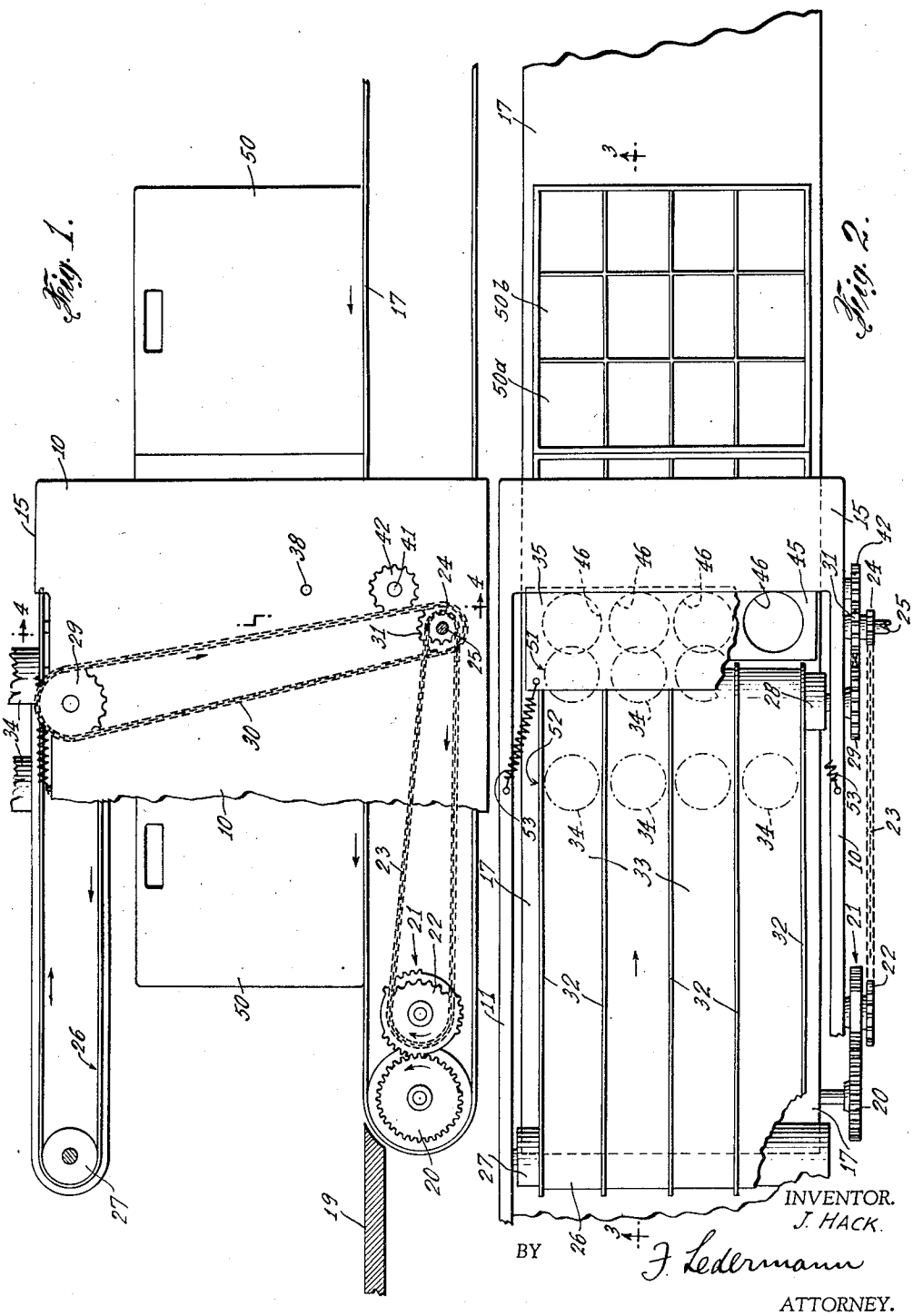
Sept. 5, 1939. J. HACK 2,171,650

MACHINE FOR MOUNTING BOTTLES IN CASES

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MACHINE FOR MOUNTING BOTTLES IN CASES

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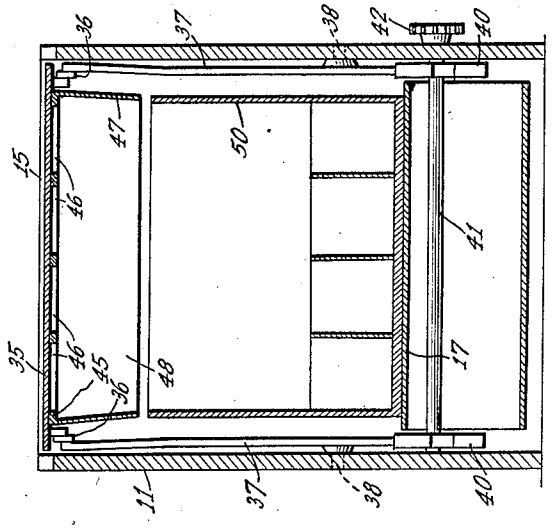


Fig. 4.

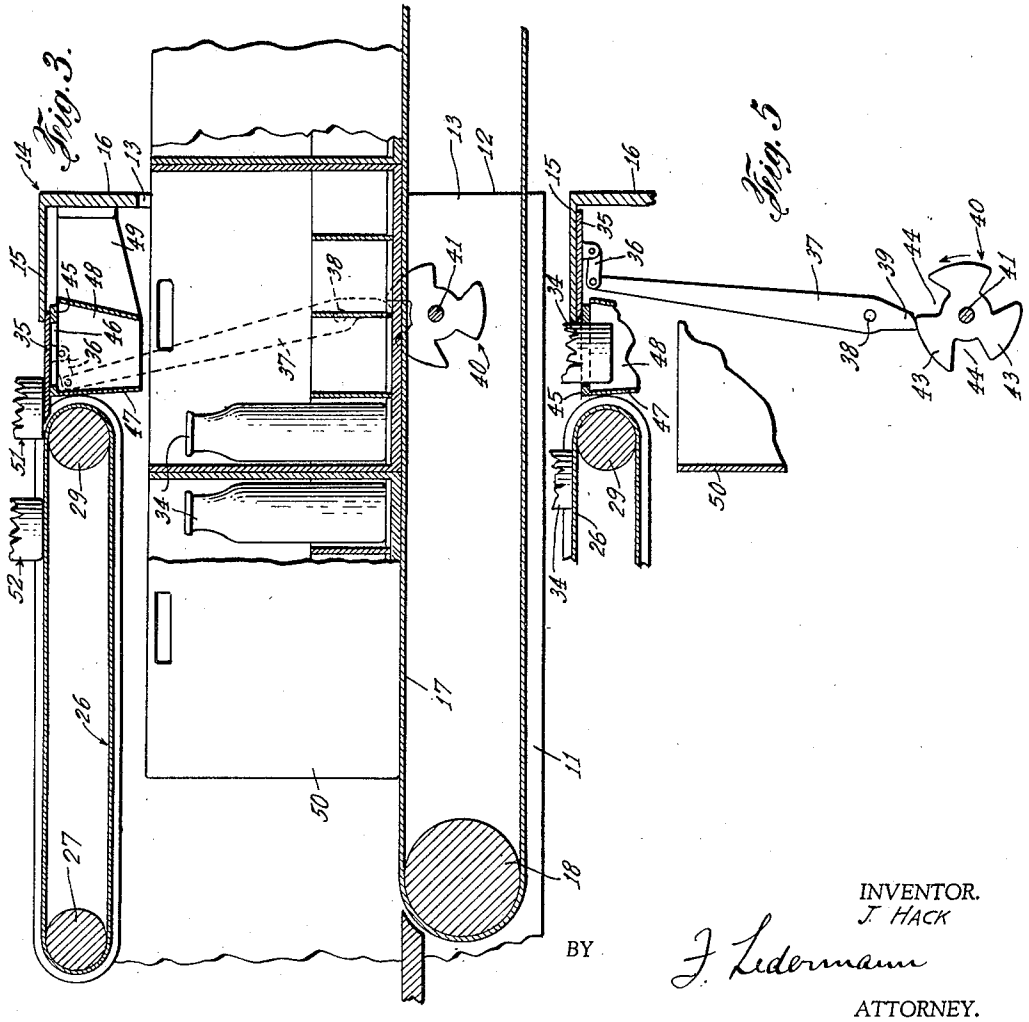


Fig. 3.

Fig. 5

INVENTOR.
J. HACK

BY J. Ledermann

ATTORNEY.

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MACHINE FOR MOUNTING BOTTLES IN CASES

Johann Hack, Montreal, Quebec, Canada

Application June 9, 1938, Serial No. 212,845

1 Claim. (Cl. 226—14)

The main object of this invention is the provision of a machine which works automatically to mount filled bottles in boxes or cases, in an efficient and safe manner, the machine being driven by any suitable means such as an electric motor.

The above and other objects will become apparent in the description below, in which characters of reference refer to like-named parts in the accompanying drawings.

Referring briefly to the drawings, Figure 1 is a side elevational view of the machine, partly in section.

Figure 2 is a plan view of the same, partly in section.

Figure 3 is a cross-sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a cross-sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a fragmentary elevational view showing the slide and its associated parts and the mechanism operating the slide.

Referring in detail to the drawings, the numerals 10 and 11 represent the side walls of the frame of the machine, and 12 the rear wall which has an opening 13 therein. The side walls are joined at the rear above the opening 13 by an angular member 14 which provides an apron 16 above the opening 13 and a ledge 15 extending forward therefrom. The side walls may be further braced by ties, not shown.

A conveyor belt 17 extends longitudinally between the walls 10 and at one end it is trained about a roller 18. From that end the belt extends rearward through the opening 13 and at its rear end, not shown, it is trained about a similar roller, not shown, since the length of the belt may be as great or small as desired beyond the opening 13. At its forward end a loading platform 19 terminates adjacent the belt 17, onto which cases which have been filled with bottles are deposited by the belt and from which they are removed by hand as they are deposited.

A gear 20 is rigid on the end of the roller 18 and is driven intermittently by a pinion 21 which has on its periphery three arcs of teeth interspaced by three smooth arcs, as shown. A cog 22, on the same shaft as the pinion 21, has a chain 23 trained thereabout, the chain being also trained about a smaller cog 24 on a shaft 25 of a motor, not shown.

A second conveyor belt is mounted between the walls 10 and 11 on rollers 27 and 28, above the front end of the belt 17 and substantially level with the upper edges of the said walls. A cog 29 is rigid on the end of the roller 28 and has a chain 30 trained thereabout, this chain also being trained about a cog 31 on the motor shaft 25. The side edges of the belt 26 are provided with raised ridges 32, and similar raised ridges are provided spaced-apart from each other to provide a plurality of sections 33 on each of which rows of bottles may be placed, as described below.

It is to be noted that the belt 26 terminates on its right hand side at a distance from the ledge 15 which is slightly greater than the diameter of the bottles 34. A horizontal slide 35, of slightly greater length than that of the space just mentioned, and extending almost the full width between the walls 10 and 11, is mounted with its rear edge just below the front edge of the apron 15 (when the slide covers the said space or opening) as shown in Figures 2 and 3. This slide is movable from the said position to the right to the extreme position shown in Figure 5, and is normally urged to the former position by springs 53. On opposite side edges (that is, the edges adjacent the walls 10 and 11) of the slide, pivoted links 36, extend downward, one from each said side edge. Rocker arms 37 are pivotally mounted at 38 to the inside surfaces of said side walls, and the upper ends of their longer arms are pivoted to the links 36. The shorter, lower arms of the rockers 37 have each a rounded nose formed thereon. Below each rocker 37 a star wheel 40 is rotatably mounted on a shaft 41. On one end of the shaft 41 a cog 42 rigid thereon lies in mesh with the chain 30. The orbit of the nose 39 of each rocker 37 intersects the orbit of the star wheel 40. The latter has three rounded teeth 43 interspaced by three slots 44.

A plate 45, having a plurality of aligned circular openings 46 therethrough, is supported just below the path of the slide 35 in the opening between the belt 26 and the ledge 15. This plate 45 is rigid on the top of a frame 47 formed in the manner of a honeycomb to provide a plurality of inverted frusto-conical depending guides 48, one under each opening 46. The frame 47 is secured by brackets 49 to the apron 15.

In use, the cases 50 which are to be filled with bottles are placed one against the other on the belt 17 which carries them through the opening 13. At the same time the bottles are placed in spaced-apart rows on the belt 26, as, for instance, the rows indicated for convenience by the numerals 51 and 52. When the row of bottles 51 reaches the side 35 the center of gravity of each bottle will be moved onto the slide. The various parts of the device are so harnessed together that, as soon as the latter occurs, the toothed arc of the

pinion 21 which has been in engagement with and been turning the gear 20 will have passed out of said engagement so that the belt 17 will come to rest with a row of spaces of a bottle case directly below the openings 46 of the plate 45.

While the said arc has been turning the gear 20, the nose 39 of the rocker 37 has been resting in a slot 41 of the star wheel 40. As soon as the case has thus come to rest, continued slow turning of the wheel 40 will cause contact of the succeeding tooth 43 with the nose 39 and the latter will ride up on the nose so as to swing the upper end of the rocker to its extreme right hand position. Thus, the slide 35 is similarly carried to its extreme right hand position, and the bottles in the row 51, which are first carried by the slide against the ledge 15, are dropped through the openings 46 and guides 48 into the row of spaces in the case. As soon as this occurs, the next toothed arc of the position 22 will have reached engagement with the gear 20 and the belt 17 will be advanced again the distance between the rows 50*a* and 50*b* of the bottle recesses therein, and the operation above-described will be repeated. As soon as the nose 39 of the rocker is clear of a tooth 43, the springs 53 will pull the guide back to close position and the nose will descend into the succeeding slot 44.

Obviously, modifications in form and structure may be made without departing from the spirit and scope of the invention.

I claim:

A device of the class described comprising a housing having a conveyor belt mounted in the lower part thereof and adapted to have bottle cases placed thereon, a second conveyor belt mounted above said first belt and adapted to have rows of bottles placed thereon, means for moving said belts, a horizontal slide adapted to be moved from a position adjacent the end of said second belt in the direction of its travel to a position at a distance therefrom, means for normally retaining said slide in said position adjacent said belt, the bottles of each of said rows being successively deposited on said slide at regular intervals by said second belt, means for stopping movement of said first belt and keeping the same at rest for an interval, means for moving said slide from its said normal position to its said extreme position at the same time that said first belt comes to rest and for retaining said slide in said extreme position for the same intervals as said interval of rest of said second belt, comprising a star wheel having rounded teeth with slots interposed therebetween, a rocker arm pivoted near one end thereof on said housing and having a short arm on one side of said pivot and a long arm on the other side thereof, said short arm having a nose thereon lying in the orbit of said star wheel, a link pivoted at one end to said slide and at the other end to the end or said long arm, said belt-moving means being connected to said star wheel to simultaneously rotate the latter, continuous rotation of said star wheel causing alternate swinging of said rocker from side to side as said nose alternately rides on one of said teeth and falls into the slot following said tooth, said long arm and said link when said nose begins to ride on said tooth pushing said slide away from said belt position, said nose on passing from said tooth into said following slot releasing said rocker arm and permitting said slide-retaining means to restore said slide to said belt position, said first belt coming to rest and said slide being moved to its extreme position at the instant one of the rows of bottle recesses of one of said cases reaches a position directly under the row of bottles on said slide, said row of bottles thereupon falling into said bottle recesses.

JOHANN HACK.