Nov. 27, 1956 W. YOUNGBERG 2,772,107

LATCH MECHANISM

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Fig. 1.

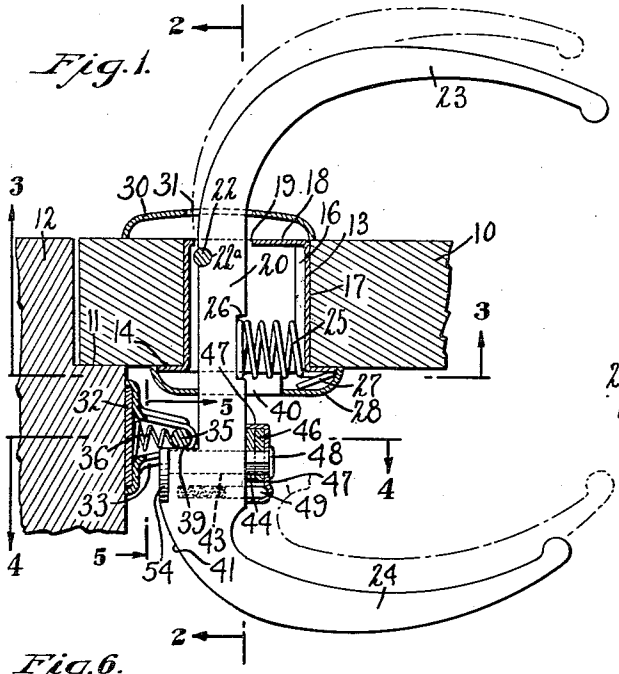


Fig. 2.

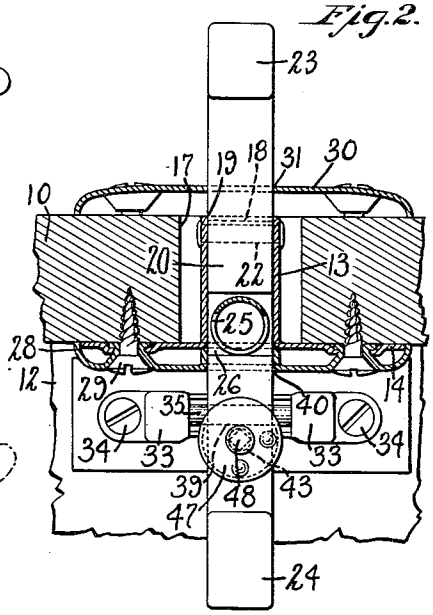


Fig. 6.

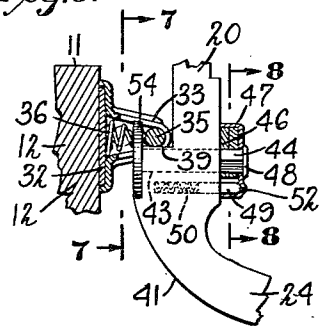


Fig. 7.

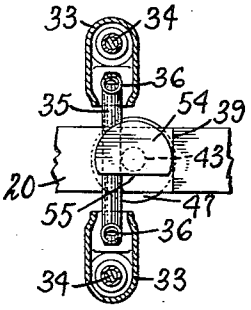


Fig. 3.

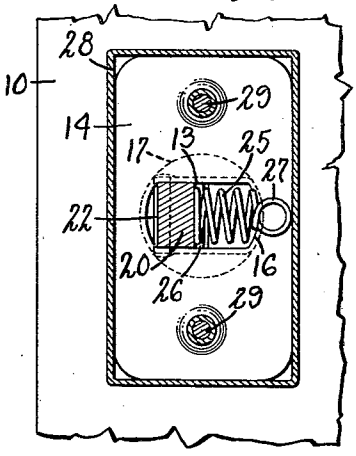


Fig. 4.

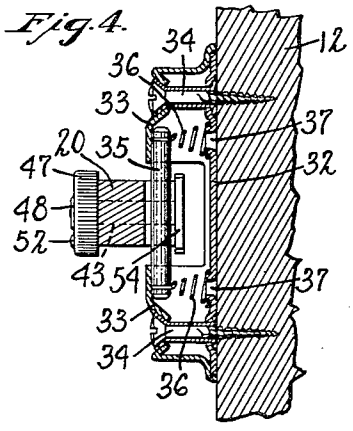
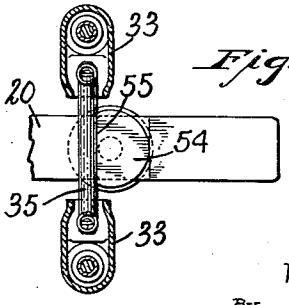


Fig. 5.



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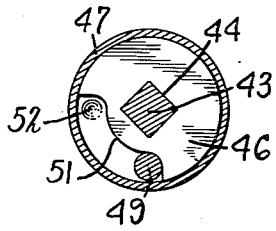
By Rockwell & Bartholow
Attorneys

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LATCH MECHANISM

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Fig. 8.



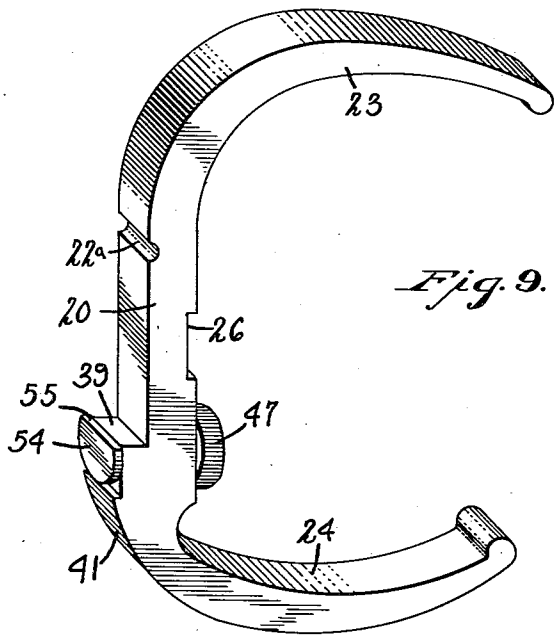


Fig. 9.

Fig. 10.

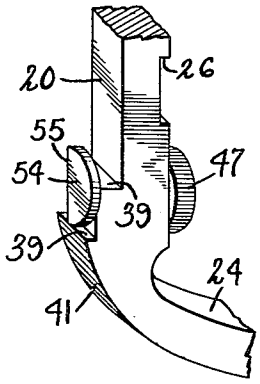


Fig. 12.

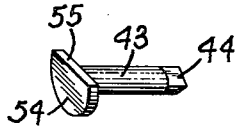


Fig. 15.

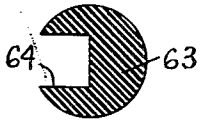


Fig. 14.

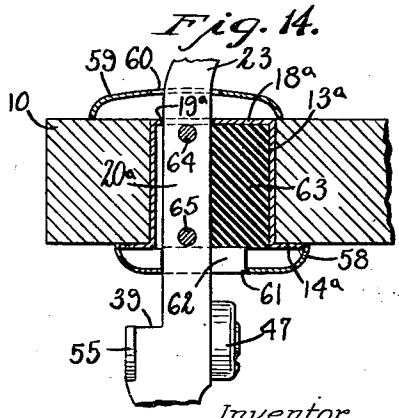


Fig. 11.

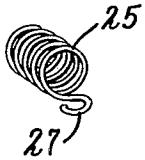
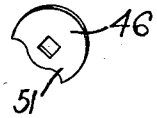


Fig. 13.



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LATCH MECHANISM

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Application July 26, 1952, Serial No. 301,025

8 Claims. (Cl. 292—108)

This invention relates to a door latch and more particularly to a latch designed for use on doors of light weight such as screen doors, for example.

In a door latch of the type described it is desirable to provide a latching mechanism which will be efficient in operation and at the same time will be of relatively simple and economical construction so that it may be sold at a relatively low price. Also it is desirable that notwithstanding the fact that the mechanism of the lock may be of simple construction it should be provided with some means for locking the door against opening from the outside.

It is contemplated by the present invention to provide a door latch of this character which will be of very simple construction and which may be readily mounted upon a door by the provision of a single opening or bore provided in the door in which the mechanism is mounted. Also it is contemplated to provide a latching mechanism provided with a single handle passing through the latch casing and extending on both sides thereof so that inner and outer manually engageable parts are provided in one integral structure. With this construction the handle may be pushed from the inside or pulled from the outside to disengage the latch mechanism and permit the opening of the door, each of such movements being the natural movement to open the door from the side upon which the handle is engaged.

Also in the present mechanism there is provided a retractable strike member to be mounted upon the door jamb, which strike member cooperates with a latching shoulder upon the door handle so that while the door handle is swung pivotally to open the door, the latter may be closed without moving the handle. During the closing of the door the handle member strikes the retractable strike member and cams it toward the door jamb to permit the door to close. After the door has closed the strike member then springs out forwardly of the latching shoulder and latches the door in closed position.

There is additionally provided means for locking the door against opening from the outside. In the present case this means comprises a rotary cam-shaped disk or button provided upon the door handle which when in its inoperative position clears the strike member so that the door handle can be moved, and in its operative position engages rearwardly of the strike member, or between the strike member and the door jamb, so as to lock the handle against movement and, therefore, lock the door in closed position.

This particular locking mechanism is of especial advantage in the present instance in that the door cannot be inadvertently locked from the outside. If, for example, the door is closed after the locking mechanism has been moved to its operative position, the locking disk will engage the strike member even after the door is fully closed and prevent the return of this strike member to its latching position. Therefore, the locking mechanism can function only when moved to operative position after the door is closed.

One object of the present invention is to provide a door latch of simple and economical construction for light doors such as screen doors.

A further object of the invention is to provide a door latch of the character described which will be simple in construction and at the same time efficient and certain in operation.

A still further object of the invention is to provide a door latch of this character with means for locking the latch against operation from the outside of the door, the locking means being so constructed that it cannot be moved to operative position from the inside of the door until after the door has been closed so that the user may not inadvertently lock himself out.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a sectional view through the latch mechanism showing the same as mounted upon a door;

Fig. 2 is a sectional view on line 2—2 of Fig. 1;

Fig. 3 is a sectional view on line 3—3 of Fig. 1;

Fig. 4 is a sectional view on line 4—4 of Fig. 1;

Fig. 5 is a sectional view on line 5—5 of Fig. 1;

Fig. 6 is a fragmentary sectional view similar to Fig. 1 but showing the locking mechanism in operative position;

Fig. 7 is a sectional view on line 7—7 of Fig. 6;

Fig. 8 is a sectional view on line 8—8 of Fig. 6;

Fig. 9 is a perspective view of the door handle with the locking mechanism thereon;

Fig. 10 is a fragmentary perspective view of the door handle showing the locking mechanism in its operative position;

Fig. 11 is a perspective view of the door spring;

Fig. 12 is a perspective view of the locking member;

Fig. 13 is a view of one of the stop disks employed on the locking member;

Fig. 14 is a sectional view of a modified form of lock; and

Fig. 15 is a sectional view of the rubber block used in the construction of Fig. 14.

To illustrate a preferred embodiment of my invention I have shown a door latch mounted upon a door **10**, the door shown as being closed against a shoulder **11** of the door jamb **12**.

The latching mechanism comprises a casing which consists of a cup-shaped member **13** having a face plate **14** adapted to be secured at one side of the door. The portion **13** of the casing is substantially rectangular in cross sectional form as shown in Figs. 1 and 2 but is slightly rounded at its side edges, as shown at **16**, so that it may fit snugly in a round bore **17** provided through the door.

As shown the casing is open at the end adjacent the plate **14** and is provided at the other end with a bottom closure member **18** provided with an opening **19** to snugly receive the intermediate portion **20** of the door handle which is pivoted upon a pin or rivet **22** passing through the upper and lower walls of the cup-shaped portion **13** of the casing. The door handle is provided with a groove 22^a to receive the pin **22**. It will be noted that the opening **19** is only slightly larger than the cross section of the handle **20** and, as the pivot point **22** of the handle is adjacent this end of the casing, a very small movement of this portion of the handle is necessary to unlatch the door. As only a small opening is made in the casing there is not sufficient room around the handle member for the entry of insects or the like.

The handle member **20** extends through the door and is provided on its outer end with a manually engageable handle portion **23** and at its inner end with a similar portion **24** which may be grasped by the operator so that the latter may move the handle about the pivot **22** in unlatching the door. It is noted that the inner handle portion **24** is moved toward the door while the outer

handle portion 23 is moved away from the door, and that these movements would be in the normal directions to move the door to open position.

A coil spring 25 is disposed between one of the side walls of the casing portion 13 and the handle 20, the spring fitting into a recess 26 in the handle. The other end of the spring is bent at right angles to the spring axis, as shown at 27, Figs. 1 and 11, and this end 27 is locked in place between the plate 14 and a rose or escutcheon plate 28 secured to the inside of the door by screws or other fastening means 29. It will be noted that this is a simple and economical method of securing the spring in position between the lock casing and the handle member so that the latter is urged in a clockwise direction about its pivot 22, as shown in Fig. 1. A matching rose or escutcheon plate 30 may be secured to the outside of the door, this plate being provided with an opening 31 through which the handle passes.

Mounted upon the door jamb 12 is a striker mechanism which comprises a casing including a base plate 32 and a pair of spaced end housings 33 secured to the jamb by screws 34, Figs. 2 and 4. A strike member in the form of a short bar or rod 35 has its ends mounted in these housings so that it is movable toward and from the door jamb. Conical springs 36 are disposed between the striker member 35 and the base plate 32, the outer ends of these springs being secured to the strike member and the inner ends being received over shallow sockets 37. It will be seen that as these springs are of conical form the coils will, when compressed, nest one within the other so that the strike member enjoys a greater freedom of movement than if the coils of the springs were helical and one abutted against the next coil when the spring was compressed. Thus with the use of a spring of this kind a greater range of movement is provided for the strike member 35 relatively to the height of the casings 33 than if the ordinary helical spring were used.

The handle member 20 is provided with an abrupt latching shoulder 39 in position to engage the strike bar 35 so that when the parts are in the position shown in Fig. 1 the door will be latched in closed position. When it is desired to open the door the operator either pushes on the handle member 24 if he is on the inside or pulls on the handle member 23 if he is on the outside and swings the handle about the pivot 22 to disengage the shoulder 39 from the strike member 35. This movement of the handle takes place against the action of the spring 25 and the latter restores the handle to its normal position, shown in Fig. 1, when it is released. The movement of the handle in a clockwise direction is limited by the edge of the opening 40 in the escutcheon or rose 28. When the door is being closed the rounded portion 41 of the handle portion 24 engages the strike member 35 and cams this member inwardly toward the door jamb against the action of the springs 36 until the shoulder 39 passes the strike member 35.

At this time the springs 36 force the member 35 outwardly to the position shown in Fig. 1 where the strike member is engaged rearwardly of the shoulder 39, thus latching the door in closed position. It will be understood that the strength of the spring 25 is such that the handle member will not be swung about its pivot 22 when the door is closed as the springs 36 are sufficiently light so that the strike member is cammed inwardly instead.

In order to lock the door against being opened from the outside a locking member is mounted on the handle 20 in position to be engaged with the strike member 35 on the side of this member opposite the handle. This locking member comprises a short shaft or pin 43 (Fig. 12) rotatably mounted in the door handle at the inside of the door adjacent the latching shoulder 39. This shaft 43 is provided with a squared end 44 upon which are non-rotatably mounted a pair of washers 46 and a thumb turn 47 which covers the washers so that rotation of the member 47 will serve to rotate the shaft 43. The end of the squared portion 44 of the shaft is riveted over the member 47, as shown at 48, Figs. 1 and 6, to hold these members in assembled position.

In order to limit the rotation of the pin 43 and to hold it releasably in adjusted position a plunger 49 is mounted in the door handle (Figs. 1 and 6) and urged outwardly by a spring 50, the outer end of the plunger 49 being received in a cutout portion 51 of the washers 46, this cutout portion extending over an arc of approximately 90 degrees. At each end of the cutout portion or recess 51 the thumb turn member or cap 47 is provided with a depression 52 to receive the end of the plunger 49 so that when the locking member has been turned to an adjusted position, the plunger will enter the depression 52 and the locking member will be releasably held in this position until positively moved therefrom.

Upon the outer end of the pin 43 is a lock disk 54 of segmental form. It is of generally circular shape but cut away at one side to provide a straight edge 55. The normal position of this locking member is shown in Fig. 9 and it will be seen that the straight edge 55 of the locking disk 54 registers with the surface of the shoulder 39 so that the door may be closed and opened freely. When, however, it is desired to lock the door against opening from the outside, the thumb turn or cap member 47 is turned through an angle of 90 degrees to the position shown in Figs. 6 and 10. In this position a portion of the locking disk 54 extends beyond the shoulder 39 and engages rearwardly of the strike 35. It will be seen that this locks the handle to the strike member 35 so that it cannot be swung away from the strike member about its pivot 22, and thus the door may not be opened until the locking member is rotated to the position shown in Figs. 1 and 9 which can only be done from the inside of the door.

One important feature of the present mechanism is that a user cannot leave the house and lock himself out due to the fact that the locking button has been turned to operative position before the door was closed. If it is attempted to close the door when the locking button is in operative position, as shown in Figs. 6 and 10, the locking disk 55 will engage the strike member 35 and will hold this member depressed against the door jamb and will not permit it to be moved outwardly by the springs 36 so that it cannot be engaged behind the shoulder 39. This position of the parts is shown in dotted lines in Fig. 6.

In Fig. 14 of the drawings I have shown a modified form of my invention which differs from that described above in the construction of the lock casing and the manner in which the handle is secured within the casing.

In this form of my invention a casing 13a is mounted in a bore in the door 10 as before. In this instance, however, the casing is of substantially circular form and is open at the inner face of the door. At the outer face of the door the casing is provided with a bottom or closure member 18a and an opening 19a. The handle 20a similar to the handle 20 extends through the casing and projects outwardly through the opening 19a at the outer face of the door.

The casing is provided with a flange or plate 14a which abuts the inner face of the door and may be secured thereto in any suitable manner. Also, there are provided inner and outer roses or escutcheons 58 and 59, the outer escutcheon being provided with an opening 60 through which the outer end 23 of the door handle extends. The inner escutcheon 58 is provided with an opening 61 through which the inner portion of the door handle extends, and on each of two opposite sides of this opening are flanges 62 which extend inwardly toward the inner face of the door, the escutcheon being arched to some extent so that the body portion thereof stands in spaced relation to the face of the door.

Surrounding the intermediate portion of the handle 20a there is provided a block of sponge rubber or similar material 63, which rubber holds the handle in place and

acts as a spring to maintain it in a forward position, as shown in Fig. 14, in which the shoulder 39 will be engaged with the strike member.

The rubber block fits snugly within the cylindrical casing 13a and is provided with a recess 64 to permit the handle member 20a to pass therethrough. The handle is held in place in a novel manner. Two pins 64 and 65 extend through the handle and project to a slight extent on each side thereof. The pin 64 adjacent the outer side of the door abuts against the bottom portion 18a of the casing which surrounds the opening 19a so as to prevent movement of the handle in that direction. The pin 65 abuts against the flanges 62 on each side of the handle member, which flanges, as will be recalled, are provided upon the rose 58. As the rose is secured to the plate 14a of the casing by any suitable means, this will prevent movement of the handle inwardly while leaving it free to move rearwardly or transversely of its length against the rubber block 63. The flanges 62 also hold the rubber block 63 within the casing 13a.

It will be noted that the opening 61 of the inner rose 58 is considerably longer than the width of the handle so as to permit movement of the handle to disengage the shoulder 39 from the strike. As the opening 19a is only slightly larger than the cross sectional size of the handle, the latter when either pulled from the outside or pushed from the inside will pivot substantially about the pin 64 or about a point adjacent the bottom portion 18a of the lock casing and will be moved rearwardly against the compressible rubber block 63. It will be found that this is a very convenient and simple method of mounting the handle in place.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. A door latch comprising a casing to be mounted upon a door, said casing being open at one end and being provided with a bottom portion at the other end, a handle extending through the casing and projecting therefrom at both sides thereof, the bottom portion of the casing having an opening through which the handle passes and which snugly fits said handle, a pin passing transversely through the handle and projecting therefrom to engage the bottom portion of the casing, a second pin passing through the handle and projecting therefrom adjacent the open end of the casing, means engaging said second pin to hold the handle against longitudinal movement in the casing, and a block of compressible material mounted between the handle and one wall of the casing, said block urging the handle toward the other wall.

2. A door latch adapted to engage a movable keeper member, said door latch comprising a casing, a latching member carried by the casing, a locking member movably mounted on the latching member to be projected between the keeper member and a door jamb on which the keeper is mounted and lock the latching member to the keeper member, manually engaging means on the locking member by which it may be moved to locking position, and interengaging means on said latching member and locking member to hold the latter in the position to which it is moved.

3. A door latch adapted to engage a movable keeper member, said door latch comprising a casing, a latching member carried by the casing, a locking member rotatably mounted on the latch member, said locking member being movable to one position to embrace the keeper member between the locking member and the latch member, and thereby lock said latching member against movement away from the keeper member and movable to another position to permit disengagement of the latch member from the keeper member, manually engageable means on the locking member by which it may be moved to locking position, and interengaging means on said latching and locking members to hold the latter in the position to which it is moved.

4. A door latch adapted to engage a movable keeper member, said door latch comprising a casing, a latching member carried by the casing, a locking member movably mounted on the latch member to be projected between the keeper member and a door jamb on which the keeper is mounted and lock the latch member to the keeper member, said locking member holding the keeper member in depressed position out of engagement with the latch member when the door is closed with the locking member in its projected position, and means releasably holding the locking member in projected position.

5. A door latch adapted to engage a movable keeper member, said door latch comprising a casing, a handle member pivoted to the casing and provided with a latching shoulder, a locking member rotatably mounted on the handle adjacent the shoulder for rotation to a position to confine the keeper member between the locking member and the handle member and prevent disengagement of the shoulder from the latch member, and means releasably holding the locking member in said position.

6. A door latch adapted to engage a movable keeper member, said latch comprising a casing to be mounted on the door, a handle member pivoted to the casing and provided with a latching shoulder, a locking member rotatably mounted on the handle adjacent the shoulder for rotation to a position to confine the keeper member between the locking member and the handle member and prevent disengagement of the shoulder from the keeper member, said locking means comprising a cam-shaped disk adapted to be rotated to a position between the keeper member and a door jamb on which the keeper member is mounted.

7. A door latch adapted to engage a movable keeper member, said latch comprising a casing to be mounted on a door, a handle member pivoted to the casing and provided with a latching shoulder, and a locking member rotatably mounted on the handle adjacent the shoulder for rotation to a position to confine the keeper member between the locking member and the handle member and prevent disengagement of the shoulder from the keeper member, said locking member comprising a cam-shaped disk adapted to be rotated to a position to extend beyond said shoulder and on the side of the keeper member opposite the handle.

8. A door latch adapted to engage a movable keeper member, said latch comprising a casing to be mounted on a door, a handle member pivoted to the casing and provided with a latching shoulder, and a locking member rotatably mounted on the handle adjacent the shoulder for rotation to a position to confine the keeper member between the locking member and the handle member and prevent disengagement of the shoulder from the keeper member, said locking member comprising a cam-shaped disk adapted to be rotated to a position to hold the keeper member out of engagement with said shoulder when the door is closed.

References Cited in the file of this patent

UNITED STATES PATENTS

974,566	Giles	Nov. 1, 1910
1,335,027	Popovich	Mar. 30, 1920
1,955,969	Marzolf	Apr. 24, 1934
2,317,300	Quinn	Apr. 20, 1943
2,352,465	Anderson et al.	June 27, 1944
2,479,256	Radcliffe	Aug. 16, 1949
2,583,391	Quinn	Jan. 22, 1952
2,613,971	Goserud	Oct. 14, 1952

FOREIGN PATENTS

561,248	Germany	Oct. 12, 1932
603,689	Great Britain	June 21, 1948