

March 6, 1928.

1,661,356

W. V. BAKER

WASHING MACHINE

Filed Sept. 15, 1926

Fig. 1.

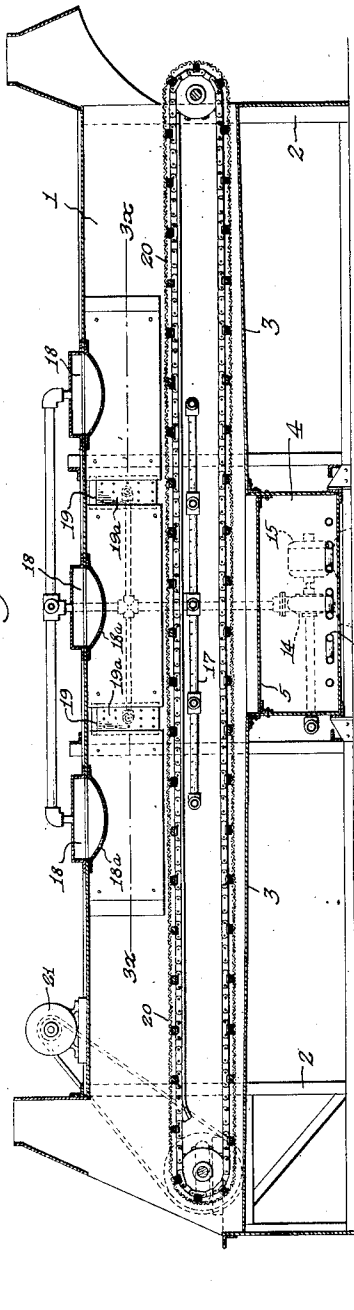


Fig. 3.

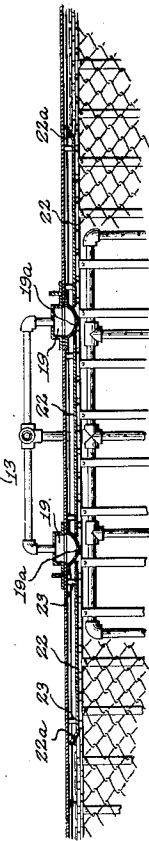
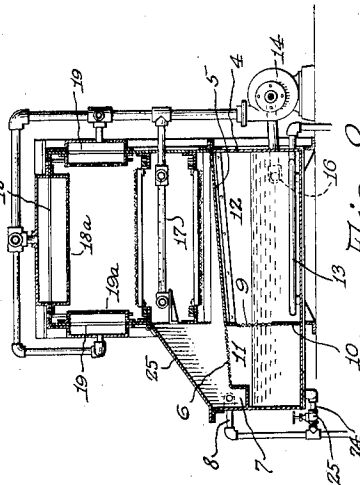


Fig. 2.



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WASHING MACHINE.

Application filed September 15, 1926. Serial No. 135,684.

This invention relates to washers such as are used in connection with the cleaning of metal plates and articles, especially after the processing of the same as in the case of pickling, in which case it is desired that the chemicals and foreign matter be removed by washing from the surface of the articles as is well understood in the art to which this invention appertains, and in the present case the object is to provide such a device which will be very efficient in its operation and which will admit of long continuous reuse of the washing fluid, usually hot water, without such undue contamination of the liquid as would render it unfit for use and also without the fouling or undue accumulation of foreign matter in the washer in a manner which would ordinarily call for frequent interruption of the operation of the washer for cleaning purposes.

The improved type of washer contemplated by this invention admits of the directing of quite powerful streams of water against the objects to be cleaned, so that the cleaning thereof is speedily effected, and also provides for a very effective distribution of the cleaning fluid over objects passing through the machine, and still further provides for an adequate circulation of cleaning fluid whereby it is utilized over and over again and screened or filtered as it is circulated.

Still further objects subsidiary to or resulting from the aforesaid objects or from the construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may provide an elongated open ended casing or body preferably of sheet metal through which extends a suitable conveyor such as an endless conveyor upon which sheet or other metal articles are carried through the machine, this conveyor being of an open nature whereby both the upper and lower surfaces of the articles may be subjected to streams of cleaning fluid as they pass through the device, and beneath the conveyor are arranged manifolds having upwardly directed jets for the cleaning of the underside of such articles, the top of the casing being provided with perforated manifolds through which water is also directed

against the upper surfaces of such articles, further manifolds being also provided in the sides of the casing to project lateral streams of cleaning fluid into the casing, all of the said jets and manifolds being connected with a pump which receives its supply from a chamber beneath the said casing, which chamber receives the discharge fluid from the said casing. Suitably disposed screens are provided to prevent scale or other foreign matter from the articles being cleaned, passing into said tank, and a trough or sump is so arranged with respect to one of the screens that it receives such foreign matter which may then be disposed of in any suitable manner. Means are also provided for the protection of the walls of the casing adjacent the manifolds against the injurious effect which the powerful streams of cleaning fluid may otherwise have on such walls.

All of which is more particularly described and ascertained hereinafter, by way of example, having reference to the accompanying drawing, in which—

Figure 1 is a longitudinal vertical section of a washer embodying the said invention;

Figure 2 is a transverse section of the same; and

Figure 3 is a fragmentary horizontal section taken on the line 3^x—3^x, Figure 1.

Similar characters of reference indicate similar parts in the several figures of the drawing.

1 is an open ended elongated casing or body which is usually constructed of sheet metal and is mounted on a frame structure 2, the base 3 of the said casing sloping somewhat from the ends thereof to a tank 4 disposed at or towards the center of the machine, so that fluid may drain from the casing into the said tank, and this tank is provided near its upper end with a preferably removable laterally inclined drain plate 5 extending towards one side of the machine and having provided as a continuation at the lower edge thereof a removable screen 6, the lower edge of which screen terminates at the mouth of a trough or sump 7 provided with an overflow pipe 8. Also at the lower edge of the drain-plate 5 is a downwardly extending vertical screen 9 which is connected to a wall 10 which with the said screen 9 forms a partition dividing the said tank into two chambers 11 and 12 as

shown in Figure 2, which together form a reservoir for a cleaning fluid such as hot water. For the heating of such fluid steam coils 13 are provided in the chamber 12.

14 indicates a pump driven by a motor 15 by means of which pump fluid is drawn from the chamber 11 through the connection 16 and is directed through pipes or jets 17 and manifolds 18 and 19 into the interior of the body of the washer, and upwardly, downwardly and laterally against articles which may be within the body of the said machine; and for the carrying of such articles through the machine an endless conveyor 20 is provided driven by a motor 21, which conveyor passes over the jets 17.

The manifolds 18 and 19 are indicated as being formed in the upper and side walls of the casing and having their jets in the form of arcuate perforated members 18^a and 19^a so designed as to offer a minimum of obstruction to articles passing through the machine whilst at the same time affording a side distribution of fluid within the casing.

In the washing of heavy plates or castings it is desirable that a quite powerful stream of fluid be utilized in order to secure efficient removal of foreign matter from the articles, and the force of such stream or streams may be such that it is liable to damage the walls of the casing in the immediate vicinity thereof, for which reason it is proposed to provide guards in the form of plates 22, spaced by spaces 23 from the interior side walls of the casing as will be seen in Figure 3 of the drawing. These guards also serve to protect the members 18^a of the manifolds 18 from injury by articles passing through the device, and the extreme ends of the said guards are preferably inclined as at 22^a to prevent their obstructing the passage of such articles through the machine.

It will be understood that as scale or other foreign matter is washed from articles passing through the machine, it is carried by the stream of discharge fluid to the drain-board 5 and thence washed over the screen 6 into the trough 7, the fluid itself passing through the screen into the chambers 11 and 12, the screen 9 tending to further screen out such foreign matter as may have passed through the first screen 6 and which might cover the heating coils 13 and prevent their proper heating of the cleaning fluid. A further and beneficial function of the screen 6 is to effect a separation of oil, washed from the articles by causing a foaming of such oil due to the movement of the cleaning fluid over the screen, this foam being projected by the velocity of the moving fluid into the trough 7.

24 is a drain connection provided with a valve 25 whereby sediment or sludge in the bed of the compartment 11 may be drained out from time to time as may be desirable,

and 26 is a hinged closure which may be raised to permit access to the drain-board 5, screen 6 or trough 7 for inspection or cleaning purposes or for the replacement or repair of screens.

The perforations in the manifolds may be of a countersunk nature as indicated in the drawing, to effect a spraying of the fluid from such perforations.

The described device lends itself especially to heavy duty use such as is required in many of the metal working industries and is capable of long continued operation without requiring frequent renewal of the cleaning fluid or interruption of operation for cleaning purposes, the said device being substantially of a self-clearing and filtering nature as will be fully apparent without further description. The device, may, however, be readily adapted to other washing purposes such as dish washing.

This invention may be developed within the scope of the following claims without departing from the essential features of the said invention, and it is desired that the specification and drawings be read as merely illustrative and not in a limiting sense, except as necessitated by the prior art.

What I claim is:—

1. In a washer, an elongated casing, a conveyor mounted in said casing for the passage of articles therethrough, a cleaning fluid reservoir formed beneath and communicating with said casing, means for directing fluid towards said conveyor, a sloping drain plate mounted at the top of said reservoir, and a trough formed at the lower end of said drain plate for receiving foreign matter washed down the plate.

2. In a washer, an elongated casing, a conveyor mounted in said casing for the passage of articles therethrough, a cleaning fluid reservoir formed beneath and communicating with said casing, means for directing fluid towards said conveyor, a screen mounted above said reservoir, a sloping drain plate disposed beneath said screen, and a trough formed at the lower edge of said drain plate for receiving foreign matter washed from said screen and down the plate.

3. In a washer, an elongated casing, a conveyor mounted in said casing for the passage of articles therethrough, a cleaning fluid reservoir formed beneath and communicating with said casing, means for directing fluid towards said conveyor, a sloping drain plate mounted at the top of said reservoir and adapted to shed into the reservoir, and a screen provided within said reservoir and dividing the same into two communicating chambers, said screen extending upwardly as far as said drain plate.

4. In a washer, an elongated casing, a conveyor mounted in said casing for the pas-

sage of articles therethrough, a cleaning fluid reservoir formed beneath and communicating with said casing, means for directing fluid towards said conveyor and adapted to shed into the reservoir, a sloping drain plate mounted at the top of said reservoir, and a partition in said reservoir having its lower portion closed and the upper portion in the form of a screen, thereby dividing the reservoir into two chambers, said screen extending upwardly as far as said drain plate. 10

In testimony whereof I affix my signature.

WEDWORTH V. BAKER.