(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 814 223 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.12.1997 Bulletin 1997/52

(51) Int Cl.[6]: **E05C 19/14**

(21) Application number: **97610024.8**

(22) Date of filing: **16.06.1997**

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(30) Priority: **17.06.1996 DK 66696**

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(54) Locking mechanism especially for parcel containers

(57) By a locking mechanism especially for parcel containers and of the kind that comprises a base plate (2) onto which a housing (6) in the shape of a U-bend plate is mounted, wherein a pawl (8) is arranged having a hook-shaped catching end, and said pawl over a cranked and pivotally mounted spring arm (20) is connected to a turnable handle (26), and where the spring element extends through an aperture in the edge of the housing, there is a risk that a finger can be crushed in the free space (38) between the housing (6) and the spring arm (20). This problem can be solved by providing the spring arm (20) with a cranking that reduces the free space (38), but in such a way that the wanted spring force still is maintained, or by bending the material from the slot up along one of the long sides, so that it protrudes to cover the free space. Hereby the safety problem is solved without making the locking mechanism more expensive to manufacture or change its way of working.

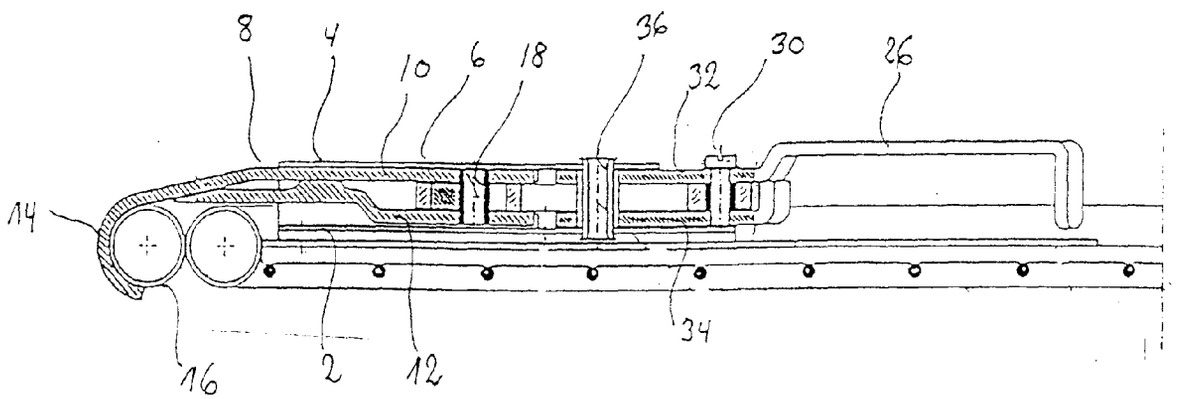

Fig. 1

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Description

The invention relates to a locking mechanism especially for parcel containers and of the kind that comprises a base plate onto which a housing in the shape of a U-bend plate is mounted, wherein a pawl is arranged having a hook-shaped catching end, and said pawl over a cranked and pivotally mounted spring arm is connected to a turnable handle, and where the spring element extends through an aperture in the edge of the housing.

The applicant has through many years performed an intensive product development of the above-mentioned type of locking mechanisms for wheelable parcel containers that are used by postal services. The sides of these containers consist of a frame carrying a wire grid. At least one of the ends in such a container, which is approximately the height of a man, is made as a side-hinged door, or rather two or more half doors each provided with a locking mechanism of the described type. When the door is locked the pawl with the hook-shaped catching end grips about the frame of the adjacent side wall. During the development of the locking mechanism it has proven difficult immediately to obtain the wanted clamping force, i.e. that must be exercised on the handle for opening the closure mechanism. This has resulted in a particular shape and placement of the spring arm, which means that the spring arm moves out through a slot in the housing when the closure mechanism is opened. The shape of the spring arm means that a comparatively large free space is created between the spring arm and the housing. The free space is abundantly large, so that a person accidentally can get the end of a finger therein with the risk of damaging it whilst closing the locking mechanism. The mutilation can be of serious nature as the spring arm performs a cutting during its way down into the slot in the housing and force influence at the same time is relatively huge. Security-wise one would speculate in making an capsulation, but this would mean a more expensive product that for competitive reasons itself has the price been kept low.

By the invention it is however realised that by a cranking of the spring that reduces the free space, in such a way that a finger even in the fully open position of the locking mechanism cannot be inserted and that the wanted closure force still can be maintained.

Furthermore, it is realised that the problem even by the known designs of the spring arm can be solved without making the locking mechanism more expensive, through rather than punching the slot out in the material of the housing, to bend the material along one of the long sides, so that a flap is protruding that covers the free space under the spring when the locking mechanism is open.

The invention is in the following further explained by reference to the accompanying drawing, on which

fig. 1 shows a sectional view lengthways through a locking mechanism mounted on a wire grid container, and there also is shown a sectional view of the container where the locking mechanism is shown in its closed position,

fig. 2 shows the locking mechanism viewed directly from the side,

fig. 3 shows the locking mechanism in its open position with the handle shortened,

fig. 4 shows the known spring arm, while

fig. 5-8 show embodiments of the spring arm for the locking mechanism according to the invention, and

fig. 9 shows the housing of the locking mechanism viewed directly from above.

The locking mechanism displayed in the drawing is intended for wheelable parcel containers where the sides consist of a frame in which a wire grid is mounted. In one end of the container there is a side-hinged half door, i.e. two door sections arranged on top of each other and each provided with a locking mechanism.

As it appears in figures 1-3 of the drawing, the locking mechanism comprises a base plate 2 and a front plate 4, in which a housing is raised by a pressing as a guide for a pawl 8 that consists of a front piece 10 and a back piece 12 parallel hereto. At the end of the front piece 10 a hooked bending 14 is formed disposed for gripping around the frame 16 - shown here with a circular cross-section - on the adjacent side. A spring arm 20 is secured to the rear end of the pawl 8 which is rotary mounted on a bushing 18. As shown in the figures, the end of the spring arm is curled for the creation of two eyes 22, 24 - the first 22 for the bushing 18 and the second 24 for a sleeve of elastic material. The other end of the spring arm is rotably connected to a handle 26, since the spring arm here also is curled into an eye 28, through which a through-going machine screw 30 is placed in the handle, which innermost end consists of a front piece 32 that is displaced for the creation of the handle and a back piece 34. The handle is pivotally mounted on a bushing 36 that is placed through a hole in the front end of the handle.

On figures 1-3 of the drawing the locking mechanism is shown with the known spring arm, and figure 3 clearly shows the free space 38 under the spring arm and the upper edge of the housing where a finger can be squeezed or crushed.

This safety problem can according to the invention be solved by a particular kind of shape of the spring arm, and embodiments of such kind of shape are shown in figures 5-8 of the drawing, in comparison the known spring arm is shown in figure 4. The spring arm shown in fig. 5 differs from the known springs in that the eye 28 for the screw of the handle is curled from beneath and upwards, while it is curled from above and downwards

by the known spring arms. The expansion of this new shaping of the spring arm is indicated by a dotted line in fig. 3, where the particularity precisely is that the end that extends into the housing is identical with the known spring arm. It is precisely the characteristic by the invention that the safety problem is solved without further intervention in the constructional design.

By the embodiment of fig. 6 the central section 40 on the spring arm is given a cranking that reduces the free space beneath the spring, so that a finger cannot become crushed underneath. By this embodiment it must still be observed that the necessary clamping or closing force is maintained.

In fig. 7 of the drawing an embodiment is shown where the original shape of the spring arm is maintained, but where the end is prolonged 46 so that it covers the free space underneath the spring arm.

Finally, the embodiment is shown in fig. 8 that by its cranking also covers the free space underneath the spring arm.

The problem of avoiding injuring a finger can also be solved by exploiting the material 42 that otherwise is punched out in the housing for the creation of the slot, through which the spring slides in and out of the housing. In fig. 9 of the drawing the housing is shown directly from above. By performing a punching on the innermost lengthways side and the end and bend the material upwards around the outermost lengthways side 44, the material will appear as a protecting flap covering the free space underneath the spring arm. Naturally, a partial punching can also be performed so that a triangular flap is left, as indicated by dotted line, so that the upper edge will flush with the spring arm when the locking mechanism is in its open position.

During the description of the invention reference is primary made to parcel containers for postal services, but it is naturally realised that the invention is not limited to this. The locking mechanism is of cause generally useable.

Claims

1. A locking mechanism especially for parcel containers and of the kind that comprises a base plate (2) onto which a housing (6) in the shape of a U-bend plate is mounted, wherein a pawl (8) is arranged having a hook-shaped catching end, and said pawl over a cranked and pivotally mounted spring arm (20) is connected to a turnable handle (26), and where the spring element extends through an aperture in the edge of the housing, **characterised** in that the spring arm (20) is cranked in such a way that the free space (38) that appears between the slot area of the housing and this arm is so small that a finger cannot be inserted therein even when the locking mechanism is in its maximally open position, but that the spring arm still is able to produce the wanted closure force for the locking mechanism.

2. A locking mechanism according to claim 1, **characterised** in that the eye (28) of the spring arm that surrounds the pivotal axis of the handle (26) is curled from beneath and upwards.

3. A locking mechanism according to claim 1, **characterised** in that the central section on the spring arm (20) is curled (40) for blocking off the free space underneath the spring.

4. A locking mechanism according to claim 1, **characterised** in that the end of the spring arm (20) is prolonged (46) backwards under this spring arm for blocking off the free space underneath the spring arm.

5. A locking mechanism especially for parcel containers and of the kind that comprises a base plate (2) onto which a housing (6) in the shape of a U-bend plate is mounted, wherein a pawl (8) is arranged having a hook-shaped catching end, and said pawl over a cranked and pivotally mounted spring arm (20) is connected to a turnable handle (26), and where the spring element extends through an aperture in the edge of the housing, characterised in that the material (42) from the slot is bend along one of the long sides (44) so that a flap is protruding that covers the free space under the spring when the locking mechanism is open.

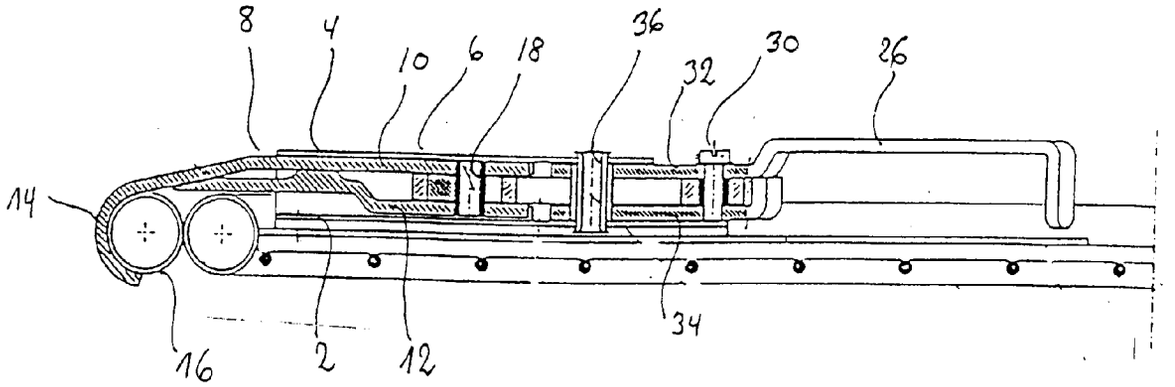

Fig. 1

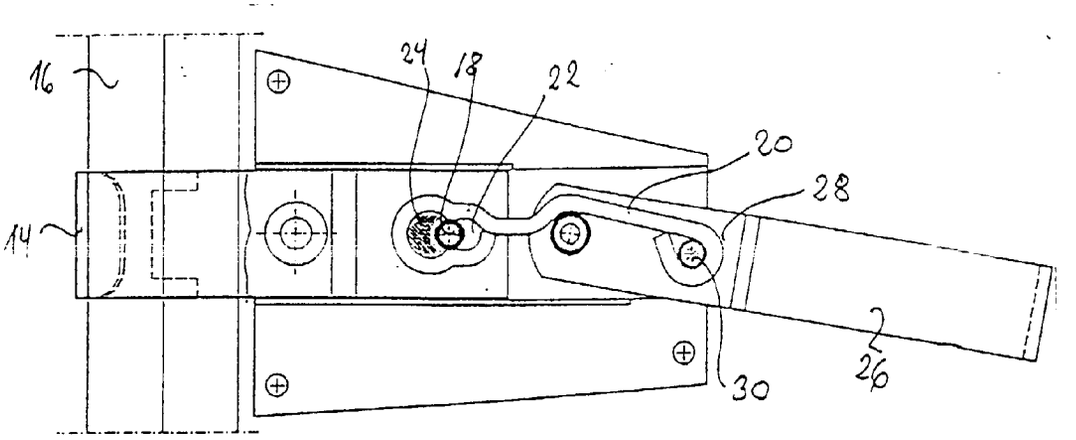

Fig. 2

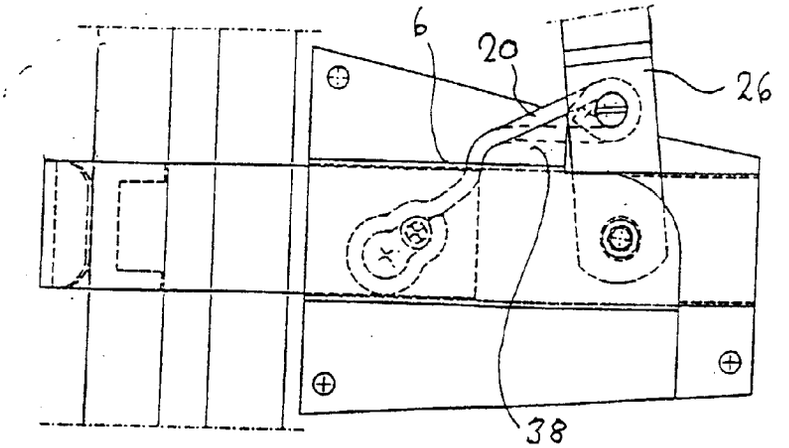

Fig. 3

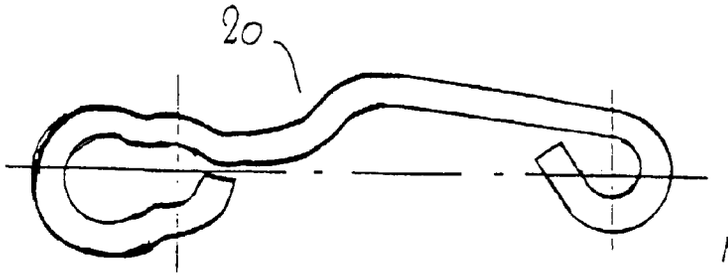

Fig. 4

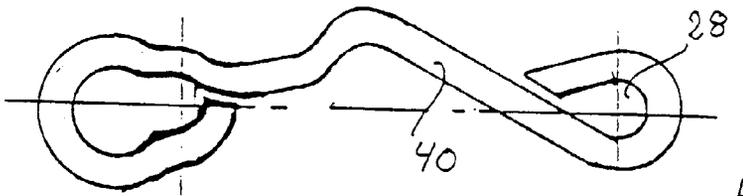

Fig. 5

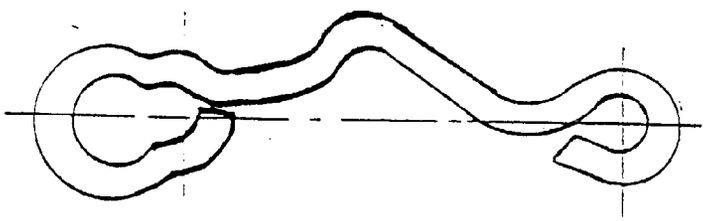

Fig. 6

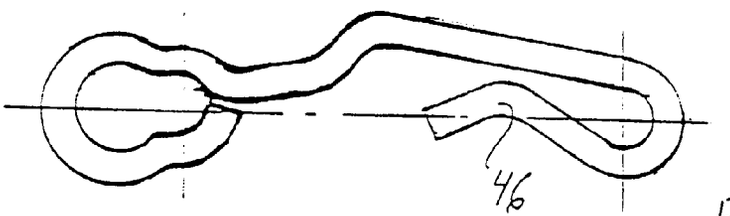

Fig. 7

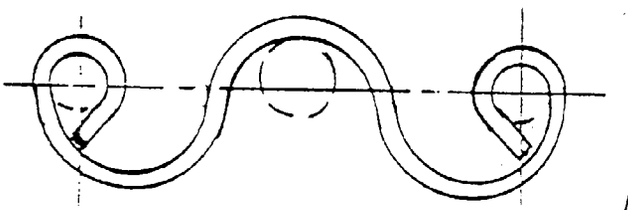

Fig. 8

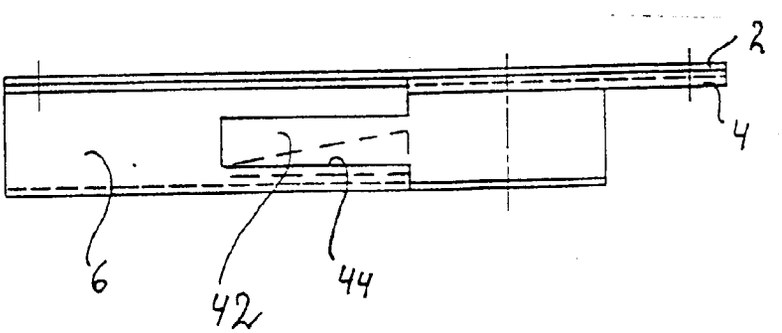

Fig. 9