Aug. 27, 1935. R. A. FRITZ 2,012,925

SUPPLEMENTAL DOOR OPERATING MEANS

Filed Aug. 22, 1934 2 Sheets-Sheet 1

Fig. 5.

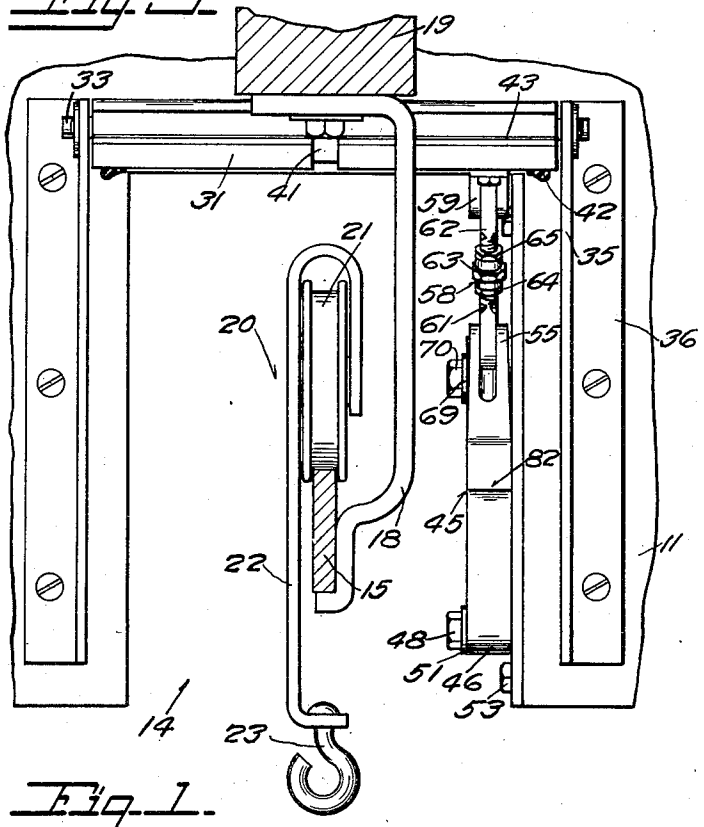


Fig. 1.

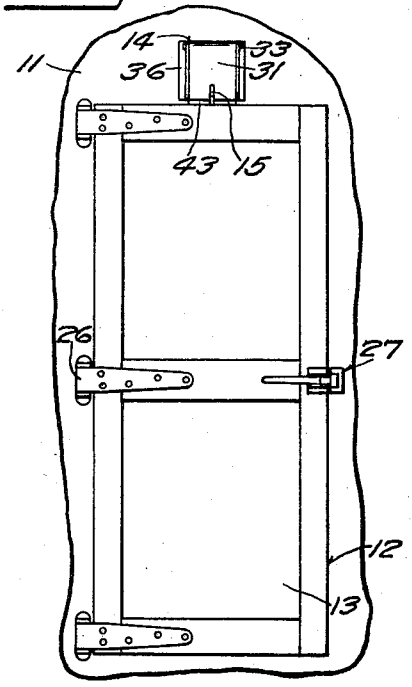
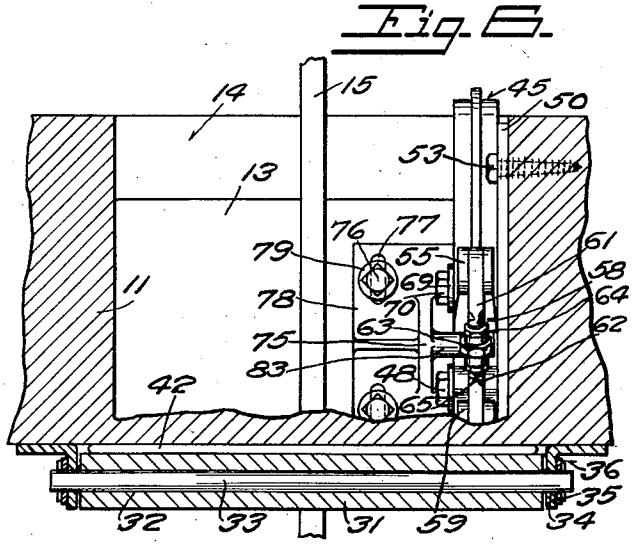


Fig. 6.



INVENTOR:

Rudolph A. Fritz,

by W. F. Leibold, His Attorney

Aug. 27, 1935. R. A. FRITZ 2,012,925

SUPPLEMENTAL DOOR OPERATING MEANS

Filed Aug. 22, 1934 2 Sheets-Sheet 2

Fig. 2.

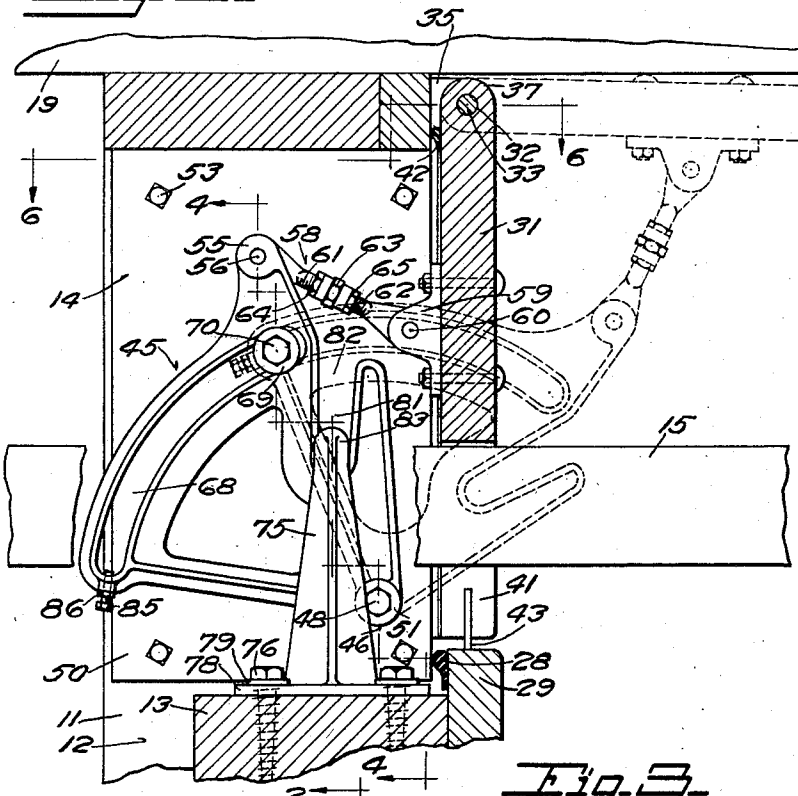


Fig. 3.

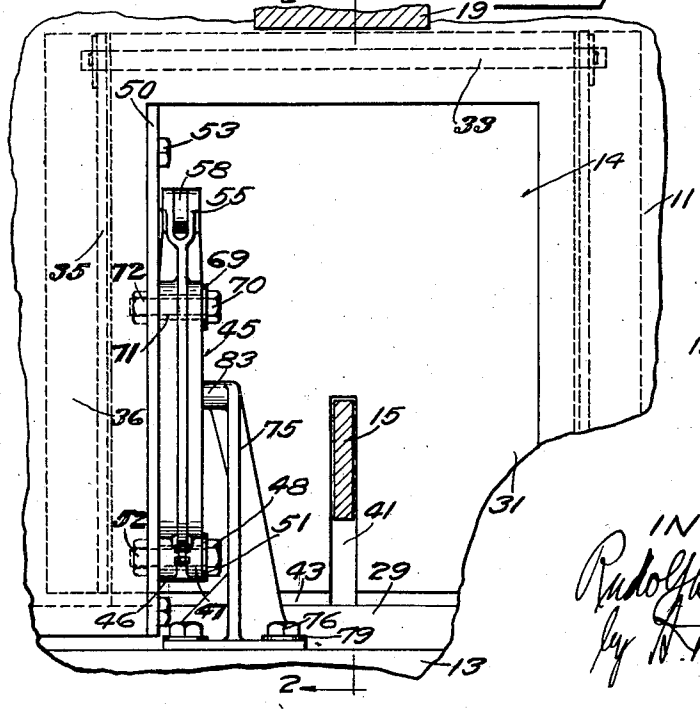
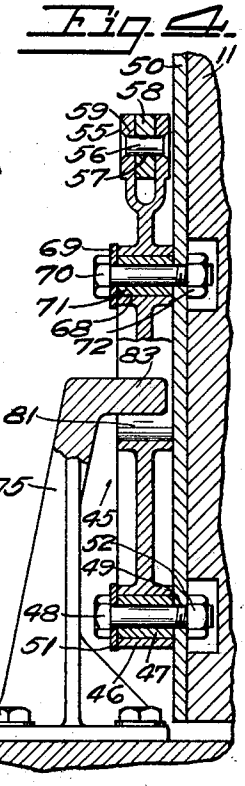


Fig. 4.



INVENTOR:
Rudolph A. Fritz,
by R. F. Blakeslee, His Attorney.

Patented Aug. 27, 1935 2,012,925

UNITED STATES PATENT OFFICE

2,012,925

SUPPLEMENTAL DOOR OPERATING MEANS

Rudolph A. Fritz, Cincinnati, Ohio, assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio, a corporation of Ohio

Application August 22, 1934, Serial No. 741,023

3 Claims. (Cl. 268—14)

My invention relates to supplemental door operating means, and is exemplified as employed in operating a supplemental door for closing the opening above the main door of a refrigerator in a meat processing plant or the like, the said opening being provided in the main wall of the refrigerator above and connecting with the opening for the main door for permitting the passage of meat-supporting carriages traveling on a track extending past said first-named opening.

It is the object of my invention to provide novel means for operating a supplemental door; further, to provide novel means whereby to move a supplemental door in synchronism with the movement of the main door; further, to provide novel means for opening the supplemental door during the beginning of opening movement of the main door, and for closing the supplemental door during the latter part of the closing movement of the main door.

My invention consists in the novel parts, and in the novel construction and arrangements of the parts for accomplishing these objects.

In the drawings:

Fig. 1 is a front elevation showing the general arrangement of the doors and a track of a refrigerator, to which my invention is applied in the present exemplification.

Fig. 2 is a vertical cross-section of my improved device, taken on the line 2—2 of Fig. 3, and showing the supplemental door and its operating means in closed relation in full lines and in open relation in dotted lines.

Fig. 3 is a rear elevation of the same, partly broken away.

Fig. 4 is a cross-sectional detail of the same, taken on the irregular line 4—4 of Fig. 2.

Fig. 5 is a front elevation of my improved device, showing the supplemental door in raised relation and a track and carriage therefor in operative relation thereto, the track and the support for its hanger being shown in cross-section; and,

Fig. 6 is a plan section of my improved device, taken in the plane of the irregular line 6—6 of Fig. 2.

The wall of the exemplifying refrigerator is indicated by the numeral 11, and is provided with an opening 12 normally closed by a main door 13, the opening having an extension 14 thereabove, forming a small supplemental or auxiliary opening through which a track 15 extends. This track and branches thereof in practice extend to the outside of the refrigerator to suitable points for moving articles into the refrigerator, for instance, sides or quarters of cattle, carcasses of hogs, hams and other articles to be placed in the refrigerator, the track and branches thereof also extending into the refrigerator for supporting the articles therein and for having the articles removed from the refrigerator when desired.

The track is supported at the inside and at the outside of the refrigerator on suitable hangers 18 attached to overhead supports 19. A carriage 20 is provided with a roller 21 rolling on the track and has a downward extension 22 supplied with a suitable connection 23 for supporting a suitable gambrel-hook or other supporting device for supporting the article which is suspended from the carriage. The frame of the carriage usually consists of a bent piece of flat steel. The track is comparatively thin.

The supplemental opening in the wall of the refrigerator is provided for the passage of such carriage into and out of the refrigerator when the main door is open. It is desirable that this supplemental opening be closed on closing of the main opening, so as to preserve the cold in the refrigerator, and it is desirable that such supplemental closure be so constructed and operated as not to interfere with the track.

The usual refrigerator door 13 is hinged to the wall by hinges 26, and held in closed position by usual latching means 27. A usual cushioning strip 28 is shown at the inner face of the outer marginal flange 29 of the door, for engaging the margin of the wall of the main opening.

I have provided a supplemental door 31 for closing the supplemental opening. This supplemental door is shown pivoted at its upper end to the wall of the refrigerator by providing said upper end with a hole 32 through which a pivot rod 33 extends. This pivot rod extends through holes 34 in the upper ends of flanges 35 of angle-plates 36 fixed to the wall of the supplemental door opening. The upper end of the supplemental door is rounded as at 37.

The lower portion of the supplemental door is provided with a slot 41 for accommodating the rail 15 when the supplemental door is closed. The manner of mounting and operating the supplemental door permits this slot to be narrow, so that there is little clearance between its side walls and the rail. The upper end and sides of the supplemental door are shown provided with cushion strips 42 which contact the front faces of the walls of the supplemental opening when the supplemental door is closed. The lower end of the supplemental door is provided with a flexible lip 43 extending throughout the width of the supple-

mental door at each side of its slot and making contact with the upper end of the main door when the doors are closed.

A lever **45** is pivoted to the side wall of the supplemental door opening, as by being provided with a bearing **46** in which there is a journal bushing **47** about a pivot bolt **48** passing through a hole **49** in a supporting plate **50**. The pivot bushing is clamped between a washer **51** under the head of the bolt and said plate by a nut **52** screwed over the threaded end of said bolt. This arrangement permits ready pivotal movement of the lever. The supporting plate is fixed to the side wall of the supplemental door opening by means of screws **53**.

The upper end of the lever has a fork **55** which forms a bearing for a pin **56** passing through a hole **57** in one end of a link **58**. This forms an articulating connection between said lever and one end of said link. The other end of the link has articulating connection with the supplemental door, as by being received in a fork-bearing **59** fixed to the inner face of the supplemental door, an articulating pin **60** passing through a hole in the other end of said link and said fork bearing.

This link may be made adjustable, as by forming the same of two sections having inner threaded ends **61**, **62**, respectively having right-hand and left-hand threads, and having a similarly threaded nut **63** threaded thereover, for lengthening and shortening the link by rotation of the nut in opposite directions. Jam nuts **64**, **65** lock the parts in adjusted relations.

A guiding connection is provided for the lever, exemplified as an arcuate slot **68** in the lever, the walls of which slide between the inner face of the supporting plate and a washer **69** under the head of a bolt **70** extending through a hole in said supporting plate and having a bushing **71** received thereabout, the threaded end of the bolt having a nut **72** thereon for clamping the bushing to the plate, so as to leave sufficient freedom for the walls of the slot to slide over the bushing and between the supporting plate and the washer on said bolt.

The main door is provided with an operating part coacting with the lever, shown as a standard **75** extending upwardly from the door and as adjustable relatively to the thickness of the door by having securing screws **76** pass through slots **77** in a base-plate **78** of said standard and screwed into the door, washers **79** being located between the heads of said screws and the walls of said slots. The standard is adjustably positioned, and is then clamped in place.

Coacting means are provided between the lever and said operating part, exemplified as a slot **81** in the lever, having a mouth **82** arranged for receiving a contact lug **83** on the standard. The slot is in the nature of a cam slot having opposite contact faces arranged to be contacted by opposite contact faces on the lug for respectively rocking the lever in opposite directions respectively upon opening movement and upon closing movement of the main door for corresponding movements of the supplemental door.

In operation, the article that is being conveyed into or out of the refrigerator is suspended from its carriage and pushed along the rail by the operator. When the carriage reaches a position adjacent to the main door, the operator opens the main door and thereby automatically operates the supplemental door for opening the latter from a position shown in full lines in Fig. 2 to a position shown in dotted lines in said figure during the beginning portion of the opening movement of the main door.

The article is then pushed into or out of the refrigerator, the carriage which supports it passing through the supplemental opening. As many articles as may be desired are thus pushed through the openings, and the main door is then closed. The supplemental door is also thereby automatically closed, as from the position shown in dotted lines in Fig. 2 to the position shown in full lines in said figure. This closing movement of the supplemental door takes place during the latter portion of the closing movement of the main door.

The opening movement of the supplemental or auxiliary door taking place during the beginning portion of the opening movement of the main door and the closing movement of the supplemental or auxiliary door taking place during the latter portion of the closing movement of the main door, insures non-interference between the carriage and the supplemental door, as the operator must always have moved the carriage to such extent as to insure opening and closing of the main door, thereby insuring freedom of opening and closing movement of the supplemental door.

When the doors are open, free passage is permitted the carriages and articles suspended therefrom through the door openings.

When the main door is being opened, the contact part thereon engages the forward wall of the slot in the lever, automatically rocking the lever in forward direction and swinging the supplemental door outwardly, and moving the articulating axis between the lever and its link past a right line between the pivotal axis of the lever and the articulating axis of the link with the supplemental door, to form a locking toggle link for maintaining the supplemental door in open relation.

Such movement of the lever has moved the mouth of its slot within the range of movement of the operating part of the main door, so that, when the main door is closed, the operating part will pass into said mouth and engage the rear wall of said slot for rocking the lever rearwardly and breaking the toggle lock between the lever and its link, for automatically moving the lever and the supplemental door inwardly to the position shown in full lines in Fig. 2. In this relation the operating part presses upon the rear wall of the slot for pressing the supplemental door toward the margin of its opening for exerting pressure upon the cushioning strips **42**.

The adjustments provided between the operating part and the main door and in the link permit adjustments of the parts for insuring such relations. Further adjustments may be had by means of a bolt **85** threaded in a threaded hole in the end of the slot **68** and secured in adjusted positions by a jam nut **86**. The inner end of this bolt is arranged to strike the bushing **71** and act as a stop to the forward movement of the lever, thereby aiding in adjusting the position of the mouth of the slot.

It is, of course, obvious that the contact faces on the respective doors for urging opening and closing movements of the supplemental door upon similar movements of the main door may be transposed, and that other changes and alterations may be made in the construction of my improved device and the details thereof, without departing from the spirit of my invention as embraced in the appended claims.

I claim:

1. In operating means for a supplemental door supplemental to a main door in a frame, a lever having pivot means at one end for pivoting the same to the frame and having articulating connection at its opposite end for connection with the supplemental door, said lever provided with a cam slot extending lengthwise between said articulating connection and said pivot means and having a mouth, the mouth end of said slot being toward said articulating connection, and arranged for receiving a contact part on said main door for opening and closing said supplemental door upon opening and closing of said main door.

2. In operating means for a supplemental door supplemental to a main door in a frame, a lever of general triangular form having pivot means at one corner for pivoting the same to the frame, articulating means at another corner for connection with the supplemental door, and a guide between said last-named corner and an additional corner of said lever, said lever having a cam between said first two corners arranged for coaction with a contact part on the main door for opening and closing said supplemental door upon opening and closing of said main door.

3. In operating means for a supplemental door supplemental to a main door in a frame, the combination of a lever of general triangular form having pivot connection at one of its corners with the frame, a link having pivot connections at its respective ends with another corner of said lever and with the supplemental door, one edge of said lever of general triangular form provided with a cam slot between said corners, an operating part on the main door coacting with the walls of said cam slot for moving said lever on its first-named pivot connection by opening movement and by closing movement of said main door to open and close said supplemental door, and an arcuate guide extending along another edge of said lever of general triangular form between said second-named corner and the third corner of said lever, for guiding said lever in a path of movement perpendicular to the pivotal axis of said first-named pivot connection.

RUDOLPH A. FRITZ.