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SIGNALING ARRANGEMENT FOR A RURAL MAILBOX

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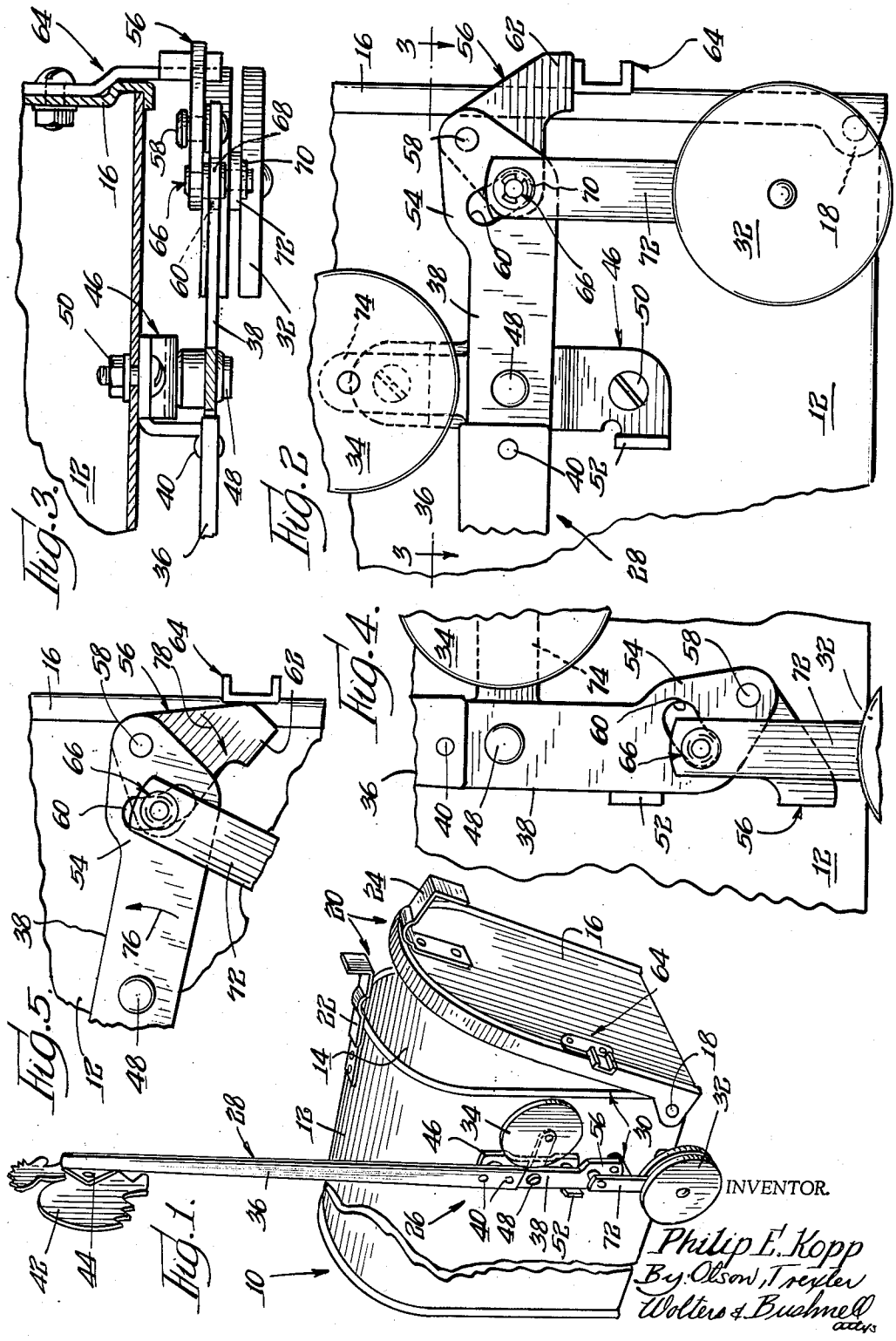


Fig. 3.

Fig. 2

Fig. 4.

Fig. 5.

Fig. 1.

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SIGNALING ARRANGEMENT FOR A RURAL MAILBOX

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This invention relates generally to mechanical signaling devices and especially to signaling arrangements for use with a rural mailbox.

In accordance with conventional practice, a signal arm is mounted on the side of a rural mailbox so that the presence of mail for pick up can be indicated by raising the arm. Specifically, the arm is fashioned with a slot; and a rivet is disposed to pass slidably through the slot fixedly to engage the sidewall of the box. Thus, the signal arm can be situated in horizontal orientation under normal circumstances and re-situated in vertical orientation to signal the presence of mail in the box. In the past, some of these signal arm devices have been arranged so as to require manual raising of the signal and manual lowering. Moreover, postal regulations do not permit mail carriers to operate any signaling arrangement for indicating that mail has been delivered. Accordingly, numerous automatically operated signaling devices have been proposed for this purpose and many of these devices have incorporated springs. Arrangements of this latter type have proved susceptible of failure due to weather weakening the spring to render it susceptible of fracture and due to moisture collecting in the coils of the spring to rust adjacent coils together or to freeze in the spring rendering it inoperative. Furthermore, certain of these spring operated devices have presented a hazard to the mail carriers.

Accordingly, an important object of the present invention is to provide a new and improved signaling arrangement for use with rural mailboxes.

Another object of the invention is to provide a signaling arrangement of the described character which automatically raises a signal arm into vertical orientation upon opening of the mailbox door.

Still another object of the invention is to provide a signaling arrangement for use with a rural mailbox, which arrangement is operated strictly by gravitational means.

Yet another object of the invention is to provide a signaling arrangement for use with a rural mailbox, which arrangement operates without interference with the door of the mailbox.

Additional objects and features of the invention pertain to the particular structure and arrangement whereby the above objects are attained.

An arrangement in accord with the invention includes a signal arm adapted to be pivotally mounted to the side of a mailbox exteriorly thereto, latch means adapted to act between the signal arm and the door of the mailbox selectively to hold the arm in horizontal orientation when the door is closed and automatically to release the arm upon opening of the door, and weight means gravitationally acting on the arm to bias the arm into vertical orientation.

The invention, both to its structure and mode of operation, will be better understood by reference to the following disclosure and drawing forming a part thereof, wherein:

FIG. 1 is a perspective view of a rural mailbox incorporating a signaling arrangement constructed in accordance with the present invention;

FIG. 2 is an enlarged, fragmentary side elevational view of the mailbox of FIG. 1, showing the signal arm latched in horizontal orientation;

FIG. 3 is a view taken through the section 3—3 of FIG. 2;

FIG. 4 is a fragmentary, side elevational view similar to the showing of FIG. 2 but illustrating the signal arm in vertical orientation; and

FIG. 5 is a fragmentary, side elevational view showing action of the pawl and the strike bracket upon return of the signal arm from vertical orientation to horizontal orientation.

Referring now in detail to the drawings, specifically to FIG. 1, a rural mailbox indicated generally by the numeral **10** will be seen to include a body **12** having a horizontally opening portal **14** at one end. A door **16** is swingably mounted to the bottom of body **12** by trunnions **18**, the door **16** being arranged for opening and closing of the portal **14**. The door **16** is secured in position closing the portal **14** by means of a conventional friction latch **20**, latch **20** comprising a bumped strap **22** which is affixed to body **12** and a cooperatively shaped bracket **24** which is fastened to door **16**.

In accordance with the present invention, a signaling arrangement indicated generally by the numeral **26** is assembled with the mailbox **10** to provide an indication of mail having been delivered to the box. As will be seen from an inspection of FIG. 1, the signaling arrangement **26** includes a signal arm unit **28**, a latch unit **30** and a weight unit including weights **32** and **34**.

The signal arm unit **28** includes an arm **36** and an intermediate member **38** which is suitably secured to the arm **36** as by rivets **40**. A signal element **42** desirably fashioned in the silhouette of a rooster is fastened to the free end of arm **36** transversely thereof by one or more flange elements **44** at the end of the arm **36**. It is to be recognized that the arm **36** is fashioned to be of such a length and signal element **42** affixed to the flange **44** in such a manner that the element **42** does not interfere with the side of mailbox body **12** when the signal arm unit **28** is disposed in horizontal orientation.

Turning to FIGS. 2 and 3, the signal arm unit **28** will be seen pivotally mounted to the side of mailbox body **12** in the forward quarter of the length thereof by means of a mounting bracket **46** and a pivot stud **48**, stud **48** extending through aligned apertures in the intermediate member **38** and the vertical plate portion of bracket **46**. The bracket **46** is suitably fastened to the side of mailbox body **12** as by nut and bolt arrangements **50**; and the bracket **46** is provided with a laterally extending arm or stop **52** for purposes of arresting signal arm unit **28** in vertical orientation as will be described more fully hereinafter.

The intermediate member **38** terminates in a mounting plate portion **54** to which a pawl **56** is swingably mounted by means of a pivot pin **58**, the pawl **56** comprising one component of the latch unit **30**. Plate portion **54** defines an arcuate slot **60** intermediate the pin **58** and the pivot stud **48**, slot **60** being fashioned with pin **58** as its center of curvature for purposes which will become more apparent hereinafter. The pawl **56** includes a foot **62** which

is adapted to coact with a strike bracket **64**, bracket **64** being secured to door **16** to extend beyond the edge thereof into approximate alignment transversely of the arm unit **28**. Strike bracket **64** comprises another component of the latch unit **30**.

With continued reference to FIGS. 2 and 3, a pin element **66** will be seen to define a shoulder rivet portion at one end whereby to facilitate its attachment to pawl **56**. A bushing portion **68** of the pin element **66** operates slidably in the slot **60**, and a retainer ring **70** is fitted about the laterally outermost end of the pin element **66** to hold a weight strap **72** in place on the pin element, weight strap **72** swingably mounting the weight **32** to the pawl **56** and thereby to the signal arm unit **28** by virtue of the interattachment of the pawl and the arm unit which is achieved through pivot pin **58**. It is to be noted that the length of strap **72** spaces the center of weight **32** a short distance from the pin element **66**, weight **32** being also spaced laterally apart from the mailbox body **12** and the door **16**.

The companion mass defined by weight **34** is rigidly mounted to the intermediate member **38** by an arm **74** which spaces the center of mass of weight **34** apart from the axis of the signal arm unit **28**. Specifically, the center of weight **34** is arranged to be located vertically above the pivot stud **48** when the signal arm unit **28** is disposed in horizontal orientation. This is well shown in FIG. 2.

For purposes of affording a more complete understanding of the invention, it is advantageous now to provide a functional description of the mode in which the component parts cooperate.

Let us assume that the signal arm unit **28** is disposed in horizontal orientation, as is shown in FIG. 2, with the foot **62** of pawl **56** abuttingly overlying the strike bracket **64**. In this configuration of the parts, weight **32** draws the strap **72** into a plumb condition in which the pin element **66** exerts a counterclockwise force, as is viewed in FIG. 2, on pawl **56**. This force also urges the pin element **66** into the lower end of slot **60** to stop rotation of the pawl and maintain it in coactable relationship with the strike bracket **64**.

Upon opening of the door **16** as upon mail being delivered to the box **10**, strike bracket **64** is automatically rotated out of abutting relationship with the foot **62**; and the weight **32** thereupon causes the signal arm unit **28** to pivot about stud **48**, raising the signal arm unit **28** into vertical orientation as is generally shown in FIGS. 1 and 4. It will be observed that, as the signal arm unit **28** approaches the vertical, the force available from weight **32** becomes minimal due to the shortening of the moment arm which is incurred as the weight pivots about pin element **66**. However, it will be further noted that weight **34** at this time provides an appreciable moment to urge the heel of intermediate member **38** against the stop **52** whereby to hold the signal arm unit **28** in vertical orientation.

When the mail has been inserted in box **10**, the door **16** is closed; and the signal arm unit **28** remains in vertical orientation signaling the presence of the mail in the box. After the mail has been removed from the box by the addressee, the door **16** is again returned to its position closing the portal **14** whereupon it will become desirable to return the sginal arm unit **28** to its horizontal orientation. This is achieved by rotating the mounting plate portion **54** of intermediate member **38** in the general direction of arrow **76** as shown in FIG. 5. When the pawl **56** abuts the strike bracket **64**, the force acting between the strike bracket and the pawl causes the pawl to rotate in the direction of arrow **78** which rotation is permitted by the slot **60** accommodating the corresponding movement of pin element **66**. After rotation of intermediate member **38** in the direction of arrow **76** raises pawl **56** above strike bracket **64**, the gravitational bias of weight **32** again draws the pawl into the position shown in FIG. 2 whereupon the signal arm unit **28** may be released; and the signaling arrangement **26** is again cocked and ready for further operation.

The specific example herein shown and described should be considered as illustrative only. Various changes in structure may occur to those skilled in the art; and these changes are to be understood as forming a part of this invention insofar as they fall within the spirit and scope of the appended claims.

The invention is claimed as follows:

1. A signaling arrangement for use with a rural mailbox, said arrangement comprising:
   (*a*) signal arm means adapted to be pivotally mounted to a side of said mailbox exteriorly thereto;
   (*b*) latch means adapted to act between said signal arm means and the door of said mailbox selectively to hold said arm means in horizontal orientation when said door is closed and automatically to release said arm means upon opening of said door;
   (*c*) stop means abutting said arm means upon vertical orientation thereof; and
   (*d*) weight means gravitationally acting on said arm means to bias said arm means into vertical orientation, including a first mass swingably mounted to said signal arm means at a point intermediate the pivot thereof and said latch means, said weight means further including a second mass rigidly mounted to said signal arm means, said second mass urging said arm means into abutting relationship with said stop means when said arm means is disposed in vertical orientation.

2. A signaling arrangement for use with a rural mailbox, said arrangement comprising:
   (*a*) signal arm means adapted to be pivotally mounted to a side of said mailbox exteriorly thereto;
   (*b*) latch means adapted to act between said signal arm means and the door of said mailbox selectively to hold said arm means in horizontal orientation when said door is closed and automatically to release said arm means upon opening of said door;
   (*c*) weight means gravitationally acting on said arm means to bias said arm means into vertical orientation, including a first mass swingably mounted to said signal arm means at a point intermediate the pivot thereof and said latch means, the center of said mass being spaced apart from said point, said weight means further including a second mass rigidly mounted to said signal arm means, the center of said second mass being spaced vertically above said pivot when said arm means is disposed in horizontal orientation.

3. A signaling arrangement for use with a rural mailbox including a mail-receiving body having a horizontally opening portal and a door swingably mounted to the bottom of said body for opening and closing said portal, said signaling arrangement comprising:
   (*a*) signal arm means adapted to be pivotally mounted intermediate its ends to a side portion of said body exteriorly thereto, said arm means including mounting means at one end thereof;
   (*b*) a strike bracket adapted to be secured to said door to extend beyond the edge of said door into alignment transversely of said arm means;
   (*c*) pawl means pivotally attached to said mounting means, said pawl means including a foot coactable with said bracket in holding said arm means in horizontal orientation and further including a pin extending laterally therefrom to slide in a slot formed in said mounting means generally intermediate the pivot of said arm means and the pivot of said pawl means; and
   (*d*) weight means swingably mounted on said pin in spaced apart relationship therewith, said weight means gravitationally acting on said arm means to bias said arm means into vertical orientation and gravitationally acting on said pawl means to bias said

foot into confronting engagement with said bracket when said arm means is disposed in horizontal orientation with said foot overlying said bracket, said slot permitting displacement of said foot past said bracket upon return of said arm means from vertical to horizontal orientation when said door is disposed closing said portal.

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