

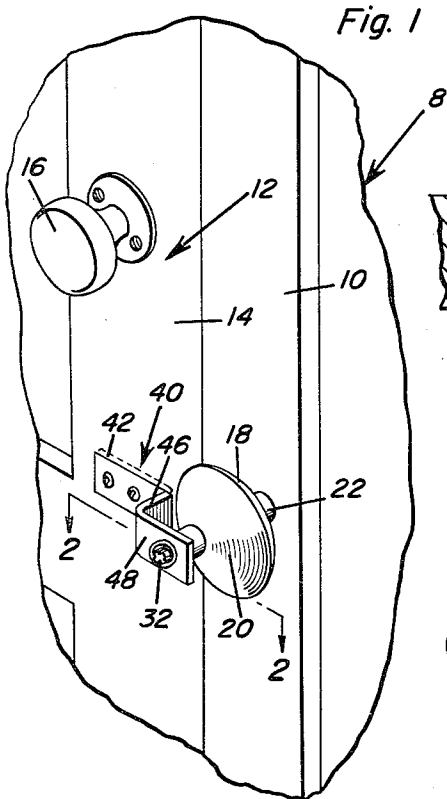
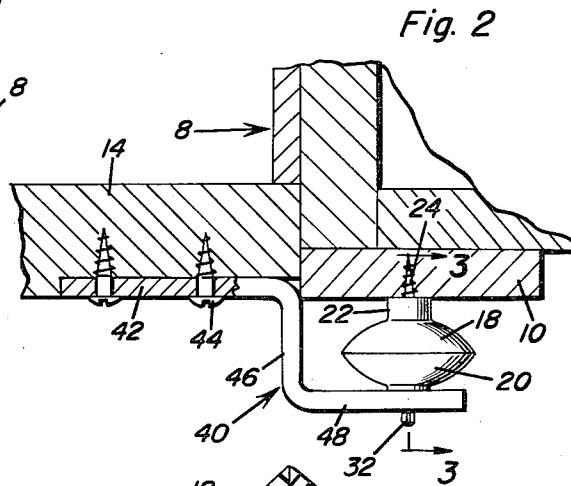
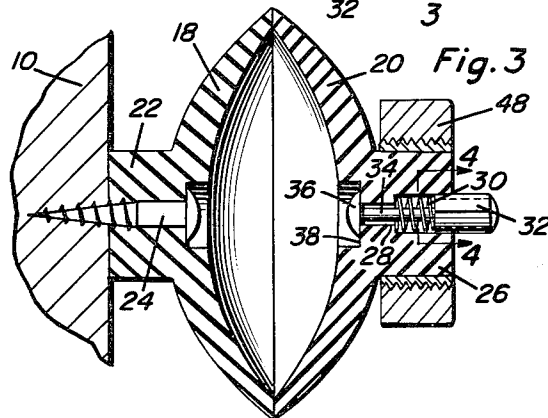
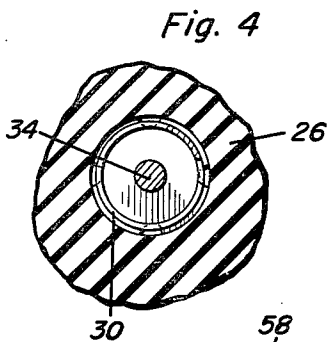
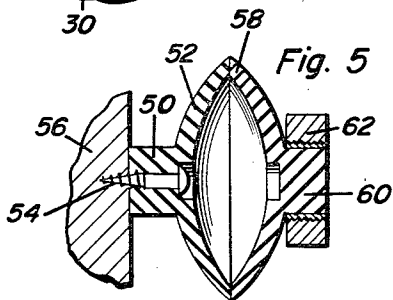
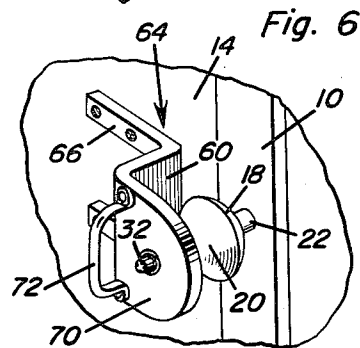
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DUAL SUCTION CUP DOOR CHECK AND HOLDER

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3,042,958

DUAL SUCTION CUP DOOR CHECK AND HOLDER

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5 Claims. (Cl. 16—84)

The present invention relates to closures, broadly construed, but pertains, more particularly, to hingedly and swingably mounted doors, gates and the like.

As the title of the invention briefly implies, the concept has to do with a novel noise-diminishing bumper-like door check which involves a pair of separably connectible companion suction cups, the latter being cooperatively utilized in such a way that the vacuum chamber existing therebetween joins the cups with the inherently applied force so that, in addition to providing a check or stop, a satisfactory fastener or holder is also provided.

In carrying out a preferred embodiment of the overall inventive idea one suction cup with its cup-side facing outwardly is secured to a door frame. The complemental suction cup is carried by a bracket which, in turn, is fastened to the frame of a screen door. The marginal lip portions of the cups are caused to confront each other and once they abut, a vacuum or suction joint is had providing the aforementioned door fastener.

Where heavier doors than ordinary spring-closed screen doors are used this will require the use of larger size suction cups and, in addition, a spring-closed manually operable valve to break the vacuum seal when one desires to part the suction cups.

Significantly present in this invention are certain carefully thoughtout ideas. For instance, the noisy repetitional slamming and banging of spring-closed screen doors often provokes perplexed parents to an emotional state of irritation. Youngsters darting in and out is in and of itself distracting, but the child's "delight" at hearing the door slap and bang to, is nerve wracking to say the least. To be sure, expensive-type summer-winter combination doors have shock-absorbers to cope with the adequately-closed door problem, but the often rickety old screen door requires one of the not-so-good bumpers and stop-checks. While helpful to the cause, it will have been noticed that flaccid coil springs, with or without special bumpers, do not keep the door fully closed; so, it rebounds leaving an open gap, much to the annoyance of parents. With these and other nuisances (too numerous to be mentioned) in mind, it is an objective here to provide something different; namely, a contrivance which, when the door closes, it immediately checks itself, prevents noisy rebound, and fastens in a reliable practical manner. Secondly, it functions as a cushioning bang-proof bumper and reduces noise to an appreciable minimum. Then, too, it "latches" the door and soon lets mind-changing youngsters know that once out, they cannot turn around and run back in because frustrating force and pressure on the door frame is then required to part the vacuum connected cups.

It follows that the present invention satisfactorily provides a cushioned bumper-stop and door fastener which obviates the necessity of repeatedly admonishing children to "close the door" and, being a good hold-tight fastener it overcomes the necessity of having to manually hook the door. Therefore, untrained behavior of most children takes a new turn since the average small child cannot easily thrust the door open from the outside but can, of course, use a suitably provided handle on the inside to voluntarily go out.

Not only does the invention function nicely on screen doors, it may and should be used on fence gates where

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it soon puts a stop to prankish gate-riding, swinging back and forth and consequent destruction of frail gates.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a fragmentary perspective view showing a portion of a door frame and a screen door and illustrating, what is more important, the invention and how it is constructed and installed for use;

FIG. 2 is a view on a larger scale with the parts primarily in elevation taken approximately on the horizontal line 2—2 of FIG. 1;

FIG. 3 is an enlarged view with the parts adequately illustrated taken on the section line 3—3 of FIG. 2;

FIG. 4 is an enlarged section on the line 4—4 of FIG. 3;

FIG. 5 is a view similar to FIG. 3 of a modification of the invention wherein the valve means is omitted and wherein two simple suction cups are employed in carrying out the idea; and

FIG. 6 is a view in perspective similar to FIG. 1 but showing a modified type of a mounting bracket.

In FIGS. 1 and 2 the door frame is denoted by the numeral 8 and has a jamb 10. The screen door (representing the closure whether it be a door or a gate) is denoted by the numeral 12 and it has a frame including a rail 14. This rail is shown provided with a handle 16 which assists in opening and closing the door taking into consideration the latching-type door check herein under consideration. Referring now to FIG. 2 it will be seen that the relatively stationary rubber or equivalent suction cup is denoted at 18 and the companion but movable suction cup at 20. Both cups are similar in construction so that they are properly mated for conjoint operation. The suction cup 18 is ordinary and has a neck 22 which may be screwed or otherwise fastened in place as at 24. The suction cup 20 is of special construction and therefore attention is invited to FIG. 3 wherein it will be seen that the convex side thereof is centrally provided with an outstanding neck 26 having a bore 28 and a counterbore at the outer end thereof provides a socket for a coil spring 30 and the plunger head 32 of a spring-closed valve. The valve stem extending through the bore is denoted at 34 and the head 36 provides the valve element which is normally engaged with the valve seat 38. Thus this valve is closed but by exerting thumb pressure on the button or head 32 and pressing against the tension of the spring the valve can be opened. The obvious purpose of this valve is to destroy the vacuum in chamber 52, 58 which exists between the two closed cups when they are joined together in the manner shown in all figures of the drawing.

The adapter and attaching bracket is denoted at 40 and it has a shank 42 at one end which is fastened to the rail 14 by screws or the like 44. The offsetting or spacing limb is denoted at 46 and the cup attaching limb at 48. This limb is provided with a suitable screw-threaded hole to accommodate the screw-threaded portion of the neck 26. It may be necessary to secure a threaded collar around the neck 26 as shown in FIGURE 3 and to thus make a way for connecting the part 26 and the collar together by mating threads; or the joint between 48 and 26 may be achieved in some other satisfactory manner.

With this construction and assuming that the door is closed one may catch hold of the handle 16 and by exerting a firm pull thereon the suction cups part and the door comes open. When the door is allowed to close and assuming that it is a spring-closed screen door, as it slams

to closed position its action is checked whereupon the suction cups function as a door check. In FIGS. 1-4, inclusive, the valve is included but in actual practice on an ordinary screen door, valve means is perhaps unnecessary. Where, however, the doors are heavy or burdensome to handle or where the device is installed on gates, specially large size gates, the valved suction cup is almost essential to break the vacuum in order to open the door or gate as the case may be.

Attention is directed to FIG. 5 wherein it will be seen that the neck 50 of the suction cup 52 is fastened at 54 to the door jamb 56. The opposed companion cup 58 is provided with a solid neck 60 suitably connected with the bracket limb 62. The purpose of this view is to show that it is within the purview of the invention to employ two smaller suction cups or two larger ones, or intermediate ones using the valving means wherever necessary or desired.

In FIG. 6 the suction cups are the same as already described and are therefore referred to by the same numerals. The difference here is in the bracket 64 having spaced parallel attaching members 66, a limb 60 and another limb 70 which is shaped in the form of a plate, as it were, and is sufficiently large and rigid to permit a simple hand-grip 72 to be mounted directly thereon.

It is believed that a careful reading of the statement of the objects of the invention, the description of the figures, the description of the details with the latter construed in the light of the drawing, a clear and comprehensive understanding of the concept and the preferred manner of reducing the same to practice will be attained. Therefore, a more lengthy description is believed to be unnecessary.

Minor changes in shape, size, materials and rearrangement of component parts may be resorted to in actual practice without departing from the spirit of the invention or the scope of the invention as claimed.

What is claimed as new is as follows:

1. A device for controlling movement between relatively movable members comprising a first suction cup adapted to be affixed to one member with a concave cup-side facing outwardly, and a second suction cup adapted to be affixed to the other of said members, said second cup having a concave cup-side facing and aligned with said first-named cup-side, said cups corresponding in size

and the marginal edges abutting each other with an airtight fit whereby a suction formed between the two cups holds them together, one of said cups having manually opened and spring closed valve means functioning when opened to destroy the suction force and to thus allow the cups to be intentionally parted.

2. The structure defined in claim 1, and wherein said valve means is movably secured in the second mentioned cup.

3. The structure defined in claim 1, and wherein the first member comprises a screen-door-frame on which the first suction cup is adapted to be screwed, said other member being a spring-closed screen door fitted to said frame to close flush therewith, said valve means including an easily accessible valve-opening member, and bracket means carrying said second suction cup and adapted to be fixed on the frame of the screen door.

4. An attachment for a screen door or the like comprising a first stationary suction cup adapted to be mounted on a door jamb, a second like cup, the cups having open ends facing each other, and a bracket for attachment to the frame of a screen door, said bracket having an attaching portion, an intermediate offsetting portion, and a limb portion to which the second suction cup is connected, said second-named suction cup having a neck with a bore passing therethrough, said bore provided at its inner end with a valve seat, a spring-loaded plunger-type valve having a stem operable in the bore, means at the outer end of the stem for displacing the stem inwardly, and a valve element at the inner end of the stem cooperable with the seat to prevent admission of air between the cups until said stem is displaced inwardly.

5. The structure defined in claim 4 and wherein said bracket is provided with a hand-grip directly attached thereto to permit the steps of depressing the valve and promptly grasping the hand-grip and parting the suction cups.

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