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(54) Dispenser for rolls of paper

(57) The invention concerns a dispenser for rolls of paper, in particular rolls of toilet paper, said dispenser comprising a housing with a feed-through aperture provided in it for feeding the paper out, two spindles mounted within the dispenser for receiving rolls of paper and a guiding system for guiding the spindles successively near the feed-through aperture provided in said housing, in which the guiding system guides a first spindle and a

second spindle in an arched or circular arch path of their own, in which the first or second spindle are coupled by a connecting arm at or near their respective ends and the opposite end is free of said first and second spindles. The guiding system is carried out in such a way that the second spindle with a roll of paper will not be able to move in relation to the connecting arm and to get near the feed-through aperture, until the first roll of paper has been completely spent.

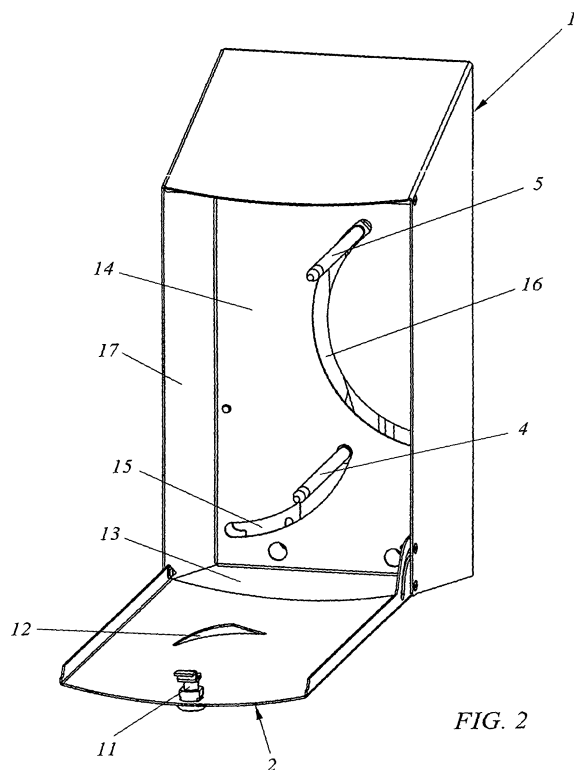


FIG. 2

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Description

[0001] The present invention relates to a dispenser for rolls of paper, in particular rolls of toilet paper, said dispenser comprising a housing with a feed-through aperture provided in it for feeding the paper out, a number of spindles mounted within the dispenser for receiving rolls of paper and a guiding system for guiding the spindles successively near the feed-through aperture provided in said housing.

[0002] Such dispensers are known in a number of embodiments. With said known dispensers, the rolls of paper are mounted on horizontal spindles being supported at both ends as well as received in a guiding system at both ends. The guiding systems employed therein are mostly rather complicated systems requiring a large number of parts so as to realize a properly operating system.

[0003] The object of the invention is to provide an improved dispenser in which a guiding system working properly at all times with a minimal amount of parts is obtained.

[0004] Accordingly, the invention provides for a system having guiding means for guiding a first spindle and a second spindle respectively in an arched or circular arch path of their own, in which the first or second spindle are coupled by a connecting arm at or near their respective outer ends and are kept spaced-apart and said connecting arm maintaining at least a predetermined minimum distance between the first and second spindles up to reaching a predetermined position. An important advantage of this guiding system is that one of the extremities of the respective spindles is free and that therefore the rolls of paper can easily be put onto the spindle without first having to remove the spindles from the guiding system.

[0005] The connecting arm provides for that the rolls of paper are kept spaced-apart, which is of great importance because on unwinding the roll of paper, being situated directly above the feed-through aperture in the housing, the other roll should not be allowed to roll along and thus be caused to unwind as well.

[0006] According to another elaboration it is provided for, that the connecting arm is carried out in such a way that when the first spindle reaches the lowermost position in the arched guiding path for the first spindle, the position of the second spindle can slide at least in longitudinal direction of said connecting arm. Further, it is provided for that the arched guiding path for the first spindle is provided in a first vertical plane and extends from approximately in the middle above the feed-through aperture downwards to or near a first limiting wall extending straight to the vertical plane and the arched guiding path for the second spindle is situated at least partly higher in the same plane, is longer than the first arched guiding path and extends to or near a second limiting wall provided opposite the first limiting wall.

[0007] Due to these provisions, in which the first roll

abuts a first limiting wall and therefore the first spindle is kept spaced from the first limiting wall and thus spaced from the extremity of the first guiding path, the second roll can not slide in relation to the connecting arm and thus end up above the feed-through aperture, until the moment the first roll of paper is empty or almost empty and the first spindle ends up at the lowermost position, the end of the first guiding path. Even if the roll should not yet be completely empty, then unwinding of the second roll by driving movement by the first roll will not be possible, because due to the positioning of both guiding paths, the first roll has been moved beyond reach of the second roll.

[0008] According to a first embodiment, the guiding paths can substantially comprise slots provided in a plate situated in the vertical plane, in which the first and second spindles are moveable. To this end, the first and second spindles should be provided with a sled or comparable member moveable within the slots, at or near their ends concerned. According to a preferred embodiment, however, it is provided for that the first and second spindles each have an outer end fixedly connected to a first and a second arm, respectively, said first and second arms each having a fixed pivot point. This is simple embodiment that can be realized at low cost, in which the guiding paths can be provided with a starting position and an end position by mounting stops for the respective arms there.

[0009] The connecting arm is of such length and the guiding paths are provided in relation to one another and to both limiting walls in such a way, that the second spindle can only be guided further down along the second guiding path if the distance between both spindles can become smaller at a predetermined position. To this end, the second spindle can move in relation to the connecting arm, for which an elongate opening is provided in the connecting arm, which extends substantially in longitudinal direction of the connecting arm and in which the second spindle projects through the elongate opening.

[0010] However, movement of the second spindle in the elongate opening in the connecting arm is not allowed to take place before the first roll of paper is empty or almost empty. In order to realize this, a guide is provided on the connecting arm and a cam is provided at or near the end of the second spindle, said cam abutting the guide during a part of the passage of first and second spindles in the respective guiding paths for said first and second spindles. As soon as the cam comes free of the guide, the second spindle moves downwards in the elongate opening, under its weight and the weight of the roll of paper mounted on the second spindle, said second spindle following the further course of the second guiding path.

[0011] Preferably, the cam is formed at the end of the second arm past the coupling point of the second spindle to the second arm. Further, the guide on the connecting arm has a first guiding part and a second guiding part, said second guiding part being at an angle to the first guiding part or having a curvature, in which said cam will

abut the second guiding part when the first spindle moves through the last part of the guiding path for the first spindle. The second guiding part is required for overcoming the composite movement of the cam in relation to the guide caused by the simultaneous movements of first spindle, second spindle and connecting arm and for preventing an early displacement of the second spindle within the elongate opening in the connecting arm.

[0012] According to a further embodiment it is further provided for, that a spring is provided between the second spindle or the second arm to which the second spindle is mounted and the housing. This can be necessary if the weight of the second roll of paper would cause the last part of the first roll of paper to deform and consequently be brought above the feed-through aperture before the first roll would be completely spent. Additionally, it can be provided for, that the spring is mounted in such a way, that the second spindle or the second arm on which the second spindle is mounted, will be stopped by the spring when the first spindle moves through the last part of the guiding path for said first spindle. Here, the spring force only acts on the second arm when the first roll of paper gets empty.

[0013] The invention is further explained by way of the example given in the drawing, in which:

- fig. 1 illustrates a perspective view of the front side of the dispenser with two rolls of papier;
- fig. 2 illustrates a perspective view of the front side of the dispenser without the rolls of paper;
- fig. 3 illustrates a perspective view of the front side of the dispenser with the second roll of paper above the feed-through aperture;
- fig. 4 illustrates a rear view of the dispenser with the spindles for receiving the rolls of paper in the uppermost position;
- fig. 5 illustrates a rear view of the dispenser in which the spindles are each provided with a roll of paper;
- fig. 6 illustrates rear view of the dispenser in which the first roll of paper is spent and the second roll is about to slide in relation to the connecting arm;
- fig. 7 illustrates a rear view of the dispenser in which the second roll of paper has moved to the position above the feed-through aperture; and
- fig. 8 illustrates a rear view of the dispenser with the spindles for receiving the rolls of paper in the lowermost position.

[0014] Fig. 1 illustrates the dispenser comprising a housing 1 having a lid 2 mounted at the front side and being able to pivot around pivot points 3. In housing 1, a first roll of paper 6 and a second roll of paper 7 are mounted on a first spindle 4 and a second spindle 5, respectively. Since these spindles 4, 5 have a free extremity at the front side of the dispenser, the rolls of paper 6, 7 can easily be slid onto the spindles 4, 5. The rolls of paper 6, 7 are situated at a distance from one another in order to

prevent the second roll of paper 7 from unwinding too when the first roll of paper 6 is unwound.

[0015] The lid 2 can not swing forward any further than the position indicated in the figure, which is effected with the pin 8 mounted in housing 1, projecting in a slot 9 provided in a side 10. Further, the lid 2 is provided with a lock 11 and an opening 12, which allows viewing from the outside to what degree the rolls of paper 6, 7 have been spent.

[0016] The bottom side of housing 1 is completely or largely open and represents a feed-through aperture 13 for the sheets of paper to be unwound from the rolls of paper. In the example given, a first full roll of paper 6 is also partly located in the feed-through aperture 13.

[0017] Fig. 2 illustrates the dispenser without rolls of paper 6, 7. The spindles 4, 5 project through a rear plate 14, with slots 15, 16 being provided in rear plate 14, within which the spindles 4, 5 can move freely. In the illustrated position, the spindles 4, 5 are in their uppermost positions, in which the spindle 4 is located so high above the feed-through aperture 13 that a first roll of paper 6 can easily be slid onto first spindle 4. This position is established by bringing the second spindle to the upper position by hand and keeping it there. After a first roll 6 has been mounted, one can let go of the second spindle 5 causing the first roller to descend across a short distance until it will abut the side wall 17 of housing 1. Thus the first roll 6 will be partly located in the feed-through aperture 13.

[0018] Fig. 3 illustrates the dispenser in which the first roll of paper 6 is has been completely spent and the second roll of paper 7 has descended to a short distance above the feed-through aperture 13. The second roll of paper will not descend any further because it will abut the side wall 18 of housing 1. First and second rolls of paper abutting respective side walls 17, 18 with their weights cause a braking action on unwinding of the paper, so that the rolls can be unwound in a controlled way.

[0019] Fig. 4 illustrates the rear side of the dispenser in which the guiding system for the first and second spindles 4, 5 is provided between the rear plate 14 and partly open rear side 19 of the housing 1. First spindle 4 has an end fixedly connected to a first arm 20 being freely pivotable around pivot 21 and the second spindle 5 to a second arm 22 being freely pivotable around pivot 23. First and second spindles 4, 5 are coupled to one another by a connecting arm 24 in which the first and second spindles 4, 5 can rotate freely. Connecting arm 24 contains an elongate opening 27 in which the second spindle 5 can be moved, thus reducing the distance between first and second spindles 4, 5. This can only take place after the cam 28 provided at the end of arm 22 comes free from the guide 29 for the cam 28 provided on connecting arm 24.

[0020] First and second arms 20, 22 can engage the connecting arm 24 with a forked structure, in which first and second spindles 4, 5 are fixedly connected to said fork. In the illustrated example, connecting arm 24 has

parts of lesser thickness near its coupling positions with the first and second spindles 4, 5, in order to offer respective first and second arms 20, 22 sufficient freedom of movement.

[0021] The illustrated topmost positions of first and second spindles 4, 5 corresponds to those in fig. 2, be it that a first roll of paper 6 is mounted on the first spindle 4. There the first roll of paper 6 is located at some distance above the feed-through aperture 13.

[0022] In fig. 5, the first roll 6 has descended and abuts against the side wall 17 of housing 1 and has also descended in the feed-through aperture 13. The second roll 7 is mounted on the second spindle 5 and is kept at a distance from the second roll 6 by the connecting arm 24, in which the cam 28 at the extremity of the second arm 22 abuts guide 29. This position corresponds to the position illustrated in fig. 1.

[0023] In fig. 6, the first roll of paper 6 is completely spent and the arm 20 with the first spindle 4 will hang down into the lowermost position, in which the first spindle 4 will engage the end of slot 15. In this position, cam 28 will just come free from the guide 29. Guide 29 is subdivided in a first, substantially straight part 30 and a second part 31 connecting to it, which has a predetermined radius. This second part 31 is required for preventing a premature release of the cam 28 from the guide 29, which is caused by simultaneous movement and tilting of connecting arm 24.

[0024] If necessary, a spring member, such as e.g. a draw spring, can be mounted between the second arm 22 and a higher point on rear wall 14, by which the movement of the cam 28 sliding across the lowermost position of second part 31 of the guide 29 can be adjusted precisely. This is important e.g. for preventing the second roll of paper 7 from coming down after an impact on the dispenser before the first roll of paper 6 is completely spent.

[0025] Fig. 7 shows that the second roll of paper 7 has engaged the side wall 18 of housing 1, which is possible because the cam 28 has been released from the guide 29 and the second spindle 5 has moved across the major part of the length within the longitudinal aperture 27 in connecting arm 24.

[0026] Finally, fig. 8 shows the position in which the second roll of paper 7 is completely spent too. The second arm 22 with the second spindle 5 has arrived at the extremity of the slot 16, in which the second spindle 5 in the longitudinal aperture 27 in connecting arm 24 has returned at or near the uppermost extremity thereof. From this position, in order to refill the dispenser with rolls of paper 6, 7, the second spindle 5 should be moved up completely by hand until it abuts the extremity of the slot 16. After that, the first roll of paper 6 can be mounted on the first spindle 4, one can let go of the second spindle 5 and one can mount a new second roll of paper 7 on said spindle as well.

Claims

1. Dispenser for rolls of paper, in particular rolls of toilet paper, said dispenser comprising a housing with a feed-through aperture provided in it for feeding the paper out, a number of spindles mounted within the dispenser for receiving rolls of paper and a guiding system for guiding the spindles successively near the feed-through aperture provided in said housing, **characterized in that** guiding means for guiding a first spindle and a second spindle respectively in an arched or circular arch path of their own have been provided, in which the first or second spindle are coupled by a connecting arm at or near their respective outer ends and are kept spaced-apart and said connecting arm maintaining at least a predetermined minimum distance between the first and second spindles up to reaching a predetermined position.
2. Dispenser according to claim 1, **characterized in that** the connecting arm is carried out in such a way that when the first spindle reaches the lowermost position in the arched guiding path for the first spindle, the position of the second spindle can slide at least in longitudinal direction of said connecting arm.
3. Dispenser according to claim 2, **characterized in that** the arched guiding path for the first spindle is provided in a first vertical plane and extends from approximately in the middle above the feed-through aperture downwards to or near a first limiting wall extending straight to the vertical plane and the arched guiding path for the second spindle is situated at least partly higher in the same plane, is longer than the first arched guiding path and extends to or near a second limiting wall provided opposite the first limiting wall.
4. Dispenser according to claims 1-3, **characterized in that** the arched guiding paths are substantially determined by slots provided in a plate situated in the vertical plane, in which the first and second spindles square to said vertical plane are moveable.
5. Dispenser according to claims 1-3, **characterized in that** the first and second spindles are each fixedly connected to a first and a second arm, respectively, said first and second arms each having a fixed pivot point.
6. Dispenser according to claims 4-5, **characterized in that** a guide is provided on the connecting arm and a cam is provided at or near the end of the second spindle, said cam abutting the guide during a part of the passage of first and second spindles in the respective guiding paths for said first and second spindles.

7. Dispenser according to claim 6, **characterized in that** the cam is formed at the extremity of the second arm past the coupling point of the second spindle with said second arm. 5
8. Dispenser according to claims 6-7, **characterized in that** the guide on the connecting arm has a first guiding part and a second guiding part, said second guiding part being at an angle to the first guiding part or having a curvature, in which said cam will abut the second guiding part when the first spindle moves through the last part of the guiding path for the first spindle. 10
9. Dispenser according to claim 8, **characterized in that** the connecting arm contains an elongate aperture, extending substantially in longitudinal direction of the connecting arm, said second spindle projecting through the elongate aperture. 15
10. Dispenser according to claim 9, **characterized in that** the second spindle is moveable within the elongate aperture after the cam has moved past the end of the second guiding part on the guide mounted on the connecting arm. 20 25
11. Dispenser according to claims 1-10, **characterized in that** a spring is provided between the second spindle or the second arm to which the second spindle is mounted and the housing. 30
12. Dispenser according to claim 11, **characterized in that** the spring is mounted in such a way, that the second spindle or the second arm on which the second spindle is mounted, will be stopped by the spring when the first spindle moves through the last part of the guiding path for said first spindle. 35

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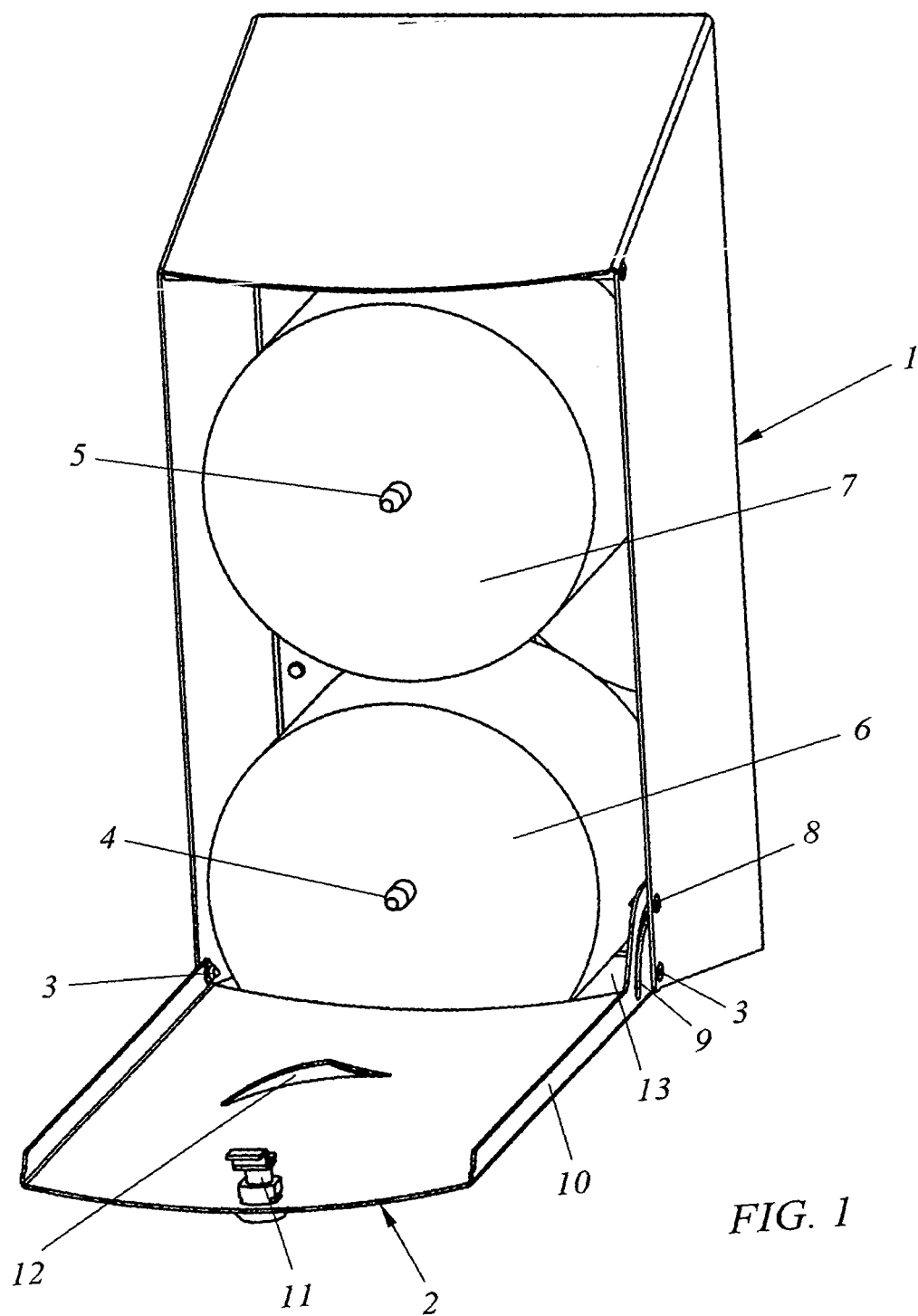
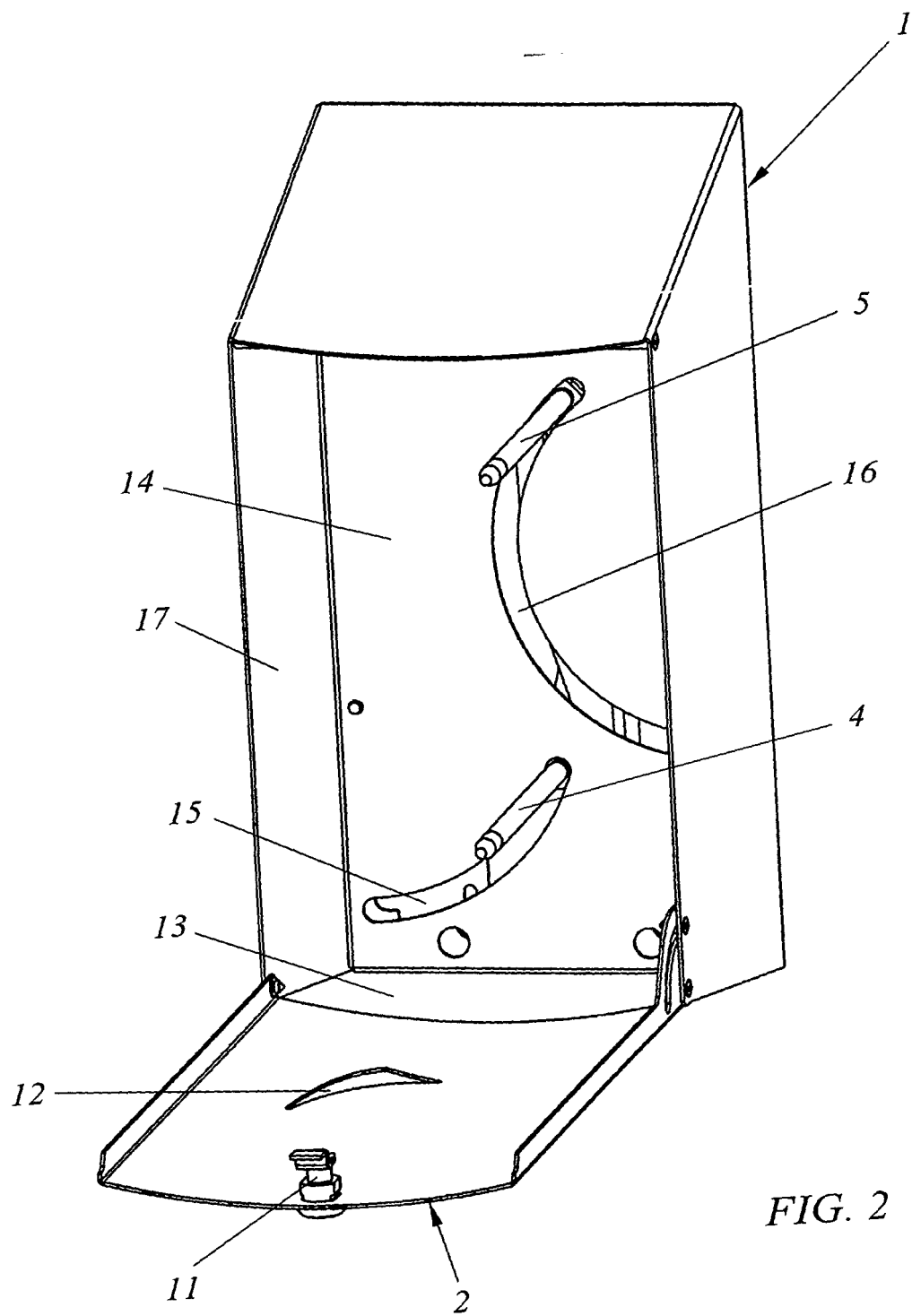


FIG. 1



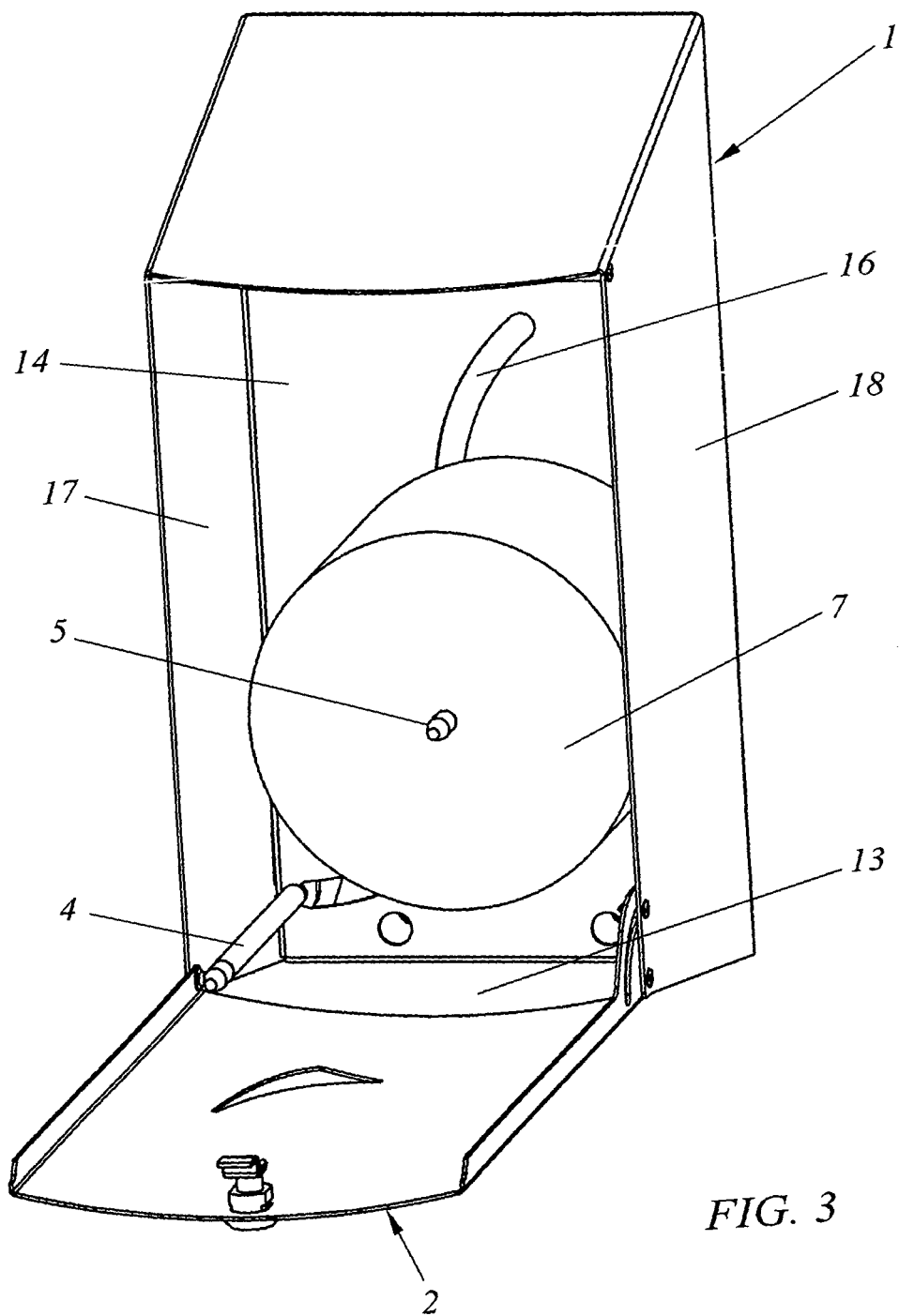


FIG. 3

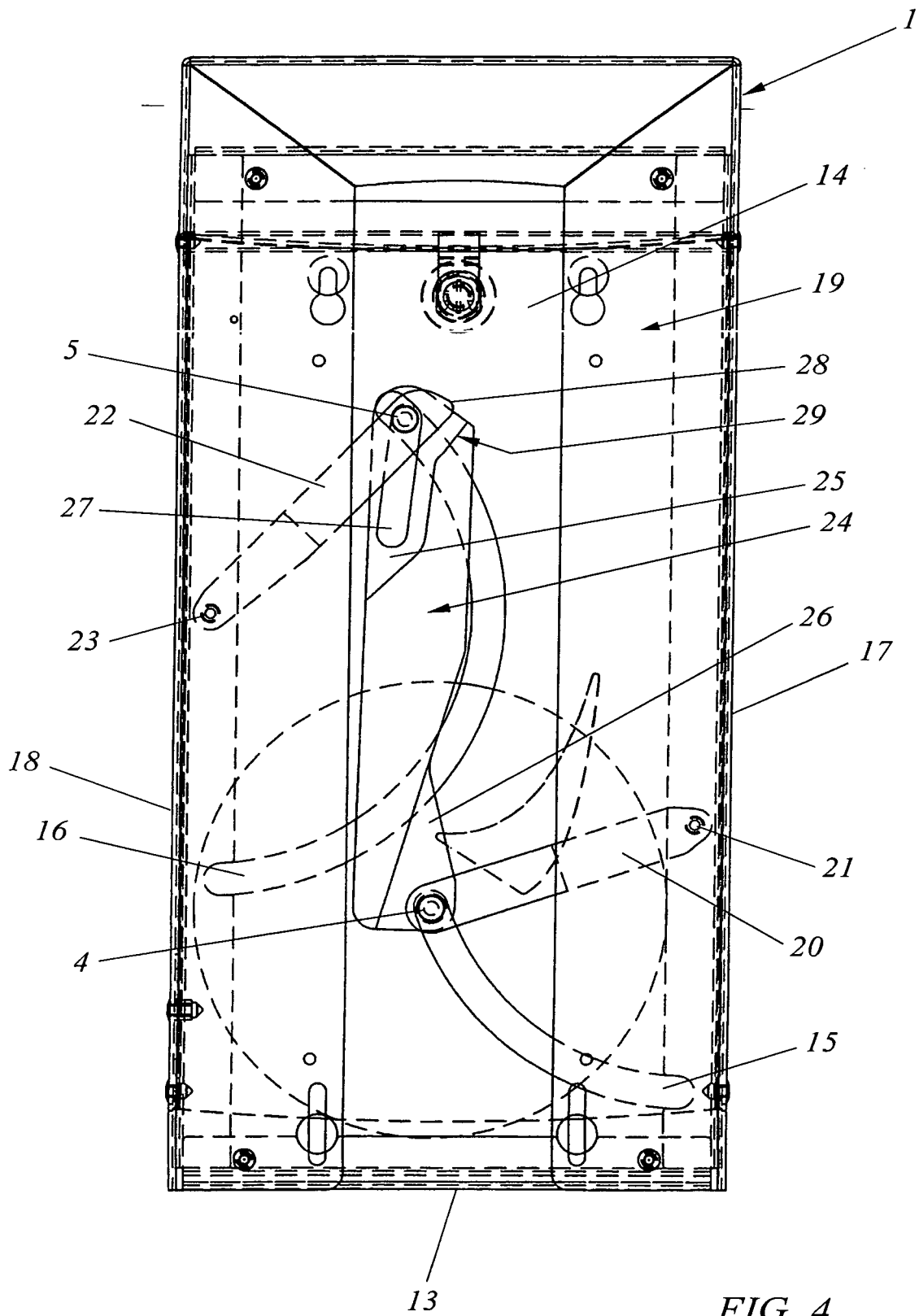


FIG. 4

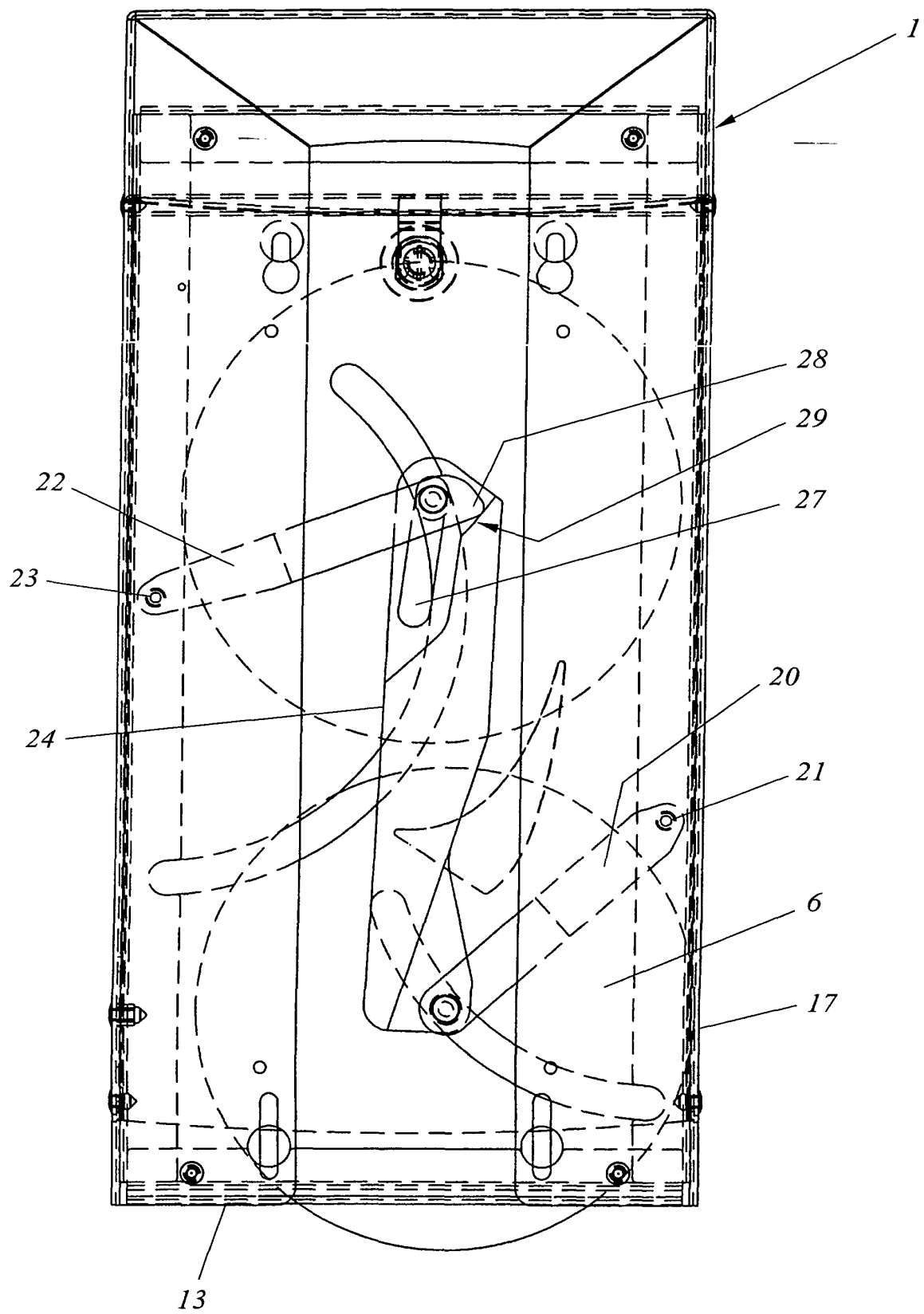


FIG. 5

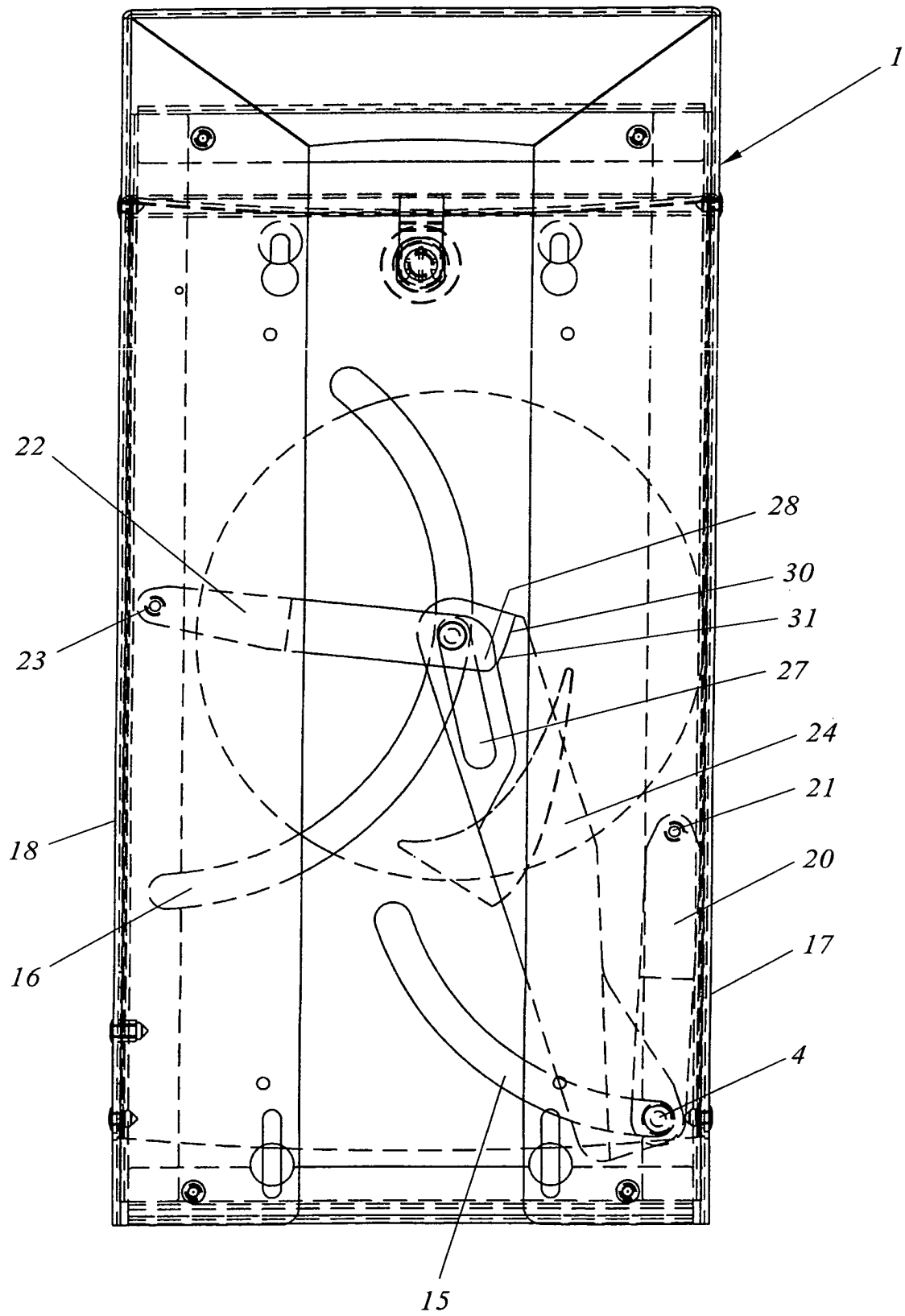


FIG. 6

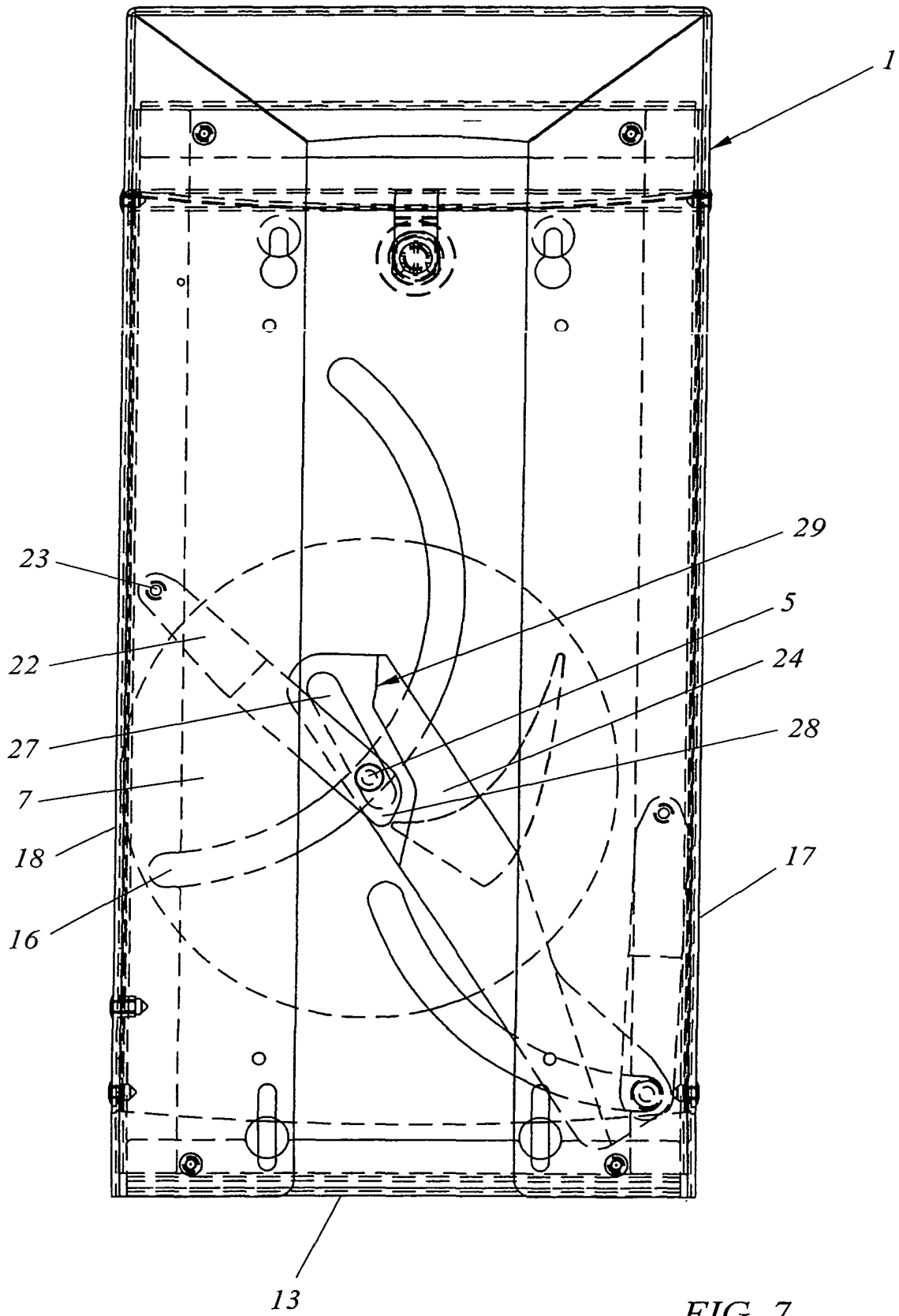


FIG. 7

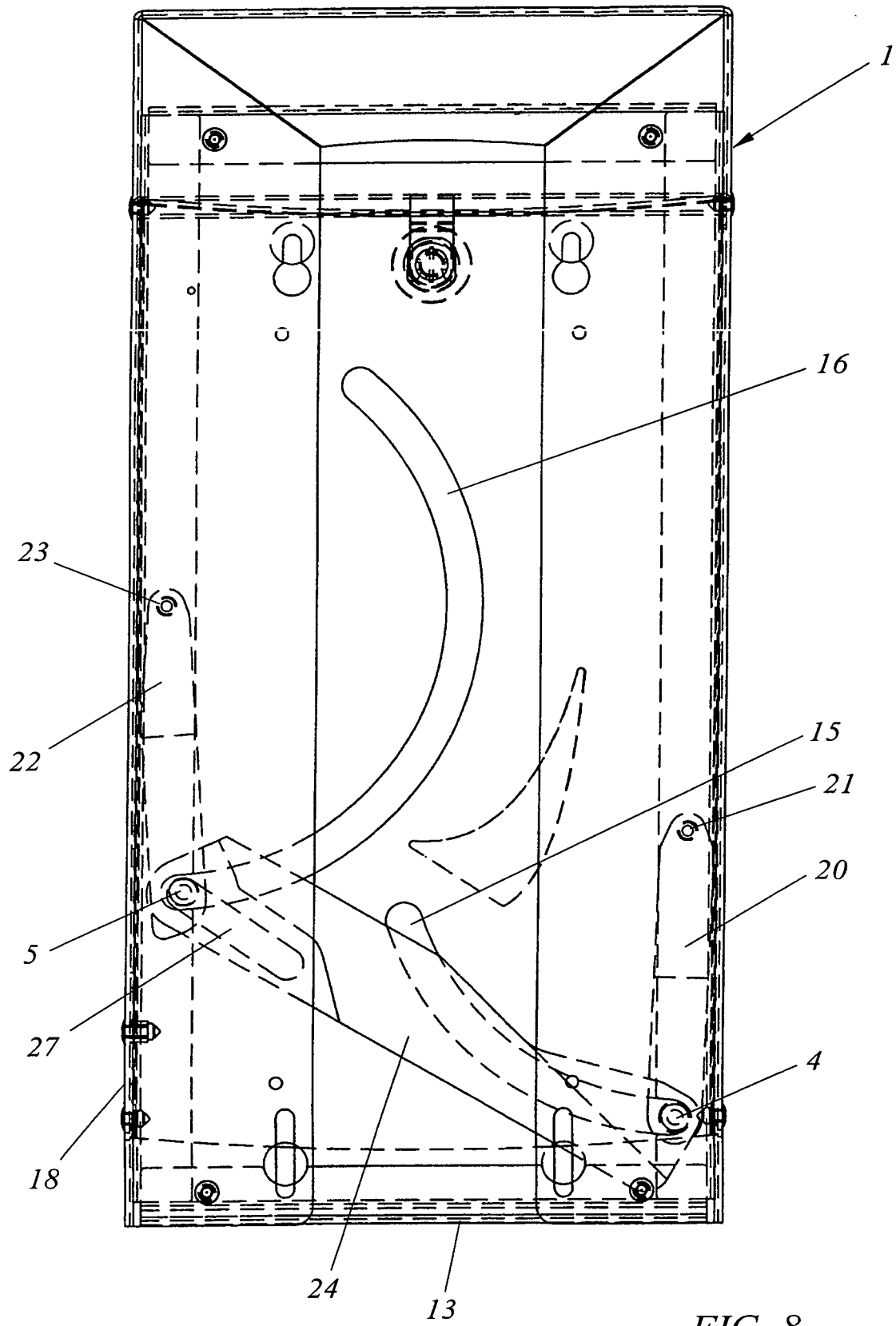


FIG. 8



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EUROPEAN SEARCH REPORT

Application Number
EP 05 07 6566

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 203 562 A (DELUCA, RAYMOND F ET AL) 20 May 1980 (1980-05-20) * column 10, line 22 - column 11, line 48; figure 9 *	1-3,5-8, 11,12	A47K10/38
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30 September 2005	Examiner Zuurveld, G
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