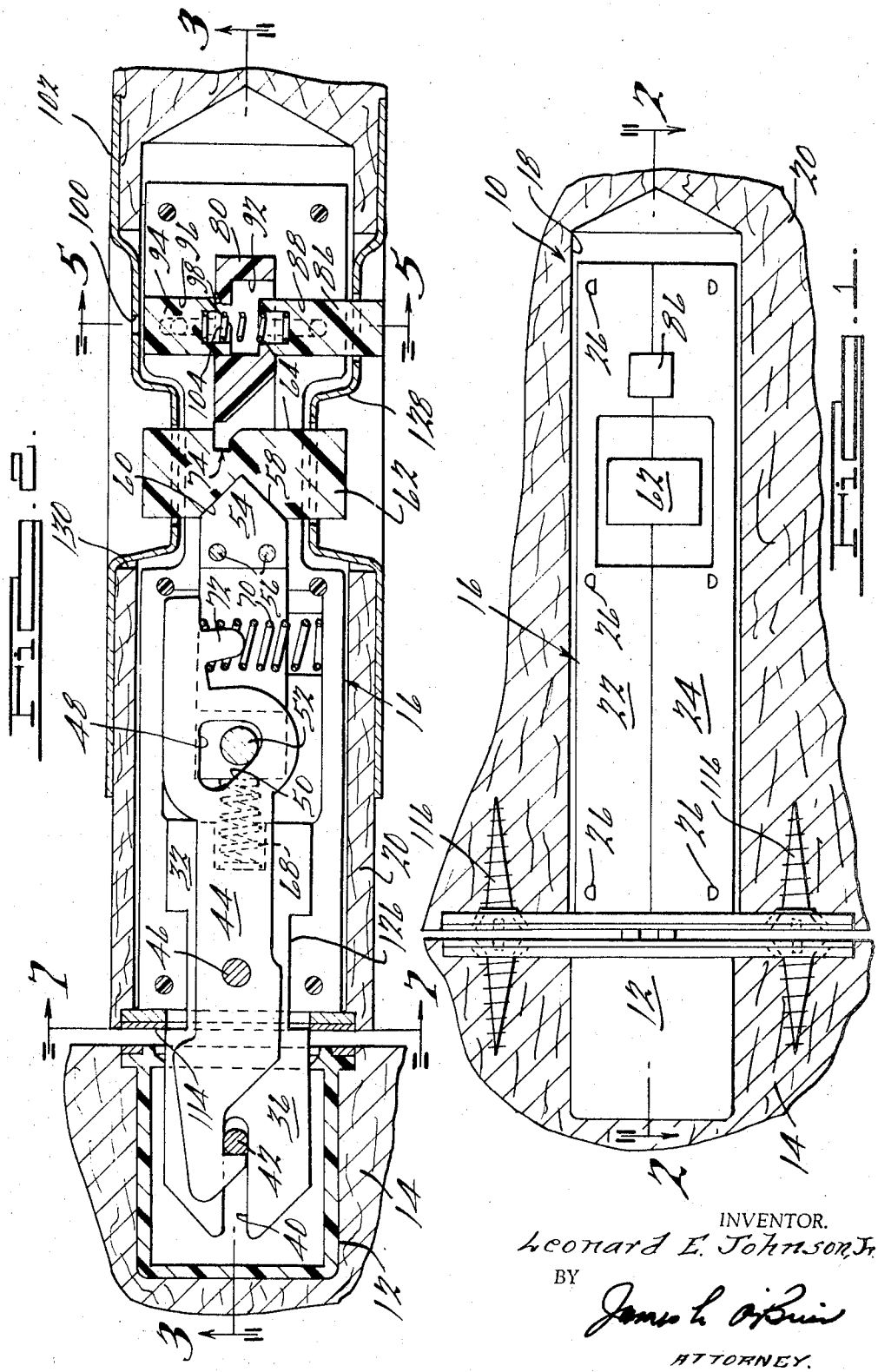
July 1, 1969 L. E. JOHNSON, JR 3,453,014

SLIDING DOOR LOCK

Filed Jan. 30, 1968 Sheet 1 of 3



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SLIDING DOOR LOCK

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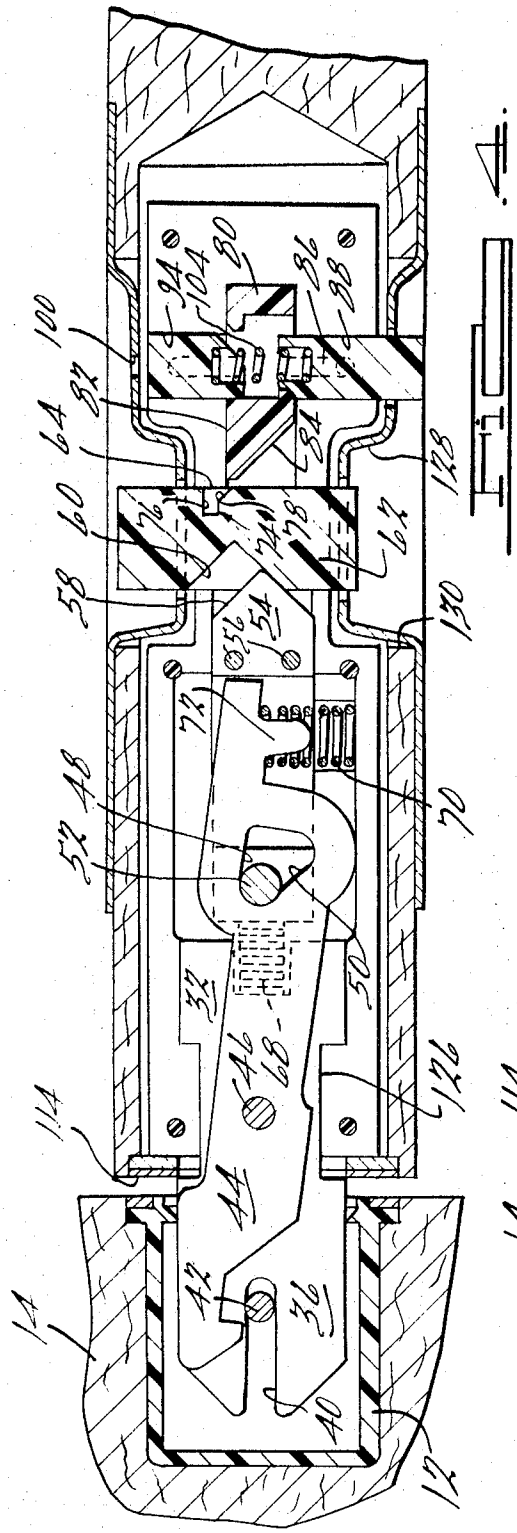


Fig. 4

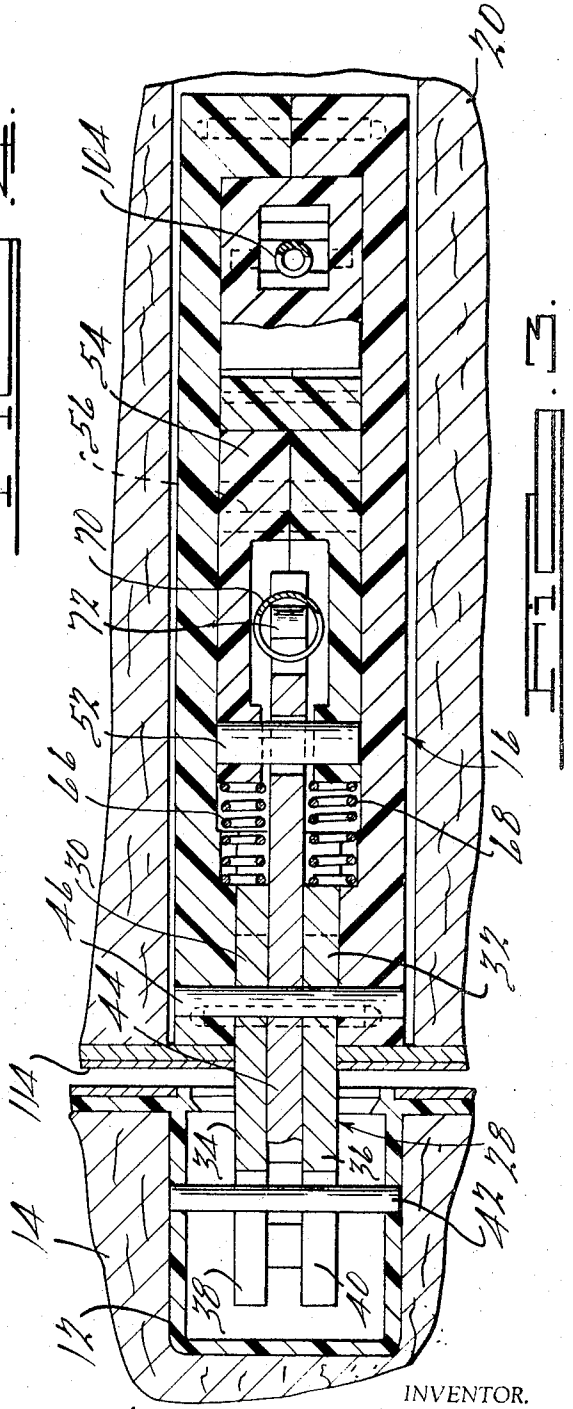


Fig. 3

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SLIDING DOOR LOCK

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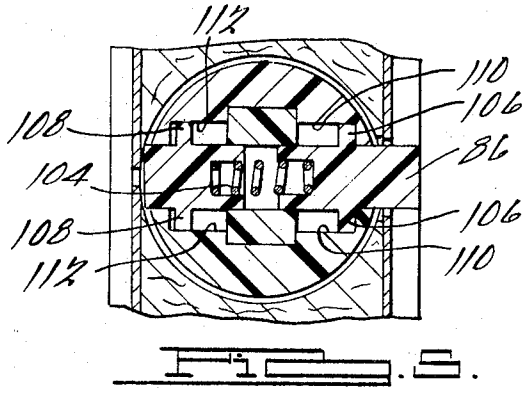


FIG. 5.

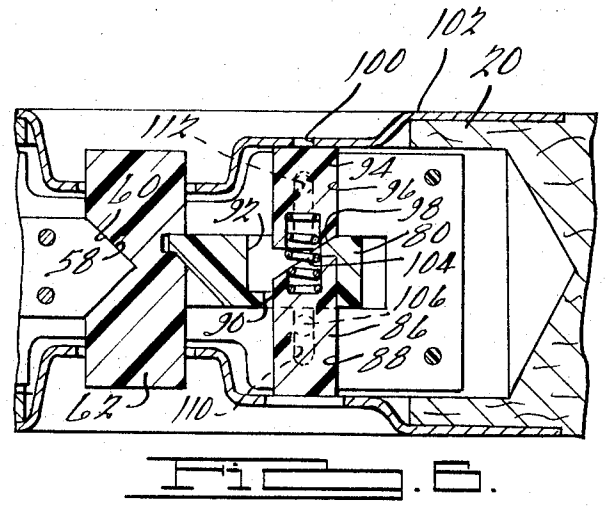


FIG. 6.

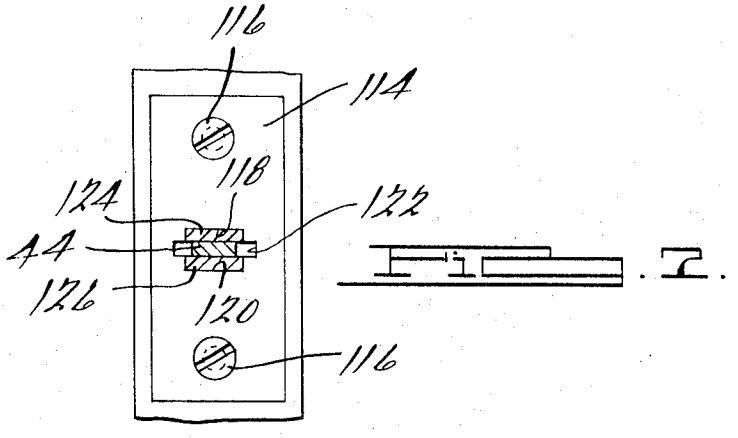


FIG. 7.

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SLIDING DOOR LOCK

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6 Claims

ABSTRACT OF THE DISCLOSURE

A rotatable latch is mounted in the edge of a door between fixed, slotted guide members to enage a latch pin. Movement of a transverse actuating member moves a slide member longitudinally to rotate the latch out of engagement with the latch pin. A privacy lock actuable from one side of the door may be unlocked from the opposite side through limited access actuating means.

This invention relates generally to locks and more particularly to locks for sliding doors. An example of one form of sliding door lock is shown in my earlier U.S. Patent No. 2,723,148 wherein the lock is recessed into a specially formed opening in the edge of the door and a finger hole handle is provided to draw the door from its pocket. The lock of the present invention is constructed to fit into a standard bore often provided in the door by the manufacturer thereof or easily drilled by the lock installer and is also constructed to have a minimum of parts. A door having a lock of the present invention installed may be withdrawn from its pocket without need of a special handle.

Other advantages of the invention will become readily apparent from the following description taken in connection with the appended drawings, in which:

FIGURE 1 is a side view showing a sliding door lock embodying the present invention installed in a door;

FIGURE 2 is a sectional view taken along line 2—2 in FIGURE 1;

FIGURE 3 is a sectional view taken along line 3—3 in FIGURE 2;

FIGURE 4 is a view similar to FIGURE 2 showing the position of parts in unlatching position;

FIGURE 5 is a sectional view taken along line 5—5 of FIGURE 2;

FIGURE 6 is a fragmentary view of FIGURE 4 showing the position of parts in the locked position; and

FIGURE 7 is a view taken along line 7—7 of FIGURE 2.

Referring now to the drawings and more particularly to FIGURE 1, numeral **10** designates a sliding door lock assembly having a cup member **12** mounted in a door **14** and having housing **16** mounted in a bore **18** formed in the edge of a door **20**. The housing **16** is preferably made of plastic, such as nylon, with upper half **22** and lower half **24** held together by suitable pins **26**.

A bipartite guide member **28** having identically formed upper and lower members **30** and **32** is disposed in housing **16** with projecting end portions **34** and **36** having aligned slots **38** and **40**, respectively, formed in end portions **34** and **36** to receive latch pin **42** which is mounted in cup member **12**. A latch member **44** is rotatably mounted on a pivot **46** for rotation in a plane between the upper and lower guide members **30** and **32**. An opening **48** is formed in latch member **44** and is provided with an angular cam surface **50** which is adapted to engage a pin **52** carried by a reciprocable bipartite slide member **54**. The two parts of the slide member **54** are identical and are secured together by pins **56**. One end **58** of slide member **54** is formed with a cam surface which is adapted to engage a complementary shaped surface **60** formed in

actuating member **62** which is mounted in a bore **64** for reciprocation in a direction transverse to the direction of movement of the slide member **54**. Springs **66** and **68** urge slide member **54** toward the latched position wherein slide member **54** is in its extreme position to the right, as shown in FIGURE 2. A spring **70** engages the housing wall and a lug **72** formed on latch member **44** to urge the latch member toward the latched position as shown in FIGURE 2.

A detent **74** having a straight side **76** and an angular side **78** is formed in actuating member **62** and is adapted to receive an abutment **80** having complementary shaped sides **82** and **84**, respectively. Abutment **80** is actuated toward the locked position, as shown in FIGURE 6, by a first button **86** which is reciprocably mounted in a transverse bore **88** formed in housing **16** and adapted to engage a cam surface **90** formed on the leading edge of a transverse bore **92** in abutment **80**. A second button **94** is disposed in transverse bore **96** and is adapted to engage a cam surface **98** formed on an edge of bore **92** opposite to cam **90**. Limited access to the second button **94** is provided through the small hole **100** formed in the face plate **102**. A spring **104** urges said first and second buttons apart toward limit positions defined by engagement of pins **106** and **108** respectively carried by the first and second buttons **86** and **94** with an end of corresponding slots **110** and **112** formed respectively in bores **88** and **96**.

A face plate **114** is adapted to be secured to the edge of door **20** by suitable screws **116** and is provided upper, lower and middle slots designated respectively **118**, **120** and **122**, as best seen in FIGURE 7. The width of the middle slot **122** is greater than the upper and lower slots and is sufficiently wide to permit the passage there through of the end portions **34** and **36** of guide members **30** and **32**. The widths of upper and lower slots **118** and **120** are smaller than the widths of end portions **34** and **36**, but are greater than the widths of neck portions **124** and **126** of guide members **30** and **32** respectively. The bipartite guide member **28** and latch member **44** are assembled by passing the projecting end portion **38** through the middle slot until the neck portion **124** can be moved into the upper slot **118** and by passing end portion **40** through the middle slot until neck portion **126** can be moved into the lower slot **120**. Latch member **44** is then inserted between guide members **30** and **32** and passed through middle slot **122** to a position where the pivot pin **46** can be inserted.

Cup shaped face plates **102** and **128** are mounted on opposite sides of door **20** to cover a standard transverse bore **130** which permits access to actuating member **62** and first and second buttons **86** and **94**. Plates **102** and **128** also act as a finger grip or handle to facilitate movement of the door.

In operation, movement of the actuating member **62** inwardly from the position shown in FIGURE 2 to the position shown in FIGURE 4 causes surface **60** to engage cam surface **58** to move slide member **54** longitudinally whereby pin **52** acts against cam surface **50** to rotate latch member clockwise to the unlatched position. Springs **66**, **68** and **70** urge the parts toward the latch position shown in FIGURE 2. When the door **20** is moved from the open to closed position, the guide member **28** and latch member **44** enter the cup member **12** with the latch member **44** in the latched position. The cammed end of latch member **44** strikes latch pin **42** causing the member **44** to be rotated clockwise in opposition to springs **66**, **68** and **70** until the hooked portion of latch member can engage latch pin **42** whereupon the springs cause the latch member to rotate counterclockwise into the latched position. Unless locked the actuating member **62** may be moved from either side of the door to operate the latch member. Face plates **102** and **128** provide access to the actuating member **62** and first and second buttons **86** and **94** and also

act as a finger grip or handle to facilitate movement of the door. When the face plates **102** and **128** are covered, as when the door **20** is completely within its pocket, the projecting guide members **34** and **36** are used as a handle to move the door.

The latch may be locked by pushing the first button **86** inwardly causing abutment **80** to engage detent **74** wherein the parts assume the positions shown in FIGURE 6. In this position the actuating member **62** can be moved only from one side of the door, the lower side as shown in the drawings. Movement from this one side brings the cam surfaces **78** and **84** into engagement and causes the abutment **80** to be retracted from detent **74**. The latch may also be unlocked by inward movement of the second button **94** which may be accomplished by inserting a suitable probe through the limited access hole **100**.

As can be seen, the sliding door lock of the present invention may be installed in a bore **18** in a sliding door. Access to the actuating member **62** and first and second buttons is through a transverse bore **130**. The use of such bores is standard practice in swinging doors and the present invention permits sliding doors to follow a similar standard practice. In any event the bores are easily made. The lock is assembled in two halves with most of the upper and lower parts being identical to keep manufacturing costs low and to facilitate assembly. Although the lock has been shown with the cup member **12** mounted in an adjacent door, it is obvious that the cup member could be mounted in a door jamb.

It will be readily apparent to those skilled in the art that various modifications and changes can be made without departing from the spirit of the invention.

I claim:

1. A lock assembly for a sliding door comprising:

a cup member having a latch pin mounted therein,

a housing adapted to be mounted in an edge of said door opposite said cup member,

a guide member disposed in said housing and having an end projecting therefrom which is adapted to extend into said cup member when said door is in closed position,

a latch member rotatably mounted in said housing adjacent said guide member and adapted for latching engagement with said latch pin,

a slide member reciprocably mounted in said housing to cammingly engage said latch member whereby said latch member is rotated when said slide member is moved longitudinally, and

an actuating member reciprocably mounted in said housing for engagement with said slide member to move said slide member longitudinally in response to transverse movement of said actuating member to cause said latch member to be rotated in a direction to disengage said latch member from said latch pin.

2. The lock of claim **1** wherein the guide member is composed of an upper member and a lower member and the latch member being mounted between said upper and lower guide members, and said upper and lower guide members having projecting end portions with aligned slots formed therein for receiving said latch pin.

3. The lock of claim **2** wherein the guide members are formed with a neck portion narrower than said projecting end portion, and a face plate is formed with upper, lower and middle slots to respectively receive the neck portion of the upper and lower guide members and the latch member, the width of the upper and lower slots being smaller than the width of the projecting end portions of said guide members and the width of the middle slot being greater than the width of said projecting end portions.

4. The lock of claim **1** wherein the latch member is formed with an opening having a cam surface formed at an angle to the longitudinal axis of said latch member, and wherein said slide member is bipartite and disposed to straddle said slide member, and a pin connecting the parts of said slide member and extending through said opening for engagement with said cam surface.

5. The lock of claim **1** wherein said actuating member is formed with a detent having a substantially straight side and an angular side, an abutment reciprocably mounted in said housing having a straight side and an angular side adapted for respective engagement with the straight and angular sides of said detent; a first button having a one way connection with said abutment for moving said abutment into engagement with said detent to thereby prevent movement of said actuating member in one direction, movement of said actuating member in the opposite direction being effective to move said abutment out of engagement with said detent.

6. The lock of claim **5** having a second button disposed on a side of the door opposite to said first button and having a one way connection with said abutment for moving said abutment in a direction to disengage the abutment from said detent, and means defining a restricted access to said second button.

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U.S. Cl. X.R.

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