

WATERING CUP

1 This invention relates to watering cups for fowl and
2 more particularly relates to watering cups for providing for a
3 watering of fowl without any clogging of the water cups by
4 particles of dirt or feed.

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6 Fowl, and particularly chickens, have become a staple
7 food throughout the world because they are an excellent source
8 of nutrition and because they can be raised inexpensively and
9 expeditiously. In order to raise the fowl properly, water has
10 to be made available to the fowl whenever the fowl wish to
11 dissipate their thirst.

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13 Various articles have been provided for making water
14 available to fowl. Some of these articles have comprised
15 drinking cups which have included arms actuatable by the beaks
16 of the fowl to open a valve for introducing water into the cups.
17 These cups have generally been successful in making water
18 available to the fowl. However, the fowl have tended to carry
19 particles of dirt and feed on their beaks and to transfer these
20 particles into the cups. Such particles of dirt and feed have
21 sometimes caused the valves to become stuck and have
22 occasionally prevented the walls of the cups from being as clean
23 as might otherwise be desired. This has occasionally produced a
24 spillover of water from the cup. Such water spillover has not
25 been conducive to optimal sanitary conditions and has not made
26 for happy fowl.

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28 Watering cups have been used successfully for decades
29 to provide water to fowl. During that extended period of time,
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considerable efforts have been made to eliminate the problems discussed in the previous paragraphs. Despite such efforts, the problems discussed above have persisted.

5 This invention provides a watering cup which eliminates the above difficulties. The cup is constructed to prevent a valve in the cup from becoming stuck in the open position by particles of dirt or feed. The cup is also constructed so that the surface of the cup adjacent the valve is cleaned of particles of dirt or feed by the flow of water through the
10 valve. The cup is further constructed so that overflow of water from the cup is prevented.

According to the present invention there is provided a watering cup with a triggering arm disposed in the cup and mounted for pivotal movement in accordance with the operation
15 of the arm by fowl, valve means extending into the cup and operative between a normally closed position and an open position in accordance with the triggering of the triggering arm, means for supplying water to the valve means and means disposed on the triggering arm and arranged to receive the water issued through
20 the valve means and to direct the water in a swirling movement along the rear wall of the cup to clean the rear wall of the cup as the water flows to the bottom of the cup, the means disposed on the triggering arm comprising hooded portions spaced to define a recess for directing, to the rear wall of the cup, water which passes through the valve means to the triggering
25 arm, and the rear wall of the cup being provided with ledges shaped to direct downwardly and in a swirling motion the water flowing to the rear wall from the triggering arm.

30 Preferably the hooded portions have configurations defining converging arcuate areas at their centers and further defining outwardly and downwardly directed channels at their peripheries.

In a preferred embodiment, the watering cup is formed from a body portion and a clamping member. The clamping member may be constructed at one

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1 end to be coupled to a pipe for supplying water to the cup. The
2 clamping member is provided at the other end with fingers for
3 engaging the body portion to be retained by the body portion at
4 the opposite lateral ends of the body portion. A pivot pin
5 extends through the clamping member for disposition on the rim
6 of the body portion and supports the triggering arm for pivotal
7 movement. A rocker arm is also pivotable with the pin at one
8 end of the pin at a position external to the body portion of the
9 cup. The pivotal movement of the rocker and triggering arms is
10 limited in one direction by a particular one of the fingers and in
11 the other direction by a projection on the external surface of
12 the cup body portion.

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14 The pin may be provided with a head at a position
15 external to the cup and adjacent to the outer wall of the cup.
16 The pivotal movement of the rocker and triggering arm is
17 limited in one direction by raised portions or detents on the
18 inner wall of the cup. The pin, the head, the rocker arm and
19 the triggering arm may be made from a suitable material, such as
20 polypropylene, having properties of floating in water.

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22 Gutter means extend downwardly and outwardly from the
23 top of the cup. The gutter means are shaped to define a channel
24 for directing from the cup water overflowing from the top of the
25 cup. The gutter means include at least one rib on the bottom of
26 the channel for controlling the flow of water along the channel
27 to inhibit the water from being directed toward the cup after it
28 flows from the channel. A tongue extends downwardly from the
29 outer end of the gutter means to inhibit the water from being
30 directed toward the cup after it flows from the channel.

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1 The invention will now be described by way of
2 example with reference to the accompanying drawings, in which:-

3 Figure 1 is a schematic perspective view of a pen for
4 chicks and of watering cups and of piping for introducing water
5 to the cups;

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7 Figure 2 is an enlarged side elevational view of one
8 of the watering cups shown in Figure 1;

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10 Figure 3 is a top plan view of the watering cup shown
11 in Figure 2;
12 Figure

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14 Figure 4 is a sectional view of the cup and is taken
15 substantially on the line 4-4 of Figure 3;

16
17 Figure 5 is an enlarged fragmentary section view
18 similar to that shown in Figure 4 and particularly illustrates
19 the construction of a pivotable triggering arm and a valve,
20 shown in the closed position, actuatable by the pivotal movement
21 of the arm for providing for the flow of water into the cup;

22
23 Figure 6 is an enlarged fragmentary sectional view
24 similar to that shown in Figure 5 but with the valve in the open
25 position;

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27 Figure 7 is an enlarged fragmentary sectional view and
28 is taken substantially on the line 7-7 of Figure 6;

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30 Figure 8 is a sectional view taken substantially on the
31 line 8-8 of Figure 5;

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1 Figure 9 is a schematic perspective view of a modified
2 cup;

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4 Figure 10 is a top plan view of a watering cup
5 constituting another embodiment of the invention;

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7 Figure 11 is a sectional view of the watering cup
8 shown in Figure 10 and is taken substantially on the line 11-11
9 of Figure 10; and

10
11 Figure 12 is an enlarged fragmentary perspective view
12 of the cup shown in Figures 10 and 11 with parts broken away to
13 show other parts with additional clarity.

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15 In one embodiment of the invention, a cup generally
16 indicated at 10 is supported on a pipe 12 for providing a
17 controlled introduction of water into the cup. The pipe 12 in
18 turn communicates with a line 14 for receiving water from a
19 source (not shown). The cup 10 is disposed within a pen 16
20 holding chicks 18 or other fowl.

21
22 The cup 10 includes a body portion 20 and a clamping
23 member 22 made from a suitable material such a polypropylene.
24 The body portion 20 is closed at the bottom and is open at the
25 top, the opening being defined by a rim 24. The forward end of
26 the body portion 20 is tapered to define a basin portion 26 for
27 holding water. The tapering of the forward end enhances the
28 ability of the chicks 18 to direct their beaks into the basin

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1 26. A fin 28 extends downwardly from the body portion 20 at the
2 tapered forward end of the body portion.

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4 The clamping member 22 is disposed on the rim 24 of
5 the body portion 20 and is clamped to the body portion by
6 fingers 30 which extend downwardly along the body portion at the
7 opposite lateral extremities of the body portion. The clamping
8 member 22 may also be heat sealed to the rim 24 of the body
9 portion 20. At its opposite end, the clamping member 22 is
10 provided with a portion 32 which is constructed to partially
11 encircle and to engage the pipe 12. The encircling portion 32
12 may be enlarged by manually gripping and operating tab portions
13 34 so as to facilitate the disposition of the clamping member on
14 the pipe or the removal of the clamping member from the pipe.

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16 A triggering arm 36 is pivotably disposed in the cup
17 10. The triggering arm 36 may also be made from a suitable
18 plastic material such as polyethylene. The triggering arm 36
19 has a lever arm 38 extending downwardly into the cup in a
20 substantially vertical direction. The lever arm 38 is
21 relatively long so as to increase the tongue arm when a chick
22 operates the arm. The triggering arm 36 also has a tongue
23 portion 40 at the bottom end of the lever arm 38. The tongue
24 portion 40 extends forwardly in a transverse direction,
25 preferably substantially perpendicular, to the lever arm 38 so
26 that it is disposed at a position above the bottom of the basin
27 portion 26. When the chick 18 desires water and the water level
28 in the basin 26 is relatively low, the chick pecks at the tongue
29 portion 40.

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1 Hood portions 42 (Figure 8) are provided at the rear
2 end of the triggering arm 36 at a position near the upper end of
3 the lever arm 38. The hood portions 42 have a converging
4 arcuate configuration 44 at their central portion to define a
5 central recess 45 for receiving a stream of water. The hood
6 portions 42 also define outwardly and downwardly directed
7 channels 46 at their peripheries. The channels 46 communicate
8 with the recess 45. The center of the recess 45 may be further
9 indented as at 48.

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11 A pin 50 made from a suitable plastic material such as
12 polypropylene is integral with the triggering arm 36 at the top
13 of the triggering arm. The pin 50 is provided with flange
14 portions 52 at opposite ends. A rocker arm 54 is integral with
15 one of the flanges 52. The pin 50 is disposed in sockets in
16 the clamping member 22 so that the flange portions 52 and the
17 rocker arm 54 are external to the clamping member and so that
18 the clamping member will co-operate with the flange portions 52
19 to retain the pin. The pin 50 rests on the rim 24 of the body
20 portion 20 for pivotable movement of the pin, the triggering arm
21 36 and the rocker arm 54 relative to the body portion 24. A
22 particular one of the fingers 30 limits the pivotable movement
23 of the rocker 54 in one direction and a projection 56 on the
24 body portion 24 limits the pivotable movement of the rocker arm
25 in the opposite direction.

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27 The upper surface of the clamping member 22 is
28 undercut at the rear end of the clamping member to define a
29 ledge 62 near the upper end of the clamping member. The ledge
30 62 is curved downwardly as at 66, at the positions of the side

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1 wall of the body portion 20, to define a path for the flow of
2 water downwardly in a swirling motion.

3
4 A tubular portion 70 is included in a valve generally
5 indicated at 72. The tubular member is 70 provided at the rear
6 end of the body portion 20 at a position just below the rim 24.
7 A sleeve 74 is disposed on the tubular portion 70 and is sealed
8 relative to the tube as by an O-ring 76 disposed in a socket on
9 the tubular portion. A rod 78 extends through the tubular
10 portion 70 to a position adjacent the triggering arm 36. The
11 rod 78 is provided with a spliced configuration as at 80 to
12 facilitate a flow of water through the valve 72 along the
13 splices.

14
15 Barbs 82 are provided at the forward end of the rod
16 78 to limit the rearward movement of the rod relative to the
17 body portion 20. The barbs 82 are tapered in the forward
18 direction. The rod 78 is provided with an enlarged portion 84
19 at positions forward of the barbs 82. A sealing member 86 is
20 disposed on the rod 78 at the rear end of the rod. The sealing
21 member 86 co-operates with a tapered surface 88 on the rear end
22 of the tubular portion 70 to close the valve 72 in the normal
23 operation of the valve.

24
25 The valve 72 is normally in the closed position shown
26 in Figure 5. This results from the action of the pressure of
27 the water in the pipe 12. This pressure acts upon the sealing
28 member 86 and forces the sealing member to the left in Figure 5
29 against the tapered surface on the rear end of the tubular
30 member 70. During the time that the valve 72 is closed, the

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1 chicks 18 are able to drink water from the cup 10 since water is
2 generally disposed in the basin portion 26 at a level
3 corresponding to the position of the tongue portion 40.

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5 When the chicken 18 desires water and the water level
6 in the cup 10 is below the level of the tongue portion 40, the
7 chicken pecks the tongue portion. This causes the triggering
8 arm 36 to be pivoted against the rod 78 so that the rod is moved
9 toward the right to open the valve 72, as illustrated in Figure
10 7. Water then flows through the conduit 14, the pipe 12 and the
11 valve 72 as illustrated in Figure 7 by the arrows directed
12 toward the left.

13
14 The water flowing through the valve 72 is directed
15 against the central recess 45 defined by the hood portions 42.
16 The water then flows outwardly and downwardly through the
17 channel 46 to positions below the ledge 62 on the clamping
18 member 22. The water then flows downwardly on the rear end side
19 surfaces of the body portion 20 along the path defined by the
20 curvature 66 in the ledge 62. The water accordingly flows in a
21 path defining a swirling motion. The swirling movement of the
22 water produces a cleaning action on the rear wall of the body
23 portion 24 and carries particles of dirt and feed on the rear
24 wall to the basin portion 26 at the bottom of the cup 10. By
25 carrying particles of dirt and feed to the basin portion 26, the
26 particles of dirt and feed are prevented from lodging in the
27 valve 72 and jamming the valve in either the open or closed
28 positions.

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1 The proper operation of the valve 72 is also assured
2 by the inclusion of other components in and on the cup. For
3 example, the inclusion of the rocker arm 54 and the disposition
4 of the rocker arm on the external surface of the body portion 24
5 prevent the operation of the rocker arm from being impeded by
6 particles of dirt and feed. As previously described, the
7 co-operation of the rocker arm 54 with one of the fingers 30 and
8 with the projection 56 limits the pivotal movement of the rocker
9 arm 54 and the triggering arm through an arc sufficient to open
10 and close the valve.

11
12 The construction of the valve 72 also enhances the
13 operation of the cup 10 in providing water to the chicks 18.
14 For example, the provision of the splines 80 on the rod 78
15 assures that the water will flow uniformly through the valve.
16 The provision of the forwardly tapered barbs 82 further assures
17 that the water will flow in a uniform manner and at a
18 sufficiently low velocity to the central recess 44 in the
19 triggering arm 36 so that the water will not splatter when it
20 contacts the rear wall of the triggering arm 36.

21
22 The disposition of the pivot pin 50 in the clamping
23 member 22 and on the rim 24 also enhances the performance
24 characteristics of the cup. This causes the pivot pin 50 to be
25 spaced a considerable distance above the tongue portion 40.
26 Since the water in the cup is generally at the level of the
27 tongue portion 40, the disposition of the pivot pin 50 at a
28 position considerably above the tongue portion 40 prevents water
29 from rising to the level of the pin and leaking from the cup
30 through the area around the pin. This is facilitated by the
31 considerable vertical height of the lever arm 38.

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1 Figure 9 illustrates a modification of the cup shown
2 in the previous Figures and described above. In the
3 modification shown in Figure 9, an expanded rim 100 is provided
4 on a body portion 102 of a cup generally indicated at 104. The
5 expanded rim 100 extends laterally from one side of the body
6 portion 102 so that any overflow of water from the cup to the
7 ground will occur at positions displaced from the body portion
8 102 of the cup 104 and displaced from the feed trough of the
9 cup.

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11 Figures 10 and 11 illustrate a modification of the
12 invention. In the embodiment shown in Figures 10 and 11, the
13 pin 50 is disposed in sockets 154 in the clamping member 22.
14 The pin 50 rests on the rim 24 of the body portion 20 for
15 pivotal movement of the pin, the triggering arm 36 and the
16 rocker arm 54 relative to the body portion 24. Raised or detent
17 portions 156 are provided on the inner surface of the body
18 portion in spaced relationship to each other. Each of the
19 rocker arms 54 is disposed between a pair of the raised or
20 detent portions 156 so that its pivotal movement in opposite
21 directions is limited by the raised portions.

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23 Figures 10 and 12 illustrate an arrangement in the cup
24 for directing from the cup water overflowing from the cup. In
25 the arrangement shown in Figure 12, an expanded rim 90 is
26 provided on the clamping member 22 of the cup 10. The expanded
27 rim 90 extends laterally and downwardly as at 92 from one side
28 of the clamping member 22 so that any overflow of water from the
29 cup to the ground will occur at positions displaced from the
30 body portion 20 of the cup 10 and displaced from the pen 16.

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1 The lateral extension 92 is shaped to define gutter means having
2 a channel 94.

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4 At least one rib 96 is disposed at the bottom of the
5 channel 94 at a position intermediate along the length of the
6 channel. Preferably, a plurality of ribs 96 are provided at
7 spaced positions along the length of the channel 94. The ribs
8 96 interrupt the flow of water along the channel so that the
9 water reaching the end of the channel has a relatively low
10 velocity. This low velocity inhibits any tendency for the water
11 to be directed back toward the cup as the water flows from the
12 channel toward the ground. A tongue 98 extends downwardly from
13 the end of the channel 94. The tongue 98 also inhibits any
14 tendency for the water to be directed back toward the cup as the
15 water flows from the channel 94 toward the ground.

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17 Although this application has been disclosed and
18 illustrated with reference to particular applications, the
19 principles involved are susceptible of numerous other
20 applications which will be apparent to persons skilled in the
21 art. The invention is, therefore, to be limited only as
22 indicated by the scope of the appended claims.

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CLAIMS

1. A watering cup with a triggering arm disposed in the cup and mounted for pivotal movement in accordance with the operation of the arm by fowl, valve means extending into the cup and operative between a normally closed position and an open
5 position in accordance with the triggering of the triggering arm, means for supplying water to the valve means and means disposed on the triggering arm and arranged to receive the water issued through the valve means and to direct the water in a swirling movement along the rear wall of the cup to clean the
10 rear wall of the cup as the water flows to the bottom of the cup, the means disposed on the triggering arm comprising hooded portions spaced to define a recess for directing to the rear wall of the cup, water which passes through the valve means to the triggering arm, and the rear wall of the cup being provided with
15 ledges shaped to direct downwardly and in a swirling motion the water flowing to the rear wall from the triggering arm.
2. A watering cup according to claim 1, wherein the hooded portions are provided with configurations defining converging
20 arcuate portions at their centers and further defining outwardly and downwardly directed channels at their peripheries.
3. A watering cup according to claim 1 or 2, wherein the ledges on the rear wall of the cup are disposed near the top of
25 the cup and are provided with downwardly curved portions near their extremities.
4. A watering cup according to claims 2 and 3, wherein the hooded portions on the triggering arms are disposed at
30 approximately the vertical levels of the ledges on the rear wall of the cup.
5. A watering cup according to claim 4, wherein the valve means is constructed to direct the water throughout the central
35 area of the rear wall of the triggering arm between the hooded portions.



6. A watering cup according to any preceding claim, wherein a clamping member is supported on a body portion at one end to define a cup with the body portion and has at its other end a portion for support by a pipe, a pivot pin is supported by the clamping member on the body portion and supports the triggering arm for providing the pivotal movement of the triggering arm, the valve means is supported by the body portion, a rocker arm is provided to be pivotable with the triggering arm, and means are disposed on the body portion for limiting the pivotal movements of the triggering and rocker arms.

7. A watering cup according to claim 6, wherein the rocker arm is disposed at a position external to the body portion, and the limiting means is disposed on the body portion at positions external to the cup to limit the pivotal movement of the rocker and triggering arms in opposite pivotal directions.

8. A watering cup according to claim 6 or 7, wherein the body portion has a top rim and the clamping member includes a finger extending downwardly below the top rim of the cup and defining one of the limiting means.

9. A watering cup according to claim 8, wherein the triggering arm is provided with a substantially vertical portion and with a tongue disposed at the bottom of the substantially vertical portion and extending forwardly in the cup for actuation by the fowl to open the valve means for the flow of water into the cup through the pipe.

10. A watering cup according to any one of claims 6 to 9, wherein fingers on the clamping member provide for the clamping of the clamping member to the top of the body portion.

11. A watering cup according to claim 2, wherein the outwardly and downwardly directed channels are directed downwardly at a relatively shallow angle to the horizontal.



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12. A watering cup according to any preceding claim, wherein the valve means includes a valve rod, there being splines along the valve rod for providing for a flow of water along the valve rod, a sealing member disposed on the valve rod at one end of the valve rod, barbs near the other end of the rod for limiting the movement of the rod in the cup, and a tubular member receiving the rod for movement of the rod in the tubular member.

13. A watering cup according to claim 12, wherein there is an enlarged portion on the rod at a position forward of the barbs.

14. A watering cup according to claim 1, including, means disposed on at least one of the side walls of the cup for defining a pair of spaced detents, and means disposable within the inner periphery of the cup between the pair of spaced detents and movable with the triggering arm for defining limits of pivotal movement of the triggering arm.

15. A watering cup according to claim 14, wherein the limiting means include an enlarged head portion movable with the triggering arm and disposed on the outer periphery of the cup.

16. A watering cup according to claim 15, wherein the limiting means include a rocker arm disposed on the pin within the inner periphery of the cup and the head is disposed on the pin within the outer periphery of the cup.

17. A watering cup according to claim 16, wherein the rocker arm and the head define close relationships with the walls of the cup.

18. A watering cup according to claim 1, wherein at least one of the side walls of the cup is provided with a pair of raised portions spaced from each other to define a recess, and means are disposed within the recess in the side wall of the cup and co-operate with the raised portions to limit the pivotal movements of the triggering arm.



* C L M S *

19. A watering cup according to claim 1, wherein a gutter portion extends outwardly and downwardly from one of the side walls of the cup at the top of the side wall to receive overflows of water from the cup and at least one rib is disposed on the gutter portion to control the flow of water from the cup.

20. A watering cup according to claim 19, wherein a tongue extends downwardly from the gutter portion at the outer end of the gutter portion.

21. A watering cup according to claim 6, wherein the limiting means are disposed within the cup.

22. A watering cup according to claim 21, wherein a head portion is disposed on the pivot pin adjacent to the cup at a position external to the cup.

23. A watering cup according to claim 22, wherein a gutter portion extends outwardly from the clamping member at the top end of the clamping member, the gutter portion having a downward component as it extends outwardly from the clamping member, and a tongue extends downwardly from the gutter portion at the outer end of the gutter portion.

24. A watering cup according to claim 23, wherein ribs are disposed on the bottom surface of the gutter portion at spaced positions along the gutter portion.

25. A watering cup according to claim 22, wherein the triggering arm and the rocker arm and the head and the pivot pin are made from a material having properties of floating in water and overflow means are provided to prevent the water overflowing the cup from dripping from the overflow means toward the cup.



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26. A watering cup substantially as described hereinbefore with reference to Figures 1 to 8 of the accompanying drawings.

27. A watering cup substantially as described hereinbefore with reference to Figure 9 of the accompanying drawings.

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28. A watering cup substantially as described hereinbefore with reference to Figures 10, 11 and 12 of the accompanying drawings.

