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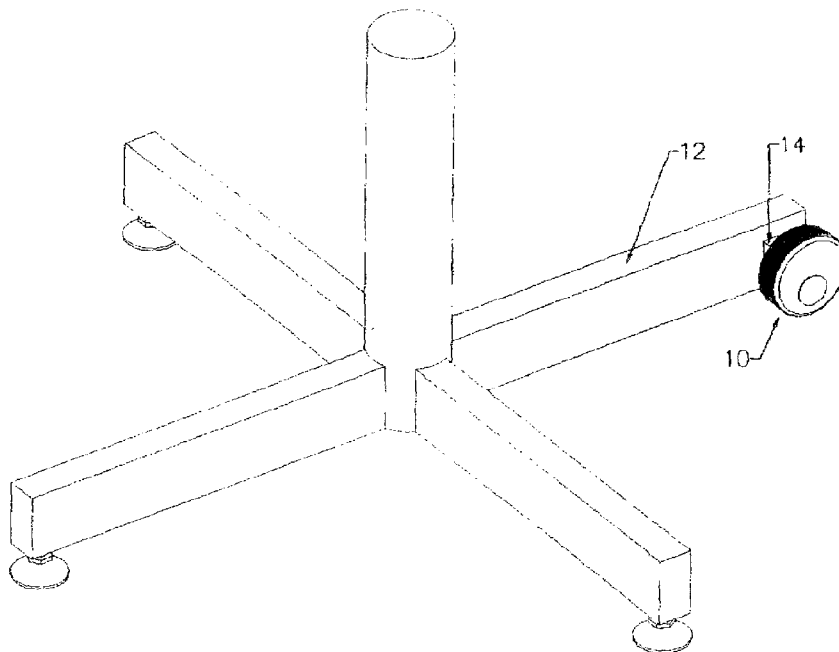
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(54) Title: DEVICE TO PREVENT ROCKING OF TABLES



(57) Abstract: A stabilising device for a table or the like article comprises a cam means (10) which is rotatable on an axle (18) to engage the surface on which the table is located to prevent it from rocking. The cam is mounted on the table leg by a bracket (14). The cam may be locked in the desired position.



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DEVICE FOR STABILISING TABLES

TECHNICAL FIELD OF THE INVENTION

5 This invention relates to a device for stabilizing tables in particular and preventing the rocking of such articles located on uneven surfaces or having legs of slightly different length.

BACKGROUND ART

10 In this specification, where a document, act or item of knowledge is referred to or discussed, this reference or discussion is not an admission that the document, act or item of knowledge or any combination thereof was at the priority date:

- (i) part of common general knowledge; or
- (ii) known to be relevant to an attempt to solve any problem with which this specification is concerned.

15 Restaurateurs in particular, are constantly frustrated by having to try to stabilize tables which rock due to the unevenness of floors. Tables must be moved constantly for cleaning purposes and to re-arrange settings for different-sized groups. Typically, the problem is attempted to be solved using wedges in the form of folded paper or even wooden wedges, but most often this achieves very little. A slight movement of the table
20 requires readjustment, adding to the frustration of waiters, patrons and the like.

It is an object of preferred embodiments of this invention to provide a stabilizer which is not only effective, but inexpensive to manufacture, easy to operate and further which is required to be fitted to only one leg of a table to be stabilized.

DISCLOSURE OF THE INVENTION

25 According to the invention, there is provided a device for stabilizing tables, chairs and other similar articles including a cam means mountable at the lower end of a leg of the article and being rotatable from a first position which, when the other legs of the article are flush with the surface upon which it is located, is spaced apart from the surface, and a second position in which a portion of the cam means is in contact with the surface,
30 such that the article is not susceptible to rocking when the cam means is in the second position and rotation of the cam is non-reversible, rotation being possible in one direction only.

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In the preferred form of the invention, the cam means is mounted at the lower end of the leg, and rotation thereof causes the leg to be raised or lowered; and means to releasably lock the cam in a desired position is provided.

In the one form of the invention, the cam comprises a wheel or pair of wheels. The
5 wheel operates as a cam by engaging a transverse shaft (wheel axle) at a point remote from the centre of the wheel. The eccentric attachment causes raising or lowering of the leg upon rotation of the wheel.

The cam is preferably non-reversible, being rotatable in one direction only. This enables the cam to be locked in the desired position.

10 In the preferred form of the invention, the wheel has braking means associated with the axle. The brake means preferably comprises a pawl and the axle comprises a ratchet-wheel. Rotation of the wheel about the axle in the clockwise direction is uninhibited, but attempted rotation in the anti-clockwise direction results in immediate engagement of the pawl with the inclined teeth of the ratchet-wheel to act as a brake.

15 The ratchet-wheel is housed within the hollow body of the wheel and is rotatable about the wheel hub. Integral with the ratchet wheel is a central cylindrical shaft which forms the wheel axle which extends through the wheel hub, through an opening to engage a mounting bracket.

In the preferred form of the invention, the mounting bracket for attaching the device
20 to the leg of the article is a right-angled bracket, one portion of which is securable to the leg of the table etc., the other providing a mounting point for the eccentric wheel. A mounting screw fastens the bracket to a wheel axle.

In this form, mounting screw engages a central bore in the axle, the outer end of the axle including a polygonal protrusion for engaging a complimentary opening in the bracket.
25 This ensures that the axle is fixed to the bracket and hence the table leg, with the wheel

rotating about the axle. The bracket is easily screwed or otherwise fastened to the table leg.

In an alternative form of the invention, the cam comprises a two-wheeled castor having an eccentrically located transverse axle, the wheel including a weighted section
5 biasing the wheel towards a particular orientation and enabling gravity-assisted rotation of the wheel.

This form of the invention may be secured to the leg of the table or other article by means of a suitable clamp or the like which is in turn secured to a shaft including at the lower end thereof a short transverse tubular section for receiving the transverse shaft of the
10 cam. It is important to note that the angle of the leg does not affect the operation of the device in that regardless of whether the leg is vertical, horizontal or at an angle therebetween, the cam will always engage the ground at the lowest point in its rotation path. The transverse tubular section is provided with a clutch bearing with which the transverse shaft of the wheel is rotatable in one direction only.

In use, the device is fitted to one leg of a table for example. When the table is
15 located in a desired position and it is found that the table is not stable due to unevenness of the floor, the cam wheel is rotated clockwise into a position in which the rocking of the table is eliminated as the cam has effectively filled the gap between the floor and the bottom of the leg to which it is attached. At this point the cam cannot be rotated in the
20 reverse direction due to the non-reversible nature of the cam.

The diameter of the wheel will determine the size of the leg lengthening or put differently, the size of the gap which the device will take up to eliminate unsteadiness. The advantage of the device is that incremental adjustments are possible down to fractions of a millimetre ensuring that the exact height adjustment required is achievable.

The device of the invention may be retro-fitted to an existing table or may be
25 supplied integral with a table. Thus, according to a second aspect of the invention, a table or the like includes a cam means attached to at least one leg thereof, the cam means being

movable from a first position which, when the other legs of the article are flush with the surface upon which it is located, is spaced apart from the surface, and a second position in which a portion of the cam means is in contact with the surface, such that the article is not susceptible to rocking when the cam means is in the second position.

5 BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the preferred form of the invention is described below with reference to the accompanying drawings in which:

Figure 1(a) is an isometric view of the legs of a 4-legged table fitted with a device according to the invention;

10 Figures 1(b) and 2 are magnified isometric side views of a device of Figure 1 in minimum and maximum leg lengthening positions respectively;

 Figures 3 and 4 are identical views to Figures 1 and 2 but with the cover plate removed;

 Figure 5 is a side view with the brake disengaged;

15 Figures 6 and 7 are side views of the device with the brakes engaged in the position of Figures 1 and 3; 2 and 4 respectively;

 Figures 8 and 9 are rear views of the device in the position of Figures 1, 3 and 2, 4 respectively,

 Figure 10 is an exploded isometric view of the device;

20 Figure 11 is a magnified isometric view of the front of the wheel, ratchet-wheel and brake;

 Figure 12 is a rear view of the components of Figure 11;

 Figure 13 is a front isometric view of the bracket and cover plate;

 Figure 14 is a rear isometric view of the components of Figure 13.

25 DESCRIPTION OF THE BEST MODE

In the drawings, a device according to the invention comprises an eccentric wheel 10 fastened at or near the base of a table leg 12. The eccentric wheel operates as a cam

and when rotated, effectively raises the table leg by any desired amount between the minimum and maximum positions shown in Figures 1 and 2 respectively. The wheel is rotatable in one direction only, namely clockwise. Attempted rotation in an anti-clockwise direction results in a brake engaging. This allows the device to be set at the correct position
5 to prevent it from rocking.

The wheel is mounted on a table leg using a bracket 14 fastened to the leg by a bolt or screw. Where the table has built-in levellers, one may be removed and replaced with the device of the invention. Mounting screw 16 fastens the bracket to the wheel axle 18 which protrudes from the rear of the wheel hub 20. The rear of the axles has a central bore 22 of
10 receiving the mounting screw and is further square in section. The bracket includes an identical square hole 24 for engaging the square rear 23 of the axle, preventing rotation of the axle relative to the bracket and hence the table leg. As shown in Figure 12, the axle 18 comprises a central cylindrical shaft 26 affixed at the inner end to a ratchet-wheel 28 of greater diameter than the cylindrical shaft 26. The channel formed between the shaft and
15 the ratchet-wheel fits onto the wheel hub 20 and rotates therearound.

The ratchet-wheel 28 is housed within the hollow body of the wheel 10. The braking mechanism associated with the axles comprises a pawl 30 pivotally mounted at 32 and which includes a bracing element 34. This arrangement permits inhibited clockwise rotation of the wheel about the axle, but rotation in an anti-clockwise direction causes
20 immediate engagement of teeth 36 of the brake with the teeth 38 of the ratchet-wheel.

As can be seen from Figures 3 through 7, the wheel 10 is mounted eccentrically, the wheel axle 18 and the wheel hub 20 being located between the centre of the wheel and the edge thereby. Rotation thereof consequently follows a path which causes the distance from the centre of the axle 18 to the ground (distance A - A in Figure 5) to progressively
25 increase to a maximum measured by distance B - B in Figures 6 and 7. This rotation therefore effectively increases the gap between the bottom of the leg 12 and the floor to stabilise the table and prevent it from rocking. This is further illustrated by comparing the distance between the base of the leg 40 and the base of the wheel 42 (distances X-Y and X-Z in Figures 8 and 9). The rotation may be stopped and locked at any point between the

positions shown in Figures 3 and 4 to effectively reduce the gap by the amount required to stabilise the table. Further clockwise rotation towards the starting point shown in Figure 3 results in the table become progressively less stable.

DESCRIPTION OF ALTERNATIVE MODE OF THE INVENTION

5 Figures 15, 16 and 17 are isometric front views of the device according to the invention in three different positions equating to three (of many) possible height adjustments;

 Figure 18 is an exploded isometric view of the device;

 Figure 19 is an isometric view of the table with the device attached to one leg;

10 and

 Figure 20 is a magnified view of the lower end of the table leg.

 In Figures 15 to 18, a device 50 according to the invention comprises a two-wheeled castor having an eccentrically located transverse axle 52 to which is attached a vertical shaft 54. The vertical shaft is clamped (Figures 19 and 20) to a leg 56 of a table 15 58 to be stabilized. In this illustration the table leg is vertical and hence shaft 54 is vertically orientated. Should the table leg be horizontal or angled, the shaft would simply be orientated at a similar angle for ease of clamping.

 At least one wheel of the castor includes a weighted segment 60 in the form of a metal insert which biases the wheel to the desired orientation under the action of gravity.

20 The castor acts as a non-reversible cam which only turns in a clock-wise direction and accordingly, once the wheels have been rotated into the required location in which the effective length of the table leg has been increased, the wheels cannot roll backwards and reverse the leg extension. The non-reversible motion of the cam is achieved by mounting the transverse axle, which may be provided in two sections 52a and 52b, within a clutch 25 bearing 64 provided within the tubular section 66 at the base of shaft 54. The clutch bearing permits rotation in one direction only.

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In Figures 15 to 17, three different positions or orientations of the device are illustrated. In Figure 1, the transverse shaft or axles 52 of the device is located at the top of the wheel and hence in a position to give the greatest height extension. In Figure 16, the axle is approximately at the midpoint of the wheel
5 and the extension provided is approximately half of that of Figure 1. In Figure 17, however, the extension given by the device is minimal.

In Figures 19 and 20, the device of the invention is shown locked in a position in which the table 58 is stabilized, level and will not rock. Clamp 62 mounts the device onto the table leg 56.

10 The word 'comprising' and forms of the word 'comprising' as used in this description and in the claims do not limit the invention claimed to exclude any variants or additions. Modifications and improvements to the invention will be readily apparent to those skilled in the art. Such modifications and improvements are intended to be within the scope of this invention.

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The Claims Defining the Invention are as follows:

1. A device for stabilizing tables, chairs and other similar articles including a cam means mountable at the lower end of a leg of the article and being rotatable from a first position which, when the other legs of the article are flush with the surface upon which it is located, is spaced apart from the surface, and a second position in which a portion of the cam means is in contact with the surface, such that the article is not susceptible to rocking when the cam means is in the second position, and rotation of the cam is non-reversible, rotation being possible in one direction only.
2. A device according to claim 1, wherein the cam comprises an eccentric wheel, the eccentric attachment of the wheel axle to the wheel resulting in raising and/or lowering of the leg upon rotation of the wheel
3. A device according to claim 2, wherein the wheel has braking means associated with the wheel axle.
4. A device according to claim 3, wherein the braking means comprises a pawl and the axle comprises a ratchet-wheel.
5. A device according to claim 4, wherein rotation of the wheel about the wheel axle in the clock-wise direction results in immediate engagement of the pawl with the inclined teeth of the ratchet-wheel to act as a brake.
6. A device according to claim 4 or claim 5, wherein the ratchet-wheel is housed within the hollow body of the wheel and is rotatable about the wheel hub, the ratchet-wheel including an integral central cylindrical shaft which forms the wheel axle which extends through the wheel hub through an opening to engage a mounting bracket.
7. A device according to any one of claims 2 to 7, wherein a mounting screw engages a central bore in the wheel axle, the outer end of the wheel axle including a polygonal protrusion for engaging a complimentary opening in a mounting bracket.
8. A device according to any one of claims 2 to 7, wherein the cam comprises a two-wheeled castor having an eccentrically located transverse axle, the

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wheel including a weighted section biasing the wheel towards a particular orientation and enabling gravity-assisted rotation of the wheel.

- 9. A device according to claim 8 wherein the castor is secured to the leg of the table or other article by means of a suitable clamp or the like which is in turn secured to a shaft including at the lower end thereof a short transverse tubular section for receiving the transverse shaft of the cam.
- 10. A device according to claim 9, wherein the transverse tubular section is provided with a clutch bearing with which the transverse shaft of the wheel is rotatable in one direction only.
- 10 11. A device for stabilizing tables, chairs and other similar articles, substantially as herein described with reference to any one of the accompanying drawings.

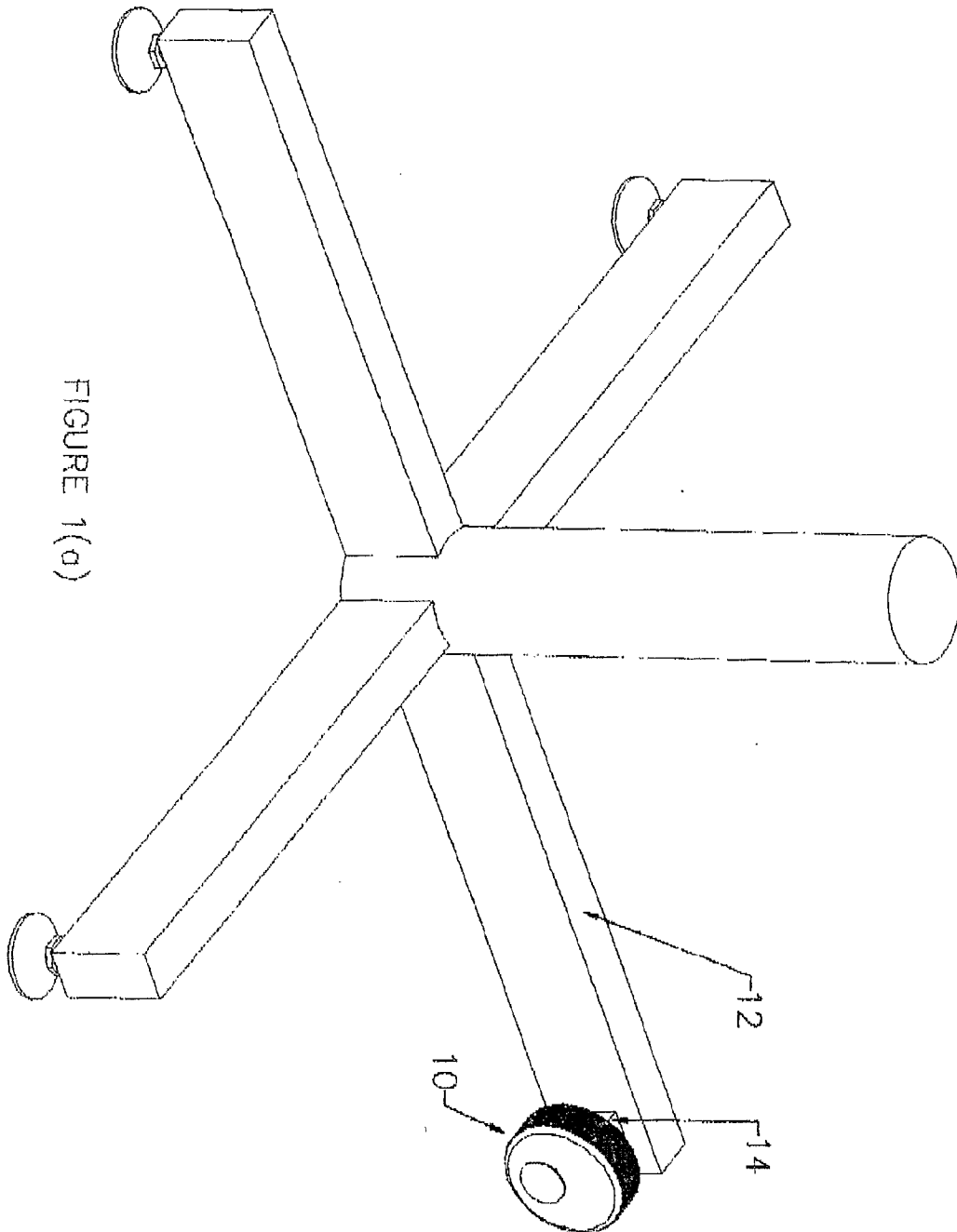


FIGURE 2

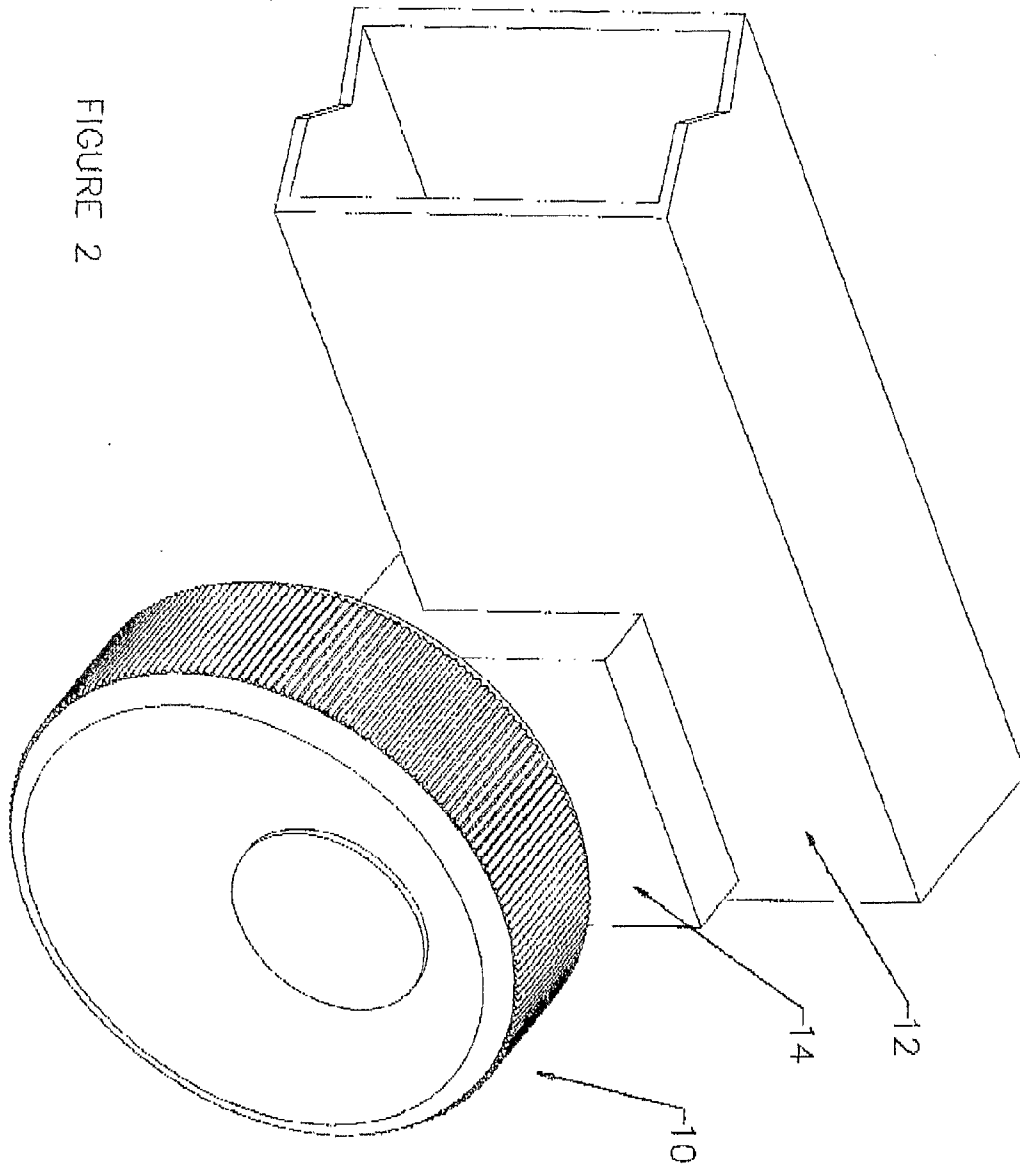


FIGURE 1(b)

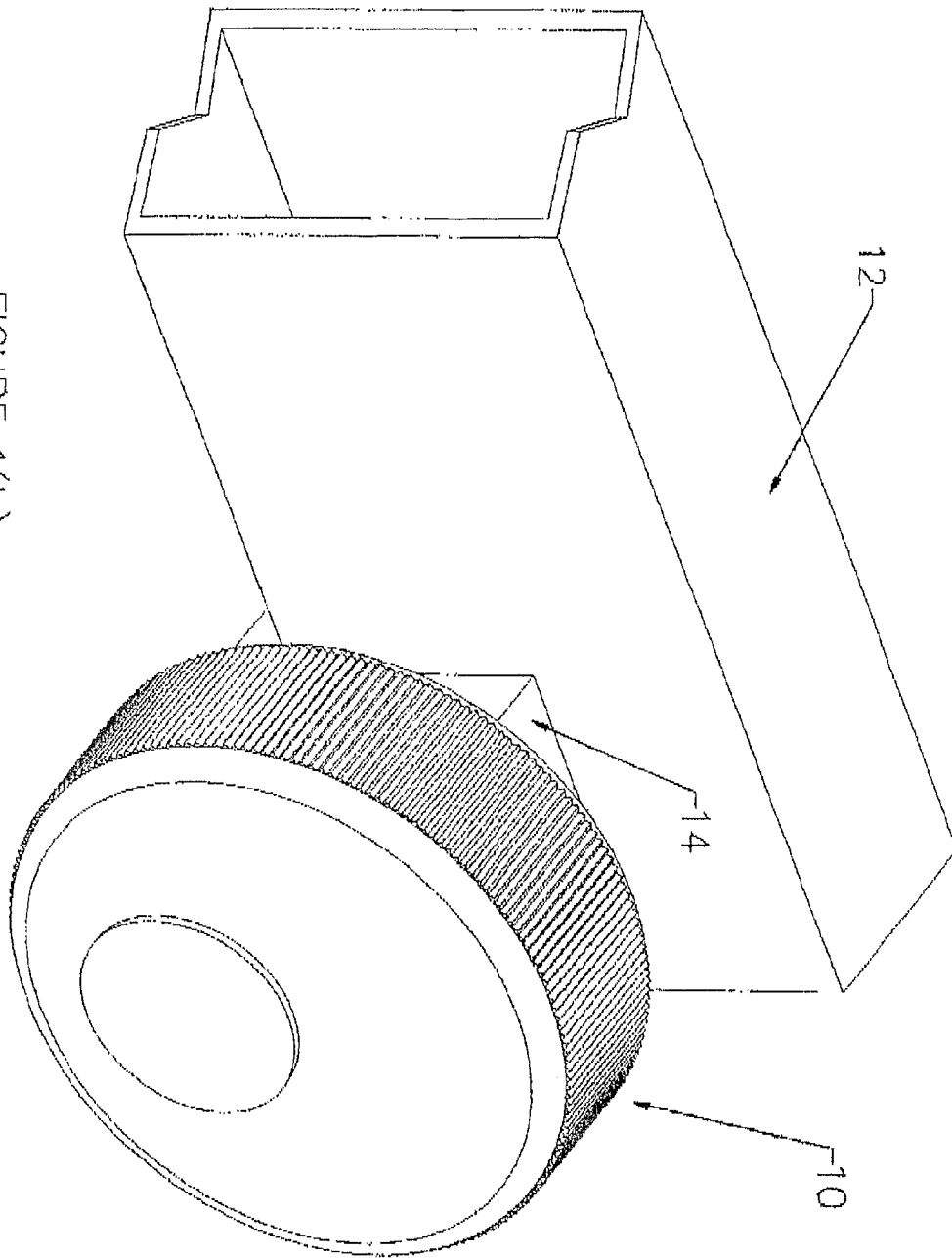


FIGURE 4

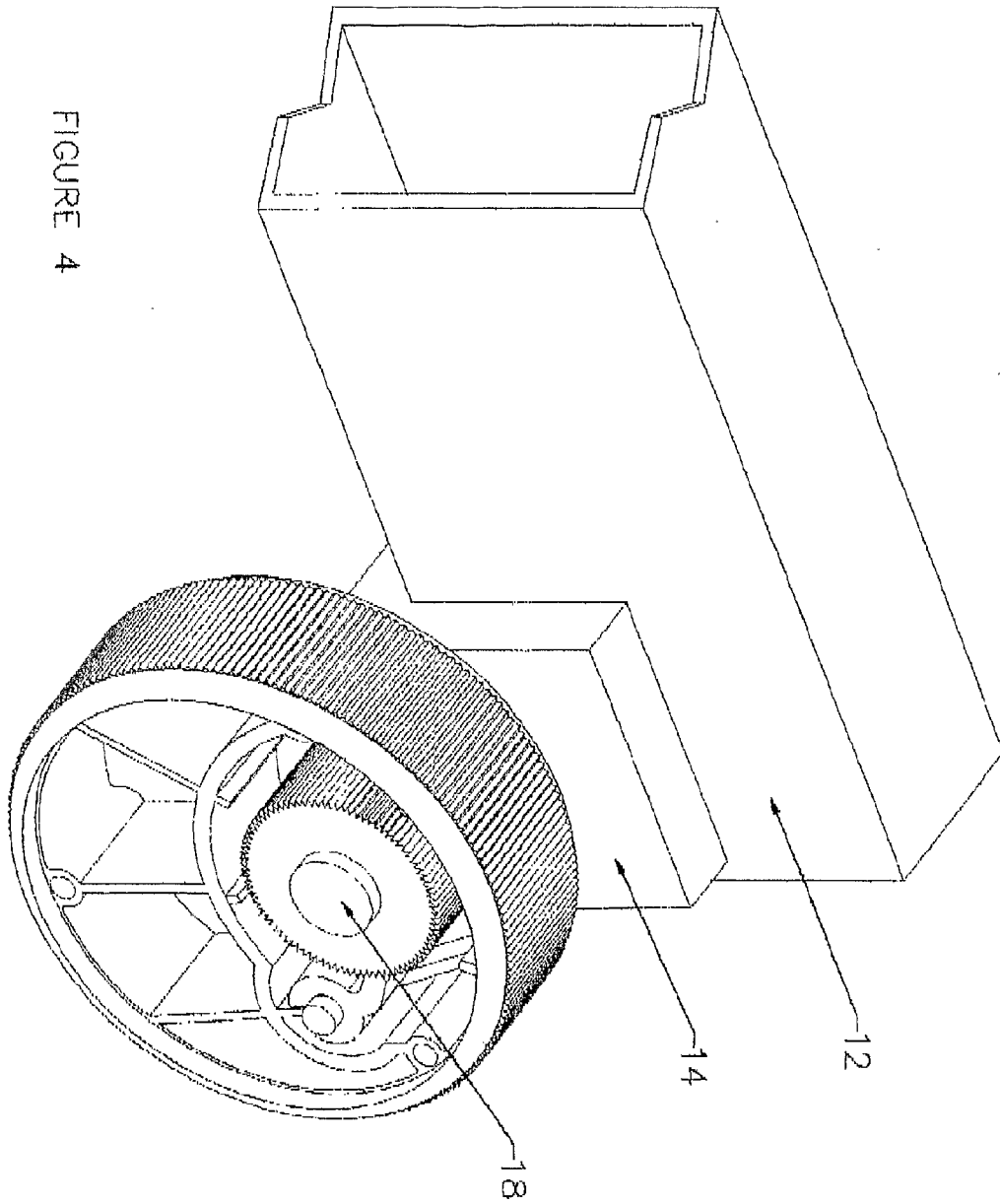
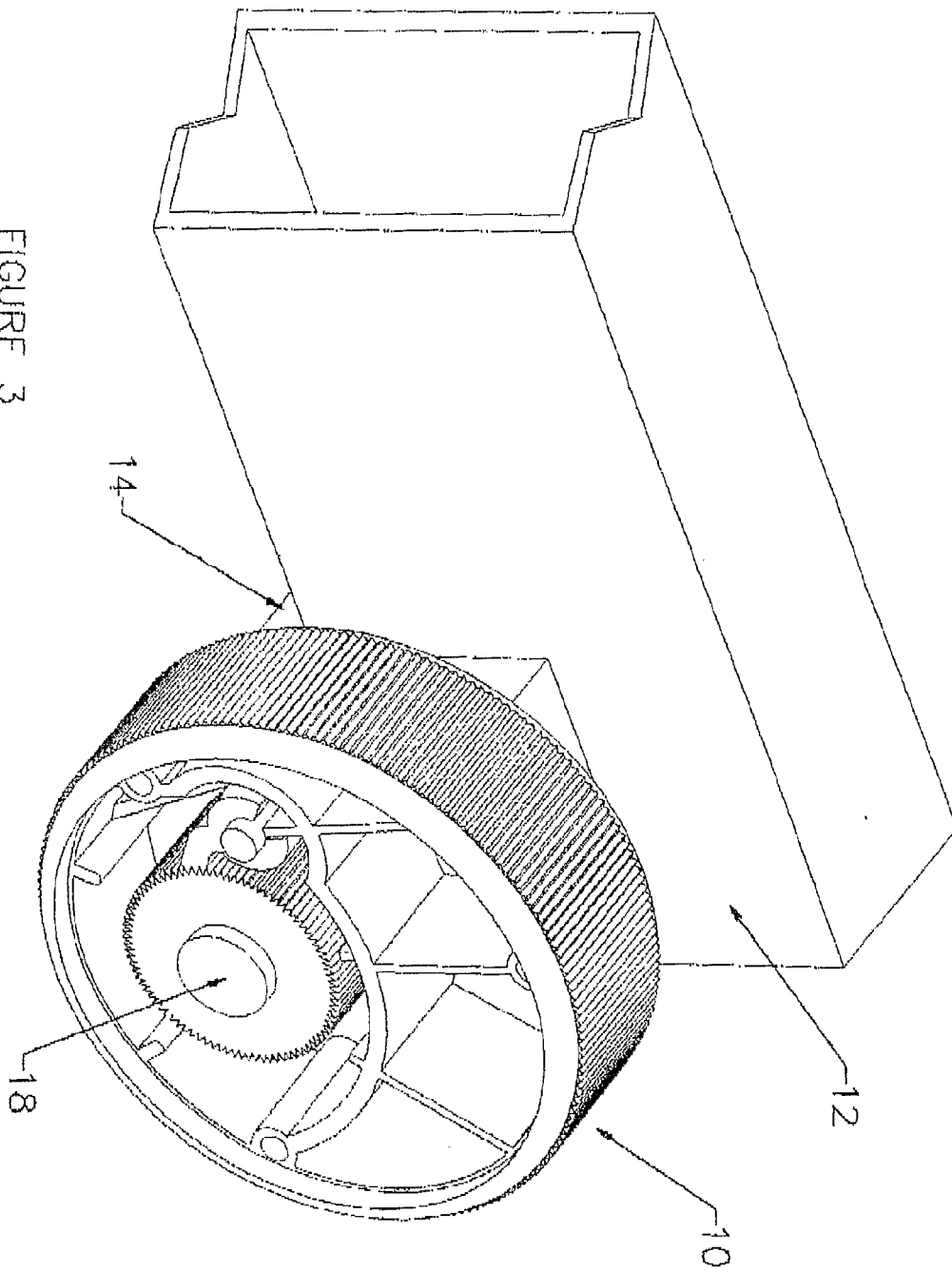


FIGURE 3



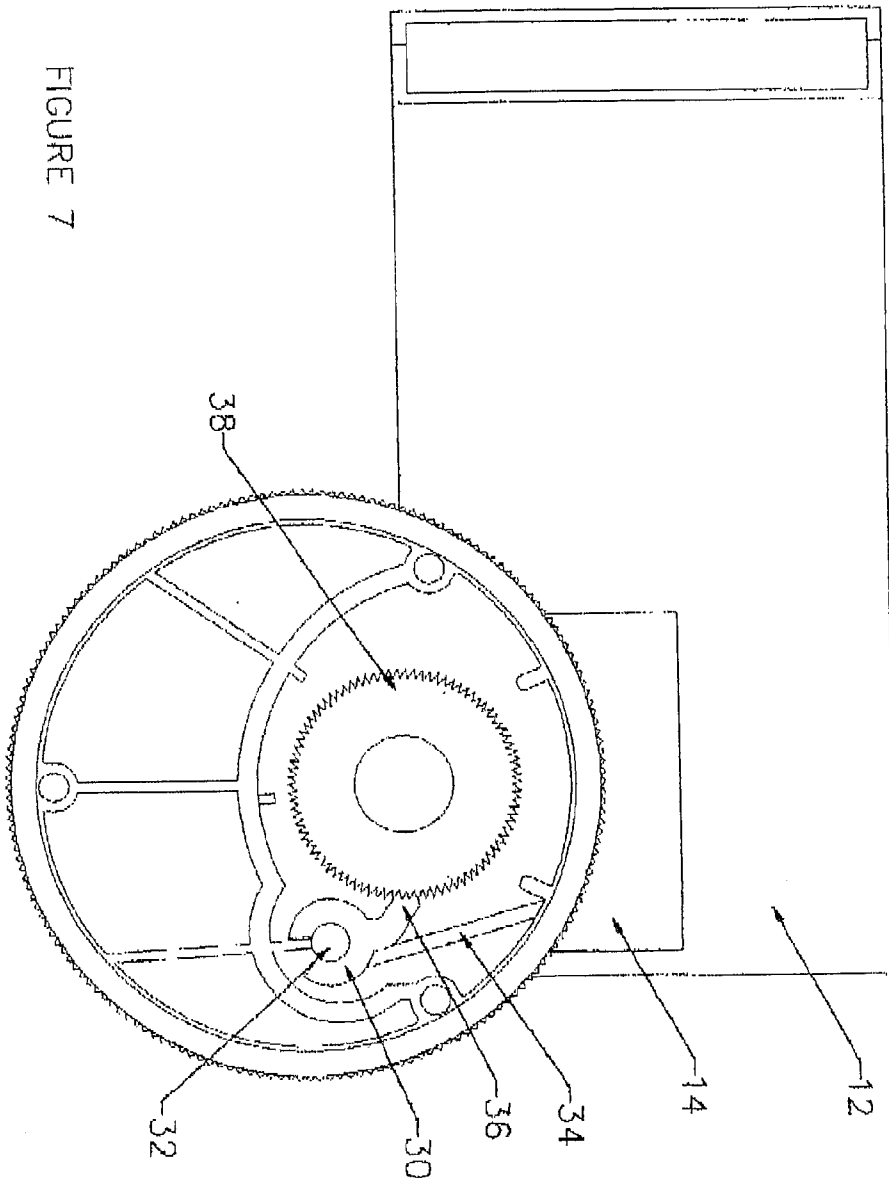


FIGURE 7

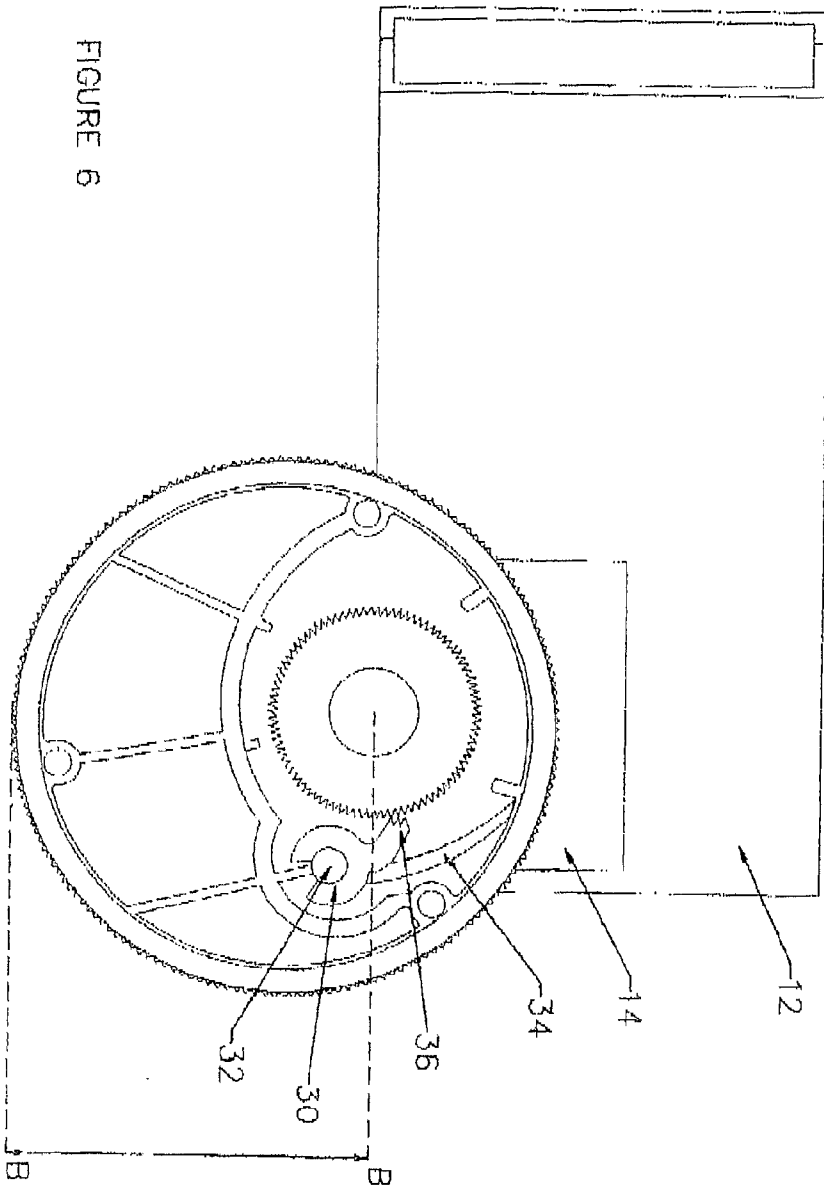


FIGURE 6

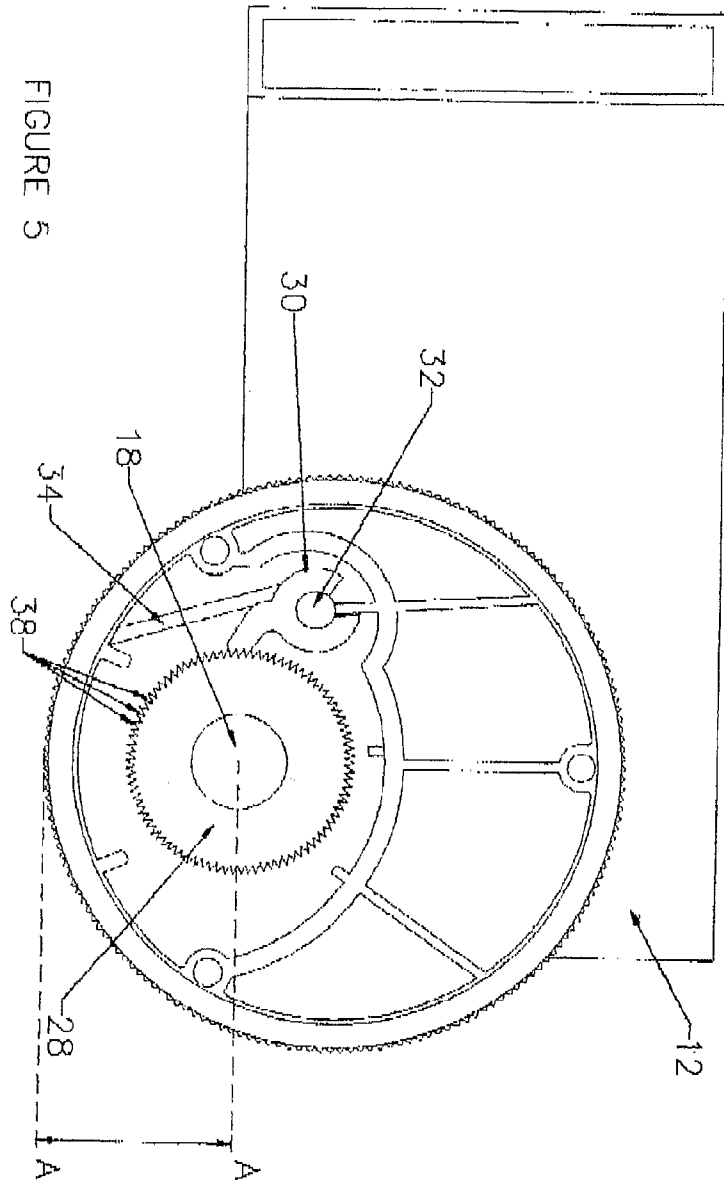


FIGURE 5

FIGURE 9

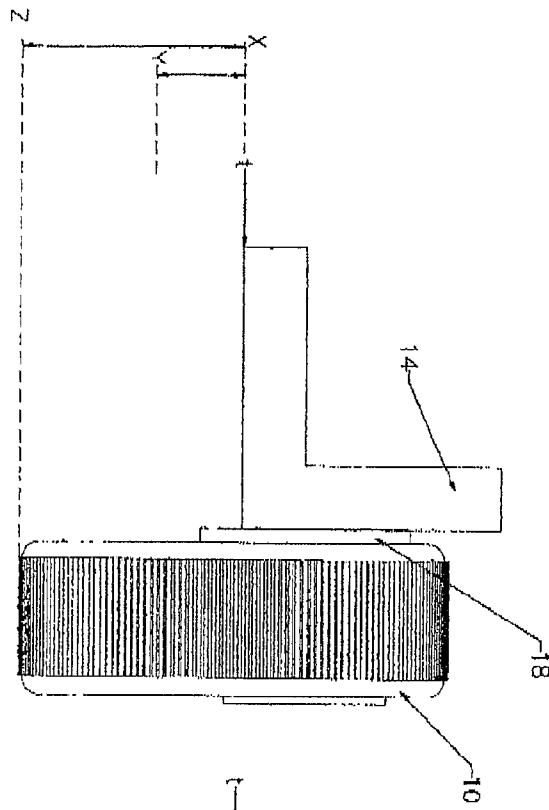
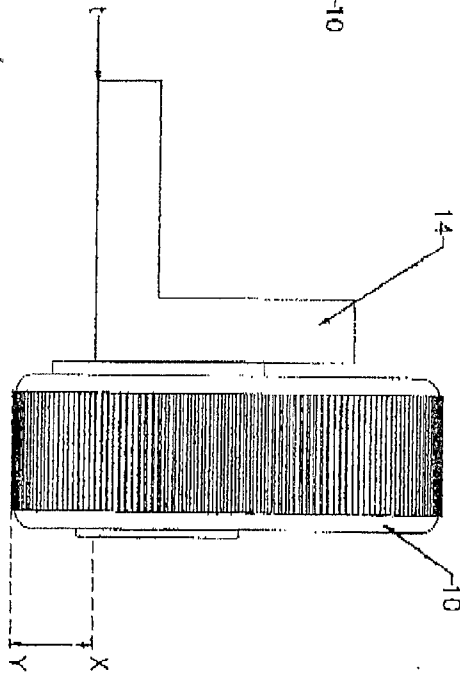


FIGURE 8



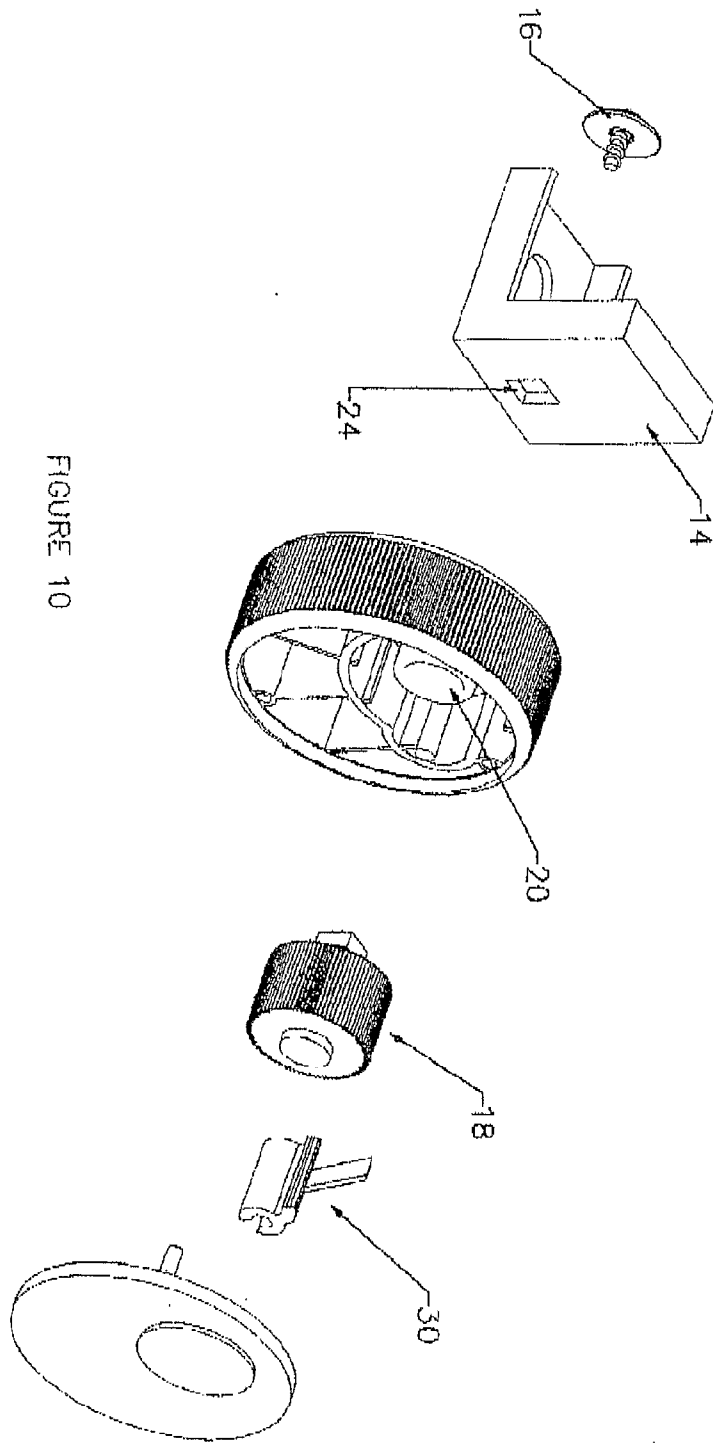


FIGURE 10

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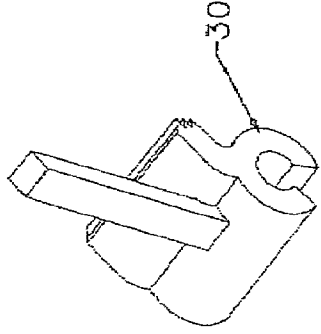
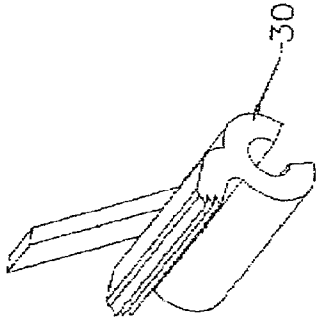
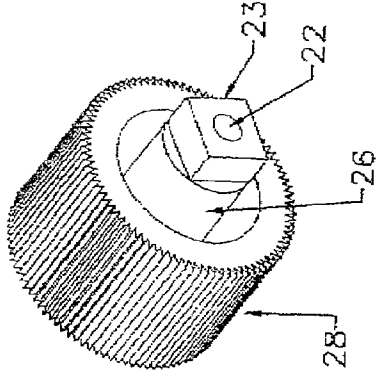
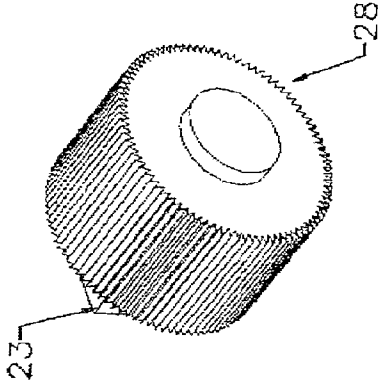
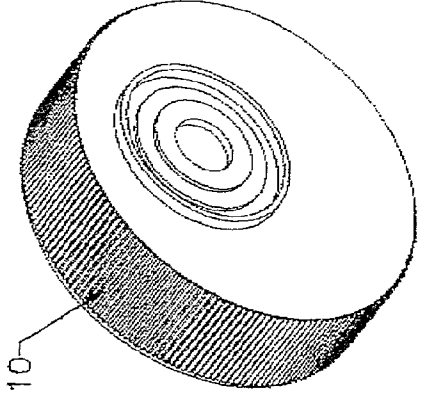
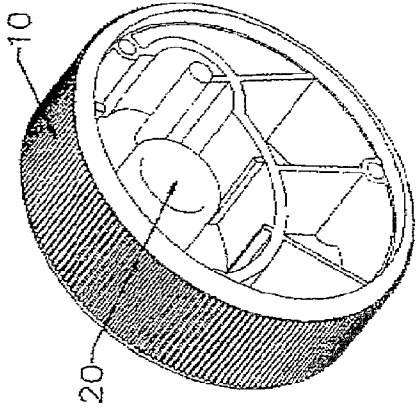


FIGURE 11

FIGURE 12

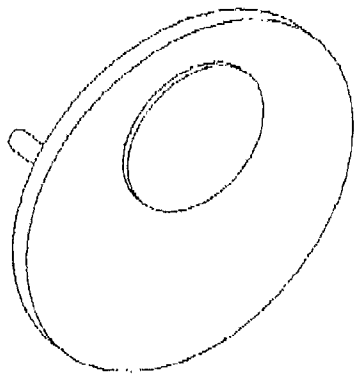
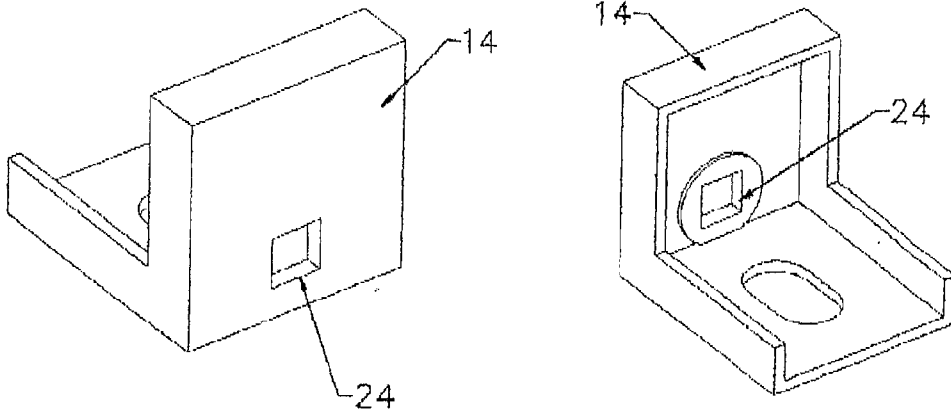


FIGURE 13

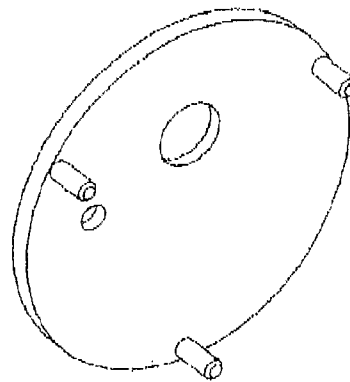


FIGURE 14

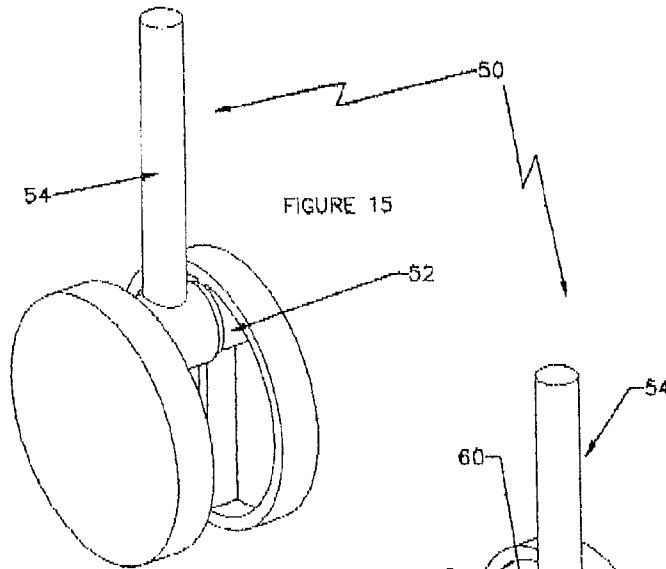


FIGURE 15

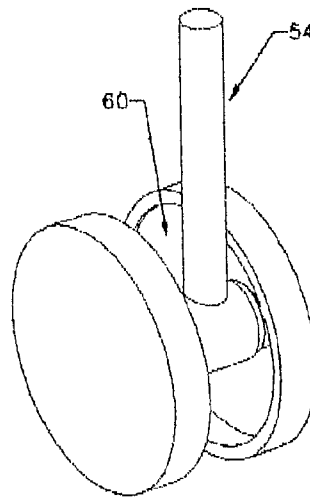


FIGURE 16

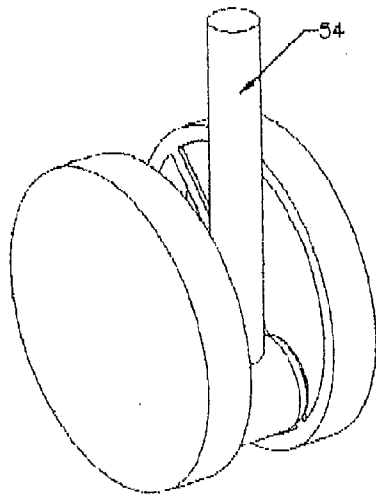


FIGURE 17

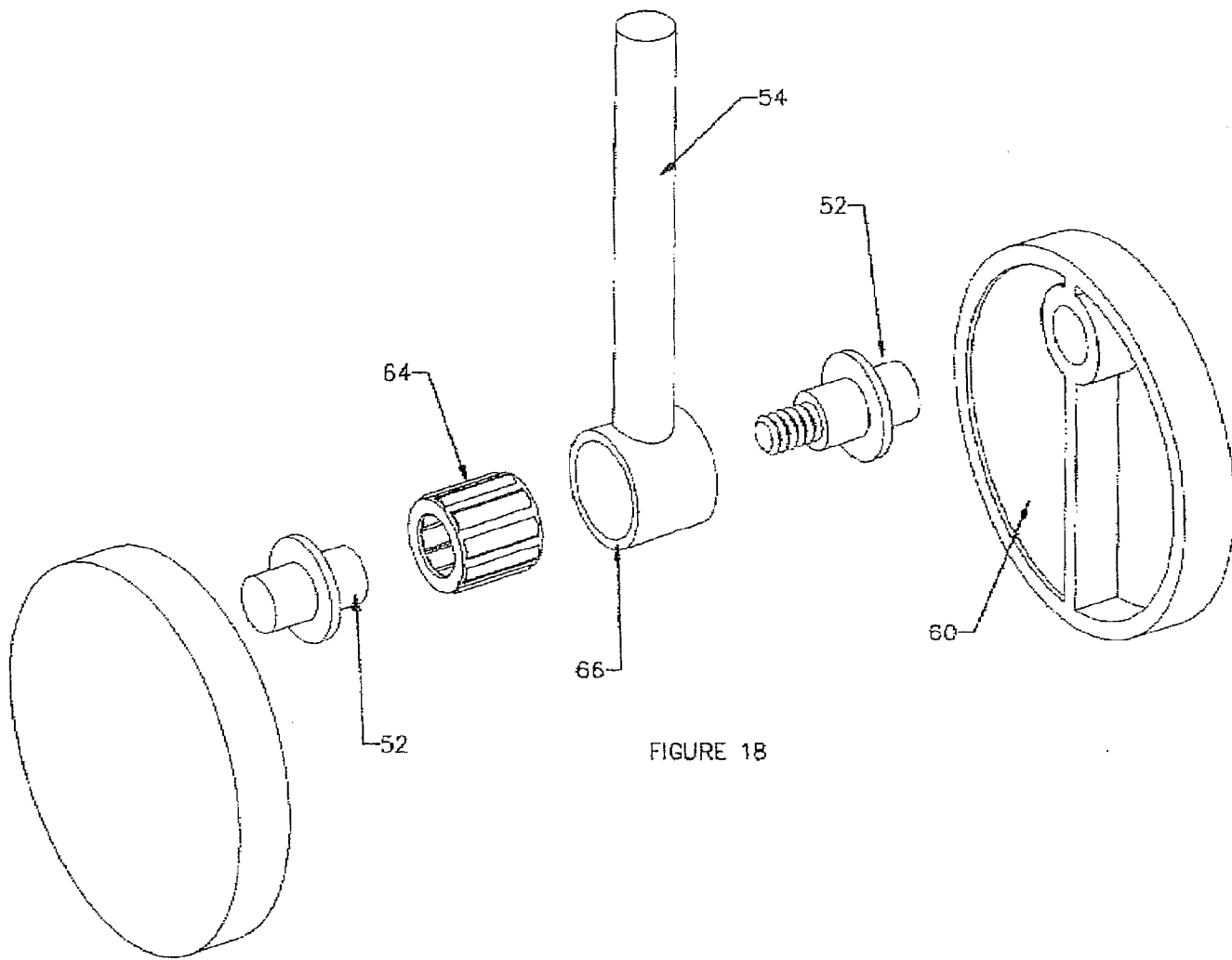


FIGURE 18

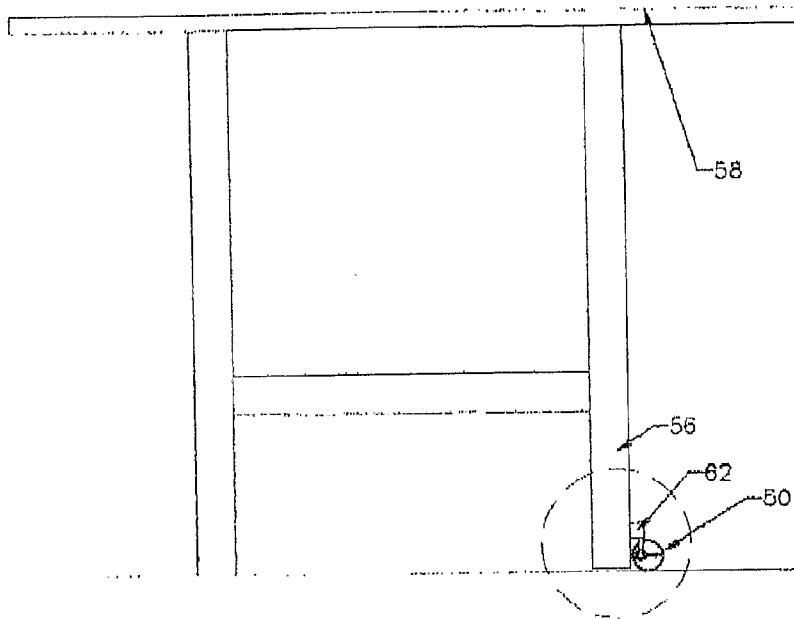


FIGURE 19

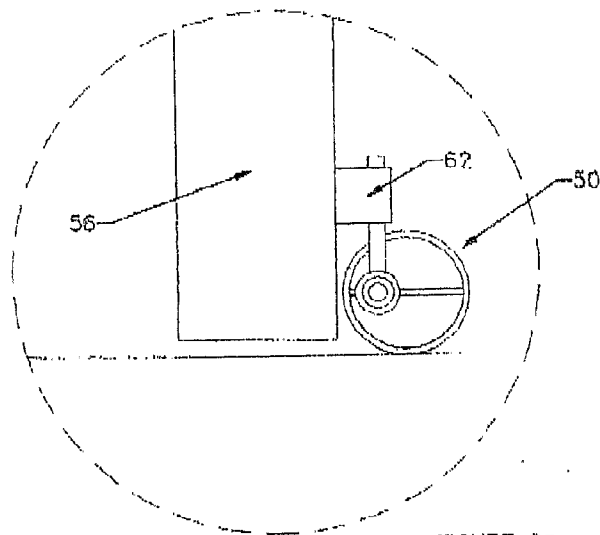


FIGURE 20