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

(11) Publication number: **0 257 981**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87307356.3**

(51) Int. Cl.[4]: **G 07 F 9/06**

(22) Date of filing: **20.08.87**

(30) Priority: **21.08.86 GB 8620321**

(43) Date of publication of application:
02.03.88 Bulletin 88/09

(84) Designated Contracting States:
BE CH DE FR GB IT LI NL SE

(71) Applicant: **F.C. Brown (Steel Equipment) Limited**
Queens Road
Bisley Surrey GU24 9BJ (GB)

(72) Inventor: **Deacon, Bryan**
26 Audley Road
Chippenham Wiltshire SN14 0DY (GB)

(74) Representative: **Bardo, Julian Eason et al**
Abel & Imray Northumberland House 303-306 High Holborn
London, WC1V 7LH (GB)

(54) Security closure mechanism.

(57) A security closure mechanism includes a receptor trap (3) and a transit trap (4). The transit trap (4) includes a carrier (5) on which the trap mechanism is detachably mounted, the trap mechanism including a housing (6), a closure member (8) rotatably mounted in the housing having a first position in which the trap mechanism is in an open position and a second position in which the trap mechanism is in a closed position with the passageway blocked by the closure member, and means (15, 20) for restricting rotation of the closure member between the open and closed conditions. The arrangement of the trap mechanism and the carrier is such that when the trap mechanism is mounted on the carrier in the open condition the mechanism cannot be removed from the carrier and the trap mechanism has to be moved to the closed position for removal from the carrier. The means (15, 20) for restricting rotation of the closure member (8) is arranged to lock the trap mechanism in the closed condition.

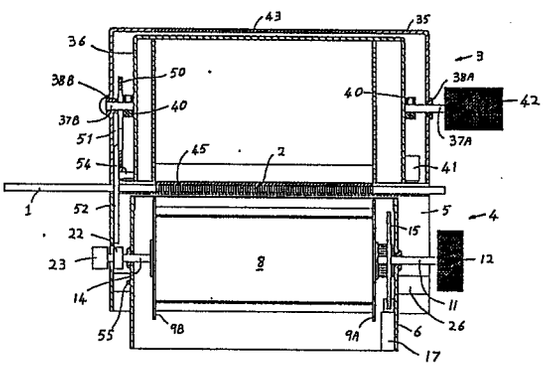

Figure 1

EP 0 257 981 A2

Description

Security Closure Mechanism

This invention relates to a security closure mechanism for a container such as a box or bag, the closure being able to allow items to be inserted into the box or bag but to prevent their removal by unauthorized personnel. Such a form of closure is hereinafter referred to as a trap.

Safes or deposit boxes may be arranged to receive items such as cash or valuable documents through a slot in their surface, the items passing through the slot into a bag (or box) mounted therein. In many applications of such devices it is necessary to prevent a person extracting the items through the slot and for this purpose it is known to provide a sprung trap which closes the slot but can be withdrawn when items are being inserted into the container. Such an arrangement does make the bag more secure although it has proved difficult to provide a really secure trap that is not of unduly complex and expensive design. It may also cause a safety hazard because the sprung trap may act in the manner of a guillotine.

A further problem with such traps is that, even if they secure the bag when installed in the safe or deposit box, it may be possible for the individual who is responsible for removing the bag and conveying it to a central location for emptying, covertly to pilfer the contents.

Sometimes a bag will be required to receive items of relatively large size and this makes it harder to provide a secure and safe trap.

It is an object of the invention to provide a trap which overcomes at least some of the disadvantages described above and offers both security and safety.

The present invention provides a security trap including a trap mechanism and a carrier on which the mechanism is detachably mounted, the trap mechanism including a housing, a closure member rotatably mounted in the housing having a first position in which the trap mechanism is in an open condition with a passageway extending through the housing and a second position in which the trap mechanism is in a closed condition with the passageway blocked by the closure member, and means for restricting rotation of the closure member between the open and closed conditions, the arrangement of the trap mechanism and the carrier being such that when the trap mechanism is mounted on the carrier in the open condition the mechanism cannot be removed from the carrier and the trap mechanism has to be moved to the closed condition for removal from the carrier, wherein the means for restricting rotation of the closure member is arranged to lock the trap mechanism in the closed condition.

Such a trap mechanism can be made without the use of spring biased closure members and can only be removed from the carrier in a locked closed condition so that it is possible to make covert pilfering by a person removing the trap mechanism extremely difficult. Once removed the trap mechanism cannot be opened without unlocking the movement restricting means; the trap mechanism may be arranged so that the movement restricting means can be released once a bag or other receptacle attached to the trap mechanism has been opened.

The trap mechanism preferably has a further closed condition in which the mechanism is able to be mounted on the carrier and the closure member can be rotated to move the trap mechanism from the further closed condition to the open condition but means are provided for opposing rotation of the closure member to move the trap mechanism from the open condition to said further closed condition. In this case the trap mechanism is not opened until it is installed on the carrier.

Preferably the opposing means and the means for restricting transfer of the trap mechanism between the open and closed conditions are one and the same.

It would be possible to arrange for the closure member to be in its second position in both closed conditions of the trap mechanism but it is preferable for the closure member to be in different positions for the two closed conditions.

The closure member may have a through passage passing through the axis of rotation of the member, the through passage being aligned with the passageway through the housing of the trap mechanism when the mechanism is in an open condition and being disposed transverse to the passageway when the mechanism is in a closed condition.

The means for restricting transfer of the trap mechanism between the open and closed conditions may comprise an index plate in fixed relationship to the closure member and a latch in fixed relationship to the housing and engaging the index plate.

The present invention further provides a container including a security trap as defined above in which the carrier is attached to the container. The carrier may be mounted on the interior of the container and the trap mechanism may be arranged to be inserted through a lockable door of the container and to be mounted on the carrier with the passageway through the housing of the trap mechanism communicating directly or indirectly with an opening in the container.

A further trap may be mounted on the container on the inside or outside thereof, the further trap restricting access to the passageway through the housing of the trap mechanism. Such an arrangement can prevent a person extracting items through the traps. The further trap may be mounted on the exterior of the container over the opening in the container or may be mounted inside the container interposed between the opening in the container and the passageway through the housing of the trap mechanism.

Means may be provided to lock the further trap in a closed condition when the trap mechanism is removed.

The further trap may comprise a housing with a passageway extending through the housing and in communication at its bottom end with the passageway in the housing of the security trap mechanism, a hollow member rotatably mounted in the passageway of the housing and having a peripheral opening providing access to the hollow interior of the member, the member having a first position in which the peripheral opening is aligned with the top end of the passageway to enable an item to be deposited in the member from above and a second position in which the peripheral opening is aligned with the bottom end of the passageway to enable an item deposited in the hollow member to pass out of the member through the bottom end of the passageway.

The further trap preferably includes a shield closely surrounding at least a portion of the hollow member and having an opening aligned with the bottom end of the housing. Such a shield prevents an item falling out of the hollow member prematurely during rotation of the member to the second position.

The present invention also provides a security trap mechanism including a housing, a closure member rotatably mounted in the housing having a first position in which the trap mechanism is in an open condition with a passageway extending through the housing, a second position in which the trap mechanism is in a closed condition with the passageway blocked by the closure member and a third position in which the trap mechanism is in a further closed condition, wherein means are provided for locking the trap mechanism in the first mentioned closed condition and for obstructing movement of the trap mechanism from the open condition to the further closed condition but allowing movement from the further closed condition to the open condition.

It is possible to use the further trap on its own or with some other form of trap. Accordingly, the present invention also provides, according to another aspect, a receptor trap comprising a housing with openings in its top and bottom ends, a hollow member rotatably mounted in the housing and having a peripheral opening providing access to the hollow interior of the member, and a shield closely surrounding at least a lower portion of the hollow member and having an opening aligned with the opening in the bottom end of the housing, the hollow member having a first position in which the peripheral opening is aligned with the opening in the top end of the housing to enable an item to be deposited in the member from above and a second position in which the peripheral opening is aligned with the opening in the bottom end of the housing to enable an item deposited in the hollow member to pass out of the member into a receptacle below.

By way of example, an embodiment of the invention will now be described with reference to the accompanying drawings, of which:

Figure 1 is a side sectional view of a receptor trap and a transit trap mounted on the top of a safe, both traps being in a closed condition;

Figure 2a is a side view of parts at a front end of the transit trap;

Figure 2b is a view from the front of the parts shown in Fig. 2a;

Figure 3a is a side view of parts at a rear end of the transit trap;

Figure 3b is a view from the rear of the parts shown in Fig. 3a;

Figure 4a is a side view of a central part of the transit trap;

Figure 4b is an end view of the central part of the transit trap shown in Fig. 4a with an end plate removed;

Figure 5 is a side sectional view similar to Fig. 1 but with the transit trap shown being inserted;

Figure 6 is a view of the assembly of Fig. 1 from the rear with the trap in the same closed condition as in Fig. 1;

Figure 7 is a view of the assembly of Fig. 1 from the rear but with the transit trap in an open condition;

Figure 8a is a partly sectional front view of the assembly of Figs. 1 and 2 with the traps in the same condition as in Fig. 1, the receptor trap being in a closed condition and the transit trap being in a first closed condition;

Figure 8b is a partly sectional rear view of the assembly in the state shown in Fig. 8a;

Figure 9a is a partly sectional front view similar to Fig. 8a with the receptor trap in the same closed condition but with the transit trap in an open condition;

Figure 9b is a partly sectional rear view of the assembly in the state shown in Fig. 9a;

Figure 9c is a side sectional view similar to Fig. 1 but with the assembly in the state shown in Fig. 9a;

Figure 10a is a partly sectional front view similar to Figs. 8a and 9a with the transit trap in the open condition as in Fig. 9a but with the receptor trap also in an open condition;

Figure 10b is a partly sectional rear view of the assembly in the state shown in Fig. 10a;

Figure 11a is a partly sectional front view similar to Figs. 8a, 9a and 10a with the receptor trap in a closed condition as in Figs. 8a and 9a but with the transit trap in a second closed condition; and

Figure 11b is a partly sectional rear view of the assembly in the state shown in Fig. 11a.

In some of the drawings, particularly Figs. 8a to 11a and 8b to 11b, certain parts are omitted and some parts shown in section in the interests of clarity.

It will be understood that the first closed condition of the transit trap shown in Figs. 8a and 8b represents the "further closed condition" of the transit trap referred to above and similarly that the "second closed condition" of the transit trap shown in Figs. 11a and 11b represents the "first mentioned closed condition" of the transit trap referred to above.

Fig. 1 shows the top wall 1 of a safe having a slot 2 formed therein. Mounted above the slot 2 is a receptor trap 3 and mounted below the slot 2 on a carrier frame 5 is a transit trap 4. The transit trap 4

has an outer housing 6 to the bottom open end of which is permanently secured a bag (not shown in the drawings) into which valuable items are to be inserted. The bag has a sealed closure apart from the closure provided by the trap 4.

The carrier 5 is screwed, welded or otherwise secured to the underside of the wall 1 of the safe. The receptor trap is similarly secured above the wall 1 as will be described later. In this way both traps are aligned with the slot 2 in the safe wall.

The transit trap has the general form of a hollow cylinder 8 at a front end of which a circular end plate 9A is fixed and to a rear end of which a circular end plate 9B is fixed. A shaft carrying certain additional parts is fixed to each end plate as will now be described in more detail.

The parts fixed to the front end of the cylinder 8 are shown in more detail in Figs. 2a and 2b. Referring now to Figs. 1, 2a and 2b, a shaft 11 is fixed to the centre of the end plate 9A and at its distal end carries a handle 12 for rotating the cylinder 8. A bearing bush 13A by which the front end of the cylinder 8 is rotatably mounted in the outer housing 6 (omitted from Figs. 2a and 2b) is carried on the shaft 11 and between the end plate 9A and the bearing bush 13A an index plate 15 is fixed to the shaft. Spacers are provided between the end plate 9A and the index plate 15 and also between the index plate 15 and the bearing bush 13A.

The parts fixed at the rear end of the cylinder 8 are shown in more detail in Figs. 3a and 3b. Referring now to Figs. 1, 3a and 3b, a shaft 14 is fixed to the centre of the end plate 9B and at its distal end carries a locking head 23 which as can be seen in Fig. 3b is of oblong shape. A bearing bush 13B by which the rear end of the cylinder 8 is rotatably mounted in the outer housing 6 (omitted from Figs. 3a and 3b) is carried on the shaft 14 and between the bearing bush 13B and the locking head 23 a cam 22 is fixed to the shaft. The profile of the cam 22 can be seen in Fig. 3b; the cam is of generally oblong shape with its major axis aligned with the major axis of the locking head 23.

The structure of the cylinder 8 is shown in Figs. 4a and 4b. Extending between the end plates 9A, 9B are a pair of sheet metal assemblies 10A, 10B which define a through passage 24 of rectangular cross-section therebetween.

As shown in Fig. 1, a latch mechanism 17 is mounted on an interior face of the outer housing 6 immediately below the index plate 15. Figs. 8a to 12a and 8b to 12b show the latch mechanism 17 with its cover removed. Referring to Fig. 8a, the latch comprises a housing 18 in which a latch member 19 having a latch element 20 is slidably mounted with the latch element projecting through an opening in the housing 18 and being biased into engagement with the periphery of the index plate 15 by two compression springs 21. The index plate has recesses 28, 29 and 30 formed in its periphery at 90° intervals for receiving the latch element 20 as will be described in more detail later. Fig. 8a also shows top and side walls of the outer housing 6, a slot 32 in the top wall aligned with the slot 2 in the safe wall and downwardly projecting portions 31 around the slot 32 which prevent access to those parts of the interior of the housing 6 on either side of the cylinder 8. Still referring to Fig. 8a it can be seen that the side walls of the carrier 5 carry rails 26 on the inside thereof in which projecting strips 27 on the outer sides of the housing 6 slidably engage to mount the transit trap slidably on the carrier 5.

Referring now to Figs. 1, 8a and 8b, the receptor trap 3 comprises an outer housing 35 secured to the top of the wall 1, a slotted cylinder 36 rotatably mounted on shafts 37A and 37B in the housing 35 by bearing bushes 38A and 38B, and a shield 39 formed of two parts which fit closely around the lower portion of the cylinder 36 and are fixed to the housing 35, for example by welding. Collars 40 are fixed on the shafts 37. A weight 41 is provided at the front end of the cylinder so as to bias it into the position shown in Fig. 1 and a handle 42 is provided on the ends of the shaft 37A to enable a user to rotate the cylinder 36.

A gravity latch mechanism is provided at the rear end of the cylinder 36. Referring to Figs. 1 and 8b, a latch plate 50 has a vertical slot 51 through which the shaft 37B of the receptor trap passes. A cam follower plate 52 is fixed to the rear side of the bottom of the latch plate 50 and extends downwards through an opening in the wall 1. The bottom of the latch plate is formed with a peripheral recess 53, shown in dotted outline in Fig. 8b but not in the other drawings, and a locking pin 54 is provided on the cylinder 36 projecting from the rear face thereof. In the position of the parts shown in Figs. 1 and 8b the pin is engaged in the recess 53 and since significant transverse movement of the latch plate 50 is prevented by for example engagement of the cam follower plate 52 with the wall 1, the cylinder 36 is prevented from rotating. If, however, the latch plate 50 is raised, the locking pin 54 is disengaged from the recess 53 and the cylinder 36 can be rotated using the handle 42.

The outer housing 35 of the receptor trap has a slot 45 formed in its bottom wall, a slot 43 formed in its top wall and downwardly projecting portions 35A around the slot 43 which prevent access to those parts of the interior of the housing 35 on either side of the cylinder 36. The cylinder 36 has a slot 44 in the same region of its circumference as the weight 41. The slots 43, 44 and 45 are of a similar size and shape to the slot 2 in the safe wall 1 and the slots 43 and 45 are aligned with the slot 2 while the slot 44 is aligned with these slots both in the position to which it is biased, in which it is adjacent the slot 45, and in a position displaced 180° therefrom and shown in Figs. 10a and 10b, in which it is adjacent the slot 43.

The receptor trap 3 is permanently installed on the top face of the safe wall 1 and the carrier 5 is permanently installed on the bottom face of the safe wall, while the transit trap can readily be attached and detached from the carrier 5 by a person (referred to herein as a "bag handler") having access to the safe. The manner of attachment and detachment will now be described as will the manner in which a person uses the apparatus illustrated in the drawings, starting with the transit trap 4 ready for attachment to the carrier 5.

Prior to attachment, the index plate 15 is in the orientation shown in Fig. 8a with the latch element 20 engaging in the recess 28 of the index plate. In this orientation of the index plate 15, the locking head 23 and the cam 22 are oriented as shown in Fig. 8b and the cylinder 8 is disposed with its through passage 24 extending horizontally so that the transit trap is closed. The bag attached to the outer housing 6 is closed with a seal and/or lock and prevents access to the latch mechanism 17 or any other interior part of the housing 6. Such bags are themselves well known and as they do not form part of the present invention will not be described further here.

With the index plate 15 oriented as just described, the bag handler, having unlocked the door of the safe (the door being on the right hand side of the assembly as seen in Fig. 1), is able to slide the transit trap into position with the strips 27 slidably engaging the rails 26 (see Fig. 5). Stop pins 55 near the innermost ends of the rails 26 define the fully inserted position of the trap. In this position the locking head 23 has passed through an opening 56 in the rear wall of the carrier (Fig. 6) and the cylinder 8 of the transit trap is free to rotate but such rotation is restricted by the latch mechanism 17 and the index plate 15. The recess 28 in the index plate 15 is asymmetrically shaped such that it is possible to rotate the index plate clockwise as seen in Fig. 8a, as indicated by the arrow, to disengage the latch, but anticlockwise movement is prevented.

Both prior to insertion of the trap and after insertion to the position shown in Figs. 8a and 8b the locking pin 54 on the cylinder 36 of the receptor trap engages in the recess 53 of the latch plate 50 so that the receptor trap is locked in the closed condition as shown in Figs. 8a and 8b.

The bag handler, having fully inserted the transit trap 4 into the carrier 5, rotates the cylinder 8 through 90° by means of the handle 12, this rotation being in the clockwise direction as seen in Fig. 8a. During this operation the latch element 20 disengages from the recess 28 in the index plate 25 and then engages in the recess 29 as shown in Fig. 9a. The rotation through 90° moves the passageway 24 in the cylinder 8 into the vertical orientation shown in Figs. 9a, 9b and 9c and thus opens the transit trap. The rotation through 90° also moves the locking head 23 to the position shown in Fig. 7 preventing the transit trap being withdrawn from the carrier 5 and also rotates the cam 22 through 90° lifting the cam follower plate 52 and the latch plate 50 and thereby disengaging the locking pin 54 from the recess 53 and freeing the cylinder 36 of the receptor trap for rotation using the handle 42. The bag carrier then locks the safe door.

A user wishing to deposit an item in the bag rotates the handle 42 of the cylinder 36 of the receptor trap 3 through 180° from the position shown in Figs. 9a to 9c to that shown in Figs. 10a and 10b whereupon the slot 44 in the cylinder 36 becomes aligned with the slot 43 in the outer housing of the receptor trap. The user is then able to place the item in the cylinder, the size of the item being limited only by the size of the cylinder 36 and the size of the slots 43, 44. Finally the user releases the handles 42 allowing the cylinder 36 to rotate through 180° under the influence of the weight 41, whereupon the item passes under the action of gravity out of the cylinder through the slot 44 therein, through the slot 45, through the slot 2 in the safe wall, through a slot in the carrier 5, through the slot 32 in the outer housing 6 of the transit trap and through the passageway 24 in the cylinder 8 into the bag. The apparatus is then ready to receive another item to be deposited. It will be noted that the receptor trap at all times prevents any person gaining access either to the transit trap or to the bag below.

When it is desired to remove the bag and transit trap from the safe, a bag handler unlocks the safe, opens the safe door and rotates the cylinder 8 through a further 90° by means of the handles 12, this rotation being in the same direction as before namely clockwise as seen in Fig. 10a and moving the indexing plate to the position shown in Fig. 11a. During this operation the latch element 20 disengages from the recess 29 in the index plate 15 and then engages in the recess 30. It will be noted that the recess 29 is shaped like the recess 28 so that rotation in the opposite direction (anticlockwise) is again impossible. After the rotation the parts are in the position shown in Figs. 11a and 11b. The rotation through 90° moves the passageway 24 in the cylinder 8 into a horizontal orientation thereby closing the transit trap. Furthermore, the rotation through 90° rotates the cam 22 through 90° causing the cam follower plate 52 and latch plate 50 to drop under gravity so that the locking pin 54 once again engages the recess 53 and the cylinder 36 of the receptor trap is locked in the closed condition shown in Figs. 11a and 11b. Furthermore, it will be noted that the recesses 30 are shaped such that the latch elements 20 cannot be disengaged by attempting to rotate the index plates in either direction so that once the latch elements 20 are engaged in the recesses 30 the transit trap is locked in a closed condition.

Once the cylinder 8 and sleeve 10 have been rotated to the position shown in Figs. 11a and 11b, and only then, the locking head 23 becomes aligned with the opening 56 in the rear wall of the carrier as shown in Fig. 6 enabling the transit trap to be removed from the carrier 5.

The bag handler conveys the transit trap and bag to a location at which the items deposited are to be extracted. The bag is then opened enabling the items to be removed and also providing access to the latch mechanism 17 to enable a person manually to retract the latch member 19 back into its housing 18 against the bias of the springs 21 whereupon the index plate 15 can be rotated through 180° back to the position shown in Fig. 8a and 8b, in readiness to be used again.

From the description above it will be clear that the apparatus has various advantages, including the following:

i) The transit trap 4 has to be closed by the bag handler before it is detached from the carrier 5 and cannot thereafter be opened by him without opening the bag itself.

ii) There are no spring loaded parts in or adjacent to the path followed by items as they are passed through the traps; accordingly, there is little risk of injury to a person, even if they are abusing the trap.

iii) The receptor trap at all times blocks access to the slot 2 in the safe wall and to the transit trap below the slot, regardless of the position of the cylinder 36 of the receptor trap; it is therefore not possible for a person to retrieve items already deposited through the traps.

iv) Both traps are relatively simple and can be of rugged construction, enabling them to be made relatively cheaply and yet operate reliably.

v) The traps can be arranged to accept quite bulky objects such as packages measuring about 18 cm × 10 cm × 6 cm and yet still be secure.

In the apparatus shown in the drawings, both a transit trap and a receptor trap are described. It should be understood, however, that either trap could be used in conjunction with some other form of trap or without any other trap at all. Also, in the illustrated embodiment the receptor trap is mounted on the exterior of a safe. Alternatively, the receptor trap can be mounted inside the safe on top of a shelf below which the transit trap is mounted. In this case, the door of the safe requires an opening for the handle 42 of the receptor trap and an opening in its top aligned with the slot 43 in the top of the receptor trap.

Claims

1. A security trap including a trap mechanism and a carrier on which the mechanism is detachably mounted, the trap mechanism including a housing, a closure member rotatably mounted in the housing having a first position in which the trap mechanism is in an open condition with a passageway extending through the housing and a second position in which the trap mechanism is in a closed condition with the passageway blocked by the closure member, and means for restricting rotation of the closure member between the open and closed conditions, the arrangement of the trap mechanism and the carrier being such that when the trap mechanism is mounted on the carrier in the open condition the mechanism cannot be removed from the carrier and the trap mechanism has to be moved to the closed condition for removal from the carrier, wherein the means for restricting rotation of the closure member is arranged to lock the trap mechanism in the closed condition.

2. A trap as claimed in claim 1 in which the trap mechanism has a further closed condition in which the mechanism is able to be mounted on the carrier and the closure member can be rotated to move the trap mechanism from the further closed condition to the open condition but means are provided for opposing rotation of the closure member to move the trap mechanism from the open condition to said further closed condition.

3. A trap as claimed in claim 2 in which the opposing means comprises the means for restricting rotation of the closure member between the open and closed conditions.

4. A trap as claimed in claim 2 or 3 in which, in said further closed condition of the trap mechanism, the closure member is in a third position different from the second position.

5. A trap as claimed in claim 4 in which the closure member has a through passage passing through the axis of rotation of the member, the through passage being aligned with the passageway through the housing of the trap mechanism when the mechanism is in an open condition and being disposed transverse to the passageway when the mechanism is in a closed condition, and the closure member is rotatable through about 180° between its second and third positions, and the first position is intermediate the second and third positions.

6. A trap as claimed in any preceding claim in which the restricting mechanism comprises an index plate in fixed relationship to the closure member and a latch in fixed relationship to the housing and engaging the index plate.

7. A container including a security trap as claimed in any preceding claim in which the carrier is mounted on the interior of the container and the trap mechanism is arranged to be inserted through a lockable door of the container and to be mounted in the carrier with the passageway through the housing of the trap mechanism communicating directly or indirectly with an opening in the container.

8. A container as claimed in claim 7 in which a further trap is mounted on the container on the inside or outside thereof, the further trap restricting access to the passageway through the housing of the trap mechanism.

9. A security trap mechanism including a housing, a closure member rotatably mounted in the housing having a first position in which the trap mechanism is in an open condition with a passageway extending through the housing, a second position in which the trap mechanism is in a closed condition with the passageway blocked by the closure member and a third position in which the trap mechanism is in a further closed condition, wherein means are provided for locking the trap mechanism in the first mentioned closed condition and for obstructing movement of the trap mechanism from the open condition to the further closed condition but allowing movement from the further closed condition to the open condition.

10. A receptor trap comprising a housing with openings in its top and bottom ends, a hollow member rotatably mounted in the housing and having a peripheral opening providing access to the hollow interior of the member, and a shield closely surrounding at least a lower portion of

the hollow member and having an opening aligned with the opening in the bottom end of the housing, the hollow member having a first position in which the peripheral opening is aligned with the opening in the top end of the housing to enable an item to be deposited in the member from above and a second position in which the peripheral opening is aligned with the opening in the bottom end of the housing to enable an item deposited in the hollow member to pass out of the member into a receptacle below.

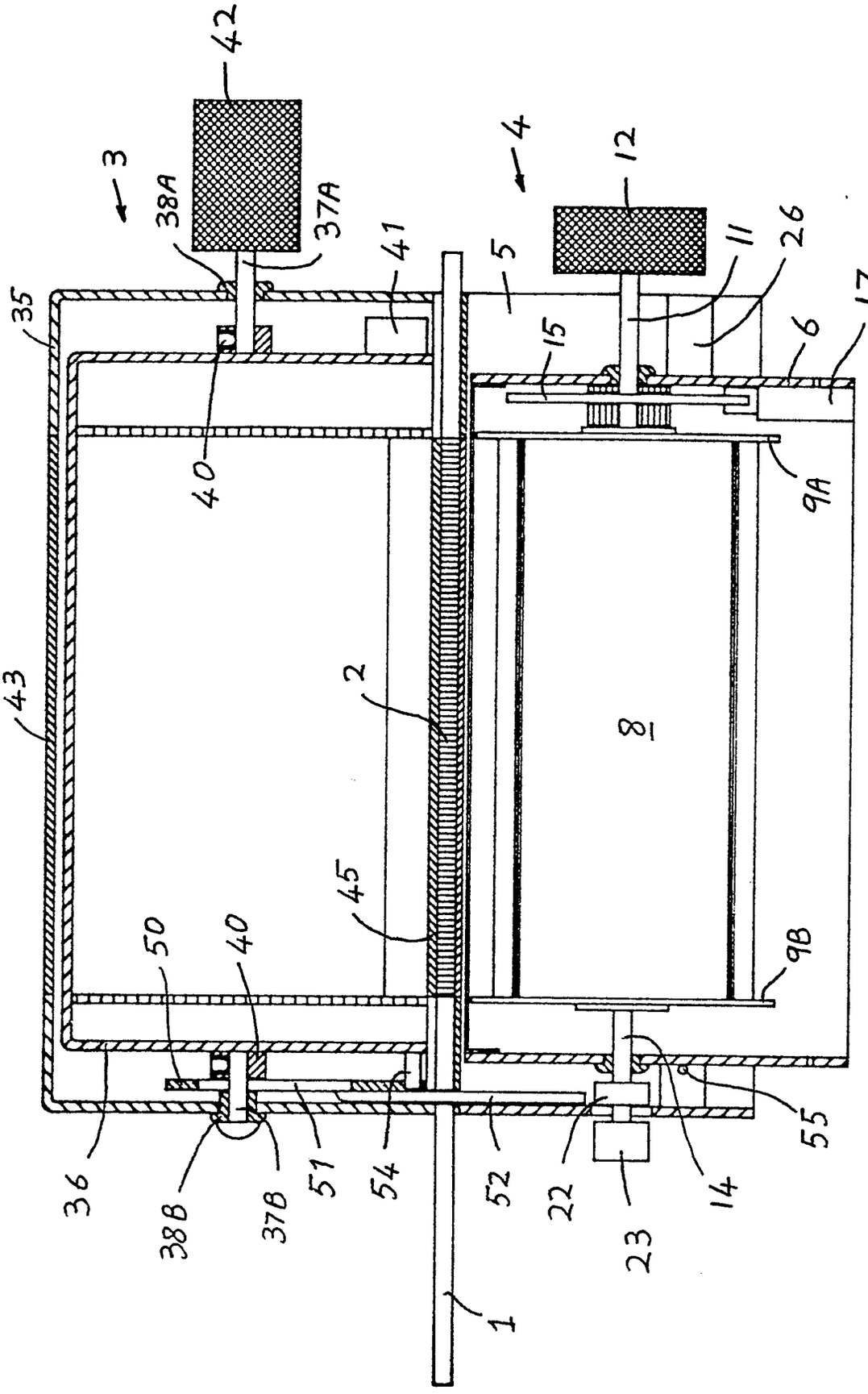
42
3
38A
37A
4
12
41
5
11
26
35
15
6
17
40
9A
43
2
8
45
50
40
9B
36
38B
37B
51
54
52
22
14
55
23
1

Figure 1

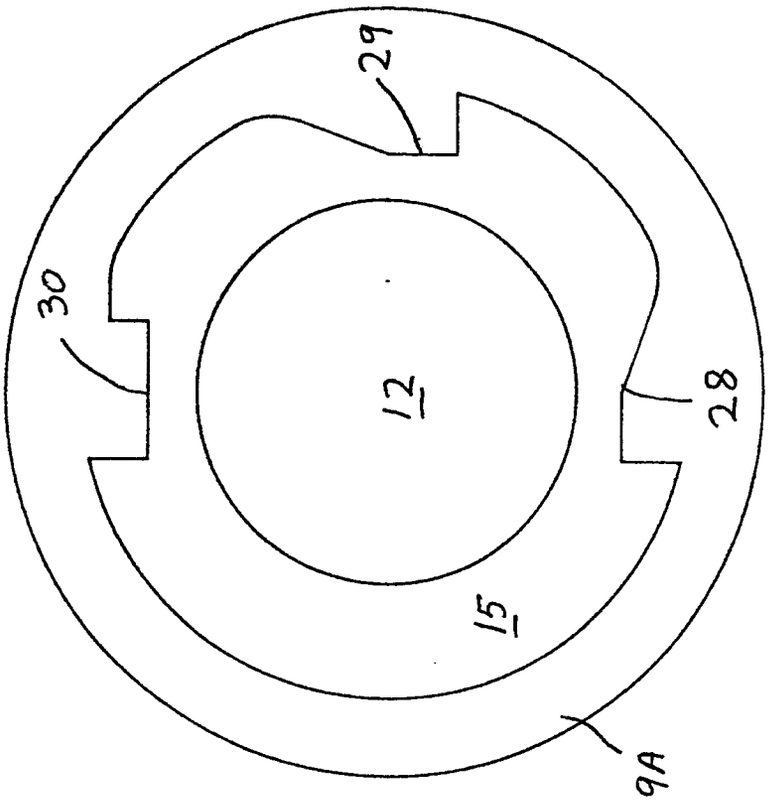

Figure 2b

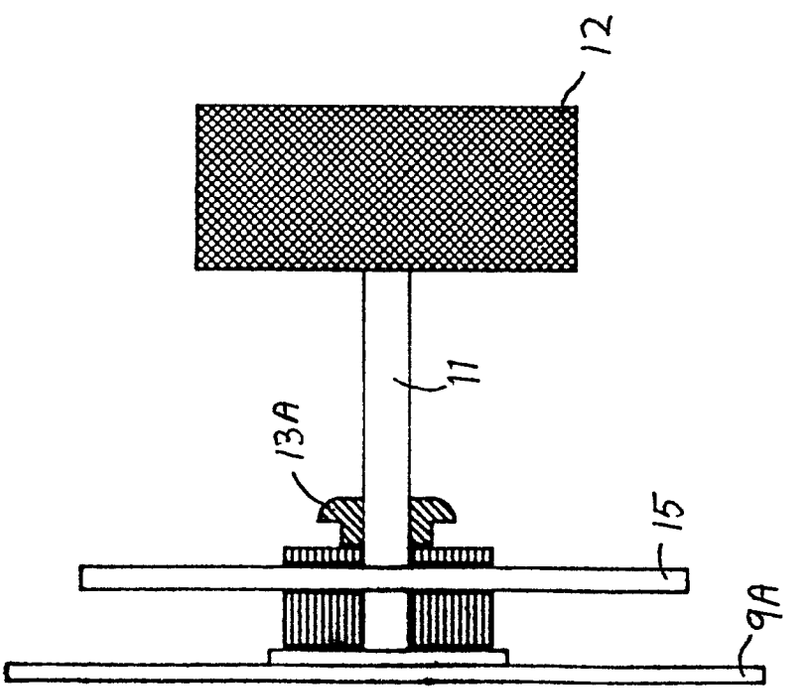

Figure 2a

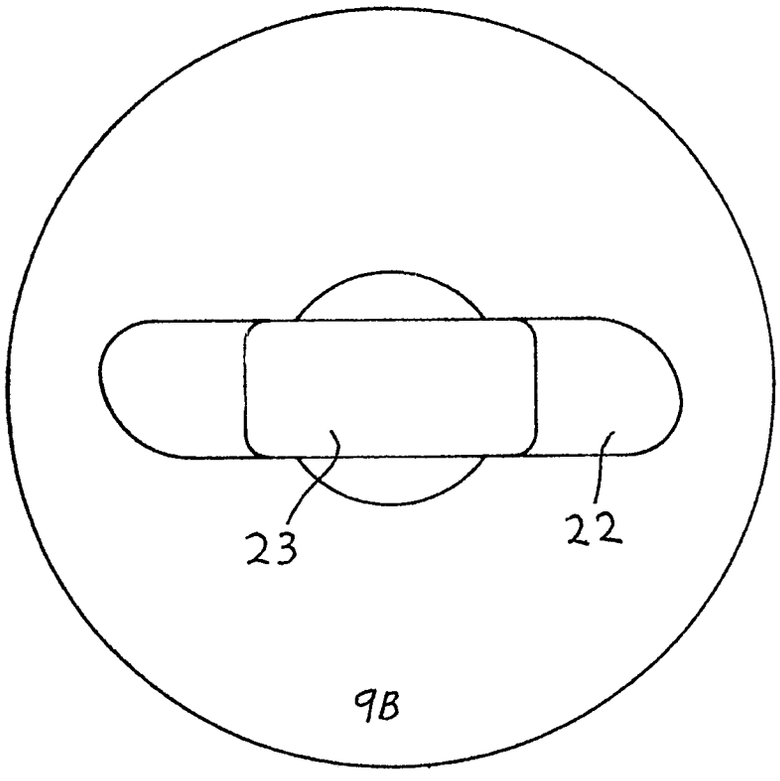

Figure 3b

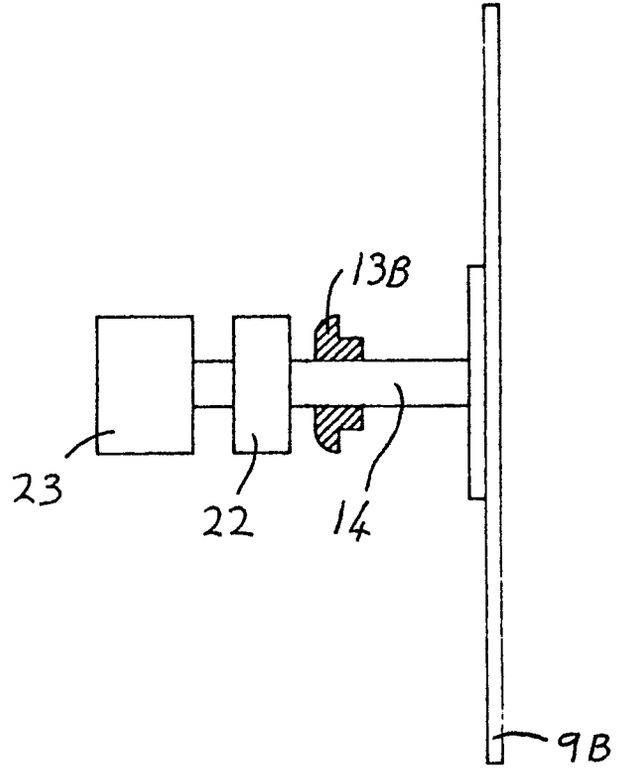

Figure 3a

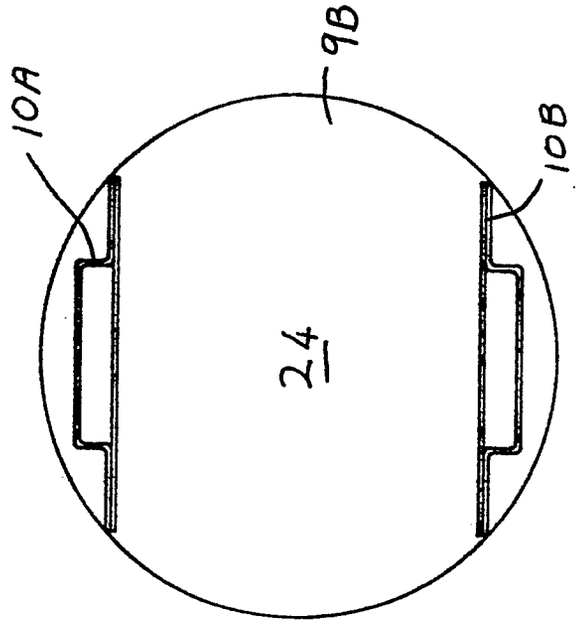

Figure 4b

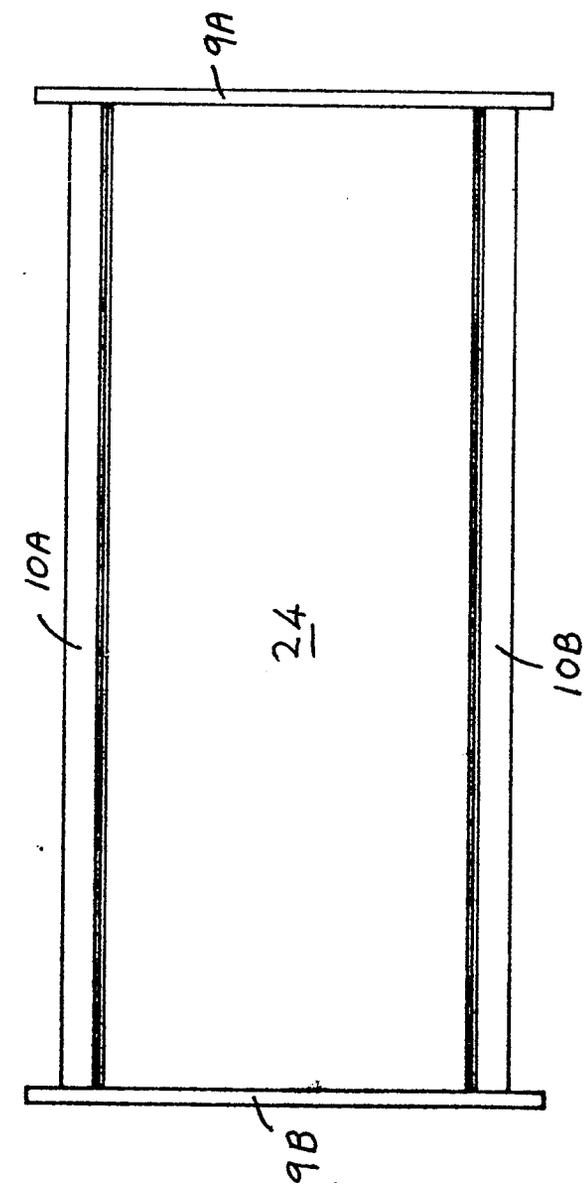

Figure 4a

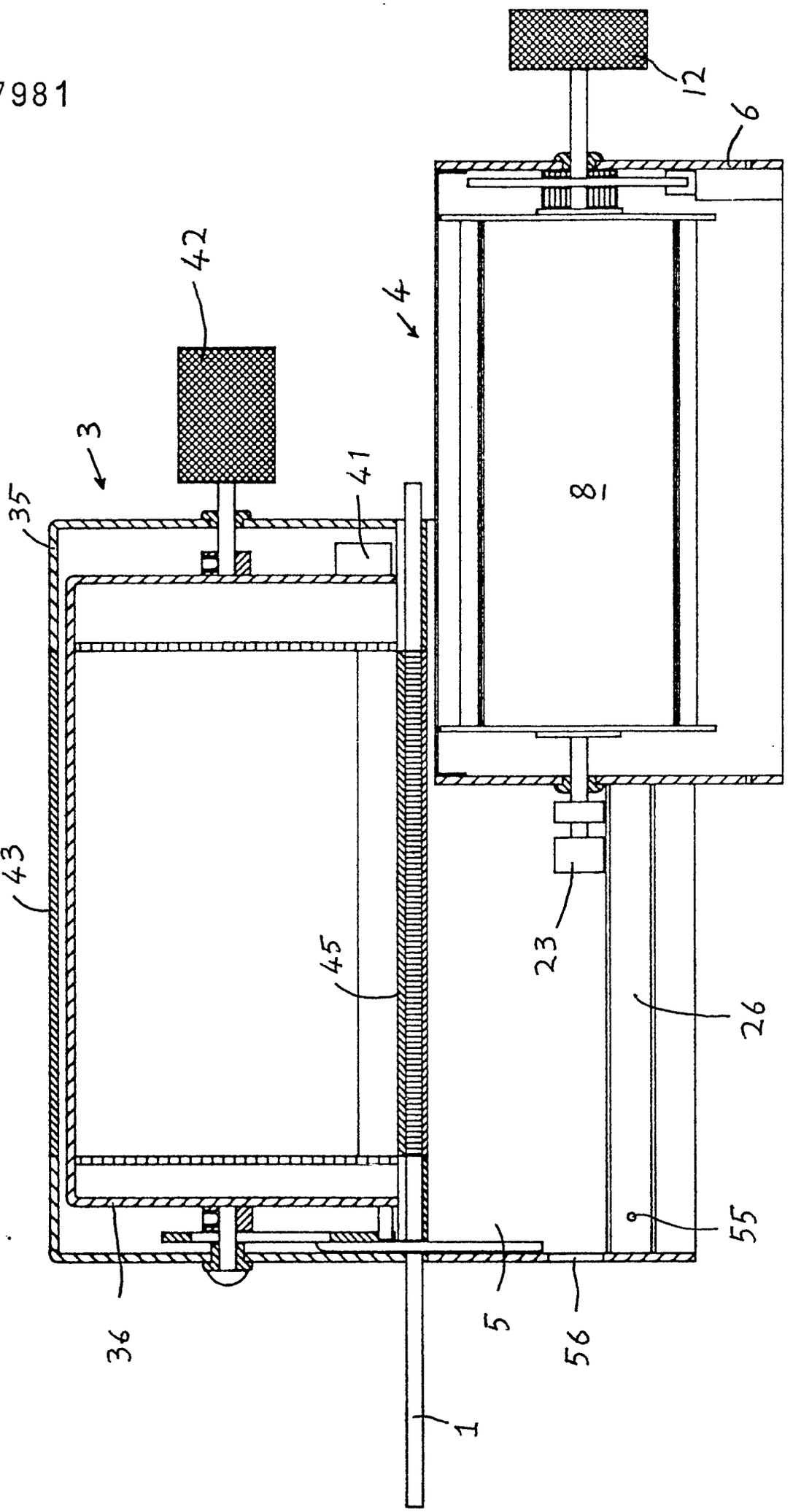

Figure 5

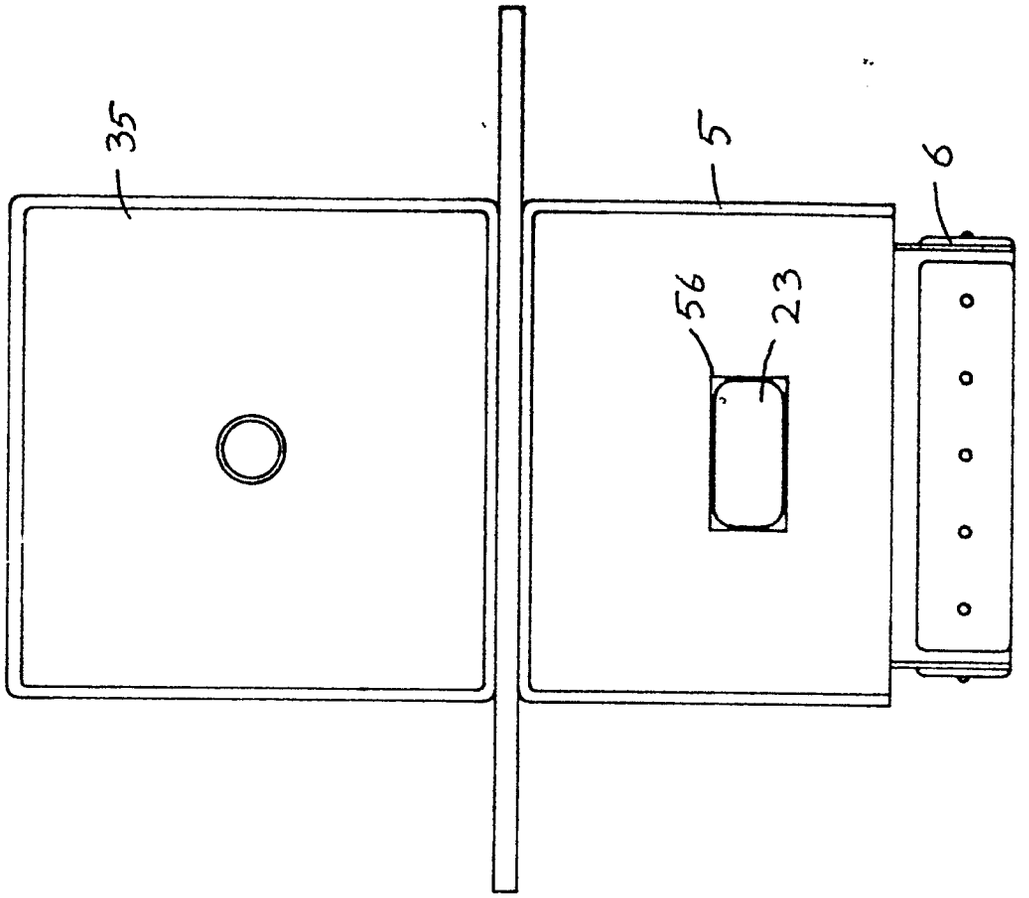

Figure 6.

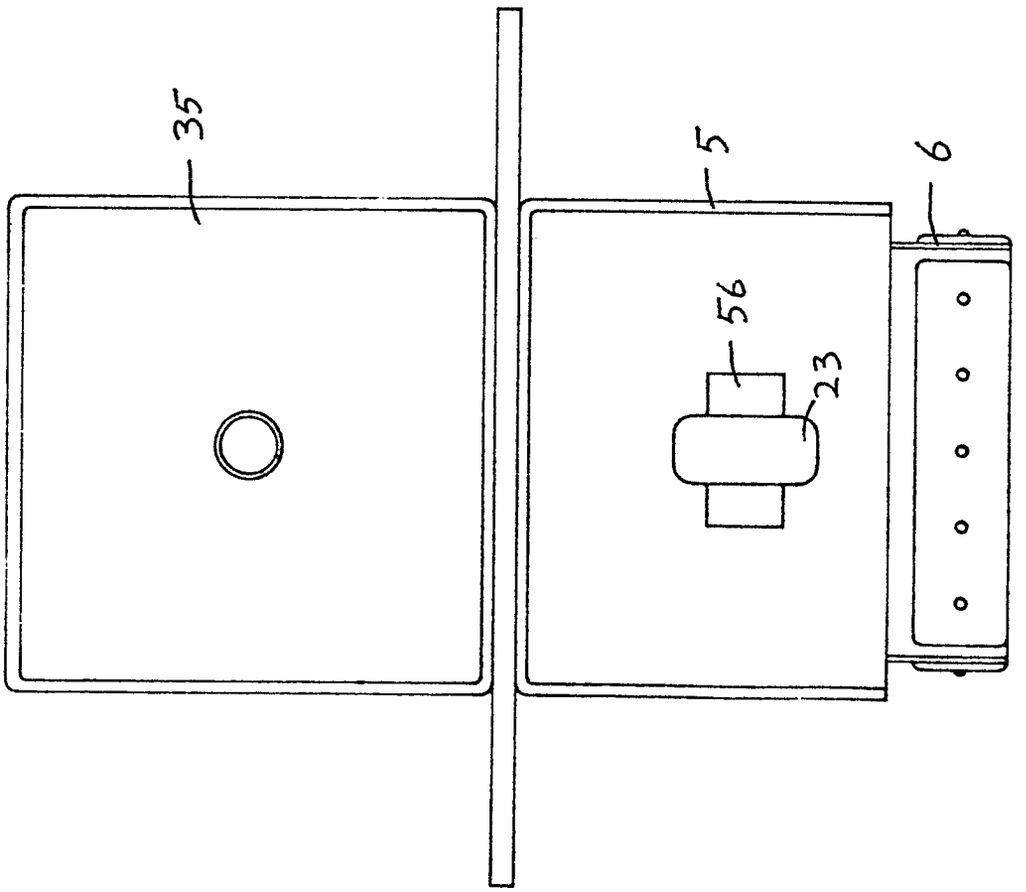

Figure 7

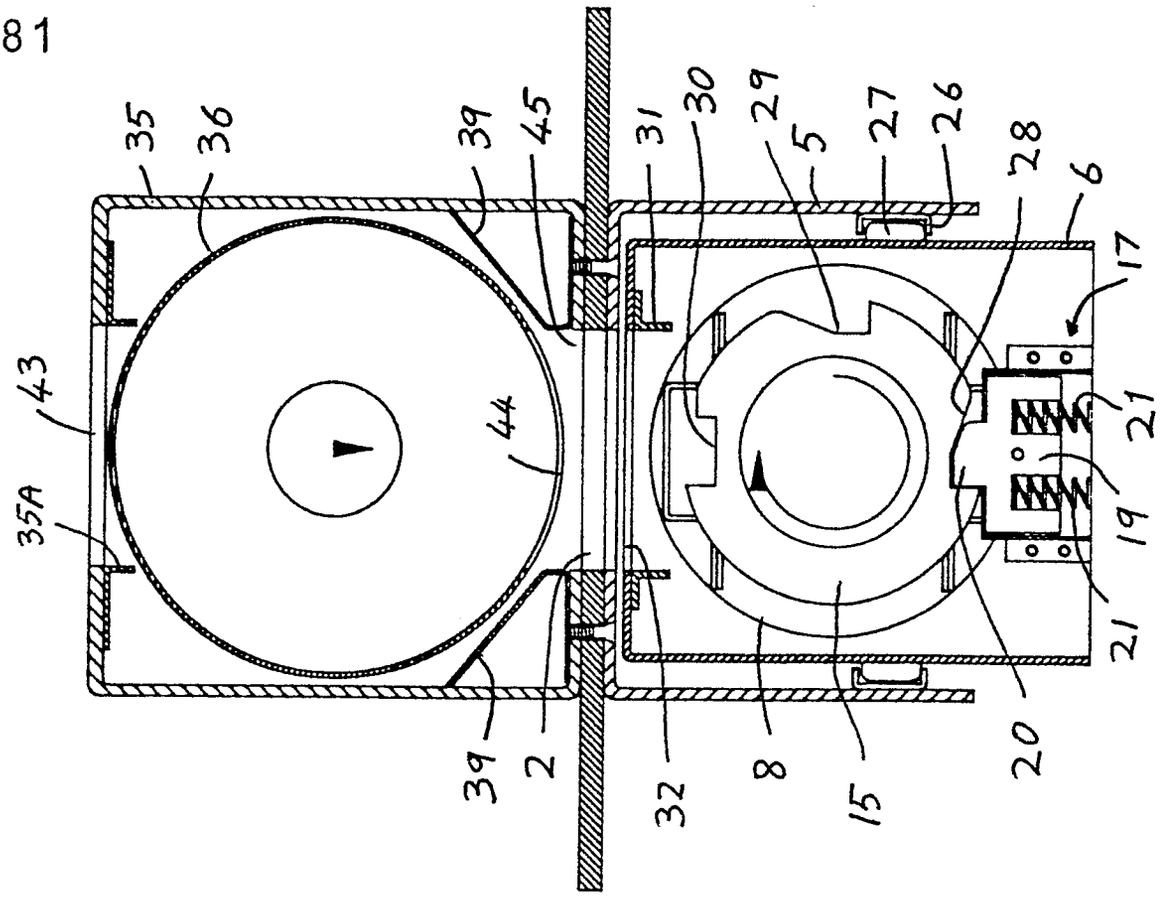

Figure 8a

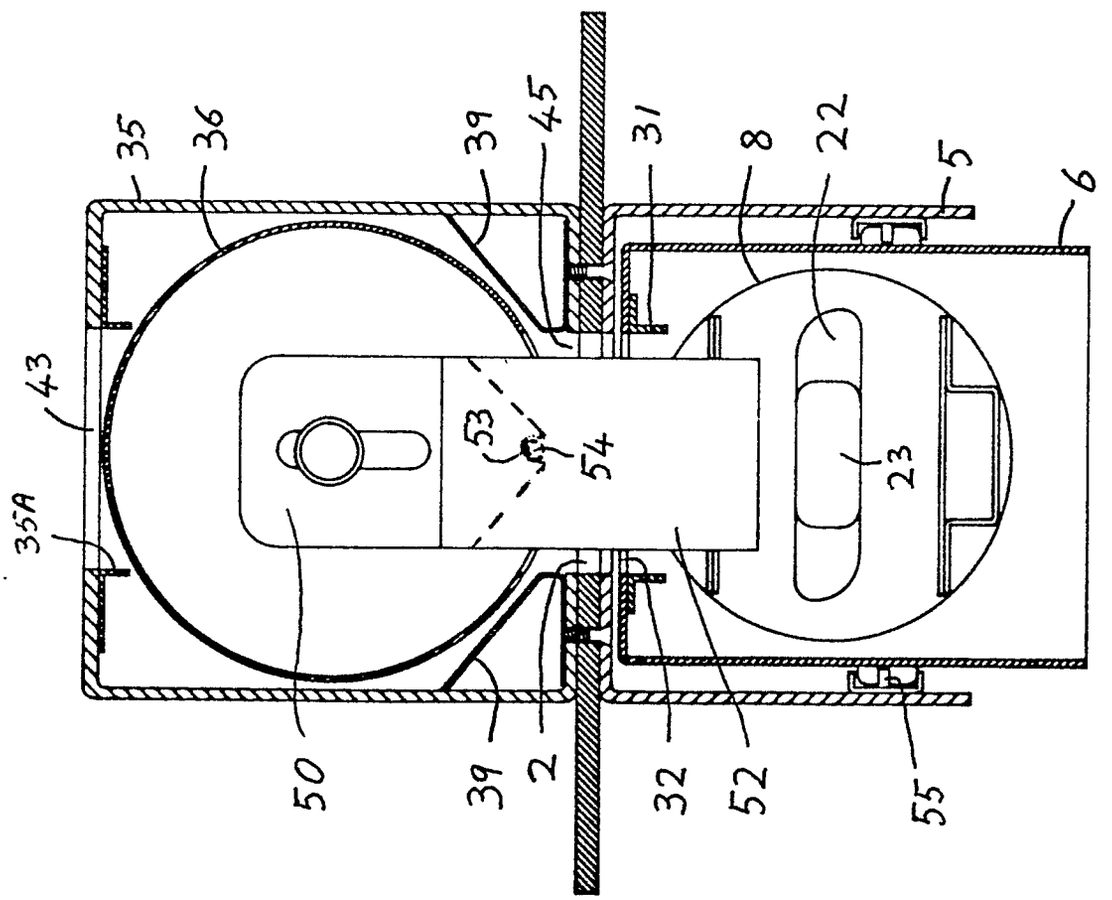

Figure 8b

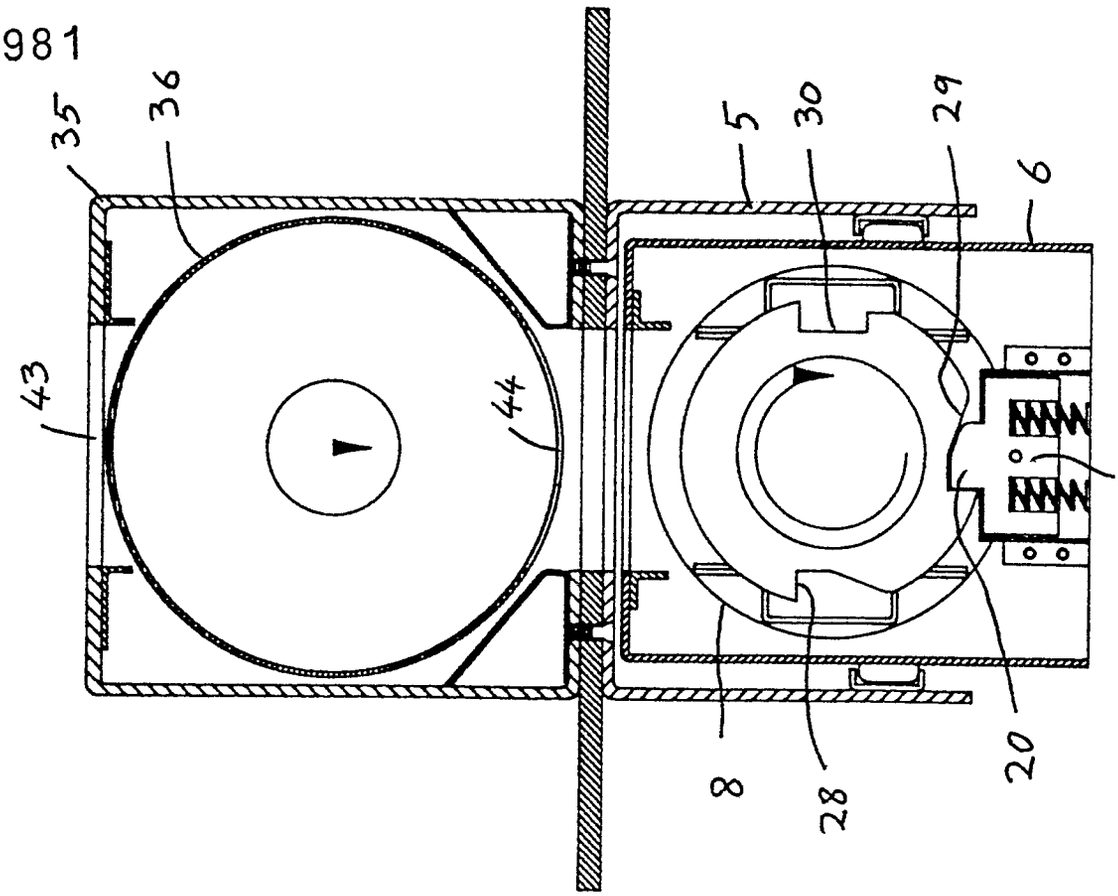

Figure 9a

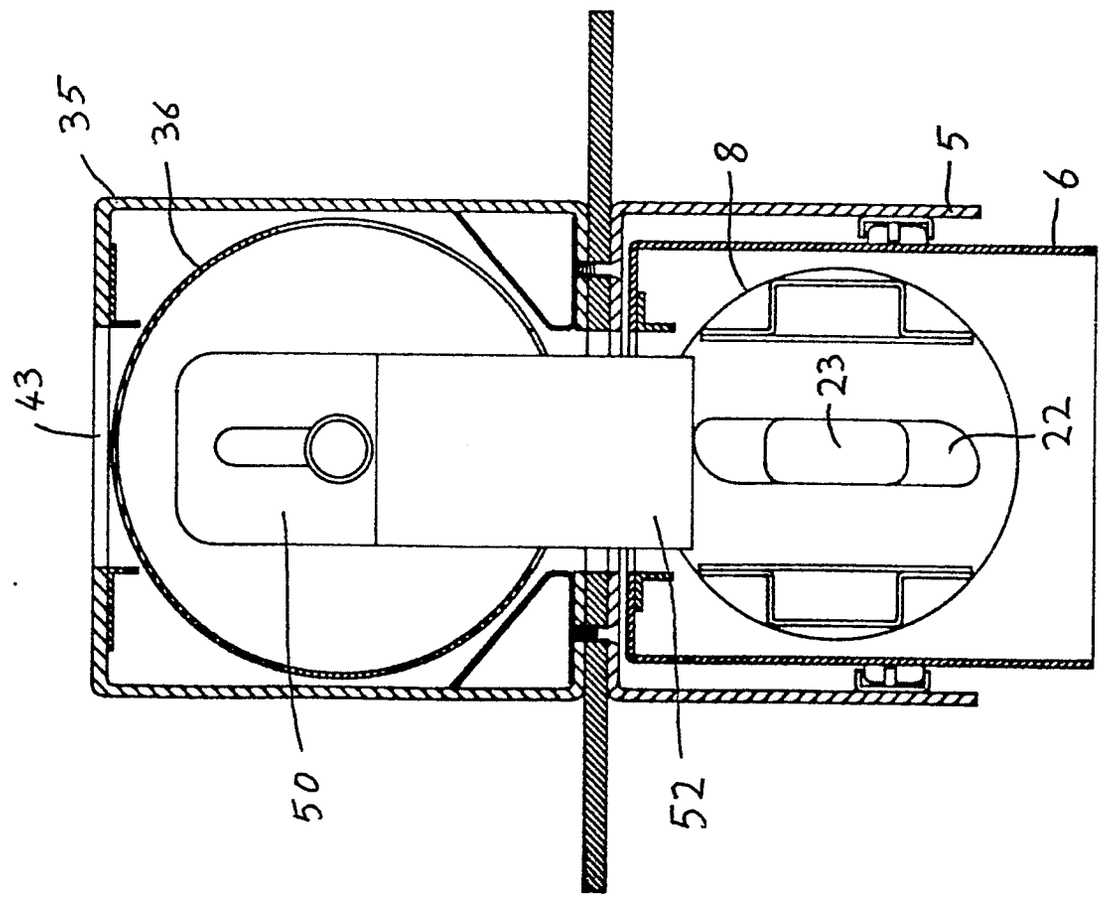

Figure 9b

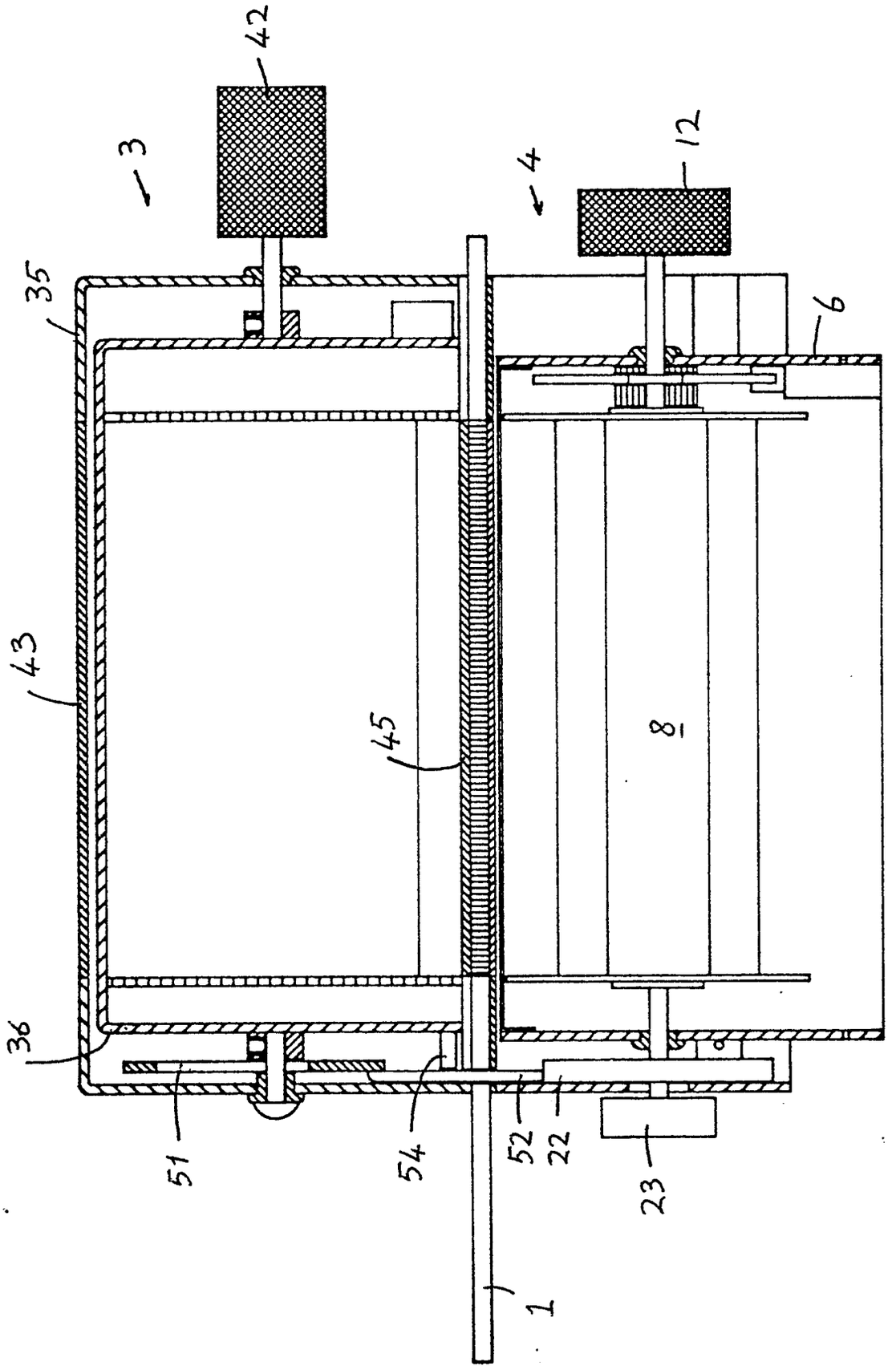

Figure 9c

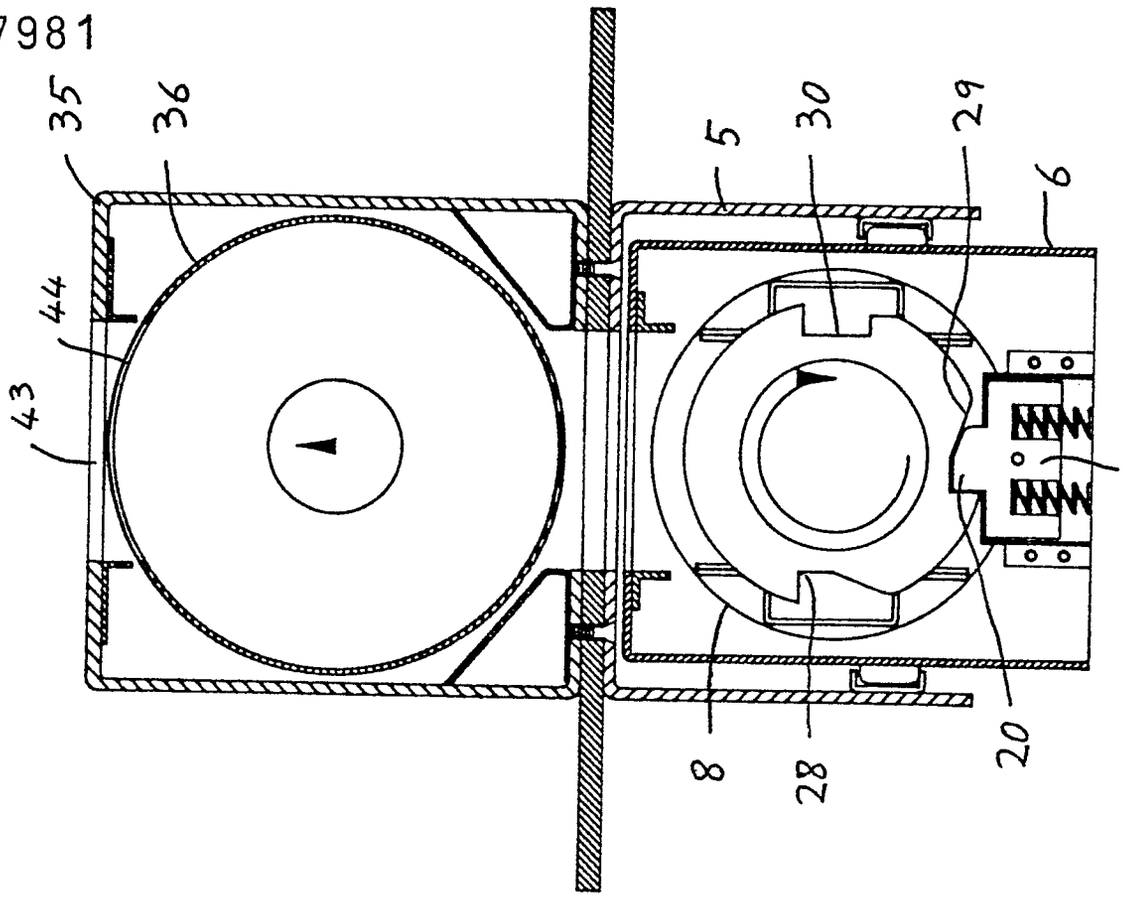

Figure 10a

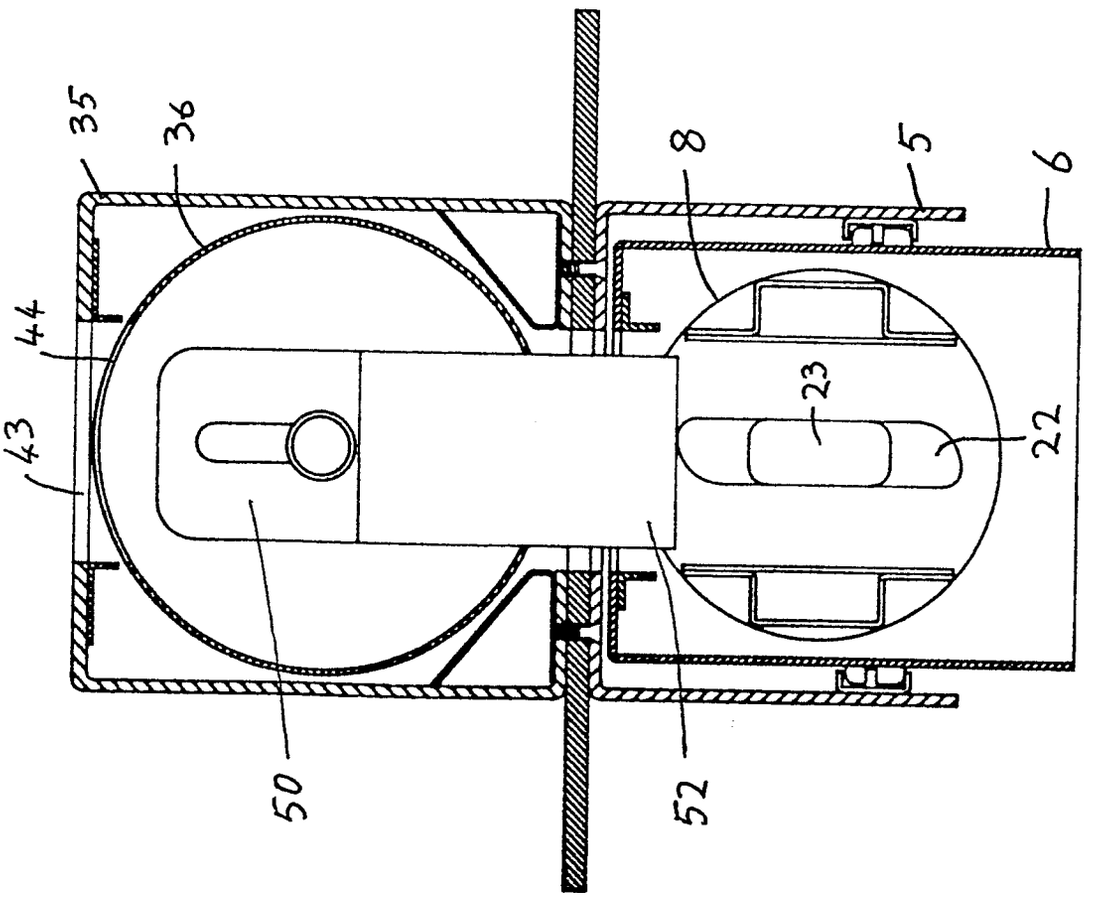

Figure 10b

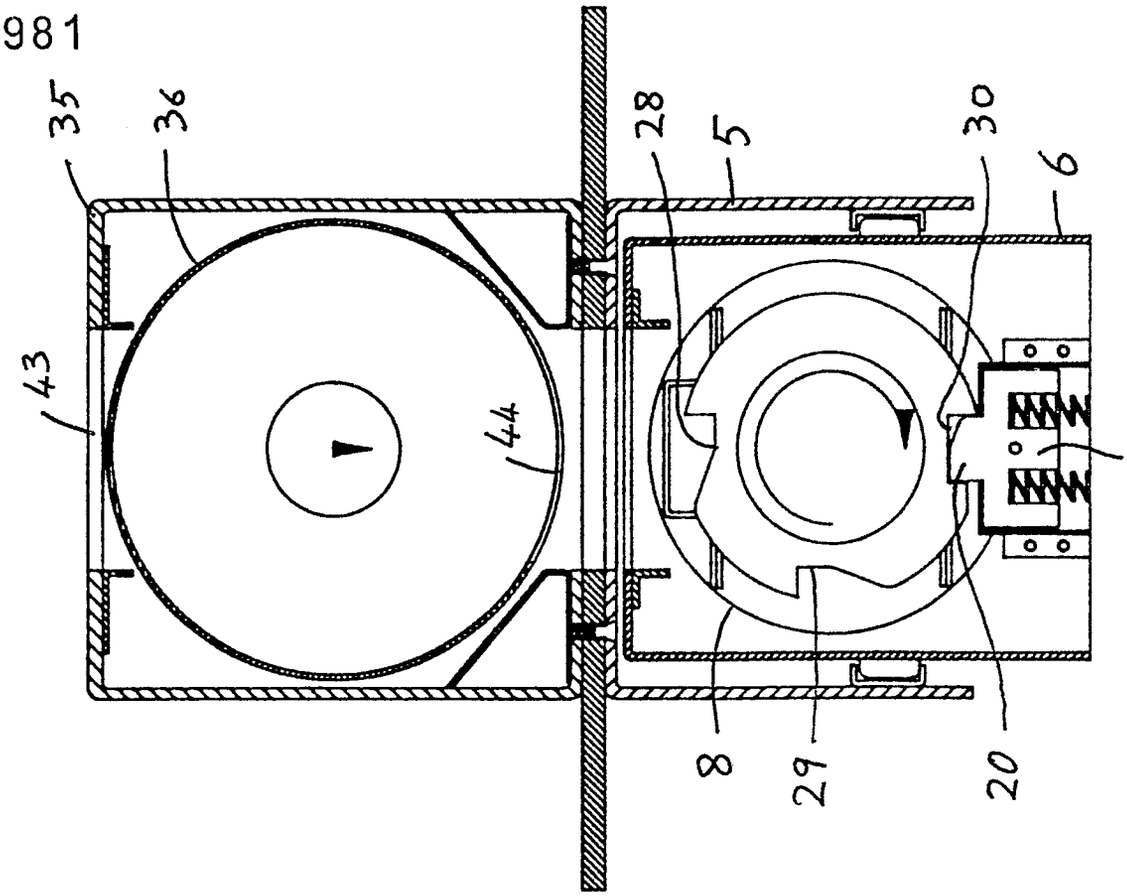

Figure 11a

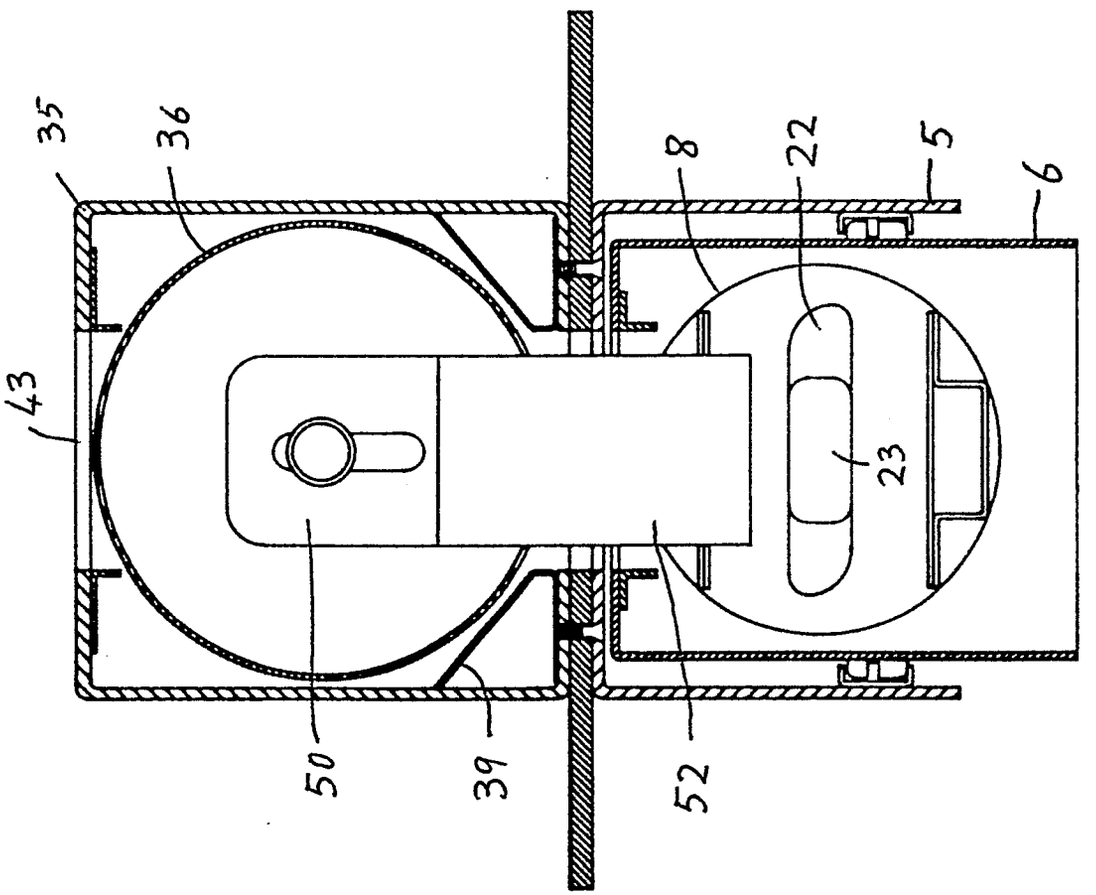

Figure 11b