United States Patent

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[45] **Dec. 26, 1972**

[54] **MAIL BOX WITH REMOTE SIGNAL TRANSMITTER**

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[52] **U.S. Cl.** **232/36,** 340/224, 116/132

[51] **Int. Cl.** **B65d 91/00**

[58] **Field of Search** 232/34, 35, 36, 37; 340/224; 343/225; 116/132

[56] **References Cited**

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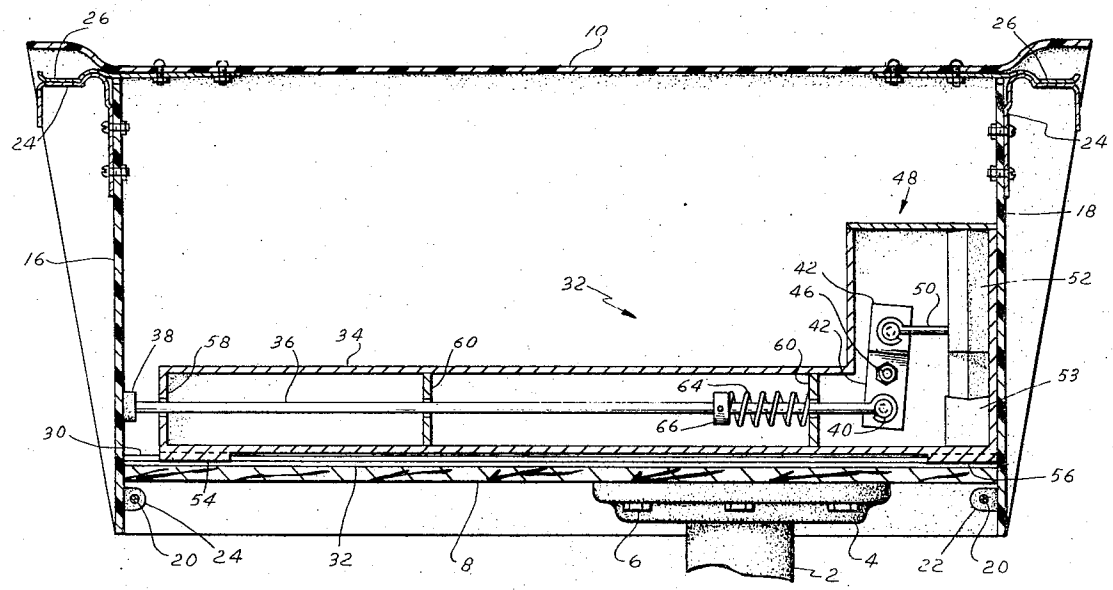
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[57] **ABSTRACT**

A rural route mail box having an insertable unit housing a remote signal transmitter and a rod and lever actuating mechanism to trigger the same on opening the box door to deliver or pick-up mail. The unit is slidable into position with an enlarged transmitter housing portion located at the rear of the box, the rod and lever being arranged for push-button like operation of the transmitter responsive to movement of the front door. The unit, in the embodiment disclosed, is further slidably movable under spring pressure for transmitter operation in response to the opening of a door at the rear end of a box having an access opening at either end.

6 Claims, 6 Drawing Figures



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SHEET 1 OF 3

Fig. 1.

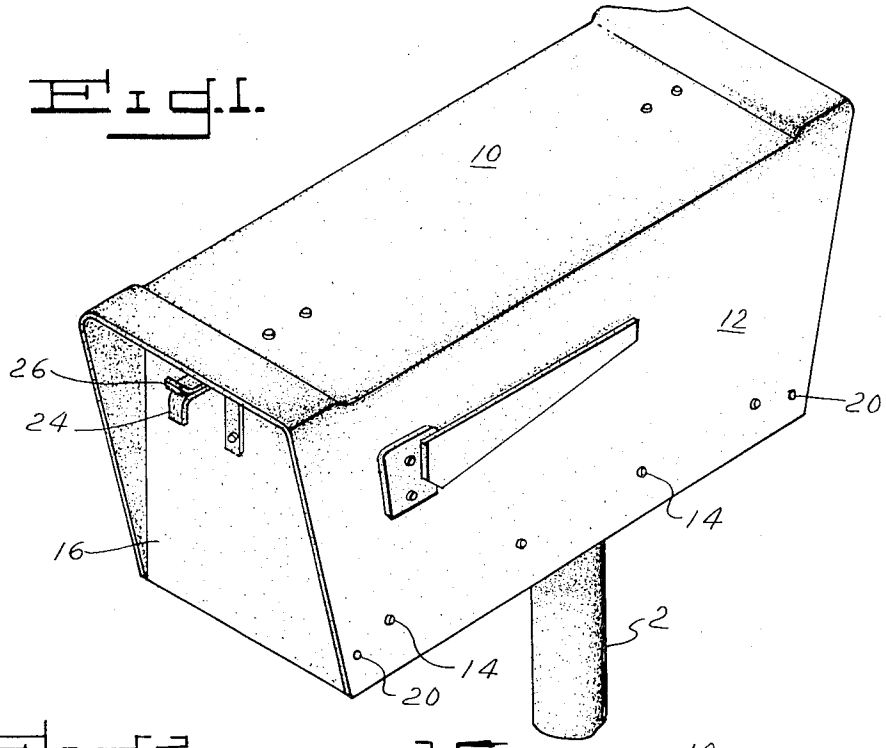
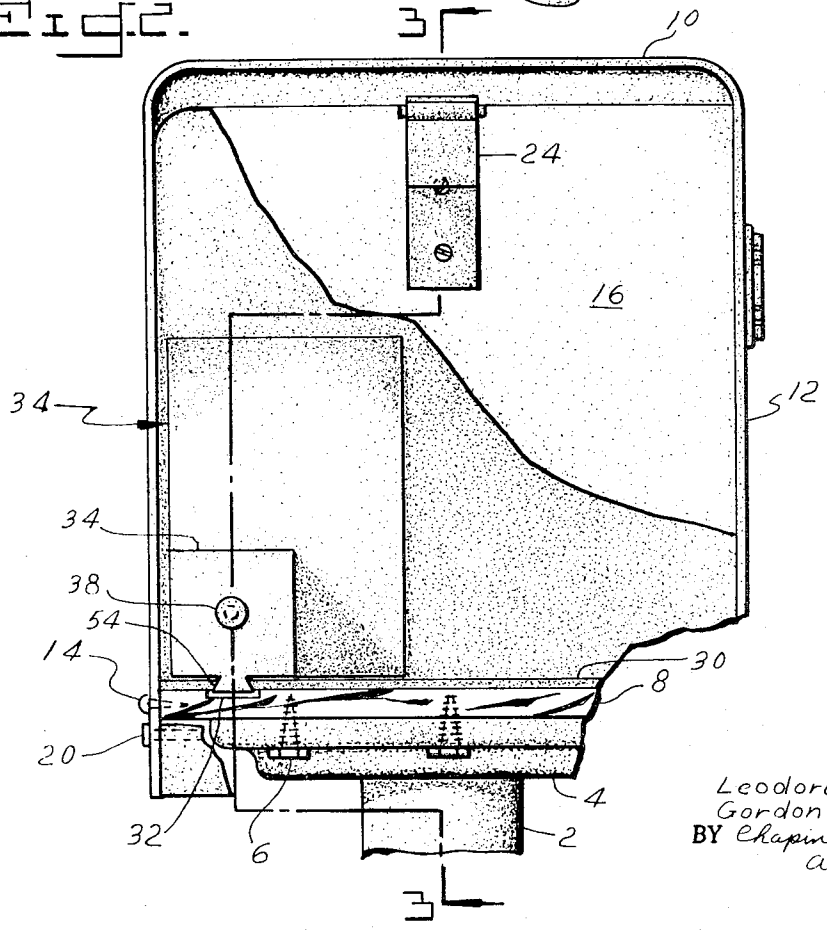


Fig. 2.



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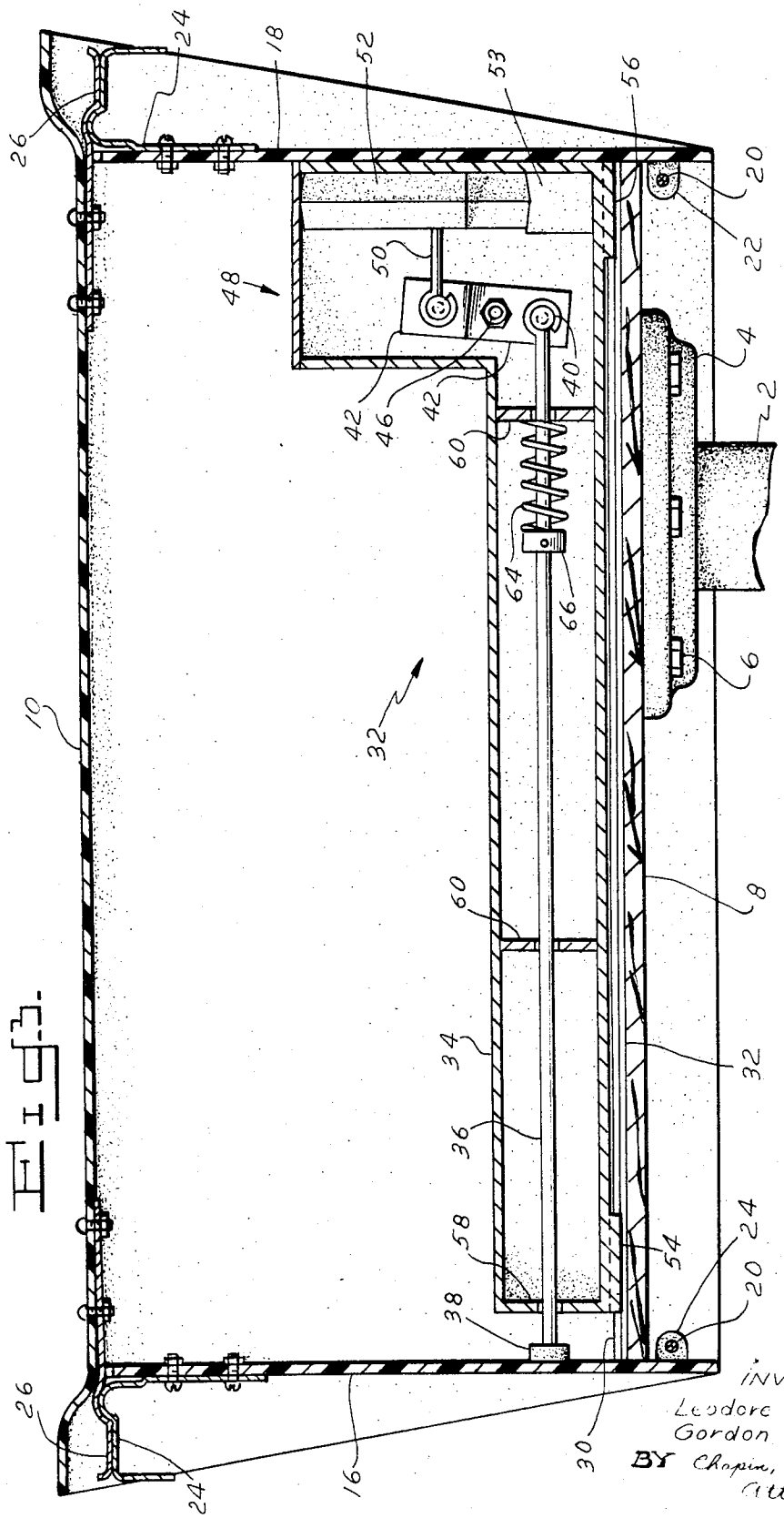


Fig. 3.

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Fig. 4.

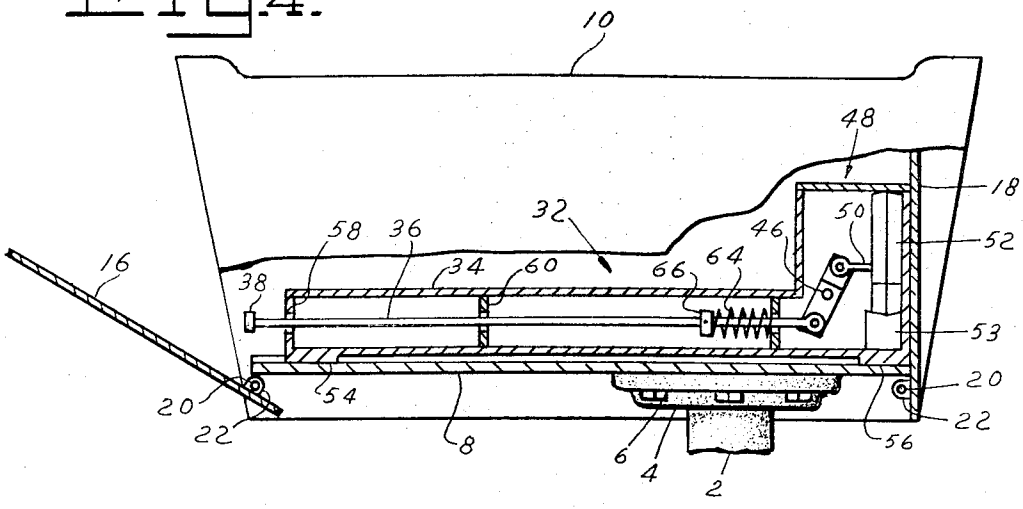
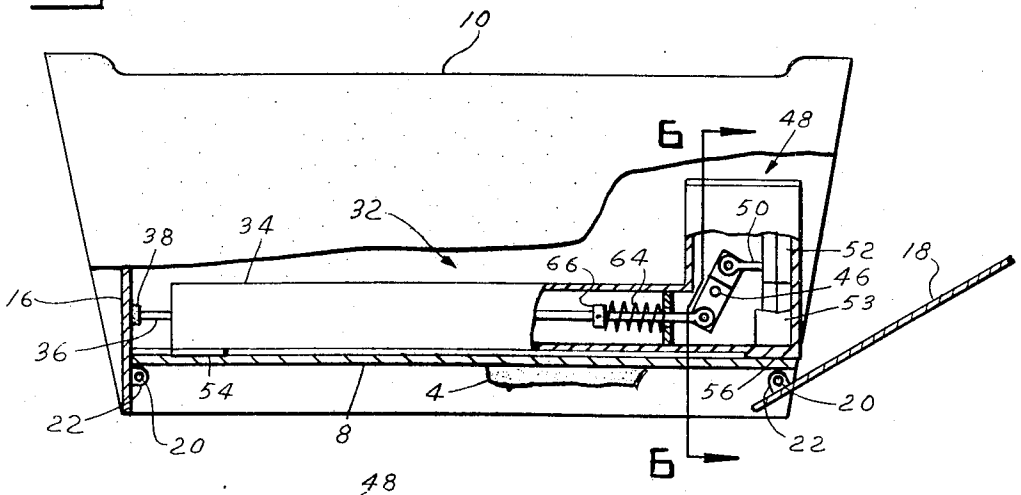


Fig. 5.



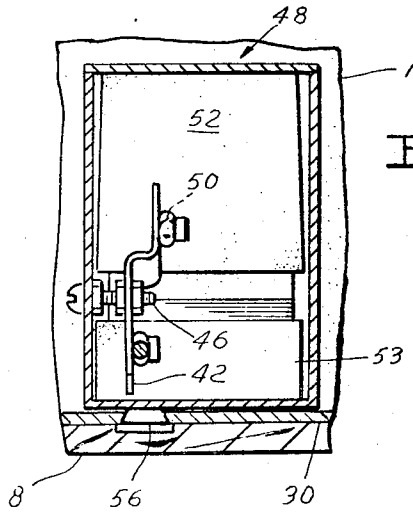


Fig. 6.

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MAIL BOX WITH REMOTE SIGNAL TRANSMITTER

BACKGROUND

This invention relates to remote signal transmitter assemblies for incorporation in a mail box of the type commonly used on rural mail delivery routes, and more particularly to a unit which utilizes conventional signalling equipment readily available on the market such as a standard transmitter commonly employed with a receiver in the operation of automatic garage door opening and closing apparatus.

Insofar as is known radio frequency signal transmitting devices have not heretofore been used in rural mail boxes for indicating to a householder, as by a receiver at a location remote from the box, the fact that the box door has been opened and thus to indicate a delivery of mail. While mail box signalling equipment, utilizing electric indicator or alarm devices with wiring directly connecting the box with an indicator at a convenient location in a household is well known in the art, there are many instances particularly in rural areas where difficulties and/or excessive expense is involved in the installation of direct wiring connections and thus the use of this type of equipment is not feasible.

An object of the present invention is accordingly to provide a remote signal transmitter unit which may be conveniently installed without the need for direct wiring connections. The unit also may be readily removed for repair or replacement purposes in the event of failure to operate. It is particularly designed to make available such signalling apparatus for use in rural areas where a mail box is located a considerable distance from a household.

It is a more particular object of the invention to provide a housing unit in which a transmitter and the actuating mechanism may be contained as an entity for the convenient slidable insertion thereof into position and condition for operation upon opening and closing movement of a door at each end of a box. To this end the housing is fitted in the interior of the box by means of a slidable dovetail connection, an enlarged rear section of the housing containing the transmitter and abutting the rear door. The actuating mechanism comprising a push rod and lever triggering means is arranged with the push rod element being directed forwardly of the box and supported in an elongated reduced housing portion, the end of the rod pressing against the inside surface of the front door. With both doors closed the push rod is held inwardly against the pressure of a spring seated in the housing and engaging the rod. When the front door only is opened the rod is urged forwardly by the spring and the transmitter switch actuated. When the rear door only is opened, the rod remains stationary and the spring pushes the housing unit rearwardly in the dovetail guide to actuate the switch.

As is well known to those familiar with standard transmitter and signal receiving equipment for automatic garage door opening apparatus a momentary push-button switch actuation of the transmitter energizes a receiver which, through an appropriate relay system, in turn operates mechanism to open or close the door. Subsequent momentary transmitter switch actuation will de-energize the receiver and stop operation of the door mechanism. With the transmitter installed in the present mail box delivery signalling system, the opening and closing of the mail box door so as to deposit pieces of mail will correspond to the initial momentary switch actuation described above. Thus it operates to energize a remote receiver and light a signal lamp, or to trip an audible signal as may be desired. The receiver may, of course, be located as is most convenient for the recipient. When the mail is subsequently picked up by the further opening and closing of the mail box door a second signal, which corresponds to the second push button operation above described, is transmitted to de-energize the receiver and extinguish the signal. Alternatively, an auxiliary cut-off at the receiver may be supplied for this purpose if so desired. In any event, such transmitter devices are well known and for exemplary purposes reference is made to U.S. Pat. No. 3,364,427 of Jan. 16, 1968 and the disclosure therein for a conventional type of circuitry and operation as well as an additional means for modifying the circuit and increasing signal strength where shielded conditions occur.

In the assembly of the present invention such a transmitter device is utilized without further detailed description thereof. The invention resides in the combination of parts in association with the transmitter and the relationship thereof as set forth in the following description of an embodiment thereof as shown by the accompanying drawings.

FIGURES

FIG. 1 is a perspective view of a mail box of the type used on rural routes and in which the unit of the present invention is incorporated;

FIG. 2 is an end view of the box of FIG. 1, the front cover being cut away and showing the preferred positional relationship of the signalling unit in the interior thereof;

FIG. 3 is a longitudinal sectional view on line 3—3 of FIG. 2;

FIGS. 4 and 5 are schematic views similar to FIG. 3 showing, respectively, the front and rear doors open and the parts in position after triggering the transmitter switch; and

FIG. 6 is a sectional view on line 6—6 of FIG. 5.

In FIG. 1 a mail box of the type commonly used on rural routes and the like is shown as mounted on a post 2, the box being seated on the top of the post by a pipe flange 4 (FIG. 2) with screw bolts 6 fixed in the base 8. In its preferred form as shown, the body of the box may be made from a single piece of synthetic plastic material of a suitably rigid composition, forming a hood with top 10 and sides 12, and a base 8 affixed between the lower portions of sides 12 as by the attaching screws indicated at 14.

As shown (FIG. 3) doors are provided at each end although, as will be recognized, the invention may be utilized with a single door at one end only. Both the front door 16 and rear door 18, are also preferably of a suitable plastic material. They may be hinged to swing downwardly from the top of the end openings on hinge rods at 20 extending between the side walls 12 below the floor at each end. Eared brackets as at 22 project from lower marginal portions of doors 16 and 18 and engage the rods 20 for suitable opening and closing movement. At the top of each door a conventional type

of latch member 24 is secured for releasably engaging a striker member as the strap 26 fixed to the underside of top wall 10. Thus the doors may be opened and closed in conventional fashion.

In the embodiment of the invention illustrated the flooring 8 of the mail box is shown as made of wood (FIGS. 2 and 3). A floor panel at 30 of any suitable material, such as metal or plastic, may be adhesively or otherwise secured to member 8 to cover the same and in the panel a longitudinal dovetail slotted portion is formed from end to end, as indicated at 32, the underlying surface of the wood preferably being cut away below the slot to insure clearance.

The dovetail groove is best seen in FIGS. 2 and 6. It is designed for slidably positioning the new unit, comprising a switch triggering mechanism and transmitter, in the interior of the box. The unit designated generally by numeral 34 (FIG. 2) is preferably located along one side and at the back of the box so as to cause a minimum of interference with insertion or withdrawal of mail through the front opening. As will become apparent, it may be noted that with doors provided at each end an easy sliding movement of the entire unit 34 on the floor is necessary for proper operation when the rear door 18 is opened and closed. When the front door 16 is opened and closed for access, the unit remains stationary. Thus such sliding movement is not essential where a single door is provided. The slidable dovetail mounting of the unit in the latter case is, however, of advantage for insertion and/or withdrawal of the unit as an entirety for repair purposes.

As seen in FIG. 3 both doors are closed. The unit 32 is positioned for operating the signal transmitter upon the opening or closing of either of the doors. An elongated housing portion 34 encases a push rod 36 extending therethrough and having its outer end fitted with a knob 38 outwardly of the front of the housing. The inner end of rod 36 is pivotally connected at 40 to the lower arm of a lever 42 pivotally mounted at its center on the end of a mounting bolt 46 which is fixed to extend inwardly of the adjacent side wall of an enlarged rear section 48 of the housing (see FIG. 6). The other arm of lever 42 has pivotally connected thereto the end of a short switch actuating stem or rod 50 extending within the casing of a transmitter at 52. The stem 50 acts in the same manner as a push button arrangement to close and open the transmitter switch (not shown), the transmitter being mounted in upright position at the rear of the housing section 48 and there held with its base portion seated in a pocket at 53 against the lower rear wall of section 48. As will be noted, the outside end wall of housing portion 48 is butted up against the rear door 18 of the box. At the outer ends of the housing portions 34 and 48 front and rear dovetail pads 54 and 56 (FIG. 3) are provided at the underside for slidably engaging the groove 32 of the floor panel.

In housing portion 34 a front wall 58 and interior reinforcing walls 60 and 62 have openings for the positional bearing support of push rod 36. A compression spring 64 surrounds rod 36 and is seated against reinforcing wall 62 and against a collar 66 fixed forwardly thereof on the rod. Thus rod 36 is urged forwardly for extension of knob 38 beyond the wall 58. With the doors closed as in FIG. 3 the spring is under compression and knob 38 is pressed against the inside of front door 16. In this position the switch actuator rod or stem 50 is in a retracted position relative to the transmitter and in a switch "off" condition. When either door is opened the force of spring 64 will cause the lever 42 to swing in a clockwise direction as shown and close the transmitter switch.

In FIG. 4 the front door 16 is swung open and thus spring 64 extends the push rod and knob 38 outwardly. In FIG. 5 the rear door 18 is shown open and since push rod 36 remains stationary against door 16, the entire housing of the unit is moved as to the right for clockwise movement of lever 42 for switch operation. When the door in either case is again closed the switch will be opened.

As previously mentioned radio frequency signalling and/or transmitter and receiver equipment is well known and the push button operation of the transmitter is accomplished by the act of opening and closing either one of the mail box doors 16 or 18. The box is preferably of plastic material to eliminate the adverse effects of metallic shielding. However, as above mentioned the referenced U.S. Pat. No. 3,364,427 includes means for modifying the signal for increased strength and overcoming metallic shielding effects so that, if desired, the box may be of standard metallic construction and the transmitter of a modified construction to compensate for such conditions.

What is claimed is:

1. A mail box of the rural route type having a front door pivotally swingable outwardly of access opening thereof for insertion and withdrawal of pieces of mail,

a housing unit encasing a remote signal transmitter in the rear section thereof and switch triggering mechanism for actuating the transmitter,

said triggering mechanism including a short rod having its inner end engaging the transmitter for operating the switch thereof, a centrally pivoted lever having one arm connected to the other end of said rod, an elongated push rod connected to the other arm of the lever and slidably supported in said housing with its outer tip end portion extending forwardly of the front end of the housing, and spring means urging said push rod in a forward direction,

the interior of said mail box and said housing having interengageable mounting means positionally holding said housing unit with said elongated push rod moved inwardly against said spring means on closure of said front door, whereby switch operation of said transmitter is responsive to door opening and closing movement.

2. The structure of claim 1, in which,

said interengageable mounting means comprises a dovetail connection at one side of the floor of said box interior, and said rear section of the housing abuts the rear wall of said mail box in said operative mounted condition.

3. The structure of claim 2, in which,

said rear section encases said transmitter, short rod, and lever, and a forward section of the housing encasing said elongated rod is of reduced cross section extending from the lower corner of the rear section along the adjacent side wall of the box.

4. The structure of claim 3, in which,

said forward section is provided with apertured interior partitioning walls for support of said elongated push rod, and said spring means is a compression spring surrounding the rod and seated between one of said walls and a collar fixed on the rod forwardly thereof.

5. The structure of claim 4, in which,

said rear wall of the mail box comprises a rear door therefor and both front and rear doors are pivoted on hinge means below the ends of the floor, and said housing unit is slidably movable on said box floor for operation of said triggering mechanism upon the opening and closing movement of one door when the other door is closed.

6. The structure of claim 5, in which,

the top and side walls of the mail box and said doors are of rigid plastic material.

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