Sept. 3, 1963 H. B. EGING 3,102,684

AUTOMATIC MAIL BOX SIGNAL

Filed June 1, 1959

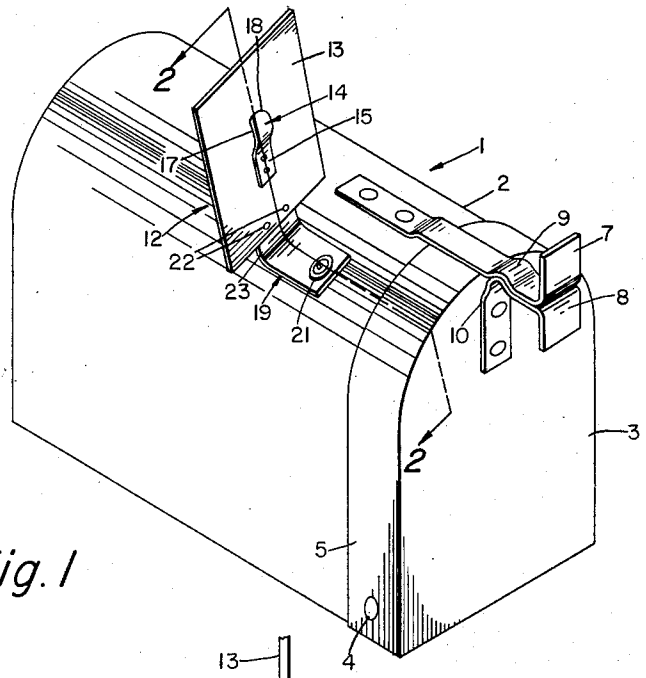


Fig. 1

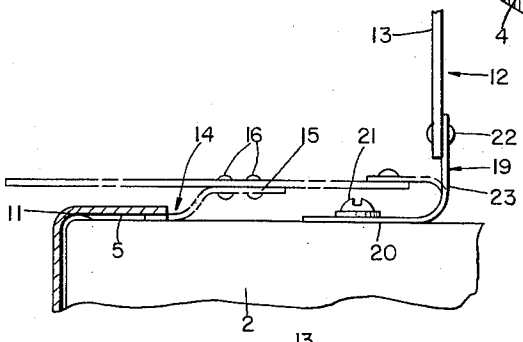


Fig. 2

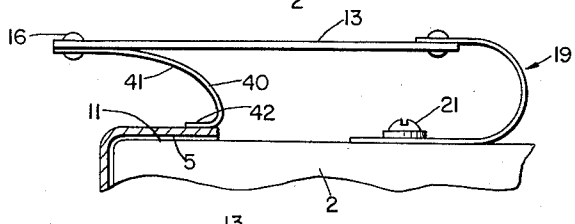


Fig. 3

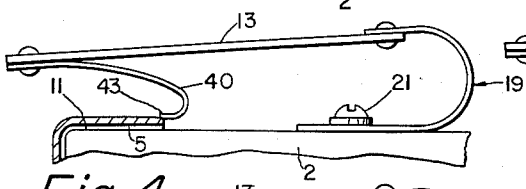


Fig. 4

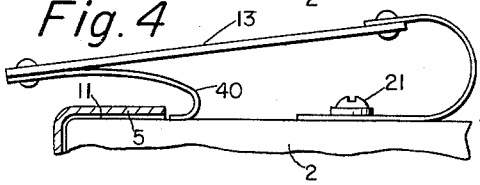
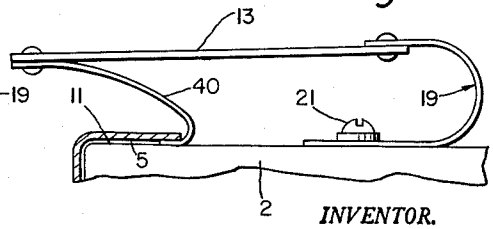


Fig. 5

Fig. 6



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AUTOMATIC MAIL BOX SIGNAL

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4 Claims. (Cl. 232—35)

This invention as indicated relates to automatically actuated signals which find particularly advantageous application when used in conjunction with mail boxes.

This application is a continuation-in-part of my application Serial No. 722,714, filed March 20, 1958, now abandoned.

It has been found desirable over the years to provide mail boxes with signaling devices of one sort or another. This is particularly true with regards to mail boxes of the type used in rural areas in which the box may be located adjacent the road a substantial distance from the house, thus necessitating long and inconvenient trips to and from the box. In view of this existing situation, it is immediately obvious that it is desirable to provide some means by which the owner of the box may know whether or not the mailman has called. A large variety of signaling devices have been developed in the past in order to fill this need, but until this time none has been developed which is completely satisfactory.

It is, therefore, an object of this invention to provide an improved mail box signaling device.

A further object of this invention is to provide a mail box signaling device which is automatically actuated by the opening of the mail box door.

A still further object of this invention is to provide a mail box signaling device which includes a snap acting latching means.

A still further object of this invention is to provide a snap latch in conjunction with a mail box signaling device which may be operated with a maximum of convenience.

It is yet another object of this invention to provide a mail box signaling device, which when operated, rocks back and forth in order to increase the visibility of the same.

Other objects and advantages will be apparent from the detailed description to follow.

FIG. 1 is a perspective view showing a signaling device of this invention installed in operative relationship upon a mail box;

FIG. 2 is a fragmentary side view, partly in section, of the signaling device of FIG. 1 and showing in phantom the position which the signaling device assumes in its cocked position;

FIGS. 3 through 6 are fragmentary side views, partly in section, of a modified embodiment of the mail box signaling device of this invention and showing progressively the manner in which the latching means is snapped into position beneath the door flange.

Referring now more specifically to the drawing, I have shown a rural mail box of conventional design and indicated generally at 1. The mail box consists of a housing member 2 which is provided at one end with the door 3 pivotally mounted as at 4. A portion of the periphery of the door 3 is provided with a flange 5 which in closed position of the door extends over the housing as shown in FIGS. 2 through 6. A pair of straps 7 and 8 are fixedly attached to the housing and the door, respectively, and may be provided with interfitting deformations 9 and 10 which act as latching means for the door. As shown in FIGS. 2 through 6, the door flange 5 and the housing 2 define therebetween a clearance 11.

The signaling device, which is the subject of this invention, is indicated generally as 12 and is mounted on the housing 2 in a position slightly offset laterally from

the strap 9 as seen in FIG. 1. The signaling device 12 includes a thin, flat plate 13 of generally rectangular shape. A suitable latch 14 in FIGS. 1 and 2 is constructed of a thin material and, as seen in FIG. 1, has a cross section of configuration which roughly approximates a Z. One leg 15 of the Z lies flat against the surface of the plate 13 on the side thereof nearest the door 3 and is secured to the plate by means of rivets 16 or the like.

The other leg 17, i.e., the latching leg, of the latch 14 is disposed generally parallel to the plane of the plate 13 but is spaced therefrom. The free end of the latching leg 17 may be generally convex as at 18. Latching leg 17 is constructed of relatively thin material so as to fit within the clearance defined between the door flange 5 and the housing 2.

As shown, for example, in FIG. 2, a generally L-shaped leaf spring 19 includes a leg 20 which lies along the surface of the housing 2 and is attached thereto by means of the fastener 21. This fastener may be either a sheet metal screw or a bolt and nut combination. However, it has been found that a bolt and nut combination provides a somewhat more rigid fastening action.

The other leg 23 of the leaf spring 19 is disposed at generally right angles to the housing wall, as seen in FIG. 2, when the flag is in the released position thereof. As seen in the drawings, the legs 20 and 23 are joined on a gently curved radius to facilitate latching. The free end of the leg 23 is attached to intermediate portions of the lower edge of plate 13 as by rivets 22 or the like.

When it is desired to set the signaling device, the operator pulls the plate 13 against the biasing force of the spring 19 and downwardly towards the door flange 5 until the outer surface of the latching leg 17 of the latch contacts the outer surface of the door flange 5, thus bending the leaf spring 19 into generally U shape in cross section as seen in FIG. 2.

At this point the operator pushes the plate 13 in the direction of the junction of the legs of the leaf spring 19 and at the same time continuing to exert a force on the plate 13 towards the door flange 5. In this manner the latching leg 17 of the latch 14 is moved along the door flange 5 in a direction generally parallel to the strap 9 until the convex end 18 of the leg clears the edge of the door flange 5 and comes to rest against the top surface of the housing 2. At this point external pressure is withdrawn, and the leaf spring 19 forces the latching leg 17 to snap under the door flange 5 into the clearance 11 provided between the said flange and the housing 2. It is important to note that in order for this action to occur the spring 19 must be capable of exerting a force on the latch 14 through the plate 13 in a direction generally parallel to the strap 9 and towards the door flange 5. This pre-loading of the leaf spring 19 occurs when force is applied on the plate 13 in a direction towards the junction of the legs of the leaf spring, thereby causing the location of the junction to shift along the length of the spring with somewhat of a rolling action. This action is facilitated by the gently curved radius at the juncture of the legs of the L-shaped spring. The resiliency of the spring, of course, causes the junction to return to its original position along the length of the spring when the force exerted on the signal plate in the direction of the junction is suddenly released, thereby causing the latching leg 17 to snap into the clearance 11. After the latching leg 17 of the latch 14 has been inserted into the clearance 11 defined between the door flange 5 and the housing 2, the plate 13 will be held in a position generally parallel to the surface of housing 2 as shown in FIG. 2.

It will be understood, of course, that leaf spring 19, being of substantial L shape when unstressed, always has a tendency to return the plate 13 to the position shown in

FIG. 1. Therefore, when the door is swung open by the postman, causing the door flange **5** to clear the latching leg **17**, the plate **13** will swing into the released or up position as shown in FIG. 1 due to the resiliency of the spring **19**. The momentum developed by the plate **13**, when it reaches the released or up position of FIG. 1, will cause the plate **13** to rock back and forth for a considerable period of time, thereby increasing the visibility thereof.

I have found it extremely desirable to coat the plate with a bright colored, fluorescent paint to further increase the ease with which the signaling device may be seen when released.

After the signaling device has notified the owner of the postman's call, the owner may open the box and remove the articles which have been deposited therein. After closing the box, it is a simple matter to reset the signaling device according to the process described hereinabove.

FIGS. 3 through 6 show a modified form of the signaling device of this invention. In this embodiment the plate, spring, fastener and mail box are substantially the same as in the embodiment of FIGS. 1 and 2 and, therefore, I have used like reference numerals for identifying like elements. The primary difference between this embodiment and that of FIGS. 1 and 2 exists in the form of the latch which is here indicated as **40**.

An examination of the drawings will disclose the fact that the mounting leg of the latch shown in FIGS. 3 through 6 is directed in the opposite direction from its counterpart in the embodiment of FIGS. 1 and 2.

Unlike the embodiment of FIGS. 1 and 2, the latch **40** is constructed of a relatively thin, resilient or springy material, and, instead of having a general Z shape in cross section, the latch **40** assumes the general shape in cross section of a J and includes a relatively long leg **41** which is concave, opening away from the plate **13**. The leg **41** is attached at its free end as by rivets **16** along the top edge of plate **13**. A short latching leg **42** is attached to the leg **41** by a smoothly curved joining portion and is generally parallel to the plane of plate **13**. The free end of latching leg **42** may be generally convex in form as at **43**.

In order to set the signaling device of FIGS. 3 through 6, the said device **12** is moved against the force of the spring **19** towards the door flange **5** until the outer surface of the latching leg **42** contacts the outer surface of the flange **5** as shown in FIG. 3. Upon a continued downward and inward pressure upon the plate **13**, the leg **41** tends to straighten, thereby increasing the effective length thereof to move the latching leg **42** along the outer surface of the door flange **5** towards the spring **19** as shown, for example, in FIG. 4.

When the free end portion **43** of the latching leg **42** clears the end of the flange **5**, the latching leg **42** will snap into engagement with the housing as shown in FIG. 5. When at this point external pressure upon the plate **13** is released, the leg **41** of the latch **40** will tend to resume its concave configuration, thereby reducing the effective length thereof to cause the latching leg **42** to move into the clearance **11** defined between the door flange **5** and the housing **2** as shown in FIG. 6. As soon as the latching leg **42** has been disposed in this clearance, the signaling device will be held in position ready for actuation upon the opening of door **3**.

It will, of course, be understood that in the embodiment of FIGS. 3 through 6 the leaf spring **19** serves in a similar capacity as in the embodiments of FIGS. 1 and 2 as regards the moving of the latching leg **42** into the clearance **11**. However, in view of the action of the latch **40**, it is not necessary that the plate **13** be moved as much in the direction of the junction of the legs of leaf spring **19** during the time just prior to the disposition of the latching leg **42** into the clearance **11**. It will be appreciated that, in the embodiments of FIGS. 1 and 2

in which the latch **14** does not tend to elongate, the plate **13** must be moved in the direction of the junction of the legs of the leaf spring **19** a somewhat greater distance in order to move the concave free end **18** of the latching leg **17** past the end of the edge of the door flange **5**.

By forming the free ends of the latching legs **17** and **42** with convex portions as at **18** and **43**, the ease with which these legs may be moved past the free ends of the flange **5** is increased since these edges tend to act as cam surfaces in the event that the signaling device **12** is twisted with respect to the leaf spring **19**, either rotationally about the longitudinal axis of the latch or laterally of the axis thereof.

On some occasions, due to the dimensional variations of various of the mail box components within manufacturing tolerances, the clearance **11** defined between the door flange **5** and the housing **2** may not be of sufficient size to allow the leg of the latch member to pass freely into and out of the same. When such occasions arise, it is a simple matter to bend the flange **5** away from the housing by means of pliers or the like.

It will be readily recognized that by my invention I have provided a mail box signaling device which is economical in manufacture and convenient in operation. From the standpoint of convenience, this invention particularly excels because of the fact that, due to the snap action of the latch, only one hand is required in order to set the same.

For simplicity of description, I have shown my invention as being embodied in only a limited number of forms. One skilled in the art will immediately recognize, however, that there are a number of alterations which could be made to the illustrated embodiments without departing from the spirit or scope of the invention. It is, therefore, my intention to be limited only by the spirit and scope of the appended claims.

I claim:

1. An automatic signal device for use with a mail box of the type including a housing, a swingable door attached at one end of the housing and a flange on portions of the margin of the door overlying the housing in spaced relationship thereto comprising: a leaf spring of general L shape in the unstressed condition thereof, a signal plate substantially rigidly attached to the free end of one of the legs of the L-shaped spring, the other leg of the L-shaped spring, in the installed position of the signal device, being substantially rigidly attached adjacent its free end to said housing with said signal plate and said one leg extending substantially parallel to the plane of said door in the unstressed condition of said spring, and said other leg extending generally perpendicular to the plane of said door, a latching member rigidly attached on said plate and including a latching leg generally parallel thereto but spaced therefrom and extending in a direction generally transverse the line of juncture of the legs of said L-shaped spring, said latching leg being disposed on the side of said plate closest to said door in the installed position of the signal device, the free end of said latching leg being of a size to fit into the space defined between said housing and said flange, whereby said signal plate may be pivoted around the juncture of the legs of said L-shaped spring against the force thereof into a position substantially perpendicular to said door, the distance from the pivot point of said plate to the free end of said latching leg being slightly greater than the distance from said pivot point to the free end of said flange, whereby after said signal plate has been pivoted into said position a force may be applied against the same in a direction toward said juncture to shift the location of said juncture along said spring by a rolling action and allow said free end of said latching leg to clear the free end of said flange to be snapped into position between the space defined between said housing and said flange and thereby detachably fix said signal plate in said position.

2. A device as defined in claim 1 in which said latching member is of substantially Z shape in cross section with one leg thereof lying along the surface of said signal plate and being attached thereto.

3. A device as defined in claim 1 in which said latching member is generally J-shaped in cross section with the longer leg thereof having a portion lying generally along said signal plate and with said longer leg being attached at its free end to said signal plate, said longer leg being generally concave and opening away from said signal plate, said latch being constructed from resilient material.

4. An automatic signal device for use with a mail box of the type including a housing, a swingable door attached at one end of the housing and a flange on portions of the margin of the door overlying the housing in spaced relationship thereto comprising: a leaf spring of general L shape in the unstressed condition thereof, a signal plate substantially rigidly attached to the free end of one of the legs of the L-shaped spring, the other leg of the L-shaped spring, in the installed position of the signal device, being substantially rigidly attached adjacent its free end to said housing with said signal plate and said one leg extending substantially parallel to the plane of said door in the unstressed condition of said spring, and said other leg extending generally perpendicular to the plane of said door, the legs of said spring being joined on a gently curved radius, a latching member rigidly attached on said plate and including a latching leg extending in a direction generally transverse the line of juncture of the legs of said L-shaped spring, the free end of said leg being of a size to fit into the space defined between said housing and said flange, said leg being disposed on said plate in position to be inserted into the space defined between said housing and said flange when said signal plate is pivoted around the juncture of the legs of the L-shaped spring against the force thereof into a position substantially perpendicular to said door, the distance from the pivot point of said plate to the free end of said latch being slightly greater than the distance from said pivot point to the free end of said flange, whereby after said signal plate has been pivoted into said position a force may be applied against the same in a direction toward said juncture to shift the location of said juncture along said spring by a rolling action and allow said free end of said latch leg to clear the free end of said flange to be snapped into position between the space defined between said housing and said flange and thereby detachably fix said signal plate in said position.

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