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

Mit eines Vorrichtung zur Behandlung von postbeförderte Korrespondenz verberbundener Briefkasten

Boîte crux lettres associée à un dispositif pour le traitement de correspondance

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- **PATENT ABSTRACTS OF JAPAN vol. 001 no. 163 (E-078) ,22 December 1977 & JP-A-52 108891 (TOSHIBA CORP) 12 September 1977,**

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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 according to the characterizing part 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 may comprise:

- 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:
   - the first optical reader means comprises a (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:
   - the stamping device (13), 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:
   - the second optical means comprises a 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),
   - the third optical means comprises a 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.

Patentansprüche

1. Briefkasten (1) mit einer Vorrichtung zur Bearbeitung abgeschickter Korrespondenz mit einer Verbindung (3) zwischen einem externen elektrischen Netzwerk und einem Wandler (4), der die Spannung des Netzwerks auf einen Sicherheitswert ver-

mindert,
dadurch **gekennzeichnet,** daß sie die folgende Ausstattung aufweist, die durch die Sicherheitsspannung gespeist wird:

- eine Programmeinrichtung (5), die zur Steuerung eines ersten optischen Mittels (11) geeignet ist, die feststellt, ob ein Brief korrekt abgesandt ist, um akzeptiert zu werden, und, im positiven Fall, einen elektrischen Motor (12) eines Mittels (7) zu aktivieren, der den akzeptierten Brief in eine Vorrichtung (13) fördert, die den Brief mit dem Datum und der Zeit stempelt, eines zweiten optischen Mittels (14), das feststellt, ob der auf dem Brief angebrachte Stempelaufdruck korrekt ist und, im positiven Fall, den Motor (12) erneut startet, um den Brief auf den Boden des Kastens fallen zu lassen, und ein drittes optisches Mittel (15), das den Pegel des Briefstapels (16) auf dem Boden des Kastens überprüft, um die Bearbeitung weiterer abgeschickter Briefe zurückzuweisen, wenn der Pegel eine vorgegebene Höhe erreicht hat.

2. Briefkasten (1) nach Anspruch 1,
dadurch **gekennzeichnet,** daß er aufweist:

- eine Ablage (6), die dem Schlitz (2) des Kastens (1) und einem Fördermittel (7) für den abgeschickten Brief zugeordnet ist und auf der ein Benutzer den Brief plaziert,
- eine elektronische Programmeinrichtung (5) mit einem Takt, der steuert:
- das erste optische Mittel mit einem Leser (11), der oberhalb der Ablage (6), die dem Schlitz (2) zugeordnet ist, angeordnet ist, und steuert, daß jeder Brief in der vorgegebenen Orientierung plaziert ist, und, im negativen Fall, ein Licht und/oder akustisches Signal (17) für den Benutzer außerhalb des Kastens absendet und die Leistung für den elektrischen Motor (12) unterbricht, und, im positiven Fall, es der elektronischen Programmeinrichtung (5) ermöglicht, zu aktivieren:
- den elektrischen Motor (12), der das Fördermittel (7) für eine Zeit aktiviert, die erforderlich ist, damit der Brief erreicht und anhält unter:
- der Stempelvorrichtung (13), einen Moment, nachdem der elektrische Motor (12) angehalten hat, die den Befehl empfängt, den Brief mit dem Datum und der Zeit zu stempeln, die kontinuierlich durch den Takt aktualisiert wird, und den elektrischen Motor (12) einen Moment, nachdem der Stempel aufgebracht wurde, erneut startet, um den Brief unter:
- das zweite optische Mittel zu bringen, das einen Leser (14) aufweist, der mit dem Takt verbunden ist, um zu überprüfen, daß der auf dem Brief aufgebrachte Stempelaufdruck mit dem Takt übereinstimmt, und, im Fall der korrekten Stempelung, den elektrischen Motor (12) aktiviert, um den Brief weiterzutransportieren, bis er auf den Boden des Kastens fällt, und, im Fall einer inkorrekten Stempelung, den elektrischen Motor (12) aktiviert, um den Brief zurück zu dem Schlitz (2) zu bringen,
- das dritte optische Mittel, das einen Leser (15) aufweist, der den Pegel des Briefstapels (16) auf dem Boden des Kastens überprüft und die Zurückweisung weiterer abgesandter Briefe veranlaßt, wenn der Stapel (16) den eingestellten Pegel erreicht, wobei das Signal (17) an den Benutzer abgegeben wird und die Leistung des elektrischen Motors (12) unterbrochen wird,
- eine Bereitschaftsbatterie, die die Funktion der Vorrichtung für den Fall ermöglicht, daß in dem externen elektrischen Netzwerk eine Stromunterbrechung auftritt.

Revendications

1. Boîte aux lettres (1) associée à un dispositif pour le traitement de correspondance, comprenant une liaison (3) entre un réseau électrique extérieur et un transformateur (4) qui abaisse la tension du réseau à une valeur de sécurité,
caractérisée en ce qu'
elle comprend les équipements ci-après alimentés par la tension de sécurité :

- un programmateur (5) destiné à commander un premier moyen optique (11) qui regarde si une lettre a été correctement expédiée pour être acceptée et, dans l'affirmative, active un moteur électrique (12) d'un moyen (7) qui transporte la lettre acceptée dans un dispositif (13) destiné à timbrer la lettre avec la date et l'heure,
- un second moyen optique (14) qui regarde si le timbre imprimé sur la lettre est correct et, dans l'affirmative, doit redémarrer le moteur (12) pour laisser tomber la lettre dans le fond de la boîte et,
- un troisième moyen optique (15) qui vérifie le niveau de la pile de lettres (16) dans le fond de la boîte de manière à rejeter le traitement d'autres lettres expédiées lorsque le niveau ci-dessus a atteint une hauteur prédéterminée.

2. Boîte aux lettres (1) selon la revendication 1,
caractérisée en ce qu'
elle comprend :

- un plateau (6) associé à la fente (2) de la boîte (1) et un moyen de convoyeur (7) de la lettre

expédiée, plateau et convoyeur sur lesquels un utilisateur place la lettre,

- un programmateur électronique (5) comprenant une horloge qui commande :
- le premier moyen optique (11) comprenant un lecteur optique placé au-dessus du plateau (6) associé à la fente (2) et servant à contrôler que chaque lettre est placée avec l'orientation prescrite, de façon que dans la négative, le premier moyen optique envoie un signal lumineux et/ou acoustique (17) à l'utilisateur se trouvant à l'extérieur de la boîte et coupe la puissance d'alimentation du moteur électrique (12), et que dans l'affirmative, le premier moyen optique déclenche le programmateur électronique (5) pour activer :
- le moteur électrique (12) qui actionne le moyen de convoyeur (7) pendant le temps nécessaire pour que la lettre arrive et s'arrête au-dessous
    - du dispositif de timbrage (13) qui, un certain temps après l'arrêt du moteur (12), reçoit la commande pour timbrer la lettre avec la date et l'heure continuellement mises à jour par l'horloge, et redémarre le moteur électrique (12) un certain temps après l'impression du timbre, pour transporter la lettre au-dessous
    - du second moyen optique (14) comprenant un lecteur optique connecté à l'horloge pour vérifier que le timbre imprimé sur la lettre est conforme à l'horloge, et qui dans le cas d'un timbre correct, active le moteur électrique (12) pour qu'il fasse avancer la lettre jusqu'à ce qu'elle tombe dans le fond de la boîte, et dans le cas d'un timbre incorrect, active le moteur électrique (12) pour qu'il ramène la lettre à la fente (2),

- le troisième moyen optique (15) comprend un lecteur optique qui vérifie le niveau de la pile de lettres (16) sur le fond de la boîte et produit le rejet d'autres lettres expédiées lorsque la pile (16) a atteint le niveau de réglage activant le signal (17) destiné à l'utilisateur et coupant l'alimentation de puissance du moteur électrique (12),
- une batterie de réserve permet le fonctionnement du dispositif en cas de coupure de courant sur le réseau électrique extérieur.

FIG. 1

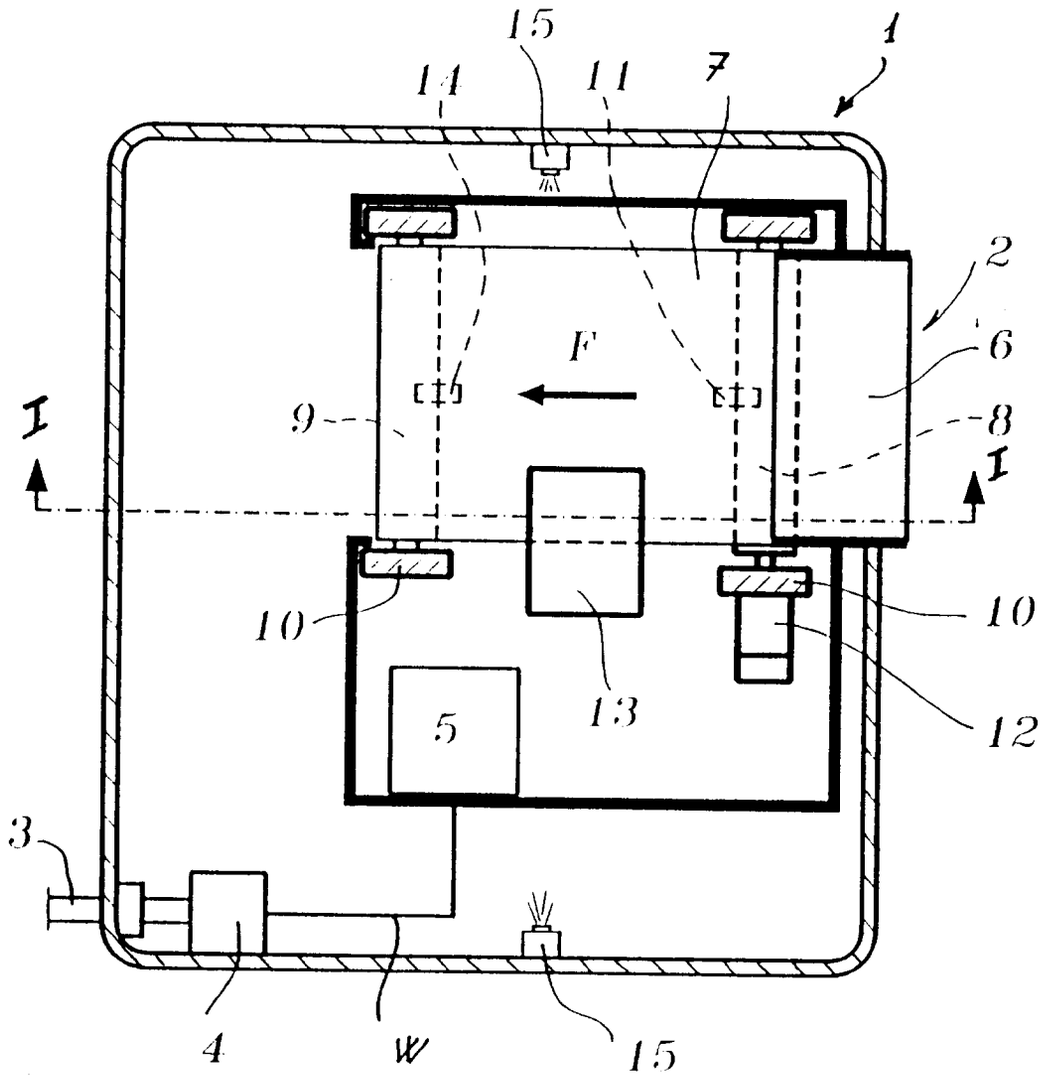

FIG.2