June 24, 1941. H. C. WIEBEN 2,246,708

FLUSH DOOR HANDLE AND LOCK

Filed Sept. 11, 1940 2 Sheets-Sheet 1

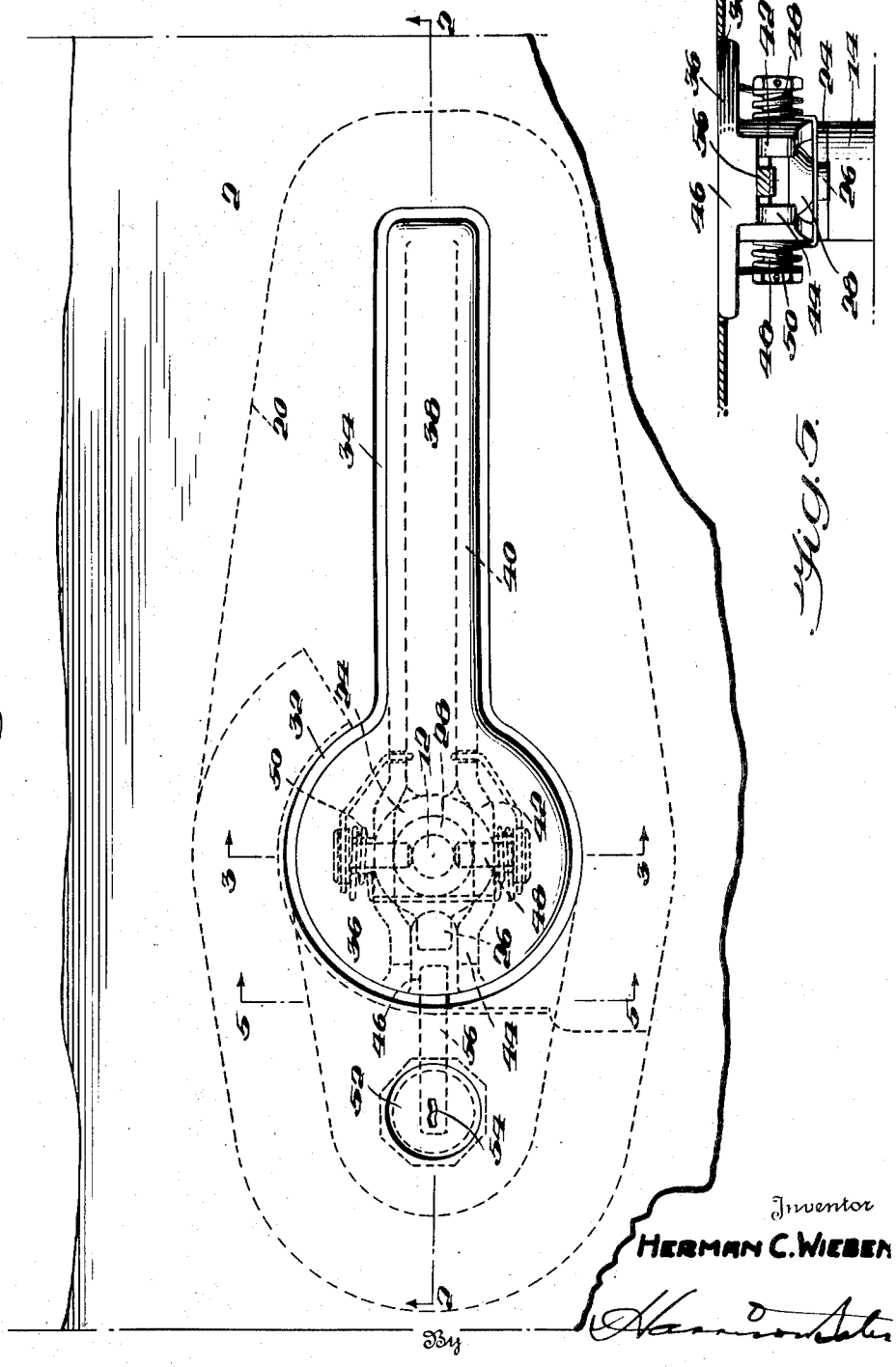


Fig. 1.

Fig. 5.

Inventor
HERMAN C. WIEBEN

By

Attorney

June 24, 1941. H. C. WIEBEN 2,246,708

FLUSH DOOR HANDLE AND LOCK

Filed Sept. 11, 1940 2 Sheets-Sheet 2

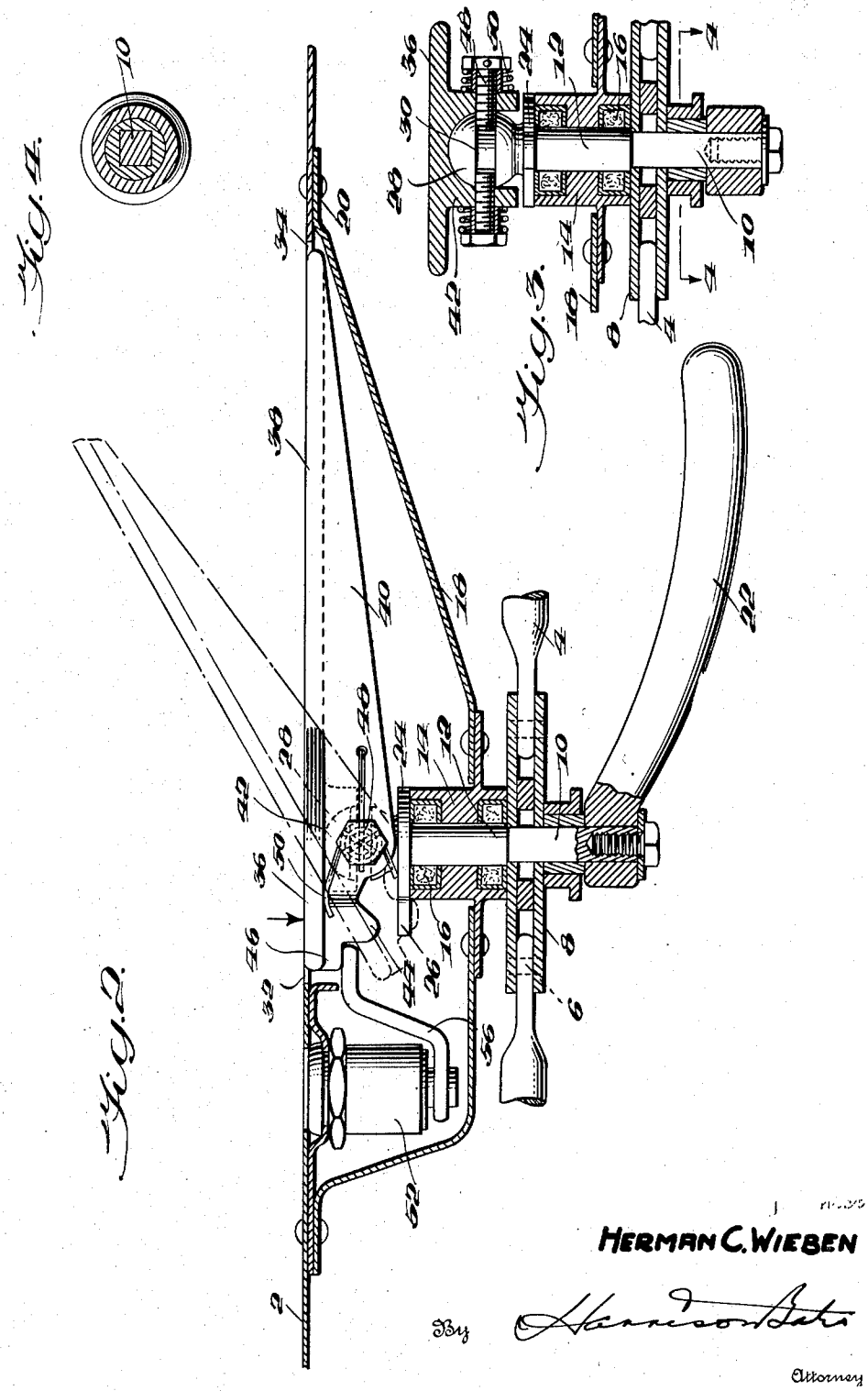


Fig. 4.

Fig. 3.

Fig. 2.

HERMAN C. WIEBEN

By Harrison Sales

Attorney

Patented June 24, 1941 2,246,708

UNITED STATES PATENT OFFICE

2,246,708

FLUSH DOOR HANDLE AND LOCK

Herman C. Wieben, Parkville, Md., assignor to The Glenn L. Martin Company, Baltimore, Md.

Application September 11, 1940, Serial No. 356,291

6 Claims. (Cl. 70—208)

The invention relates to latch mechanism and handles therefor, and particularly to latch handles for doors.

As the speed of vehicles increases, the need for reducing the aerodynamic resistance also increases. Any projection is likely to have a harmful effect on the speed.

A primary object of the present invention is to provide an operating handle for a latch which does not increase the aerodynamic resistance of a vehicle or other body.

A further object of the invention is to provide a latch and handle, especially for a door or the like, which is almost unnoticeable and therefore does not detract from the appearance of an object on which it is used, or project in such a way as to be likely to catch the clothing or the like.

Still another object of the invention is to provide a door latch handle which when not in use is flush with the surface of the door in which it is mounted.

Another object of the invention is to provide a latch and handle which permits opening of the door from the inside or outside, but which is airtight so that air can neither enter nor leave the vehicle at the point of its location.

Still a further object of the invention is to provide a latch having a flush type of handle which can be locked from the outside but can be operated from the inside even when it is so locked.

An additional object of the invention is to provide a flush type handle which must be moved out of its normal flush condition for operation, and which cannot return to its flush position until the door is latched, thus giving a visual indication of the fact that the door is not latched.

A further object of the invention is to provide a latch and handle construction which accomplishes the above results and is yet simple in structure and operation, inexpensive and sturdy.

The invention is applicable to any purpose, where a flush handle is desired, but is especially suited to the outer doors of aircraft, in order to prevent interruption of the stream-lined surface thereof.

Further objects and advantages of the invention will appear more fully from the following description, particularly when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings:

Fig. 1 shows in side elevation a latch and handle embodying my invention.

Figs. 2, 3 and 5 are cross sections on the lines 2—2, 3—3 and 5—5 respectively of Fig. 1.

Fig. 4 is a cross section on the line 4—4 of Fig. 3.

The invention is shown applied to a closure member 2, formed of a wall of sheet metal, for instance, which might by way of example constitute a door opening into the fuselage of an aircraft. This door is to be held closed by some conventional arrangement which may be operated for example by rods or bars 4 pivoted at 6 between two discs or plates 8. These plates are provided centrally with square holes fitting on a squared portion 10 of an operating shaft 12. The invention relates to the manner of moving this operating shaft, and not to the connection from such shaft to the locking means for the door.

Shaft 12 is mounted to turn in a bearing member 14 provided with packings 16. Bearing member 14 is supported in a sheet metal frame 18 which forms a domed structure, secured all around its edges as at 20 to door 2 and projecting inwardly from the plane of the door. On its inner squared portion 10, the shaft 12 also carries a handle 22. At its other end, shaft 12 has a flange 24 provided with a projecting lug 26 and a ball-shaped end 28 having a groove 30 transverse to the shaft axis.

The portion of the door wall beneath the domed member 18 is provided with an aperture of generally keyhole shape, that is having a large round portion 32 concentric with the axis of shaft 12 and a narrower elongated portion 34 extending radially therefrom. Within this aperture fits a handle of the same shape, but slightly smaller so as to provide clearance for movement. This handle has a round portion 36 and an elongated extension 38 both flush with the surrounding surface of the door. The handle also has downwardly or inwardly extending flanges including portions 40 forming ribs along the edges of extension 38 to reinforce the same; spread portions 42 lying on opposite sides of ball 28; spaced lug portions 44 above and on opposite sides of lug 26 of disc 24; and a portion 46 of less height extending between the outer ends of lug portions 44 adjacent the periphery of disc portion 32.

Threaded in flanges 42 are pivot members 48 which extend into groove 30 and thus pivot the handle on the end of shaft 12. Coil springs 50 around members 48, bearing at their ends against the handle portion 36 and the disc 24, normally hold the handle in its inoperative, concealed position (solid lines, Fig. 2).

Also within domed member 18 is a key controlled lock 52 of any suitable type having a keyhole 54 which controls a bar 56 which turns about the axis of the lock between a position beneath flange 46, as shown, and a position to one side of the handle portion 36.

The operation is as follows: When the parts are in the position shown, handle 36, 38 is unmovable since it is held within its aperture 32, 34 by the presence of bar 56 beneath flange 46. On the other hand, there is no positive connection between handle 36, 38 and shaft 12, so that shaft 12 may be turned from the inside by handle 22 to unlock and open the door.

To open the door from the outside, lock 52 must be operated to move bar 56 from beneath flange 46. By pressing on the handle portion 36 in the direction of the arrow, Fig. 2, the handle will pivot about pins 48 to the broken line position, Fig. 2, and its end 38 may be grasped. At the same time, lugs 44 will straddle lug 26 which is rigid with shaft 12. By swinging handle 38 in one direction or the other, shaft 12 will now be turned and the door will be unlocked.

It will be noted that, as soon as handle 38 moves to unlock the door, it moves out of alignment with aperture 34. Thus because of the non-circular shape of the aperture and handle, the handle cannot return to its flush position until it is in a position corresponding to locking of the door.

To close and latch the door, handle 38 is turned back to alignment with aperture 34, turning shaft 12. When handle 38 is released, coil springs 50 will return it to its normal flush position. Lock 52 may now be operated if desired to return bar 56 to its locking position.

While I have described herein one embodiment of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the appended claims.

I claim:

1. A locking mechanism for a closure having an opening therein, a domed member mounted on the inner face of said closure covering said opening, said opening having a circular portion and an elongated portion extending radially therefrom, comprising a latch operating shaft mounted in said domed member to turn about an axis perpendicular to the closure wall and extending through the center of the circular portion of said opening, a handle rigidly mounted on one end of said shaft on the inner side of the domed portion, said shaft having a ball on the other end thereof provided with an annular groove extending therearound concentrically disposed about the shaft axis, a lever having a circular portion and a radially extending portion fitting within said opening, the circular portion of said lever having downwardly extending flanges and pins in said flanges extending into said groove to pivot said second lever on said shaft, means on said lever and said shaft, operable when said lever is tilted so that the extending portion thereof moves out of the opening, to connect said lever to the shaft, and means normally urging said lever into a position flush with the edges of said opening.

2. A locking mechanism for a closure having an opening therein, a domed member mounted on the inner face of said closure covering said opening, said opening having a circular portion and an elongated portion extending radially therefrom, comprising a latch operating shaft mounted in said domed member to turn about an axis perpendicular to the closure wall and extending through the center of the circular portion of said opening, a handle rigidly mounted on said shaft on the inner side of the domed portion, said shaft having a ball on the other end thereof provided with an annular groove extending therearound concentrically disposed about the shaft axis and a projecting lug, a lever having a circular portion and a radially extending portion fitting within the said opening, the circular portion of said lever having downwardly extending flanges and pins in said flanges extending into said groove to pivot said lever on said shaft, said lever having downwardly extending lugs normally spaced above the lug on said shaft, and positioned, when said lever is tilted so that the extending portion thereof moves out of the opening, to engage on opposite sides of the lug on the shaft, a lock mounted within said domed member, a bar controlled by said lock and mounted for movement from a position beneath a portion of the circular part of said lever to a position out of the path thereof, whereby said lug may prevent tilting of said lever for engagement with said shaft, and means normally urging said lever into a position flush with the edges of said opening.

3. A locking mechanism for a closure having an opening therein, comprising a latch operating shaft mounted in said closure to turn about an axis perpendicular to the closure wall, said shaft having a ball on the outer end thereof provided with an annular groove extending therearound concentrically disposed about the shaft axis, a lever fitting within said opening, said lever having downwardly extending flanges and pins in said flanges extending into said groove to pivot said lever on said shaft, and means on said lever and said shaft, operable when said lever is tilted so that a portion thereof moves out of the opening, to connect said lever to the shaft.

4. A locking mechanism for a closure having an opening therein, said opening having a circular portion and an elongated portion extending radially therefrom, comprising a latch operating shaft mounted in said closure to turn about an axis perpendicular to the closure wall and extending through the center of the circular portion of said opening, said shaft having a ball on the outer end thereof provided with an annular groove extending therearound concentrically disposed about the shaft axis, a lever having a circular portion and a radially extending portion fitting within said opening, the circular portion of said lever having downwardly extending flanges and pins in said flanges extending into said groove to pivot said lever on said shaft, and means on said lever and said shaft, operable when said lever is tilted so that the extending portion thereof moves out of the opening, to connect said lever to the shaft.

5. A locking mechanism for a closure having an opening therein, said opening having a circular portion and an elongated portion extending radially therefrom, comprising a latch operating shaft mounted in said closure to turn about an axis perpendicular to the closure wall and extending through the center of the circular portion of said opening, said shaft having a ball on the outer end thereof provided with an annular groove extending therearound concentrically disposed about the shaft axis and a projecting lug, a lever having a circular portion and a radially extending portion fitting within

the said opening, the circular portion of said lever having downwardly extending flanges and pins in said flanges extending into said groove to pivot said lever on said shaft, said lever having downwardly extending lugs normally spaced above the lug on said shaft, and positioned, when said lever is tilted so that the extending portion thereof moves out of the opening, to engage on opposite sides of the lug on the shaft.

6. A locking mechanism for a closure having an opening therein, said opening having a circular portion and an elongated portion extending radially therefrom, comprising a latch operating shaft mounted in said closure to turn about an axis perpendicular to the closure wall and extending through the center of the circular portion of said opening, said shaft having a ball on the outer end thereof provided with an annular groove extending therearound concentrically disposed about the shaft axis and a projecting lug, a lever having a circular portion and a radially extending portion fitting within the said opening, the circular portion of said lever having downwardly extending flanges and pins in said flanges extending into said groove to pivot said lever on said shaft, said lever having downwardly extending lugs normally spaced above the lug on said shaft, and positioned, when said lever is tilted so that the extending portion thereof moves out of the opening, to engage on opposite sides of the lug on the shaft, a lock mounted adjacent said lever, a bar controlled by said lock and mounted for movement from a position beneath a portion of the circular part of said lever to a position out of the path thereof, whereby said lug may prevent tilting of said lever for engagement with said shaft, and means normally urging said lever into a position flush with the edges of said opening.

HERMAN C. WIEBEN.