July 15, 1958 R. F. LESAGE 2,843,375

COMBINED SLIDING AND SIDE SEALING DOOR

Filed Nov. 16, 1955 4 Sheets-Sheet 1

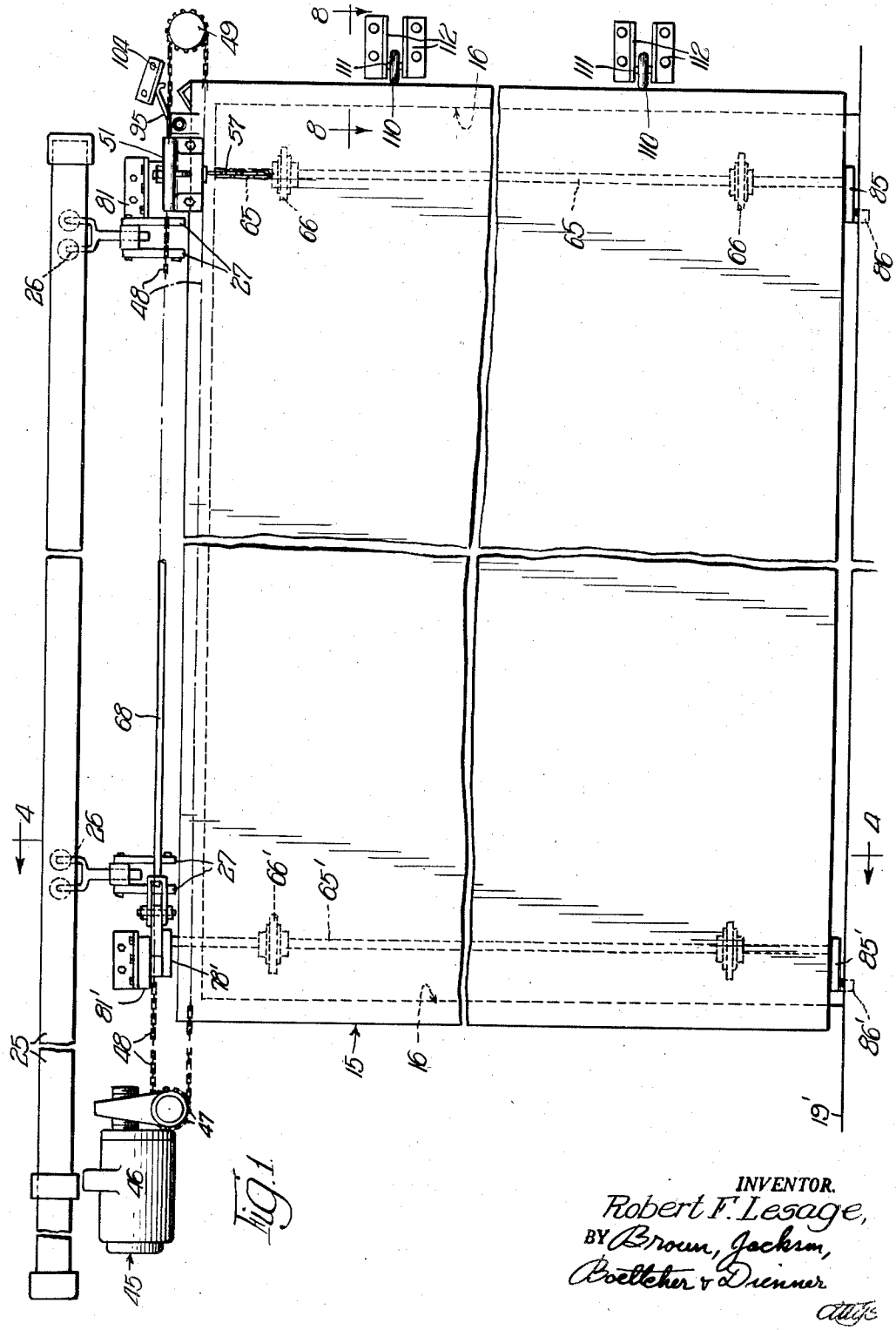


Fig. 1.

INVENTOR.
Robert F. Lesage,
BY Brown, Jackson,
Boettcher & Dienner
Attys.

July 15, 1958 R. F. LESAGE 2,843,375

COMBINED SLIDING AND SIDE SEALING DOOR

Filed Nov. 16, 1955 4 Sheets-Sheet 2

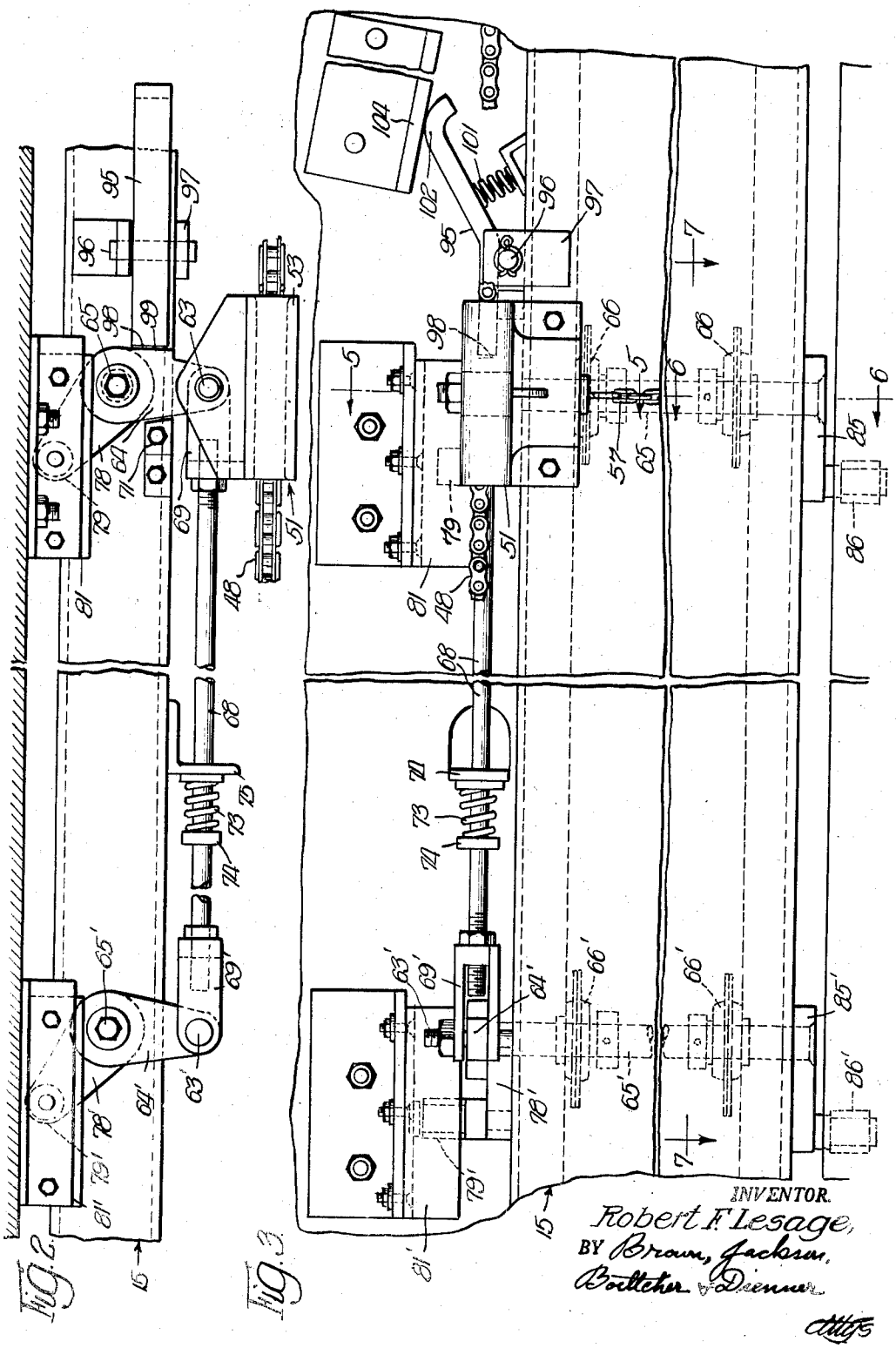


Fig. 2

Fig. 3

INVENTOR.
Robert F. Lesage,
BY Brown, Jackson,
Boettcher & Dienner
Attys

July 15, 1958 R. F. LESAGE 2,843,375

COMBINED SLIDING AND SIDE SEALING DOOR

Filed Nov. 16, 1955 4 Sheets-Sheet 3

Fig. 4

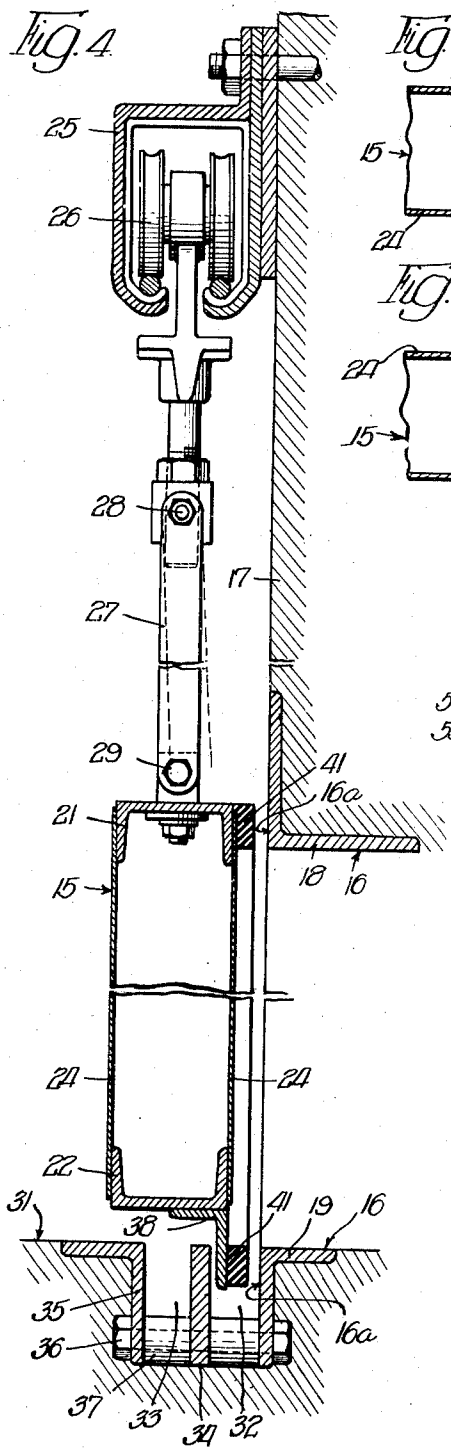


Fig. 8

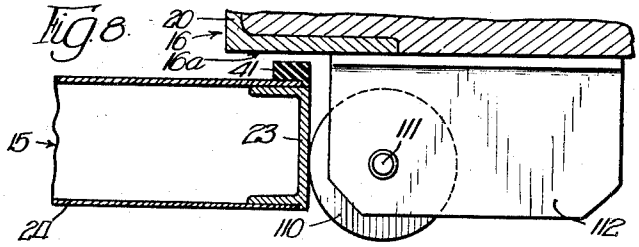


Fig. 9

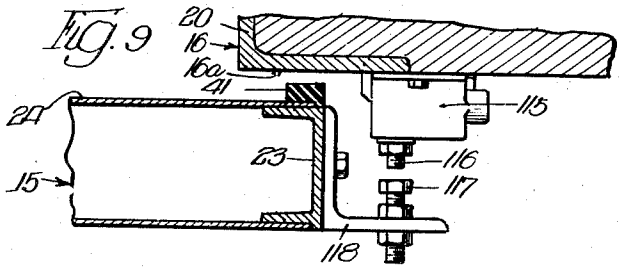


Fig. 5

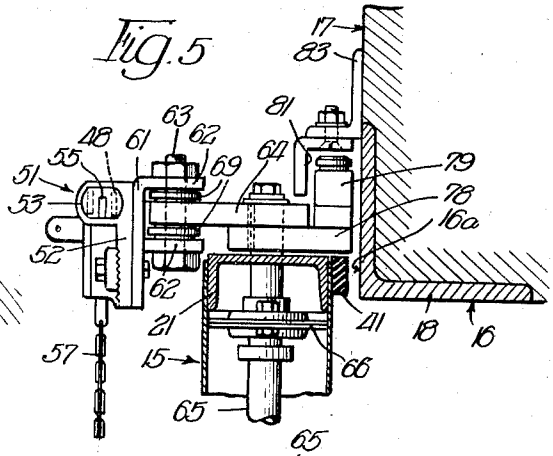
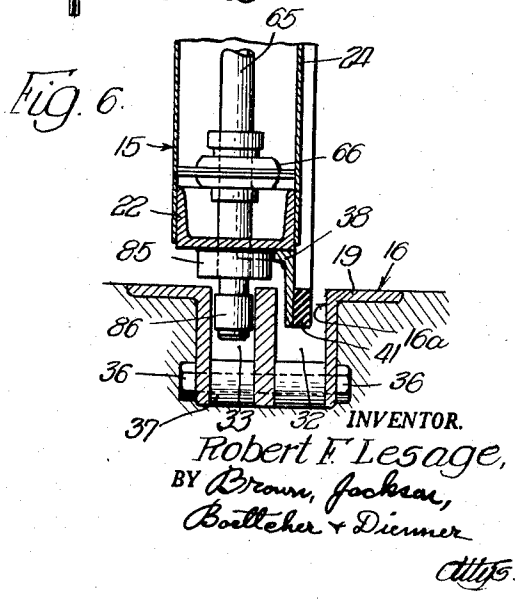


Fig. 6

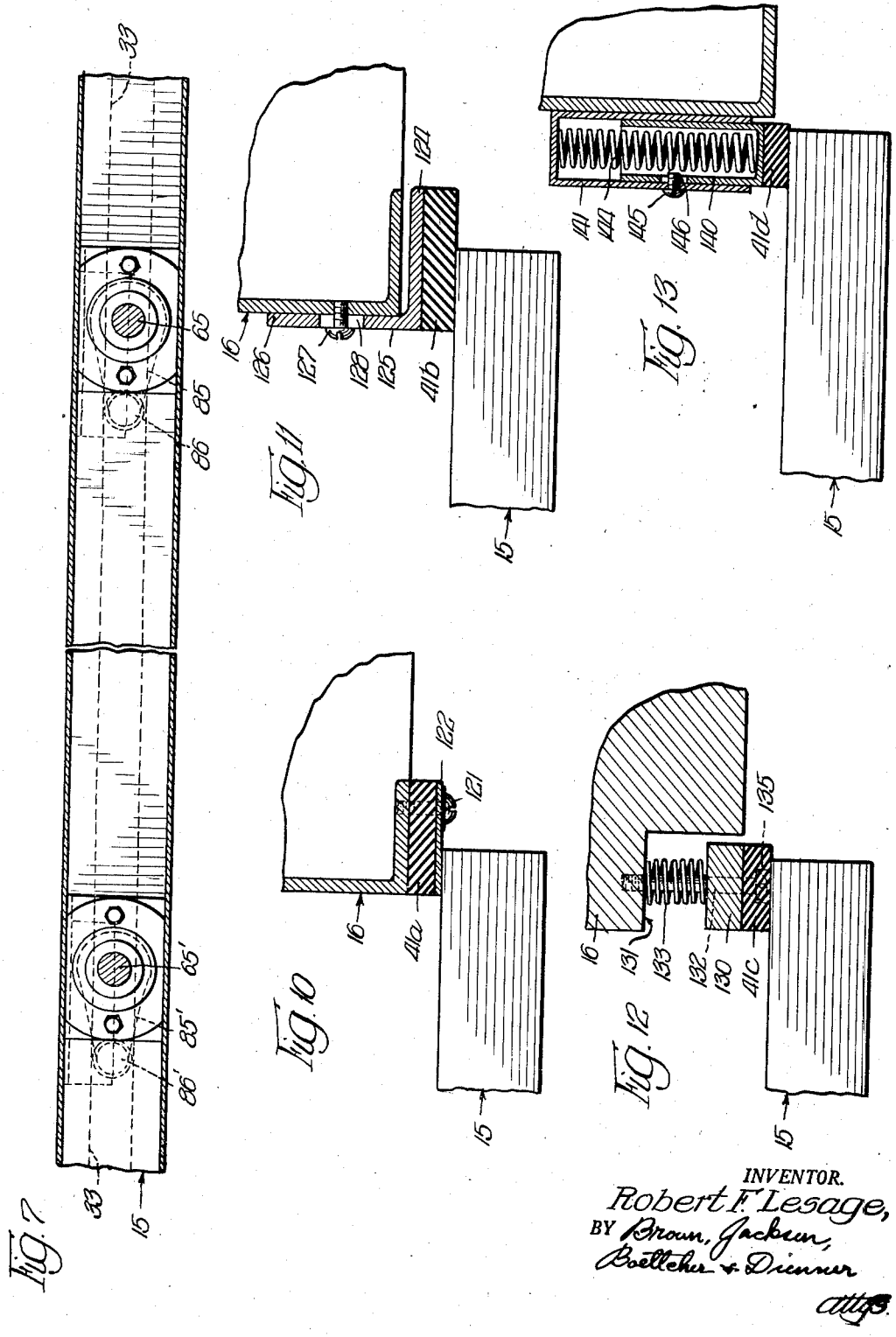


INVENTOR.
Robert F. Lesage,
BY Brown, Jackson,
Boettcher + Dienner
Attys.

July 15, 1958 R. F. LESAGE 2,843,375

COMBINED SLIDING AND SIDE SEALING DOOR

Filed Nov. 16, 1955 4 Sheets-Sheet 4



INVENTOR.
Robert F. Lesage,
BY Brown, Jackson, Boettcher & Dinner
attys.

United States Patent Office 2,843,375
Patented July 15, 1958

2,843,375

COMBINED SLIDING AND SIDE SEALING DOOR

Robert F. Lesage, Denver, Colo., assignor to Richards-Wilcox Manufacturing Company, Aurora, Ill., a corporation of Illinois

Application November 16, 1955, Serial No. 547,188

16 Claims. (Cl. 268—53)

The present invention relates to a combined sliding and side sealing door, i. e. a door which is first slid edgewise into registration with the doorway, and which is then moved laterally sidewise into direct sealing contact with the doorway. Such a door has all of the space-saving advantages of a sliding door in its movement between open and closed positions, and it also has all of the sealing advantages of a swinging door in effecting a tight closure.

While the door is intended for general utility, its principal use will probably be in the case of large doors for industrial establishments, treatment plants, warehouses, etc. In the case of exterior doors, the sealing feature secures a tight closure of the doorway against the entrance of inclement weather, and in the case of interior doors the sealing feature secure a tight closure of the doorway for maintaining predetermined temperature and humidity conditions in different parts of a factory, treatment plant or the like.

One of the principal objects of the invention is to provide improved door operating mechanism which will effect the two stage operation of first sliding the door edgewise into registration with the doorway, and then automatically moving the door laterally sidewise into sealing contact with the doorway.

Another object of the invention is to provide improved door shifter mechanism for performing the second stage operation of shifting the door laterally sidewise into sealing contact with the doorway.

Another object of the invention is to provide improved mechanism for automatically effecting the transition from the first stage operation of sliding the door edgewise into registration with the doorway into the second stage operation of shifting the door laterally sidewise into sealing contact with the doorway.

The improved door operating mechanism comprises door propelling means preferably in the form of an endless chain which slides the door edgewise into a position which is in registration with the doorway, but is spaced laterally out of contact therewith. When the door reaches this position of registration with the doorway, the sliding motion of the door is automatically stopped, but the motion of the endless chain is continued for performing the second stage operation of shifting the door laterally sidewise into sealing contact with the doorway. This lateral shifting operation is performed by a unique arrangement of shifter cranks carried by the door and having cooperative engagement with stationary trackways mounted adjacent the doorway. The aforesaid continued motion of the endless chain occurring after the sliding motion of the door has been automatically stopped is arranged to impart swinging motion to the shifter cranks for shifting the door sidewise. After the shifter motion by the shifter cranks has established effective sealing contact between the door and the doorway, the motion of the endless chain is interrupted.

The reverse operation of opening the door is performed by reversing the drive to the endless chain, which first reversely operates the shifter cranks to release the sealing

contact between the door and doorway, and which then slides the door back to its open position out of registration with the doorway.

Other objects, features and advantages of the invention will be apparent from the following detail description of one preferred embodiment thereof. In the accompanying drawings illustrating such embodiment:

Figure 1 is a fragmentary elevational view of a door embodying the invention, showing the door in closed position;

Figure 2 is a fragmentary plan or top view of the door showing the shifter crank mechanism and the arrangement by which it derives its operating energy from the endless chain;

Figure 3 is a fragmentary elevational view showing the shifter cranks at each of the four corners of the door;

Figure 4 is a transverse sectional view taken approximately on the plane of the line 4—4 of Figure 1, and showing the trolley track suspension of the door;

Figure 5 is a detail sectional view taken on the plane of the line 5—5 of Figure 3;

Figure 6 is a detail sectional view taken on the plane of the line 6—6 of Figure 3.

Figure 7 is a fragmentary horizontal sectional view taken on the plane of the line 7—7 of Figure 3;

Figure 8 is a detail sectional view of one of the blocking rollers, taken on the plane of the line 8—8 of Figure 1;

Figure 9 is a similar detail sectional view of the microswitch for stopping the closing movement of the door; and

Figures 10 to 13 inclusive are fragmentary diagrammatic views of different embodiments of sealing strips mounted on the doorway for effecting sealing closure with the door.

Referring to the accompanying drawings, the door is indicated at **15** in its entirety, and the doorway to be closed thereby is indicated at **16**, this doorway being defined in a wall structure designated **17**. The marginal edges of the doorway are defined by a frame which includes the top, bottom and side angle irons **18**, **19** and **20** (Figures 4 and 8). The door **15** may be of any suitable construction, in the illustrated embodiment being shown as comprising top, bottom and side channels **21**, **22** and **23** joined by side panels **24**. The sliding motion of the door occurs along an overhead track **25** in which travel wheeled trolleys **26**. The door is pivotally suspended from the trolleys **26** by links **27** which have their upper ends pivotally connected at **28** to the trolleys, and which have their lower ends pivotally connected at **29** to the top channel **21** of the door. By virtue of this pivoted link suspension, the door normally hangs directly below the overhead track **25**, but is capable of being shifted laterally into sealing engagement with the doorway **16**, as indicated by the dotted line position of the suspension links **27** in Figure 4.

As shown in Figures 4 and 6, the floor level is indicated at **31**, and provided in said floor are two parallel floor tracks **32** and **33** which extend throughout the entire length of travel of the door from its fully open position to its fully closed position. The inner floor track **32** is defined between the angle iron **19** (and its extension **19'**) and a flat bar **34** spaced outwardly therefrom. The outer floor track **33** is defined between the flat bar **34** and an outer angle bar **35**, which latter bars have their upper edges lying flush with the floor level. The three bars **19**, **34** and **35** are joined together by bolts **36** passing through all three bars, there being spacing collars or nuts **37** mounted on these bolts for spacing the bars from each other.

Secured to the lower edge of the door **15** is an angle bar **38** which has a lower downwardly extending flange traveling in the inner floor track **32**. Secured to the

inner face of this angle bar **38** is the lower length of a compressible sealing strip **41** preferably composed of sponge rubber, or it might be made of neoprene or other like material. This compressible sealing strip **41** also extends across the top of the door and along the side edges for sealing contact with the top and side angle bars **18** and **20** of the doorway. The vertical flanges of the angle bars **18**, **19**, **20** define a vertical sealing face **16***a* for the doorway **16**. In the edgewise sliding motion of the door the sealing strip **41** travels out of contact with this vertical sealing face **16***a*. In the operation of sealing the doorway, the door is shifted laterally sidewise to bring the sealing strip **41** into compression engagement against the vertical sealing face **16***a* of the doorway, as will be presently described.

The door is operated by an electrical door operator **45** comprising an electric motor **46** operative through speed reduction gearing to drive a chain sprocket wheel **47**. This electric operator **45** is stationarily mounted at the inner end of the path of travel of the door. An endless chain **48** trained over the sprocket wheel **47** extends along the upper edge of the door to an idler sprocket wheel **49** mounted at the other limit of travel of the door. The lower run of the chain **48** has operative connection with the door **15** through the medium of a chain latch **51**. As shown in Figures 2 and 5, this chain latch comprises a plate **52** from the forward upper edge of which projects an enclosed channel **53** through which the chain **48** passes. A spring pressed latching pin or plunger **55** extends upwardly into the channel **53** for effecting latching engagement with only one particular place in the chain **48**, so that the timing of the door will not be altered if emergency manual operation is used. Connected with the lower end of this spring pressed locking plunger **55** and hanging downwardly therefrom is an emergency release cord or chain **57** which is adapted to be pulled downwardly in the emergency situation of releasing the propelling chain **48** from the door. This releasable chain latch **51** is a conventional or standard accessory for use with chain propelled sliding doors. The chain latch **51** is adjustably bolted to a plate **61** having two laterally projecting pivot ears **62** which are pivotally connected by a pivot bolt **63** to the swinging end of an actuating crank arm **64**. The crank arm **64** is secured fast to the upper end of a long vertical rock shaft **65** which extends down through the door from top to bottom thereof adjacent to the leading edge of the door. This rock shaft is journaled in vertically spaced bearings **66** mounted in the door.

Extending down through the door adjacent to the trailing edge thereof is a companion rock shaft **65'** which is likewise journaled in vertically spaced bearings **66'** mounted in the door (Figures 1 and 2). As shown in Figure 2, the two rock shafts **65** and **65''** are connected together for concurrent oscillation by a connecting rod **68** extending parallel with the upper edge of the door. One end of the connecting rod **68** has pivotal connection through a clevis **69** with the pivot bolt **63** carried by the actuating crank arm **64**, and the other end of the connecting rod has pivotal connection through a clevis **69'** with a pivot bolt **63'** carried by an actuating crank arm **64'** mounted on the companion shaft **65'**.

The clockwise direction of throw of the two actuating arms **64**, **64'** is limited substantially to the positions of these two arms shown in Figure 2, by the provision of a stop bracket **71** which is adjustably secured to the top edge of the door. The left hand edge of the right hand crank arm **64** is adapted to abut this stop bracket **71** when the crank arm is in the position illustrated. The two crank arms **64**, **64'** and connecting rod **68** are normally maintained in the positions illustrated in Figure 2 by the action of a compression spring **73** mounted on the connecting rod **68**. One end of this compression spring bears against a stop collar **74** secured to the connecting rod, and the other end of the spring bears against an angle bracket **75** secured to the door, whereby the spring normally holds the parts with the edge of crank arm **64** bearing against abutment stop **71**.

Mounted on the upper and lower ends of the long vertical shafts **65**, **65'**, above and below the top and bottom edges of the door **15**, are the upper and lower door shifter cranks of the door shifter mechanism. The upper door shifter cranks **78**, **78'** carry upwardly extending rollers **79**, **79'** at their ends, which effect camming action in trackways **81**, **81'** (Figure 5) for shifting the door laterally into sealing contact with the doorway. The trackways **81**, **81'** are shown in the form of two short sections of angle bar secured to the wall structure **17** by supporting angles **83**, **83'** located approximately above the doorway **16**. When the door approaches its closed position the rollers **79**, **79'** can enter these upper trackways for exerting a camming action therein to shift the door laterally into sealing contact with the doorway. As an alternative construction, a one piece length of angle bar **81** may suffice for both upwardly extending rollers **79**, **79'**.

Mounted on the lower ends of the vertical shifter shafts **65**, **65'** below the lower edge of the door are lower shifter cranks **85**, **85'** which carry downwardly extending rollers **86**, **86'** at their ends. As shown in Figures 6 and 7, these downwardly extending rollers **86**, **86'** travel in the outer floor track **33** which, as previously described, extends the entire length of travel of the door. As will presently appear, when the door **15** arrives in registration with the doorway the door shifter mechanism is unlatched, so that continued motion of the endless chain **48** transmits counterclockwise oscillation to the two shafts **65**, **65'** which operate through the upper and lower shifter cranks **78**, **78'** and **85**, **85'** to shift the door laterally sidewise into sealing engagement with the doorway.

Referring now to the latch mechanism which automatically unlatches the shifter mechanism when the door is in registration with the doorway, this comprises a latch or safety arm **95** which is pivotally mounted on the top of the door adjacent to the leading edge thereof. This latch is pivotally mounted for vertical swinging movement on a horizontal pivot pin **96** supported in brackets **97** carried by the door. The left hand end of the latch has a blocking nose **98** adapted to occupy a position in abutment with a blocking shoulder **99** which is formed along the right hand edge of the actuating crank arm **64**. A compression spring **101** acting upwardly against the under side of the upwardly sloping right hand end **102** of the latch normally tends to hold the latch in the blocking position shown, in which blocking position the endwise motion of the chain **48** can only serve to slide the door edgewise, and cannot operate the door shifter mechanism. The latch **95** is released by the action of the upwardly inclined right hand end **102** striking a sloping overhead cam plate **104** when the leading edge of the door is within a short distance from closing the doorway, such as two or three inches from closing the doorway. The action of the overhead cam plate **104** is to rock the latch **95** in a clockwise direction for clearing the blocking nose **98** from the blocking shoulder **99**, whereupon the driving energy of the chain **48** is effective through chain latch **51** to cause pivoting of the rocker arm **64**, with resulting actuation of the upper and lower door shifter crank arms. The purpose of the latch **95** is to prevent the door from closing against the wall if an obstruction should be encountered while the door is closing.

After the latch **95** has been released and after the door has arrived in a position of registration with the doorway, the further sliding motion of the door is interrupted by the leading edge of the door striking upper and lower blocking rollers **110** which are pivotally mounted on vertical pivot axes **111** between pairs of brackets **112** stationarily mounted adjacent the closing jam of the doorway. When the leading edge of the door strikes these rollers **110**, further sliding motion of the door parallel to the doorway is positively stopped, but the door is free to shift

inwardly along the rollers into sealing contact with the doorway. This immediately takes place because the latch 95 has been just previously released, and since the endwise motion of the chain 48 can no longer slide the door, this endwise motion is converted into oscillating motion of the shifter shafts 65, 65' and their upper and lower shifter crank arms, whereby the door is shifted into sealing engagement with the doorway.

When the door has thus been closed with the sealing strip 41 compressed between the door and the doorway, the circuit to the electric motor 46 of the door operator 45 is interrupted by the operation of a microswitch 115, as shown in Figure 9. This microswitch is mounted on the closing jamb angle bar 20 of the door frame 16 and has its actuating plunger 116 arranged for actuation by an adjustable bolt 117 carried by an angle bar bracket 118 projecting from the leading edge of the door. The bolt 117 can be adjusted for opening the motor circuit at different degrees of closure of the door. The electric motor 45 comprises a magnetic brake which holds the door closed in pressure sealing contact with the doorway after the motor circuit has been interrupted. The circuit connections of the electric operator 45 are old and well known and need not be described here.

In the reverse operation of opening the door, the electric motor 46 is reversely energized for driving the endless chain 48 in the reverse direction. This first releases the door from its pressure sealing contact with the doorway, and as a part of this operation is restores the crank 64 to the position shown in Figure 2 with the left hand edge of the crank arm engaging abutment 71 and with the latch nose 98 engaging abutment shoulder 99. Thereupon, the propelling force of the chain is operative to slide the door edgewise in an inward direction along the trolley track 25, into the fully open position of the door. A rotary limit switch in the electric operator 45 shuts off the power to the electric motor when the door is in its fully open position.

In Figures 10 to 13 inclusive, I have shown modified arrangements of the compressible rubber sealing strip mounted on the door frame 16, instead of on the door 15. In Figure 10 the strip 41*a* is secured to each of the angle bars of the door frame by screws 121. The door 15 may contact this strip directly, or a thin metallic face plate 122 may cover the cushioning strip, with this face plate 122 slidable on the shanks of the screws 121.

In Figure 11 the cushioning strip 41*b* is mounted on the flanges 124 of angle bars 125 which line the four sides of the door frame. The inwardly extending flanges 126 of these angle bars 125 have adjustable mounting on the door frame angle bars by screws 127 passing through slots 128 formed in the flanges 126 and tapping into threaded holes in the door frame angle bars. This adjustability afforded by the screws 127 and slots 128 enables the cushioning strip 41*b* to be adjusted at the four sides of the door frame, as for example to take care of misaligned door jambs.

In Figure 12 I have shown a resiliently mounted sealing strip 41*c* which is supported on a spring pressed wood framing 130, which lies in a notched-out area 131 extending around the perimeter of the doorway 16. At spaced points the wood framing has slidable mounting on the shanks of screws 132 which pass loosely through the framing and thread into the door frame 16. Compression springs 133 on the shanks of the screws normally tend to hold the sealing strip 41*c* pressed outwardly. The heads of the screws 132 seating in the bottoms of the recesses 135 limit the outward movement of the cushioning strip.

In Figure 13 the cushioning strip 41*d* is mounted on the outer side of a channel-shaped frame 140 which has sliding engagement in a channel-shaped outer frame 141, these two channel-shaped frames extending around all four sides of the doorway. At spaced points compression springs 144 are confined between these channel-shaped

frames, these compression springs tending to thrust the inner frame 140 and sealing strip 41*d* in an outward direction relatively to the door frame. At spaced points, pins or screws 145 project from one of the frames through slots 146 in the other of said frames for limiting the spring pressed outward motion of the inner frame 140.

While I have illustrated and described what I regard to be the preferred embodiments of my invention, nevertheless it will be understood that such are merely exemplary and that numerous modifications and rearrangements may be made therein without departing from the essence of the invention.

I claim:

1. In a laterally sealing sliding door construction, the combination of a doorway, a guide track extending substantially parallel to the plane of said doorway, a door adapted to travel along said guide track, an endless chain for propelling the door along said track to a position in registration with the doorway, door shifter mechanism carried by the door, shifter trackways mounted adjacent to said doorway, said shifter mechanism having cooperative engagement with said trackways when the door is in registration with said doorway, and means responsive to said endless chain for actuating said shifter mechanism when the door is in registration with the doorway, whereby to move the door sidewise into sealing engagement with said doorway.

2. In a combined sliding and side sealing door construction, the combination of a doorway, a door, a guide track extending substantially parallel to the plane of the doorway, a propelling chain for propelling the door along said guide track to a position in registration with said doorway, door shifter mechanism carried by said door for shifting the door sidewise into sealing engagement with said doorway, blocking mechanism for blocking further sliding movement of said door when it is in registration with said doorway, and means for causing said propelling mechanism to thereupon become operative through said shifter mechanism for shifting the door laterally sidewise into sealing contact with the doorway.

3. In a combined sliding and side sealing door construction, the combination of a doorway, a track extending substantially parallel to the plane of the doorway, a door adapted to travel along said track, an endless chain for propelling the door along said track to a position in registration with said doorway, door shifter mechanism pivotally mounted on said door and shifter trackways cooperating therewith stationarily mounted adjacent to said doorway, said shifter mechanism having cooperative engagement with said trackways when the door is in registration with said doorway for effecting lateral sidewise movement of the door into sealing contact with the doorway, means operatively connecting said endless chain with said shifter mechanism, latch means for holding said shifter mechanism against operation by said endless chain until after said door has been slid edgewise substantially into registration with said doorway, and blocking rollers for blocking sliding movement of said door when it is in registration with said doorway but permitting free rolling motion of said door laterally sidewise into sealing contact with the doorway.

4. In a combined sliding and side sealing door construction, the combination of a doorway, a track extending substantially parallel to the plane of the doorway, a door mounted to travel along said track, an endless chain for propelling the door along said track to a position in registration with said doorway, blocking mechnism for blocking further sliding movement of said door door when it is in registration with said doorway, door shifter mechanism for shifting the door sidewise into sealing engagement with said doorway, and means for operating said door shifter mechanism after said door has engaged said blocking mechanism.

5. In a combined sliding and side sealing door construction, the combination of a doorway, a track extending substantially parallel to the plane of the doorway, trolleys in said track, link means pivotally suspending said door from said trolleys, an endless chain for propelling the door along said trolley track, door shifter mechanism carried by said door for shifting the door sidewise into sealing engagement with said doorway, said link suspension means permitting said sidewise shifting motion of the door, blocking mechanism for blocking further sliding movement of said door when it is in registration with said doorway, and means for causing operation of said door shifter mechanism after the door has engaged said blocking mechanism.

6. In a laterally sealing sliding door construction, the combination of a doorway, an overhead trolley track and a floor track both extending parallel to said doorway, a door adapted to travel along said tracks, trolleys in said trolley tracks, link means pivotally suspending said door from said trolleys, cranks carried by the lower portion of said door having crank rollers engaging in said floor track, a propelling chain for propelling the door along said tracks to a position in registration with the doorway, means for interrupting the motion of said door along said tracks when said door is in registration with said doorway, and mechanism thereafter actuated by said chain for moving the door laterally sidewise into sealing contact with said doorway, said mechanism comprising means for swinging said cranks relatively to said door.

7. In a laterally sealing sliding door construction, the combination of a doorway, an overhead trolley track and a floor track both extending parallel to said doorway, a door adapted to travel along said tracks, trolleys in said trolley track from which said door is suspended, two vertical shafts carried by said door adjacent to the leading and trailing edges thereof, means connecting said shafts for conjoint operation, cranks carried by the lower portions of said shafts having crank rollers travelling in said floor track, upper reaction trackways adjacent to the upper portion of said doorway, upper cranks carried by the upper portions of said vertical shafts having crank rollers adapted to engage said upper reaction trackways, an endless chain for propelling the door edgewise along said tracks, means for interrupting the edgewise motion of said door when the door is in registration with said doorway, and means thereafter actuated by said endless chain for transmitting rocking movement to said vertical shafts for moving the door laterally sidewise into sealing contact with the doorway.

8. In a laterally sealing sliding door construction, the combination of a doorway, track means extending substantially parallel to the plane of the doorway, a door adapted to travel along said track means, electric door operating mechanism for first propelling the door along said track means into a position in registration with the doorway, and comprising means thereafter responsive to said electric door operating mechanism for causing said door to move sidewise into sealing engagement with the doorway, and switch mechanism for interrupting the operation of said electric door operating mechanism when said door has been moved into sealing engagement with said doorway.

9. The combined sliding and side sealing door construction of claim 4 in which the sealing engagement between the door and doorway is established by a sealing strip carried by said door and adapted to have sealing contact with said doorway.

10. The combined sliding and side sealing door construction of claim 4 in which the sealing engagement between the door and doorway is established by a sealing strip carried by said doorway and adapted to have sealing contact with said door.

11. The combined sliding and side sealing door construction of claim 4 in which the sealing engagement between the door and doorway is established by a compressible sealing strip carried by said doorway around its perimeter, and a face plate yieldably mounted on said sealing strip adapted to have sealing contact with the door.

12. The combined sliding and side sealing door construction of claim 4 in which the sealing engagement between the door and doorway is established by bars adjustably mounted on said doorway for movement toward and away from said door, and sealing strips on said bars adapted to have sealing contact with the door.

13. The combined sliding and side sealing door construction of claim 4 in which the sealing engagement between the door and doorway is established by a frame extending around the perimeter of the doorway, spring means urging said frame outwardly away from said doorway, and a sealing strip carried by said frame adapted to have sealing contact with the door.

14. The combined sliding and side sealing door construction of claim 4 in which the sealing engagement between the door and doorway is established by inner and outer telescopic channels extending around the perimeter of the doorway, spring means tending to separate said channels, and a sealing strip carried by one of said channels for sealing contact with the door.

15. In a laterally sealing sliding door for closing a doorway, the combination of an overhead trolley track extending substantially horizontal and parallel to the plane of the doorway, spaced trolleys rolling along said trolley track, a door suspended from said trolleys to travel substantially horizontally along said trolley track toward and away from said doorway, power driven propelling mechanism operative to propel the door along said track into a position in registration with said doorway, automatic door shifter mechanism operated by said propelling mechanism when the door is in registration with the doorway for shifting the door into closing engagement with the doorway, said door shifter mechanism comprising means for causing the door to be shifted flatwise into engagement with the doorway with the entire plane of the door remaining parallel with the doorway in such lifting movement, reaction means against which said automatic door shifter mechanism reacts for closing the upper portion of the door against the doorway, and suspension links pivotally suspending the upper portion of said door from said trolleys whereby the reaction pressure of closing the upper portion of the door against the doorway is not transmitted to said trolley track but is borne by said reaction means.

16. In a laterally sealing sliding door for closing a doorway, the combination of an overhead trolley track extending substantially horizontal and parallel to the plane of the doorway, spaced trolleys rolling along said trolley track, a door suspended from said trolley to travel substantially horizontally along said trolley track toward and away from said doorway, power driven propelling mechanism operative to propel the door along said track into a position in registration with said doorway, automatic door shifter mechanism operated by said propelling mechanism when the door is in registration with the doorway for shifting the door into closing engagement with the doorway, said door shifter mechanism comprising means for causing the door to be shifted flatwise into engagement with the doorway with the entire plane of the door remaining parallel with the doorway in such shifting movement, reaction means against which said automatic door shifter mechanism reacts for closing the upper portion of the door against the doorway, suspension links pivotally suspending the upper portion of said door from said trolleys whereby the reaction pressure of closing the upper portion of the door against the doorway

is not transmitted to said trolley track but is borne by said reaction means, locking mechanism for locking said automatic shifter mechanism against operation while the door is being propelled along said trolley track into and out of registration with said doorway, and means for automatically releasing said locking mechanism when the travel of said door along said trolley track brings it into registration with said doorway.

References Cited in the file of this patent

UNITED STATES PATENTS

1,778,360	Gorman	Oct. 14, 1920
2,381,966	Bishop et al.	Aug. 14, 1945
2,701,394	Anderson	Feb. 8, 1955

FOREIGN PATENTS

542,624	Germany	Jan. 26, 1932

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,843,375 July 15, 1958

Robert F. Lesage

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 71, strike out "door", first occurrence; column 8, line 45, for "lifting" read -- shifting --.

Signed and sealed this 16th day of September 1958.

(SEAL)
Attest:
KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents