

Oct. 7, 1930.

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1,777,662

WASHING MACHINE

Filed Oct. 19, 1928

4 Sheets-Sheet 1

Fig. I

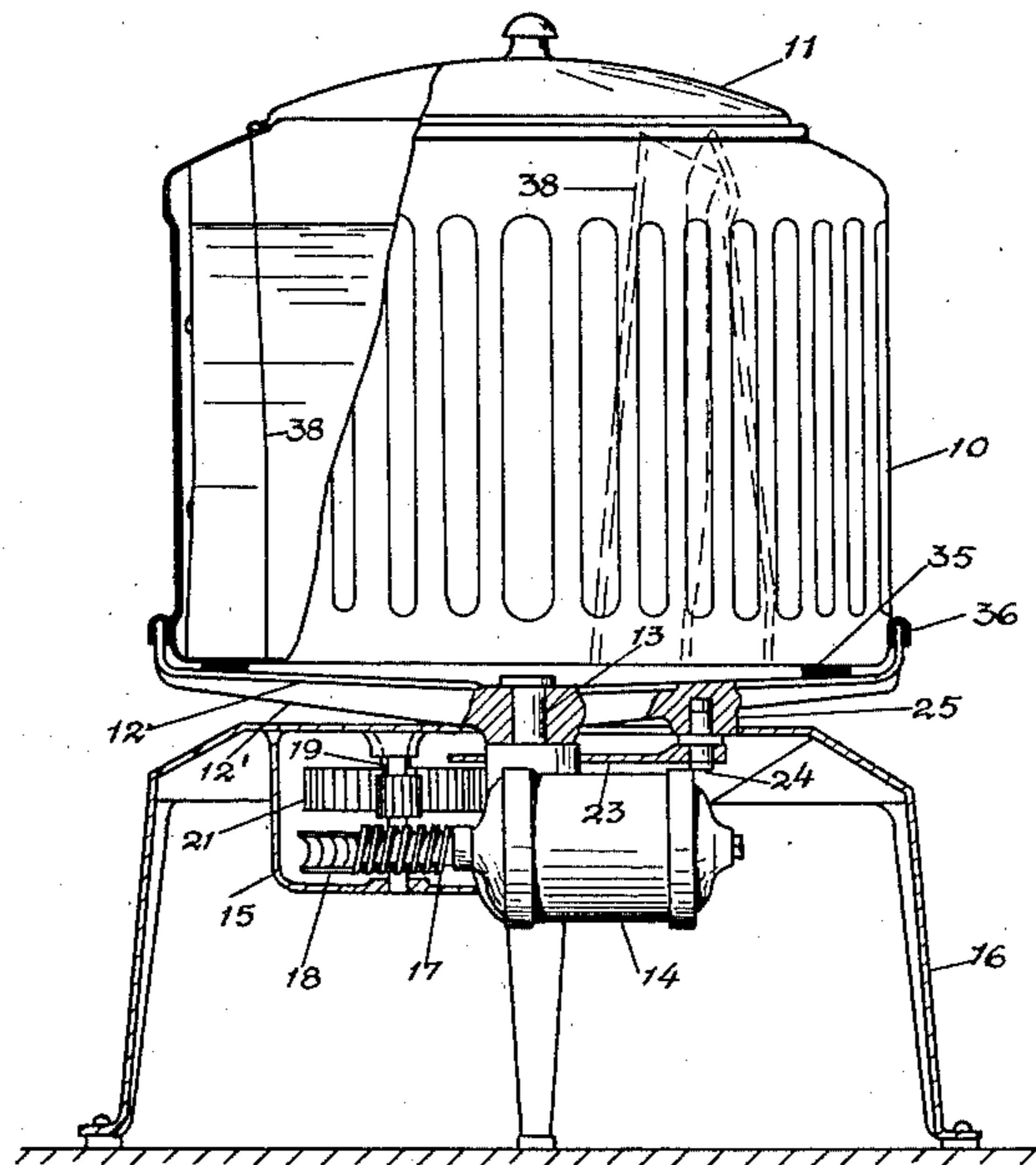
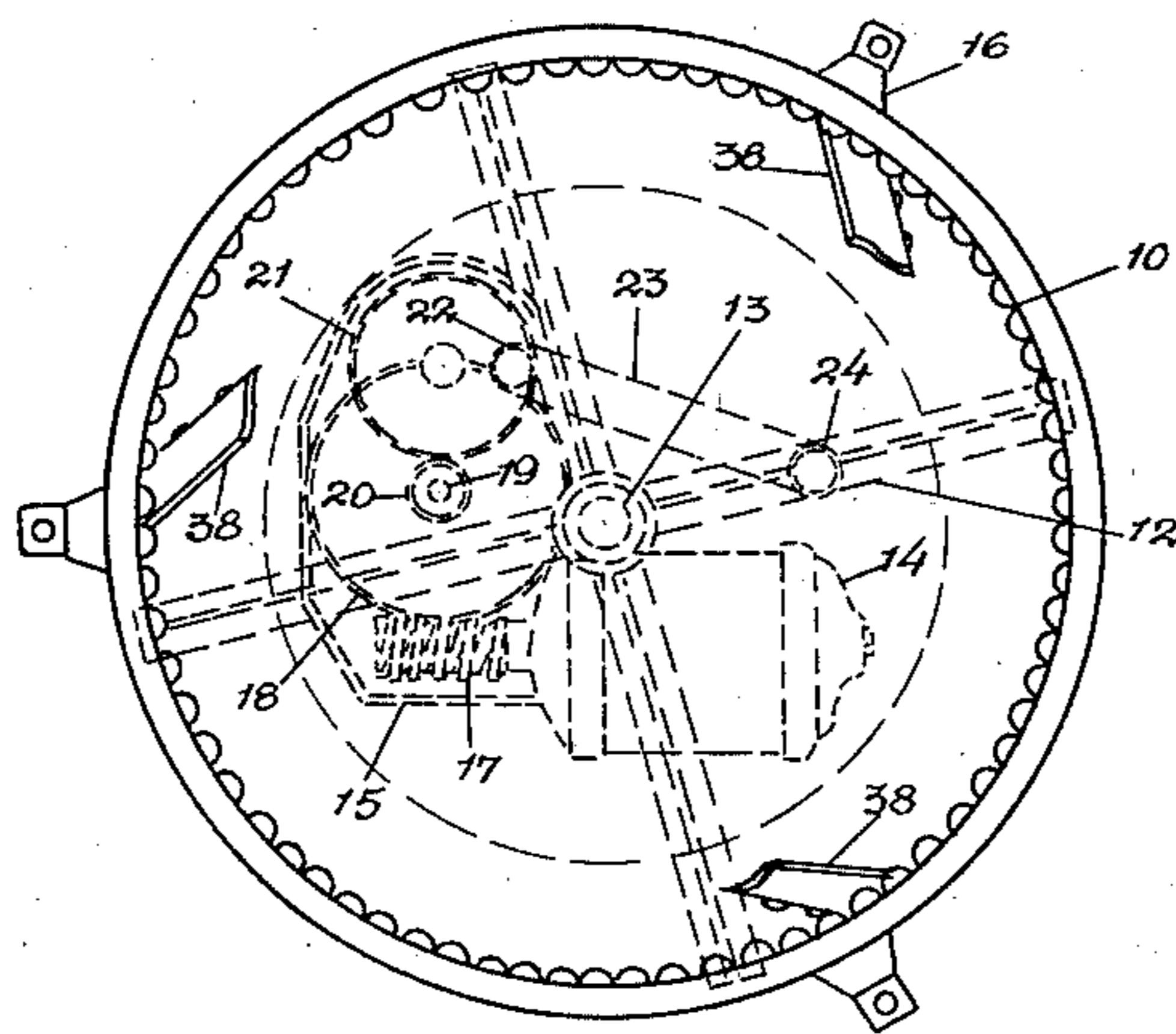


Fig. II



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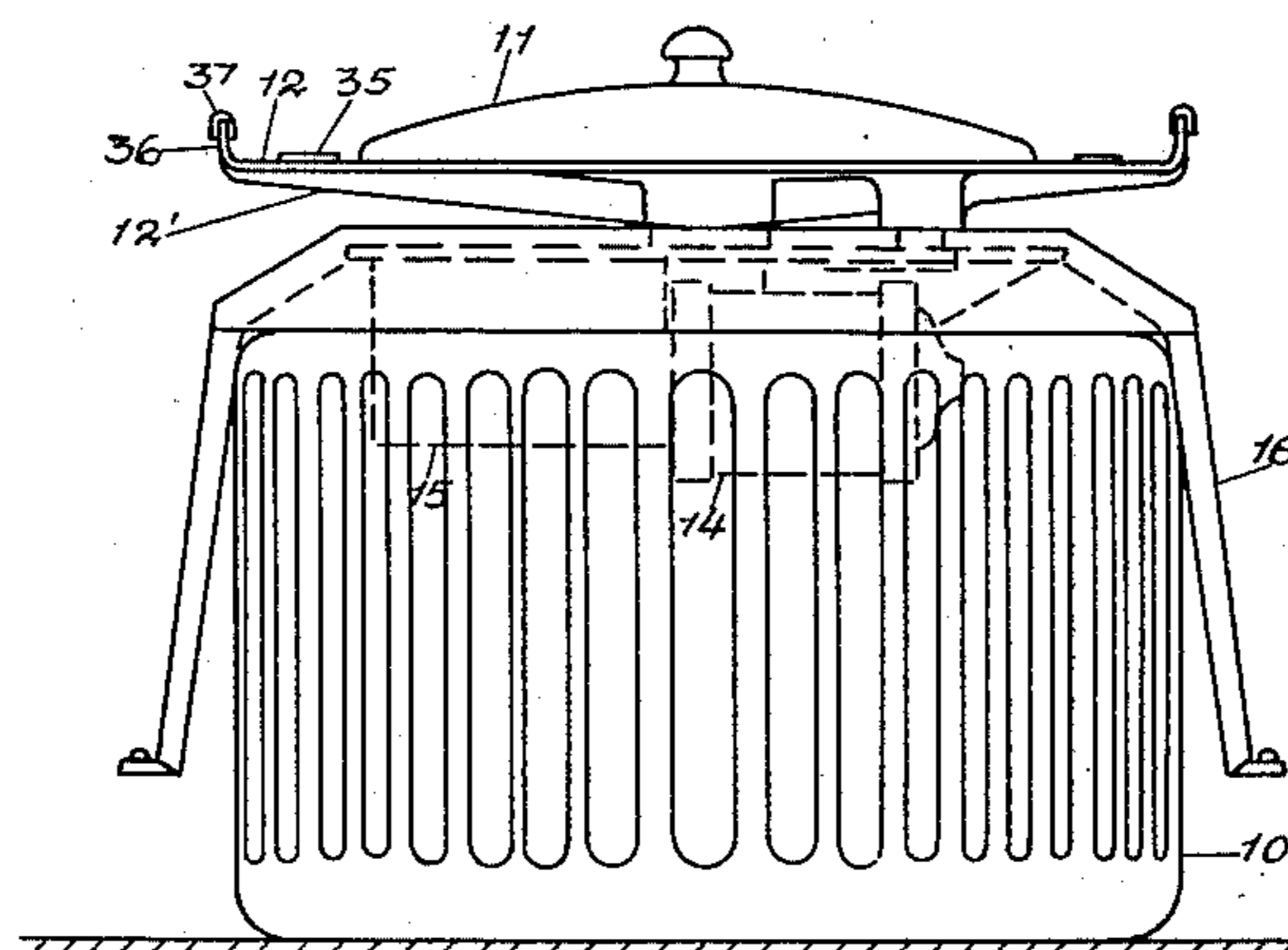
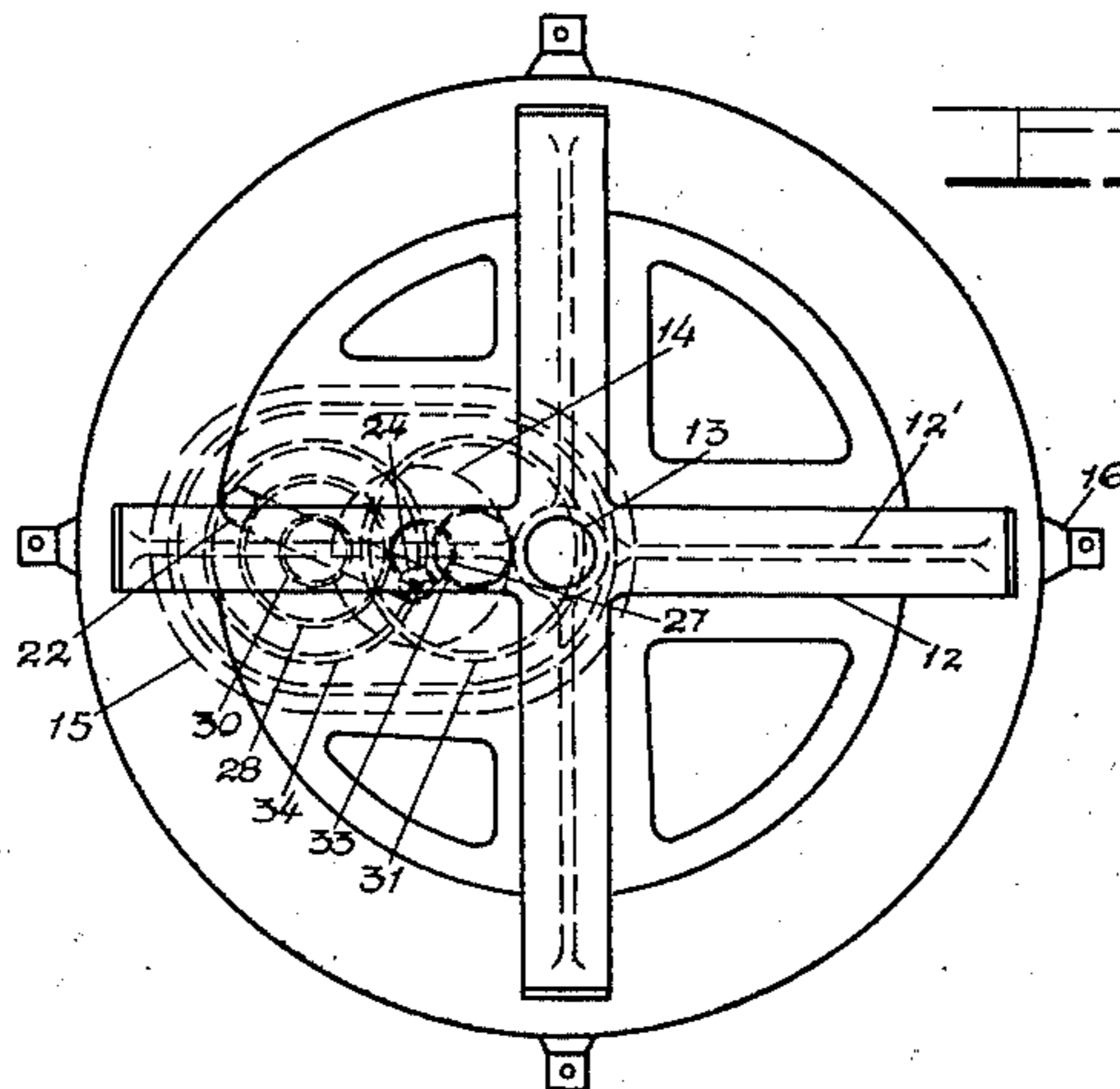
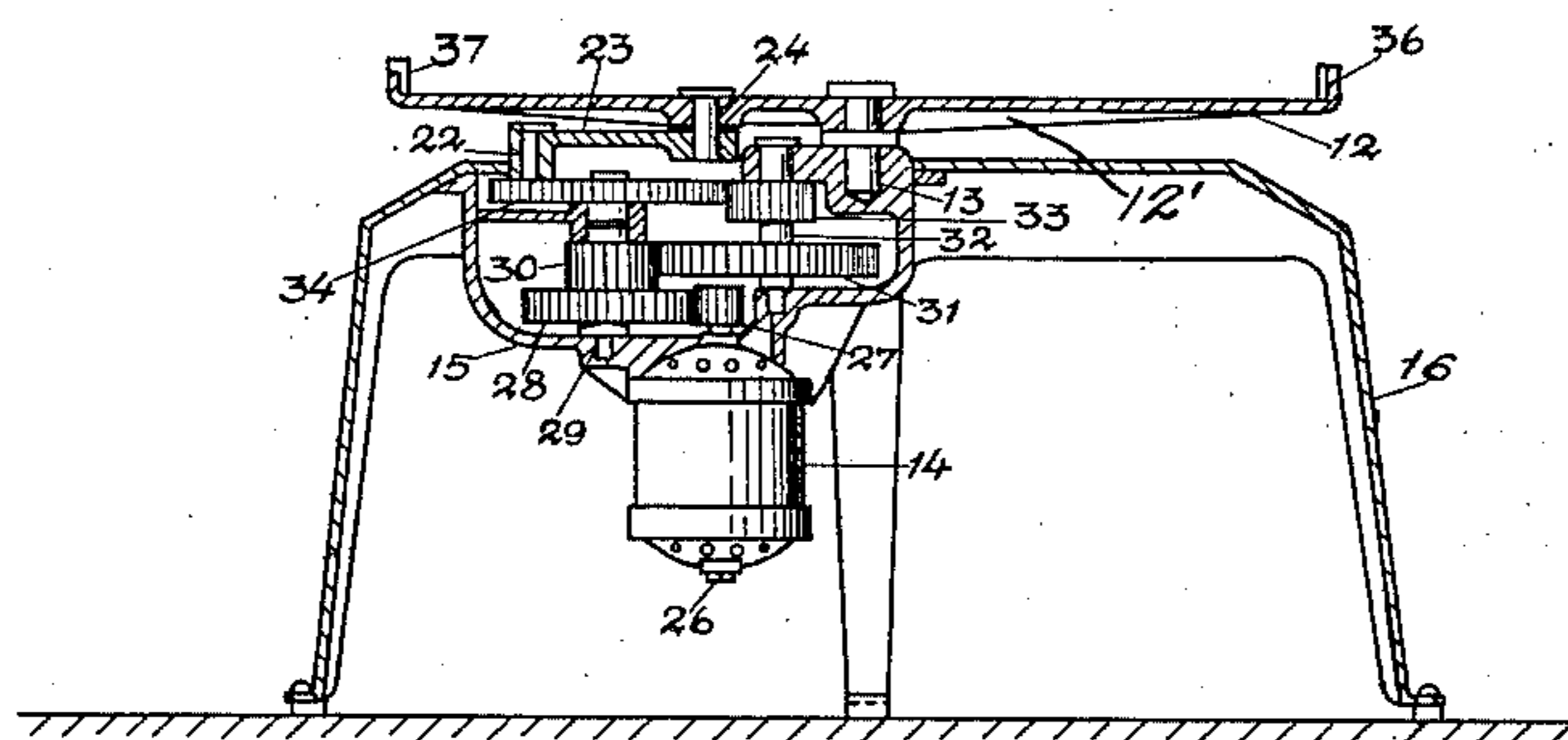
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4 Sheets-Sheet 2



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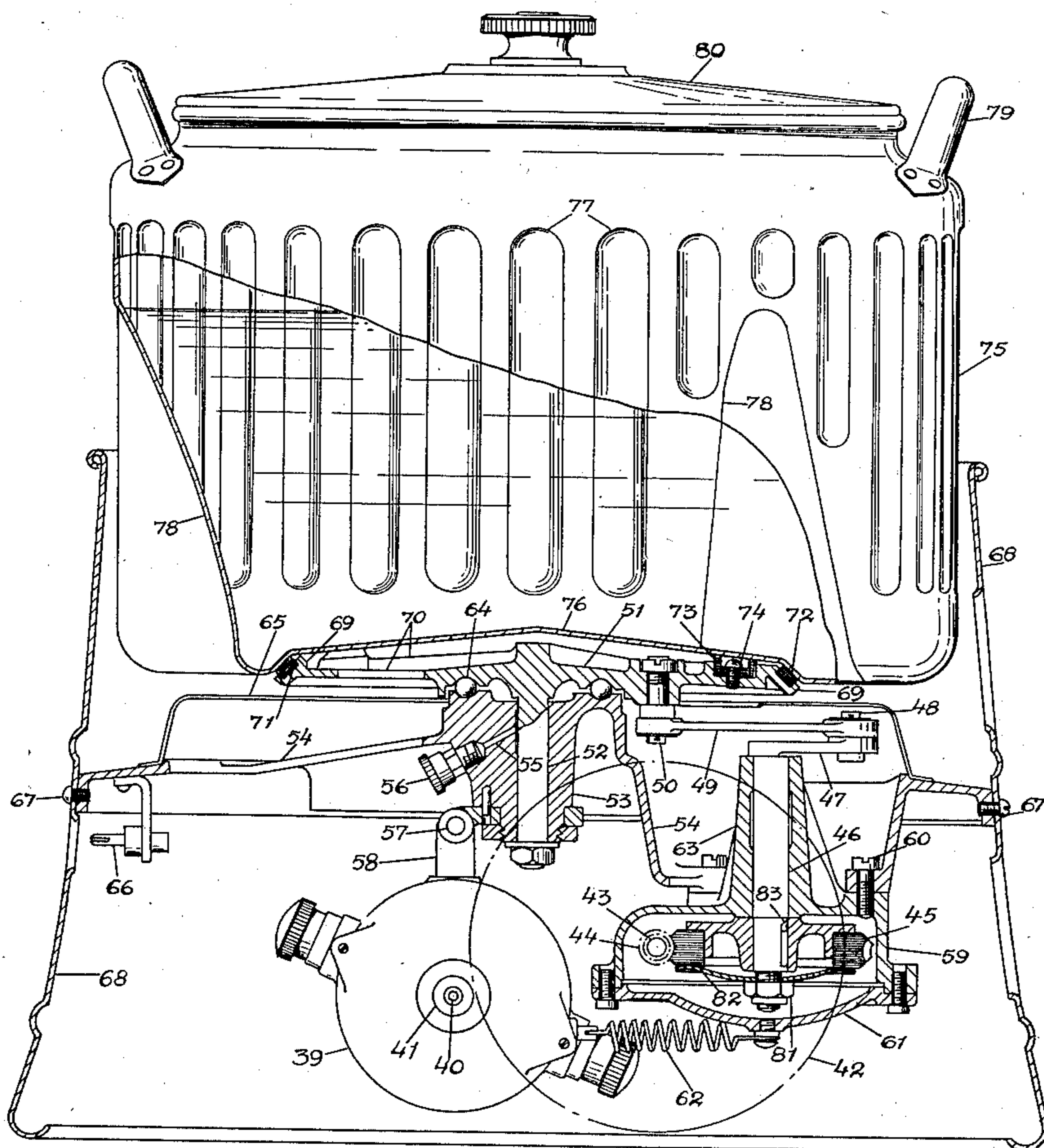
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Fig. VI



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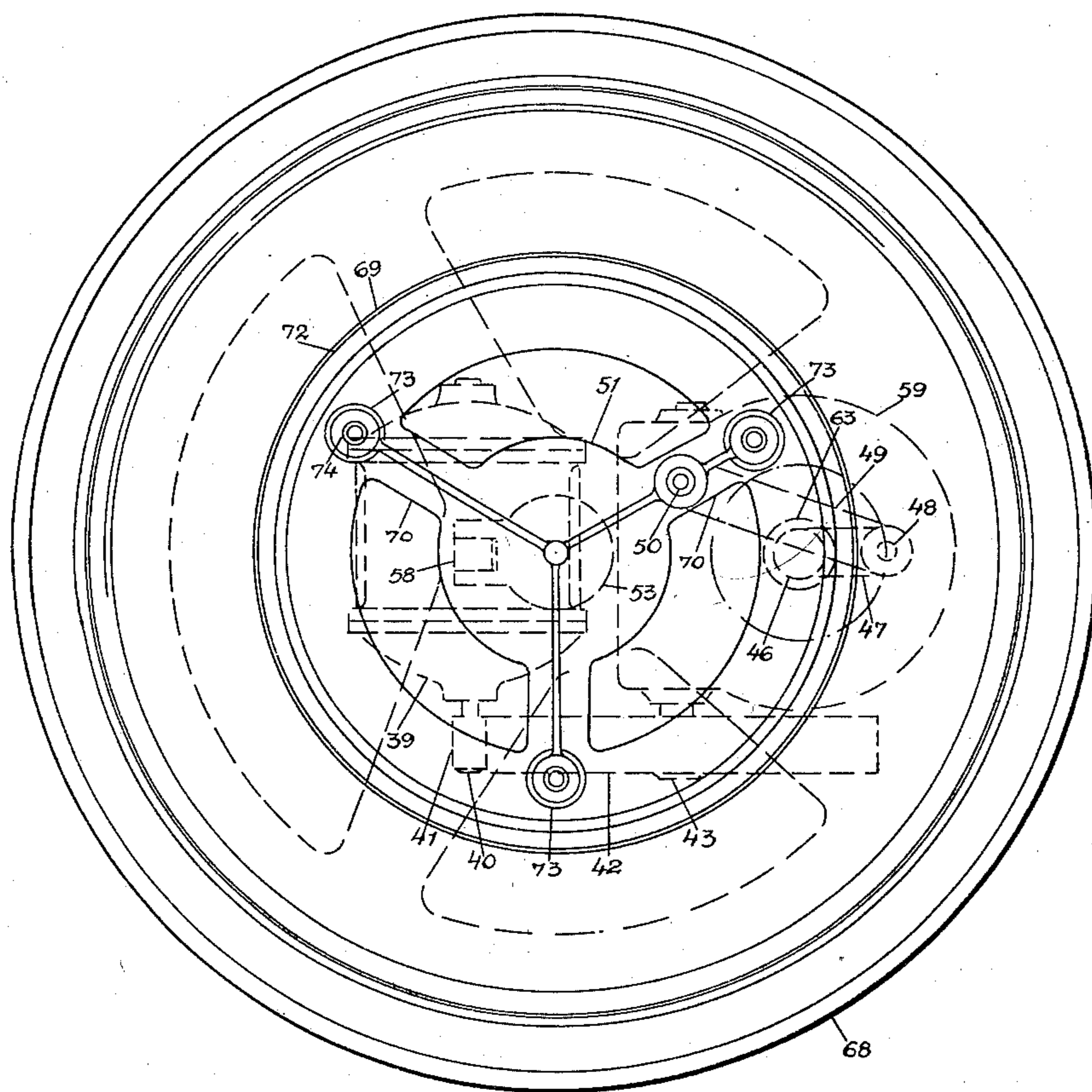
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WASHING MACHINE

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4 Sheets-Sheet 4

FIG. VII



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UNITED STATES PATENT OFFICE

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WASHING MACHINE

Application filed October 19, 1928, Serial No. 313,566, and in Sweden October 20, 1927.

The present invention relates to a washing machine and particularly to a machine in which a container for the wash and the washing liquid is given an oscillating movement.

One object of our invention is the provision of a washing container which is readily releasably arranged on carrying means which means are given an oscillating movement by suitable driving arrangements.

Another object is the provision of rubber pieces between said container and said means.

These and other objects and advantages of the invention will be clearly described with reference to the accompanying drawings, in which:

Fig. 1 is an elevational view partially in cross-section, of a washing machine according to the invention, while Fig. 2 is a horizontal section of Fig. 1.

Fig. 3 is a vertical section through the carrying means for the container and the driving arrangements and Fig. 4 a vertical projection of same, whereas Fig. 5 shows the washing machine in packing position.

Figs. 6 and 7 are horizontal and vertical projections respectively of our preferred embodiment.

The invention will first be described with reference to Figs. 1 to 5 in which 10 denotes a container with corrugated side walls adapted to receive the wash and the washing liquid, said container being provided with a detachable cover 11. During the washing operation this container is placed on a container carrier 12 which consists of arms arranged in a stellar way. The arms of carrier 12 are provided with stiffening ribs 12'. The carrying arrangement is rigidly connected to a shaft 13 which receives an oscillating movement by means of a driving arrangement more clearly described hereinafter. This driving arrangement comprises an electric motor 14 connected to a gear train supported in and enclosed by a casing 15, which casing in turn is supported by a carrying stand 16 comprising a horizontal platform and supporting legs for the whole machine. In the embodiment shown in Figs. 1 and 2 the gear train consists of a worm 17 which, on rotation of motor 14, rotates a

worm 18 supported on a shaft 19. To this shaft a cog wheel 20 is also secured, which engages with a larger cog wheel 21, which, in turn, is provided with a crank pin 22. Said pin 22 is connected by means of a crank arm 23 to a crank pin 24, which is secured to the container carrier 12. Crank pin 24 is journaled in a member 25 arranged on one of the arms of carrier 12.

The embodiment of the gearing shown in Figs. 3 and 4 differs from that described in connection with Figs. 1 and 2 in that there is no worm gearing, the movement of the motor being transferred to the container carrier by means of a cog wheel gearing. The motor shaft 26 turns a small cog wheel 27 which engages a larger cog wheel 28, arranged on a shaft 29. To shaft 29 is secured a smaller cog wheel 30 which engages with a cog wheel 31, which wheel, in turn, is fastened to the same shaft 32 as a smaller cog wheel 33 which, finally, drives a cog wheel 34 which in a similar manner to the embodiment shown in Figs. 1 and 2 transfers the motion to the shaft 13 of carrier 12.

It is thus clear that, when motor 14 is started, container 10 will receive an oscillating movement, owing to the crank arm connection of the container carrier 12 to the rotating cog wheels 21 or 34. In order to prevent a relative movement between the container carrier and the container, rubber clamps 35, on which the container rests, are arranged on carrier 12. In addition, the upstanding outermost parts 36 of the carrier arms are provided with rubber covers 37. These upstanding parts 36 may preferably be springloaded, the spring load being regulated so as to enable an easy lifting off of container 10 which preferably is provided with handles (not shown), in order to facilitate the placing of same on a heating element for the heating of the washing liquid and the wash respectively, or moving it from such a heating element back to the washing machine stand.

The connection between the container and the container carrier may, of course, also be built in any other suitable manner, for instance by arranging on the container some

legs which fit into holes or incisions in the carrier.

To effect a stirring of the wash and the washing liquid respectively and especially a relative movement between these, there are, on the inside of the container, carrying plates 38 applied, which preferably are inclined as shown in Fig. 2. Instead of plates 38 there may be perforated partition walls radially arranged which walls, however, of course do not need to cross the interior of the container, or the container may be provided with other suitable arrangements for the purpose of effecting a relative movement between the wash and the washing material.

In Fig. 5 the apparatus is shown in position for packing. As in transport space is an important consideration, the washing machine is preferably so formed that the legs of the stand may embrace the container and that the motor and the gearing can be seated within the container on removal of the cover. The cover is then put on the carrying member.

The rubber parts 35 and 37 between the container and the container carrier also provide an insulation between these members as regards electricity as well as heat. The contents of the container may possibly be heated before commencing the washing operation, and it is desirable that this heat be not led away too fast.

If a transmission gearing consisting of cog wheels is utilized, the cog wheels preferably include prime numbers of cogs in order that the same cogs shall not always be stressed at the turning points of the carrier and container.

In Figs. 6 and 7 the motor is designated 39. To motorshaft 40 a friction wheel 41 is fixed cooperating with another friction wheel 42. One of said wheels is suitably provided with a lining of any material having a large coefficient of friction, such as rubber. Wheel 42 is fixed to a shaft 43 which carries a worm 44 cooperating with a worm wheel 45. Worm wheel 45 is arranged on a shaft 46 carrying a crank 47. To crank 47 a pin 48 is fixed cooperating with one end of an arm 49. The other end of arm 49 cooperates with a further pin 50, rigidly secured to a carrier 51, moving on a shaft 52. Shaft 52 rotates in a bearing 53 cast integrally with a stand 54. In bearing 53 a channel 55 is provided through which lubricant is supplied to shaft 52 the channel being closed by a plug 56. On the lower part of bearing 53 the motor 39 is pivotally arranged by means of a bolt 57 and abutment 58. To stand 54 a housing 59 enclosing worm 44 and worm wheel 45 is secured by means of screws 60, housing 59 being filled with oil or grease and provided with a detachable bottom 61. Between bottom 61 and motor 39 a tension spring 62 is arranged in order to provide a good engagement be-

tween wheels 41 and 42. The top of housing 59 is formed as a bearing 63 for shaft 46. On stand 54 between the transmission parts and carrier 51 which rotates on an axial ball bearing 64 a partition plate 65 is arranged. Contact pins 66 are fixed to said stand for the supply of current to motor 39. Stand 54 with all parts arranged thereon is by means of screws 67 secured to a somewhat conical housing 68 which carries the whole washing machine.

Carrier 51 is, as will be seen from Fig. 7, formed as a ring 69 connected with the center of the carrier by means of arm 70. Ring 69 is conical in form, as seen in Fig. 6 and is provided with a ringshaped groove 71 holding a correspondingly shaped rubber lining 72. Each arm 70 is provided with a rubber piece 73 fastened by means of a screw 74. Carrier 51 is adapted to carry a washing container 75 formed with a bottom 76 which exactly corresponds to the outer structure of said carrier and its rubber parts as is evident from Fig. 6. The friction between the rubber and bottom 76 is sufficient to prevent relative motion between container 75 and carrier 51. Container 75 is corrugated as shown at 77 and is provided with protuberances 78 formed in the container wall and adapted to check the clothes to be washed during operation. In order to facilitate the lifting and carrying of container 75, the same is provided with handles 79. A cover 80 forms the top of the container.

During operation the motor 39 will transfer its motion by means of friction wheel 41 to wheel 42, whereby worm 44 and thus worm wheel 45 and shaft 46 are rotated. By means of the crank arrangements 47, 48, 49 and 50 this rotative movement is transferred into an oscillating movement, thus giving carrier 51 and thereby container 75 an oscillating motion. By means of protuberances 78 the clothes are checked and thus will not follow the container and the water in the oscillating movement. In this manner the desired effective relative motion between the wash and the washing liquid is obtained.

In order to prevent damage to the transmission parts if for instance the container has been loaded too much thus unduly increasing the stresses on said parts at the turning points, worm wheel 45 is, under such circumstances, enabled to slip a little on shaft 46. To this end worm wheel 45 is, by means of a nut 81 and spring disc 82, pressed against an abutment 83 of shaft 46. This arrangement may also be used if the transmission gearing consists of cog wheels.

What we claim is:

1. In a washing machine, a container carrier, a container having an open top and removably engaging said container carrier for joint operation therewith, and mechanism

operatively connected to and located below
said container carrier for imparting motion
thereto, said mechanism being adapted for
insertion into the open top of the container
5 to facilitate shipment.

2. In a washing machine, a stand compris-
ing a platform provided with supporting
legs, a container carrier mounted above said
platform, mechanism for driving said car-
10 rier mounted below said platform and oper-
atively connected to said carrier, a container
having an open top and removably engage-
able with said carrier and said stand adapted
to be placed in such relation to said container
15 that said mechanism extends within the open
top thereof.

In testimony whereof we affix our signa-
tures.

20 AXEL OLOF ENGBERG.
 TORD ERIK DANIEL BILDE.

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