United States Patent

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[54] **TRAFFIC SIGNAL HOUSING**
6 Claims, 5 Drawing Figs.

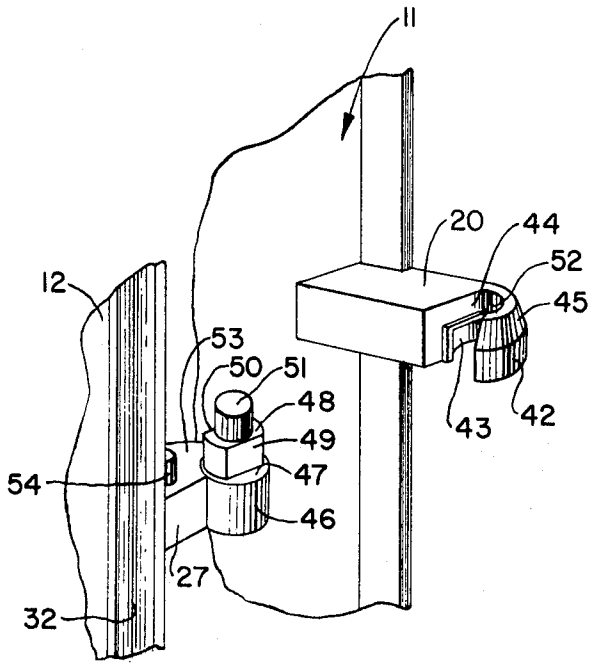
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[51] **Int. Cl.** **B65d 51/04**
[50] **Field of Search** ..... 220/31 S, 31 R, 31 B; 16/171, 175

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ABSTRACT: A traffic signal housing has a housing body and a pivotal, removable door. Hinge means provide ease of assembly of the door on the body and permits pivoting of the door about an axis to open and close the body with the door being removable from the body only in one position thereof and preferably prevented from movement into said one position when assembled by a stop means which coacts as a lens hood.



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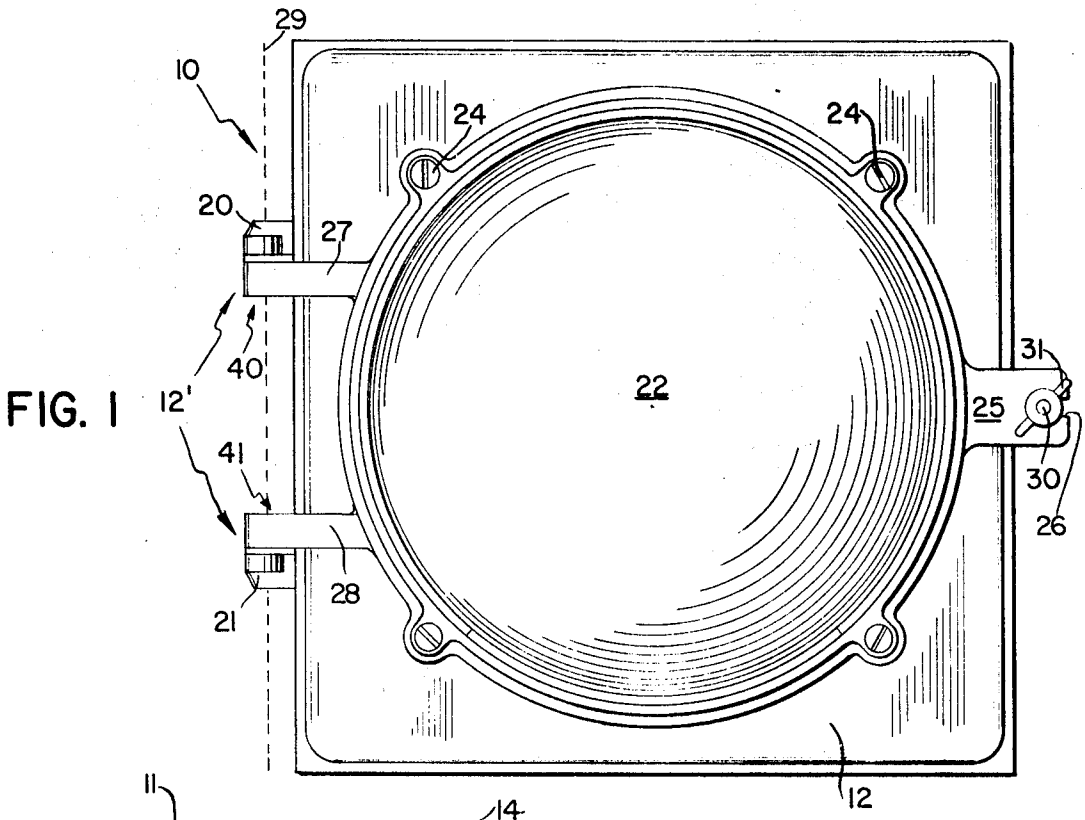


FIG. 1

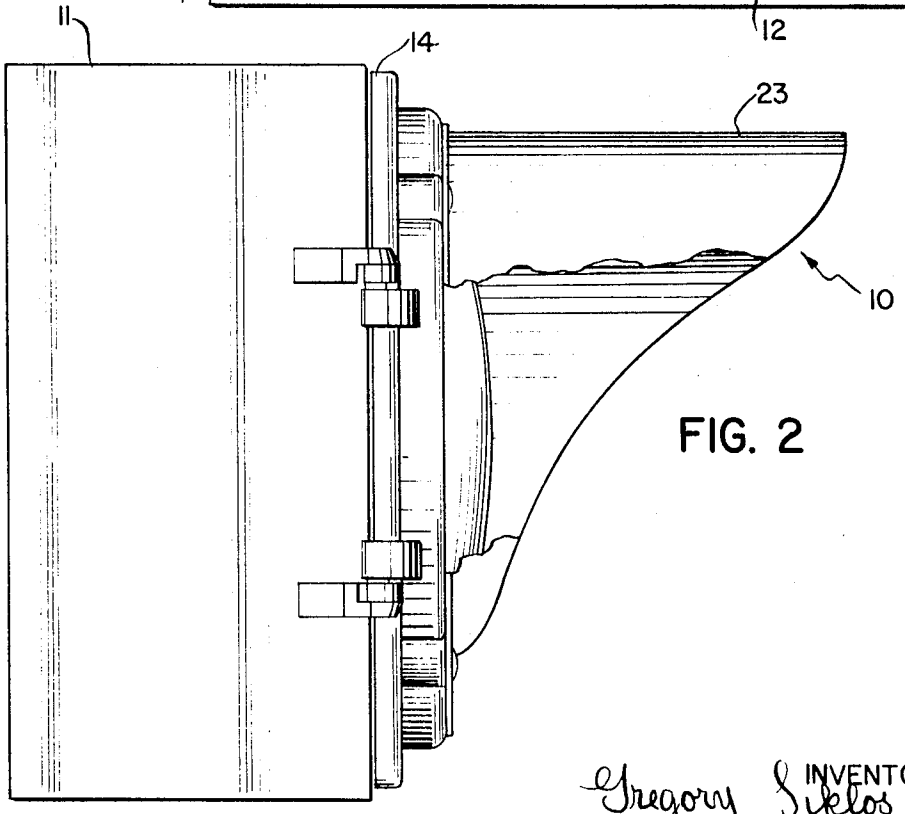


FIG. 2

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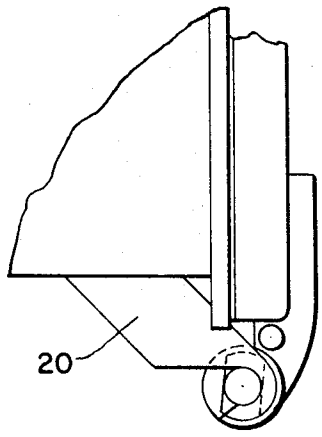


FIG. 4

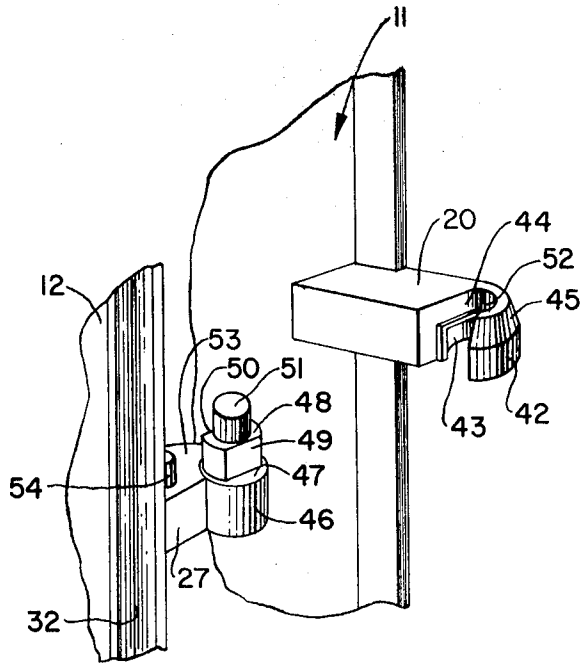


FIG. 5

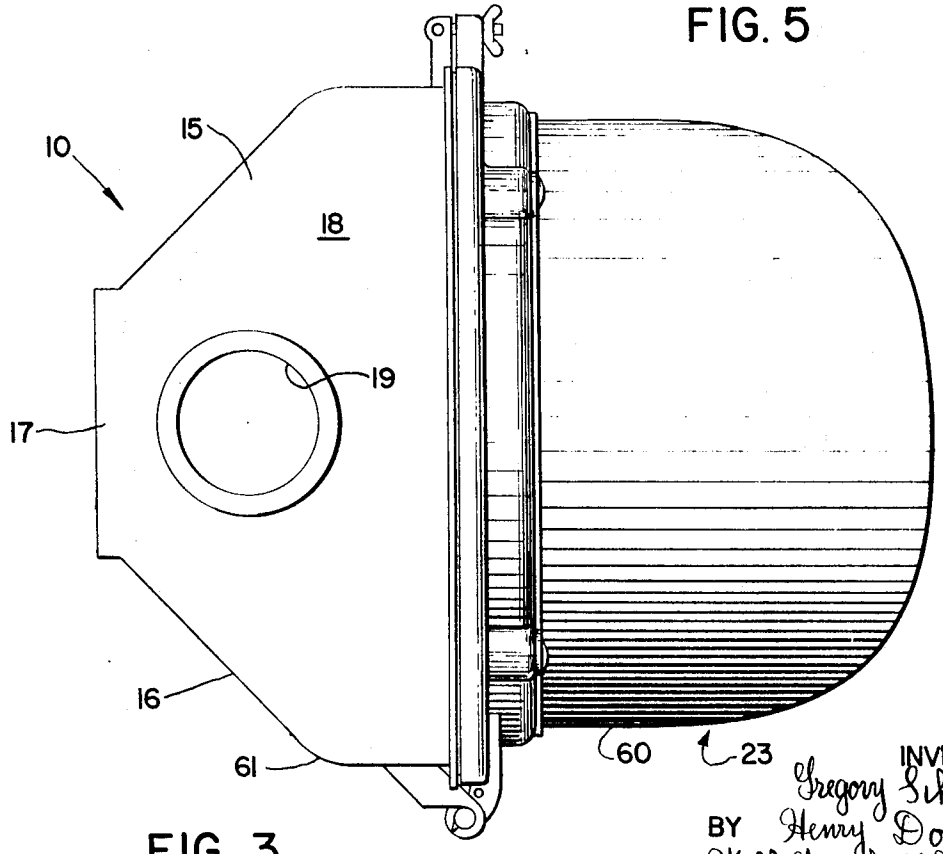


FIG. 3

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TRAFFIC SIGNAL HOUSING

BACKGROUND OF THE INVENTION

A large variety of traffic signal housings are known in the art. Traffic signal housings such as stoplight housings comprise a housing body and a cover plate or door carrying a lens which can be opened to allow access to the interior of the housing for replacement of bulbs and the like. Some problems arise in manufacture and efficient attachment of the doors to the housings. Various pivotal arrangements have been used which require the use of a number of components and multistep assembly operations. Similar disassembly operations are required when, for any reason, it may be desired to remove the door completely from the housing.

It is an object of this invention to provide a traffic signal housing having a pivotal access door which is readily assembled on the housing.

Another object of this invention is to provide a traffic signal housing in accordance with the preceding object wherein accidental removal of the door from the housing is prevented.

Still another object of this invention is to provide a traffic signal housing in accordance with the preceding objects wherein the door and housing body each carry portions of a hinge means and are each lightweight integral components.

A still further object of this invention is to provide a traffic signal housing in accordance with the preceding objects wherein the door carries a hood for a signal lamp reflector which hood acts as a stop means to prevent unwanted or accidental removal thereof but is removable to allow removal of the door when desired.

It is a feature of this invention that the traffic signal housings can be formed of lightweight metals with the integral one-piece door and body cast as individual units along with the hinge means.

Another feature of this invention is the ease of access to the traffic signal housings. The doors and bodies can be assembled together without the need for tools by merely slidably positioning the doors in proper pivotal position with respect to the bodies when desired.

SUMMARY OF THE INVENTION

According to the invention, a traffic signal housing comprises a housing body defining an opening and a pivotal removable door closing said opening. Hinge means permit pivoting of the door about an axis to open and close the opening with the door being slidably removable from the body only in one pivotal position thereof. Preferably a hood is mounted on the door and acts as a stop means for preventing pivoting of the door to the one position in use so that the door cannot be accidentally removed as during normal servicing of the housing.

In the preferred embodiment, the housing body and housing door each carry a portion of the hinge means and are formed as integral one-piece castings. Preferably the hinge means comprises a seat portion and a male insert portion with the seat portion defining a circular recess and an overlying slot extending through a portion of the circular recess. The male insert portion defines an upstanding pin designed to pivot in the slot and a lower circular boss having a cutaway portion dimensioned to permit said boss to pivot in the seat and be removable or insertable along with the pin in one pivotal position of the door. Preferably two of the seat portions and insert portions are used.

A primary advantage of this invention lies in the specific construction of the hinge means which allows the door to be assembled on the housing body merely by sliding the hinge portions together with the door positioned in a predetermined position. After joining of the door and body, the door is pivoted to lock it in place and a hood or other stop means is mounted on the door preventing it from swinging or pivoting to a position where it can be slidably disconnected or removed from the body in use thus preventing accidental removal which could result in dropping and damage to the door during servicing of the housing.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other features, objects and advantages of the present invention will be better understood from the following specification when read in connection with the accompanying drawings in which:

FIG. 1 is a front plan view of a traffic signal housing in accordance with a preferred embodiment of this invention;

FIG. 2 is a side view thereof;

FIG. 3 is a top view thereof;

FIG. 4 is a top fragmentary view thereof showing a preferred hinge arrangement in an assembled position; and

FIG. 5 is an expanded fragmentary rear perspective view of the hinge arrangement showing the door in its full open position ready for assembly and before the hood is attached to the door.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference now to the drawings, a preferred embodiment of a traffic signal housing in accordance with this invention is illustrated at **10** in FIGS. **1–3** and has a housing body **11** on which is pivotally mounted a door **12** by means of a hinge arrangement **12'**.

The housing body **11** is of conventional outer configuration defining a front opening **14**, indented sidewalls **15** and **16**, a rear wall **17**, a top wall **18** having a opening **19** for attachment to other similar housings, hangers or the like with a bottom wall not shown substantially identical to wall **18**. Flanges **20** and **21** form part of the hinge means **12'** and extend outwardly from one side of the housing body **11**. Preferably the housing body is formed of an integral, one-piece lightweight metal casting such as an aluminum casting in order to reduce weight and overall manufacturing cost.

The door **12** is preferably formed of the same lightweight metal and is an integral, one-piece casting as is the housing body **11**. In the preferred embodiment, the door **12** has a centrally located single light lens **22** mounted thereon by a conventional retainer ring and bolts extending from the rear face of the door (not shown). A conventional sunlight hood **23** is mounted about the lens **22** by conventional bolts **24**. An integral locking flange **25** extends from one side of the door and has a side opening notch **26** while integral mounting flanges **27** and **28** extend over the other side of the door and form the parts of the hinge means as will be described.

The door **12** is pivotal about an axis **29** to an opened and closed position and is locked in its closed position by a bolt **30** and wing nut arrangement **31** with the bolt **30** pivotally connected to one side of the housing body **11** as is well known in the art.

A rubber sealing gasket **32** extends about the inside periphery of the door **12** to seal the door to the housing body **11** in weathertight relationship thereto when the locking wing nut is positioned in the slot **26** and tightened in normal use.

Turning now to the novel and advantageous hinge structure **12'** of this invention, only the top hinge unit **40** will be described fully since the lower hinge unit **41** is identical thereto but in a reverse position as will be seen from the drawing and more particularly FIGS. **1** and **2**. With reference now to FIGS. **4** and **5**, the housing body flange **20** extends outwardly and to the side of the body **11** and has a circular boss or seat end **42** having a circular undercut recess **43** with an overlying slot **44** extending into the seat end **42**. Preferably the upper, outer portion **45** of the seat end is frustoconical The slot **44** has a width less than the diameter of the circular recess **43** and acts to allow insertion of the door hinge portion therein in only one pivotal position of the door as will be described.

The door **12** has its outwardly extending flange **27** ending in a male insert portion which comprises a preferably circular end **46**, a flat surface **47** and a raised circular boss **48** having cutaway portions ending at parallel sidewall portions **49** and **50**. Above the boss **48** is an upwardly extending pin **51**. When the door is assembled, the axes of pin **51**, circular boss **48** and the circular end **52** of the slot **44** are all coincident and coaxial.

Preferably either or both of the hinge parts which contact each other in use are coated with a plastic coating to prevent galvanic corrosive action. For example, pin **51**, boss **48** and flat surface **47** are preferably provided with a thin polytetrafluoroethylene coating. In some cases, a molded plastic cap can be used in place of the plastic coating.

Preferably a flat surface **53** of the flange **27** mounts a second stop means comprising a pin **54** spaced from the rounded surface of boss **48** a distance sufficient to enable clearing of the rounded end **42** when the door and body are assembled as will be described.

In assembly of the traffic signal housing **10**, the door **12** is positioned as shown in FIG. **5**. In this position, the circular boss **48** is slid into the circular recess **43** with the pin **51** lying in slot **44**. This assembly step is carried out before the hood **23** is attached to the door. The door is then pivoted to a position such as the closed position shown in FIG. **4**. It will be seen from the drawing that the door cannot be removed from the seat portion defined by the circular recess unless it is in the position shown in FIG. **5** since in any other position, the slot **44** is not wide enough to enable the circular boss **48** to be removed and in the case where the door is at 180° angle to the position shown in FIG. **5**, the stop **54** prevents removal by sliding action. Both hinges are simultaneously interlocked as described above.

Once the door is assembled as shown in FIG. **4**, the hood **23** is attached by means of the bolts **24**. The hood acts not only to prevent sunlight from obscuring the color of the lens and to direct the light beam where desired in a traffic signal such as a traffic light but also acts as a stop means. Thus, the edge **60** of the hood is designed to extend outwardly sufficiently far toward one side of the door to hit a corner portion **61** of the housing body prior to the door reaching the position shown in FIG. **5** where it can be slidably removed from the hinge seat portion. Thus, once the door is assembled and the hood positioned, it can be pivotally moved as desired for servicing without any fear of the door accidentally being removed from the housing. On the other hand, should one desire to remove the door, it is only necessary to first remove the screws holding the hood in place after which the door can be removed in the same manner that it is assembled with the body.

While a specific embodiment of this invention has been shown and described, many modifications thereof are possible. For example, in the preferred embodiment, pins **51** of the hinge portions **40** and **41** are pointed away from each other. However, the pins can be positioned to point in toward each other with the seats correspondingly reversed. Similarly, while it is preferred that the male insert portions be mounted on the door and the seats mounted on the body, the parts can be reversed if desired.

What is claimed is:

1. A traffic signal housing comprising:
a housing body defining an opening,
a pivotal, removable door for said housing,
hinge means for permitting pivoting of said door about an axis to open and close said opening with said door being slidably removable from said body in one position thereof,
said body and said door each being formed of an integral metal casting having a portion of said hinge means integral therewith,
said door carrying stop means for preventing pivoting of said door to said one position in use,
said door carrying a traffic signal lens,
and said stop means comprising a removable hood mounted over said lens with said hood being dimensioned to act as a stop means in conjunction with said housing body.

2. A traffic signal housing in accordance with claim **1** wherein said hinge means comprises a seat portion and a male insert portion,
said seat portion defining a circular recess and an overlying slot extending through a portion of said circular recess,
said insert portion defining an upstanding pin designed to pivot in said slot and a lower circular boss having cutaway portions dimensioned to permit said boss to pivot in said seat and be removable therefrom along with said pin in one pivotal position thereof.

3. A traffic signal housing in accordance with claim **2** wherein said hinge means comprises a second seat portion and a second male insert portion,
said second male insert portion defining a second upstanding pin designed to pivot in a second slot of said second seat portion,
said pins extending in opposite directions.

4. A traffic signal housing in accordance with claim **3** and further comprising lock means for locking said door in its closed position.

5. A traffic signal housing comprising,
a housing body defining an opening,
a pivotal door for said housing,
hinge means mounting said door for pivotal movement about an axis to open and close said opening,
said hinge means having a position coincident with one pivotal position of said door enabling said door to be slidably attached and detached from said housing,
removable stop means for preventing said door from pivoting to said one position,
said hinge means comprising a seat portion and a male insert portion,
said seat portion defining a circular recess and an overlying slot extending through a portion of said circular recess,
said insert portion defining an upstanding pin designed to pivot in said slot and a lower circular boss having cutaway portions dimensioned to permit said boss to pivot in said seat and be removable therefrom along with said pin in one pivotal position thereof.

6. A traffic signal housing in accordance with claim **5** wherein said stop means comprises a hood,
and said door and body are formed of one-piece lightweight metal castings.