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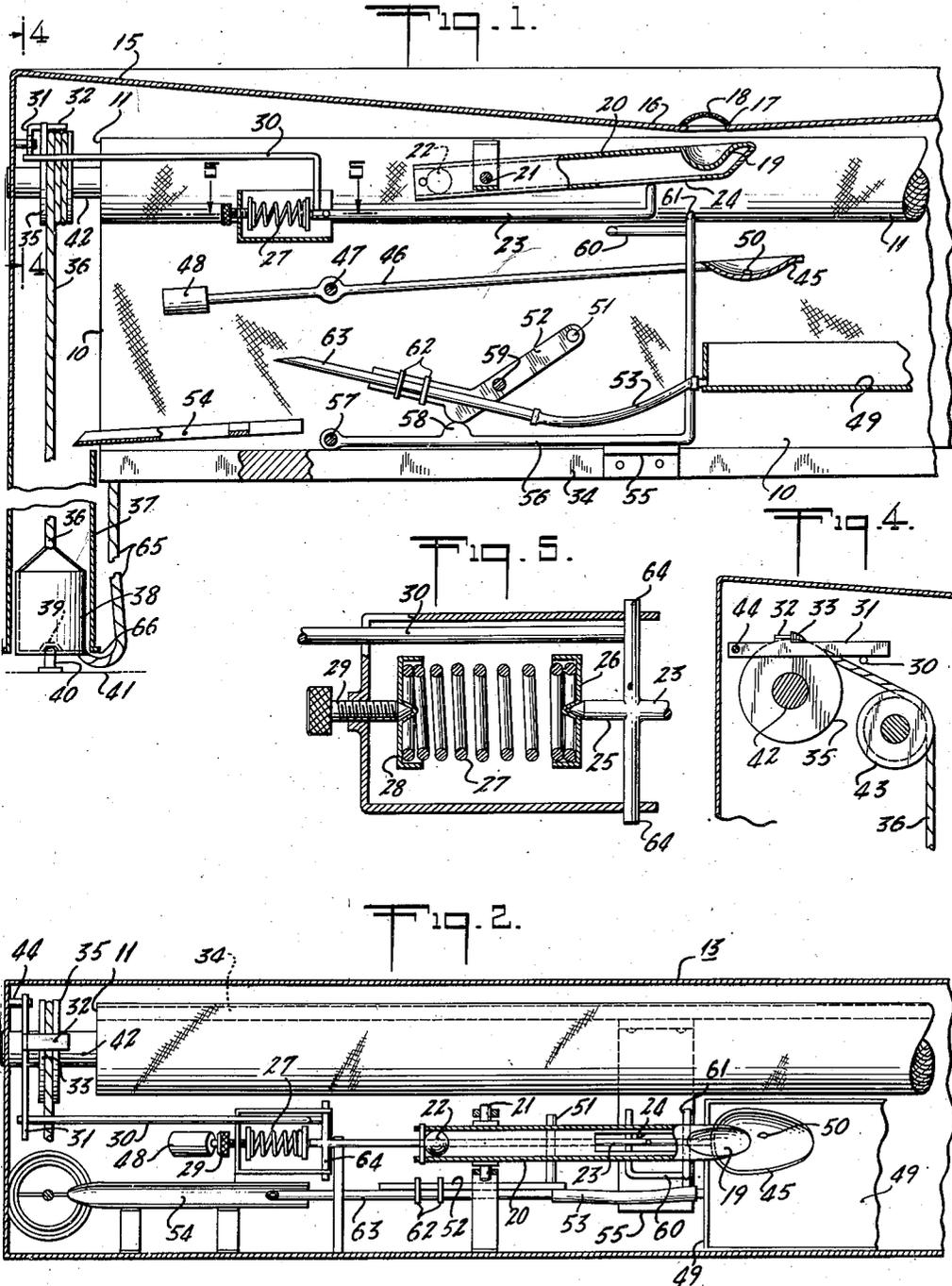
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2,464,623

WINDOW GUARD

Filed May 20, 1947

2 Sheets-Sheet 1



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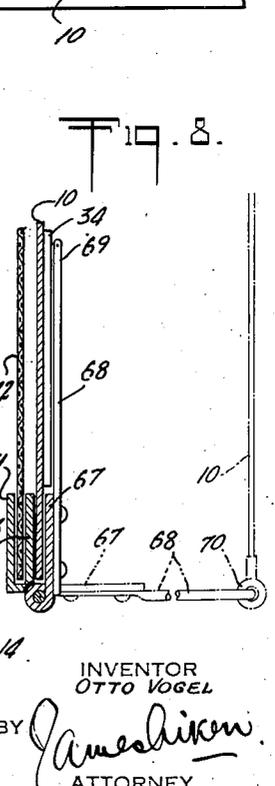
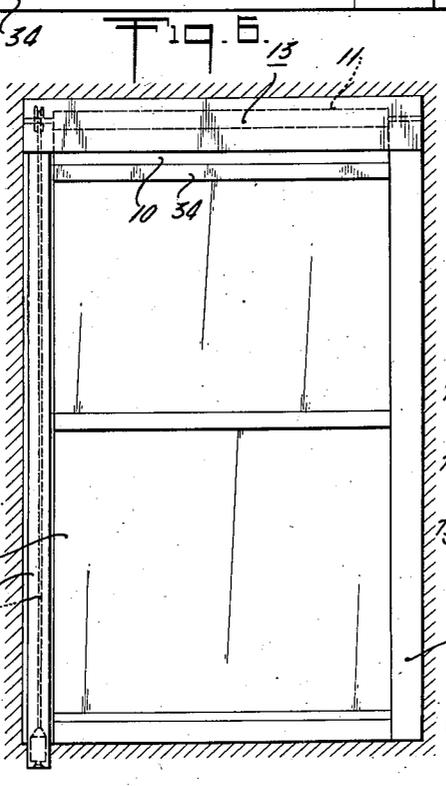
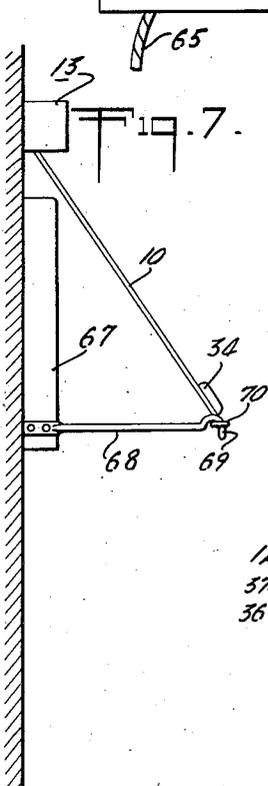
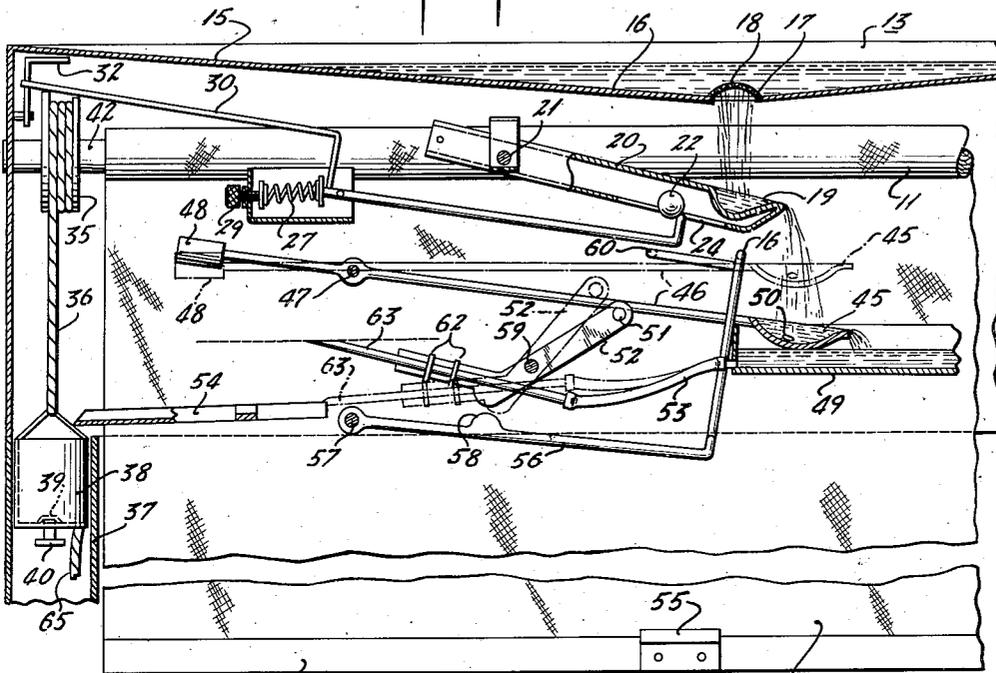
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Fig. 3.



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WINDOW GUARD

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20 Claims. (Cl. 160—5)

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This invention relates to a window guard mounted on a roller above a window opening and adapted to operate automatically so as to be lowered when it rains, to protect a window opening from the rain, and to be automatically raised when the rain stops.

My prior United States Patent No. 2,103,923, granted December 28, 1937, covered an apparatus adapted to serve this purpose and in that construction the weight of rain water, collected in a trough attached to the guard or awning, caused the latter to descend when the rain started, and a counterweight was provided to roll up the guard when the rain stopped.

One object of the present invention is to provide an improved mechanism whereby the guard is caused to unroll and descend automatically by the operation of a permanent weight and whereby the raising of the guard, after the rain stops, is effected by the weight of rain water automatically supplied from a storage tank.

A further object is to provide means whereby even a very slight rainfall is sufficient to cause the mechanism to operate and lower the guard, and, when the rain has entirely ceased, the weight of rain water supplied from the reserve tank is sufficient to raise the guard against the action of the lowering weight.

Still another object of the invention is to provide means whereby the guard is retained in its raised position by a cam or lug engaged by a pawl, against the action of the lowering weight, and to provide means whereby the pawl automatically releases the cam when the rain starts.

With the above and other objects in view, the present invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes may be made without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawings, Fig. 1 is a front view—partly in section—showing the actuating mechanism, Fig. 2 is a plan view thereof shown partly in section, Fig. 3 is a view corresponding to Fig. 1 but showing the parts of the mechanism in different positions, Fig. 4 is a detail cross-section taken on the line 4—4 of Fig. 1, Fig. 5 is a sectional plan view taken on the line 5—5 of Fig. 1, Fig. 6 is a front view of a window with the improved guard applied thereto, Fig. 7 is a side view showing the guard in use as an awning, and Fig. 8 is a detail sectional plan showing certain parts for use with awning.

Referring to the drawings, an automatic guard 10 of waterproof fabric or other suitable flexible material or combination of materials is mounted on a roller 11 outside and above a window 12, and

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mechanism is provided whereby the guard is lowered when it rains and is automatically rolled up after the rain stops. The roller 11 and the operating mechanism are mounted in a casing 13 supported above, or at the top of the window opening 14 (Fig. 6) and this casing is provided with a top cover 15 having a depression 16 with an opening 17 at its lowest point for the passage of rain water, and a strainer 18 is provided to exclude leaves and other solid matter from the opening 17. Arranged below the opening 17 is a cup 19 forming part of a tube 20 pivoted at 21 and containing a ball weight 22 by which the cup 19 is normally held in its raised position as shown at Fig. 1. When rain water from the opening 17 accumulates in the cup 19, the tube member 20 turns clockwise until the ball 22 is caused to roll by gravity towards the right and the ball then engages and operates a lever arm 23, the end of which extends upwardly through a slot 24 in the bottom of the tube 20. The lever 23 is pivotally mounted on trunnions 64 (see Fig. 5) and has a pointed projection 25 engaging a central depression in a disc 26 having in its opposite side an annular depression for the reception of the compression spring 27 whose opposite end engages a similar disc 28 which latter is engaged by an adjustable screw 29 by means of which the compression of the spring 27 may be regulated. The lever 23 and spring 27 are normally in a straight line but when the lever 23 is thrown downwardly by the momentum of the ball 22 the spring 27 is free to expand upwardly and an extension arm 30 forming part of the lever 23 then moves upwardly (Fig. 4) and raises an arm 31 which is pivoted at 44 and has thereon a projecting pawl 32 which releases an inclined projection 33 on the periphery of a pulley 35 attached to the shaft 42 of the roller 11 so that the pulley and roller rotate in unison, and as the pulley and roller are thus released, a weighted strip 34 on the lower edge of the flexible guard 10 then rotates the roller 11 and thus pulls down the guard.

As the guard 10 is thus lowered by the weight 34 the rain water passing through the hole 17 to the cup 19 flows from such cup to a lower cup 45 mounted on a lever arm 46 pivoted at 47 and having a counterweight 48 and as the cup 45 receives water from the cup 19 the arm 46 turns clockwise with the lowering of the cup 45 and excess water from cup 45 flows into a reserve tank 49 of substantial capacity. The cup 45 is provided with a small aperture 50 through which the rain water may slowly seep, so that the weight of the water in the cup 45 holds the said cup in its lowered position until the rain stops falling and until the water in the cup has sufficient time to seep slowly through the said aperture 50. In the case of uneven rain, therefore, the cup 45 will not swing up and down. As long as the rain

continues to fall, the cup 45 remains in its lowered position as shown in full lines at Fig. 3 and, when the water in the reserve tank 49 reaches its highest level, excess water escapes by a suitable overflow—not shown—and when the rain stops falling and the cup 45 has had sufficient time to discharge its contents the lever 46 is swung upwardly by the counterweight 48 and the arm 46 thus releases a pin 51 on a pivoted member 52 so that the latter is free to turn counter-clockwise by gravity and thus move from the position shown in full lines to that shown in dotted lines at Fig. 3, thereby permitting a flexible hose 53 to swing downwardly by gravity and to allow water to pass from the reserve tank 49 to a channel 54 from which the water passes to a vessel 38 as hereinafter described.

The member 52 is mounted on a pivot pin 59 and on one end thereof the projecting pin 51 is provided for engagement by the arm 46 and on the opposite end of the member 52 rings or loops 62 are provided for the reception of a pipe 63 capable of free sliding movement therein. The pipe 63 is connected with the lower part of the reserve tank 49 by the said flexible hose 53 so that rain water may flow from the said tank to the hose 53 and the pipe 63 when the latter is in its lowered position as shown in dotted lines at Fig. 3.

To raise the guard 10, the said pulley 35 has wound thereon a cable 36 which is shown extending over a guide pulley 43 (Fig. 4) and extends downwardly and is accommodated in a vertical tube 37 and carries on its free end the open-topped vessel 38 above referred to. The cable 36 is wound on the pulley 35 in the opposite direction to the winding of the guard on its roller 11 so that, when rain water is supplied to the vessel 38, and the weight thereof overbalances the weight 34 on the guard 10, the vessel 38 descends and causes the weight 34 to ascend thereby rolling up the guard. The vessel 38 is provided with a spring-loaded valve 39, the stem 40 of which projects downwardly and is engaged by a stationary member 41 when the vessel 38 reaches its lowest position so that the valve 39 is then opened and the rain water is discharged from the vessel 38 and, while the guard is held in the raised position by the action of the pawl 32 as above described, the vessel 38 remains in its lowered position even after the discharge of the rain water therefrom.

The weight 34 on the guard 10 is provided with a projecting bracket 55 and when the guard is raised this bracket engages and raises a reset lever 56 which is pivoted at 57 and has a projecting member 58 for turning the member 52 in a clockwise direction about its pivot 59, has a projecting part 60 for raising the arm 23 until the spring 27 is brought to its compressed and balanced position, and has a top part 61 for raising the tube 20 until the ball weight 22 rolls to the left hand end of the tube 20 and thereby holds the cup 19 in a raised position.

The projecting cam 33 on the pulley 35 is so located that when the guard reaches the uppermost position the cam is spaced about one inch from the pawl 32 and after the water is allowed to escape from the vessel 38 by the action of the valve 39 the weight 34 causes the guard to move slightly downwards until the cam 33 is engaged by the pawl 32 and the reset bracket 56 thus moves downward by gravity from its top position and frees the tube 20 and the arm 23 in readiness for the next operation, but does not

allow the member 52 to turn far enough to bring the outlet end of the pipe 63 below the level of the water in the reserve tank 49. When the automatic lowering of the guard causes the projection 58 to entirely release the member 52, however, the arm 46 engages the projection 51 thereby preventing flow of water from the reserve tank 49 to the vessel 38 until the next time the guard is to be raised.

The reserve tank 49 preferably has sufficient capacity for several operations of the guard and by this arrangement the mechanism may operate effectively several times even though the rainfall is very light each time.

A cord 65 may be attached to the vessel 38 and may pass therefrom to the weight 34, being passed through a suitable aperture 66 in the tube enclosing the container and cable 36, and this cord 65 may thus serve as a suitable means for actuating the screen by hand if and when desired.

Referring particularly to Figs. 7 and 8, the side edges of the guard 10 may be accommodated, when the guard is in its lowered position, in side channels each comprising a rear fixed strip 73 and a hinged front strip 67, which latter may be turned outwardly through 90 degrees (as shown in dotted lines at Fig. 8) to permit the guard 10 to be swung outwardly into the position shown in Fig. 7 and shown in dotted lines at Fig. 8 so as to serve as an awning, and, to retain the guard in this position, an arm 68 is secured to the strip 67 and may have a hook 69 on its outer end for engagement with an eye 70 secured at the lower edge of the guard 10. The guard 10 is moved outward into position for use as an awning and the hook 69 is engaged with the eye 70 by hand, and when it is desired to return the awning to its vertical position for use as a guard, the hook is disengaged from the eye 70 and the strip 67 is returned to the position shown in full lines at Fig. 8 where the strips 67 serve as guide for the side edges of the guard 10 during the upward and downward movement thereof.

As shown at Fig. 8, the channels for the side edges of the guard may also comprise inner strips 71 parallel to and spaced from the strips 73 to provide channels to serve as guides for the marginal edges of wire mesh or mosquito netting 72.

Although the drawings and the above specification disclose the best mode in which I have contemplated embodying my invention, I desire to be in no way limited to the details of such disclosure, for in the further practical application of my invention many changes in constructional details may be made as circumstances require or experience suggests, without departing from the spirit of the invention within the scope of the appended claims.

What I claim is:

1. An automatically operated window guard comprising means for lowering the guard, means for retaining the guard in its raised position against the action of such lowering means, water collecting means for releasing said retaining means when it rains, a rain storage tank, and guard-raising means consisting of a rain water receiving vessel and means whereby rain water is directed to said vessel from the storage tank when the rain stops.

2. Mechanism of the character described for the actuation of a guard to protect a window opening from rain, comprising normally restrained gravity means for lowering the guard, means actuated by the weight of rain water for

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releasing the lowering means, a reserve tank for the collection of rain water for raising the guard, and means whereby the weight of rain water from said tank raises the guard against the action of said gravity lowering means.

3. Mechanism of the character described for the actuation of a guard to protect a window opening from rain, comprising means for lowering the guard by gravity, means actuated by the weight of rain water for releasing the actuating means, a reserve tank for the collection of rain water, means whereby the weight of rain water raises the guard against the action of said lowering means, and means whereby, after raising the guard, the actuating rain water is discharged in preparation for a subsequent lowering of the guard.

4. Mechanism of the character described for the actuation of a flexible guard to protect a window opening from rain, comprising a roller for the actuation of the guard, a permanent weight for lowering the guard, spring means released by the weight of rain water for releasing the gravity actuating means, a reserve tank for the collection of rain water, means whereby the weight of rain water supplied from said tank actuates the roller to raise the guard against the action of said weight, and valve means whereby, after raising the guard, the actuating rain water is discharged in preparation for a subsequent lowering of the guard.

5. Roller mechanism for the actuation of an automatic flexible guard for the protection of a window opening from rain water, having actuating means comprising a spring for releasing the guard, a weight for lowering the guard when so released, a reserve tank for the reception of rain water, means for rotating the roller to raise the guard, a rain water vessel attached to said means, means for conveying rain water from the reserve tank to said vessel, means whereby water passes from the reserve tank to the said vessel only when the rain stops, and means on the guard for stopping the passage of water from the reserve tank to the said vessel in readiness for a subsequent operation.

6. Roller mechanism for the actuation of an automatic flexible guard for the protection of a window opening from rain water, having operating means comprising a movable cup for the reception of rain water, spring means actuated by the movement of said cup to release the guard, a weight for lowering the guard when so released, a lower cup for the reception of water, a reserve tank for the reception of water from the lower cup, means for rotating the roller to raise the guard, a rain water vessel attached to said means, means for conveying rain water from the reserve tank to said vessel, means whereby the weight of rain water in the lower cup prevents the passage of water from the reserve tank to the said vessel, and means on the guard for stopping the passage of water from the reserve tank to the said vessel and for resetting the first cup in readiness for a subsequent operation.

7. Roller mechanism for the actuation of an automatic flexible guard for the protection of a window opening from rain water having operating means comprising a movable cup for the reception of rain water, means whereby the actuation of said cup by the rain water releases the guard, a weight for lowering the guard when so released, a lower cup for the reception of water, a reserve tank for the reception of water from the lower cup, means for rotating the roller

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to raise the guard, a rain water vessel attached to said means, means for conveying rain water from the reserve tank to said vessel, means whereby the weight of rain water in the lower cup prevents the passage of water from the reserve tank to the container, and means on the guard for stopping the passage of water from the reserve tank to the said vessel and for resetting the first cup in readiness for a subsequent operation.

8. Guard operating mechanism, according to claim 7, comprising a pivoted member carrying the first cup to receive rain water and a device actuated by the movement of said member for releasing the guard to permit it to descend by gravity.

9. Guard operating mechanism, according to claim 7, comprising a pivoted tube carrying the first cup to receive rain water and a ball weight enclosed in said tube for releasing the guard to permit it to descend.

10. Guard operating mechanism, according to claim 7, comprising a cover with an opening therein, a pivoted tube carrying the first cup in position to receive the rain water from said opening, and a gravity-actuated rolling member enclosed in said tube for releasing the roller of the guard to permit the guard to descend by gravity.

11. Guard operating mechanism, according to claim 7, comprising a pulley actuated with the guard, pawl and cam mechanism for arresting the motion of the pulley with the guard in its raised position, spring means for releasing the pawl from the cam, and means whereby actuation of the first cup facilitates operation of the said spring means.

12. Guard operating mechanism, according to claim 7, comprising a pulley actuated with the guard, pawl and cam mechanism for arresting the motion of the pulley with the guard in its raised position, a spring for releasing the pawl from the cam, a lever normally holding said spring under restraint, and a rolling member actuated by the first cup to engage and swing said lever to thereby release said spring for the actuation of said pawl for the said release of the pawl from the cam.

13. Guard operating mechanism, according to claim 7, comprising a pulley actuated with the guard, pawl and cam mechanism for arresting the motion of the pulley with the guard in its raised position, spring means for releasing the pawl from the cam, gravity means whereby actuation of the first cup facilitates operation of the said spring means, and means whereby the weight of stored rain water actuates the pulley to raise the guard.

14. Mechanism, according to claim 7, comprising a counterweight for the lower cup for moving said cup to its raised position after the discharge of rain water therefrom and an opening in the lower part of said cup for the slow seepage of water therefrom to permit upward movement of said cup only after a predetermined interval.

15. Mechanism, according to claim 7, comprising a counterweight for the lower cup for moving said cup to its raised position after the discharge of rain water therefrom, and an opening in the lower part of said cup for the slow seepage of water therefrom to permit upward movement of said cup only after a predetermined interval, and means whereby upward movement of

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said cup facilitates passage of water from the reserve tank to raise the guard.

16. Mechanism, according to claim 7, comprising means for raising the lower cup to its raised position after the complete discharge of rain water therefrom and an opening in the lower part of said cup for the slow seepage of water therefrom to permit upward movement of said cup only after a predetermined interval.

17. Mechanism for the operation of an automatic guard, according to claim 7, in which the means for conveying water from the reserve tank to the guard-raising vessel comprises a pivoted member, a pipe mounted on said member, a flexible tubular connection between said pipe and the reserve tank, and means whereby the outlet end of the pipe is held above the water level in the reserve tank by the guard.

18. Mechanism for the operation of an automatic guard, according to claim 7, in which the means for conveying water from the reserve tank to the guard-raising vessel comprises a pivoted member, a pipe movably mounted on said member, a flexible hose between said pipe and the reserve tank, means whereby the outlet end of the pipe is raised above the water level in the reserve tank by the raising of the guard, and means on said member engaged by the lower cup for holding said outlet end in its raised position until all rain water has escaped from said cup.

19. Mechanism for the operation of an automatic guard, according to claim 7, in which the

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means for conveying water from the reserve tank to the guard-raising vessel comprises a pivoted member, a pipe slidably mounted on said member, a flexible hose connection between said pipe and the lower part of the reserve tank, means on the guard whereby the outlet end of the pipe is raised above the water level in the reserve tank by the raising of the guard, and means on said pivoted member for holding said outlet end in its raised position until all rain water has escaped from the lower cup.

20. Mechanism for the operation of an automatic window guard of the type described comprising a water vessel for overbalancing the guard and for raising it by gravity, an automatic valve for discharging the water from said vessel after the raising of the guard, and pawl mechanism for retaining the guard in the raised position during the discharge of water from the said vessel.

OTTO VOGEL.

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