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(54) Tilting of mail containers

(57) A device for tilting a mail container (7) which can be filled with items of mail. The mail container (7) has parallel first side walls (7a), second side walls (7b) which adjoin the first side walls (7a) substantially at right angles thereto, an underside which is closed off by a base (7d) and an open top side (7c). The device comprises a frame (not shown), a holder (2) for receiving a mail container (7) and an axle (3) which is connected to the holder (2) and can be rotated about its centre axis. The axle (3) is mounted in the frame in such a manner

that, during use, the axle (3) is positioned at an oblique angle with respect to the base of the mail container (7) and at an oblique angle with respect to the second walls (7b), in order, in the event of the axle being rotated, for the holder (2) together with the mail container (7) to be tilted between a starting position, in which the underside of the mail container (7) faces downwards, and a position in which the underside of the mail container (7) is directed obliquely upwards. Furthermore, the axle is positioned at an oblique angle with respect to the first side walls.

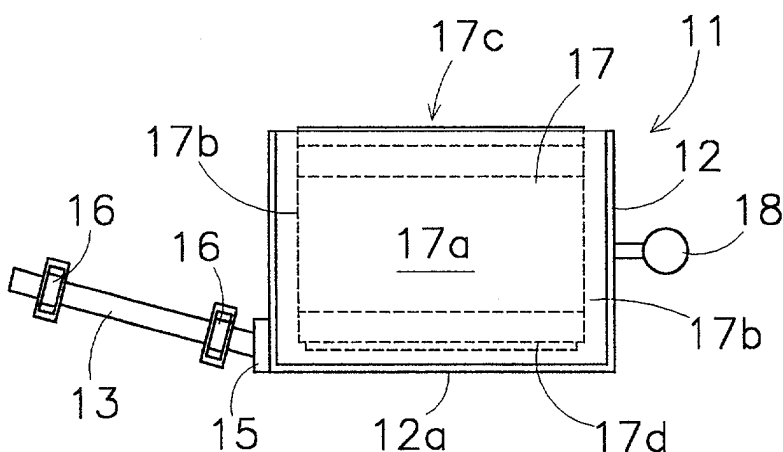


Fig 2a

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Description

[0001] The invention relates to a device for tilting a mail container which can be filled with items of mail and has parallel first side walls, second side walls which adjoin the first side walls substantially at right angles thereto, an underside which is closed off by a base and an open top side, which device comprises a frame, a holder for receiving a mail container and an axle which is connected to the holder and can rotate about its centre axis, which axle is mounted in the frame in such a manner that, during use, the axle is positioned at an oblique angle with respect to the base of the mail container and at an oblique angle with respect to the second walls, in order, in the event of the axle being rotated, for the holder together with the mail container to be tilted between a starting position, in which the underside of the mail container faces downwards, and a position in which the underside of the mail container is directed obliquely upwards.

[0002] A device of this type is known for use with sorting machines in mail sorting offices. The items of mail are generally supplied in a mail container, standing upright next to one another on the base of the mail container. The mail containers have to be emptied in order for it to be possible for the items of mail then to be fed individually or in groups to the sorting machine. To enable the mail containers to be emptied without a person having to lift up the mail container by hand and then turn it over, it is possible to use a device of the type described above. The mail container is, for example, pushed sideways into the holder, after which the container is tilted as a result of the axle being rotated.

[0003] In the known device, the axle extends parallel to the first side walls of the mail container, with the result that the mail container is rotated out of the starting position, about the axle, into the tilted position; in the tilted position, the first walls of the mail container extend parallel to the first walls in the starting position. During the tilting operation, an operator can guide the mail manually during the rotary movement so that the mail container is emptied in a controlled way.

[0004] It is an object of the invention to provide an alternative device for tilting a mail container.

[0005] This object is achieved by a device in accordance with the preamble of claim 1 in which the axle is also positioned at an oblique angle with respect to the first side walls.

[0006] The device according to the invention makes it possible for the mail container, as a result of the axle being rotated, to execute a tilting movement which is such that not only is the underside of the mail container directed obliquely upwards, but also the orientation of the mail container is changed.

[0007] In a preferred embodiment, the angle between the axle and the first side walls is 45°, with the result that the second side walls in the tilted position extend parallel to the first side walls in the starting position.

[0008] The invention will be explained in more detail in the following description of figures with reference to the drawing, in which:

Fig. 1a diagrammatically depicts a device according to the prior art in a starting position,

Fig. 1b shows the device shown in Fig. 1a in a tilted position,

Fig. 2a shows a front view of a device according to the invention in a starting position,

Fig. 2b shows a view from the left-hand side in Fig. 2a of the device according to the invention in the starting position,

Fig. 2c shows a plan view of the device according to the invention in the starting position,

Fig. 3a shows a front view of the device according to the invention in a tilted position,

Fig. 3b shows a view from the left-hand side in Fig. 3a of the device according to the invention in the tilted position,

Fig. 3c shows a plan view of the device according to the invention in the tilted position.

[0009] Figs. 1a and 1b show a device 1 according to the prior art. The device 1 comprises a holder 2 and an axle 3. The axle 3 is connected to the holder 2 by means of securing means 5. The axle 3 is mounted, in such a manner that it can be rotated about its centre axis, on a frame (not shown) of the device by means of bearings 6. At one end, actuating means in the form of a handle 8, which a person can use to rotate the axle 3, are arranged on the axle 3.

[0010] A mail container 7 has been positioned in the holder 2. The mail container 7 has a base 7d, first side walls 7a which are positioned opposite one another and extend perpendicular to the base, side walls 7b which adjoin the first side walls at right angles thereto, and an open top side 7c. The axle 3 extends parallel to the first side walls 7a. Fig. 1a shows how the holder 2 together with the mail container 7 are located in a starting position, in which the base 7d is positioned horizontally and the open top side 7c of the mail container 7 faces upwards. From the starting position shown in Fig. 1a, the holder 2 together with the mail container 7, through actuation of the actuation means 8, can be tilted into a tilted position as a result of a rotation on the part of the axle 3 indicated by arrow 4. Fig. 1b shows the tilted position, from which it is clearly apparent that the base 7d is facing obliquely upwards. Perhaps superfluously, it is also pointed out that on account of the rotation about the axle 3 that part of the axle 3 which is indicated by a dashed

line in Fig. 1b is in this view located behind the holder 2, and that the first side wall 7a which is visible in Fig. 1a is no longer visible in Fig. 1b. Instead, the opposite first side wall 1a is visible in Fig. 1b.

[0011] Figs. 2a to 2c show an embodiment of a device 11 according to the invention. The device 11 comprises a holder 12 having a base 12a and three side walls 12b, 12c and 12d. The device also comprises an axle 13 which is connected to the holder 12 by means of securing means 15. The axle 13 can be rotated about its centre axis, which is indicated by a dot-dashed line, and is mounted, by means of bearings 16, on a frame (not shown) of the device 11. Actuating means in the form of a handle 18 are arranged on a side wall of the holder 12.

[0012] A mail container 17 has been positioned in the holder 12. The mail container 17 has a base 17d, first side walls 17a which are positioned opposite one another and extend perpendicular to the base 17d, side walls 17b which adjoin the first side walls 17a at right angles thereto, and an open top side 17c.

[0013] Figs. 2a to 2c show various views illustrating how the holder 12 together with the mail container 17 is located in a starting position, in which the base 17d is positioned horizontally and the open top side 17c of the mail container 17 faces upwards. The axle 13 is preferably positioned at an angle of between 10° and 45°, and in the embodiment shown is at an angle of approximately 20°, with respect to the horizontal and therefore with respect to the base 17d, as can be seen from the views presented in Figs. 2a and 2b. Furthermore, in the embodiment shown the axle 13 is positioned at an angle of approximately 45° with respect to the first side walls 17a and second side walls 17b, as can be seen from the plan view illustrated in Fig. 2c.

[0014] In the starting position shown in Figs. 2a to 2c, an operator stands in front of the holder 12, having the view shown in Fig. 2a. The operator can tilt the holder 12 together with the mail container 17 into a tilted position by pulling the handle 18 towards him, with the result that the holder 12 together with the mail container 17 is rotated with the axle 13.

[0015] Figs. 3a to 3c show precisely the same views as those presented in Figs. 2a to 2c, except that the device 11 is now in the tilted position. It is clearly apparent that the base 17d of the mail container 17 is facing obliquely upwards and the open top side 17c is facing obliquely downwards, so that items of mail (not shown) located in the mail container slide downwards out of the mail container 17. On account of the angle between the axle 13 and the side walls 17a and 17b being 45°, in the tilted position the second side walls 17b extend parallel to the first side walls 17a in the starting position, as can be seen if Fig. 2a to 2c are compared with Figs. 3a to 3c. The mail container 17 can be rotated back out of the tilted position into the starting position. The rotation of the holder 12 together with the mail container 17 from the starting position to the tilted position and vice versa is indicated by a double arrow 20 in Fig. 3a.

[0016] During the tilting operation, the operator can use his free hand, i.e. the hand which he is not using to operate the handle 18, to hold the mail in place, so that it does not slide out of the mail container 12. Then, in the tilted position shown in Fig. 3, he can use his hand to guide the mail out of the mail container 12.

[0017] It is preferable for a collection container (not shown) for collecting the items of mail during use to be present beneath the tilted holder 12 together with the mail container 17.

[0018] In the embodiment described with reference to Figs. 2 and 3, the holder 12 together with the mail container 17 is tilted by hand, i.e. the operator has to provide the tilting force. In a further embodiment (not shown), it is possible to provide actuating means, such as an actuating handle or an actuating button which is designed to emit an actuating signal to a motor which is coupled to the axle 13. The motor can drive the axle 13 in the correct direction of rotation when an actuating signal is received from the actuating means.

[0019] In the exemplary embodiments shown in the figures, the mail containers are illustrated with first side walls 7a, 17a and second side walls 7b, 17b which extend at right angles with respect to one another and with respect to the base. Perhaps superfluously, it is pointed out that the first side walls 7a, 17a and second side walls 7b, 17b do not have to extend exactly perpendicular with respect to one another and with respect to the base, but rather may also be slightly inclined, so that the mail containers can be nested.

Claims

1. Device for tilting a mail container which can be filled with items of mail and has parallel first side walls, second side walls which adjoin the first side walls substantially at right angles thereto, an underside which is closed off by a base and an open top side, which device comprises a frame, a holder for receiving a mail container and an axle which is connected to the holder and can rotate about its centre axis, which axle is mounted in the frame in such a manner that, during use, the axle is positioned at an oblique angle with respect to the base of the mail container and at an oblique angle with respect to the second walls, in order, in the event of the axle being rotated, for the holder together with the mail container to be tilted between a starting position, in which the underside of the mail container faces downwards, and a position in which the underside of the mail container is directed obliquely upwards, **characterized in that** the axle is also positioned at an oblique angle with respect to the first side walls.
2. Device according to claim 1, **characterized in that** the angle between the axle and the base of the mail container is between 10° and 45°.

3. Device according to claim 1 or 2, **characterized in that** the angle between the axle and the first side walls is approximately 45°.
4. Device according to one or more of the preceding claims, **characterized in that** the container can be rotated about the axle by hand. 5
5. Device according to one or more of claims 1-3, **characterized in that** the device is provided with drive means comprising a motor for driving the axle. 10
6. Device according to one or more of the preceding claims, **characterized in that** there is a collection container for collecting the items of mail during use when the holder together with the mail container is in the tilted position. 15
7. Mail-sorting installation for sorting items of mail provided with a device according to one of the preceding claims. 20

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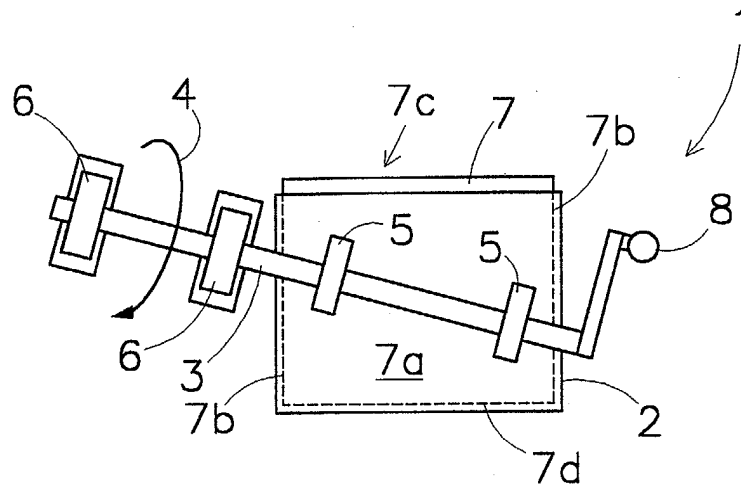


Fig 1a

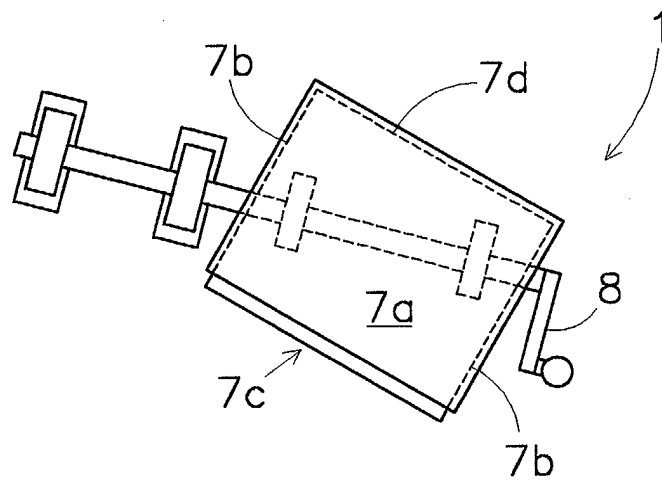


Fig 1b

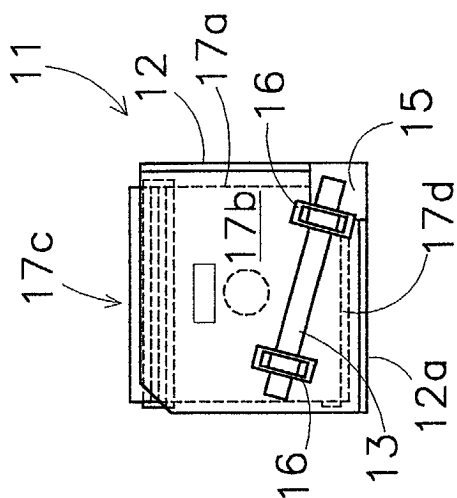


Fig 2b

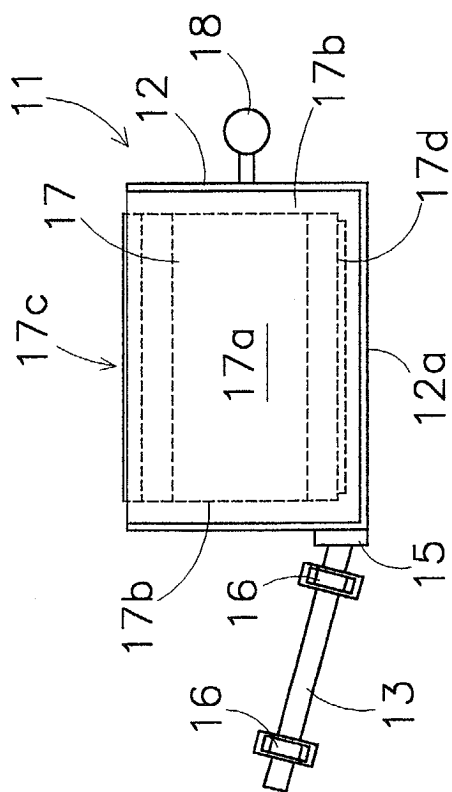


Fig 2a

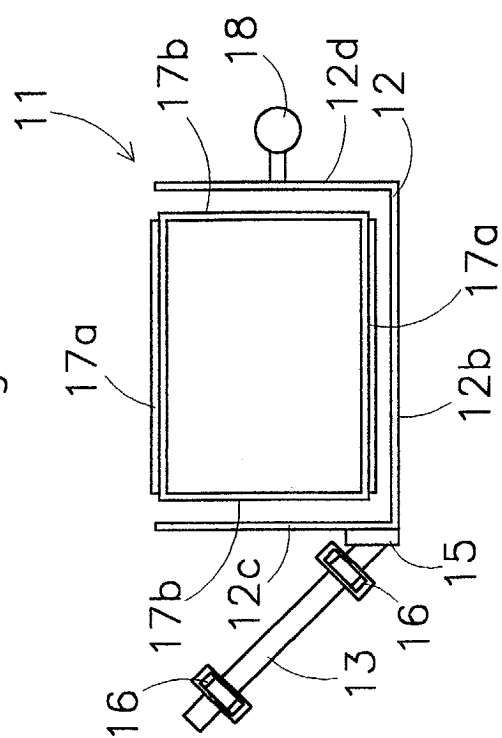
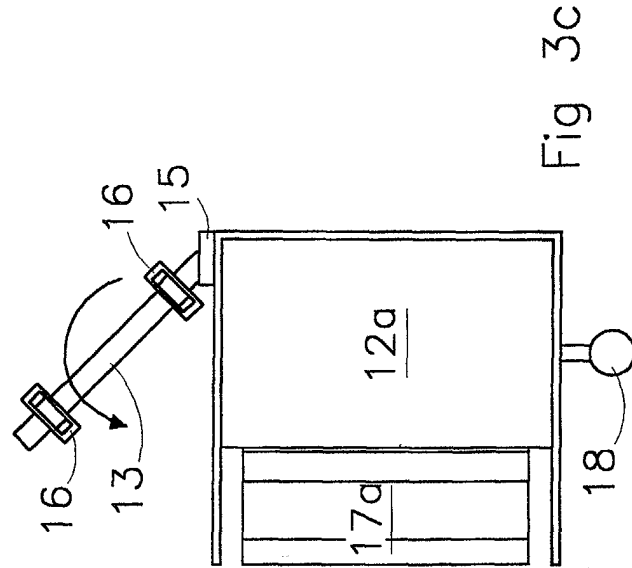
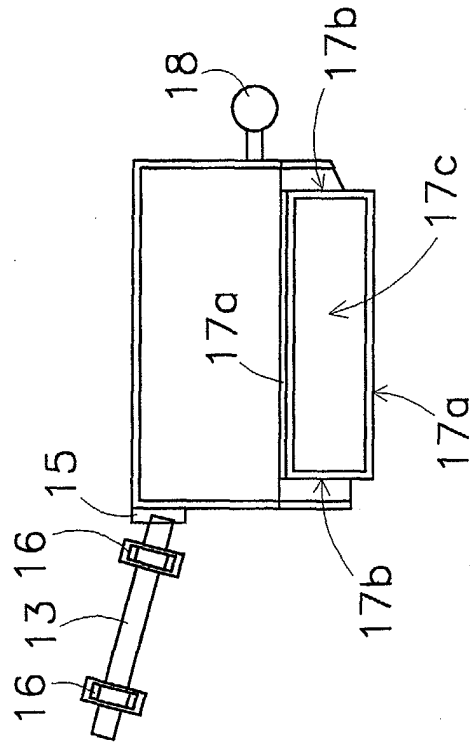
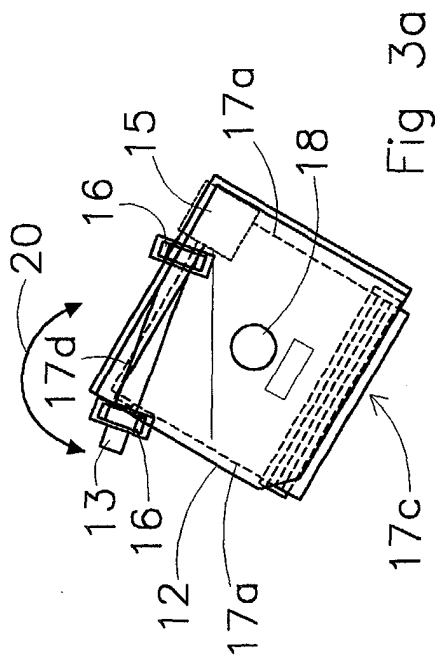


Fig 2c





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EUROPEAN SEARCH REPORT

Application Number
EP 03 07 9195

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.7)
A	DE 198 27 456 A (SIEMENS AG) 23 December 1999 (1999-12-23) * figure 1 *	1	B07C3/00 B65G65/23
A	US 5 906 468 A (ESTIS ANATOLY ET AL) 25 May 1999 (1999-05-25) * figures 4A-4F *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 29 March 2004	Examiner Kising, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EP 03 07 9195

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