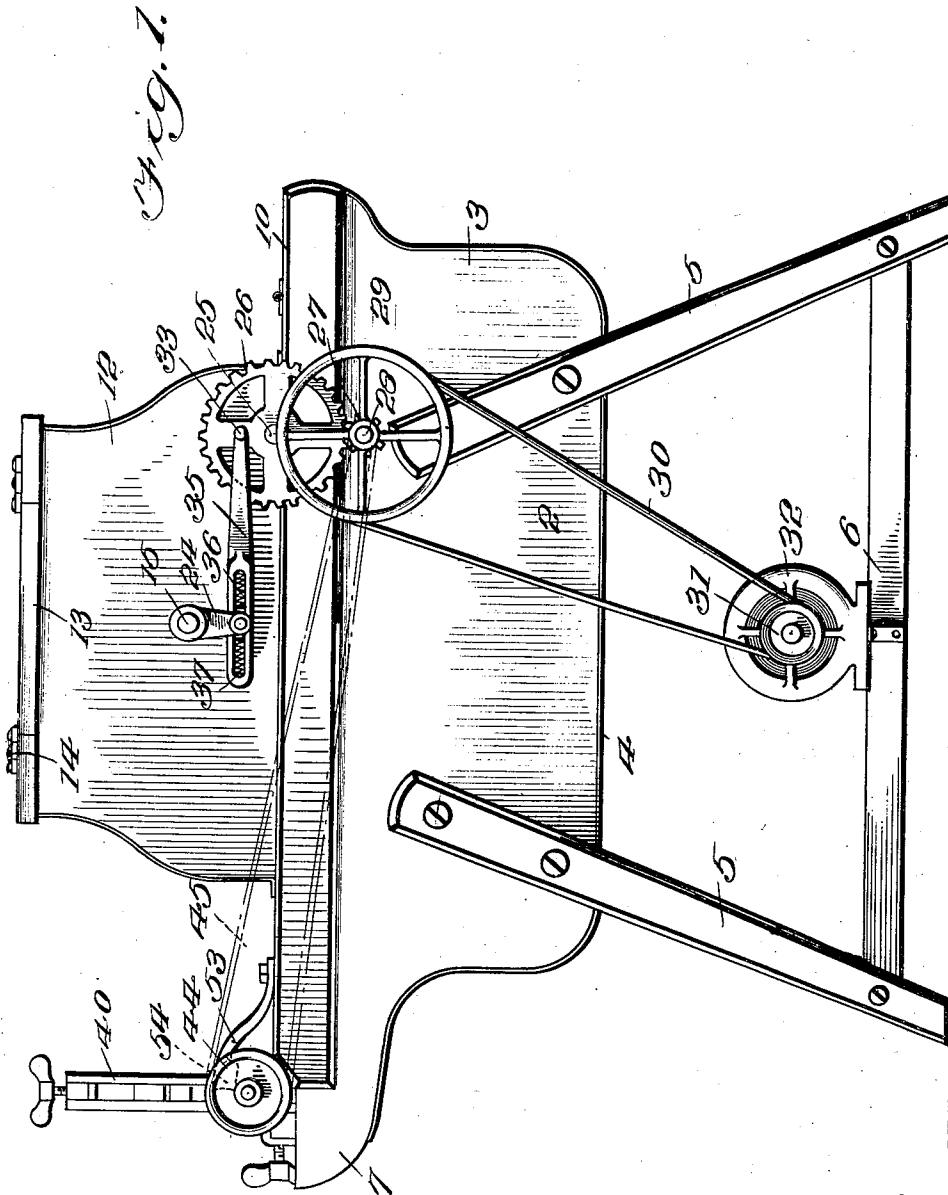


J. I. WOODRUFF.
GEARING FOR WASHING MACHINES.
APPLICATION FILED SEPT. 5, 1912.

1,076,089.

Patented Oct. 21, 1913.

3 SHEETS-SHEET 1.



J. I. Woodruff ^{Inventor}

Witnesses
Richard E. [unclear]

Joe [unclear]

By

Wm. A. [unclear]

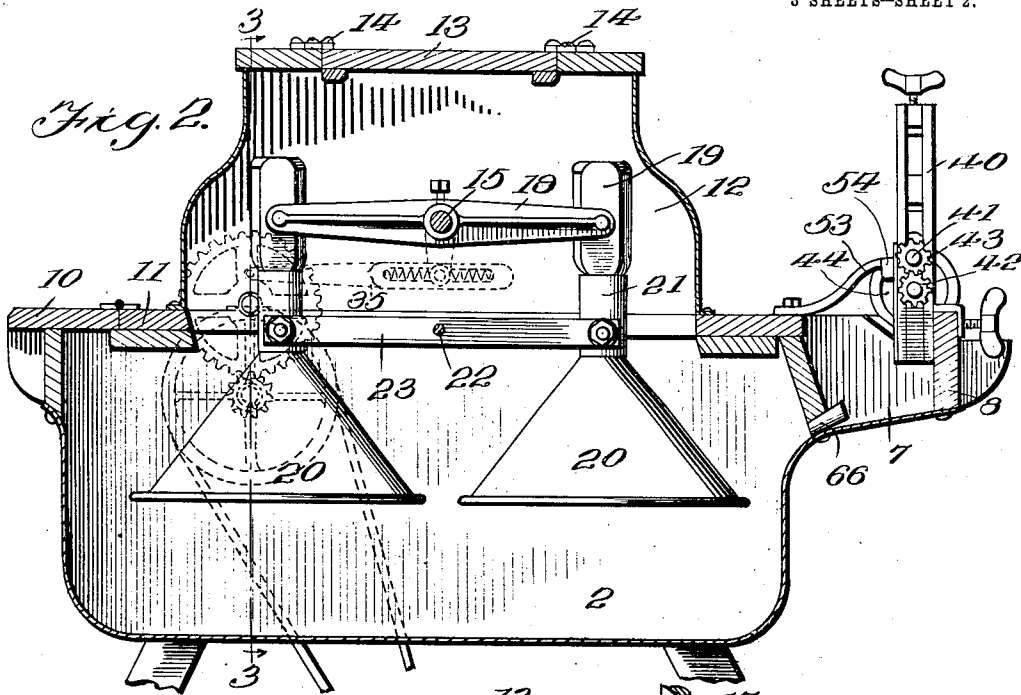
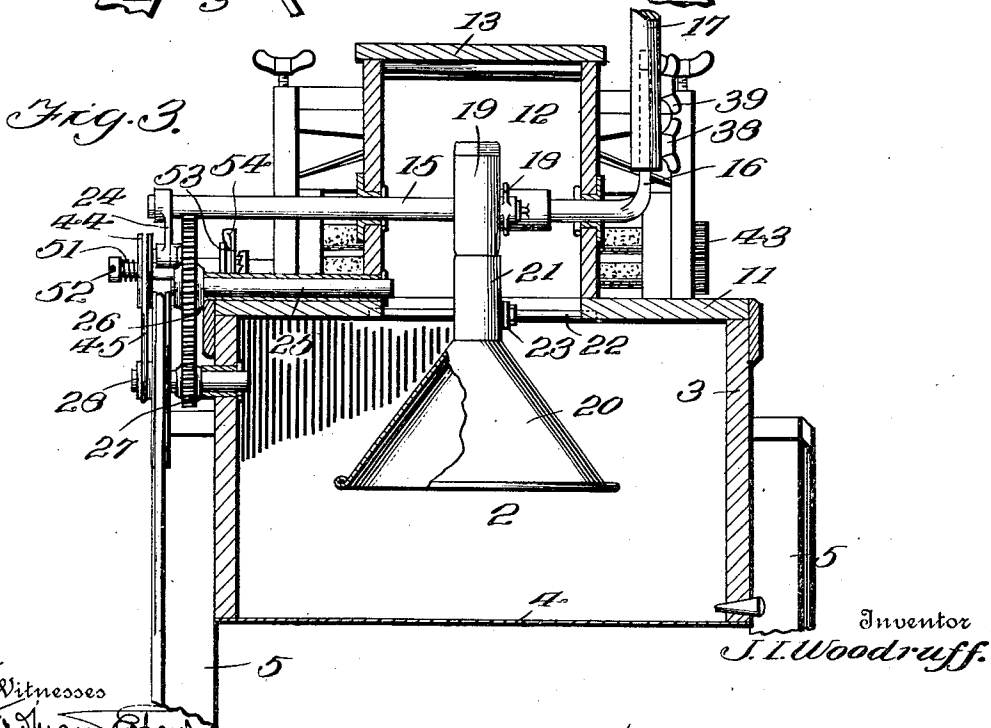
Attorneys.

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3 SHEETS—SHEET 2.



Inventor
J. I. Woodruff.

Witnesses
Wm. A. E. E. E.

Wm. A. E. E. E.

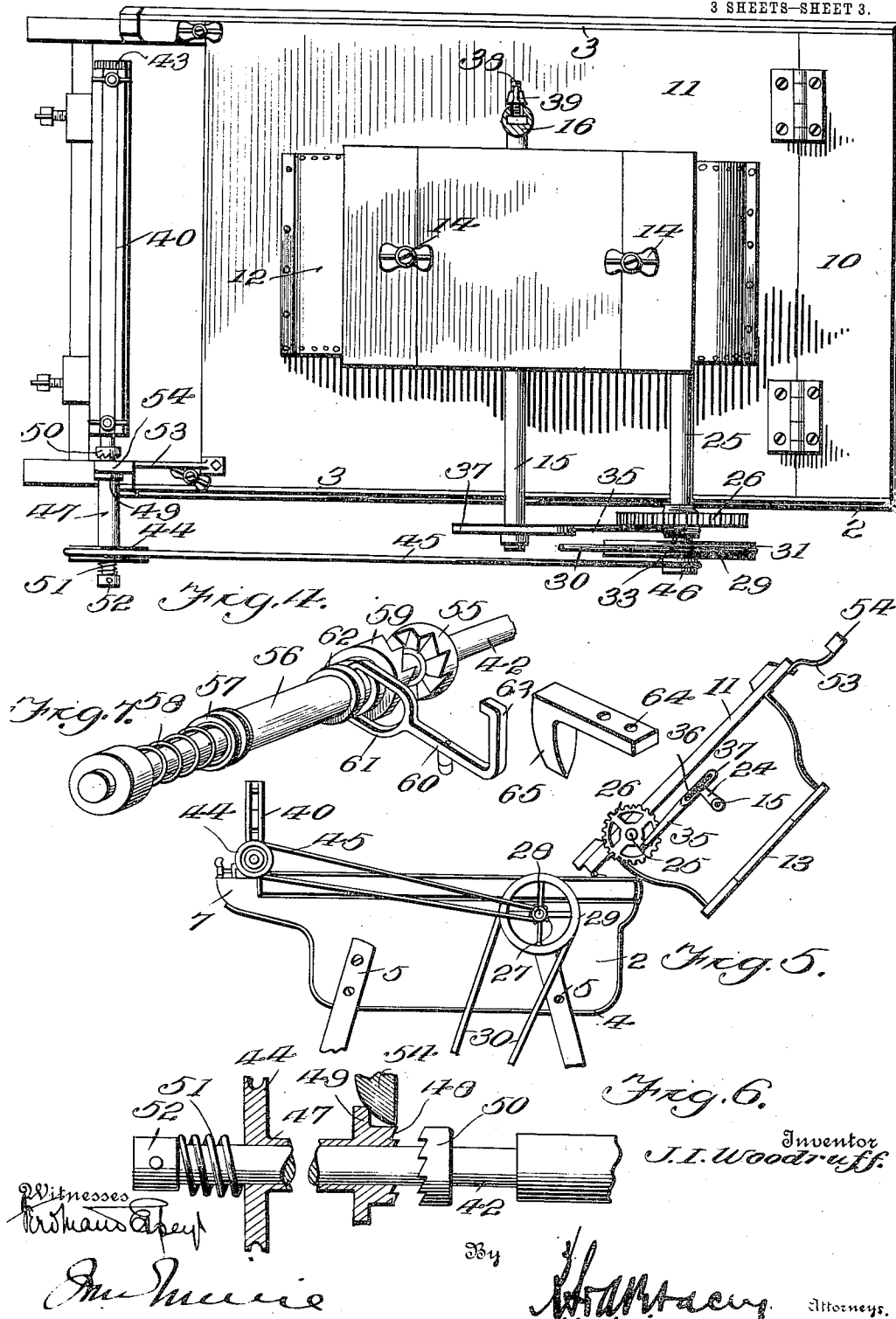
By

Wm. A. E. E. E.

Attorneys

1,076,089.

3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

JOHN I. WOODRUFF, OF SELINGSGROVE, PENNSYLVANIA.

GEARING FOR WASHING-MACHINES.

1,076,089.

Specification of Letters Patent.

Patented Oct. 21, 1913.

Application filed September 5, 1912. Serial No. 718,776.

To all whom it may concern:

Be it known that I, JOHN I. WOODRUFF, a citizen of the United States, residing at Selingsgrove, in the county of Snyder and State of Pennsylvania, have invented certain new and useful Improvements in Gearing for Washing-Machines, of which the following is a specification.

My invention relates to washing machines and particularly to machines of that type wherein a hollow pounder head reciprocates against the clothes to cause a suction there-through.

The primary object of my invention is the provision of a very simple, easily operated and effective washing machine of this type in which the mechanism is so arranged as to be easily cleaned and repaired and wherein the pounders and the mechanism for driving the pounders are so mounted that the lid of the machine may be raised so as to give unobstructed access to the interior of the machine.

A further object is to provide means whereby the wringer may be operated by the same mechanism as operates the pounders and in this connection to provide means whereby the gearing of the wringer may be thrown out of operative engagement with the driving mechanism when the lid is lowered so as to bring the pounders into action and thrown into operative engagement when the lid is raised.

A further object is to provide a mechanism of this type which may be operated either by hand or by a motor.

A still further object is to so connect the pounders with the driving mechanism by a yieldable connection so that the shock and jar of the pounders striking the clothes is reduced and so that the mechanism will not be broken by this shock or jar.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings wherein:

Figure 1 is a side elevation of a washing machine constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view thereof, the plungers being shown in elevation. Fig. 3 is a transverse section on the line 3-3 of Fig. 2. Fig. 4 is a plan view of the machine. Fig. 5 is a side elevation on a reduced scale showing the cover or lid of the washing machine open. Fig. 6 is a detail sectional view of the clutch mechanism

whereby the lower wringing roll is disengaged from operative connection with the driving mechanism when the lid is closed. Fig. 7 is a perspective detail view of another form of clutch actuating mechanism.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

The body of the washing machine consists of an approximately rectangular tub or receptacle designated 2 having wooden sides 3 and a sheet metal bottom 4 and which is supported upon legs 5 connected to a supporting frame 6.

As illustrated in Fig. 2, the receptacle 2 is elongated at one end as at 7, this elongated portion being braced by cross pieces 8 and 9, the cross piece 9 forming a partition separating the portion 7 from the main body of the receptacle. The frame 10 crosses the top of the receptacle and hingedly mounted upon this frame is a lid 11. Formed upon this lid is an upwardly extending dome 12, the top of which has a removable lid section 13 normally held in place by means of the buttons 14.

Passing transversely through the dome 12 and supported in any suitable manner on the walls thereof is a shaft 15, one end of which is upwardly extended as at 16 and adapted to be connected to a detachable handle 17. The other end of the shaft projects through the side wall of the dome and is connected to a driving mechanism as will be later stated. Mounted upon the shaft 15 at the middle thereof is a rocker arm 18, and pivotally connected to the ends of the rocker arm are the posts 19. The pounders 20 are hollow and the upper end of each pounder is formed with a socket 21 surrounding the lower end of the post 19 which is reduced for the purpose.

Passing transversely through the receptacle 2 near the upper edge of the same and preferably mounted in the portion 10 is a rod 22 and pivotally mounted upon this rod is a rocker arm 23 which extends parallel to the rocker arm 18 and which at its ends is pivoted to the sockets 21 of the pounders. These two rocker arms being arranged in parallel relation give parallel motion to the pounders and cause the same to remain vertical when moving up or down.

The shaft 15 as shown in Fig. 3 extends out through one side of the dome 12 and car-

ries upon it the downwardly extending drop arm 24. Mounted upon the lid is a shaft 25 which carries at its end a spur gear 26 adapted when the lid is closed to mesh with a pinion 27 mounted upon a shaft 28. Mounted on the shaft 28 is a band wheel 29 over which passes a band 30 which extends down to a driving pulley 31 mounted upon the shaft of a motor 32. A wrist pin 33 projects out from the spur gear wheel 26 and connected to this wrist pin and to the arm 24 of the rocker shaft 15 is a connecting rod 35. This rod is preferably slotted at its end as at 37 and carries a sliding block forming the wrist pin for the arm 24. Disposed within the slot on opposite sides of the sliding block are springs 36 which normally hold the block in the middle of the slot 37. The purpose of these springs 36 is to cushion the shock or jar given to the machine by the pounders striking the clothes and thus eliminate as much as possible vibration which would tend to rack the mechanism, and also eliminate as much as possible the noise of the machine.

It will be plain that the machine may be operated either by connecting it with the motor 31 or may be operated by the lever 17. The lever 17 is preferably detachably connected to the upturned end of the shaft 15 in any suitable manner but I have shown for the purpose the lever 17 as formed with a socket within which the upturned end of the shaft is received, the socket being formed with a longitudinal slot through which project the stud bolts 38 provided with the wing nuts 39. It will be seen that this construction permits the handle 17 to be readily set upon the upturned end of the shaft 15 and clamped thereon or as readily removed. It will also be seen that when the lid 11 is raised the gear wheel 26 will be moved out of engagement with the pinion 27.

It will be noted that in my construction the pounders are entirely housed and that the actuating mechanism therefore does not project through the upper portion of the dome mounted upon the lid but through the side of the dome and that the only part which projects through the side of the dome is the shaft. As a consequence of the pounders being entirely housed, the water within the tub will not be splashed out through any openings and furthermore the shaft 15 passing out through the side of the machine permits a relatively snug fit to be secured between the shaft and the bearing on which it is mounted so that no water can pass out through the opening for the shaft. At the same time it leaves the upper portion of the dome entirely unobstructed so that the lid 13 may be raised permitting an inspection of the contents of the tub. When the lid is closed, therefore, the agitating mechanism and the clothes are entirely inclosed

and neither steam nor water can escape while the clothes are being agitated. It will, of course, be obvious that upon an oscillation of the rocker 18, the conical pounders will be alternately reciprocated and that as the conical hollow pounders move downward they will force the water through the clothes but that as they move upward away from the clothes, they will suck the water through the clothes so that a most effective washing and cleansing action will be secured.

It is most desirable to provide means whereby the wringer may be actuated by the same driving mechanism as is used for actuating the agitators and it is necessary, of course, to provide means whereby the wringer will not be driven while the clothes are being washed and whereby the agitating mechanism will not be actuated while the wringing mechanism is being actuated or the lid opened. To this end I have provided a wringer designated 40 of any ordinary construction and provided with upper and lower wringer rollers mounted upon shafts 41 and 42, these shafts carrying intermeshing gears 43. One of these shafts, preferably the lower shaft 42, carries upon it a pulley 44 over which passes a band wheel 45 which in turn passes over a pulley 46 mounted upon the shaft 28. The shaft 42 as will be seen in Fig. 6 carries upon it a sleeve 47 upon which the pulley 44 is mounted or formed. This sleeve as illustrated in the embodiment shown in Fig. 6 is formed with a clutch face 48 at one end and is also formed with an annular shoulder or flange 49. Mounted upon the shaft 42 and rotating therewith is a clutch member 50 coacting with the clutch face 48. Urging the sleeve 47 into engagement with the clutch member 50 is a spring 51 disposed between the pulley 44 and a head 52. It will thus be seen that the clutches will normally be in engagement with each other and that therefore the shaft 42 will be driven by the pulley 44. When the lid is lowered, however, means is provided whereby the sleeve 47 shall be shifted so as to disengage the clutch faces 48 and 50, and as illustrated in Figs. 5 and 6 I have provided for this purpose a projecting arm 53 attached to the free edge of the lid 11, which arm carries upon it a wedge or cam 54. When the lid 11 is lowered to the position shown in Fig. 2, this wedge 54 is brought into wedging engagement with the shoulder 49 and forces the sleeve 47 laterally so as to disengage the clutch teeth 48 and the clutch member 50. Under these circumstances, of course the sleeve 47 rotates freely and the shaft 42 is not rotated. When, however, the lid is raised, the spring 51 forces the clutch members into engagement with each other and a rotation of the wringer rolls is accomplished. I do not wish to be limited to this construction how-

ever as it is obvious that a number of different forms of clutch actuating devices might be used for shifting the clutch members into or out of engagement with each other. In Fig. 7 I have shown the shaft 42 as being provided with the clutch member 55 and as having mounted upon it the sleeve 56 carrying the pulley 57 which is precisely the same as the pulley 44 previously referred to and constituting the driving pulley. A spring 58 forces the sleeve toward the clutch member 55 and this sleeve carries upon it the one wall of the receptacle is a shifting lever 60 having a yoke 61 at its inner end which engages in a collar 62 formed with the sleeve and the forward end of this lever is upwardly bent and laterally curved as at 63. Mounted upon the free end of the lid is an arm 64 provided with a downwardly extending portion 65 whose face is also laterally curved in a reverse direction to the face 63 so that as the lid is lowered the curved faces of the portions 65 and 63 will engage with each other and the lever will be shifted laterally, thus shifting the sleeve 56 in a direction to carry the clutch members 55 and 59 out of engagement with each other, the spring 58 forcing the clutch members into engagement with each other when the lid is lifted.

The wringer 40 is clamped upon the cross bar 8 and the compartment 7 below the wringer is connected by means of an opening 66 to the tub to permit the return of the water wrung from the clothes.

I have found in practice that my invention is extremely effective and that it thoroughly cleanses the clothes, that it is simple, does not readily get out of order and that the steam and hot water does not escape from the tub. Furthermore it is obvious that immediately upon the raising of the lid, the wringer will be connected to the driving mechanism so that it may be immediately used and this renders it possible to do a larger amount of work with this machine than where it is necessary to either manually connect the wringing mechanism with the motor or operate the wringing mechanism by hand. It will be noted that the shifting of the wringing mechanism into engagement with the motor is entirely automatic. There is no gearing to prevent ready access to the clothes when the lid is raised and no gearing with which the clothes can ordinarily come in contact. By my construction the greater part of the actuating mechanism is mounted upon the lid itself so that it is entirely turned out of the way when the lid is raised.

What I claim is:

1. A machine of the character described including a stationary support, a member hinged to the support, mechanism mounted upon the hinged member and movable there-

with toward and from the stationary support, a shaft mounted on the stationary support, driving mechanism for the last named shaft and for the mechanism mounted upon the hinged member, and means whereby the driving mechanism may be disconnected from the mechanism on the hinged member and connected to said shaft by the lifting of the hinged member and disconnected from the shaft but connected with the mechanism on the hinged member by the lowering of the hinged member.

2. A machine of the character described including a stationary support, a member hinged thereto, driven mechanism supported by the hinged member, driving mechanism therefor mounted upon the stationary support, a driven shaft mounted upon the stationary support, a pulley movable into and out of operative engagement with the shaft, means connecting said pulley with the driving mechanism, and means carried by the hinged member for shifting the pulley out of operative engagement with the shaft when the hinged member is lowered and into operative engagement therewith when the hinged member is raised.

3. In a machine of the character described, a stationary support, a member hinged thereto, driven mechanism carried by the hinged member, a motor, a driven shaft mounted upon the stationary support, driven mechanism for the mechanism carried on the hinged member and operatively connected thereto when the hinged member is closed against the stationary support, a pulley operatively connected to said shaft and operatively connected to the driving mechanism, clutch members, one of which is connected to the shaft and the other of which is connected to the pulley, and a cam carried by the hinged member and disengaging the clutch members when the hinged member is lowered but permitting the engagement of the clutch members when the hinged member is raised.

4. In a machine of the character described, a stationary support, a member hinged thereto, driven mechanism carried by said hinged member, a gear wheel mounted upon the hinged member and operatively connected to the driven mechanism, a shaft mounted upon the stationary support, a spur pinion on the shaft engageable with the gear wheel on the hinged member when the latter is closed but disengageable therefrom when the hinged member is moved away from the stationary support, a motor, means for actuating the shaft from the motor, a driven shaft mounted on the stationary support, a sleeve on the shaft, a pulley carried by the sleeve, clutch members, one slidable with said sleeve and the other fixed to the shaft, a spring normally holding the clutch members in engagement, a connec-

- tion between the first named shaft and the said pulley, and means carried by the free end of the hinged member engaging said sleeve when the hinged member is lowered toward the stationary member to force the clutch members out of engagement with each other but, when the hinged member is raised, permitting the clutch members to be forced into engagement with each other.
5. In a machine of the character described, a support, a transverse shaft supported thereon, a rocker arm mounted on the shaft, means connected to one end of the transverse shaft for oscillating the same, a motor detachably connected to said oscillating means, and a detachable handle operatively connected to the other end of the shaft.
6. A machine of the character described including a stationary support, a member hinged to the same, a transverse rock shaft carried upon said member, a gear wheel mounted upon the member, an operative connection between the gear wheel and the transverse shaft whereby oscillating motion may be transmitted to the transverse shaft, a gear wheel mounted upon the stationary support and engageable by the first named gear wheel when the hinged member is moved into a predetermined relation to the stationary support, and driving means for said second named gear wheel.
- In testimony whereof I affix my signature in presence of two witnesses.
- JOHN I. WOODRUFF. [L. s.]
- Witnesses:
A. M. G. KEERCER,
IRA A. SCHOCH.