Dec. 30, 1969 G. A. A. EIGENMANN ETAL 3,486,272

CLOSURES

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FIG. 1

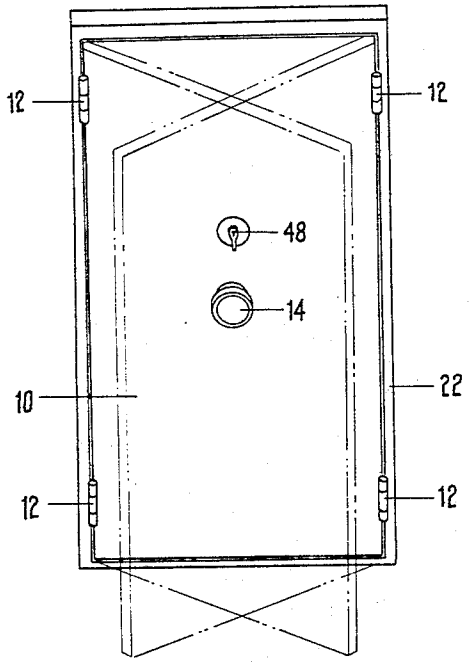
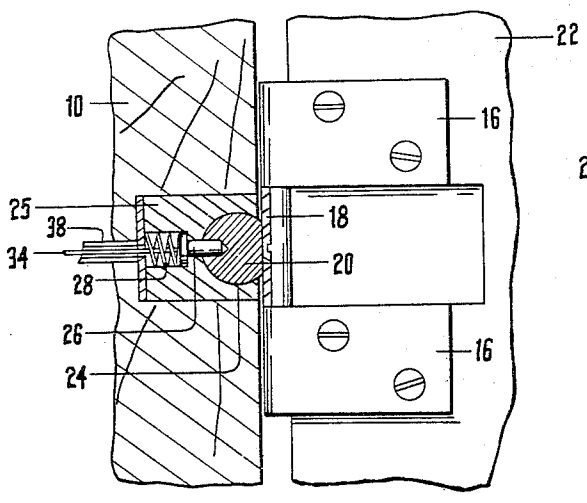


FIG. 2



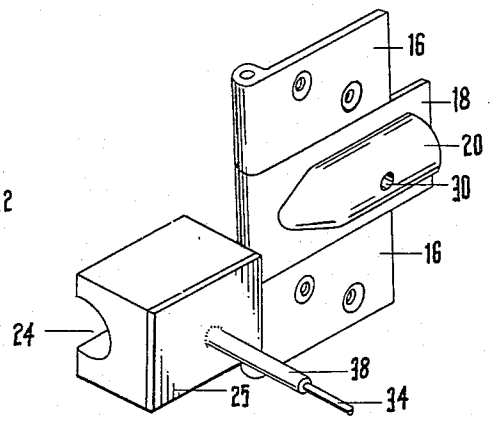


FIG. 3

INVENTORS

GUSTAV A. A. EIGENMANN
RIKWILL S. GRANT

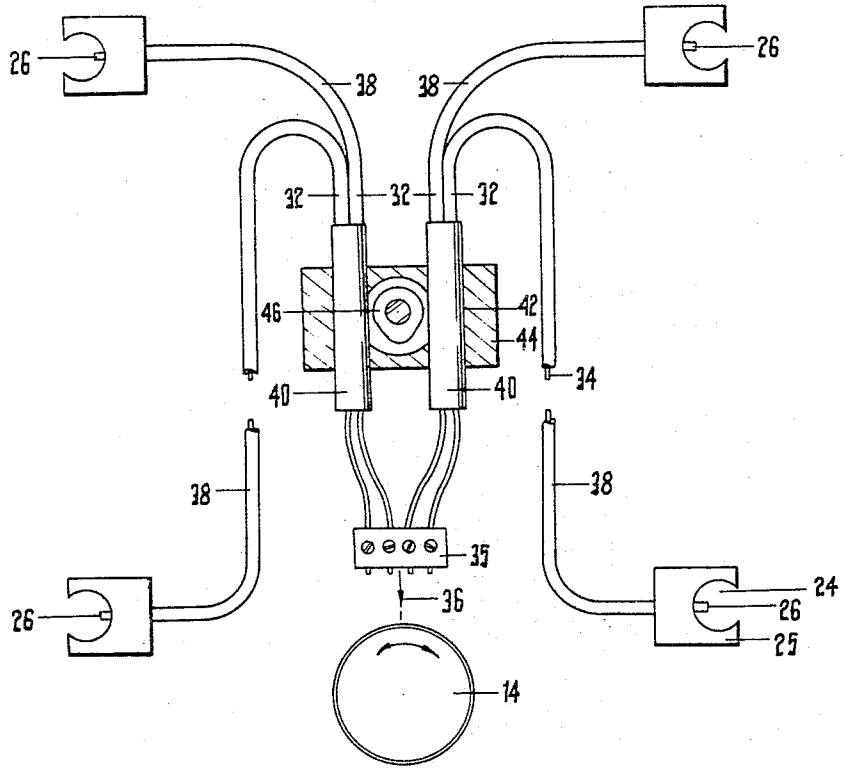
BY Young & Thompson
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Fig. 4



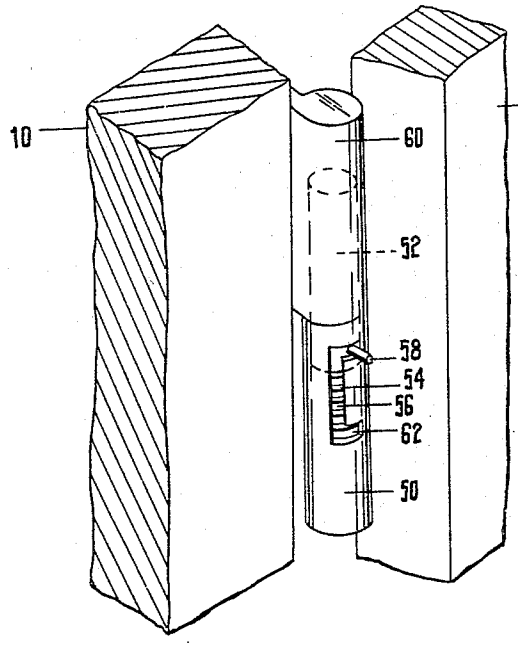


Fig. 5

INVENTORS

GUSTAV A. A. EIGENMANN

RIXWILL S. GRANT

BY Young & Thompson

ATTYS.

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CLOSURES

Gustav A. A. Eigenmann, Kloof, Natal, and Rixwill S. Grant, Durban, Natal, Republic of South Africa, assignors to Wonder Door Holdings (Proprietary) Limited, Kloof, Natal, Republic of South Africa

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Int. Cl. E05d 15/52
U.S. Cl. 49—192 5 Claims

ABSTRACT OF THE DISCLOSURE

The invention provides a closure, such as a door or window, which is pivotable about either of two opposite edges, the closure being provided with hinges at both edges, the hinges being disengageable by means associated with the handle of the closure.

This invention relates to closures such as doors, windows and the like.

A good deal of time is spent by architects in deciding which way a particular door should hang, and in many cases his decision is incorrect for some of the occupants of a building. In addition, it often happens that an occupant wishes to alter the hanging of a particular door permanently or for a particular occasion. The changing of the hanging of a door is a time-consuming operation.

It is an object of the present invention to provide a closure, the hanging of which can be changed from one side to the other in a very simple manner.

Another object of the invention is to facilitate the hanging of closures such as doors.

It is a further object of the invention to provide a simple and effective mechanism for such a door.

A still further object of the present invention is to provide a locking means for a closure in which the closure can be locked on two opposite sides.

The invention provides a closure pivotable about either of two opposite edges including hinges at these edges, each hinge having a leaf for connection to an architrave, and a leaf for connection to the closure, the latter having a cylindrical formation receivable in a complementary slot on the closure, a spring loaded retractable pin being provided through the slot and adapted to enter into a recess in the formation for locking the closure to the particular leaf.

The nature of the invention will be more clearly understood if reference be had to the accompanying drawings, in which:

FIGURE 1 is a front view of a door embodying the invention, the dotted lines indicating the opening of the door from either side thereof,

FIGURE 2 is a side view, partly in section, of a hinge-and-slot arrangement according to one form of the invention,

FIGURE 3 is a perspective view of the same hinge-and-slot arrangement,

FIGURE 4 is a diagrammatic representation of a mechanism for operating a closure of the present invention, and

FIGURE 5 is a perspective view of a hinge according to another embodiment of the invention.

It will be appreciated that although the drawings show a door openable from either side, it may also be openable from either the top or the bottom thereof, the latter arrangement being particularly suited to tail gates of station wagons and for some cupboards and the like.

Referring to FIGURE 1, a door **10** is provided with four hinges **12** and is pivotable on either side by means of a mechanism as described below with reference to FIGURES 2 to 4 or by a mechanism as described below with reference to FIGURE 5 or some other mechanism, such as levers or the like. For example, levers may be associated with handle **14** adapted to disengage the leaves of the hinges **12** on either side of the door depending on the direction in which the handle **14** is turned.

However, in a preferred embodiment of the invention, having reference first to FIGURES 2 and 3, a hinge comprising two leaves **16** and **18** has a bullet-formation **20** located on leaf **18**, leaf **16** being attached to an architrave **22**. A slot **24** in a box **25** is complementary-shaped to the formation **20** and a pin **26** in the slot **24** is spring-loaded by compression spring **28** into the slot. The formation **20** has a recess **30** which is engaged by the pin **26** when the door, and therefore the slot, is located in position. The assembly thus constitutes a hinge and it will be appreciated that all four hinges **12** will be thus constituted. Merely by retracting the pins **26** from the assemblies at one side of the door, the door can be opened from that side. As mentioned above, the retraction of the pins may be achieved by means of levers associated with the handle **14**, which, it will be noted, is centrally-located on the door. However, a better system is illustrated in FIGURE 4. Two pairs of Bowden cables **32** are provided, each pair corresponding with the hinges on one side of the door. The inner cables **34** are connected to the pins **26** (as shown in FIGURE 2) at one end and to a boss **35** at their other ends. By means of any suitable mechanism the boss **35** is moved in the direction of arrow **36** when handle **14** is rotated in either direction. The outer cables (or sheaths) **38** of the Bowden cables are fixed in sleeves **40**, which are slidable in slots **42** in an element **44**. A cam **46** is located between the slots **42** and is operable by knob **48** on the door (see FIGURE 1). In its position shown in FIGURE 4, the cam **46** allows both sleeves **40** to slide in the slots **42** when the handle **14** is rotated. Thus, the turning of the handle **14** merely pulls both the inner and outer cables with the results that the pins **26** are not retracted at all. The door is therefore locked along both of its vertical edges, and will remain so until the cam **46** is turned one way or the other to clamp either of sleeves **40** in its slot **42**. Rotation of the handle **14** will then cause the pins **26** on that side to be retracted so that the door can pivot on the hinges at the other side.

It will be appreciated that this mechanism can be used as a locking mechanism for any type of closure, in which case the slots **24** are not necessary, the pins **26** (or their equivalent) merely engaging in suitable recesses in the architrave. In addition, merely one set of Bowden cables is necessary, the cam being movable between a position in which it clamps the sleeve and a position in which it does not.

An arrangement has been described above in which the spring-loaded pins are replaced by spring-loaded balls. Such an arrangement will become apparent if regard be had to FIGURE 2. The pin **26** is replaced by a ball, suitably housed and the cables **34**, **38** omitted. The door itself may have suitable orifices at either side to receive handle means, the pulling of which disengages the balls from the recesses on one side. The orifies for the handle means may be covered with a suitable plate or the like.

Referring now to FIGURE 5, the lower portion **50** of the strap of a hinge is provided with a spring-loaded pin **52**, the spring **54** being shown through the channel **56**. A lug **58** is movable in the channel **56** between a first position (as shown in the figure) in which the pin **52** is located in the upper portion **60** of the strap and a position in the right-angled channel **62** in which the pin **52**

is clear of the portion **60** of the strap, thus disengaging the hinge. This modification of the invention is particularly suited for windows, cupboard doors, refrigerator doors and the like. The embodiment described above with reference to the first four figures is particularly suited to doors for houses, offices and the like, and for motor car doors, refrigerator doors, cupboard doors and the like.

We claim:

1. A closure pivotable about either of two opposite edges, including hinges at the two opposite edges, one leaf of each hinge being secured to an architrave, the other having a cylindrical formation connected to the leaf, a complemental slot in the edge of the closure, the slot having a spring-loaded pin biased outwardly, the formation on the leaf having a recess to receive the pin, each pin being connected to an inner cable of a Bowden cable, the other ends of the inner cables being associated with a handle, the operation of which causes the inner cables to be pulled, clamping means for clamping the outer cables of either set of cables, each set corresponding to the hinges on one side of the closure, and means to change the clamping means from one set to the other.

2. A closure pivotable about either of two opposite edges, including hinges at the two opposite edges, one leaf of each hinge being secured to an architrave, the other having a cylindrical formation connected to the leaf, a complemental slot in the edge of the closure, the slot having a spring-loaded pin biased outwardly, the formation on the leaf having a recess to receive the pin, each pin being connected to an inner cable of a Bowden cable, the other ends of the inner cables being associated with a handle, the operation of which causes the inner cables to be pulled, clamping means for clamping the outer cables of either set of cables, each set corresponding

to the hinges on one side of the closure, means to change the clamping means from one set to the other, or to clamp neither set.

3. A closure as claimed in claim **1**, in which the cylindrical formation in cross section defines a segment greater than 180°.

4. A closure pivotable about either of two opposite edges, including hinges at the two opposite edges; one leaf of each hinge being secured to an architrave, the other having a cylindrical formation connected to the leaf; a complemental slot in the edge of the closure, the slot having a spring-loaded pin biased outwardly; the formation on the leaf having a recess to receive the pin; and each pin having means for being pulled against its spring out of the recess.

5. A closure as claimed in claim **4**, in which the cylindrical formation in cross section defines a segment greater than 180°.

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DENNIS L. TAYLOR, Primary Examiner

U.S. Cl. X.R.

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