J. W. HASBURG.

GLASS WASHING MACHINE.

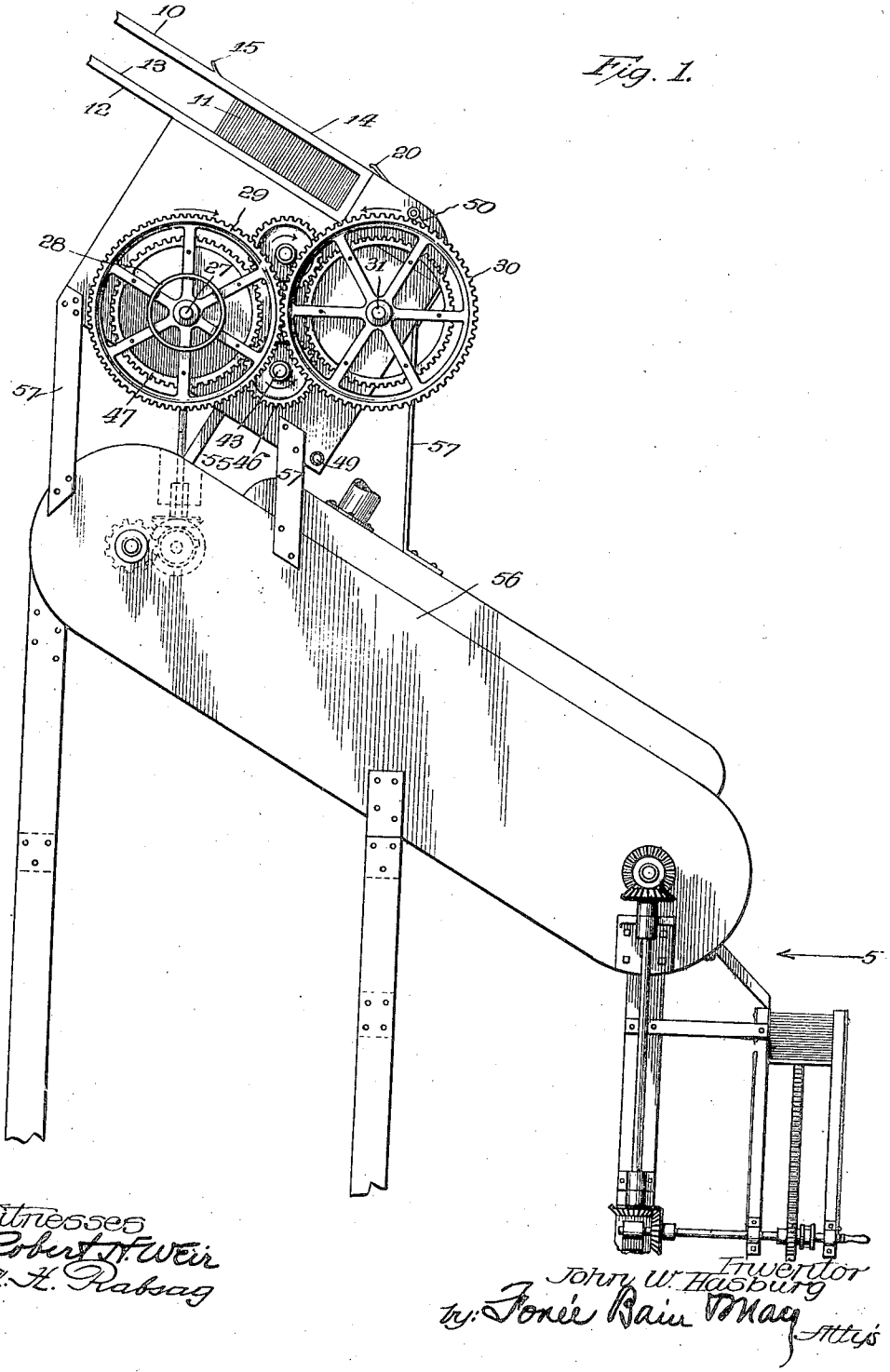
APPLICATION FILED OCT. 12, 1911.

1,104,498.

Patented July 21, 1914.

2 SHEETS—SHEET 1.

Fig. 1.




Witnesses
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A. H. Rabsag

Inventor
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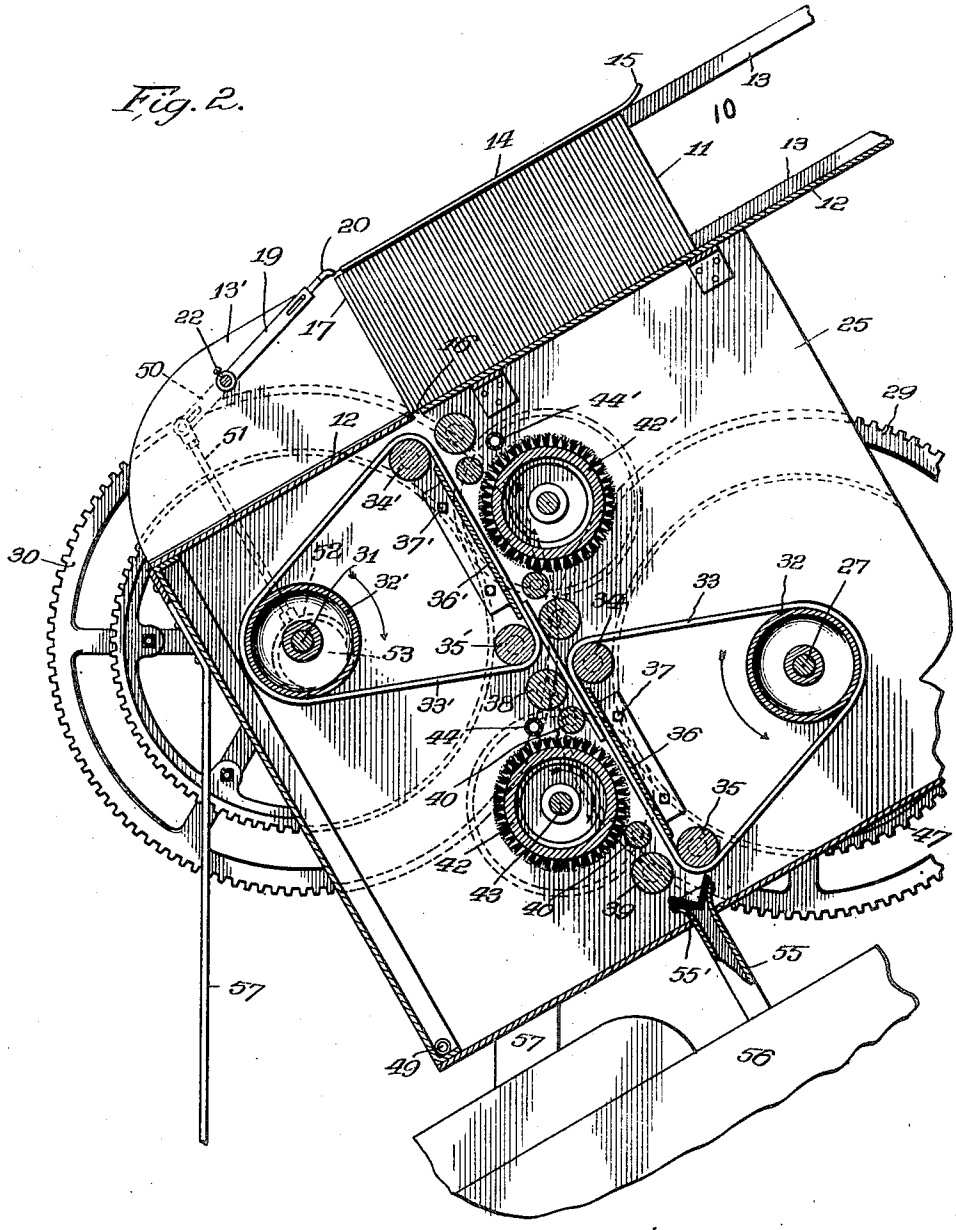
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2 SHEETS—SHEET 2.

Fig. 2.




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# UNITED STATES PATENT OFFICE.

JOHN W. HASBURG, OF CHICAGO, ILLINOIS.

## GLASS-WASHING MACHINE.

1,104,498. Specification of Letters Patent. Patented July 21, 1914.

Application filed October 12, 1911. Serial No. 654,345.

*To all whom it may concern:*

Be it known that I, JOHN W. HASBURG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Glass-Washing Machines, of which the following is a specification.

My invention relates to improvements in glass washing machines, and in some of its features particularly to a machine for washing flat glass plates.

The general object of my invention is to provide a machine arranged to receive stacks of plates and to automatically perform the operation of thoroughly washing each plate.

In the drawings, wherein I have illustrated an embodiment of my invention, Figure 1 is a side elevation; Fig. 2 is a central vertical section through the washing chamber and appurtenant parts.

In the drawings, 10 indicates in general a supply reservoir to receive the stacked plates 11, said reservior consisting of a bottom plate 12 preferably arranged at a sufficiently oblique angle to the horizontal to cause gravitational descent of the stack of plates 11, side rails 13, and top guides 14 upwardly deflected as at 15 near the rear ends to facilitate introduction of the plates into the reservoir. The bottom member 12 of the reservoir forms the top member of a washing chamber to be described, and has therein at an appropriate point a transverse slot 16 forming a suitable opening to permit the passage of a single plate at a time from the reservoir into the washing chamber. The stack of plates 11, slipping gravitationally down the reservoir as indicated, is stopped by a pair of stop-flanges 17 projecting inwardly from side wall members 13′, carried by bottom 12, the endmost or lower plate of the stack being held by said stops 17 and the pressure of the plates above it directly in register with the aperture 16. The plates 11 are fed edgewise through the opening 16, one at a time, by the operation of a feed arm 19 having mounted telescopically in its ends a feed finger 20, said arm 19 being fast on a transverse shaft 22 mounted in the side members 13′ and arranged to be rocked by mechanism to be described.

The washing chamber, generally indicated at 25, is preferably a rectangular casing, conveniently pitched at the angle of the plate reservoir, and preferably comprising top, bottom, and side walls, and a front end wall, leaving the rear end wall open for ease of manual access to the interior mechanism.

27 indicates a drive shaft traversing the casing and carrying an exterior driving pulley 28. Shaft 27 carries a large gear 29 meshing with a corresponding gear 30 upon the second shaft 31 traversing the casing. Interiorly of the casing the two shafts 27 and 31 respectively carry driving rollers 32 and 32′ for corresponding conveyer belts 33 and 33′ by which movement of the plates through the cleaning chamber is effected and controlled. The belt 33 is preferably of rubber, running toward the driver 32 and over upper and lower idler rollers 34 and 35, and across the face of a flat table 36, extending between the idlers 34 and 35, and at its sides secured as at 37 to the side walls of the casing. The belt 33′ is arranged in similar fashion (like parts being indicated by like numerals distinguished by the exponent prime), but the belts are oppositely arranged for successive coaction respectively with opposite sides of the plate in transit through the cleaning chamber. The belt-guiding rollers 34 and 35 are respectively confronted by the idle guiding rollers 38 and 39, and the extremities of the table 36 are preferably opposed by a pair of smaller rollers 40 (the same relative arrangement being carried out with reference to the belt 33′), so that by said driving belts and their opposing idle rollers, there is provided a plate path extending in alinement with the plate-receiving aperture 16 of the casing top continuously throughout the casing to a delivery point at the bottom thereof. Manifestly, a plate fed to the upper belt is passed downward thereby onto the lower belt, as indicated in Fig. 2, the effective range of action of the belts giving them continuous control of the plate of the proper size throughout the entire plate path.

Opposing the table 36 is a washing brush 42, mounted on a shaft 43 and arranged to sweep over the surface of the plate as it passes through the plate path described, the direction of rotation of the brush being preferably such that its surface in contact with the plate moves in the direction of plate movement, though at a higher speed than that at which the plate is moving. A suitable plate-cleaning fluid is supplied to the brush through a transverse spray pipe 44 directly above the brush. The brush

shaft 43, projecting beyond the appropriate wall of the casing, is provided with a pinion 46, meshing with a gear 47, carried by the shaft 27, the gearing relation being such as to produce peripheral movement of the brush at a greater velocity than the velocity of belt movement imparted through said shaft 27 to the belt 33.

The brush arrangement described is duplicated with respect to brush 42′, driven, by gearing as described, from the shaft 31. Each brush acts upon a portion of the plate which is adequately supported by the table underlying the conveyer belt, so that the plate is held up to the brush and breakage substantially obviated.

In order that the automatic feeding of the plates 11 from the reservoir into the plate path of the washing chamber may always occur at proper time intervals under any speed of operation of the machine, I arrange the rock shaft 22 for the feed arm 19 to be driven by cranks 50 connected by arms 51 with eccentric straps 52 engaging eccentrics 53 mounted on shaft 31, the feeding of a single plate therefore occurring with each rotation of shaft 31, and the belt movement concurrent with such rotation of the shaft being such that movement of at least a plate-length occurs between feeding actions. Thus, one plate is fed to the washing chamber and one plate delivered therefrom for each revolution of the drive shaft 27 and its companion shaft 31. Now, it will be manifest that each plate passed through the plate path is acted upon first on one side and then on the other by the companion brushes supplied with cleansing fluid from their respective pipes, the surplus fluid being led off through the outlet 49 at the lower corner of the washing chamber. The plate path leads at its lower end to a transfer chute 55, preferably provided with rubber "squeegee" blades 55′ at its mouth and opening through the bottom of the washing chamber to communicate at its lower end with the drying chamber 56 on which the washing chamber is carried as by suitable braces 57.

The use and operation of the device will now be apparent. The plates stacked in the reservoir 10 are fed by means of arm 19 and longitudinally-yielding finger 20 one by one through the opening 16 into the washing chamber, each plate being received by the upper belt 33′, and fed downwardly first by the upper belt, and then by the lower belt, through the plate path, to the transfer chute 55. In its traverse through the washing chamber, first one side and then the other side of the plate is subjected to the washing action of the appropriate brushes, said brushes being constantly supplied with cleansing fluid, thereby thoroughly to wash the plates. The feeding operation takes place once in every revolution of the main shaft 27, and correspondingly, one plate is delivered into the transfer chute 55 for each revolution of the shaft, the arrangement enabling two plates to be in transit through the washing chamber at the same time.

While I have herein described in some detail a specific embodiment of my invention it will be apparent to those skilled in the art that many changes in the details of construction thereof may be made without departure from the spirit of my invention and within the scope of the appended claims.

What I claim is:

1. In a machine of the character described, the combination, of a washing chamber, having an inlet for a plate of glass to be washed and an outlet opposite to said inlet; two duplicate, oppositely-facing non-alining plate engaging and feeding means, each comprising a conveyer belt, having a straight plate guiding run, a belt driving roller at the rear thereof and a stationary table underlying the plate guiding run; a rotary plate scouring brush, in front of the straight plate guiding run of each of the feeding means; intermeshing gears, carried by the belt driving rollers, whereby they are rotated at the same speed; a gear, carried by each of the scouring brushes; and a gear, associated with each roller driving gear and meshing with its opposite brush driving gear.

2. In a machine of the character described, the combination, of a washing chamber, having an inlet for a plate of glass to be washed and an outlet opposite to said inlet; two duplicate, oppositely-facing, non-alining plate engaging and feeding means, each comprising a conveyer belt, having a straight plate guiding run, a driving roller at the rear thereof and a stationary table underlying the plate guiding run; a rotary plate scouring brush, in front of the straight plate guiding run of each of the feeding means, intermeshing gears carried by the belt driving rollers, whereby they are rotated at the same speed; a second gear, carried by each of the first mentioned gears; and a gear, smaller than the second afore mentioned gear, carried by each of the scouring brushes and each meshing with its opposite second mentioned gear, whereby the peripheral velocity of the scouring brush is greater than that of the belt driving roller.

In testimony wherof I hereunto set my hand in the presence of two witnesses.

JOHN W. HASBURG.

In the presence of—
FORÉE BAIN,
MARY F. ALLEN.