

J. R. JONES & H. W. NICHOLS.
BOX HANDLING ATTACHMENT FOR SHELVES.

APPLICATION FILED FEB. 3, 1909.

940,878.

Patented Nov. 23, 1909.

3 SHEETS—SHEET 1.

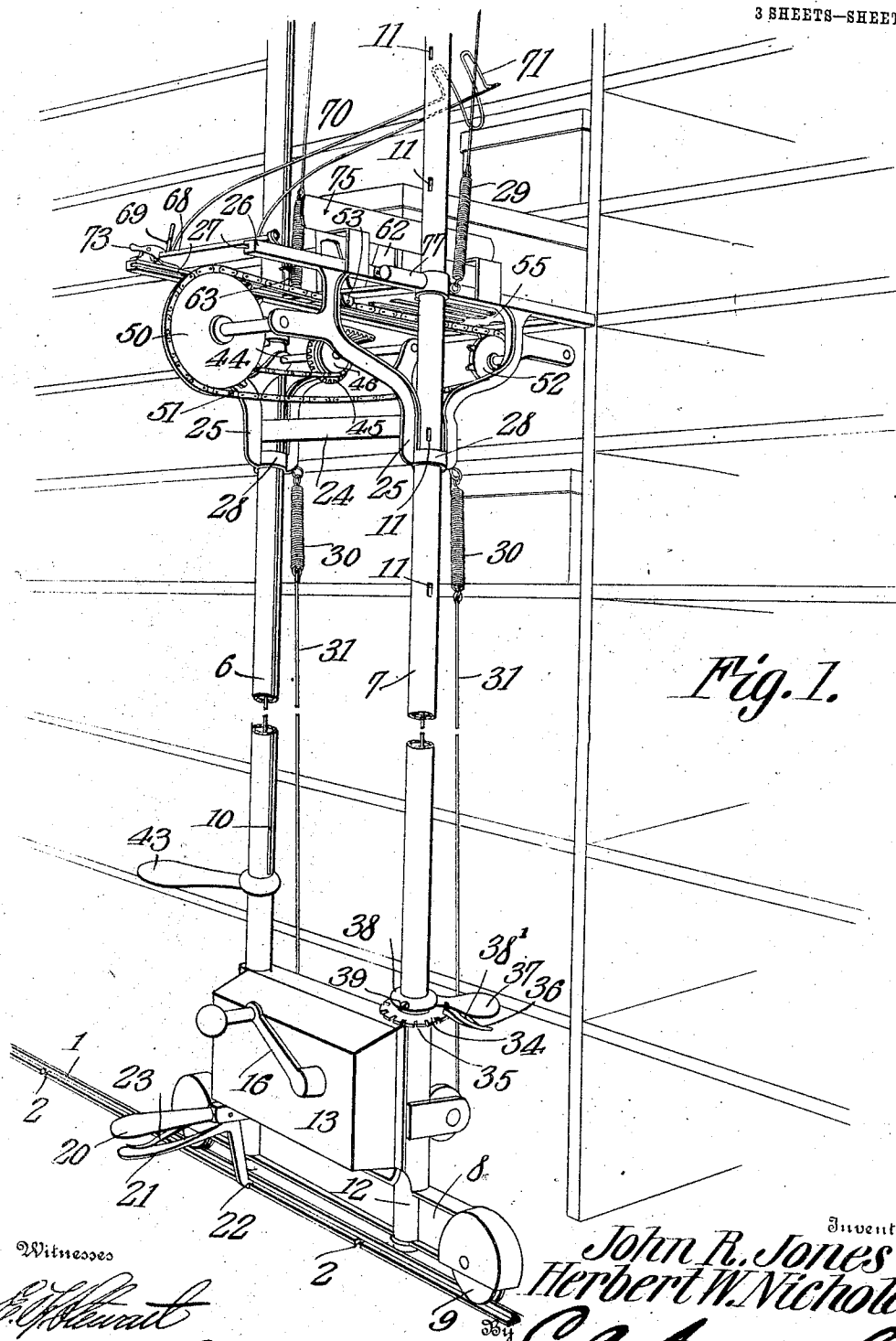


Fig. 1.

Witnesses

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Inventors

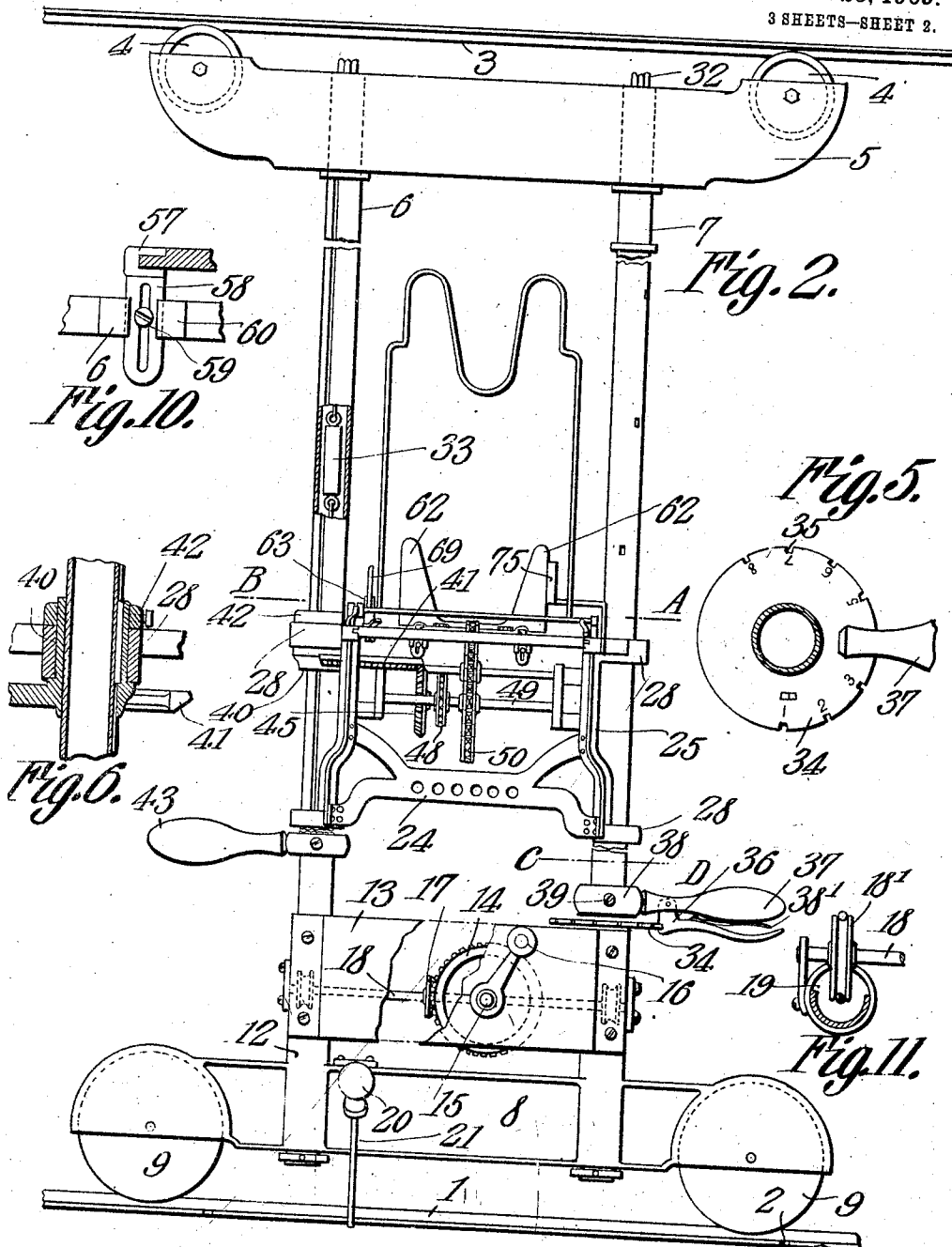
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Witnesses
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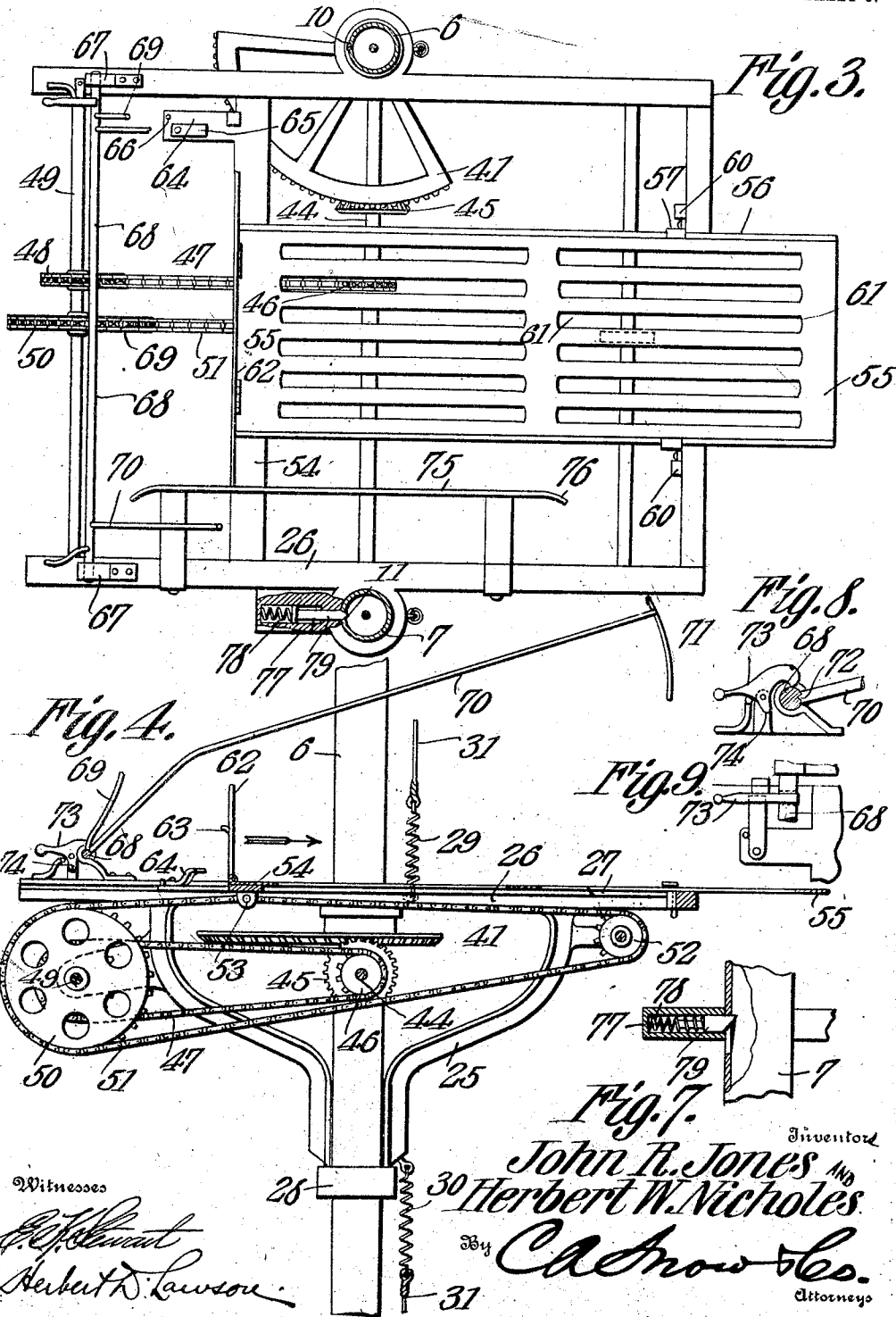
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Witnesses

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UNITED STATES PATENT OFFICE.

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BOX-HANDLING ATTACHMENT FOR SHELVES.

940,878.

Specification of Letters Patent.

Patented Nov. 23, 1909.

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To all whom it may concern:

Be it known that we, JOHN R. JONES and HERBERT W. NICHOLS, citizens of the United States, residing at Rome and Atlanta, respectively, in the counties of Floyd and Fulton, State of Georgia, have invented a new and useful Box-Handling Attachment for Shelves, of which the following is a specification.

This invention relates to apparatus for handling shoe boxes and the like, the object of the invention being to provide an apparatus of this type for use in connection with shelves on which boxes are stacked, the apparatus being adjustable to remove any one of the boxes from the shelves and being also utilized to place boxes at desired points upon the shelves.

Another object of the invention is to provide apparatus of this character which can be manipulated by a person located at the base of the shelves, means being provided whereby the mechanism can be quickly set so as to place or remove a box at any desired point in the case.

A further object is to provide a novel form of carriage for conveying the boxes to and from their positions in front of the shelves, there being means for automatically locking the carriage against movement after it once assumes a position at a predetermined elevation.

A further object is to provide in connection with the carriage a slide for use in directing boxes to and from the carriage after the said carriage has been brought in position in front of a predetermined shelf, said slide being actuated by mechanism located at the base of the apparatus and within convenient reach of the operator.

Another object is to provide means carried by the carriage for preventing the withdrawal of a box with the slide during the operation of depositing a box upon a shelf, said means being controlled in its operation by mechanism mounted on the carriage.

A further object is to provide apparatus of this character which can be readily installed in connection with various forms of shelves, said apparatus being durable, efficient in operation, and of such a nature as not to detract from the appearance of the shelves.

With these and other objects in view the invention consists of certain novel details of

construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a perspective view of the apparatus. Fig. 2 is a front elevation thereof, portions of the tubular guide standards being removed and one of said standards being shown in section. Fig. 3 is a section on line A—B Fig. 2, the slide on the carriage being shown partly projected beyond the carriage. Fig. 4 is a vertical longitudinal section through the carriage and the parts thereon, the slide being shown in the same position as indicated in Fig. 3. Fig. 5 is an enlarged section on line C—D Fig. 2. Fig. 6 is an enlarged longitudinal section through a portion of one of the tubular standards and through the hub of the segment and the adjoining parts of the carriage. Fig. 7 is a section through one of the tubular standards at the point where engaged by the stop pawl of the carriage, said pawl being shown in elevation and the adjoining portion of the carriage in section. Fig. 8 is an enlarged side elevation of the locking dog in connection with the push-off, the rock shaft of the push-off being shown in section. Fig. 9 is a plan view of the parts shown in Fig. 8. Fig. 10 is an elevation of one of the guide ears and its holding means, a portion of the plate engaged by the ear being shown in section. Fig. 11 is a horizontal section through the lower portion of one of the standards showing a grooved wheel and a portion of its shaft in plan.

Referring to the figures by characters of reference 1 designates a base rail designed to be secured upon a shelf extending forwardly from the case of shelves at a point below the lowest shelf, said rail being provided at intervals with notches 2 formed in the front edge thereof, these notches being equal in number to the number of columns of boxes located upon the shelves, and the distances between the notches being equal to the width of said columns of boxes. Another rail 3 is located in front of the case of shelves above the uppermost shelf and this upper rail is engaged by grooved wheels 4 extending upwardly from the end portions of a truck 5 which, as shown in Figs. 1 and 2, is inverted. Said truck is supported upon the upper ends of revoluble tubular standards 6

and 7 extending downwardly to the lower truck 8 of the apparatus, said lower truck being mounted on grooved wheels 9 designed to travel upon the rail 1. The standards 6 and 7 are parallel and designed to rotate in both of the trucks, and the standard 6 has a longitudinal groove 10 therein for the purpose hereinafter described, while the standard 7 is provided with a series of non-aligning notches 11 arranged along a line extending spirally there-around, the number of these notches being equal to the number of shelves in the case to which the apparatus is applied.

The lower truck 8 has tubular extensions 12 projecting upwardly therefrom and in which the lower portions of standards 6 and 7 are journaled. These casings are connected by a housing 13 upon the rear face of which is arranged a gear 14 secured to an actuating shaft 15. Said actuating shaft extends through the housing 13 and is provided at its front end with a crank 16 or any other suitable means whereby it can be conveniently rotated manually. The gear 14 meshes with a smaller gear 17 which is secured to a shaft 18. Said shaft is journaled upon the rear face of housing 13 and is provided adjacent its ends with grooved wheels 18'. These wheels are disposed adjacent to slots 19 extending partly around the lower portions of the standards 6 and 7.

The lower truck 8 of the apparatus has a lever or handle 20 extending forward therefrom and designed to be grasped for the purpose of shifting the apparatus along the rails. A bell-crank lever 21 is pivotally connected to the housing 13 below the handle 20 and has a stud 22 extending from one end thereof and designed to be seated in any one of the notches 2, there being a spring 23 for holding the stud normally in position to be automatically seated within one of said notches. It will thus be seen that by means of this lock the entire apparatus can be held in position in front of any one of the columns of boxes contained upon the shelves in front of which said apparatus is located.

The standards 6 and 7 constitute guides for a carriage which consists of a cross-bar 24 having forked ends secured to side standards 25, said standards being substantially Y-shaped as indicated in Fig. 4 and provided at their upper ends with a base frame 26, the sides of which are provided in their inner faces with guide grooves 27. Apertured guide ears 28 extend laterally from the lower portions of the standards 25 and from the middle portions of the sides of base 26 and these ears are slidably mounted on the standards 6 and 7, said standards however being free to rotate within the ears. Coiled springs 29 are secured to the sides of base 26, and additional coiled springs 30 are secured to the lower portions of the stand-

ards 25. To each of the springs 30 is secured one end of a cord 31 which extends downwardly under the grooved wheel 18' thereunder, and thence through the slot 19 and upwardly within the adjoining standard 6 or 7. A grooved wheel 32 is arranged at the upper end of said standard, said wheel being journaled upon the upper truck 5 and the cord extends over this wheel and thence downwardly to the spring 29 to which it is secured. A counterbalance 33 may if desired be secured to each cord 31, said counterbalance being arranged to move vertically within a standard 6 or 7 and being of sufficient weight to permit the adjustment of the carriage with ease. It will be seen from the foregoing description therefore that when shaft 18 is rotated by means of the crank 16 the grooved wheels 18' will cause the cords 31 to shift in the direction of their lengths and to thus move the carriage longitudinally upon the standards 6 and 7.

A disk 34 is secured upon the housing 13 and is concentric with the standard 7, said disk being provided in its periphery with a series of notches 35, the number of these notches being equal to the number of notches 11 and also to the number of shelves in the case. Said notches may be numbered consecutively as shown in Fig. 5 and any one of them is designed to be engaged by the nose of a locking lever 36 which is pivotally connected to a handle 37 and held normally in engagement with disk 34 by means of a spring 38'. Handle 37 extends fixedly from a collar 38 which is secured in any preferred manner, as by means of a set screw 39, to the standard 7. It will be understood that when the lever 36 is disengaged from the notched disk 34 the handle 37 can be utilized for partly rotating standard 7 and by releasing the lever 36 its spring 38 will throw it automatically into engagement with the notched disk and thus hold the standard 7 against further movement.

The upper guide ear 28 of the carriage which is slidably mounted on standard 6 has journaled within it the hub 40 of a toothed segment 41, said hub being feathered upon the standard 6 and being held against displacement within the ear 28 by means of a collar 42 which is fastened to the upper portion of the hub in any preferred manner as by means of a set screw. It will be apparent therefore that while the segment is capable of moving along the standard 6 with the carriage it is necessarily caused to rotate when said standard is rotated. A handle 43 is secured to and extends radially from the lower portion of the standard 6 and constitutes means for imparting a partial rotation to the standard 6.

A shaft 44 is journaled within the carriage at a point below the base 26 and has a gear 45 thereon which meshes with and

receives motion from the toothed segment 41 it therefore being understood that the partial rotation of standard 6 and the segment 41 will produce one or more revolutions of the shaft 44. A sprocket 46 is secured to shaft 44 and motion is transmitted therefrom through the chain 47 to a sprocket 48 mounted on a shaft 49 which is journaled in the carriage at a point below the base 26. A larger sprocket 50 is also secured to the shaft 49 and is engaged by a chain 51 extending around an idler sprocket 52. The sprocket 50 is located under the front portion of the base 26 while the idler 52 is located under the rear portion thereof. These two sprockets are so located as to bring the upper ply of the chain 51 close to the base 26, said ply being attached to an ear 53 extending downwardly from a cross-head 54. Said cross-head has its ends slidably mounted within the guide grooves 27 in base 26 and its upper face is secured to a plate 55 constituting a slide. One end of this plate is secured to the cross-head 54, while the other end rests upon one end of the base 26 and is designed to slide thereon, there being longitudinal grooves 56 along the edges of the plate which are engaged by guide ears 57. These ears are located at the upper ends of longitudinally slotted plates 58 slidably mounted on the frame 26 and being guided in any preferred manner as by means of a bolt 59 extending through the slot and by means of guide ribs 60.

As shown in Fig. 3 the slide 55 may be provided with a series of longitudinal slots 61 so as to have the appearance of a grate, this construction considerably reducing the weight of the device. A flange 62 extends upwardly from the slide 55 at that end thereof adjacent the cross-head 54, and this flange constitutes a follower as hereinafter set forth. A rearwardly extending lug 66 is preferably struck from this flange and operates in the manner hereinafter stated. Extending rearwardly from the cross-head 54 is an arm 64, on which is mounted a button 65 designed to swing about a vertical pivot and which is normally parallel with the direction of movement of the slide 55. A stop lug 66 however is arranged upon the arm 64 and serves to hold the button 65 at right angles to the line of movement of the slide 55 when desired.

Brackets 67 are mounted upon the base 26 at the sides thereof adjacent the front of the carriage, and journaled within these brackets are the ends of a rock-shaft 68 provided at an intermediate point with an arm 69, disposed in the path of the lug 63 hereinbefore referred to. Extending from the end portions of the rock-shaft is a push-off 70 preferably in the form of a wire bail the intermediate portion of which is bent to form a head 71 arcuate in side view as indi-

cated in Fig. 4 but waved as viewed from one end so as to present a broad bearing surface as indicated in Fig. 2. The rock-shaft 68 has a notch 72 therein so located that when the head 71 is at such an elevation as to permit the insertion of a box thereunder, a spring-pressed locking dog 73 will be seated within the notch and prevent the shaft 68 from rotating. This dog 73 has a toe 74 extending downwardly therefrom and at one side of the path of button 65, it being understood however that when said button is turned laterally against the stop lug 66 it is in position to move against toe 74 as hereinafter set forth. A gage-plate 75 is arranged longitudinally upon the base 26 at one side of the slide 55; the ends of said plate being preferably turned laterally as shown at 76. This plate constitutes an abutment against which the boxes are designed to be placed prior to being elevated to their positions upon the shelves.

One of the guide ears 28 of the carriage has an enlargement 77 provided with a recess 78 in which is mounted a spring-pressed pawl, 79. This pawl is held normally in contact with the standard 7 and is so shaped that when it is brought into register with any one of the notches 11, it will spring into said notch and prevent further upward movement of the carriage.

As stated, the normal position of the button 65 is on a line parallel with the direction of movement of the slide 55. It will be apparent therefore that under normal conditions this button will not operate to release the rock-shaft 68 from the dog 73. Said shaft will be normally held against rotation and with the bail 70 elevated as shown in Fig. 4.

When it is desired to remove a box from one of the shelves the handle 20 is grasped by an operator and the lever 21 shifted so as to become disengaged from the rail 1. The entire apparatus can then be shifted along the rail until the lever 21 can be placed in engagement with the notch 2 of a predetermined column of boxes upon the shelves. After the apparatus has thus been located and locked the locking lever 36 is disengaged from the disk 34 and the standard 7 is partly rotated by means of handle 37. The locking lever 36 is thus brought into position to engage the notch corresponding with the shelf on which the box to be removed is located. For example, if the box is to be removed from the third shelf the handle 37 is turned around until the lever 36 can be placed in engagement with the notch numbered 3. The notch 11 which is third from the bottom of standard 7 will thus be brought into the path of the pawl 79. The operator then rotates the crank 16 and the gears 14 and 17 and shaft 18 will cause the grooved wheels 18' to actuate the cords

31. The carriage will therefore be slid upwardly along the standards 6 and 7 until further upward movement is prevented by the pawl 79 springing into the notch 11 heretofore referred to. When this operation occurs the slide 55 will be in exact horizontal alinement with the top of the third shelf. By then grasping the handle 43 and swinging it in one direction the standard 6 will be caused to partly rotate and the toothed segment 41 will rotate the gearing mounted on the carriage. The chain 51 will therefore be shifted so as to cause its upper ply to push the slide 55 longitudinally upon the base 26, the inner edge of the slide being brought into position between the third shelf and the box thereon. Said box will thus assume a position upon the slide, and, by reversing the movement of the handle 43, the slide can be drawn back on to the base 26 and will carry the box therewith. The carriage can then be lowered by reversing the movement of the crank 16 and the box will of course move downward therewith.

When the slide 55 is in its normal position upon the carriage the arm 64 extends under the rock-shaft 68 and the button 65 is thus located in front of the dog 73. Should it be desired to return the box to the shelf the standard 7 is adjusted in the manner hereinbefore described, the box is placed on the slide 55 and against the gage-plate 75, and the button 65 is shifted laterally against the stop 66 so as to project across the dog 73. The carriage is then elevated by means of crank 16 and its upward movement will cease as soon as the pawl 79 comes into engagement with the notch 11 in the path thereof. As soon as the carriage has reached the limit of its upward movement the standard 6 is partly rotated by means of handle 43, and the segment 41 will thus shift the gearing so as to push the slide 55 and the box thereon, on to the shelf at the proper point. As the cross-head 54 moves along the base 26 with the slide 55, the button 65 pushes against the toe 74 of dog 73 and shifts said dog out of engagement with the rock-shaft 68. The head 71 of bail 70 is thus permitted to drop on to the top of the box. As the movement of the slide and box upon the base continues said box will slide under the head 71 until it assumes its proper position on the shelf, whereupon the head 71 will drop back of the box. When the movement of the slide is reversed by reversing the movement of handle 43 the box will not move off of the shelf therewith but will be held against movement by the head 71. The button 65 is thus brought against the toe 74 of the dog 73 and shifted back to its normal position thereby and subsequent to or during this movement of the button the lug 63 presses against the arm 69 and returns the rock-shaft and the bail 70 to their normal

positions, whereupon dog 73 will automatically engage the notched rock-shaft and thus hold the bail elevated as formerly. The apparatus is thus in condition to be used for removing the boxes from the shelves, but, obviously, it cannot again be used for the purpose of placing a box on any one of the shelves unless the button 65 is first shifted as before stated.

By providing spring connections between the cord 31 and the carriage there is no danger of breaking the cord should the movement of the crank 16 continue after the carriage has been brought to a sudden stop by the pawl 79. Moreover, in lieu of providing slots 19 in the standards 6 and 7 for the reception of the cords 31, said cords can be extended under the lower ends of the standards and it is thus not necessary to slot them.

The apparatus herein described will be found very useful for the purpose of removing boxes from a series of shelves, and is designed more especially as a substitute for the rolling ladders ordinarily employed.

By means of this apparatus boxes can be removed from shelves, no matter how high they may be, without requiring the salesman to reach or climb for them.

The apparatus can be readily applied to shelves of different construction, and, owing to its neat and compact construction, will not detract from the appearance of the shelves. It can be very easily manipulated and, by keeping the boxes arranged accurately in columns, no difficulty will ever be experienced in properly removing the boxes or placing them in position.

It is of course to be understood that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the advantages of the invention.

What is claimed is:—

1. In apparatus of the class described a revoluble guide standard, a carriage mounted for sliding movement thereon, a locking member carried by the carriage, and non-alining means upon the standard and shiftable successively in position to coöperate with said locking member to limit the movement of the carriage.

2. In apparatus of the class described a revoluble guide standard, a carriage mounted for sliding movement thereon, a locking member upon the carriage, non-alining means upon the standard at different elevations, and means for actuating the standard to position any one of said means in the path of the locking member to limit the movement of the carriage.

3. In apparatus of the class described a revoluble guide standard, a carriage mounted for sliding movement thereon, a locking member carried by said carriage, non-alining means upon the standard at different

elevations for cooperating with said locking member to limit the movement of the carriage, and means for shifting said standard to bring said means into operative position.

4. In apparatus of the class described a revoluble guide standard, a carriage mounted for sliding movement thereon, a locking member upon the carriage, means upon the standard and at different elevations for cooperating with the locking member to limit the movement of the carriage, said means being disposed out of alinement, means for shifting the standard to bring any one of said means into operative position, and an indicator cooperating with said last mentioned shifting means.

5. In apparatus of the class described a revoluble guide standard having non-alining notches disposed at different elevations, a carriage mounted for sliding movement upon the standard, a locking member upon the carriage for automatically engaging any one of the notches, and means for rotating the standard to bring any one of said notches into the path of the locking member.

6. In apparatus of the class described a revoluble guide standard having non-alining notches disposed at different elevations, a carriage mounted for sliding movement upon the standard, a locking member upon the carriage for automatically engaging any one of the notches, and means for rotating the standard to bring any one of said notches into the path of the locking member, an indicator, and means for engaging the indicator to lock the standard against movement.

7. In apparatus of the class described a revoluble guide standard, a carriage mounted for sliding movement thereon, means for actuating the carriage, a slide upon the carriage, and means operated by the rotation of the standard for shifting the slide with relation to the carriage.

8. In apparatus of the class described a revoluble guide standard, a carriage slidably mounted thereon, a slide upon the carriage, means for rotating the standard, and means actuated by said standard for shifting the slide with relation to the carriage.

9. In apparatus of the class described a revoluble guide standard, a carriage mounted to slide thereon, a conveying member movably mounted upon the carriage, means for rotating the standard, and means operated by said standard for shifting the conveying member.

10. In apparatus of the class described a revoluble guide standard, a carriage slidably mounted thereon, a conveyer upon the carriage, means operated by the rotation of the standard for shifting the conveyer upon the carriage.

11. In apparatus of the class described a revoluble guide standard, a carriage slidably

mounted thereon, a conveyer upon the carriage, means operated by the rotation of the standard for shifting the conveyer upon the carriage, a box-holding device connected to the carriage and above the conveyer, means for locking said device out of operative position, and means operated by the conveyer for releasing said device.

12. In apparatus of the class described a carriage, a conveyer movably mounted thereon, a box-holding device movably connected to the carriage and overhanging the conveyer, means for locking said device out of operative position, and means operated by the conveyer for releasing said device.

13. In apparatus of the class described a carriage, a conveyer movably mounted thereon, a holding device movably mounted upon the carriage and overhanging the conveyer, means for locking said device out of operative position, and means adjustably mounted upon the conveyer for releasing said device during the movement of the conveyer in one direction.

14. In apparatus of the class described a base, a conveyer movably mounted thereon, a holding device movably connected with the base and overhanging the conveyer, means for locking said device out of operative position, means adjustably mounted on the conveyer for releasing said device during the movement of the conveyer in one direction, and means for returning said adjustable releasing means to its initial position upon the movement of the conveyer in the opposite direction.

15. In apparatus of the class described upper and lower trucks, guide rails therefor, revoluble standards connecting the trucks, a carriage slidably mounted upon said standards, separate means for rotating the standards, cooperating means upon the carriage and one of the standards for limiting the upward movement of the carriage, a conveyer upon the carriage and means actuated by the other standard for shifting the conveyer.

16. In apparatus of the class described upper and lower trucks, rails therefor, revoluble guide standards connecting the trucks, a carriage slidably mounted on the standards, means extending through the standards for actuating the carriage, cooperating means upon the carriage and one of the standards respectively for limiting the upward movement of the carriage, a conveyer upon the carriage, means actuated by the other standard for shifting the conveyer, a normally inactive push-off device mounted upon the carriage, and means actuated by the conveyer for shifting said device into operative position.

17. In apparatus of the class described a revoluble guide standard, a carriage slidably mounted thereon, a slide upon the carriage,

means operated by the rotation of the standard for shifting the slide upon the carriage, a push-off device pivotally mounted upon the carriage and overhanging the slide, means for normally locking said device out of operative position, and adjustable means upon the slide for releasing said device during the movement of the slide in one direction.

10 18. In apparatus of the class described a revoluble guide standard, said standard having spiral series of notches therein, a carriage slidably mounted upon the standard, a spring-controlled locking member upon

15 the carriage, means for actuating the stand-

ard to bring any one of the said notches into the path of the locking device, an elastic actuating means for shifting the carriage upon the standard.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of witnesses.

JOHN REECE JONES:

HERBERT WHITTER NICHOLS.

Witnesses:

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