DOOR ASSEMBLY

BACKGROUND OF THE INVENTION

Center-hung pivot door assemblies, whether utilizing one or more doors, have wide use, but are most commonly used in commercial structures. Such doors are usually made of a metal, such as aluminum, with glass panels, and are pivotally mounted in a metal frame comprising jambs, transom, and threshold affixed to the building structure. Such doors should meet several requirements: namely, they should present a pleasing aesthetic appearance, they should be made so as to resist the ability of people to make a forced entrance into the building when the door is locked, they should be weather resistant and they should be safe for use. In this last regard, the door should be such that human, and particularly children's, hands or feet do not get caught, of, if caught, are not seriously injured, between either jamb and the adjacent door stile, or between the lock stiles when two doors are hung in a single frame. Such safety factor is of major concern in commercial structures where large numbers of people are passing through the doors.

Attempts to harmonize these requirements and, in particular to provide adequate strength against forced entry together with weather resistance and safety to users, have not proven wholly satisfactory. Consequently, because of security needs and the desire to protect against weather, doors presently in use have more or less lacked a full measure of safety protection. Thus, for example, the use of resilient materials in the pivot and lock stile areas has been avoided since such material can usually be readily removed by those wishing to force entry through the door. Furthermore it has been difficult to provide weatherseals for doors when such resilient means are used, since frictional contact with a hard surface by such resilient means causes rapid wear of the resilient material.

SUMMARY OF THE INVENTION

An improved center-hung pivot door assembly has now been devised which substantially eliminates the hazard of damage to fingers being caught in the door, and which at the same time is weather-resistant and resistant to forced entry.

Briefly stated, the present invention relates to an improved center-hung pivot door assembly comprising at least one door pivotally mounted within a door frame opening on pivot means secured to the door frame. The door frame comprises parallel transom and threshold numbers, and parallel jambs of which at least one is a pivot jamb. The door itself includes parallel top and bottom rails and parallel pivot and lock stiles fixedly secured together. In such assembly the invention provides the improvement comprising a relatively narrow jamb projection member attached to the pivot jamb along substantially the entire length thereof and projecting outwardly from said pivot jamb into the door frame opening, an arcuate-shaped pivot stile mounted in closely spaced relation with said jamp projection, and resilient weather seal means spanning the space between said pivot jamb and said pivot stile at least when the door is in a closed position, the space between said projection member and said pivot stile always being less than the thickness of human fingers, and the projection being sufficiently narrow adjacent the pivot stile so that such close spacing does not prevent mounting the door in or dismounting it from the pivot means while the projection remains attached to the pivot jamb.

Preferably the face of the jamb projection adjacent the arcuate pivot stile is substantially concave and concentric with the arcuate-shaped pivot stile.

The door further preferably includes resilient edge guard means substantially wider than the thickness of human fingers attached to the outer edge of the lock stile and extending substantially the entire length thereof. When two doors are mounted in the frame, only one need be provided with such resilient edge guard to insure that fingers cannot be caught and injured between the doors. Advantageously weather seal means contact the edge guard along substantially its entire length when the door is in the closed position.

The invention further provides improved push bars, or a center rail with a recessed pull, including means by which a lock cylinder is fully recessed so that its exposed face is flush with the surface of the push bar, or with a shield plate surrounding the recessed pull, thereby to reduce the possibility that the lock cylinder can be removed to force an entry.

These and other features of the invention are more specifically described below:

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. **1** is an elevation of a single door assembly of the present invention;

FIG. **2** is a sectional view taken along line **2—2** of FIG. **1**;

FIGS. **3** and **4**, taken together, represent an enlarged view of FIG. **2** with a portion of FIG. **4** broken away to show the means for attaching the push bars to the lock stile and for housing the lock cylinder as more fully described below;

FIG. **5** is an enlarged sectional view taken along line **5—5** of FIG. **4**;

FIG. **6** is a partial cut-away view of the door showing the overhead closer assembly;

FIG. **7** is a partial cut-away view of the door showing the bottom pivot assembly;

FIG. **8** is a plan view of a modified double door assembly of the invention;

FIG. **9** is an enlarged sectional view taken along line **9—9** of FIG. **8**;

FIG. **10** is an enlarged sectional view taken along line **1–10** of FIG. **8**; and

FIG. **11** is an enlarged partial view of the interface of the resilient weather strips and lock stile edge guard of FIG. **4**.

DETAILED DESCRIPTION

Referring to the drawings, FIG. **1** is an elevation of a single center-hung pivot door assembly **20** comprising a door having a parallel top rail **21** and bottom rail **22** fixedly secured to an arcuate-shaped (substantially cylindrical) pivot stile **23** and a lock stile **24**. Attached to and spanning the substantially parallel stiles on opposite sides of the door are push bars **25**a and **25**b which will be described in greater detail below. A panel member or members, such as, for example, a transparent glass panel **26**, is positioned in the space defined between the respective stiles and rails.