Aug. 2, 1932. J. HAUK 1,869,477

CAN TURNING MACHINE

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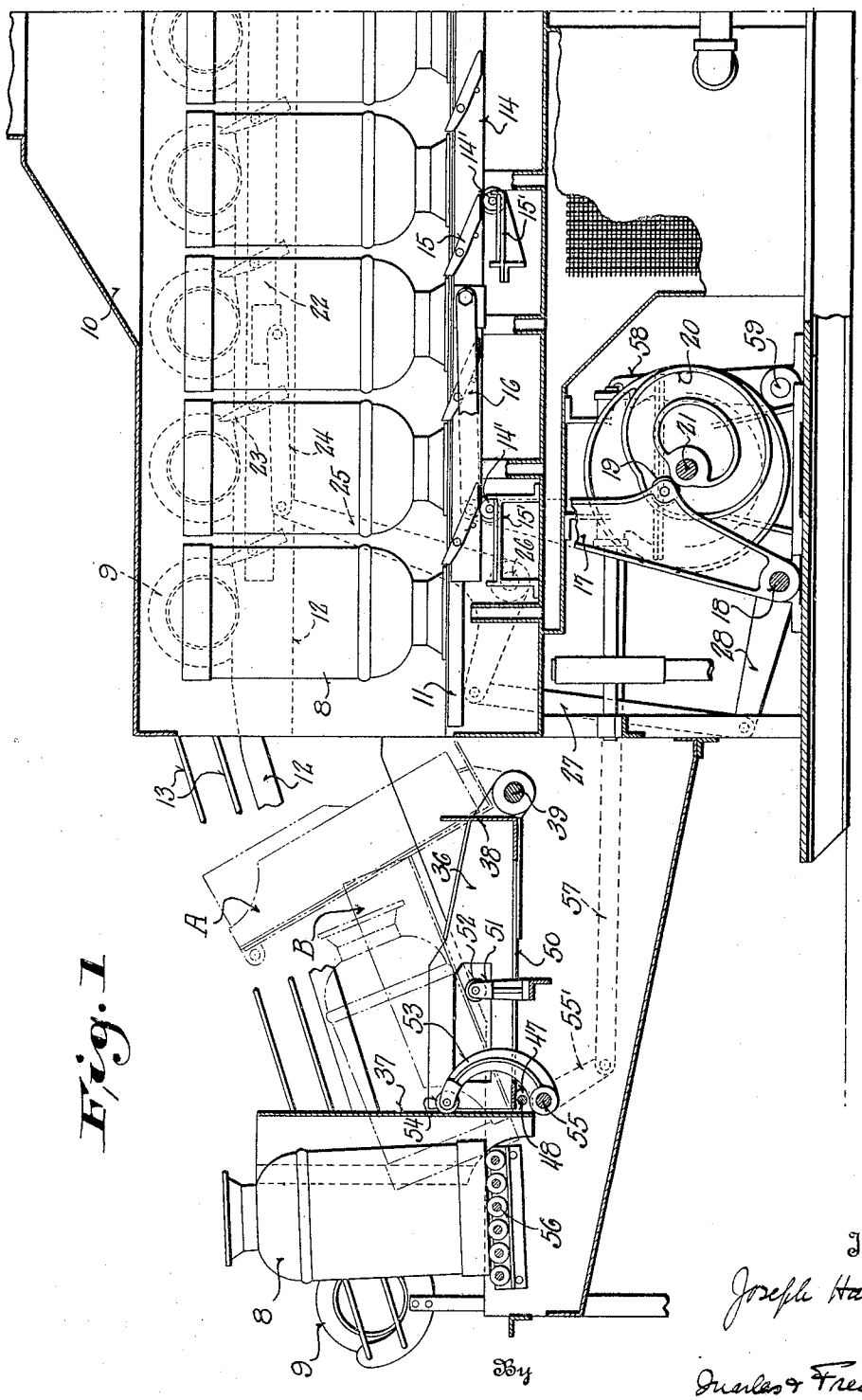


Fig. 1

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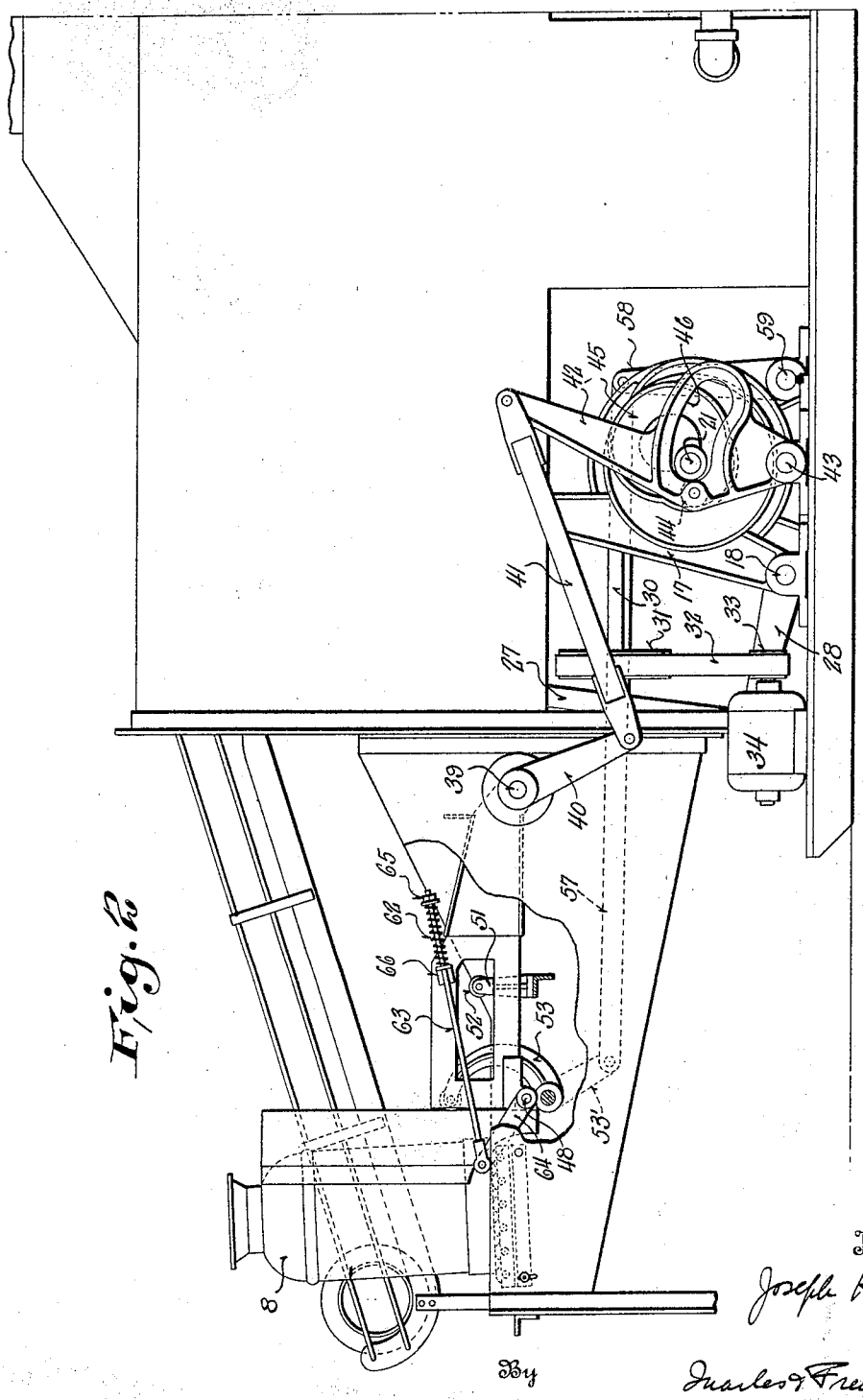


Fig. 2

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Fig. 3

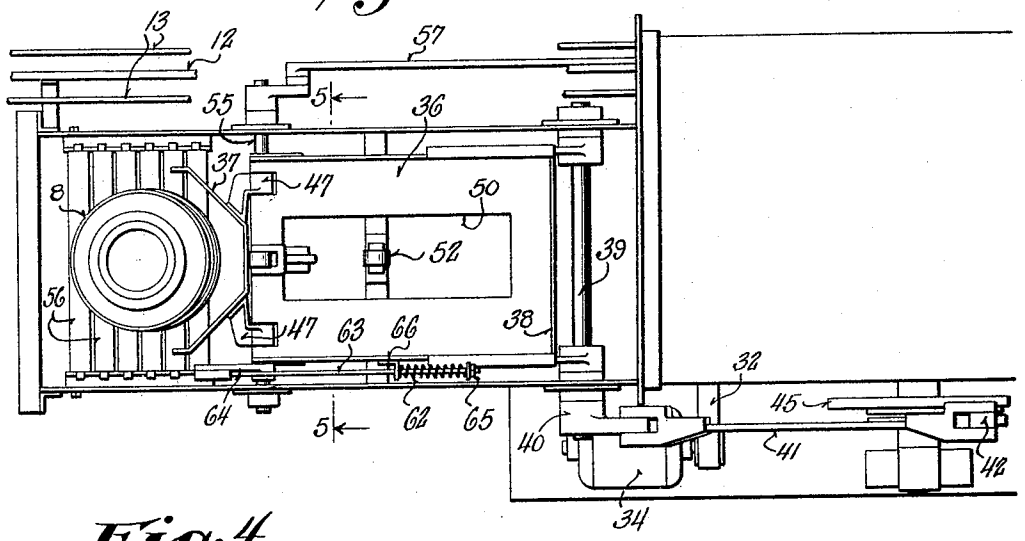


Fig. 4

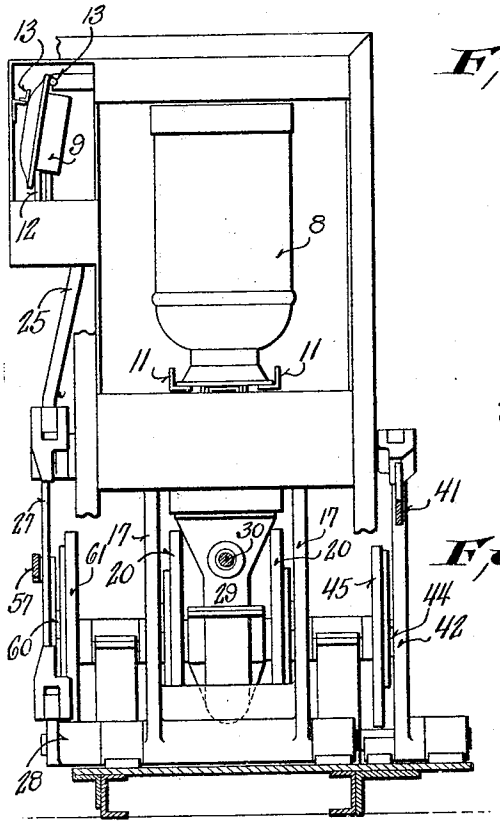


Fig. 5

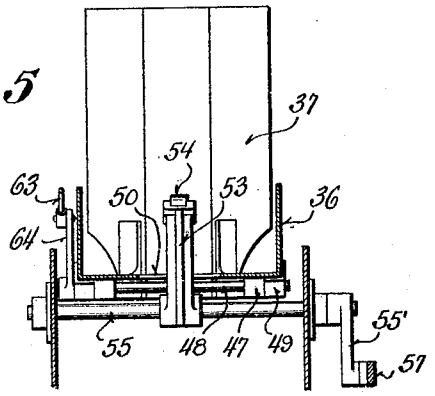
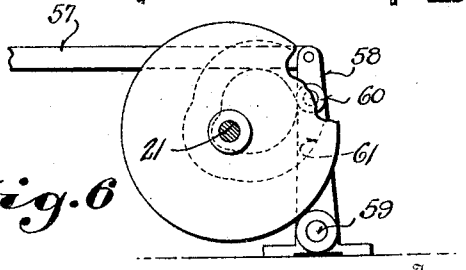


Fig. 6



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UNITED STATES PATENT OFFICE

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CAN-TURNING MACHINE

Application filed November 4, 1929. Serial No. 404,648.

The invention relates to can-washing machines and more particularly to mechanism at the delivery end of the machine for turning the washed can from an inverted to an upright position for subsequent handling or delivery to a conveyor.

The object of the invention is to provide a novel can-turning mechanism embodying a pair of interacting can-carrying elements whereby the can is turned over with a minimum amount of shock and danger of denting thereby prevented. More particularly, in accordance with the present invention the washed and dried can is delivered to a two-part carrier which moves as a unit to a partially inverted position and thereafter one of these carrier members is moved relative to the other to bring the can to an upright position.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

Referring to the drawings Fig. 1 is a vertical sectional view of the delivery end of a can-washing machine having the can-turning mechanism embodying the invention therein;

Fig. 2 is a side elevation of the delivery end of the machine;

Fig. 3 is a plan view thereof;

Fig. 4 is a rear end elevation view of the machine;

Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 3;

Fig. 6 is a detail view of one of the operating cams.

Referring particularly to Fig. 1, I have shown the cans 8 and covers 9 being moved through the drying compartment 10 of the machine by intermittent delivery mechanism, which may be of any suitable construction, timed to operate in proper synchronism with the can-turning mechanism.

As herein shown the cans 8 ride on rails or guides 11 and the covers 9 on a lower guide 12 and between the upper guides 13. For advancing the cans progressively along the guides feed bars 14, mounted on rollers 14′ working on supports 15′, are arranged on either side of the machine and provided with pivoted fingers 15, held in an upright, can-engaging position, by gravity, to move the can forward on the forward movement of the bars 14 but movable beneath the can on the reverse stroke to take up a position for forward feed of the next can, each bar 14 being operatively connected by a link 16 with the free end of a lever 17 mounted on a shaft 18 and carrying a roller 19 intermediate its ends operating in a grooved cam 20 mounted on the driven shaft 21. For advancing the covers, a reciprocating feed-bar 22, carrying pivoted fingers 23 similar to those previously described in connection with the cans, is operatively connected by a link 24 with one arm of a bell crank lever 25 pivoted intermediate its ends at 26 on the machine frame and having its other arm operatively connected by a link 27 to a crank arm 28 secured to the shaft 18 and actuated thereby.

The shaft 18 is driven through suitable reduction gearing in a housing 29 from a transmission shaft 30 connected by a pulley 31 and belt 32 to a pulley 33 on the shaft 34 of an electric motor 35 or other suitable prime mover.

The delivery mechanism above described for the covers advances them through the drier and the guides for said covers are then inclined, as shown in Figs. 1 and 2, so that the covers are delivered by gravity from the machine.

The can-turning mechanism embodies a pair of can carrier members 36 and 37 with means for moving the same together and relative to each other.

The carrier member 36 is in the general form of a semi-rectangular shell having a bottom portion 38 and carried adjacent said bottom on a shaft 39 pivotally mounted in the framework of the machine, said shaft being given an oscillatory motion in timed relation with the delivery mechanism by means of a crank arm 40 secured thereto and operatively connected by a link 41 to a cam-operated lever 42 pivoted at 43 and carrying a roller 44 working in a grooved cam 45 on the shaft 31, said lever 42 having an opening 46 thereinafter for clearance of said shaft.

The carrier member 37 is an open ended

pan fitting within the first-described member 36 and pivotally connected by lugs or ears 47 to a shaft 48 carried on ears 49 on the upper end of the carrier 37.

For producing relative movement between the carrier members, the carrier member 37 has an opening 50′ in its back through which a projection 51, carrying a roller 52 and a turning arm 53, works.

As seen in Figs. 1 and 2, the projection 51 is designed to engage the intermediate portion of the carrier 37 to hold it in a partly inclined position as the carrier 36 moves relative thereto to a horizontal position and while the carrier 36 with the can 8 therein is in this position the arm 53, having the roller 54 thereon and mounted on the oscillating shaft 55, is swung upwardly, turning the can to an upright position and depositing it on a section 56 of a suitable support or gravity conveyor. The shaft 55 carries a crank 55′ operatively connected by a link 57 with a cam-operated lever 58 pivoted at 59 at one end and carrying a roller 60 working in a grooved cam 61 mounted on the shaft 21, as shown more in detail in Fig. 6.

Referring more particularly to Fig. 1, as the cans 8 are advanced step by step through the washing machine they are tipped off the end of the guide rails 11 onto the carriers 36 and 37, then in the inclined position shown in dotted lines and designated by A, in which position the carrier 37 rests within the shell of the carrier 36 and the head of the can rests on the bottom portion 38 of said carrier 36. Thereafter the turning of the shaft 39 counter-clockwise swings the carrier 36 from this dotted line position to the horizontal position shown in full lines. As said carrier member 36 moves to this position the carrier member 37 strikes the projection 51 which arrests its and the cans' downward swinging movement with the carrier 36 and produces a relative upward swinging movement of said carrier 37 and can 8 about the shaft 55 as a center, as shown in the dotted line position B, the can under these conditions abutting at its bottom end on one of the rollers of the support or conveyor 56. As the parts assume this position the arm 53 swings the carrier 37 from the inclined position B upwardly to the full line position and thus swings the can 8 about its bottom into upright position on the conveyor 56 for removal from the machine.

Thereafter, as the arm 53 swings back, the carrier 37 is moved back to its intermediate position B by a spring 62 acting on a rod 63 pivotally connected to a crank arm 64 on the shaft 55, said spring being mounted on said rod between a stop-nut 65 and a guide bracket 66. The carrier 37 is then picked up by the carrier 36 on its return movement to can-receiving position and the cycle of operation is ready to be repeated on the next can.

As the can is always supported by the carrier during the turning movement and the distances it is moved during its transference to and from the turning mechanism are not great, the danger of denting the can is eliminated.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except insofar as such limitations are included in the claims.

What I claim as my invention is:

1. In a can-turning mechanism, the combination of a pair of can carrier members movable together and relative to each other, said carrier members being positioned together to receive a can in inverted position, means for moving both carrier members together to partially turn the can, and means for moving one of the carrier members relative to the other to raise and turn the can to upright position.

2. In a can-turning mechanism, the combination of a pivotally mounted can carrier, a second can carrier pivotally mounted on the first carrier and movable therewith, said carriers being positioned together to receive a can in inverted position, means for swinging both carrier members together toward a horizontal position to partially turn the can, and means for swinging said second carrier relative to the first carrier to raise and turn the can to complete the can-turning operation.

3. In a can-turning mechanism, the combination of a pivotally mounted can carrier, a second carrier pivotally mounted on the first carrier and nestable within the same, said carriers being in nested relation to receive a can in inverted position, means for turning the first-named carrier and thereby move both carriers toward a horizontal position together to partially turn the can, and means for swinging said second carrier about its pivot on the first carrier to raise and turn the can to complete the can-turning operation.

4. In a can-turning mechanism, the combination with a can-receiving support, of a pair of can carrier members movable together and relative to each other, said carrier members being positioned together to receive a can in inverted position, means for moving both carrier members together to partially turn the can and bring its bottom in abutting relation to said support, and means for moving one of the can-carrier members relative to the other to raise and turn the can into upright position on said support.

5. In a can-turning mechanism, the combination of a can carrier pivotally supported at one end, a second carrier pivotally connected to the other end of the first carrier and movable with and relative thereto, said carriers being in nested relation to receive a can in inverted position, means for swinging both carriers about the pivotal axis of the first

carrier to partially turn the can, means for arresting the swinging movement of the second carrier with the first carrier when the can is partially turned, means for thereafter turning the second carrier on its pivot to complete the turning of the can to upright position, and a support to receive the can in upright position.

6. In a can-turning mechanism, the combination of a can carrier pivotally supported at one end, a second carrier pivotally connected to the other end of the first carrier and movable therewith and relative thereto, said carrier being in nested relation to receive a can in inverted position, means for swinging both carriers about the pivotal axis of the first carrier to partially turn the can, stop means for arresting the swinging movement of the second carrier with the first carrier when the can is partially turned, a support adjacent which the bottom of the can is disposed when partially turned, and means for swinging the second carrier about its pivot to turn the can about said support into upright position thereon.

In testimony whereof, I affix my signature.

JOSEPH HAUK.