Oct. 29, 1968 C. G. E. GAUFFIN 3,407,966

MAGAZINE FOR DRINKING CUPS WHICH CAN BE STACKED IN ONE ANOTHER, WHICH HAS NO MANUAL ACTUATING MEMBER

Filed Aug. 10, 1965 3 Sheets-Sheet 1

FIG. 1

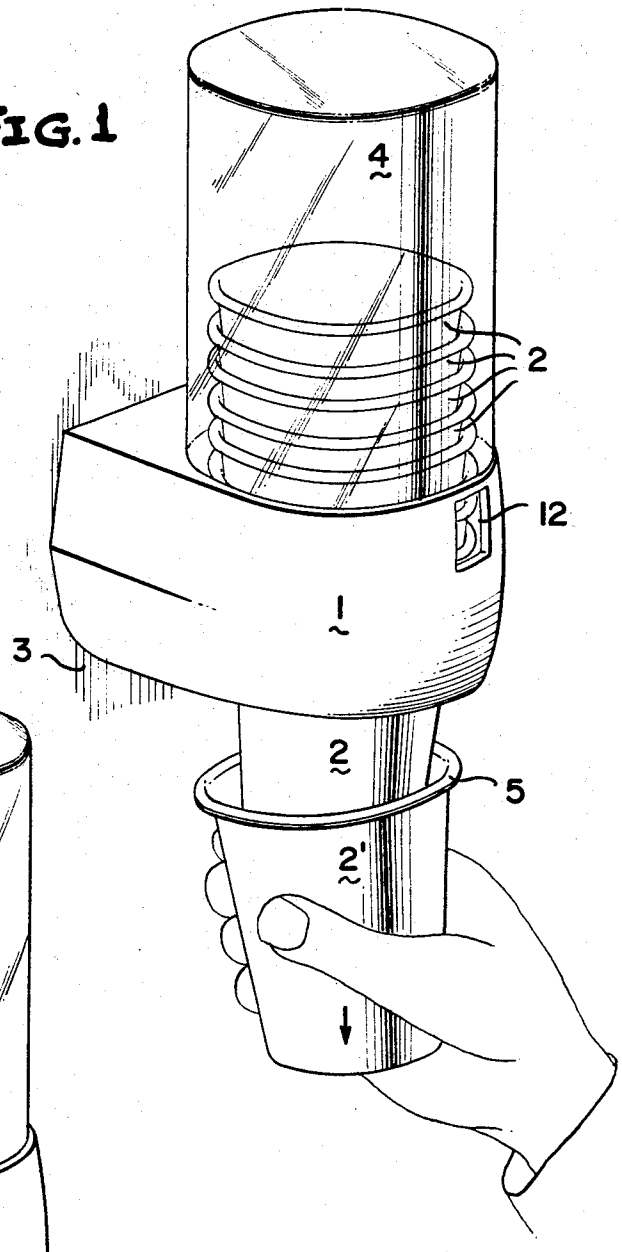
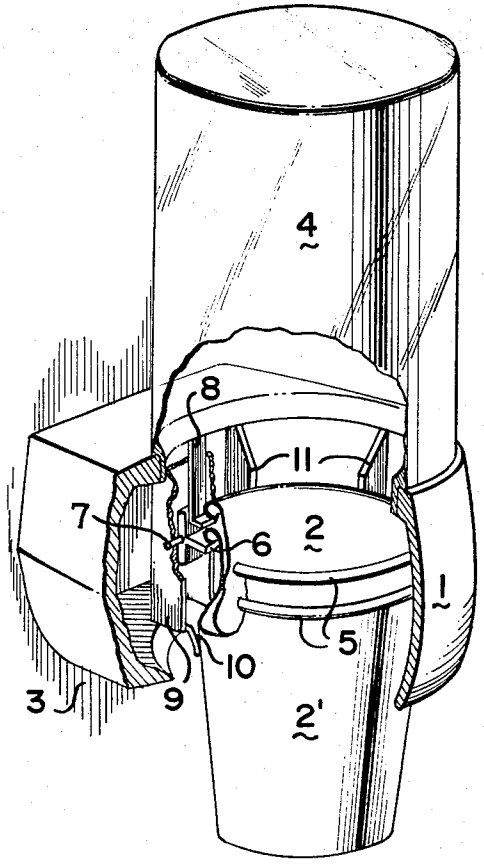


FIG. 2



INVENTOR
CLAES GUSTAF ERIC GAUFFIN

BY Mason, Porter, Miller & Brown
ATTORNEYS

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Filed Aug. 10, 1965 3 Sheets-Sheet 2

FIG. 3

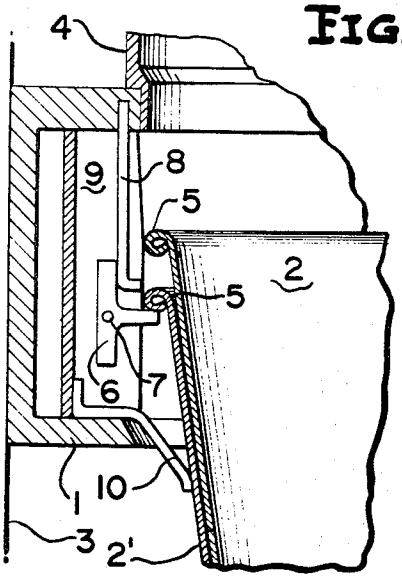
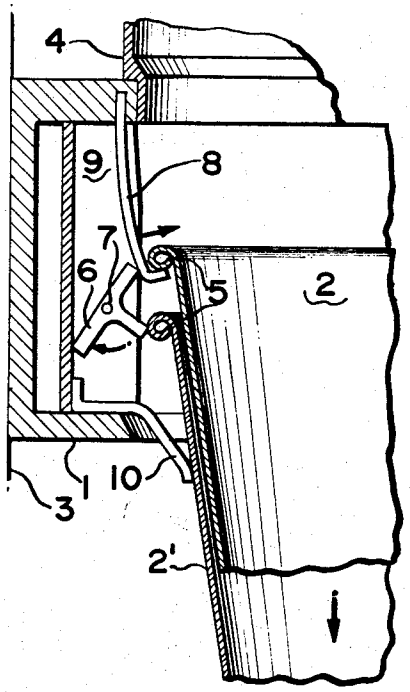


FIG. 4



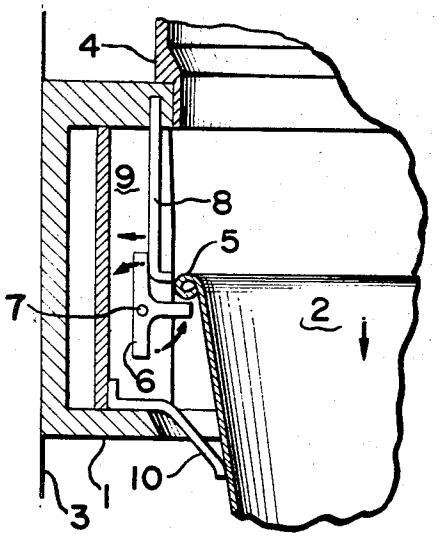


FIG. 5

INVENTOR
CLAES GUSTAF ERIC GAUFFIN

BY Mason, Porter, Miller & Brown
ATTORNEYS

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Filed Aug. 10, 1965 3 Sheets-Sheet 3

FIG. 6

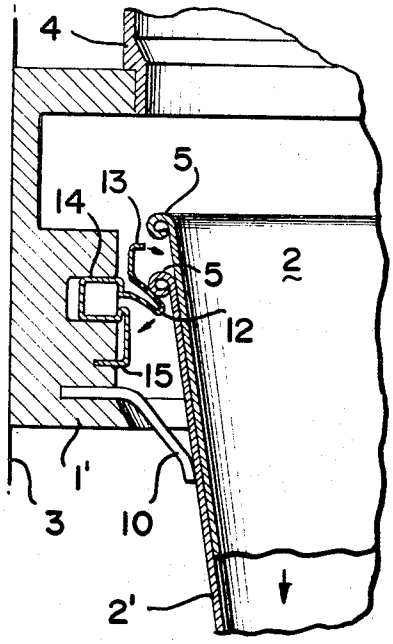


FIG. 7

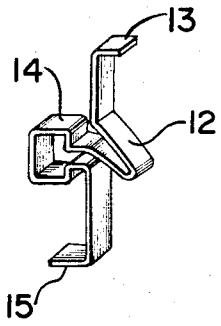


FIG. 10

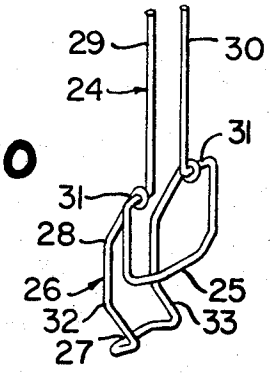
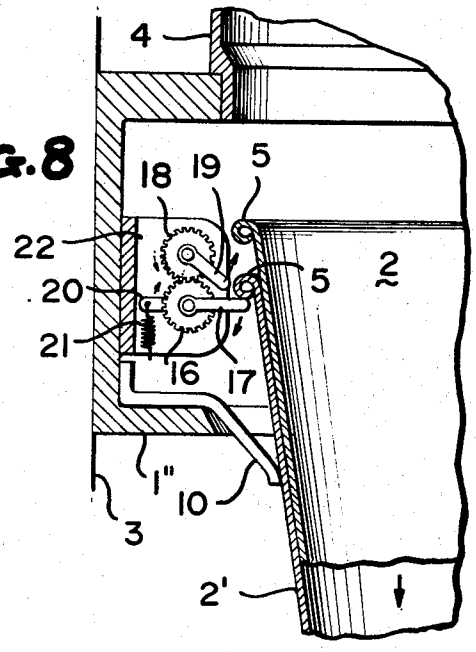


FIG. 8



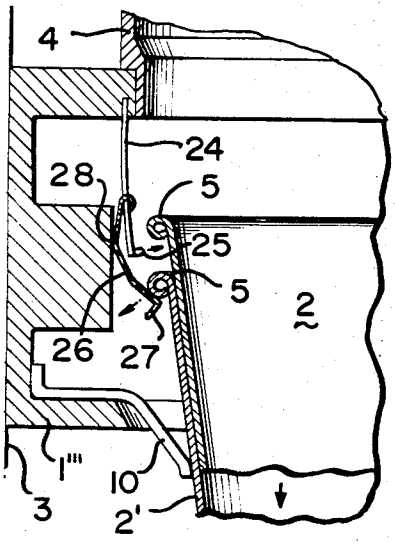


FIG. 9

INVENTOR
CLAES GUSTAF ERIC GAUFFIN

BY
Mason, Porter, Miller & Brown
ATTORNEYS

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MAGAZINE FOR DRINKING CUPS WHICH CAN BE STACKED IN ONE ANOTHER, WHICH HAS NO MANUAL ACTUATING MEMBER

Claes Gustaf Eric Gauffin, Malmo, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Aug. 10, 1965, Ser. No. 478,771
10 Claims. (Cl. 221—303)

The present invention relates to a magnazine for drinking cups with outwardly directed collar, welt or the like arranged at the edge of the opening, and which can be stacked in one another, which magazine consists of a tubular part which is intended to be in a vertical position, to possibly be closed in its upper end, and to be provided with a blocking device in its lower end, so that, if possible, only one drinking cup at a time can leave the magazine under manual influence.

Magazines of the above-mentioned kind are available on the market, and the blocking device according to one type consists of a constriction of the lower end of the tubular part. In such a magazine, the lower end of the lowermost drinking cup protrudes from the magazine. When a consumer wishes to obtain a drinking cup, he grasps the lowermost drinking cup and pulls it downwards. If the grip wtih the hand is loose, he obtains only one drinking cup but if, on the contrary, the grip is comparatively firm, it is possible that he will obtain several drinking cups in one pull, which is undesirable for the person who provides the drinking cups. In order to arrange so that the only one drinking cup at a time is obtained, it has been proposed to provide a magazine for drinking cups with a mechanism of such a kind that when a button is pushed, one drinking cup will drop from the magazine. When a magazine for drinking cups is of the last-mentioned kind, it is always necessary that a consumer of a drinking cup use both hands while, on the other hand, with the magazine of the first-mentioned kind, the consumer need only use one hand, but this magazine then has the disadvantage that the consumer may obtain more drinking cups than desired when the lowermost drinking cup is pulled.

The purpose of the present invention is to create a magazine of the first-mentioned kind with which, with only one hand, only one drinking cup at a time can be released, regardless of the firmness of the grip.

According to the present invention, a magazine for drinking cups is characterized in that a blocking device in same consists of one or several blocking members for the drinking cups, arranged on the same level and along the inside periphery of the tubular part, each blocking member being provided with two blocking teeth, fingers or the like, which are connected together with each other in such a way that one or the other is in the blocking position but not both at one and the same time, that one of the teeth in each blocking member coacts with the lowermost drinking cup, that the other tooth in each blocking member coacts with the next lowermost drinking cup, that one of the teeth, under the action of a spring force or the like is held in a blocking position, which is the rest position of the tooth, and at an axial movement downwards of the lowermost drinking cup is moved out of its blocking position against said spring action and that the other tooth, under the action of a spring force or the like is held in a non-blocking position, which is the rest position of the tooth, and at said axial movement is moved into a blocking position, against the last-mentioned spring action.

The present invention will be described in more detail in conjunction with the accompanying drawings, in which—

FIG. 1 shows a magazine for drinking cups containing the present invention, in which

FIG. 2 shows the magazine for drinking cups with a section cut away, so that an example of the mechanism which is characteristic for the present invention is clearly shown, in which

FIGS. 3, 4 and 5 show said mechanism in three different working phases, in which

FIGS. 6 and 7 show another design of said mechanism, and in which

FIGS. 8, 9 and 10 show two further examples of said mechanism.

In FIG. 1, a magazine for drinking cups with a holder part **1** is shown, which is provided with a tubular hole for drinking cups **2**. The holder part is made in such a way that it can be attached to a wall **3**. The top part of the holder part is a cylindrical and preferably transparent cover **4**, fastened in one way or another to protect the stack of drinking cups which is placed in the holder part **1**. The holder part **1** is also provided with a window **12**, so that it is possible to see how many drinking cups there are in the actual holder part **1**. The drinking cup which has been released from the holder part **1** has been given the reference designation **2'**. Each drinking cup is provided with an outwardly directed collar, welt or the like **5**.

If now FIG. 2 is regarded, it will be noted that the holder part contains a band **8**, which is fastened to the upper end of the holder part. The lower end of the band is folded outwards radially, so that it can constitute a blocking tooth for the next lowermost drinking cup by bearing against the outwardly directed collar of this drinking cup. The band **8** can appropriately be made of metal, and is of a resilient nature.

One arm of a three-armed member **6** coacts with the outwardly directed collar of the lowermost drinking cup, which member **6** in turn is rotatably supported in a U-shaped part **9**. One arm of said member **6** bears against the band **8**, as is clearly shown in FIG. 3. A second band **10** extends from the part **9**, and the function of this second band is to have a guiding effect on the lowermost drinking cup. Inside the holder part **1** a number of guide strips **11** are arranged for the stack of drinking cups.

The magazine described above functions in the following way. The band **8** strives to act upon the three-armed member **6** in such a way that the arm which coacts with the outwardly directed collar **5** of the drinking cup **2'** assumes a blocking position. In this situation the lower end of the band **8** is in its retracted position and does not have any blocking effect whatsoever. If now the drinking cup **2'** is pulled downwards, the coacting arm in the three-armed member **6** is influenced in such a way that the three-armed member is turned towards the right, as shown in FIG. 4. Through this turning, the lower part of the band **8** is turned towards the right, so that the lower part of the band **8** will block the way for the outwardly directed collar **5** of the next lowermost drinking cup. Thus, when the lowermost drinking cup **2'** is pulled, only this drinking cup can be removed from the magazine, since the lower part of the band **8** blocks the next lowermost drinking cup. When the lowermost drinking cup **2'** has been moved down so far that the coaction between its collar and the coaacting arm of the three-armed member has ceased, the band **8**, because of its spring action, will force the three-armed member **6** to assume its original position, i.e. the position shown in FIG. 3 and FIG. 5. When the three-armed member has assumed said position and the band **8** has also assumed its rest position, the next lowermost drinking cup will fall down so far that its outwardly directed collar will bear against the coacting part of the three-armed member **6**.

It will thus be noted from the above that only one drinking cup at a time can be removed from the magazine when the lowermost drinking cup is subjected to a downward pull.

In FIGS. 6 and 7 is shown another form of a blocking mechanism constructed in accordance with the invention which has two blocking teeth which are alternatingly moved into a blocking position. This mechanism is made from one single band, of resilient material. FIG. 7 shows extremely clearly how said band has been bent in order to create two blocking teeth **12** and **13**, each of which have the function that they are to have a blocking effect on the lowermost **2'** and the next lowermost **2** drinking cups. Said band is made with a part **14**, intended to be inserted in a hole in the inner wall of the holder part **1'**. The formed band is also provided with a part **15**, intended to be inserted in said holder part **1'**, in order to co-operate towards the band being securely fastened to said wall **1'**.

A magazine for drinking cups with the just-mentioned mechanism functions in the same way as the mechanism according to FIGS. 2, 3, 4 and 5. Thus, if the tooth **12** is subjected to a downward movement owing to the lowermost drinking cup **2'** having been subjected to a pull, the part **13** will be inserted under the outwardly directed collar **5** of the next lowermost drinking cup **2**. When the collar **5** of the drinking cup **2** has passed the tooth **12**, the part **13** will spring back, so that the collar **5** of the next lowermost drinking cup will come to bear against the tooth **12**.

In FIG. 8, a mechanism arranged at the holder part **1''** is shown, which consists of a gear wheel **16**, to which is fastened a fixed arm **17**, the free end of which coacts with the collar **5** of the lowermost drinking cup **2'**. The gear wheel **16** is in mesh with a gear wheel **18**, which is also provided with a fixed arm **19**, intended to coact with the collar **5** of the next lowermost drinking cup **2**. The gear wheel **16** has another fixed arm **20** fastened to it, which arm **20** is connected with a spring **21**, which strives to hold the arm **17** in contact with the collar **5** of the drinking cup **2'**. The two gear wheels are rotatably supported on a plate **22**, fastened to the holder part **1''**.

If, in the last-mentioned magazine, the lowermost drinking cup **2'** is subjected to a downward movement, the arm **17** will move downwards, against the action of the spring **21**, and owing to the gear wheel **18** being in mesh with the gear wheel **16**, the arm **19** will move so that its lower end will be located under the collar **5** of the next lowermost drinking cup **2**, and thereby block the next lowermost drinking cup. When the coaction between the collar of the lowermost drinking cup **2'** and the arm **17** has ceased, the spring will turn the gear **16** so that the arm **17** will return to its original position, which involves that the arm **19** leaves its blocking position. In this situation, the next lowermost drinking cup **2** will fall down so far that its collar will come to bear against the arm **17**.

In FIGS. 9 and 10 a further example of a mechanism according to the present invention is shown, which consists of a wire **24**, bent in such a way that it has two parallel prongs **29, 30** and a connecting part **25**, which is bent outwards in the way shown in FIGS. 9 and 10, so that a blocking tooth is formed. The prongs of the wire **24** have a greater distance from each other at their lower end than at their upper end. Said change in distance is achieved in that each prong has a horizontal part **31**. Said two horizontal parts are made to function as a turning axle for another wire **26**, preferably made of a resilient material, which is bent in such a way that it has two prongs **32, 33** and a connecting part **27**. It is the ends of the prongs **32, 33** of the last-mentioned wire which are rotatably supported around said horizontal parts **31, 31**. The prongs **32, 33** of the last-mentioned wire **26** have been bent in the way shown in FIGS. 9 and 10. The lower end of the wire **26** will thereby function as a tooth and blocking member against the outwardly directed collar **5** of the lowermost drinking cup **2'**. Through the forming of the prongs of the wire **26**, the two prongs **32, 33** will obtain a contact point **28** at the inner wall of the holder part **1'''**.

The mechanism described above functions in the following way. In the rest position, the two wires **24** and **26** assume the positions which are shown in FIG. 9. If thereafter the lowermost drinking cup **2'** is subjected to a pull, the collar **5** of said lowermost drinking cup **2'** will act upon the lower part of the bent wire **26** in such a way that the bent wire **26** will act as a two-armed lever, with the point **28** as the pivot. Because of this, the lower end of the wire **24** will be moved outwards against its own spring action, so that the part **25** will have a blocking effect on the collar **5** of the next lowermost drinking cup. When the collar of the lowermost drinking cup **2'** has lost contact with the wire **26**, the lever which has moved the part **25** into its blocking position will return to its original position, owing to the spring force in the wire **24**, and the collar **5** of the next lowermost drinking cup will come to bear against the lower part of the wire **26**.

I claim:

1. A magazine for drinking cups, wherein each of said cups has an outwardly directed edge at its opening and said cups can be internested in one another, said magazine comprising a tubular member, means for mounting said tubular member in an upright position, and blocking means mounted within the inner periphery of said tubular member and actuatable only by a downward axial movement of said edges of said cups to permit removal of only one of said cups from said tubular member said blocking means comprising internally mounted resilient biasing means including radially inwardly extending projection means normally positioned out of engagement with said cups, pivotally mounted means having first extension means normally in contact with the lowermost of said cups for supporting all of said cups within said magazine and second extension means in contact with said biasing means for driving said projection means radially inwardly upon application of a force thereto via said lowermost cup and said first extension means, and said biasing means normally maintaining said rotatably mounted means against rotational movement thereof.

2. The magazine for drinking cups as defined in claim **1**, wherein said blocking means is wholly contained within said inner periphery of said tubular member and said biasing means comprises a cantilevered resilient member.

3. The magazine for drinking cups as defined in claim **2**, wherein said resilient member including a free end which is engageable with an outwardly projecting edge of a next-lowermost of said cups and said resilient member being normally biased towards said inner periphery of said tubular member and away from engagement with said edge of said next-lowermost of said cups.

4. The magazine for drinking cups as defined in claim **3**, wherein said first extension means is normally engaged with said edge of said lowermost cup and said second extension means is engaged with said resilient member, whereby only downward axial movement of said edges of said cups pivots said first extension means out of engagement with said edge of said lowermost cup and moves said free end of said resilient member inwardly into engagement with said edge of said next-lowermost cup.

5. The magazine for drinking cups as defined in claim **4**, wherein said resilient member comprises an elongated band of resilient material.

6. A magazine for drinking cups, wherein each of said cups has an outwardly directed edge at its opening and said cups can be internested in one another, said magazine comprising a tubular member and blocking means comprising first and second rigid blocking members, said first blocking member having one of its ends engageable with an outwardly projecting edge of a lowermost of said cups and its opposite end fixed to a first gear wheel, said sec-

ond blocking member having one of its ends engageable with an outwardly projecting edge of a next-lowermost of said cups and its opposite end fixed to a second gear wheel, said gear wheels being meshed with one another and each being pivotally mounted within said inner periphery of said tubular member, and resilient means between said first gear wheel and said inner periphery of said tubular member, said resilient means normally spring biasing said one end of said first blocking member to engage said edge of said lowermost of said cups and said one end of said second blocking means away from engagement with said edge of a next-lowermost of said cups, whereby said single downward axial movement of said edges of said cups pivots said one end of said first blocking member out of engagement with said edge of said lowermost of said cups and pivots said one end of said second blocking member into engagement with said edge of said next-lowermost of said cups.

7. A magazine for drinking cups, wherein each of said cups has an outwardly directed edge at its opening and said cups can be internested in one another, said magazine comprising a vertical tubular member, blocking means disposed in the tubular member, said blocking means comprising a first wire having two prong portions, an interconnecting portion, and a first tooth portion on said interconnecting portion, said blocking means further comprising a second wire of resilient material having two further prong portions, a second interconnecting portion, and a second tooth portion on said interconnecting portion, said further prong portions being rotatably supported on the prong portions of said first wire, said second wire being rotatable about an axis parallel to said interconnecting portions whereby said second wire rests against the inner wall of said tubular member to act as a two-armed lever, both said tooth portions extending inwardly of said tubular member, said second tooth portion being in blocking engagement with the lowermost cup and said first tooth portion being moved into blocking engagement with the next lowermost cup upon movement of said lowermost cup past said second tooth portion.

8. A magazine for drinking cups, wherein each of said cups has an outwardly directed edge at its opening and said cups can be internested in one another, said magazine comprising a vertical tubular member, blocking means disposed in the tubular member, said blocking means comprising a blade spring having one end set in the inner wall of said tubular member, a first portion extending substantially radially inwardly from said wall, a second upwardly extending portion with a first tooth portion formed therein and a third inwardly extending portion forming a second tooth portion, said first tooth portion being in

blocking engagement with the edge of the lowermost cup, whereby upon movement of said edge of the lowermost cup past said first tooth portion, said second tooth portion moves into blocking engagement with the edge of the next lowermost cup.

9. A magazine for drinking cups, wherein each of said cups has an outwardly directed edge at its opening and said cups can be internested in one another, said magazine comprising a vertical tubular member, blocking means disposed in the tubular member, said blocking means comprising a first gear wheel with a first arm attached thereto, a second gear wheel meshed with said first gear wheel with a second arm attached thereto and spring means for biasing said first arm into blocking engagement with the edge of the lowermost cup whereby movement of said lowermost cup past said first arm rotates both gears moving said second arm into blocking engagement with the edge of the next lowermost cup.

10. A magazine for drinking cups, wherein each of said cups has an outwardly directed edge at its opening and said cups can be internested in one another, said magazine comprising a tubular member, means for mounting said tubular member in an upright position, blocking means mounted within the inner periphery of said tubular member and comprising an elongate band of resilient material mounted within and wholly contained within said inner periphery and having first and second projections formed thereon, said first projetcion being normally biased radially outwardly and said second projection being normally biased radially inwardly, said elongate band being fixed at least at one of its ends to said inner periphery of said tubular member and being provided at its free end with a plurality of transverse bends forming said first and second projections, said second and first projections being engageable with a lowermost and a next lowermost of said cups, respectively.

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SAMUEL F. COLEMAN, *Primary Examiner.*