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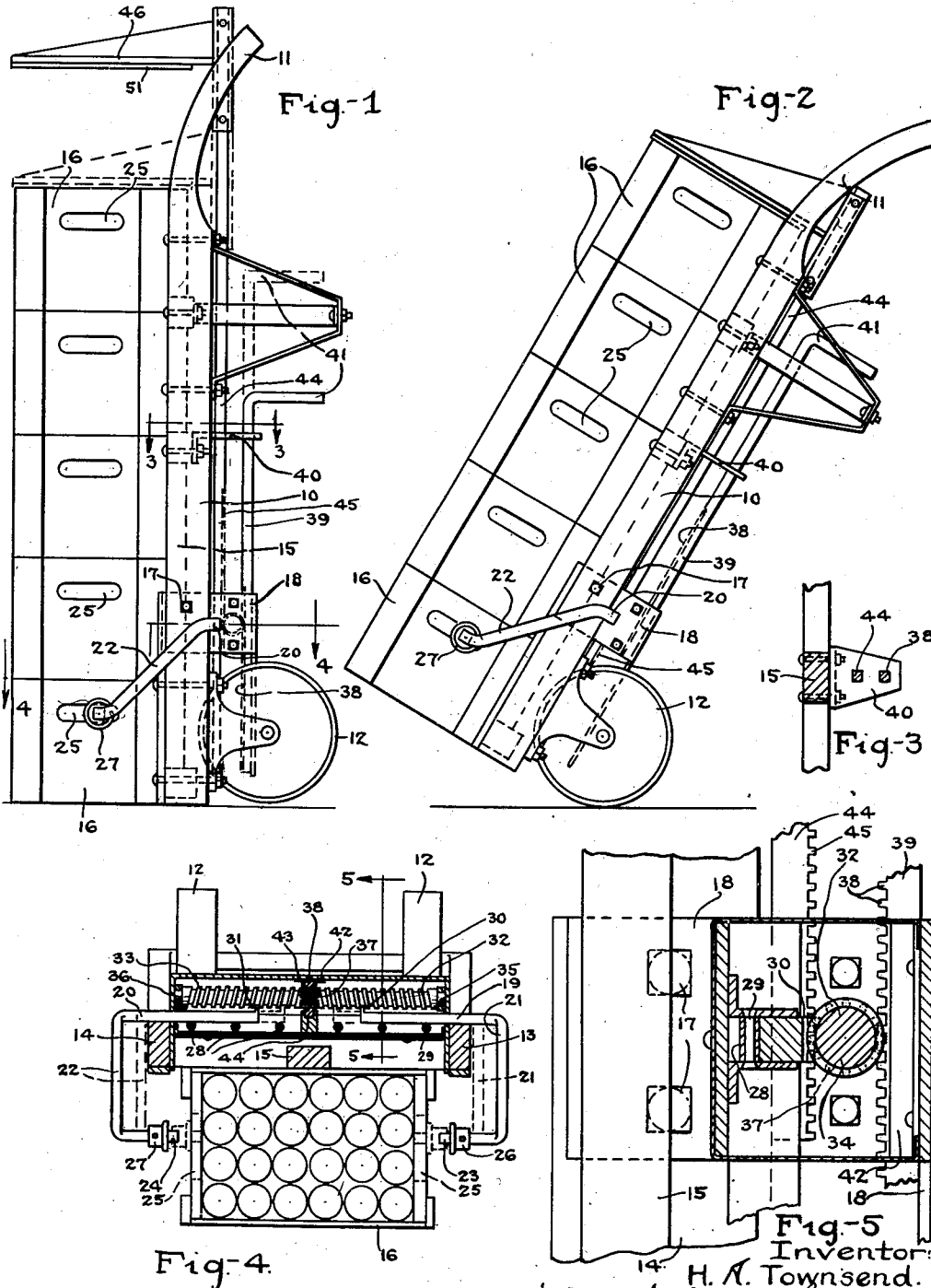
H. A. TOWNSEND

1,971,952

DEVICE FOR HANDLING STACKS OF CASES BY TRUCKS

Filed March 23, 1931

2 Sheets-Sheet 1



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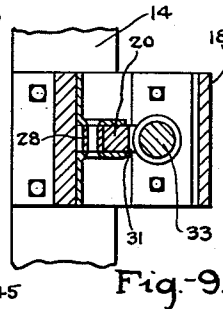
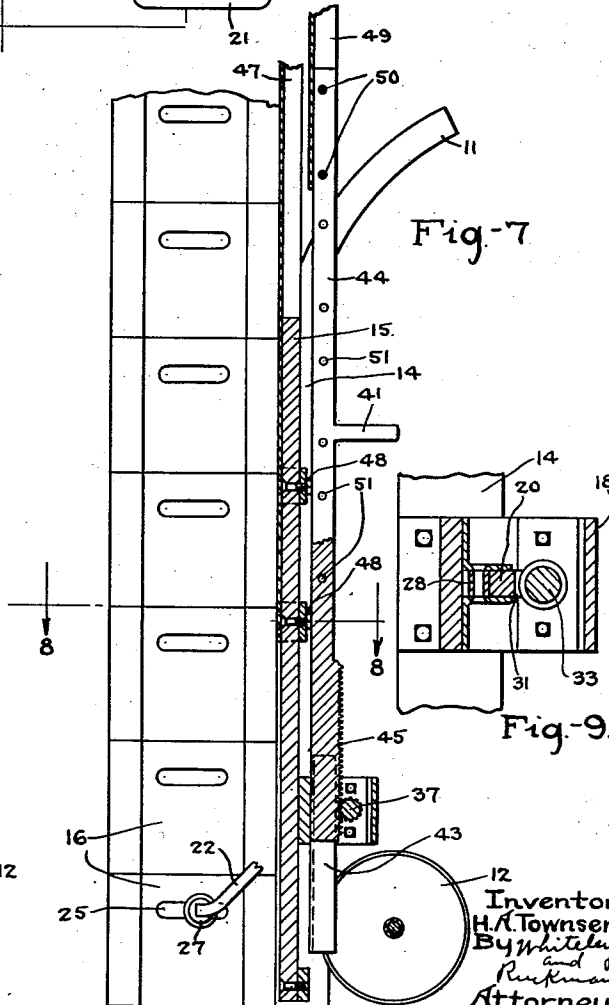
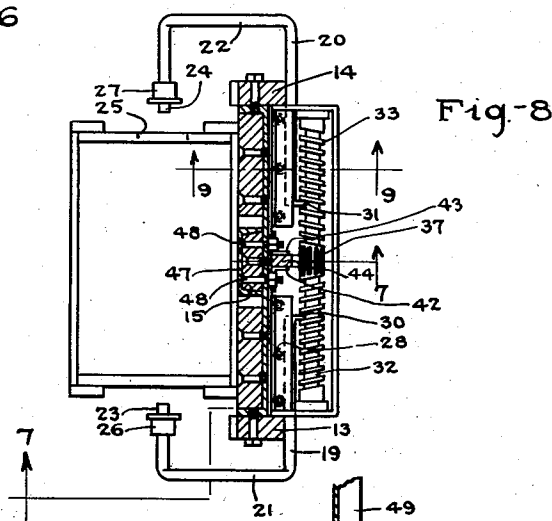
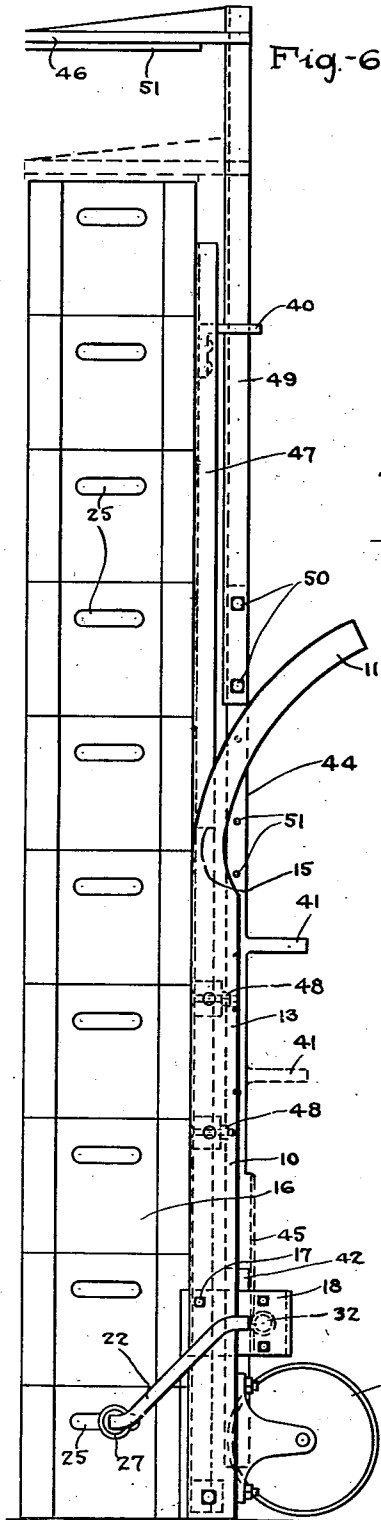
H. A. TOWNSEND

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DEVICE FOR HANDLING STACKS OF CASES BY TRUCKS

Filed March 23, 1931

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

1,971,952

DEVICE FOR HANDLING STACKS OF CASES
BY TRUCKS

Harry A. Townsend, Minneapolis, Minn.

Application March 23, 1931, Serial No. 524,503

8 Claims. (Cl. 214—65.5)

My invention relates to a device for handling stacks of cases by trucks, and has for its object to provide simple and efficient means whereby a truck such as a hand-truck can be presented to the perpendicular face of a stack of cases, such, for example, as contain bottles of soft drinks, and by means of members engaging the sides of the case and within the hand-holds of such cases, the entire stack may be readily lifted and handled as a unit.

It is a particular object of my invention to provide in connection with a hand-truck arm devices with inwardly-projecting fingers adapted to be moved in and out laterally to embrace the longitudinal extent of a case of bottles such as a case including bottles of soft drinks, and to provide means for moving said arms laterally toward one another so that fingers thereon may enter the hand-openings of the cases, and members adjacent said fingers may engage the ends of said case whereby the bottom case will be clamped to the truck and the whole stack can be lifted and swung upon the face of the truck and be thus conveniently transported.

A further object of my invention is to provide means for clamping the top of the stack of cases which will operate in conjunction with the afore-said fingers so that when the fingers are inserted in the hand-holds of the bottom case and the stops are clamped thereto, the top clamping member will simultaneously be seated upon the top case, and in this manner the stack of cases be firmly held together to be swung over on the truck.

The full objects and advantages of my invention will appear in connection with the detailed description thereof, and its novel features are particularly pointed out in the claims.

In the drawings, illustrating an application of my invention in one form,—

Fig. 1 is a side view of a truck having my invention applied thereto as the same is presented to a stack of cases. Fig. 2 illustrates what is shown in Fig. 1 after the truck has been swung over so as to transport the stack of cases. Fig. 3 is a sectional detail on line 3—3 of Fig. 1. Fig. 4 is a sectional plan view on line 4—4 of Fig. 1. Fig. 5 is a sectional plan view on line 5—5 of Fig. 4. Fig. 6 is an elevation view similar to Fig. 1 showing extensible members for adapting the device to clamp tall stacks of cases. Fig. 7 is a sectional elevation view of a portion of what is shown in Fig. 6. Fig. 8 is a sectional plan view on line 8—8 of Fig. 7. Fig. 9 is a sectional fragmentary view on line 9—9 of Fig. 8.

As illustrated, a hand-truck 10 embodying handles 11 and supporting wheels 12 is, or may be, of usual construction except that in addition to the side bars 13, 14 of said truck there will be a center bar 15, preferably of wider face than the side bars 13, 14, against which the side walls of the stack of cases 16 will engage when said cases are thrown over upon the truck, as shown in Fig. 2. Secured by bolts 17 to the sides of the frame piece 13, 14 is a boxing 18 which extends transversely across the truck and provides ways or guides for bars or rods 19, 20 which are adapted to slide laterally toward and from one another in said ways. These bars carry arms 21, 22 which in turn are provided with inwardly-projecting fingers 23, 24 adapted to enter the hand-holds 25 of the cases, being restrained from going too far by contact pieces 26 and 27 which are adapted to engage the end walls of the cases, as best shown in dotted lines in Fig. 4. The bars 19 and 20 engage at one side rollers 28 mounted on pins 29, as best shown in Fig. 5. At the other side these bars are provided with keepers 30 and 31 which take in the oppositely-turned spiral grooves 32 and 33 of a rotary rod 34 mounted to rotate in bearings 35 and 36 formed on truunion-like end extensions of said rod. The rod is provided at its center with a pinion 37 which is engaged by a rack 38 on a bar 39 slidable through a way formed in a plate 40, as clearly shown in Figs. 1, 2 and 3, said bar being provided with a hand member 41 by which it may be operated in either direction. The rack bar 38 is mounted to slide in a way formed by angle members 42 and 43, as clearly shown in Figs. 4 and 5.

As shown in Figs. 1 to 5 inclusive, and adapted for the handling of comparatively low stacks—say five or six cases—there is provided a second bar 44 which is provided with a rack 45 engaging the opposite side of the spur gear 37 from that engaged by the rack 38 of the bar 39. This bar 44 carries adjacent its top a piece 46 adapted to overhang the top case of the stack, both of the bars 38 and 44 passing through guide openings in the bracket member 40.

The form shown in Figs. 6 to 9 inclusive differs from that in Figs. 1 to 5 in that the longitudinal rest member 15 of the second-named set of figures has applied thereto a piece of channel iron 47 adapted to telescope over the bar 15 and to be held in proper elevated position by means of countersunk bolts 48 extending through the channel and the longitudinal supporting member 15, the bracket 40 being carried by the member 47 and

raised and lowered with it. By this means the supporting member may be increased in elevation the equivalent of three or more cases to adapt the truck to grip and seize tall stacks of cases, all as clearly shown in Figs. 6 and 8. The bar 44 is correspondingly made extensible by a telescoping section 49 applied thereto which carries the overhanging grip piece 46. This section is held in adjusted position by means of a pair of bolts 50 which take in holes 51 in the bar 44.

In this construction the bar 44 takes the place of the bar 39, so that there is but one bar, and the downward movement thereof causes the fingers 23, 24 to move inwardly into the hand-hold openings so as to seat the stops 26 and 27 against the end walls of the cases at the same time that the top piece 46 engages and clasps the edges of the top case of the stack. This top piece is preferably provided with a rubber pad 51.

The operation of my device will be apparent from the foregoing description. The truck is brought up to a stack of cases and the face of the truck presented in vertical position thereto, as in Fig. 1. The handle 41 is depressed, in which position the bars 19, 20, arms 21, 22 and fingers 23, 24 are in the position shown in Fig. 4, such that they may pass outside of the end walls of the cases. The handle 41 and bar 39 attached thereto is then drawn up from the full-line position of Fig. 1 to the dotted-line position of Fig. 1 and the full-line position of Fig. 2, which results in causing the fingers 23 to enter the hand-hold slots 25 and the contact pieces 26 and 27 to engage the end walls of the bottom case, as shown in dotted lines in Fig. 4. The construction can be used without the top piece 46, in which case, by placing a hand upon the top case of the stack, the entire stack may be thrown over upon the face of the truck, resting upon the frame bar 15, and be held by a hand or arm. However, the construction shown, where the grip piece 46 is brought down upon the edges of the top case simultaneously with the setting of the fingers in the hand-hold openings, is more efficient and satisfactory. When that is used the stack of cases is literally locked to the truck, and this makes possible (with the extensions provided) the handling of very tall stacks of cases, ten or a dozen high, in which event it may be necessary for two men to operate the truck. Whenever the appliances have been operated in the manner just described, the truck and its contents can quickly be rolled to a place of deposit, such, for example, as within the body of a motor truck or railway car, or upon a desired platform, and the stack of cases there be deposited in position for loading or transportation. Unloading may be effected in the same way. In this manner the stacked cases may be handled with the utmost despatch and with little effort or loss of time.

The advantages of my invention will be apparent from the foregoing detailed description. The construction can be applied to hand trucks of common manufacture. It is not expensive and does not require any modification of the hand-truck further than the supplying of the central longitudinal frame-bar 15 when that is not present. The operation of the device is simple and effective. When the fingers 23 and 24 positioned in the hand slots 25 of the cases and the contact pieces 26 and 27 are clamped upon the ends thereof by simply pulling up on the handle 41, the bottom case is securely locked to the truck. At the same time, the grip piece 46 will cause its rubber pad to seat upon the upper edges of the stack

of cases and hold them firmly together and firmly upon the face of the truck. The device is self-locking since the action of the keepers 30 and 31 upon the worm slots 32 and 33 is not such as to permit automatic or unintentional movement thereof. At the same time release is effected with the utmost ease. There is nothing which enters in upon the body of the case, no hooks or other devices which might damage the walls of the case.

The invention is applicable to a hand truck of ordinary dimensions, but where the extensible contact frame piece and grip piece carrier are employed, the device is practicable to handle high stacks of cases, and the handling of stacks of any customary or practicable height is well within the scope of my invention and, of course, I do not wish to restrict myself to the precise details of the invention herein shown and described.

I claim:

1. A device for handling stacks of bottle cases having handhold slots, embodying a hand truck adapted to have its face positioned against a face of said stack, fingers adapted to enter the slots of the bottom case, and means including a rack and pinion and oppositely-turned worm slots rotated thereby for operating said fingers.

2. A device for handling stacks of bottle cases having handhold slots, embodying a hand truck adapted to have its face positioned against a face of said stack, horizontally extending fingers positioned above the lower end of the truck so as to be adapted to enter the slots of the bottom case, means for operating the fingers to cause them to enter the slots, and means associated with the fingers to limit the extent of penetration within the slots.

3. A device for handling stacks of bottle cases having handhold slots, embodying a hand truck adapted to have its face positioned against a face of said stack, fingers adapted to enter the slots of the bottom case, said fingers being provided with rigid stops so that the length of the fingers beyond said stops is not greater than the depth of the slots, and means for operating the fingers to cause them to enter the slots and to bring the stops against the ends of the bottom case for holding said fingers clamped in the slots.

4. A device for handling stacks of bottle cases having handhold slots, embodying a hand truck adapted to have its face positioned against a face of said stack, bars adapted to move horizontally, a rotary member having oppositely-turned spiral slots a pinion thereon, studs on the respective bars entering the respective slots, a bar adapted to be moved by hand at right angles to said pinion having a rack engaging the same, and fingers on said first-named bars adapted to enter the slots of the bottom case when said rack bar is operated.

5. A device for handling stacks of bottle cases having means engageable with the bottom case, means engageable with the top case, a slide for operating the top engaging means and means connected therewith for simultaneously operating said bottom engaging means.

6. A device for handling stacks of bottle cases having means engageable with the bottom case, means engageable with the top case, a slide for operating the top engaging means and self-locking means connected therewith for simultaneously operating said bottom engaging means.

7. A device for handling stacks of bottle cases having means engageable with the bottom case,

means engageable with the top case, a slide for operating the top engaging means, means connected therewith for simultaneously operating said bottom engaging means, and extensible supports for said cases and said top engaging means adapted to be adjusted for different heights of stacks.

8. A device for handling stacks of bottle cases of customary form with hand-hold openings located at points near the tops of said cases and extending through the end walls thereof parallel with the bottoms of said cases, a hand truck embodying a supporting platform free from material-engaging or holding projections through-

out its length adapted to be positioned with said platform in substantially vertical engagement with one or more of said cases, horizontally extending fingers outside of said platform so positioned above the lower end of the truck as to enter and leave said hand-holding slots when the fingers are moved toward and away from the side planes of the platform, stops placed around said fingers of a size too great to pass through said slots for engaging said end walls, and self-locking means for moving the fingers to cause the same to enter the slots and the stops to engage the end walls.

HARRY A. TOWNSEND.

15	90
20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150