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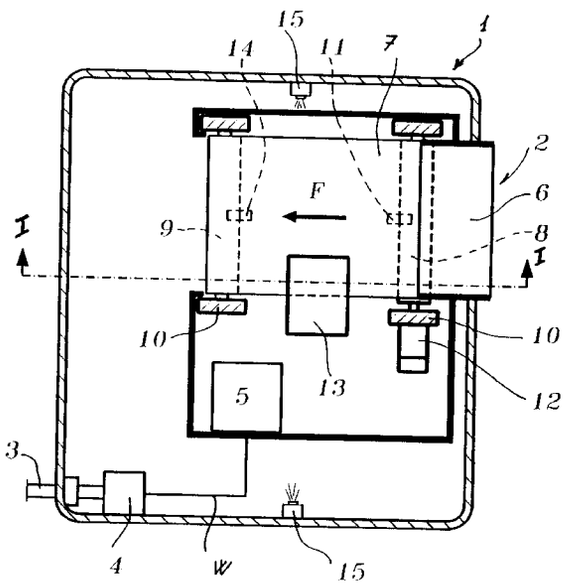
(54) Mail box associated with a device for the treatment of mailed correspondence

(57) An electronic programmer (5) controls a first optical means (11) that sees whether a letter has been correctly mailed and, in the positive case, activates an electric motor (12) of a means (7) that conveys an accepted letter into a device (13) that stamps the letter with the date and time, and a second optical means (14) sees whether the stamp impressed is correct and, in the positive case, re-starts said motor (12) so that the letter (L) is dropped to the bottom of the box (1), while in the negative case it re-starts said motor (12), so that the letter be rejected to the slot (2) of the mail box (1), a third optical means (15) checks that the pile of letters (16) on the bottom of the box (1) does not rise above a pre-established level, in which case further letters mailed are rejected by means of a signal (17) to the user and the stop of the electric motor (12)(Fig. 1).

FIG. 1



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Description

The present invention concerns a mail box associated with a device for the treatment of mailed correspondence.

The invention is within the field of the treatment of correspondence posted through mail boxes.

It is well known that correspondence is picked up from each of the mail boxes distributed in inhabited areas and taken to offices for the handling and stamping and re-distribution according to destinations. Stamping takes place after manual selection and alignment of the correspondence based on its format, by introducing stacks of letters into a stamping machine, for example stacks of about one hundred letters. These operations must be conducted on the same day the correspondence is picked up from the mail boxes or the following day.

The main disadvantages of the above described process consist in the long handling times, the lack of certainty regarding the date of stamping compared to the date of mailing and the high costs; one must especially face:

- the employment of numerous personnel for the control of staff assigned to emptying the mail boxes and to the stamping of letters,
- the cost for the purchase and maintenance of stamping machines, tables, etc.
- the availability of premises suited to these operations.

The invention, as characterized in the claims herein, is a mail box associated with a device for the treatment of correspondence mailed, and comprises:

- a connection to the external electricity network and a transformer to lower the voltage of said mains in order to feed the following equipment at safety levels;
- a programmer suited to controlling a first optical means that sees whether a letter that has been correctly mailed and can be accepted, and, in the positive case, that activates the motor of a conveyor means that carries the accepted letter into a device that stamps the letter with date and time, a second optical means that sees whether the stamp put on the letter is correct, and, in the positive case, re-starts the motor, in order to drop the letter to the bottom of the box, a third optical means that checks the level of the pile of letters on the bottom of the box in order to interrupt the handling of correspondence when said level reaches a pre-established height.

More especially, the mail box invented comprises:

- a connection to the public electric network,
- a transformer that transforms the voltage of the public electric network to a low operative voltage (e.g. 12 volts) in order to feed:
- a conveyor means next to a receiving tray in turn next to the slot, so as to allow a user to rest a letter partly on said tray and partly on said conveyor means,
- an electronic programmer comprising a clock that controls:
- a first optical reader positioned above said receiving tray that checks that each letter has been introduced with the prescribed orientation and, in the negative case, sends a luminous and/or acoustic signal to the user and, in the positive case, enables the programmer to activate:
- an electric motor that powers said conveyor means for the time necessary for the letter to arrive and stop under a:
- stamping device that, a moment after the electric motor has stopped, receives the command to stamp the letter with the date and time continuously updated by said clock and re-starts the motor a moment after the stamp has been impressed to carry the letter under:
  a second optical reader connected to said clock to check that the stamp impressed on each letter is the same as the clock and, in case of correct stamping, activates said electric motor in order to carry forward the letter until it drops to the bottom of the box and, in case of incorrect stamping, activates said electric motor to return the letter to the slot,
- a third optical reader that checks the level of the pile of letters in the box and causes the rejection of any further mail when the pile reaches a set level by activating said luminous and/or acoustic signal and interrupting the feeding of the motor,
- a stand-by battery that allows the functioning of the device in case of black-out on the public network.

It is understood that one unit of such a device can be installed on boxes with only one slot, that two may be installed on a box with two slots, for example one for in-city correspondence and another for that with different destinations, and so on, according to the organization of the postal administration.

The main advantages of the invention lie in the reduction of the overall cost for the treatment of correspondence and in offering the users and the postal administration a guarantee with regards to the date

stamped on the letters.

Moreover, the device invented can be installed on new mail boxes, appropriately constructed in order to hold such a device, or on existing mail boxes, by means of easy adaptations.

In order to better understand the invention one embodiment of the same will be described with reference to the drawings attached in which

- FIG. 1 is a horizontal section of a mail box at the level of the medial plane of the slot, and

- FIG. 2 is a cross section along I-I of Fig. 1.

Figures 1 and 2 illustrate a mail box 1 with a single slot 2 protected by a conventional shutter S; an electrical connection 3 between an external electric network and a transformer 4 to feed 12 Volts to a programmer 5 with a clock by means of cable W; at the lower level of slot 2 there is a tray 6 on which to place a letter that is at the same level as the upper band of a conveyor belt 7 stretching between a motor roller 8 and an idle roller 9 held by supports 10; when a letter, not shown, is placed on tray 6 and belt 7, the first optical reader 11 sees that the letter has been mailed correctly, that is with the side bearing the address facing upwards and the part bearing the postage stamps facing left and, in the positive case, activates the electric motor 12 that moves the conveyor belt 7 in the direction of the arrow F for a distance sufficient to carry the letter into the stamping device 13; when the letter has correctly reached the stamping device 13, updated by the clock, said device 13 receives the command to lower the stamp on the letter, after this the electric motor 12 re-starts and the second optical reader 14 checks that the stamp impressed on the letter complies with the correct date and time and then drops the letter L (arrow F1) to the bottom of the box or to reject the letter to the slot 2; the third optical reader, in the form of a photo-electric cell 15, checks the level of the pile of letters on the bottom of the box; when the photo-electric cell intercepts a letter on top of pile 16, a signal to programmer 5 stops the treatment of mailed letters and lights a red bulb 17 set above slot 2 to warn the users.

Claims

1. Mail box (1) associated with a device for the treatment of mailed correspondence comprising a connection (3) between an external electric network and a transformer (4) that lowers the voltage of said network to a safety value, characterized in that it includes the following equipment fed by said safety voltage:

   - a programmer (5) suited to controlling a first optical means (11) that sees whether a letter has been correctly mailed in order to be accepted and, in the positive case, activates an electric motor (12) of a means (7) that conveys the accepted letter into a device (13) that stamps the letter with the date and time, a second optical means (14) that sees whether the stamp impressed on the letter is correct and, in the positive case, will re-start the motor (12) in order to drop the letter to the bottom of the box and a third optical means (15) that checks the level of the pile of letters (16) on the bottom of the box in order to reject treatment of further letters mailed when said level has reached a pre-established height.

2. Mail box (1) according to claim 1 characterized in that it comprises:

   - a tray (6) associated with slot (2) of box (1) and to a conveyor means (7) of the mailed letter on which a user places the letter.

   - an electronic programmer (5) comprising a clock that controls:

   - a first optical reader (11) positioned above said tray (6) associated with the slot (2) that controls that each letter is placed with the prescribed orientation and, in the negative case, sends a luminous and/or acoustic signal (17) for the user outside the box and interrupts the power to said electric motor (12) and, in the positive case, enables the electronic programmer (5) to activate:

   - said electric motor (12) that activates said conveyor means (7) for the time necessary for the letter to arrive and stop under:

   - a stamping device (13) that, a moment after the electric motor (12) has stopped, receives the command to stamp the letter with the date and time kept continuously updated by said clock and re-starts the electric motor (12) a moment after the stamp has been impressed to carry the letter under:

   - a second optical reader (14) connected to said clock to check that the stamp impressed on the letter complies with the clock and, in case of correct stamp, activates said electric motor (12) to carry the letter forward until it drops to the bottom of the box and, in case of incorrect stamp, activates said electric motor (12) to bring the letter back to the slot (2),

   - a third optical reader (15) that checks the level of the pile of letters (16) on the bottom of the box and causes the rejection of further letters mailed when the pile (16) has reached the set level activating said signal (17) to the user and interrupting power to the electric motor (12),

- a stand-by battery that allows functioning of the device in case of current breaks on the external electric network.

FIG. 1

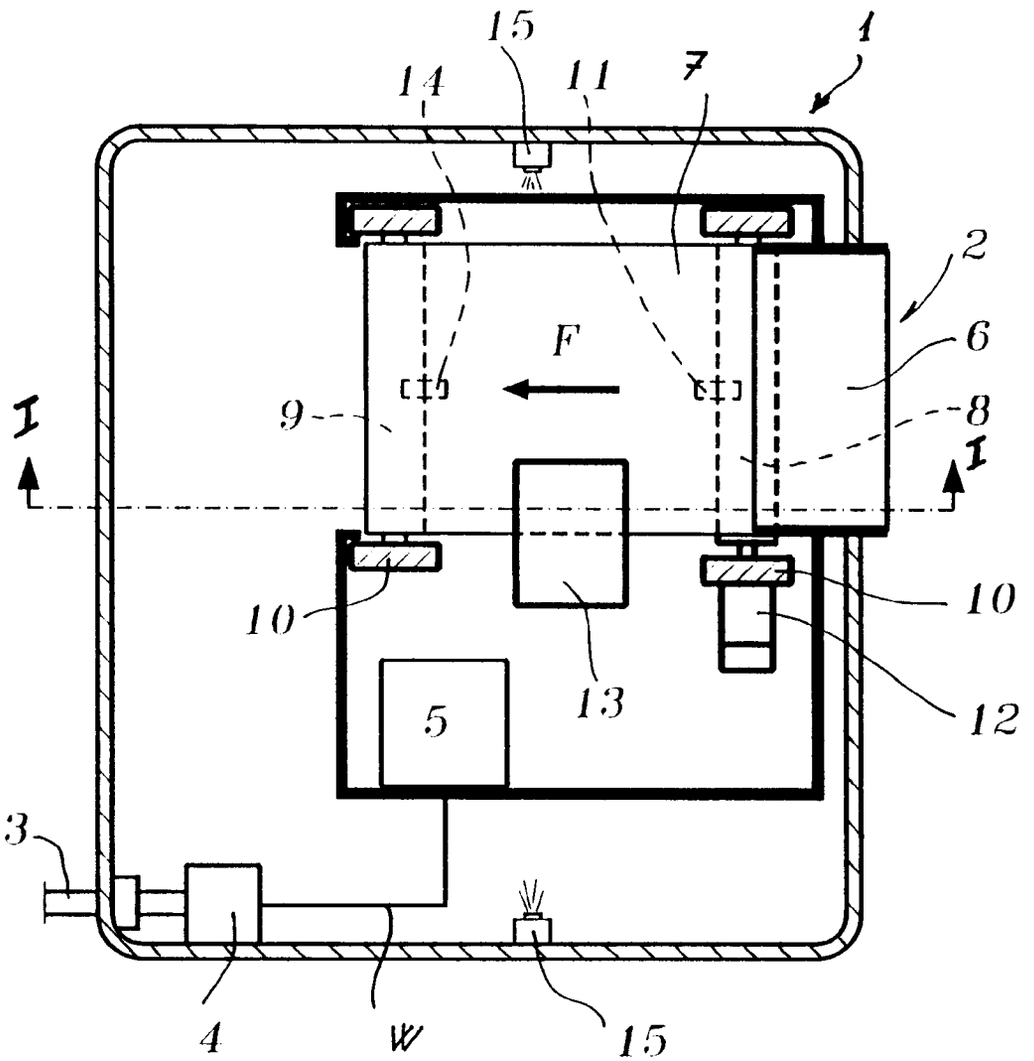
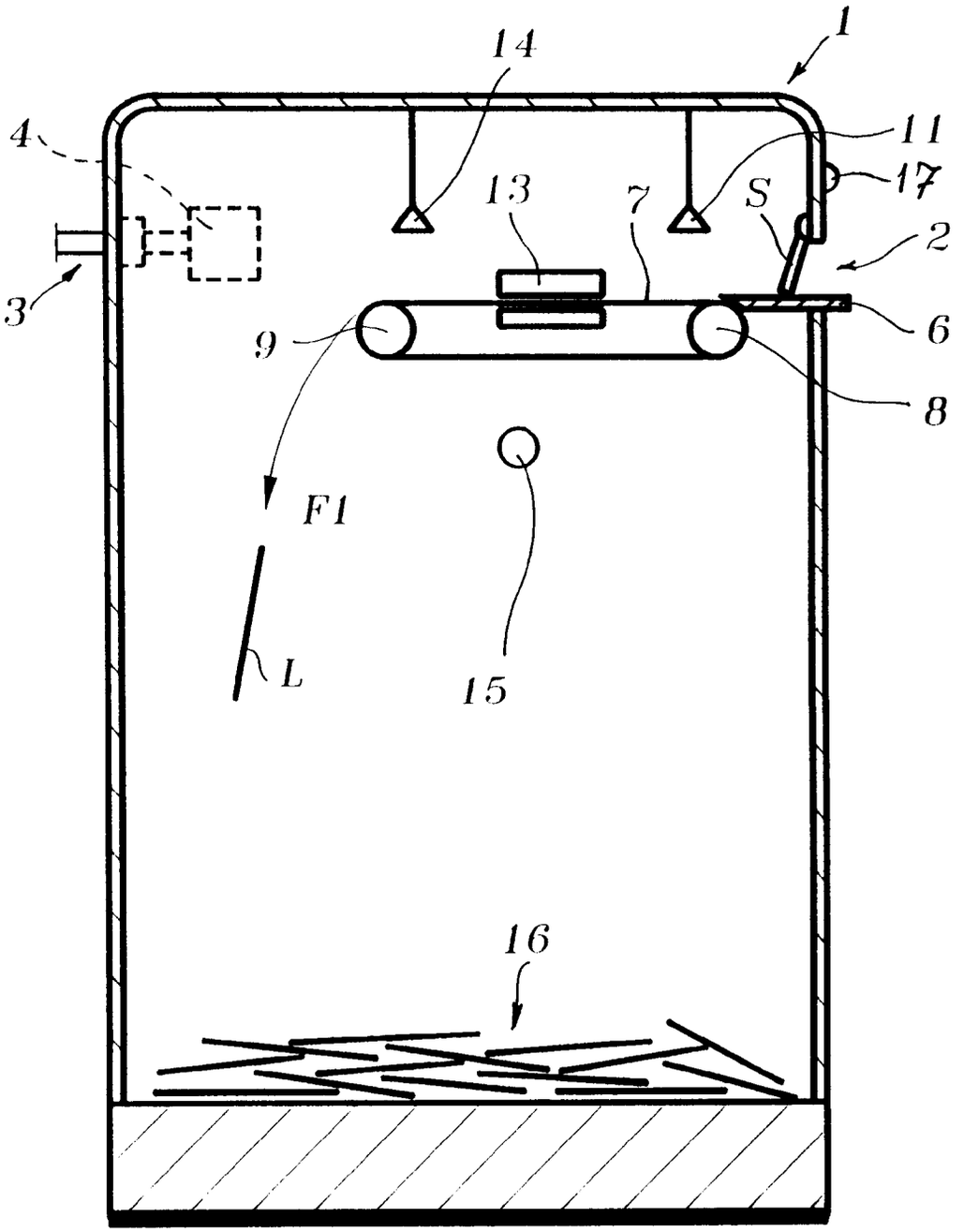


FIG.2



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EUROPEAN SEARCH REPORT

Application Number
EP 95 11 0857

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	EP-A-0 430 679 (NCR CO) 5 June 1991 * column 9, line 52 - column 11, line 33; figure 2 *	1	A47G29/122 G07F7/10
A	EP-A-0 164 649 (OMRON TATEISI ELECTRONICS CO) 18 December 1985		
A	PATENT ABSTRACTS OF JAPAN vol. 001 no. 163 (E-078) ,22 December 1977 & JP-A-52 108891 (TOSHIBA CORP) 12 September 1977, * abstract *		
A	US-A-4 747 354 (FEE KEVIN A ET AL) 31 May 1988		
A	US-A-3 998 155 (COTHRAN MARTIN D ET AL) 21 December 1976		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A47G
G07F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12 October 1995	Vistisen, L

CATEGORY OF CITED DOCUMENTS

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