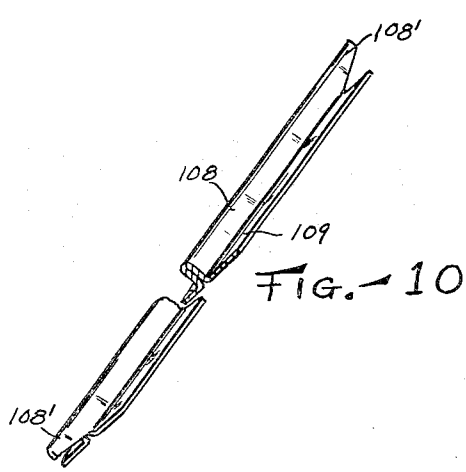



FIG. 10




FIG. 9

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# UNITED STATES PATENT OFFICE

1,955,403

## WASHING APPARATUS

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Application October 8, 1930, Serial No. 487,189

13 Claims. (Cl. 68—15)

This invention relates to cleansing and drying mechanism, particularly to a portable dolly-operated clothes washer and centrifugal drier unit. A general object is to provide an improved and simplified portable washing and drying machine in which the washing and drying operations may be effected simultaneously, or separately if desired. Another object is to provide an improved method and apparatus for cleansing materials, such as clothes.

A further general object is to provide an efficient washing machine and drier combination, wherein the washing element and drying element are effectively arranged to be driven one from the other, whereby power may be applied to but one of these elements for effecting both washing and drying.

A further object is to provide an improved and efficient driving and supporting mechanism for a washing machine agitator or dolly. Still another object is to provide a simple and compact gearing mechanism for a washing and/or drying machine incorporating an efficient lubricating system which will operate for a comparatively great length of time without requiring any attention for service, etc.

Other specific objects include the provision of an improved and simplified power driving device for a washing and/or drying mechanism. A specific object is to provide an improved power unit and support for machines, such as washing machines, which will enable all the driving parts to be easily and quickly removed from the machine as a unit, to expose the container for clothes or other material, to thereby permit such materials to be easily and quickly placed in or removed from the machine for washing and/or drying and the machine quickly reconditioned for action after being supplied with such materials.

Other specific objects include the provision of a simple and effective support and driving device for a centrifugal drier or the like.

Further objects, novel features and relationships will be set out more clearly in the following description relating to the accompanying drawings, which show the preferred embodiments. The essential characteristics are summarized in the claims.

In the drawings, Fig. 1 is a substantially central vertical cross sectional view of the entire mechanism; F.g. 2 is a cross sectional detail view taken along the line 2—2 on Fig. 1; Fig. 3 is a sectional plan view taken substantially along the line 3—3 on Fig. 1; Fig. 4 is a detail sectional bottom plan view through a portion of the driving mechanism, the section being taken substantially along the line 4—4 on Fig. 1; Fig. 5 is a detail sectional view taken substantially along the line 5—5 on Fig. 1; Fig. 6 is a bottom sectional plan view of the base and the driving mechanism between the drier and washing elements as indicated by the line 6—6 on Fig. 1; Fig. 7 is a fragmentary sectional view similar to Fig. 1 but showing the power driving unit removed from the machine; Fig. 8 is an enlarged fragmentary central vertical cross sectional view of the detachable power unit; Fig. 9 is an enlarged fragmentary sectional view of the dolly support and driving mechanism taken along the line 9—9 on Fig. 3, and Fig. 10 is a fragmentary perspective view of one of the dolly parts.

Referring again to the drawings, 1 indicates the base for the various mechanisms comprising the invention. This base supports, on its top side, a suitable casing 2 forming a washing chamber 3 and drying chamber 4, the chambers being separated by a transverse substantially vertical partition 5 dividing the casing 2. As shown in Fig. 3 particularly, the washing chamber is the larger of the two, and in this chamber and supported on a tubular post 6 is a dolly 7, the novel features of which will be hereinafter more fully described. The chamber 4 contains the drier drum 10 having suitably perforated or reticulated walls, the drier being supported on a shaft 11 extending from the base.

Detachably secured to the casing 2 is a power driving unit, indicated generally at 12, parts of which form a removable cover for the drier drum chamber 4. This unit includes a motor 13 having a depending drive shaft 14, the drive shaft carrying at its lower end, the driving element 15 of an air-couple or clutch, the detailed characteristics of which will be hereinafter more fully described. The driven element 16 of this air couple is propelled solely by air drag, both air coupling elements having suitable vanes disposed in fairly close proximity to each other, as shown in Fig. 8. A portion of the driven element 16 sets into the top of the drum to center and drive the latter.

The drier drum 10 is arranged to drive the agitator or dolly 7, the drum driving its supporting shaft 11 to which, at its lower end, is a pinion 20. The pinion 20 is part of a reduction gearing including also a relatively large spur gear 21 supported in the base, which gear 21 has secured thereto a pitman 22, the pitman being also connected with an arm 23 fast on the lower end of a suitable shaft 24 which, as will be hereinafter

more fully described, is drivingly coupled with the dolly.

The base is constructed and arranged to form a substantial support for the drier and dolly mechanisms generally described above, and also to form a sealed oil casing and housing for the reduction gearing and pitman mechanism. As shown, there is an outer pressed metal base forming shell having substantially vertical but inwardly inclined walls at 30 and a horizontal wall at 31 extending inwardly a short distance from the substantially vertical walls, the inner margins of the top wall being flanged downwardly as at 32. The walls 30 may be flanged outwardly at their bottom margins and reinforced by a suitable doubled strip of sheet metal indicated at 30' forming a finishing bead. Seated in the opening formed by the inner marginal flanges 32 of the base member above described, is a sheet metal oil casing member having vertical walls at 33 and a bottom wall at 34. The walls 33 are flanged outwardly at 35 to overlie the margins of the horizontal portions 31 as a vertical support. Surmounting the base and oil casing members just described, is a relatively stiff, substantially horizontal plate 40, the marginal edges of which lie above the superimposed parts of the flanges 35 and the wall 31. The casing and base members may be secured together as by suitable screws 36, there being a sealing gasket of suitable material at 37, clamped between the outer edges of the plate 40 and the flanges 35 to prevent leakage of oil from the casing.

The supports for the shafts 11 and 24 and associated parts, which respectively carry the drier drum and drive the dolly will now be described. The main supports comprise, as shown, suitable castings and tubular bearing members rigidly supported on the top plate 40.

For supporting the shaft 11, there is a tubular bracket 45, through which the shaft 11 extends, this casting having an outwardly extending flange 46 intermediately of its ends, resting on and secured to the plate 40, the plate having a suitable opening 40' closely receiving an annular shoulder 47 on the casting to hold the casting against lateral displacement. The shaft 11 is shown as threaded at its lower end to receive the pinion 20, which may be held on the shaft by a suitable nut 48. Downward thrust on the shaft 11 is arranged to be taken by a generally U-shaped strap member, shown in detail in Fig. 2 at 49, which strap has oppositely extending top portions underlying the plate 40 and the flanges 46 of the casting. To decrease friction, a suitable ball 53 may be interposed between the strap 49 and the end of the shaft, both these last mentioned elements being suitably recessed to retain the ball in place. It is desirable to isolate the casting 45 from water within the chamber 4, and for this purpose the casting may be covered by a protecting cap 55 which, as shown, closely embraces the shaft at its upper end and above the casting 45, and which is flanged outwardly as at 56 at its lower end, the flanges lying between a suitable attaching ring 51 and an annular gasket 57, which latter is interposed between the ring and the bottom of the casing.

Two sets of securing screws are preferably employed to hold the overlying parts just described rigidly together. As shown, there are screws 50 which pass from and through the attaching ring 51 to the lowermost member to be secured, namely the strap 49, as shown in Fig. 2, and the plate 40, as shown in Fig. 1. Additional, shorter, screws 50' (see Fig. 1, one being shown), merely hold the casting 45 onto the plate 40.

The casting provides spaced running fit bearing portions for the shaft 11, these being separated by the cored recess 45' into which extends an oil wick 45'', the wick passing through a suitable hole (not shown) formed in the casting 45 to allow the wick to extend to the sump provided by the oil casing 33—34.

The preferred construction of the drying drum 10 is as follows. The main body member 60 of the drum may comprise simply a single piece of sheet metal suitably perforated at 61 and curled up and joined in any suitable way into a cylinder. At the top, the member 60 is reinforced by an annular sheet metal rim member 62 which, as shown, is frusto-conical and open at the top. The rim may be curled over as at 63 for engagement with the driving portion of the driven element 16 of the air couple.

The bottom of the drum, as shown, is formed of a sheet metal disc 65, flanged at 66, for attachment to the cylinder 60. The disc has a raised central substantially cylindrical portion 67 depressed as at 68 forming an annular rib 68' which is uppermost. The depressed portion 68 forms one element of the safety "slip" coupling 17, provided mainly to avoid damage to the machine in the event that the dolly is abruptly stopped, as by becoming jammed by too large or heavy a load. The other parts comprise a centrally perforated metal cup 70 fast on the shaft, the upstanding rim 70' of which confines a friction disc 71 of suitable material, such as fiber or cork for example. The rib 68' of the disc 68 may be engaged by a spring metal disc 73 pressed downwardly by a suitable nut 74 threaded to the top of the shaft 11 to yieldingly force the slip coupling parts toward each other and thereby, under normal conditions, drivingly couple the drum to the shaft 11.

The supporting arrangement for the agitator or dolly and its driving shaft is as follows: Seated on the top side of the plate 40 is a flanged tubular sheet metal member 80, the flanges lying between the bottom of the casing 2 and the plate. The tubular member 80 has its smallest portion 81 embracing the bottom end of a substantially cylindrical hollow post, heretofore referred to as 6. The post and member 80 may be secured together in any suitable way as by welding or soldering. The shaft 24 extends for the most part, freely through the tubular post 6 but may, of course, have any suitable guiding bearing arrangements within it. As shown, there is a bushing bearing at 82 secured in the end of the post as by solder for example, and in which the shaft 24 has a running fit. The shaft is vertically supported and guided at its lower end by a bushing bearing 85 seated in a casting 86 which is flanged as at 87 to underlie the plate 40 at a suitable opening therein, in which the casting is shouldered as at 87'. The shaft is reduced as at 24' to provide a shoulder against the top of the bushing 85, and the pitman arm 23 may be suitably keyed to this reduced portion of the shaft, as at 88 and secured by a suitable stud 89.

For detachably securing the dolly 7 to the shaft, the dolly may have at its upper end a socket member 90 having a sliding key connection at 91 with the upper end of the shaft 24, permitting the dolly to be easily slipped off its driving shaft and removed from the casing 3.

The manner in which the various parts 80, 86, etc. are secured to each other and to the support-

ing plate 40 is substantially the same as that fully described above with relation to the bracket 45 and associated parts, hence this needs no detailed description.

The preferred construction of the dolly is, in detail, as follows: The central supporting body of the dolly comprises a metal tube 94 which lies in generally spaced embracing relation to the upstanding tube 6, except that, at the lower end of the tube 94, the tube bears on and is guidingly supported by the exterior cylindrical surface of the reduced portion 81 of the hollow bracket 80, previously described. Lateral support for the upper end of the tube 94 is afforded by reason of the socket member 90, which may, for example, be soldered or welded into the upper end of the tube 94 so as to be rigid therewith. The tube 94, it will be seen, is, by the arrangement above described, easily removable from the fixed tube 6, this also affording a suitable means for disconnecting the dolly from its driving shaft 24 when desired. Moreover, the entrance of water into the interior of the tube 6 is effectively prevented at all times.

The dolly or agitator blades are preferably formed of molded rubber or other similar substance, indicated at 100. It is not entirely essential that this substance be resilient and yielding, though this is preferred. I may use such a substance as a phenol condensation product instead.

The blades are individually secured in fixed position, but detachable for repairs and replacement on the tube 94. As shown in Figs. 3 and 9 particularly, each blade has a generally crotch-like base at 101, fitting the tube 94, and an outstanding flexible arm at 102 corrugated, preferably vertically, at its opposite sides at 103 for rubbing action on the materials to be cleansed. Within the crotch-like bases and extending from the top to the bottom of the blades, preferably molded in place, are metallic reinforcing strips 105. These reinforce strips extend into reduced end portions of the blades at the top and bottom, as at 105', to form elements for rigidly associating the blades with the tube. The reinforcing members also have openings at 106 receiving the rubber or other material when molded onto the strips to more firmly hold this material. Adjacent the tube 94, the strips 105 have key formations 107 arranged to enter longitudinally spaced aligned openings or slots in the tube substantially fitting the keys.

As a further means for securely holding the blades in place on the tube, I provide attaching strips 108, the form of which is best shown in Fig. 10. This figure shows a longitudinally folded sheet metal body having oppositely directed flanges at 109 and end extensions 108' lying beyond the flanges at both ends. The doubled edge of each strip 108 rests against the tube between the adjacent portions of the base members 101 of each two adjacent blades, the flanges 109 overlying the margins of each base 101, as is apparent from Fig. 3. It will be seen that the dolly members above described may be easily assembled onto the tube and held in place by any suitable arrangement embracing the upper and lower ends of the reinforcing strips 105 and the attaching members 108. As shown, there is a ring 109 having a diverging upstanding annular flange embracing the lower ends 105' and 108' of the reinforcing members and strips respectively, as well as the reduced end portions of the blade material 100. This flanged ring 105 may be secured to the tube 94 in any suitable manner as by welding or soldering the ring to the tube. The upper projecting ends, 105' and 108', and the end portions of the blade material, are likewise embraced by depending flanges on a suitable cap 110 which is threaded as at 111 to the socket member 90. It will be seen that to assemble the blades onto the tube, the lower exposed ends of the reinforcing strips 105 and attaching members 108 may be first seated in place in the flanged ring 109 and the upper ends of the strips and blades brought together onto the tube, and held as by hand, after which the cap 110 may be screwed onto the socket member 90 holding the assembled parts securely in place.

The active portions of the blades being, as previously mentioned, vertically corrugated, these act on the materials being cleansed to forcibly rub the materials while the rapid oscillation of the blades causes the materials to be thrown to and fro with considerable force. A very desirable washing action is afforded by reason of the resilient character of the blades, when made of soft rubber, for example, this being a slapping action which has been found to wash the materials very thoroughly, assisted, of course, by the rubbing action of the corrugations.

Referring now to the top of the casing 2, it will be seen that the sheet metal walls are rigidly braced and surmounted by an open top frame 125, preferably a single casting, arranged to be rigidly associated with the casing walls as by virtue of depending flanges 126, continuously embracing the marginal edges of the casing walls, as suggested in Fig. 1. The frame extends outwardly as at 127 to provide suitable handholds for moving the machine from place to place, as desired. Suitable openings at 130 and 131 lead through the frame 125 into the interior spaces or chambers 3 and 4 respectively. These openings should, of course, be normally covered during the operation of the machine. The opening 130 has a suitable sheet metal cover at 132, and the other opening 131 is effectively closed by sheet metal housing and supporting members forming parts of the detachable power unit 12, previously described in a general way. This power unit and associated parts will now be described in detail.

Referring to Figs. 1 and 8, it will be seen that the motor casing 140 surmounts a separate sheet metal annular shell 141 having generally conical side walls 142 which terminate in a horizontal shoulder formation at 143, extending beyond which, toward the drum, is a substantially cylindrical rim flange 144 arranged to enter the opening 131 a considerable distance.

Beneath the shoulder formation 143 is a suitable resilient ring 145 of material, such as rubber, forming the actual support for the shell 141. The shell has suitable sheet metal bracket formations at 148 at its opposite sides which extend upwardly over the top of the shell, opposite end portions of each of these bracket formations being bent up as at 150 to support suitable handles 151 by which the power unit may be removed and easily handled. The bracket formations 148, further, extend downwardly and then outwardly at 152 to form circumferentially slotted ears, the nature of the slots being shown at 153, Fig. 4. The ears 152 are arranged to underlie suitable headed securing members when the power unit is turned, as will be obvious from Fig. 4, the headed members being secured to the frame 125, as shown in Fig. 1. One member, 155, may comprise simply a screw with a suitable head for

engaging the top side of one of the ears and the other member may comprise a stud 156 with a releasable head 157 for engaging the top side of the opposite ear. This latter head and stud may be formed in accordance with Fig. 5, wherein it will be seen that the head is hollow and has a bottom wall extending inwardly at 158 to slide on the smooth portion 159 of the stud, the stud carrying a nut 160 between which and the wall 158 is a compression spring 161, arranged to force the head 157 down onto the ear 152 beneath it. This releasable head is provided simply to prevent accidental removal of the power unit, and to allow the unit to be easily turned to detach and remove it when desired.

To provide a suitable resilient support for the motor, not shown but located in the casing 140, the motor has a substantially flat horizontal sheet metal base plate 160, to which, it may be assumed, the motor is attached in any suitable manner. Between an outstanding flange 140' and the uppermost portion of the shell 141, there is a substantially flat annular yielding support 161 for the motor base plate. This yielding support is clamped between a metal ring 162 and the flange 140', as by means of any suitable arrangement of bolts or like devices (not shown), the uppermost portion of the shell 141 lying between the ring 162 and the yielding support. Beneath the base plate, there is provided an annular sheet metal disc 163 which at its outer margin is depressed so that the superimposed and spaced portions of the member 163 and plate 160 hold the inner marginal edges of the yielding support between them.

Below the plate 160 and attached thereto is a hollow bearing bracket 170 for the motor shaft 14, the bracket being flanged as at 172 for attachment to the underside of the base plate 160 and having a reduced neck at 174. The neck forms a shoulder for an inner bearing race member 175, held on as by a suitable nut 176. This bearing race member is part of an ordinary annular bearing, including balls 177 and an outer race member 178, which latter carries the outer or driven element 16 of the air-couple, the preferred arrangement of which will now be described.

The air-couple member 16 comprises an annular base or body 180, formed preferably of a phenol condensation product or like comparatively light but strong substance adapted to be molded or cast. This base 180 has upstanding vanes 181, preferably arranged as shown in Fig. 4 in cooperative relation to vanes on the driving element 15 of the air-couple. The vanes 181 at the top are slightly recessed as at 181' to receive a sheet metal disc 182 preferably of spring steel which suspends the element 16 from the outer bearing race member 178, above described. The disc is set into the recess 181' and held in any suitable manner as by a series of screws 183 entering openings in the disc and the various vanes or blades 181. To secure the disc 182 to the bearing race member 178, I propose to provide substantially complementary sheet metal members 185 having superimposed flanges at 186 riveted or otherwise suitably secured to the disc 182 and formed to embrace the bearing elements and lie close to the bearing bracket 170 at their inner marginal edges. Suitable means, such as felt packing, may be interposed between the members 185 and the bearing parts to retain suitable lubricating grease in the bearing, and protect the bearing parts from moisture.

A suitable drum driving surface may be formed at 190 on the body portion 180 of the driven air-couple element 16 which, in the event this body is formed of a phenol condensation product, is sufficient for frictional contact with the interior of the rim 62 of the drum, to drive the latter. However, I may also provide a rubber ring 191 retained on the surface 190 against a shoulder 192 on the body in any suitable way. Such rubber ring forms an abutment between the body and the bead 63 of the drum, by reason of which, when the power unit is secured in place, the spring disc 182 is sprung slightly upwardly from its normal position, thereby securing a firm driving contact between the air-couple element 16 and the drum.

The preferred construction of the fan or driving element 15 of the air-couple is obvious from Figs. 4 and 8, but it may be explained that this fan may comprise substantially solid disc and hub formations 195 and 196 respectively, which are integral with the fan blades 197. The fan, in case this is also made of a phenol condensation product or similar substance, may have a metallic ferrule 198 embedded in it for suitable threaded attachment at 199 with the motor shaft.

The fan 15, it will be seen, gets its air from within the drum through a cover plate or ring 200 on the bottom of the body 180 of the element 16, which plate is centrally apertured at 201, the aperture being covered by a reticulated guard 202, such, for example, as a metal screen disc, suitably soldered or attached to the plate 200. For attaching the plate to the body member 180, suitable ferrules may be embedded as at 203 into this body to receive screws 204, with their heads underhanging the cover plate.

From the above description, it will be seen that I have provided a number of highly efficient and advantageously arranged mechanisms forming a strikingly efficient portable washing and drying unit. The advantages of the various mechanisms forming this unit have been previously set forth, but the following may be noted with respect to the mechanism as a whole.

The washing chamber is easily charged with material to be cleaned through the frame opening 130 and the casing filled with an adequate quantity of water or other cleansing liquid and a suitable detergent if desired for the materials to be cleansed, and the washing operation started simply by energizing the motor, assuming the power unit is in place, as shown. Motor and driving fan speed is 9000 R. P. M.; driven fan and dryer speed is 900 R. P. M. Assuming the motor is of adequate capacity and operates say with a rotational speed of approximately 9000 R. P. M., the dolly will be operated at about 90 oscillations per minute, thoroughly agitating the clothes as well as imparting thereto a rubbing and slapping action by virtue of the corrugated rubber blades above described. The time required for the washing operation, of course, varies. After the washing operation is completed, the dolly may be removed simply by slipping the same over the stationary tube 6 which prevents the cleansing liquid from running down into the gear housing and oil casing at all times. The materials being cleansed may now be taken out and placed in the centrifugal drying drum, the power unit being first, of course, removed. The power unit may now be replaced in the position shown in Fig. 1 and started, and by virtue of the air couple connection, the drum will now be rotated at approximately 900 R. P. M., resulting

in quickly driving most of the water therefrom.

An important advantage of the arrangement is that washing and drying may be carried out simultaneously, that is to say, the washing operation need not be held up pending completion of the drying operation and vice versa, since the washer space 3 may be recharged simultaneously with placing the washed and rinsed materials in the drying drum. Naturally, with the speed of rotation of the drum slowed down by the active operation of the dolly, the drying operation will take considerably longer than when the drum is allowed to rotate freely, with the dolly disconnected or removed. However, it will be found that, assuming a normal washing period, the materials in the drum will be ready for hanging up to fully dry when the washing operation is completed.

I claim:

1. In a machine of the class described, a movable washing element, a movable drying element, a casing having a separate compartment for each of said elements, separate removable covers for said compartments, a power operated mechanism carried by one of said covers and arranged to engage the upper end of the element in the compartment covered by said cover, each element being provided with a connecting member extending through the bottoms of their respective compartments, and a motion transmitting means connecting both of said connecting members.

2. In a machine of the class described, a movable washing element, a drying element including a vertically extending hollow body open at its top, a casing for said drying element, a power operated mechanism removably connected to the upper edges of the casing and drivingly connected to drive and form a cover for said hollow body, and a movement transmitting means connecting the bottom of said hollow body to the washing element to cause the washing element to be driven through the medium of the walls of said hollow body.

3. In a machine of the class described a washing element and a rotatably mounted drying element, casings for said elements, said drying element comprising a vertically extending cylinder closed at its base and open at its top, a removable cover for the dryer casing, a power operated unit including a driven member mounted on said cover, a resilient driving connection between said driven member and said power unit, said driven member being arranged to frictionally engage the upper edge of the cylinder when the cover is in position on the casing, means including a slip connection between the bottom of the cylinder and the washing element to cause the washing element to be driven through the body of the drying element when the latter is driven.

4. In a machine of the class described, a movable washing element, a drying element including a rotatable cylinder, separate casings for said elements, a removable cover for the casing of the drying element, a motor mounted on the upper surface of said cover, a power transmitting device including an air couple carried by the cover and arranged to drivingly cooperate with an upper surface of the drying element when the cover is in position on the casing, and a power transmitting unit connecting a lower face of the cylinder with the washing element to drive the washing element through the medium of the walls of the cylinder.

5. In a machine of the class described, a rotatably mounted centrifugal dryer and an oscillatable washing agitator, a common divided casing for the dryer and the agitator, a hollow base for said casing, a motion translating mechanism located in said base and connecting the agitator with the dryer to cause the agitator to be oscillated by the dryer, power means detachably carried by the casing and serving as a cover therefor, said power means including a driving air couple member and a driven air couple member, said driven member being drivingly and detachably connected with an upper surface of the dryer, wherein the agitator will be driven at washing speed through the body of the dryer for washing, and wherein the dryer will operate at an increased speed for drying only.

6. In a machine of the class described, a washing mechanism of the dolly-operated type, including an oscillatable dolly, a rotatably mounted centrifugal dryer mechanism, a common support for said mechanisms, a power transmitting means including a motion translating device connecting said mechanisms, a casing for the dryer mechanism, a cover for said casing including a power operated means frictionally engaging the dryer whereby both of said mechanisms are driven from the same power means, and wherein the power means is connected to the dolly only through the medium of the body of the dryer.

7. In a washing mechanism having an agitator, a hollow cylindrical body, a casing having separate compartments for the agitator and said cylindrical body, separate removable covers for said compartments, a power mechanism carried by one of said covers and arranged to engage the upper end of the cylindrical body, said agitator and said body each being provided with a connecting member extending through the bottoms of their respective compartments, and a motion transmitting means connecting both of said connecting members.

8. In a machine of the class described having an agitator, a vertically extending hollow cylinder open at its top, a compartment for said cylinder, a power operated mechanism removably connected to the upper edges of the compartment and arranged to rotate and form a cover for said cylinder, motion transmitting means connecting the bottom of said cylinder to said agitator, whereby the agitator is driven through the medium of the walls of said cylinder body, and wherein the cylinder may be used as a centrifugal dryer when desired.

9. In a washing mechanism including an agitator, a vertically extending hollow cylinder closed at its base and open at its top, compartments for said agitator and said cylinder, a removable cover for the compartment containing the cylinder, a power operated unit mounted on said cover including a driven member and provided with a slip connection with said driven member, said driven member being arranged to frictionally engage the upper edge of the cylinder when the cover is in position on the compartment, means including a slip connection between the bottom of the cylinder and the agitator to cause the agitator to be driven through the body of the cylinder when the latter is driven.

10. In a machine of the class described an agitator, a rotatable hollow cylinder, separate compartments for the agitator and the cylinder, a cover for the compartment of the cylinder, a motor mounted on the upper surface of said cover, a power transmitting device including an air couple carried by the cover and arranged to drivingly cooperate with an upper surface of the

cylinder and rotate said cylinder when the cover is in position on the compartment, a power transmitting unit connecting a lower face of the cylinder with the agitator to drive the agitator through the medium of the cylinder, and wherein the cylinder may be used as a centrifugal drying element.

11. In a machine of the class described, an oscillatable washing agitator, a rotatably mounted hollow cylindrical body, a common divided casing for the dryer and the cylinder, a hollow base for said casing, a motion translating mechanism located in said base and connecting the agitator with the cylinder to cause the rotation of the cylinder to oscillate the agitator, power means detachably carried by the casing and serving as a cover therefor, said power means including a driving air couple member and a driven air couple member, said driven member being drivingly and detachably connected with an upper surface of the cylinder, whereby the agitator will be driven through the body of the cylinder for washing, and wherein the cylinder may be used as a centrifugal dryer when desired.

12. In a machine of the class described an oscillatable agitator, a hollow cylinder having perforations in its side walls, a common support for the cylinder and the agitator, a power transmitting device, including a motion translating device connecting the lower end of the cylinder and the agitator, a casing for the cylinder, a cover for said casing including a power means frictionally engaging the upper end of the cylinder to rotate said cylinder, and wherein said cylinder may be used as a centrifugal dryer element when desired.

13. In a machine of the class described, a washing element, including a movable agitator member, a movable hollow member closed at its bottom and open at its top, power means detachably connected to the edges of said hollow member adjacent its open end to move said hollow member, and a motion transmitting means connecting the closed end of said member to the agitator, whereby the agitator is driven through the walls of said hollow member.

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