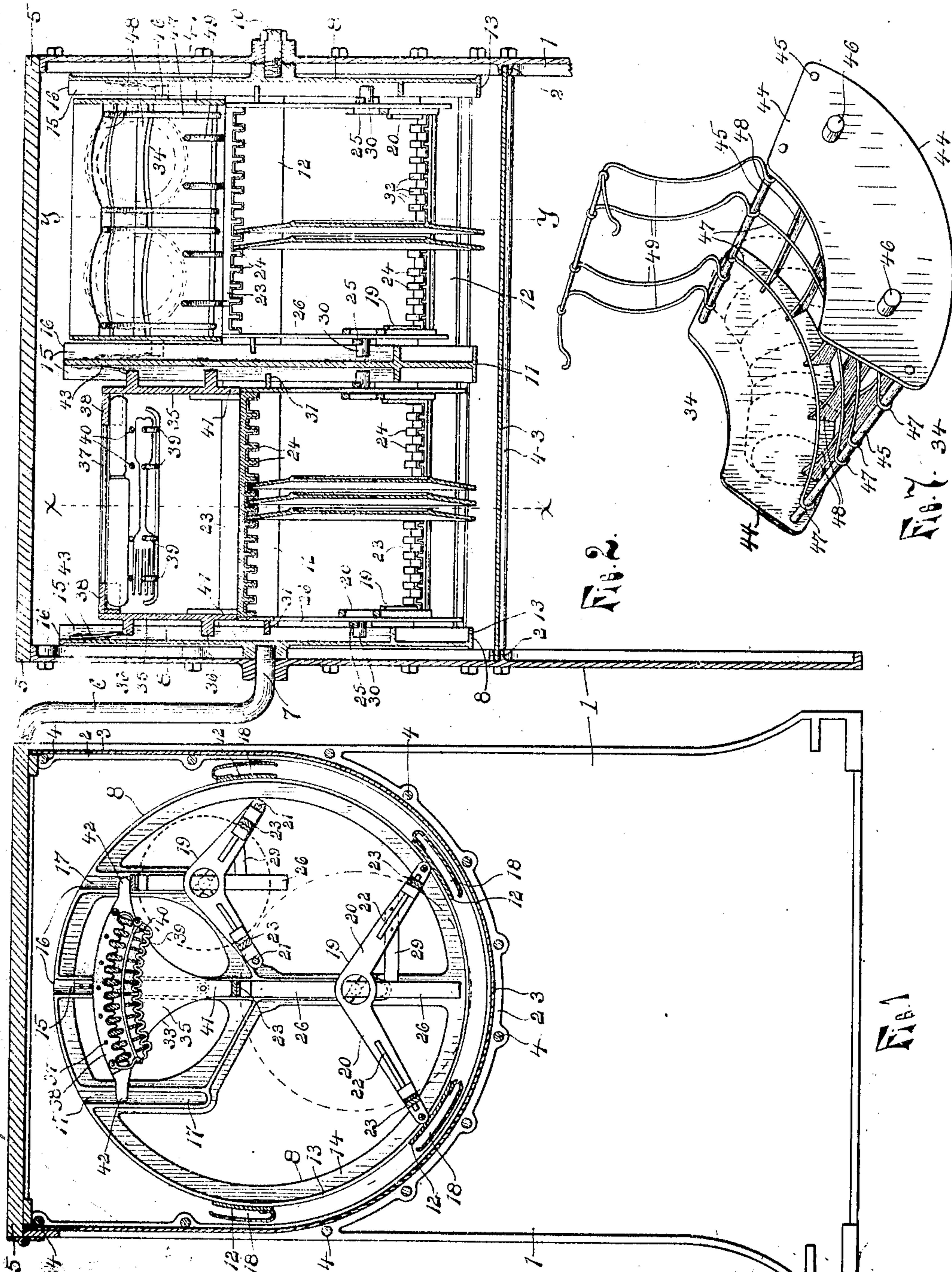


No. 849,627.

PATENTED APR. 9, 1907.

J. KREHBIEL.
DISH WASHING MACHINE.
APPLICATION FILED NOV. 1, 1905.

2 SHEETS—SHEET 1.



WITNESSES:
Lewis E. Blanders
Oliver C. Barthel

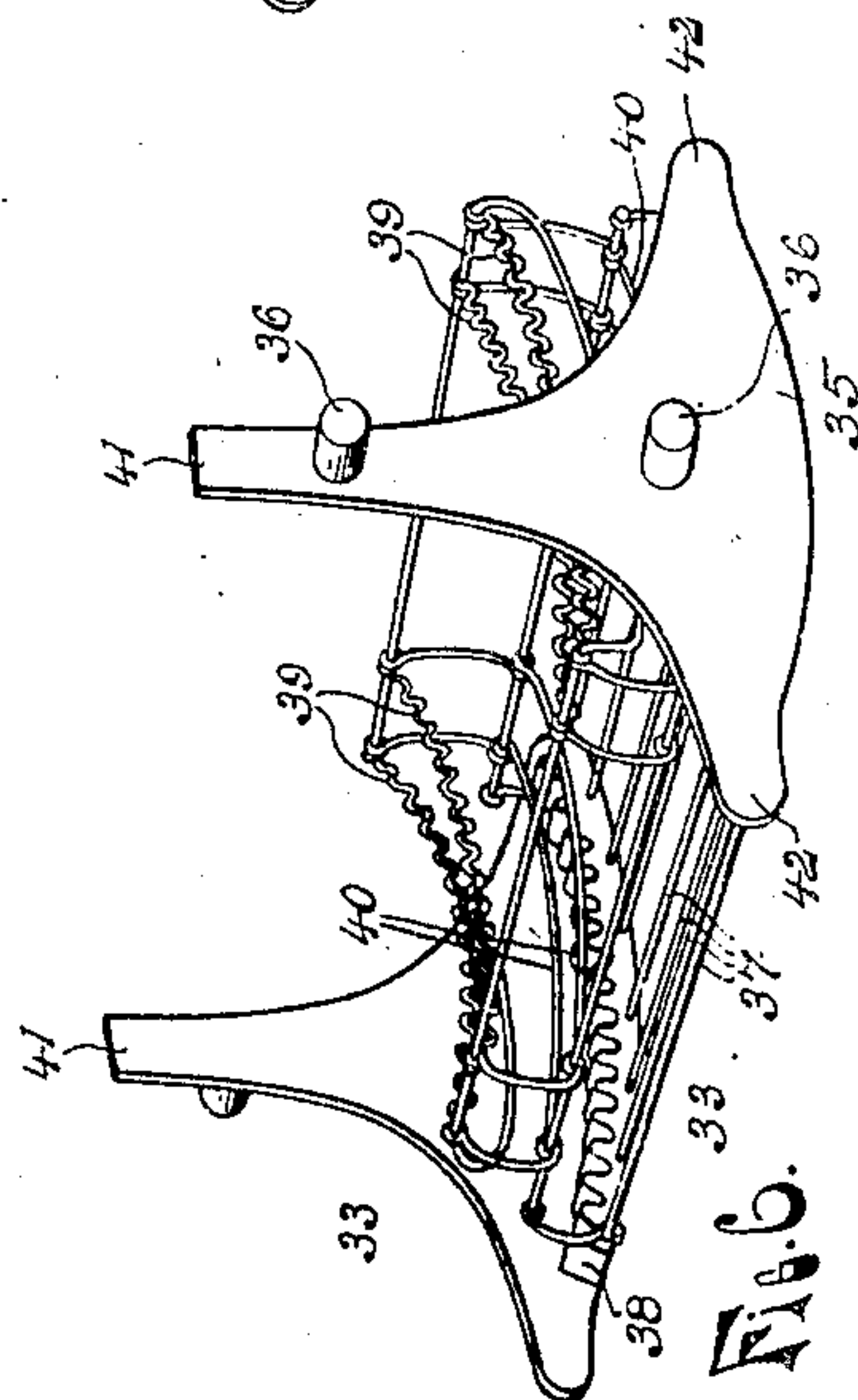
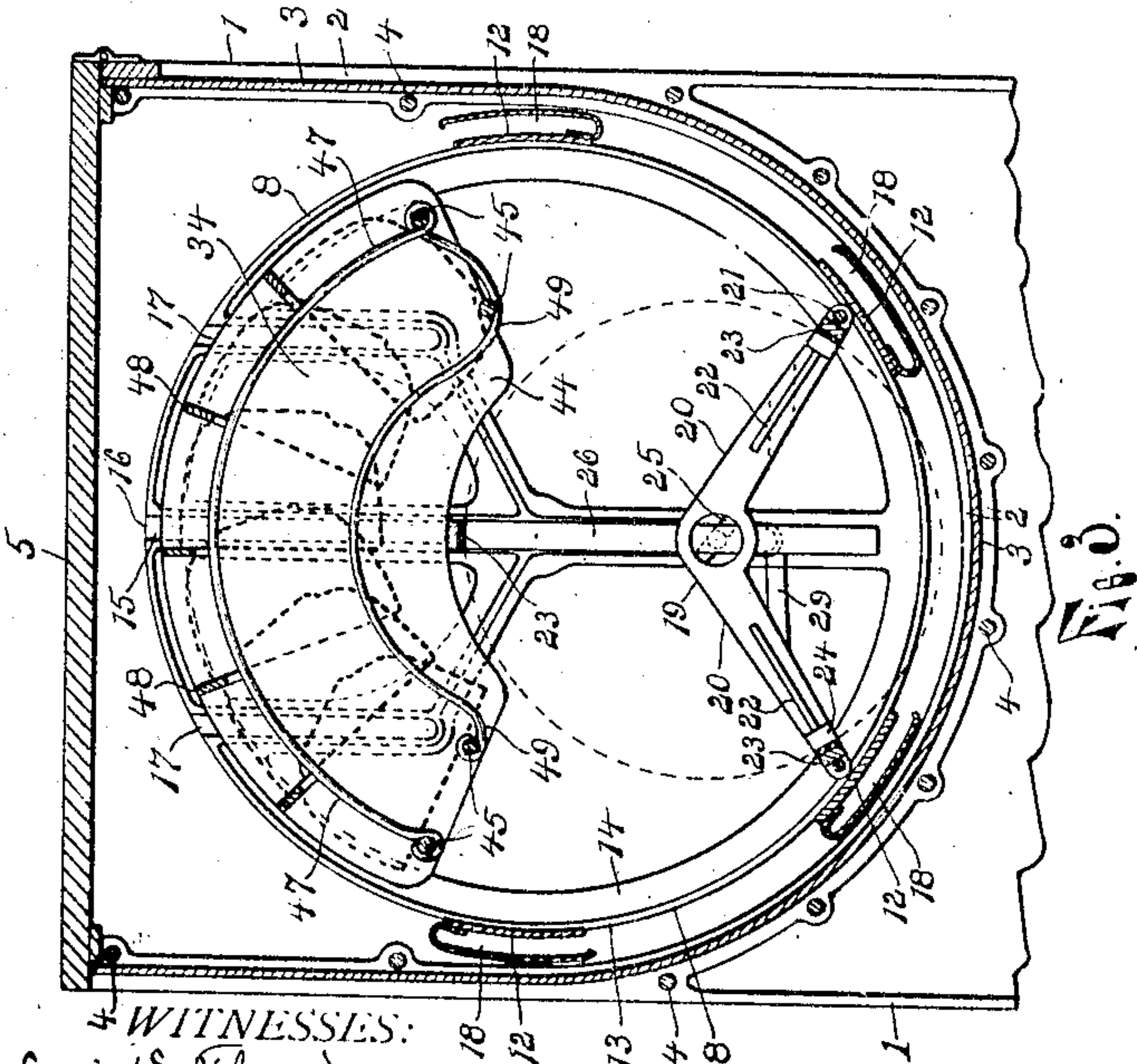
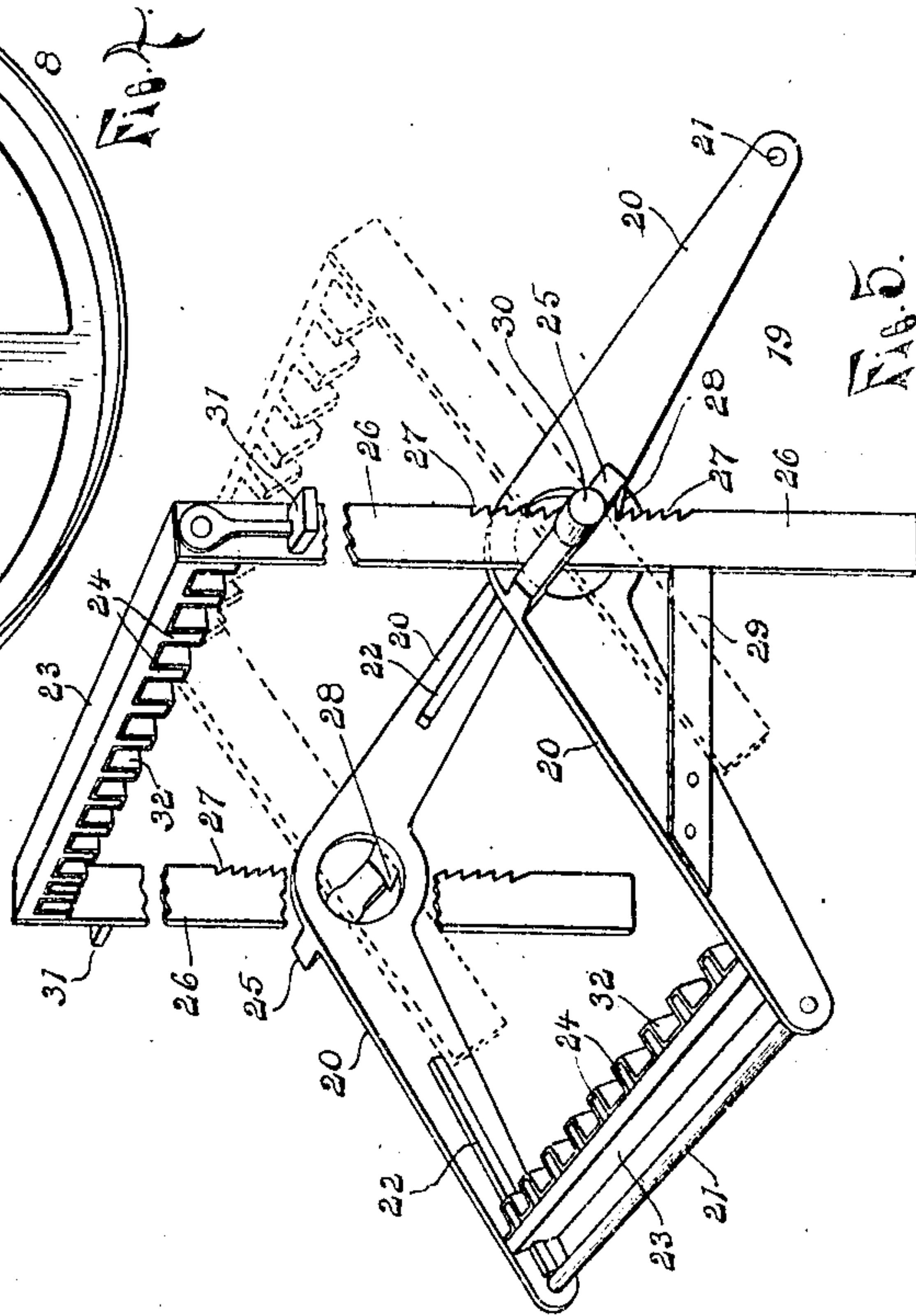
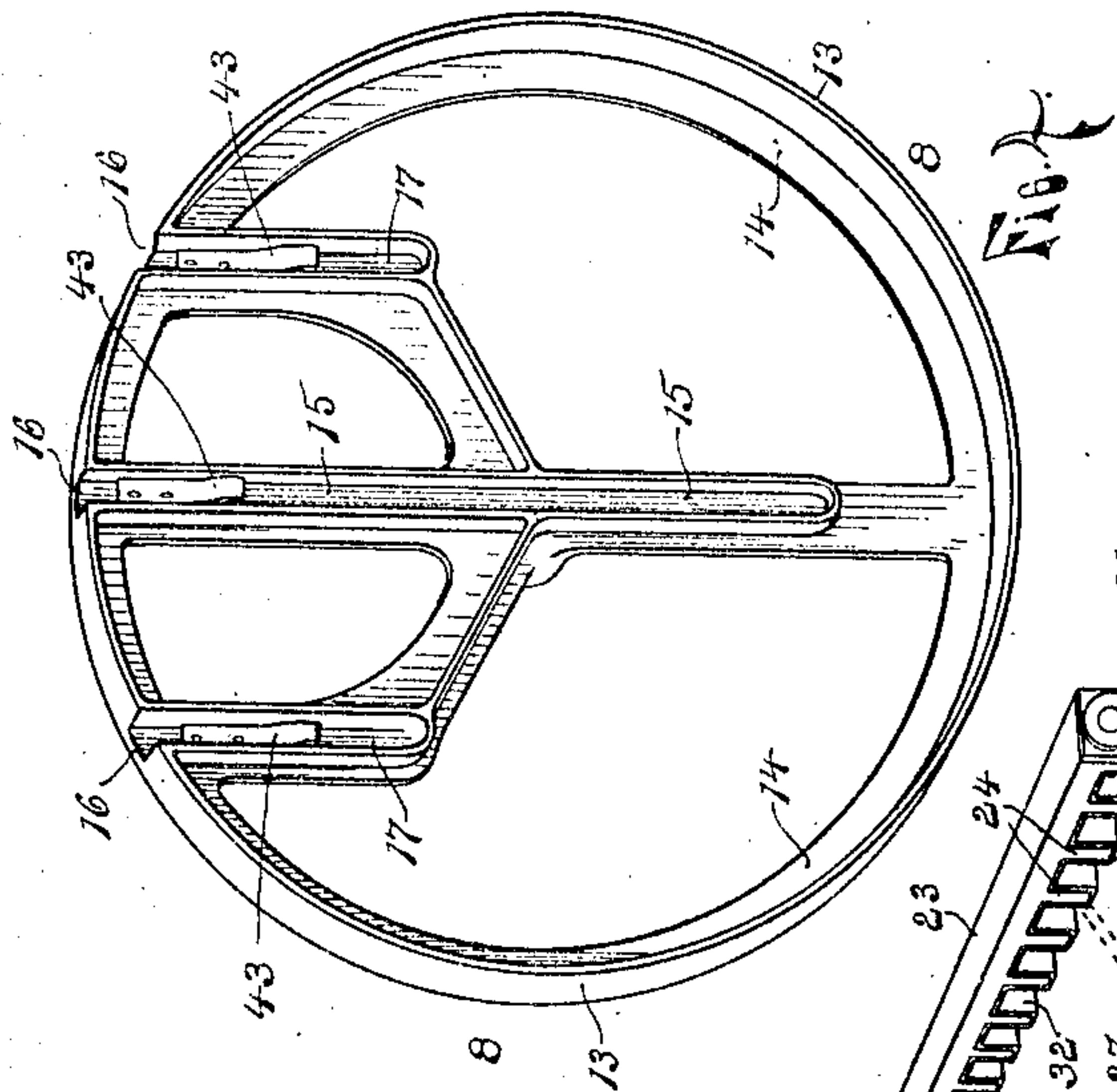
INVENTOR:
John Krehbiel
BY *Charles H. Smith*
ATTORNEY

No. 849,627.

PATENTED APR. 9, 1907.

J. KREHBIEL.
DISH WASHING MACHINE.
APPLICATION FILED NOV. 1, 1905.

2 SHEETS—SHEET 2.



WITNESSES:
Lewis E. Glanders
Oliver C. Barthel.

INVENTOR.
John Krehbiel.
BY *Barthel & Barthel*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN KREIBIEL, OF CLEVELAND, OHIO.

DISH-WASHING MACHINE.

No. 849,627.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed November 1, 1905. Serial No. 235,382.

To all whom it may concern:

Be it known that I, JOHN KREIBIEL, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Dish-Washing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in dish-washing machines; and its object is to provide an efficient, simple, and inexpensive construction having means for securely holding the dishes out of contact with each other, which means may be quickly and easily detached from the washer and taken to any convenient place for filling and may then be readily slipped into place in the washer, thus greatly facilitating the placing of the dishes in the washer and lessening the liability of breakage.

It is also an object of the invention to provide the device with detachable means for holding the other table and kitchen utensils, all of which means may be used when detached as racks to hold the several articles when not in use; and a further object of the invention is to provide a convenient and compact device embodying the several advantages of the particular arrangement and combination of parts, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a transverse vertical section on the line *x x* of Fig. 2 of a device embodying the invention; Fig. 2, a longitudinal vertical section of the same; Fig. 3, a transverse vertical section on the line *y y* of Fig. 2. Fig. 4 is a detail perspective view of the end casting of the rotary frame. Fig. 5 is an enlarged perspective view of one of the plate-racks. Fig. 6 is a perspective view of the knife and fork racks, and Fig. 7 is a perspective view of the cup-rack open and in position to receive the cups.

As shown in the drawings, 1 are cast end frames provided with inwardly-projecting parallel flanges 2, between which the ends of a sheet of metal forming the body or tank 3 of the washer are held by tie-bolts 4 extending through openings in the ends outside the tank, packing being placed between the flanges to make a tight joint. Into this tank hot water for washing the dishes is poured, and a wooden cover 5 is hinged to the tank

to tightly close the same and shut in the steam.

The end frames of the tank are formed each with a bearing, and extending through the bearing at one end is a rod or shaft bent to form a crank-handle 6 at its outer end and a stub-shaft 7 at its inner end, which is screw-threaded to engage a screw-threaded socket in a hub on the cast end ring-frame 8, of a revoluble skeleton drum formed of a similar ring adjacent to the opposite end of the tank supported in a similar manner by a stud-bolt 10, an intermediate skeleton ring or frame 11, and a series of longitudinal strips 12, secured to the peripheries of these rings. Arms extend radially outward from the center or hub of each of these ring-frames and form the spider to connect the peripheral ring 13 with the hub, and an inwardly or laterally extending strengthening-flange 14 is formed on the edge of each ring.

Formed on the inner face of the spider-arms of each end ring are parallel projecting flanges or ribs forming between them a way 15, extending diametrically across the ring from one side nearly to the opposite side, said ribs meeting the strengthening-flange 14, which is cut away between to form an open end 16 for the way in the periphery of the ring. Two short ways 17, formed in the same manner as the way 15, extend inward from the same side of each ring as said way 15, parallel with it and at a distance therefrom, and the intermediate ring 11 is made substantially the same as the end rings, except that it is double or formed with the ways 15 and 17 on each side.

Strips of sheet metal are secured along one edge to the strips 12 and bent backward to form longitudinal pockets 18 on the periphery of the skeleton drum to scoop up the water in the bottom of the tank when the drum is turned and carry it to the upper side of the drum, where it spills out over the dishes.

Detachable racks 19, constructed as shown in Fig. 5, are provided to hold the plates, saucers, and similar dishes, each consisting of a suitable frame the ends of which are formed by cast arms 20, extending in opposite directions at an angle to each other and connected at their free ends by cross-rods 21. On the inner face of each arm extending longitudinally thereof and inward from the cross-rods is a rib 22, adapted to be engaged

by bars 23, having notches in their ends to receive said ribs, and these bars are formed with inwardly-projecting lugs 24, between which the edges of the plates are placed to hold said plates separated. The distance between these notch-bars 23 must be less than the diameter of the plates, so that said plates will not pass through between them, and therefore to accommodate the different sizes in which plates are made these bars may be adjusted inward on the ribs, or they may be quickly detached for repair.

On the outer side of the arms 20, forming each end of the rack, at the point where said arms meet at an angle, is a loop 25, cast integral with said arms, and a locking-frame is provided for each rack consisting of a notch-bar similar to the notch-bars 23 and end bars 26, to the upper ends of which the ends of the notch-bar are secured. The bars 26 are adapted to slide longitudinally through the loops 25 and to also turn laterally therein, said loops being wider than the bars. These loops extend longitudinally of one of the arms, so that when the locking-frame is turned to a vertical position, or with its bars 26 extending outward midway between the outer ends of said arms, one edge of each bar will engage one side of the loop and the other edge thereof, which is provided with a series of notches 27, will engage a projection 28 on the other side of the loop, and when said bars are held in this position by the engagement therewith of spring-arms 29, secured to the frame, they are prevented from moving longitudinally through the loops by the engagement of the projections with the notches and are prevented from turning by the engagement of the spring-arms with their edges. Projecting outward from the center of each loop is a stud 30 to engage the ways 15 and 17 on the ends of the carrying-drum, and on each of the bars 26, near its upper ends, is an outwardly-extending lug 31 to also engage and slide in said way. The racks are thus guided and held in a certain position relative to said ways when placed in the drum, and the plates are firmly held and spaced apart by being engaged at their peripheries by the three notch-bars. These notch-bars are preferably faced with rubber 32 or other suitable material, so that in setting the plates into the rack and turning the locking-frame from the position shown in dotted lines in Fig. 5 into the position shown in full lines to engage the same with the upper edges of the plates and lock them in the rack there will be no danger of nicking the edges of the dishes.

The plate-racks are of a length to slip in between the end rings 8 and the center ring 11, and they may be made in different sizes, those for holding the plates being larger than those for holding the sauce-dishes and smaller plates or saucers. In the drawings the dinner-plates are shown in the bottom of

the drum at one end and the pie-plates or plates of smaller diameter in the bottom of the opposite end, the racks containing these plates resting upon the strips 12 of the drum. In the end containing the smaller plates racks containing saucers and similar dishes of small diameter may be inserted in the ways 17 above and at each side of the larger plates, and in the triangular space at the top and between these small racks a rack 33 for the knives and forks may be placed. The space above the large rack containing the dinner-plates is utilized by placing therein a suitable rack 34 for the cups, and thus a full set of dishes may be quickly, conveniently, and compactly placed in the washer at one time, the arrangement of the racks being varied to suit the circumstances.

The knife and fork rack 33 consists of triangular-shaped end plates 35, each provided with outwardly-extending studs 36 to engage the ways 15 to hold the rack in position, and a series of cross-rods 37 connect these ends. Bars 38, formed with a series of notches to receive the ends of the handles and blades of the knives, are secured to the inner faces of the end plates, and a suitable holder, formed of crimped wires 39 to receive the forks, is pivoted so as to be swung over the knives when in place and hold the same in their notches. Clamping-wires 40 are pivoted at one end to the fork-holder to be turned down across the forks and hold the same in place. In placing the knives and forks in the rack it is taken from the washer and placed on the table in the position shown in Fig. 6. The fork-holder is then swung back from over the knife-holder and each filled, the forks being secured within their holder by securing the locking-wires across them. The fork-holder is then swung down over the knife-holder to lock the knives in place, and the rack is then inverted and slipped into the drum with its studs engaging the ways 15 and the extended end 41 of each end plate resting upon the upper ends of the locking-frame of the large plate-rack in the bottom of the drum. Laterally-extending portions or arms 42 on the end plates extend laterally over the locking-racks of the two small plate-racks supported in the ways 17, and thus by providing any suitable means for locking the knife and fork rack within its way, as flat springs 43, all of the racks in this end of the drum are locked therein.

The cup-rack 34 consists of two end plates 44, secured together by cross-rods 45 and each provided with studs 46 on their outer surface to engage the two ways 17 on the end and center rings of the supporting-drum. Parallel wires 47 extend transversely of the rack and are secured at their ends to the rods 45. Upon these wires two rows of partially-nested cups may be placed, and longitudinal bars 48 are secured at their ends to the end

plates to engage the upper edges of the cups at their lower sides when placed in the rack and hold said cups separated or only partially nested, so as to give the water free access to their interior. To hold the cups down upon the wires 47 and in place, a locking-frame formed of transverse wires 49 is pivoted at one end to be turned down into contact with the upper sides of the cups and locked in place.

When the cups have been placed in the rack and locked therein as described, the rack is inverted from the position shown in Fig. 7 and slipped into place above the large dinner-plate rack by engaging its studs 46 in the ways 17, in which it slides downward until the end plates engage the locking-frame of the plate-rack, where it is locked by springs in the ways 17 similar to the spring 43, which engage its studs, and thus securely hold it and the plate-rack below within the drum.

By providing racks for holding the several articles, which may be detached from the washer and taken to any convenient place for filling, the work of placing the dishes in the washer is greatly facilitated, and, if desired, these racks may be used to hold the clean dishes when not in use. The racks and drum are so constructed that they do not interfere with the water reaching every part of the dishes, and as the drum is turned the dishes are successively submerged and raised from the water, and the hot water is constantly raised and poured over them by the buckets, thus thoroughly cleaning every part.

Having thus fully described the invention, what I claim is—

1. In a dish-washing machine, the combination with a tank, of a rack for holding dishes provided with means for holding the dishes separated, a skeleton drum rotatively mounted in said tank and provided with a way, and means on the rack for engaging the way and hold the rack in place in the drum.

2. In a dish-washing machine, the combination with a tank, of a rotatable skeleton drum within said tank, an open detachable rack for holding dishes adapted to be placed in the drum, buckets upon the periphery of the drum, and means for turning the drum.

3. In a dish-washing machine, the combination with a tank, of a rotatable skeleton drum within said tank consisting of end rings, an intermediate ring and a series of longitudinal strips secured to the peripheries of said ring, like ways on the rings, a plurality of racks for dishes, and means on the racks for engaging the ways to hold the racks in place within the drum.

4. In a dish-washing machine, the combination of a tank having bearings in its ends, a rotatable supporting-drum in said tank having a hub portion at each end formed

with a screw-threaded socket, a stud-bolt in the bearing at one end of the tank engaging the screw-threaded socket in the adjacent end of the drum, a crank-handle having a screw-threaded end extending through the bearing in the end of the tank and engaging the socket in the adjacent end of the drum, and racks for holding dishes detachably held within the drum.

5. In a dish-washing machine, the combination with a tank, of a drum having ends each provided with a plurality of ways on their inner sides, racks for holding dishes, studs on the ends of said rack to engage the ways, and means for locking the racks from moving in the ways.

6. In a dish-washing machine, the combination with a tank, of a skeleton drum in said tank having ends each formed by a hub portion from which arms extend forming a spider and a ring portion integral with the ends of the arms forming the spider, inwardly-extending parallel ribs on said arms of the spider forming ways between them, strips secured to the ring portions of the ends, and racks having outwardly-extending studs on their ends to engage the ways.

7. In a dish-washing machine, the combination with a tank, of a rack for holding plates comprising end portions, bars between said ends adapted to engage the edges of the plates and support the same, and a locking-frame carried by the end portions and adapted to be turned into engagement with the edges of the plates at their side opposite that engaged by the bars, and means for supporting and turning the rack in the drum.

8. In a dish-washing machine, the combination with a tank, of a rack for holding plates having ends, bars between said ends adapted to be engaged by the edges of the plates and support the same, lugs extending laterally from said bars inward between the plates to hold the same separated, a locking-frame consisting of end bars attached to the ends of the rack to turn laterally and a bar secured to the end bars to engage the edge of the plates and provided with lugs to extend inward between the plates, and means for securing the locking-frame with its bar engaging the edges of the plates and in a position to lock the plates between the bars engaging their edges, and means for supporting and turning the rack within the tank.

9. In a dish-washing machine, the combination with a tank, of a rack for holding dishes consisting of ends formed by laterally-extending arms, cross-rods connecting the outer ends of said arms, notch-bars to engage the edges of the dishes adjustably attached to said arms, a locking-frame pivotally attached to the ends and provided with a notch-bar to engage the edges of the dishes, and means for locking said frame with its bar in engagement with the dishes, and means

for supporting and turning the rack in the tank.

10. In a dish-washing machine, the combination with a tank, of a rack for holding
5 dishes having arms extending laterally in opposite directions at an angle to each other and forming the ends of the rack, cross-rods connecting the ends of said arms, longitudinal ribs on the inner faces of the arms, notch-
10 bars for engaging the edges of dishes having notches in their ends to receive the ribs, a locking-frame consisting of end bars adjustably attached to the ends of the rack and a
15 notch-bar secured to the ends of said end bars, means for locking said frame in a position midway between the ends of the arms and with the notch-bar in engagement with the dishes, and means in the tank for sup-
porting and turning the rack.

20 11. In a dish-washing machine, the combination with a tank, of a rack for holding dishes having ends formed by laterally and downwardly extending arms, notch-bars be-
25 tween the outer ends of said arms to engage the edges of the dishes, a loop on each end extending outward therefrom, a locking-frame consisting of end bars extending through and adjustable in said loops and a notch-bar con-
30 necting said end bars, means for locking said end bars in their loops, and means for supporting and turning the rack in the tank.

12. In a dish-washing machine, the combination with a tank, of a rack for holding
35 dishes having ends formed by laterally-extending arms meeting at an angle, rods connecting the outer ends of said arms, notch-bars between the ends of said arms, a loop on each end extending longitudinally of one of
40 the arms, a locking-frame formed of a longitudinal notch-bar secured at its ends to side bars having a series of notches in one edge and of such a width that when turned to en-
45 gage the notch-bar with the dishes and lock the same in the rack, one edge of said bars will engage one side of each loop and the notches in their opposite edges will be en-
gaged with the opposite side of the loops to prevent longitudinal movement of the bars in the loops, and a spring to engage one of the
50 bars and hold the frame in its locked position; and means in the tank for supporting and turning the rack.

13. In a dish-washing machine, the combination with a tank, of a skeleton drum in
55 said tank having a way extending across its ends, a rack for holding plates having studs

to engage said way and support the rack in the drum, a rack for holding other dishes or utensils having studs to engage the way, and means for locking the last-named rack in the
60 way to hold both in place in the drum.

14. In a dish-washing machine, the combination with a tank, of a skeleton drum hav-
ing ends formed with a series of parallel ways extending inward from one side of said ends, 65
a plurality of racks for holding plates or similar dishes provided with studs to engage said ways and be supported thereby within the drum, a rack for holding other table utensils adapted to engage all of the other racks and
70 prevent their movement in the ways, and means for locking the last-named rack in place in the drum.

15. In a dish-washing machine, the combination with a tank, of a rack for holding cups
75 consisting of end plates, supports for a series of nested cups between said end plates, bars extending between the end plates to engage the edges of the cups and hold the same out
80 of contact with each other and partially nested, means for securing the cups upon their supports; and means for supporting and turning the rack in the tank.

16. In a dish-washing machine, the combination with a tank, of a rack for holding
85 knives and forks consisting of end plates, rods connecting the end plates, bars formed with notches to receive the ends of the knives secured to the end plates, and a holder for
90 forks pivoted at one side to turn down upon the knives when in place and hold the same in their notches, and means in the tank for supporting and turning the said rack.

17. In a dish-washing machine, the combination with a tank, of a rack for holding
95 knives and forks consisting of end plates, rods connecting said end plates, bars secured to the end plates having notches in one edge to receive the ends of the knives, transverse
100 wires forming a holder for the forks and pivoted at one side to be turned down over the knives, transverse wire to hold the forks in place, and means for locking the fork-holder over the knives, and means in the tank for
105 supporting and turning said rack.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN KREHBIEL.

Witnesses:

OLIVER E. BARTHEL,
OTTO F. BARTHEL.