Nov. 5, 1957 J. H. ABELL 2,812,130

SIGNAL FLAG DEVICES

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FIG. 1

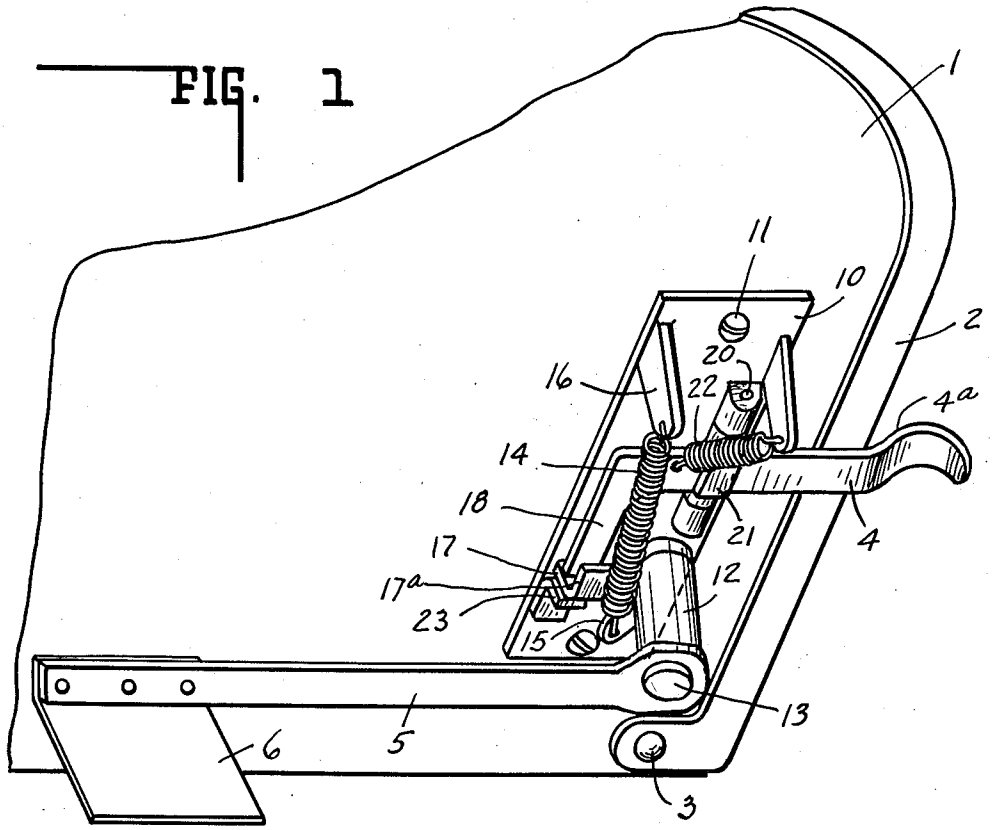


FIG. 2

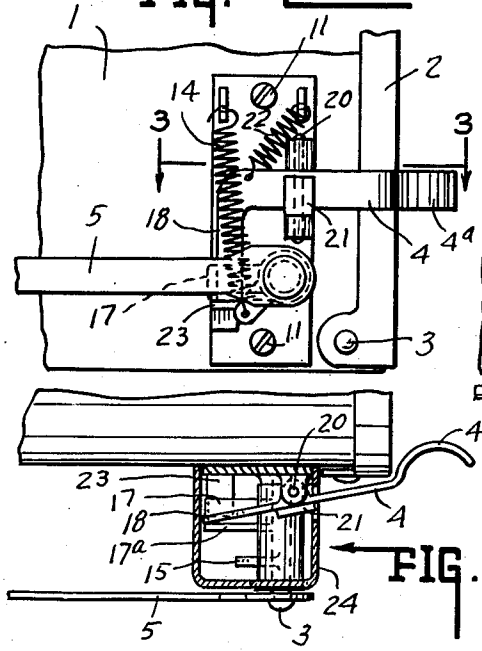


FIG. 4

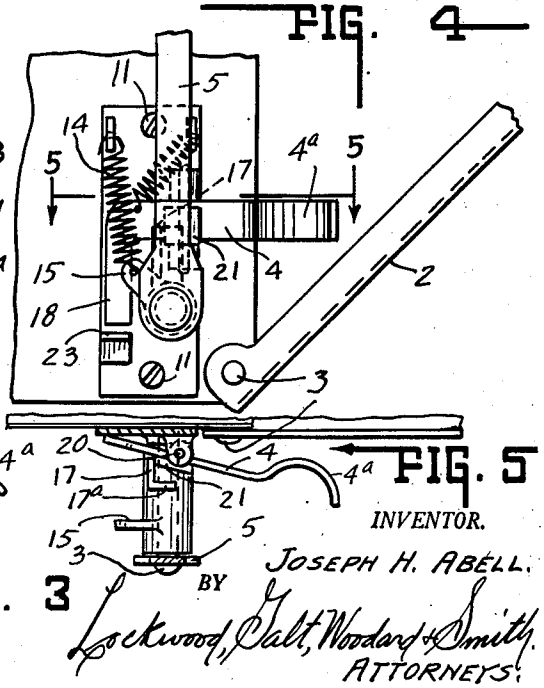


FIG. 3

FIG. 5

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SIGNAL FLAG DEVICES

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This invention relates to signal flag devices and is particularly directed to devices for indicating when a door has been opened. Still more particularly this invention relates to signal flag devices for attachment to mail boxes and the like and adapted to raise a distinctively colored flag when the box door is operated.

It is often important to determine at a distance whether the door to a receptacle such as a mail or delivery box has been opened and hence to determine whether deliveries may have been made to or from the box. In rural or suburban areas the mail box is usually placed on a post beside the road and at a considerable distance from the home or place of business of the subscriber. Since the arrival time of a delivery man or letter carrier is uncertain, many needless trips to the box are usually made.

Postal regulations, on the other hand, are not effective in requiring the postal carrier to raise or otherwise manipulate the manual flag usually provided on standard mail boxes. Further, no device is permitted on the box which will hinder ready access to the box or impede operation of the door.

Spring-operated flags with trigger mechanisms operable by the mail box door have been proposed in the past but usually the mechanism is light in weight, is vulnerable to the weather, has a short life and is unreliable in operation. One such mechanism requires the door to be fully closed else the trigger is operated and the flag rises. Such a mechanism is of little value in combination with boxes having twisted or ill-fitting doors.

The objects of this invention are to provide an improved flag-operating mechanism responsive to the movement of a door, such as the door on a mail or delivery box.

A more specific object of this invention is to provide an improved flag-operating mechanism responsive to the movement of the box door, which mechanism is strong, weather-resistant and reliable in operation, even with box doors which are twisted or ill-fitting.

The objects of this invention are attained by a flag device for mounting on the side of a mail or delivery box and responsive to the door thereof for raising a flag, characterized in this, that the device comprises a base plate, an upstanding pin staked at one end to said plate, a sleeve journaled on the pin, a flag arm with a flag extending radially from the sleeve, a spring for rotationally biasing the sleeve, and an escapement tooth on the side of the sleeve, a pivoted pawl on the plate slidably engaging the side of said tooth and adapted to release the biased sleeve, and a trigger arm on and pivoted with the pawl and shaped to slidably engage the side edge of said door and to slidably disengage said pawl.

Other objects and features of this invention will become apparent to those skilled in the art by referring to the specific embodiment of the invention described in the following specification and shown in the accompanying drawing, in which:

Fig. 1 is a perspective view of said embodiment;

Fig. 2 is a side elevational view of the flag device, cocked ready for operation by the box door;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a side elevational view corresponding to Fig. 2 but with the door opened and the flag-release mechanism operated, and

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4.

The particular delivery or mail box shown in Fig.1 to which the flag mechanism of this invention has been applied is one of the sheet metal containers approved by the Postmaster General. The box **1** has a one-piece rounded quonset-type roof with a door **2** at one end hinged along the bottom end edge on pins or rivets **3**. When the door is swung open, the trigger arm **4** is deflected to operate the escapement mechanism, to be described, to permit the raising of flag arm **5** with its metal flag **6**.

The flag mechanism of this invention is preferably assembled on the base plate **10** and is provided with stove bolts **11** for detachably mounting the base plate appropriately on the side of the box **1**. The flag arm **5** is keyed, welded, or otherwise secured to the sleeve **12** which, in turn, is pivotally journaled on pin **13** staked at right angles to the base plate **10**. The sleeve is rotatably biased to swing the arm in a clockwise direction, in Fig. 1, by the spring **14**. The spring **14** is placed under tension between the radial stub **15** at one end and a point on the base such as the anchor arm **16**, at the other end of the spring.

Escapement mechanism is provided for holding the flag down, in cocked position, against the tension of spring **14**. The escapement mechanism, according to this invention, comprises the escapement tooth or plate or detent **17**. The particular detent shown is a plate welded to the side of sleeve **12** having a smooth side surface for slidably engaging the end of the pawl **18**. The detent could, however, assume various forms, such for example, as a notch in the side of the sleeve. When the end of pawl **18** moves parallel to sleeve **12**, it will leave the top surface of the plate **17** and permit the flag arm **5** and sleeve **12** to snap to an upstanding position.

According to an important feature of this invention, the pawl **18** is curved and is pivoted on the pin **20** extending in a direction parallel to the plate and substantially normal to the pin **13**. An extension of the pawl is the trigger arm **4**. The outer end of the trigger arm is bent or otherwise formed into a cam surface **4*a*** which overlies the path of the edge of the door **2**. When the door is operated, the edge thereof slidably engages the cam surface **4*a***, deflecting the arm **4** outwardly and moving the pawl **18** from engagement with detent plate **17**. Thereupon the flag rises.

According to another important feature of this invention the flag is halted at an upstanding position and is firmly held against a stop to prevent rattle or flutter of the flag in the wind. For example, on the side of the curved pawl above the sleeve **12** is attached the stop block **21**. In operation, the detent plate **17** travels up the side of the pawl in a scraping motion and stops against block **21**. The length of the spring **14** and its tension are adjusted to hold the detent firmly against the stop block **21**. The stop block **21** is attached to the pawl on the left side of the pawl pivot pin **20** so that the detent **17** pushes the pawl toward the base plate as the detent swings upwardly in a curved path. This sliding movement of the pawl is against the tension of the spring **22**. Thus in the flag-raised position, the pawl is pressed against the base plate **10** and the trigger arm **4** is swung outwardly and away from the door **1**. Thereafter the door may be opened and closed without affecting the flag mechanism and without impeding the free operation of the door.

To reset, the subscriber is required only to depress the flag arm to its lowered position as shown in Figs. 1, 2 and

3 whereupon spring **22** swings the pawl **18** into overlying position on the detent plate **17**, and the arm **4** returns to its door-engaging position. To define the position of the pawl and the trigger arm when the flag is cocked, conveniently, the shoulder **17***a* is formed on the side of the detent plate. To limit the downward motion of the flag arm, the stop **23** is provided on the base plate underlying the detent.

A sheet metal rectangular box **24**, Fig. 3, is conveniently fitted over the mechanism with no openings except a hole for the sleeve **12** and the trigger arm **4**. Such a housing effectively protects the operating mechanism from corrosion, dirt and rust.

While one specific embodiment of this invention has been disclosed for the purpose of describing the principles of the invention, it is to be understood that the specific disclosure is illustrative only and is not to be limitive.

The invention claimed is:

1. In combination with a mail box having a hinged door; a mail box signal flag device for mounting on the side of said box, said device comprising a base plate affixed to the side of said box, a pin secured to and extending at right angles from said plate, a sleeve journaled on the pin and including an escapement tooth movable therewith, said tooth having a surface lying in a plane normal to said plate and spaced therefrom, an arm having a signal flag at one end connected to and movable with said sleeve to and from flag signaling and non-signaling positions, spring means connected at one end to said sleeve and at its other end to said plate for biasing the sleeve in one direction wherein the flag is raised to vertical signaling position, a pawl pivotally connected to said plate on a fixed axis normal to said sleeve, said pawl having one of its ends shaped to lie within the opening and closing path of said door and engageable with the side of said door when the door is in its closed position, said pawl having the other of its ends depending vertically and including an end portion engageable with said tooth surface, said end portion being movable out of engagement with said tooth surface to permit the biasing of said signal flag to signaling position upon the opening of the door, and spring means connected at one end to said pawl and its other end with said plate for normally biasing said pawl into one position wherein one end thereof is in engagement with the side of said door and the other end thereof is in engagement with said tooth surface whereby said signal flag is held in non-signaling position.

2. A device of the character described in claim 1 wherein stop means are carried by said pawl within the path of and engageable by said tooth surface as said flag is moved to its flag signaling position.

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