

March 10, 1953

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2,630,813

SPRAY MANIFOLD FOR DISHWASHING MACHINES

Original Filed May 8, 1935

5 Sheets-Sheet 3

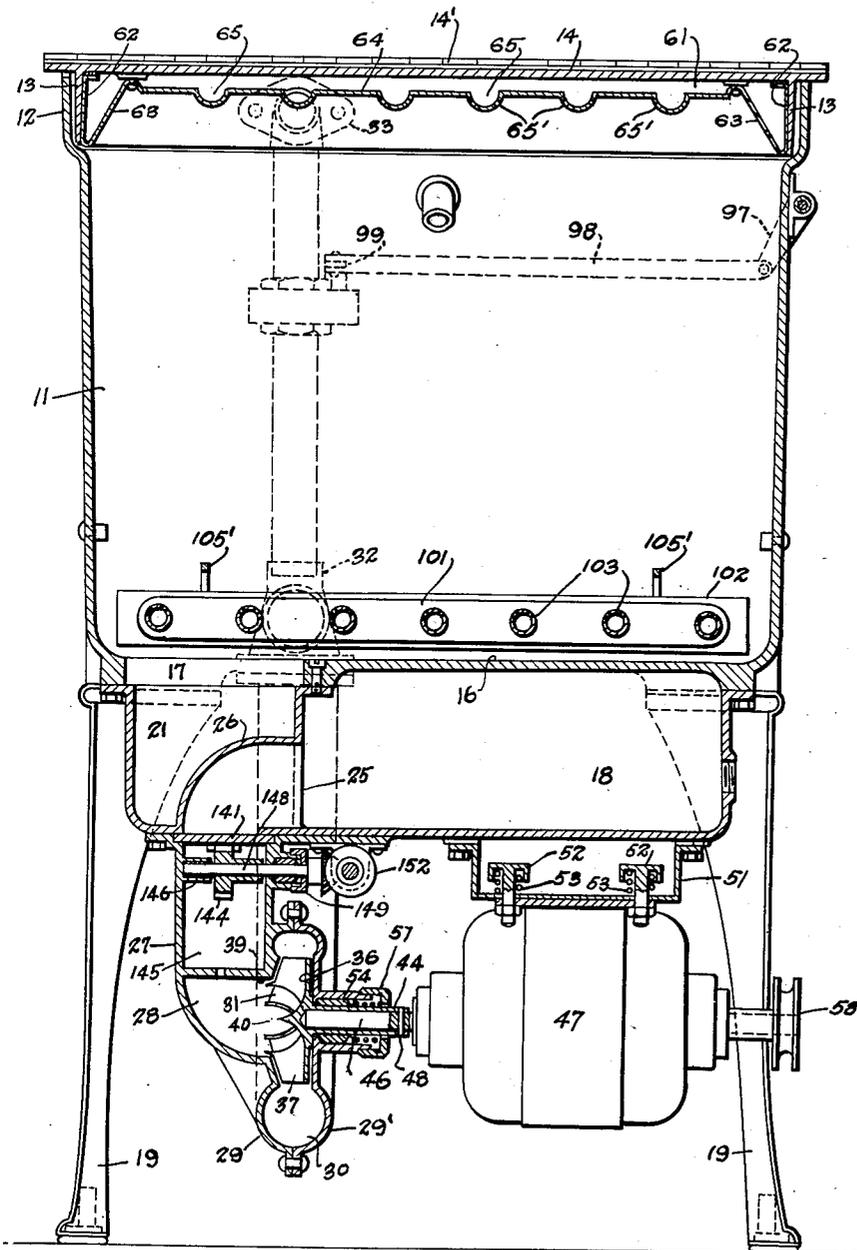


Fig. 3

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Fig. 6.

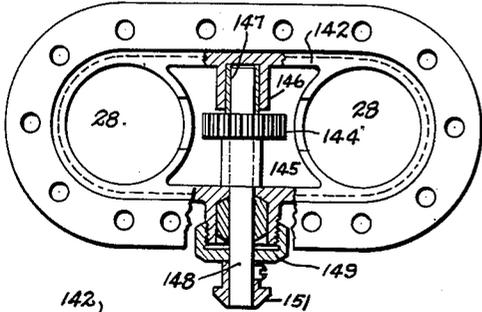


Fig. 8.

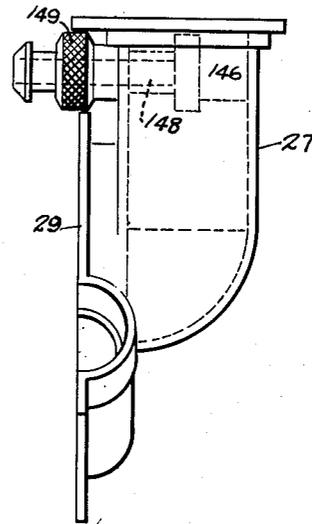
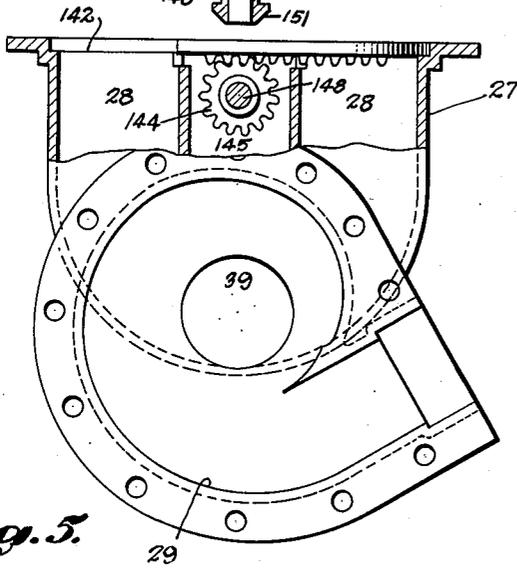
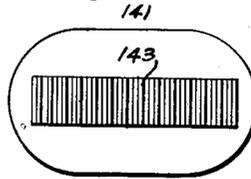


Fig. 5.

Fig. 7.

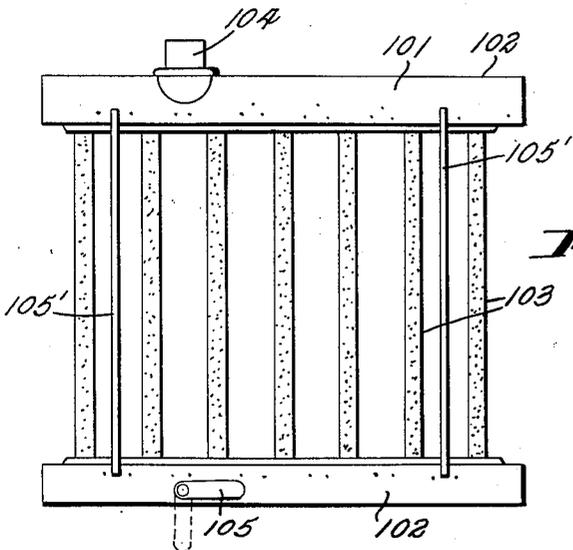


Fig. 9.

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SPRAY MANIFOLD FOR WASHING MACHINES

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Substituted for abandoned application Serial No. 20,307, May 8, 1935. This application June 23, 1948, Serial No. 34,655

1 Claim. (Cl. 134—175)

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This application is a substitute application for my abandoned application filed May 8, 1935, Serial No. 20,307 abandoned on May 19, 1937.

My invention relates to a washing machine having general utility and occupying the space usually occupied by one unit alone.

My washing machine has many uses in both the household and semi-commercial fields. In the household, the mechanical unit functions to wash the table dishes, silverware, glassware, and also the pots and pans used in cooking, in a most thorough, efficient and speedy manner. In addition, the machine is especially well adapted to thoroughly and efficiently wash vegetables, salad greens, and the like. Further uses may be mentioned such as the ready use of the machine for the home preserving and canning of fruits and vegetables; the use of the lid either to heat plates or to keep food warm temporarily, or the reverse, to use the lid as a cold and cooled surface when needed for cooling dessert dishes or for pastry making, and the like. In the semi-commercial field, among the uses that readily suggest themselves for this same machine are, in hotels, as a small silverware washer, and for the washing of the very fine glassware and china-ware services used on special occasions; in dairies and other places, the machine is excellent as a bottle washer; in hospitals, the machine is excellent for the sterilization of surgical instruments and other equipment used repeatedly.

I have devised a small, compact machine that may be produced in quantity and sold in the foregoing fields without production line changes, and with it all the machine is thoroughly efficient, very simple in its mechanical construction, very easy to assemble and also to repair, should that become necessary, and finally a machine that is "fool proof."

My invention lies in not only the broad conception of the general utility machine but also in numerous individual features hereinafter described and the assemblage thereof into an operative combination to produce the new and improved results which I obtain in my washer.

Further objects of my invention will be apparent from the following specification taken in conjunction with the accompanying drawings wherein

Figure 1 is a front elevation of the machine of my invention with the drain removed from its intended location on the machine and shown in section.

Figure 2 is a plan view of the machine with the lid or cover removed, and also with the screens removed.

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Fig. 3 is a vertical section in a plane substantially on the line 3—3 of Fig. 2.

Fig. 4 is a side elevation of the machine looking from the right hand side of Fig. 2, with parts broken away.

Fig. 5 is an enlarged side elevation of the casting comprising one-half of the pump housing, the dual inlet passages thereto, and the valve control therefor, parts being broken away and shown in section to facilitate the illustration.

Fig. 6 is a plan view of the casting of Fig. 5.

Fig. 7 is a rear elevation of the casting of Fig. 5.

Fig. 8 is an enlarged detail of the valve plate; and

Fig. 9 is a plan view of the bottom stationary spray manifold shown in Fig. 3.

For most of the mechanical washing operations I prefer to use forceful, finely divided, spray jets. These may be obtained in a variety of ways readily interchangeable by a simple withdrawal and insertion of the several attachments. In Fig. 3 I have shown stationary spray manifolds at the top and bottom of the tub with a valve enabling the users to have both or only one of the jets in operation. In Fig. 2 there is shown an attachment for securing a vortex water action in place of the bottom spray. The top spray carried by the cover or lid is not present in the particular illustrations of this figure, but it could be in place when the machine was completely assembled, so that there is provided the combined spray and vortex washing actions. The top and bottom sprays are balanced so that there is a minimum of danger of breakage of even the thinnest glassware.

The purpose of this invention as applied to household machines is to provide the housewife of ordinary means with an electrical appliance for the home that contains the most essential features of combined usefulness in a single unit with a minimum of moving parts in a machine of simple design that can be changed from one purpose to another by a person by the simple manipulation of the hand or fingers without the aid of tools or special mechanical knowledge. It fulfills all the requirements of the average family, it can be plugged into the wall base the same as the other household appliances; it has one trap connection to the waste line sewer; one hot and cold water connection, and is regularly fitted with connections for three auxiliary means of heating the water required for household use in the kitchen. The top of the machine is flat, smooth and of ample size to be used to warm or chill the dishes as required, or keep food

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warm; it can serve the purpose of a cold marble slab to roll French pastry or puff paste, by simply turning on the cold water into the sink, adding a few ice cubes from the refrigerator and starting the motor for a few seconds whereupon the lid table will take the temperature of the contents of the sink; the reverse is true when hot water is used to convert the top into a hot plate warmer; and the lid being formed with a removable spray insert in the hollow lid forms an air space between the metals which precludes sweating of the top section of the lid which always remains dry whether used hot or cold. The body of the machine is shaped like the ordinary laundry tray and can be so used without in any way impairing the sanitary features as a dishwasher and sterilizer if so desired, there being no mechanism on the inside of the tub, and the floor of the machine is level and smooth as an ordinary laundry tray. The sump or wash water reservoir is situated under the floor level and is fitted with a double screen. The bottom screen is deep and extends the full length of the sump and holds the sediment and food particles washed from the dishes, and the top screen is also perforated with much larger holes and is also used for the purpose of maintaining the floor level of the machine and preventing injury to the finer meshed screen at the bottom when heavy articles such as pots and pans, mixing machine parts, etc., are put into the sink for cleansing purposes, or to soak as the case may be.

A further purpose of this invention is to provide double reservoirs for holding the wash and rinse waters which can be emptied into a common connection at the axial center of the pump. The outlet of each reservoir is controlled by manipulating a slide bar valve which opens the one and closes the other. The rinsing is done by pump means with the same pressure as the washing, and is entirely independent of high or low city water pressure insuring proper and efficient rinsing means with water that has not become contaminated by coming in contact with the body of the machine that has previously held the wash water. This method has also the advantage of thoroughly cleansing the pump and circulating mediums which are emptied of all contaminating influences by the first flush of fresh hot water therethrough which is expelled over the dishes and sides of the machine and is not recirculated over the dishes a second time, so that when the operation is over any water left in the pump is fresh clean water.

Water is delivered from the pump through the discharge pipe, the feed pipe 34, and the discharge outlets 32 and 33 into the interior of the tub 11. The discharge outlet 33 communicates with the interior of the upper spray manifold 61.

The manifold 61 has side walls 62, which fit against the depending flanges 13 of the cover 14, tapering inner walls 63, which extend upwardly and inwardly from the bottom of the wall 62 to form a pocket inside the manifold, and extend into a plate 64, which is spaced from the inner surface of the lid 14 and is provided with a series of grooves 65. The grooves 65 have perforations 65', as shown in Fig. 3, so that they in fact constitute spray pipes. It will be noted that the spray holes project sprays directly downward and also toward the right and left in Fig. 3 at about a 30° angle and they are so interspersed in the several corrugations 65 that all surfaces and areas within the tub 11 are covered by the spray jets. The manifold 61 is secured to the lid

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14 by any suitable means, so that it may be readily attached and detached.

The depending flange 13 of the lid 14 has an aperture 66 therein and the adjacent side wall 62 of the manifold has a registering opening therein to receive the projecting end of the discharge outlet 33 whenever the lid 14 is lowered into the position shown in Fig. 3. In this position a water tight connection is formed so that the water delivered under pressure from the pump is forced through the spray manifold and discharges through the spray openings into the interior of the machine. When the lid 14 is raised to open the machine for access to the interior of the tub, as shown in Fig. 4, the connection from the discharge outlet 33 to the spray manifold 61 is broken automatically. By having this connection at the rear of the machine adjacent the hinged edge of the lid 14, the spray manifold drains quickly and readily through an opening 66, the drain being to the interior of the tub 11. Thus, not only is the top spray manifold automatically moved out of the way permitting free and easy access to the interior of the tub, but it is absolutely certain that there will be no spray or splash which will get outside of the tub whenever the lid is opened, even if opened accidentally or unintentionally while the pump is still operating.

The bottom discharge outlet 32 is for use with a variety of spray and other attachments to be located at the bottom of the machine, these various sprays and attachments being entirely interchangeable at will and by a simple and easy lateral movement.

At times it may be desirable to use the bottom spray only (or no spray in the case of some other attachment being made to the lowermost discharge outlet 32). Accordingly, I place in the feed pipe 34, between the discharge outlets 32 and 33, a cut-off valve which is adapted to shut off the supply of water to the upper discharge outlet 33.

In order that this valve may be operated by means easily accessible to the user of the machine, a control lever 95 is placed at the front of the machine which is mounted on a rod 96, extending rearwardly along the side of the machine beyond the rear thereof where a bifurcated crank 97 is fastened. The crank 97 is connected by means of the link 98 to the valve actuating lever 99. As the lever 95 is turned, the valve is opened or closed as the case may be. Of course, when the valve is closed the full force of the water delivered from the pump is upon the water ejected from the lower discharge nozzle 32 and thus the spray or other attachment at that point, delivers a much more forceful water jet.

At times it may be desirable to provide stationary top and bottom manifolds operating in combination. In Fig. 3 there is shown the stationary tub manifold 61 heretofore described, and a stationary or fixed spray bottom manifold 101. This stationary spray bottom manifold 101 is formed of a pair of heads 102 respectively located at the front and back of the tub and between which extend a plurality of spray pipes 103. The rear header 102 is provided with an outlet connection 104 so that the spray manifold has a slip fit in the discharge outlet 32 of the machine, as is illustrated for the spray mechanism in Fig. 4. In order to insure the maintenance of the spray manifold in operative position, a pivoted latch 105 is mounted upon the forward manifold 102, which latch engages the

interior of the forward wall of the tub 11 when the manifold 101 is in operative position. The front header 102 is provided on its under surface with feet (not shown) and each of the headers 102 is provided on top thereof with basket supports 105'.

From Fig. 3 it will be noted that each of the spray pipes 103 is provided with apertures, the apertures being located at a 30° angle on opposite sides of the vertical center, this being the proper angle for insuring that the entire body of the tub 11 is covered by the spray jets from the manifold 101. It will also be noted that the spray pipes 103 are interspaced between the corrugations 65 of the upper spray manifold 61.

As has heretofore been intimated, it may be at times desirable to secure a vortex action within the tub 11. For this purpose, there is substituted for the bottom spray manifolds heretofore described the nozzle 106 (Fig. 2). This nozzle has ordinary bayonet and slot connections with the bottom discharge outlet 32 to position the nozzle at whatever angle desired. In the position shown in Fig. 2 the water will enter the tub 11 at the bottom, and swirl around so as to form a vortex about a substantially vertical axis passing through the tub. If desired, this attachment 106 may have a second bayonet and slot connection with the discharge outlet 32 with the opening of the nozzle upward, so that a vortex action is obtained around a substantially horizontal axis. Obviously, this angle of the vortex can be varied anywhere that may be desired.

It has been found in practice that this vortex action is very useful in a variety of instances such as washing of small silverware, pots and pans, the washing of vegetables, etc.

The vortex action described can be obtained with the valve 91 closed and the machine lid opened or closed, or this action may be obtained in conjunction with the top spray by opening the valve 91, which condition of operation has been found to be highly desirable in the washing of lettuce, spinach, or leafy vegetables.

The drain outlet 35 is closed by a combined drain valve with plural overflow means 129 and 132 to maintain the liquid height at either of two desired levels, which valve comprises the portions 121, 122, 123, 124, 125, 126, 127, 128, 130, 131, 133, 134 and 135.

I have heretofore explained the dual feed to the pump through the U-shaped tube 28 connected to the openings 22 from the washing water sump 21 and through the opening 23 from the rinse water tank 18. I automatically close the inlet from the tank 18 when the machine is performing its washing function, and automatically close the opening 22 and open the connection 23 to the rinse water tank 18 when the rinsing operation is to be performed.

On the bottom of the plate 141 is cast a rack with which meshes a spur gear 144 by means of which the plate 141 is moved. The gear 144 is mounted in the pocket between the two legs of the U passage 28 and is provided with an extension 146 which serves to space the gear 144 from one side of the pocket. Extending into the pocket from the opposite wall is a socket 147 which receives one end of shaft 148 on which the gear is mounted and which extends outwardly to a position adjacent the opposite side of the gear 144.

The shaft 148 extends outwardly through an opening in the casting 27 where is provided a stuffing box packing of any suitable construction indicated generally at 149. On the outer end

of the shaft 148 is fastened a beveled gear 151 (Figs. 2 and 3) that meshes with bevel gear 152 which in turn is mounted upon one end of the control shaft 153.

This shaft extends outwardly adjacent the front of the machine and there has mounted a wheel or lever 154 by means of which the operator moves the valve plate 141.

The normal position of the valve plate 141 is with the opening 22 open and the opening 23 closed. In this position the pump will be supplied with wash water which will be recirculated by the pump. After the washing operation is completed the wash water is drained off by opening the drain 35.

When the operator wishes to rinse the dishes or other articles being washed, she rotates the handle 154 to move the valve plate 141 to close the opening 22, whereupon the rinse water will be admitted to the pipe 28 and to the pump 31, thereby rinsing the dishes in the machine under the same pressure as the washing operation, as heretofore described.

In rotating the shaft 153, the operator places under tension the spring 155 one end of which is fastened to the shaft 153 and the other end of which is secured to the mounting bracket 156 for the shaft 153. Thus when the rinsing operation is completed (which in this machine requires only a few seconds), the operator releases the wheel 154 and immediately, under the action of the spring 155, the valve plate 141 is returned to its normal position with the opening 23 from the rinse tank 16 closed.

The motor 47 is controlled by means of the switch 161 which is mounted on the side of the tub 11. Inasmuch as it is desirable to insure that the pump shall not be working whenever the lid 14 is opened, I provide the following automatic arrangement.

The switch 161 is mounted in a box 162 which has an opening in alignment with the spring pressed button 163 of the switch. Mounted above the opening in the box 162 is a tube 164 in which operates a plunger 165, both the tube 164 and plunger 165 extending upwardly to the top of the tub 11. The plunger does not extend to the top of the tube 164, the purpose of this arrangement being to prevent accidental starting of the machine while the lid is still open. The lid 14 carries on the side thereof a downwardly projecting lug 166 which is adapted to enter the tube 164 and engage the upper end of the plunger 165 when the lid is closed.

I have found it desirable to provide an arrangement that will require the operator to definitely seat the lid 14 in order to start the operation of the motor. For this purpose, I have provided a pocket 167 in the tube 164, in which pocket is housed a spring 168. The plunger 165 carries a collar 169 which engages the spring 168. The spring 168 is of sufficient strength to support the weight of the lid 14 so that a simple closing of the lid 14, or even an accidental dropping thereof will not be sufficient to operate the motor switch 161. However, when the operator separately and specially presses down upon the lid 14 sufficiently to overcome the tension of the spring 168, the plunger 165 will be pressed downwardly far enough to throw the switch 161 and start the operation of the motor. The upper end of the tube 164 and the plug 166 are so designed that the frictional fit thereof will be sufficient to prevent the spring 168 from lifting the lid once it is pressed home.

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In order that the lid of the machine 14 may be used for other purposes than when the machine is operating as a washing machine, it is only necessary for the operator to disconnect the current to the motor 47. This may be accomplished through any of the ordinary wall switches, or the plug 170 may be of the ordinary detachable type and may be disconnected to break the connection between the switch 161 and the motor 47.

In Fig. 1 there is shown a second electrical heater 177 which heater is in the larger tank 18 that I have heretofore indicated to be used for the rinse water. If the house should not be provided with an adequate supply of hot water, then this heating element 177 could be used to heat the water in the rinse tank during the preparation for and the washing of the dishes or other articles.

Modifications may be made in the arrangement and location of parts within the spirit and scope of my invention, and such modifications are intended to be covered by the appended claim.

I claim:

A washing machine comprising a body, a lid hinged thereon, a spray manifold consisting of a hollow shell having deep depending side wall pockets with rows of shallow perforated corrugations extending therebetween, the shell having a water-tight connection to the lid so as to complete the manifold, a water inlet connection to said manifold, and a motor-driven pump connected to the water inlet and adapted to supply water thereto.

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REFERENCES CITED.

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
193,222	Buell -----	July 17, 1877
555,570	Finney -----	Mar. 3, 1896
950,885	Wood -----	Mar. 1, 1910
1,030,139	Steer -----	June 18, 1912
1,082,259	Baumiller et al. ----	Dec. 23, 1913
1,172,300	Murray -----	Feb. 22, 1916
1,414,634	Fassio -----	May 2, 1922
1,420,418	Dow -----	June 20, 1922
1,447,305	Hauk -----	Mar. 6, 1923
1,628,118	Coles -----	May 10, 1927
1,645,815	Murdoch -----	Oct. 18, 1927
1,645,816	Murdoch -----	Oct. 18, 1927
1,645,869	Murdoch -----	Oct. 18, 1927
1,679,172	Pieters -----	July 31, 1928
1,717,149	Fassio -----	June 11, 1929
1,724,910	Cromwell -----	Aug. 20, 1929
1,737,794	Henderson -----	Dec. 3, 1929
1,848,393	Spielman -----	Mar. 8, 1932
1,916,806	Myrick -----	July 4, 1933
1,938,302	Snyder -----	Dec. 5, 1933
1,961,548	Caise -----	June 5, 1934
1,983,390	Mueller -----	Dec. 4, 1934
1,987,865	North -----	Jan. 15, 1935
2,013,387	Johnston -----	Sept. 3, 1935
2,017,677	Webb -----	Oct. 15, 1935
2,024,952	Snyder et al. -----	Dec. 17, 1935
2,044,132	Stoddard -----	June 16, 1936
2,051,233	Webb -----	Aug. 18, 1936
2,440,134	Zademach et al. ----	Apr. 20, 1948