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(58) Field of search
A1M

(54) Timed feeder for livestock

(57) A timed feeder for livestock, particularly for the feeding and watering of pet animals, has a housing (1) with an access opening (5), a closure (6) which is movable into closing and opening positions on the housing, and a timer (11) which permits or causes the closure to move to open the housing after a pre-set time has elapsed during the day. A signal, e.g. ringing of a bell (20), may be given at the time of opening. Subsequent closing of the closure may also be timed, to give a limited period of access. A series of compartments of the housing may be opened serially, at timed intervals, and each closed again after a short period of access.

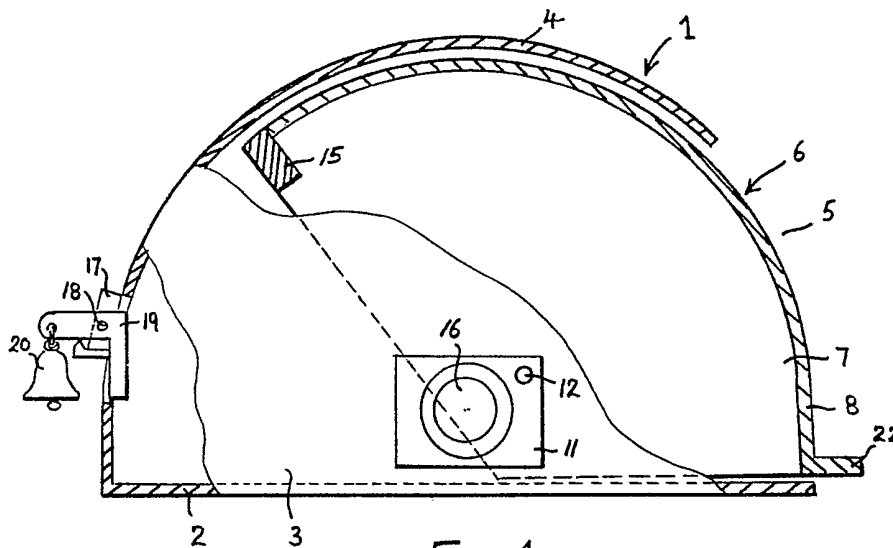


Fig. 1

GB 2 144 316 A

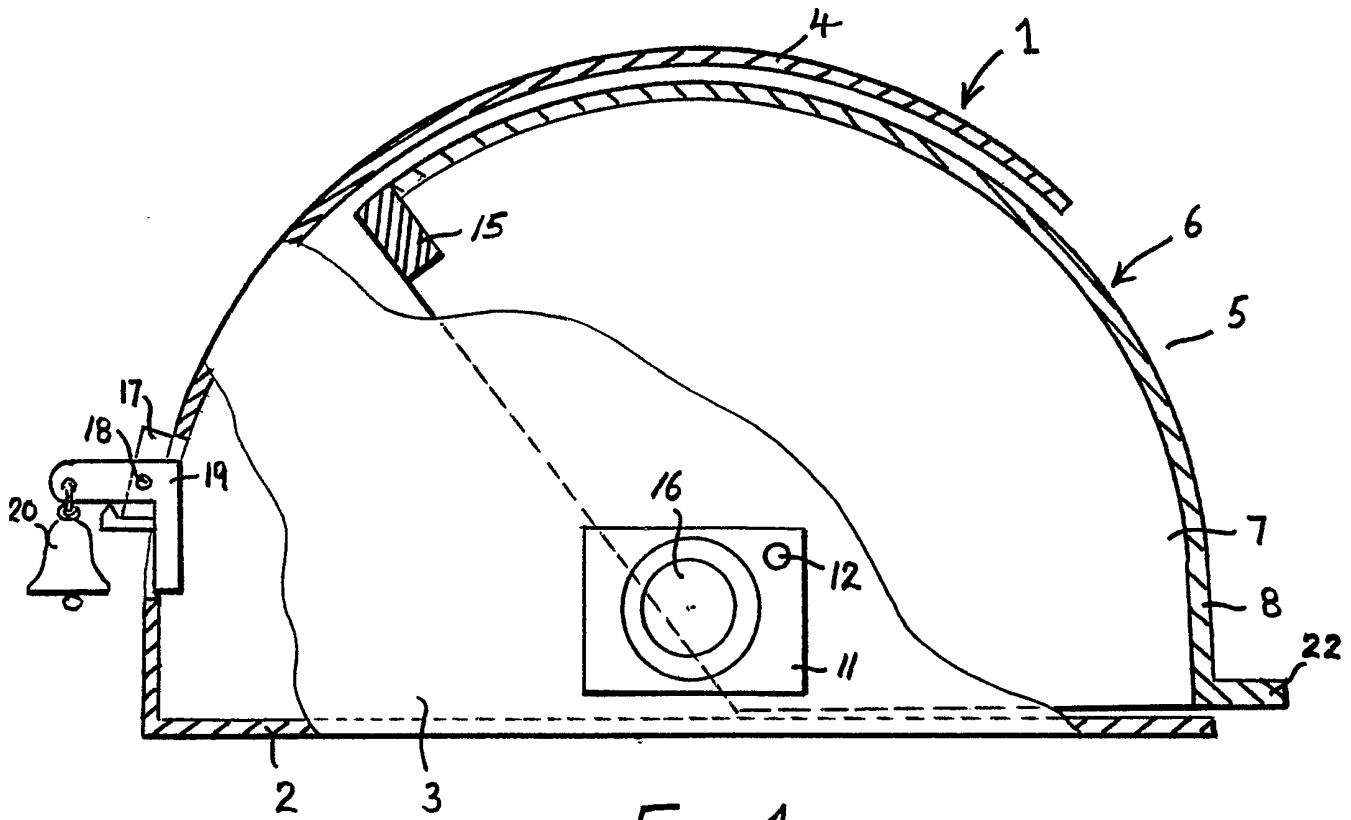


Fig. 1

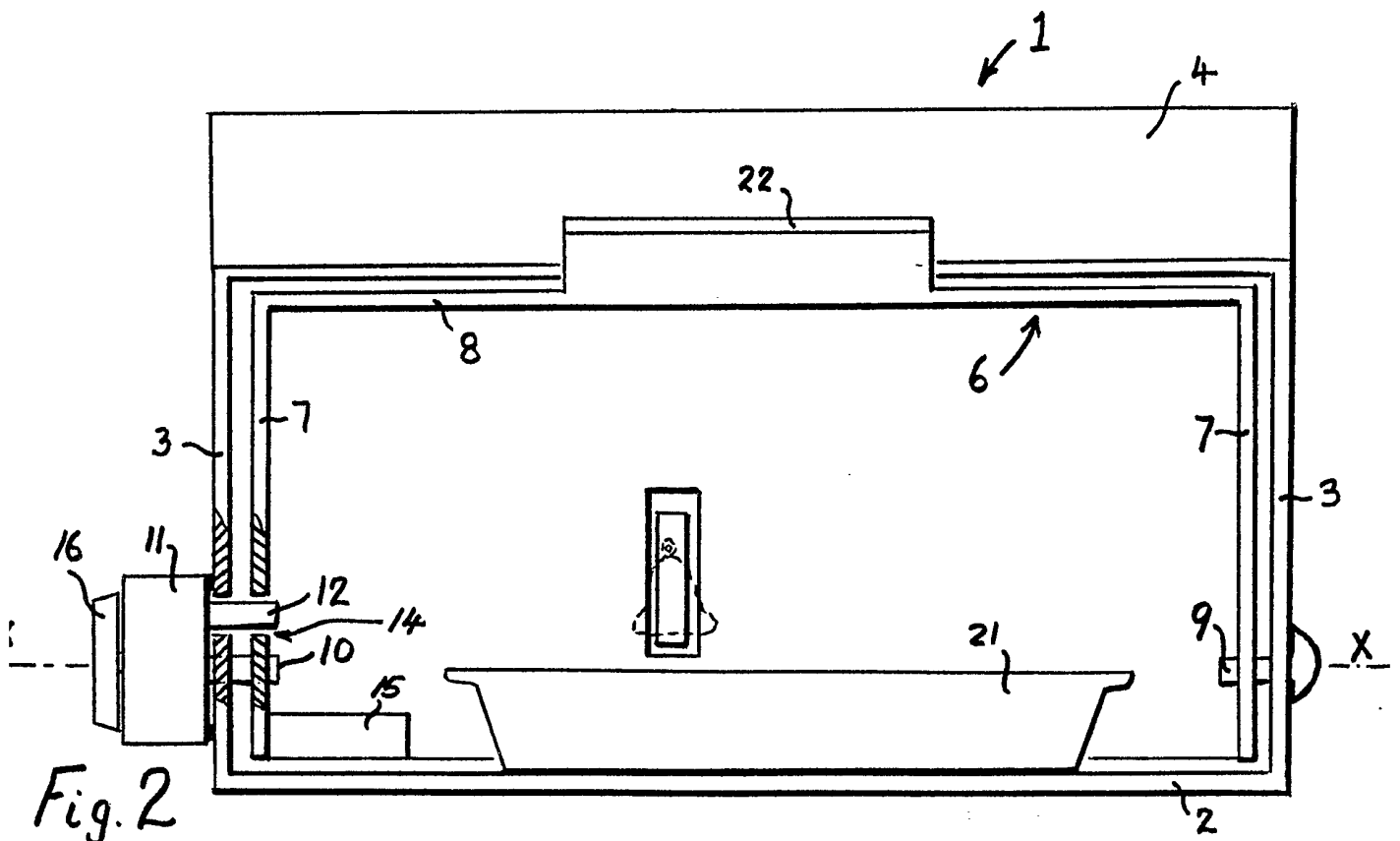


Fig. 2

SPECIFICATION

Timed Livestock Feeder

5 This invention relates to the making available in a time manner, of sustenance such as food and/or drink, to livestock. Whilst not restricted to such a field, it is of particular application to the feeding and watering of pet animals.

10 There can be circumstances when it is desirable to be able to make sustenance available to livestock only after a certain delay, as distinct from simply leaving the sustenance fully available and thus liable to be taken up by the livestock wholly or in part at the commencement of a predetermined long period.

15 It is accordingly the main object of the present invention to provide an improved feeder for the making available of sustenance to livestock after a predetermined period of delay. A second object is to provide in such a feeder a means which will alert the livestock to the fact that sustenance has become available by means of a signal which the livestock can associate with that fact.

20 A third object of the invention is to provide such a feeder which is entirely self-contained in that it requires no internal or external source of power because its mechanism is cocked or loaded by a manual act of closing the feeder against access.

30 According to the present invention a timed feeder for livestock comprises a housing having an access opening, a closure member associated with the housing and movable into and between a first position in which it closes sufficient of the opening to prevent access to food material or the like placed within the housing, and a second position in which it frees sufficient of that opening to permit access to the food material or the like, and a timing device of adjustable period arranged to permit or to cause the closure member to move from first position to second position after achievement of a pre-set period.

40 In a preferred arrangement, the feeder includes means for providing a signal, which may be a sound signal, which are actuated at or about the same time as the opening of the closure, so that the livestock may be alerted to the fact that sustenance is being made available. Conveniently, the signal means may be actuated by movement of the closure member from first position to second position, and in a preferred embodiment, the signal means is a bell which is rung mechanically as the closure member passes towards its second position.

55 Preferably, the timing device is powered by the loading of an energy storing means as the closure member is moved back manually from second position to first position. In a convenient mechanism there is a clockwork device which is wound up by the act of closing the closure member.

60 The timing device may serve to actuate, e.g. to withdraw, a latch acting between the housing and the closure member, thereby to permit the closure

65 to move from first position to second position as soon as the timed period has elapsed.

70 The closure member may be urged towards open condition by any convenient form of loading, but in a preferred embodiment it is loaded by gravity, e.g. by a counterweight which remains in an over-centre position relative to an axis of rotation of a closure member.

75 The same, or another timer device, may be arranged to cause or permit closing of the closure member after a certain relatively short period of time, with or without, a warning signal to the livestock, sufficient for the livestock to have access to the sustenance long enough to take a single feed, whereafter the closure member closes again. Thus a bulk quantity of sustenance may be placed in the housing, and the livestock permitted access to it only for a period sufficient to snatch a meal from it, but not to consume the whole.

85 In such an arrangement, the timer device may cause or permit serially a number of openings, so that the livestock has a short period of access to a stock of sustenance two or more times during a relatively long period, and preferably each waiting period and each access period is independently adjustable. In a preferred construction, the housing is compartmented, and the closure member is caused to move (arcuately or linearly for example) so as to uncover serially a number of individual compartments, with an appropriate delay period between the uncovering of one compartment and the uncovering of the next compartment, such that a series of feeds may be made available to the livestock over a relatively long period. By way of example, a closure cocked manually against a spring or weight loading may be permitted to move step by step, by timed operation of latching means, to uncover a series of compartments which have been pre-loaded with a quantity of material sufficient for one meal.

90 Such a mechanism could include, for example, an upright cylindrical housing having a series of compartments opening radially at its periphery, and a closure member in the form of a cylindrical tube rotatable about the housing and having a window opening which is brought serially in front of each compartment in turn, under the control of a multiple-period timer.

105 In order that the nature of the invention may be readily ascertained, an embodiment of animal feeder constructed in accordance therewith is hereinafter particularly described with reference to the figures of accompanying drawings, wherein:

110 Fig. 1 is an end elevation of a pet feeder, seen in closed condition and with portion of side wall cut away;

115 Fig. 2 is a front elevation of the pet feeder seen in open position and partly in section;

120 The pet feeder shown in the drawings comprises a housing 1 including a baseplate 2, a pair of similar substantially semi-circular end walls 3, 3, and an overhead wrapper wall 4, the

base 2 and the wrapper wall 4 bounding a front opening 5.

Within the housing 1 is arranged a movable closure member 6 which comprises a pair of similar segmental end plates 7, 7, and a front wrapper wall 8. The closure member 6 is movable in a circular path, with respect to the housing 1, about an axis X—X, which is the centre of curvature of the respective end walls and of the wrapper walls, such that the front wrapper wall 8 of the closure member 6 can form a close sliding fit with the front edge of the wrapper wall 4 of the housing.

The right-hand end wall 7 of the closure member, as viewed in Fig. 2, is rotatable on a simple journal pin 9 secured in the adjacent end wall 3 of the housing 1. The left-hand end wall 7 of the closure member is secured rigidly on a shaft 10 which passes through the adjacent end wall 3, to act as a journal, and enters a timing box 11 mounted externally on the end wall 3 of the housing. The timing box 11 contains a timing device including a clockwork mechanism which is such that it can be adequately wound up by rotation of the shaft 10 through about 60°, being the movement of the closure member 6 from open to closed condition. Any convenient form of one-way-drive device (not shown) such as a ratchet device or a one-way friction clutch, is incorporated in the timing box 11 between the shaft 10 and the clockwork mechanism, so that the shaft 10 is free of constraint to move in the anti-clockwise direction (as viewed in Fig. 1) but at each time of movement of the closure member 6 in the clockwork direction, to close it, the partial rotation of the shaft 10 will serve to wind up the clockwork mechanism.

The clockwork mechanism, which could advantageously be provided with a slipping clutch (not shown) to avoid overwinding, has a latching pin 12 which normally protrudes from the timing box 11 parallel to the axis of the shaft 10 through a clearance hole in the side wall 3 on which the timing box 11 is mounted. The arrangement of the timing device is that whilst it is carrying out its timing function the latching pin 12 is in the extended position, but when the timing device reaches the end of a pre-set time period, the latching pin 12 is withdrawn axially back through the side wall 3. In the adjacent side wall 7 of the closure member 6 there is provided a hole 14 to receive the latching pin 12 when (i) the closure member 6 is in fully closed position, and (ii) the timing device is carrying out its timing period. The closure member accordingly remains latched in the closed position (Fig. 1) until the termination of the timing period, whereupon the latching pin 12 is withdrawn, and the closure member 6 is free to move. To cause the closure member 6 to open when freed to do so, the rear edge of the wrapper wall 8 carries a weight 15 which is over centre with respect to the axis "X" and accordingly biases the closure member to move to fully opened position, (Fig. 2). The period of timing of the timing device is adjustable by means of a

knob 16, and the timing period might be, for example, any desired interval from 1 hour to 10 hours.

On the wrapper wall 4 of the housing 1 there is provided, near its lower rear edge, a mount 17 having a pivot pin 18 for an inverted L-shaped crank 19, the depending arm of which enters through a slot into the housing 1 and projects into the path of the rear edge of the closure member 6. The horizontal arm of the crank 19 carries a small bell 20, and by gravity the crank 19 settles in the position shown. When the closure member 6 rotates to open condition, the wrapper wall 8 strikes the depending arm of crank 19 and rings the bell. When the closure member is again returned manually to closed condition, the wrapper wall 8 rides clear of the crank 19, which returns to the position shown.

In use, a dish 21 of pet food is placed in the housing 1 on the base 2. Then the closure member 6 is moved manually to closed position, by use of a handle 22. The act of moving the closure member 6 to closed position causes the clockwork mechanism to be wound up. The time period required is selected by means of the knob 16. The closure member 6 is retained in closed position by the latching pin 12 engaged through the side walls 3 and 7.

When the time for feeding the pet arrives, the clockwork mechanism withdraws the latching pin 12, allowing the closure member 6 to open under gravity, and the bell 20 is rung. The pet can gain access to the dish of food, and by suitable training can associate the ringing of the bell 20 with the fact of food becoming available.

For ease of access to clean the feeder, the end wall 7 may be removably splined onto the winding shaft 10, and the journal pin 9 may be withdrawable, so that the closure member as a whole can then be taken out of the housing 1, the interior of the latter being unencumbered except for the presence of the shaft 10 and the depending arm of the bell crank 19.

With the feeder available for use, a pet owner can leave the pet unattended for a relatively long period of time extending over a normal feeding time, and can be assured that food will be made available at the correct moment. Obviously, the apparatus can be used also for providing drink.

115 CLAIMS

1. A timed feeder, for livestock, comprising a housing having an access opening, a closure member associated with the housing and movable into and between a first position in which it closes sufficient of the opening to prevent access by livestock to food material or the like disposed within the housing, and a second position in which it frees sufficient of that opening to permit access by the livestock to the food material or the like, and a timing device of adjustable period arranged to permit or to cause the closure member to move from its first position to its second position after elapsing of a pre-set period of time.

2. A timed feeder, as claimed in claim 1, comprising means for providing a signal, actuated at or about the same time as the opening of the closure, to alert livestock that foodstuff or the like is being made accessible.
3. A timed feeder, as claimed in claim 2, wherein the signal means is actuated by movement of the closure member from first position to second position.
4. A timed feeder, as claimed in claim 3, wherein the signal means is a bell which is rung mechanically by the closure member as the closure member passes towards its second position.
5. A timed feeder, as claimed in any one of claims 1 to 4, comprising an energy storing means coupled to the timing device for driving the timing device, the energy storing means being loaded by manual movement of the closure member in reverse direction from its second position to its first position.
6. A timed feeder, as claimed in claim 5, wherein the energy storing means is a clockwork mechanism.
7. A timed feeder, as claimed in any one of claims 1 to 6, comprising a latch acting between the housing and the closure member to retain the closure member releasably in its first position, the timing device being arranged to actuate the latch to release the closure member after the elapsing of the time period, thereby to permit the closure member to move from its first position to its second position.
8. A timed feeder, as claimed in any one of the preceding claims, wherein the closure member is urged to move, from its first position to its second position, by a counterweight which remains in an over-centre position relative to an axis of rotation about which the closure member moves.
9. A timed feeder, as claimed in any one of the preceding claims, comprising timing means arranged to cause or permit closing of the closure member after elapsing of a period of time from the moment of reaching its second position.
10. A timed feeder, as claimed in claim 9, wherein said timing means is said timing device.
11. A timed feeder, as claimed in either of claims 9 and 10, wherein the timing device is arranged to cause or permit serially a plurality of movements of the closure member from first position to second position during a total period of operation, and wherein the timing means is arranged to cause or permit movement of the closure member from second position to first position serially a plurality of times respectively a shorter period after each movement from first position to second position.
12. A timed feeder, as claimed in any one of claims 1 to 10, wherein the housing comprises a plurality of compartments each having a respective access opening, and wherein the closure member is arranged so as, during its movement from first position to second position, to uncover said access openings serially, with a waiting period between successive uncoverings.
13. A timed feeder, as claimed in claim 12, wherein said housing is an upright cylinder having a plurality of compartments opening radially at its periphery, and wherein said closure member is a cylindrical tube rotatable about the housing and having a window which is brought serially into correspondence with the access openings.
14. A timed feeder, for livestock, substantially as described herein with reference to the figures of the accompanying drawing.