

June 21, 1932.

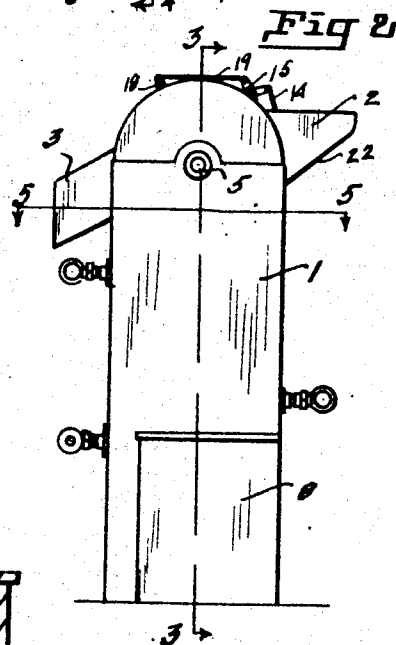
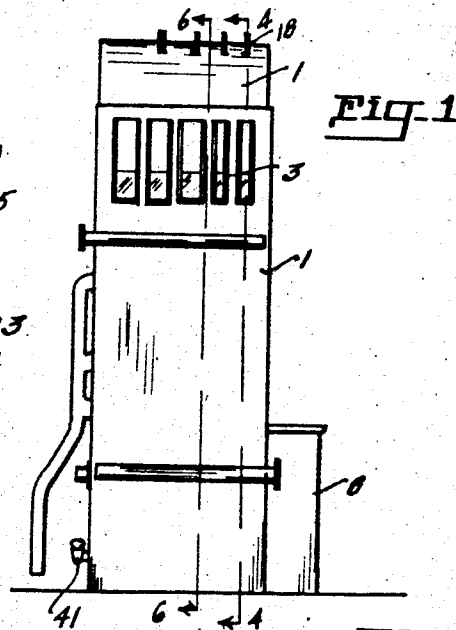
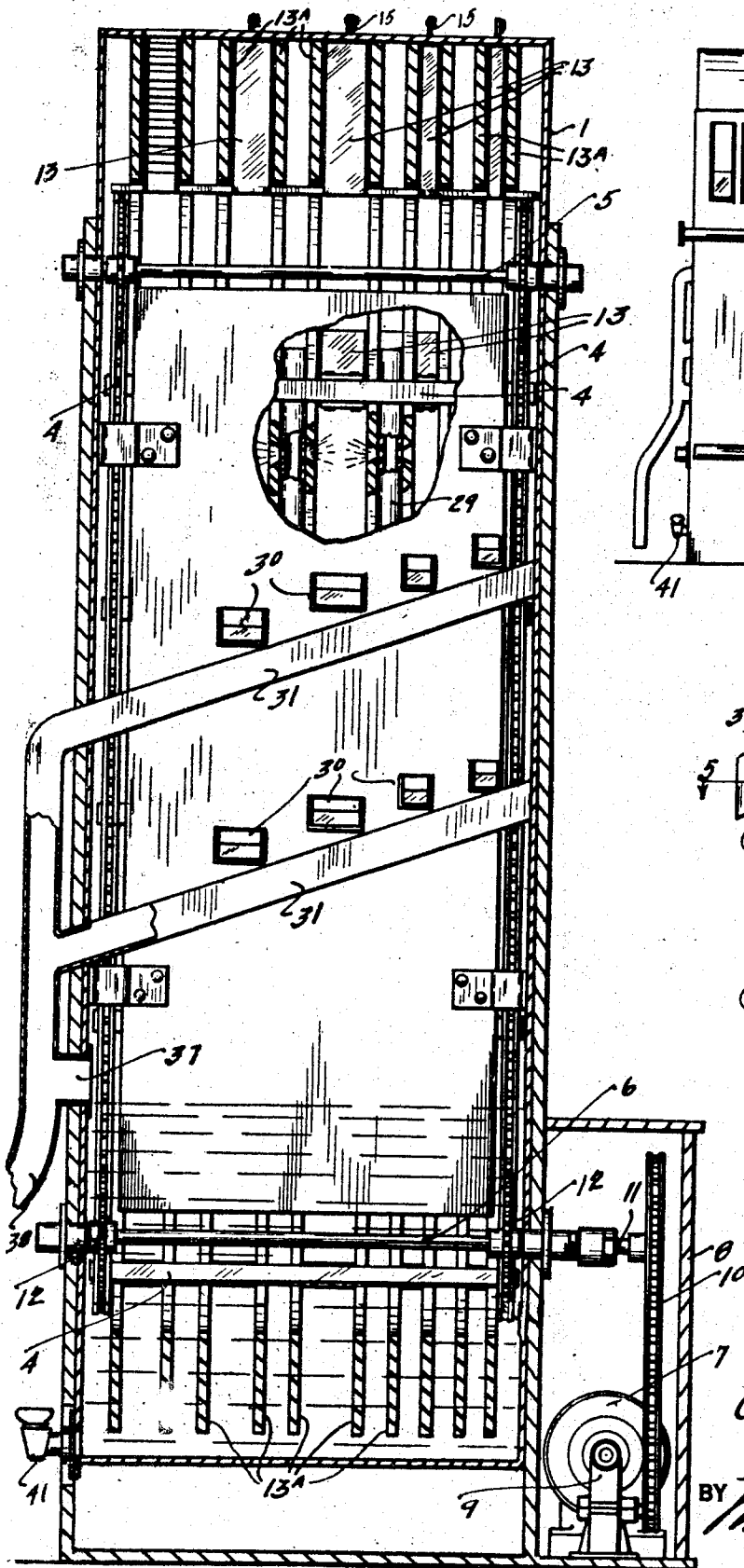
C. G. HALL

1,864,064

DISHWASHING MACHINE

Filed Feb. 3, 1930

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

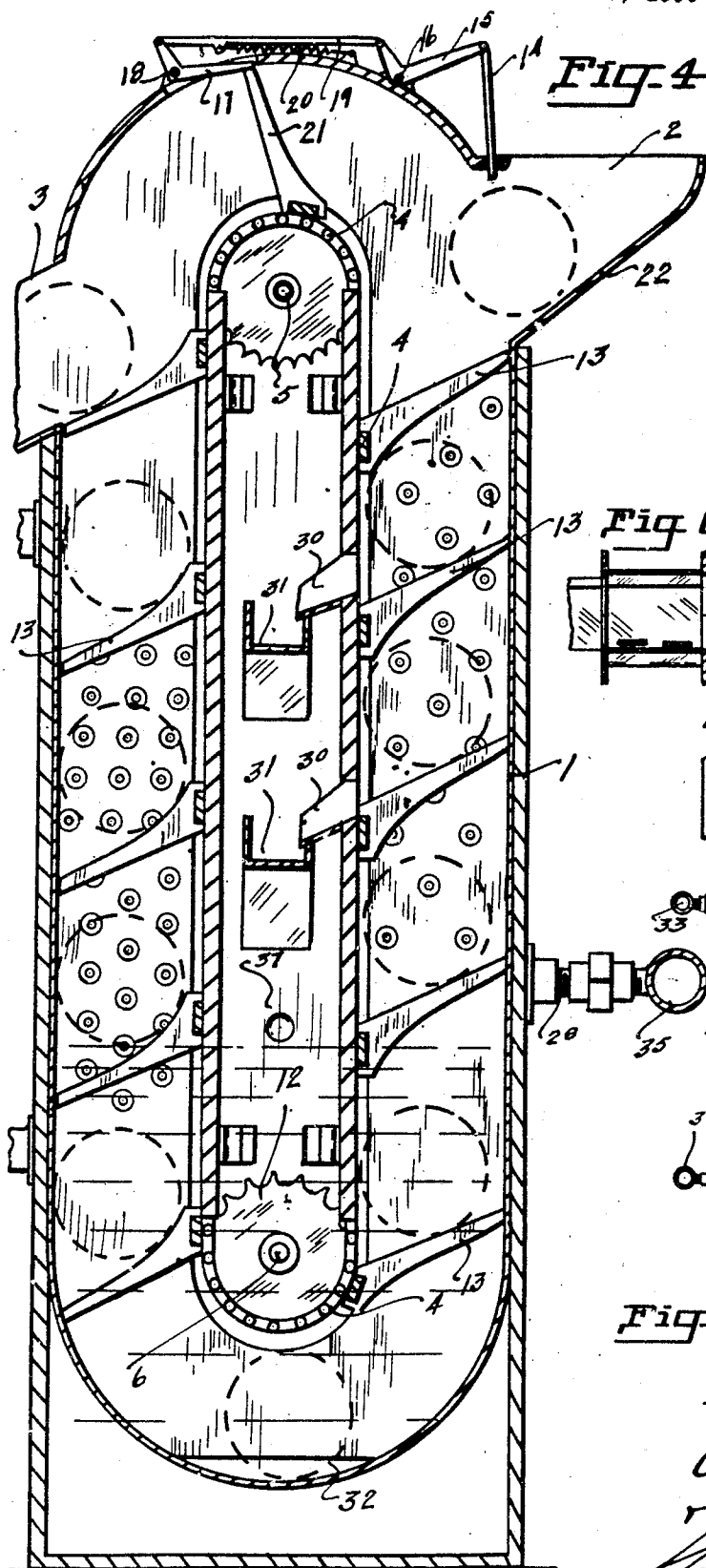


Fig. 4

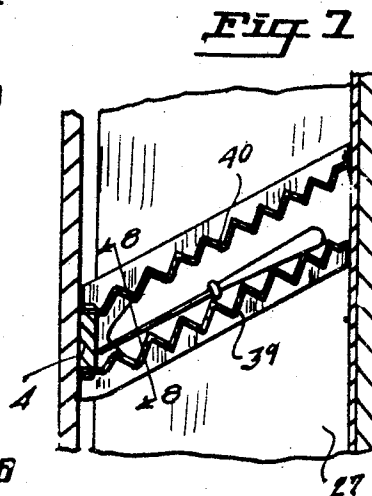


Fig. 7

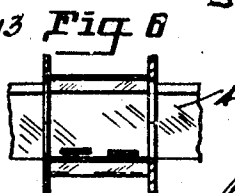


Fig. 8

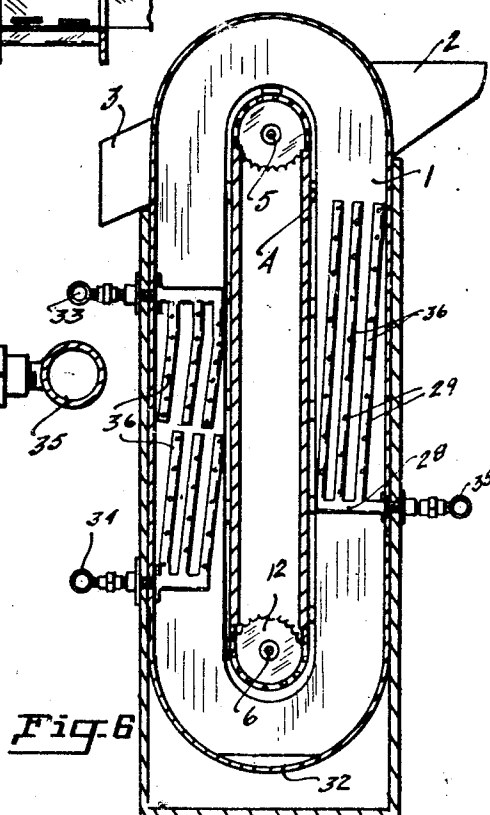


Fig. 9

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3 Sheets-Sheet 3

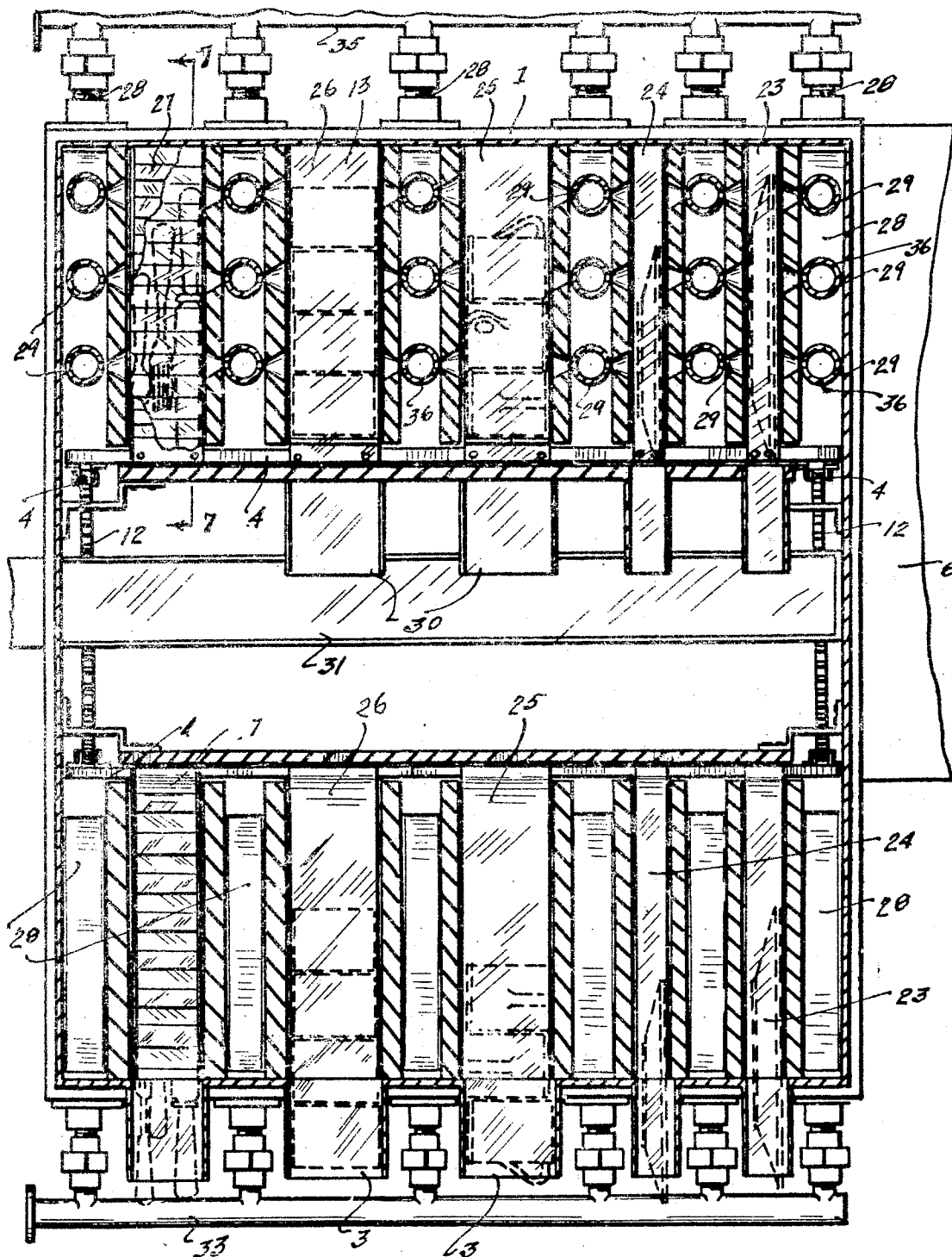


Fig. 5

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UNITED STATES PATENT OFFICE

CHARLES G. HALL, OF BOISE, IDAHO, ASSIGNOR TO AUTOMATIC FOOD MACHINERY CORPORATION, OF BOISE, IDAHO

DISHWASHING MACHINE

Application filed February 3, 1930. Serial No. 425,700.

My invention relates to washing machines that are primarily intended for washing and drying table and kitchen ware in a single operation. The invention may either be used in commercial eating places or for domestic use.

The invention in its preferred embodiment consists of a compartmented cabinet having a power driven, endless conveyor, disposed therein that is adapted for carrying the elements to be washed and dried through a predetermined line of movement. The endless conveyor has blades disposed thereupon that are adapted for carrying and supporting the articles to be cleansed past washing nozzles, and immersing the articles within the cleansing solution that is disposed within the cabinet. An entry way is disposed at one side of the cabinet to which a feeding station is attached. A discharge station is disposed upon the oppositely disposed side of the cabinet to that of the feeding station. Means are provided for drawing off the washing solution at different elevations.

The primary object of my invention is to wash and dry table ware and kitchen utensils, without the hands of the operator coming in direct contact with the solutions and sprays, or with the articles being cleansed.

A further object of my invention consists in providing a single compact unit having all of the essential elements embodied therein for the economic and rapid washing and drying of table and kitchen ware.

A further object of my invention consists in providing, in a single unit, a washing and drying device that is adapted for the separation, in the early stage of the washing, of the residue that is developed from the articles being cleansed and its removal from the cabinet. The debris is prevented from reentering the treating solutions that are disposed within the base of the cabinet.

The primary object of my invention consists in the progressive passing of the article

to be cleansed; first, through a liquid spray which is primarily intended for the removal of the residue from the articles; secondly, through a cleansing solution and finally through a fine spray of steam, and liquid at relatively high temperatures so that the articles will emerge from the cabinet in a dry and cleansed condition.

A still further object of my invention consists in providing means for preventing the admittance of the articles into the cabinet until a supporting blade, of the endless conveyor, is in precise position at the feeding station. The purpose of this is to prevent the dropping of the articles into the cabinet and thus prevent their breaking.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claims, and a preferred form of embodiment of which is hereinafter shown with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a side view of the assembled device.

Fig. 2 is an end view of the assembled device.

Fig. 3 is a longitudinal, sectional, side view of the assembled device, the same being taken on line 3—3 of Fig. 2, looking in the direction indicated.

Fig. 4 is a longitudinal, sectional, end view of the assembled device, the same being taken on line 4—4 of Fig. 1, looking in the direction indicated.

Fig. 5 is a sectional, plan, view of the assembled device, the same being taken on line 5—5 of Fig. 2, looking in the direction indicated.

Fig. 6 is a longitudinal, sectional, end view of the assembled device, the same being taken

on line 6—6 of Fig. 1, looking in the direction indicated.

Fig. 7 is a fragmentary, sectional, side view of one side only, of the endless conveyor, the same being taken on line 7—7 of Fig. 5, looking in the direction indicated.

Fig. 8 is a sectional, end view taken on line 8—8 of Fig. 7, looking in the direction indicated.

Like reference characters refer to like parts throughout the several views.

I preferably form my device of a cabinet 1 having a feeding station 2 disposed at the upper end and at one side of the cabinet and a discharge station 3 disposed at the upper end of the opposite side of the cabinet. An endless conveyor 4 is trained about pairs of sprockets 12 mounted respectively upon the shafts 5 and 6 that are journaled within the walls of the cabinet. The prime mover 7 is disposed within a suitable housing 8 adjacent the base of the cabinet. The prime mover, as an electric motor, is secured to a speed reducer 9 and any driving element, as a chain 10, is adapted for transmitting power from the speed reducer to the primary driving shaft 11, the power being transmitted from the shaft 11 to the shaft 6 about which the endless conveyor passes. The endless conveyor has spaced blades 13 disposed thereupon, the blades 13 being driven within predetermined spaced channels in the cabinet formed by apertured partitions 13a. A trap door 14 is slidably disposed within the entrance way 2. The trap door 14 is adapted for being actuated by a bell crank 15, the bell crank 15 being rotatably supported upon a pin 16.

A second bell crank 17 is pivotally disposed upon a support pin 18. A link 19 connects the bell cranks 15 and 17. A reacting element, as a spring 20, normally maintains the trap door 14 closed the free end of the bell crank 17 extending downwardly within the cabinet and in alignment with travel of the blades disposed upon the endless conveyor. There are as many trap door mechanisms as there are channels and each trap door is operated by independent hook ups like that previously described. The purpose of normally maintaining the trap door 14 closed is twofold; first, to maintain the cabinet relatively closed against the escapement of vapors and, secondly, to prevent the premature admittance of breakable articles into the cabinet, before a blade has reached the entranceway. Articles to be fed into the cabinet are placed into the feeding station and rest against the trap doors. As the blades 21, as illustrated in Fig. 4, engage the bell cranks, or when any of the other of the blades of the endless conveyor engage the bell cranks, the trap doors will be opened. The blades are so spaced about the endless conveyor and relative to the entrance and exit stations that a blade is

always in normal alignment with the base 22 of the feeding station. This arrangement facilitates the entry of the articles within the cabinet without being dropped any material distance. As soon as the blades disengage from the bell cranks, the trap doors will again be closed by the reacting element 20.

I have found best results are obtained where articles of similar types and size are placed within the different channels for example, within the channel 23, I place plates; within channel 24, I place saucers, salad plates and the like; within channel 25, I place cups; within channel 26, I place glassware; and within channel 27, I place silverware.

Headers 28 are provided between the respective channels into which washing fluids and liquids are supplied. Each of the headers have spray heads 29 extending outwardly therefrom causing the washing fluids to impinge directly upon the surface of the articles to be cleansed. The supporting blades substantially fill the cross sectional area of the channels through which they pass. Discharge outlets 30, here shown as two in number for each channel, conduct the sprayed liquids and the residue washed from the respective articles into discharge troughs 31, that conduct the resultant product of the early wash from the cabinet. The bottom end 32 of the cabinet is liquid tight. For the washing of some articles, it may be found desirable to conduct wet steam through the header pipe 33 and hot water through the header pipes 34 and 35. The discharge pipes 36 are preferably inclined at an angle, as illustrated in Fig. 6, in order that the complete surface of the article to be washed will be impinged upon by the cleansing solutions. An overflow 37 is disposed in alignment and in communication with the outlet end of the discharge pipes 31, in order that all of the cleansing materials being discharged from the cabinet will be drained through a common outlet 38. The supporting blades upon which the silverware is carried, preferably have corrugated sides 39 and 40, as illustrated in Fig. 7, in order that the cleansing fluids may better circulate around and contact with the multiplicity of surfaces that silverware has. A drain cock 41 is provided at the base of the cabinet for draining the solutions from the cabinet, when desired.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What I claim is:

1. In a device of the class described, the combination of a cabinet, a feeding station disposed at the upper end of one side of the

cabinet, a discharge station disposed upon the oppositely disposed side of the same end of the cabinet, a power driven endless conveyor disposed within the cabinet, spaced blades disposed upon the endless conveyor and adapted for being driven past the receiving and discharge stations, partitions dividing the cabinet into channels disposed longitudinally of the cabinet in which the blades disposed upon the endless conveyor move, trap doors disposed within the feeding station and being normally closed, means for opening the trap doors periodically, and spraying heads disposed within each side of each of the channels.

2. In a device of the class described, the combination of a cabinet, a feeding station and a discharge station extending through the walls of the cabinet and upon oppositely disposed sides thereof, partition walls dividing the cabinet into a plurality of channels extending longitudinally of the cabinet, a power driven endless conveyor disposed within the cabinet, spaced supporting blades disposed upon the endless conveyor and adapted for being actuated within each of the channels, trap doors disposed at each of the feeding station entrances into the cabinet and channels, means in the path of said blades adapted to be actuated by engagement of said blades therewith for periodically actuating the trap doors, means for projecting fluids, under pressure, through the partition walls of the channels, discharge outlets disposed at one end of each of the channels, discharge troughs disposed adjacent to said outlets and adapted for conducting residue from the cabinet developed within the early stages of the washing process, and means for limiting the height of fluids disposed within the base of the cabinet through which the lower portion of the conveyor and the articles pass.

3. In a device of the class described, the combination of a cabinet, a plurality of channels disposed longitudinally of the cabinet, an endless conveyor disposed within the cabinet, a plurality of blades disposed upon the conveyor in spaced relationship with each other vertically and horizontally, said blades being adapted to ride within the channels, means for periodically depositing articles to be cleaned within the cabinet upon the conveyor, intermittently operable means for actuating the first mentioned means, means for projecting fluids into the channels against said articles, and means for limiting the height of the fluids disposed within the base of the cabinet through which the lower portion of the conveyor and the articles pass.

4. In a device of the class described, the combination of a cabinet composed of a plurality of channels, longitudinally disposed therein, means for projecting fluids under pressure through the walls of the channels, an endless conveyor disposed within the cab-

inet, a plurality of blades disposed in spaced relationship upon the conveyor and adapted to ride within the channels, means for periodically feeding articles into the cabinet upon the conveyor, intermittently operable means disposed in the path of travel of the blades for actuating the first mentioned means, and means disposed within each channel and within the center of the cabinet for removing from the cabinet fluid and matter washed off the articles thereby.

CHARLES G. HALL.