

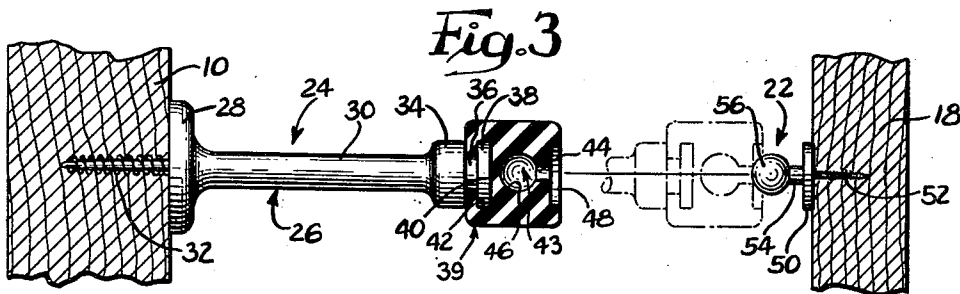
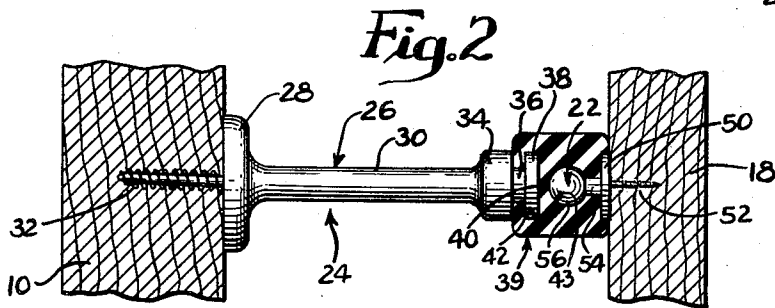
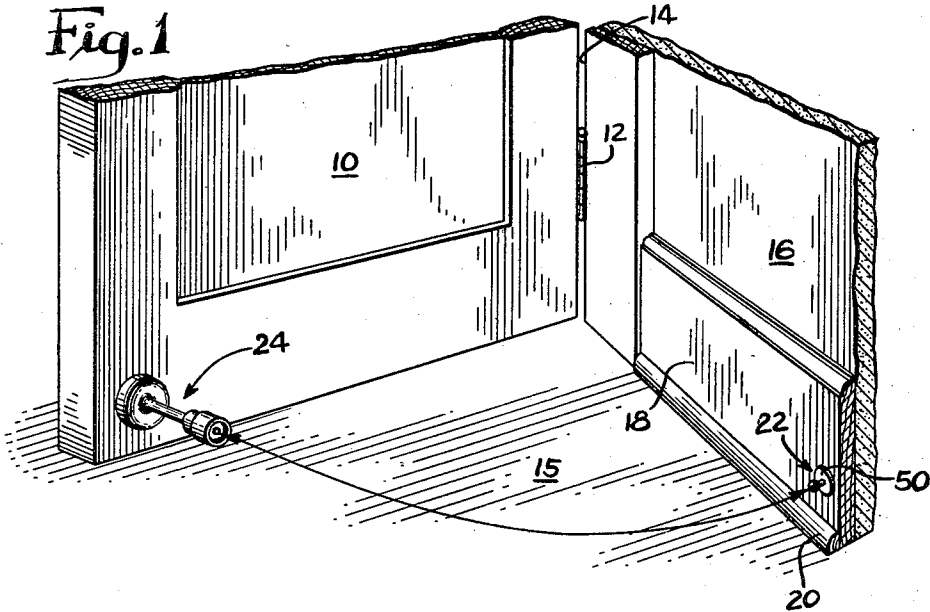
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DOOR BUMPER AND LATCH

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1

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DOOR BUMPER AND LATCH

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1 Claim. (Cl. 292-70)

The improved holding device comprising the present invention has been designed for use primarily in connection with hinged door structures for mechanically engaging the swinging door panel when the latter is swung to a predetermined open position to hold the panel against further movement. The principles of the invention are applicable wherever relatively swinging parts are concerned and the invention may, with or without modification, be employed for holding or fastening one of the parts to the other.

The present holding device is not necessarily limited to use in connection with relatively swinging parts and likewise it may, with or without modification, be employed in connection with parts that slide or otherwise move linearly in a predetermined path with respect to each other as for example a sliding door or window panel and the casement in which it is mounted. Irrespective however of the particular use to which the invention may be put, the essential features of the invention are at all times preserved.

Specifically, where swinging doors are concerned, many holding devices which are in present day use consist of a stationary member secured to a floor or wall and a cooperating member secured to the door and designed for registry with the other member so that the two may interlock mechanically, a suitable tripping or releasing device being associated with one or the other member. Another type of holding device is designed for mounting entirely upon the door and includes tilting or reciprocating means capable of being depressed to engage the floor and some devices of this type are provided with special releasing mechanism.

Holding devices of the general character outlined above are possessed of numerous disadvantages, principal among which is the fact that the cooperating members applied to the door and to the stationary structural reaction member by means of which the door is held in a fixed position, must be carefully aligned before the cooperating parts are fastened in position on their respective members. Additionally, where interlocking parts are employed, the holding device is capable of becoming inoperative due to wear of the interlocking parts. Where floor engaging members are employed, there is also the danger of undue wear of the part which frictionally engages the floor and such devices are furthermore objectionable in that they mar or otherwise deface the floor.

The present invention is designed to overcome the above noted limitations that are attendant upon the use of present day door holding devices and toward this end it contemplates the provision of an extremely simple door bumper and catch which is capable of easy installation on the cooperating relatively moving parts without necessitating alignment of the cooperating members which constitutes the holder and which, in fact, requires no measuring process whatsoever in that the device may be initially installed on one or the other of the two members in a nearly approximate position easily gauged by

2

the eye so that by the simple expedient of swinging the door to the exact position in which it is desired that it shall be held, the two members which cooperate to make up the device will automatically become properly installed and in accurate alignment for holding purposes.

The provision of an improved door stop and catch assembly of the character briefly outlined above, being among the principal objects of the invention, a further object is to provide such a device which is responsive to the application of a moderate amount of impact force of the swinging member or door relative to the stationary member to cause the device to operate merely as a bumper to cushion the impact of the door against the reaction member with no effective holding operating taking place, and which also will serve when a comparatively large degree of impact takes place between the door and reaction member to hold the door in a predetermined open position, usually its fully open position.

Yet another object of the invention is to provide a two part separable door bumper and catch combination in which the two parts may be manufactured independently and assembled in their interengaging relationship and sold commercially thus assembled, and in which one of the parts has a penetrating fastening element associated therewith so that when the assembled device is installed on one or other of the two relatively moving members and the members brought to the desired position wherein it is intended that they shall be held, the part having the penetrating device will become automatically installed on one of the members leaving nothing further to be done to complete the installation of the device for immediate use.

A still further object of the invention is to provide a door bumper and catch combination including two separable parts one of which is applicable to the door and the other of which is applicable to the stationary reaction member with one part including a bumper element of resilient material such as rubber and in which positive latching means is provided for holding the door in an open position with the resilient part cooperating with the latching means to positively hold the door in its open position and eliminate any lost motion between the parts as well as to avoid rattling or vibration of the parts.

A still further object of the invention is to provide a combined door bumper and catch combination of this general type in which one of the parts includes a resilient pad capable of receiving therein all of the projecting portion of the other part so that the latter part is substantially concealed from view when the two parts are in their operative position of holding cooperation.

Finally, it is an object of the invention to provide a door bumper and catch of this character in which one of the parts may consist of the usual widely known and sold door bumper shank in which the usual rubber bumper insert therefor has been removed and in its stead substituted the special resilient door bumper and holding pad which comprises a part of the present invention.

The provision of a door bumper and catch combination which is extremely simple in its construction and which is comprised of a minimum number of manufactured parts thereby resulting in economy of manufacture; one in which there are no pivoted or swinging parts and which is therefore unlikely to get out of order; one which is rugged and durable and which therefore is possessed of a relatively long life; one which is attractive in its appearance and design, and one which is otherwise well adapted to perform the services required of it, are further desirable features that have been borne in mind in the development and production of the present invention.

Other objects and advantages of the present invention will become more readily apparent as the nature of the invention is better understood.

In the accompanying single sheet of drawings forming a part of this specification a preferred embodiment of the invention has been shown.

In these drawings:

Fig. 1 is a fragmentary perspective view of a door structure showing the improved bumper and catch mechanism of the present invention applied thereto.

Fig. 2 is a side elevational view, partly in section, of the bumper and catch mechanism showing the same in an operatively installed holding position between the door and adjacent wall on which the door is hingedly mounted, and

Fig. 3 is a side elevational view similar to Fig. 2 showing the parts in their released position.

Referring now to the drawings in detail, the present bumper and catch mechanism has, purely for illustrative purposes, been shown as being applied to a swinging door and to an adjacent portion of the wall structure on which the door is hingedly mounted. The door 10 is of conventional construction and is hinged as at 12 to the door jamb 14 for swinging movement above the floor surface 15. The jamb 14 is part of the wall 16 of the building structure, which wall has a baseboard 18 and molding 20 extending along the bottom edge thereof. The door mounting just described is typical of most installations in residence, office, and other buildings and when the door 10 is fully open it will assume a position closely adjacent and substantially parallel to the side wall 16 which carries the baseboard 18. It will be understood of course that due to the variation of the effective stroke of the hinge 12, the angle of the door relative to the side wall in its fully open position will vary slightly but such variation has no relation to nor does it require a modification of the door bumper and catch mechanism of the present invention and which is about to be described.

The present door bumper and catch mechanism is in the form of a two part separable device including a part 22 capable of application to the baseboard 18 and a part 24 capable of application to the door 10.

The part 24 involves in its general organization a standard 26 including a circular base portion 28 and an elongated shank portion 30 which projects centrally outwardly from the base 28. The base 28 carries a threaded anchoring screw 32 capable of being inserted into the baseboard 18 which usually is formed of wood in the usual manner by forceably screwing the same into the wood after an initial penetration has been made. The free end of the shank 30 is formed with an enlarged head 34 thereon from which there projects forwardly a short shank 36 terminating in a circular flange or button 38 adapted to receive thereover a combined bumper pad and door holder pad 39.

The pad 39 which is made of a pliable elastomeric resilient material such as rubber of cylindrical form is recessed as at 40 with an undercut 42 to provide a socket reception of the button 38 and shank 36 whereby the pad is removably attached to the head 34. The elastic character of the rubber pad 39 permits the same to be "buttoned," so to speak, over the button 38 with a snug fit so that when the pad is positioned on the base 34 there will be no danger of accidental dislodgement of the pad from the standard 26.

The forward face or end of the cylindrical pad 39 is provided with a recess 43 presenting a cylindrical wall 44 which terminates in an enlarged hollow spherical bottom portion 46, the forward region of the recess 43 being enlarged as at 48 in the manner of a counterbore. As will be described presently, the recess 43 is designed for cooperation with the part 22 which is adapted to be secured to the baseboard 18.

The part 22 is in the form of a unitary member which may be a casting including a circular base 50 having a serrated driving point 52 extending centrally therefrom on one side thereof and designed for penetration of the

wood material of the baseboard 18. A shank 54 extends centrally and laterally on the other side of the base 50 and has formed on its outer end a spherical enlargement or ball 56. The ball 56 is designed for reception in the spherical portion 46 of the recess 43 provided in the pad 39 while the base portion 50 is designed for reception in the counterbore 48 as clearly shown in Fig. 2. The part 22 is adapted to be secured to the baseboard 18 in a position wherein it is in register with the part 24 on the door when the door is swung to its fully open position so that the ball 56 may enter the spherical void 46 for the purpose of holding the door in its fully open position.

In the operation of the door bumper and catch, after installation of the parts 22 and 24 on the door 10 and wall 16 respectively, the door may be moved from its closed position to approximately its fully opened position to bring the two parts 22 and 24 into register and contact with each other. If the degree of force applied to the door tending to open the same is moderate the enlarged spherical portion or ball 56 will not penetrate the restricted confines of the cylindrical wall 44 and the pad 39 will act merely as a resilient bumper to absorb the shock of the impact as illustrated in the dotted line position of the door 10 and part 22 in Fig. 3. The ball 56 will engage the rim of the opening provided by the wall 44 and will "bounce," so to speak, in the reverse direction. However, where the force tending to move the door to its fully open position is comparatively great, the ball 56 will penetrate the wall 44 which will yield or expand to accommodate such penetration and the ball will snap into position within the enlarged spherical portion 46 of the recess and the sides of the wall 44 will close upon the shank 54, thus securely latching the two parts 22 and 24 in the assembled position shown in Fig. 2 to hold the door 10 in its fully open position. The door may be closed by applying the proper degree of counter torque to the same sufficient to pull the ball 56 from the spherical portion 46 of the recess against the restraining action of the yieldable wall 44. From the above description it will be seen that when the door is in its fully open position it is effectively supported and the ball 56 and socket portion 46 of the recess provided in the pad 39 will absorb any lost motion and thus prevent rattling of the door.

In the installation of the improved door stop and retainer between two relatively movable members the threaded anchor screw 32 of the part 22 will be screwed into the wooden or other material of one of the two parts at an appropriate location which may be selected at the judgement of the operator. In the case of a hinged door and cooperating wall structure the part 24 may be applied to the door 10 at a point adjacent the free swinging corner of the latter. During application of the part 24, the part 22 will remain assembled upon the part 24 with the ball 56 contained within the pocket 46 precisely in the manner in which the assembled device is packaged for marketing. As soon as the base portion 28 has been driven home against the surface of the door 10, the door is then forceably swung with the application of a considerable degree of torque to its fully open position so that the assembly 22, 24 will be carried toward the wall structure 16 until the anchoring pin 52 engages and penetrates the wooden material of the baseboard 18 and is driven home therein. The door may thereafter be swung away from the wall and the part 22 will remain on the baseboard in proper register with the part 24 so that the device will function at all times in the intended manner.

It is to be noted from an inspection of Fig. 2 that in the commercially assembled device wherein the part 22 is operatively mounted on the part 24 and prior to the application of either part to a door or wall structure, the entire part 22, with the exception of the pin 52, is wholly contained or embedded within the confines of the

rubber pad 39. The ball 56 completely fills the recess 43. The shank 54 completely fills the bore afforded by the cylindrical wall 44. The base plate 50 completely fills the counterbore 48. By such an arrangement, the part 22 is securely held within the part 24 against shifting in any direction and the axis of the penetrating pin 52 is maintained in alignment with the axis of the shank 30 so that upon ultimate installation of the part 22 in the baseboard 18, the pin 52 will meet the surface of the baseboard in a substantially normal position and be driven straight into the wood of the baseboard so that the base plate 50 comes flush with the surface of the two parts for mating purposes after the initial installation has been made by the impact method described above. Upon impact of the pin 52 with the material of the baseboard 18, the comparatively wide surface area of the base plate 50 on the part 22 and the correspondingly wide surface area of the shoulder of the counterbore 48 serve to relieve the bottom of the spherical socket portion 46 from absorbing the impact of the ball 43 which, otherwise, would rupture the resilient material of the pad 39.

The invention is not to be limited to the exact arrangement shown in the accompanying drawings or described in this specification since various changes in the details of construction may be resorted to without departing from the spirit of the invention. For example, while the part 22 has been shown as being applied to the baseboard 18 of a wall structure 16 with the part 24 being applied to a swinging door 10, it is obvious that this installation may be reversed. In either instance however the principles involved in the installation of the device between the door and wall structure will be preserved in that the part 22 will first be attached to one of the members and the door swung to its open position so that the penetrating stud 52 will engage the other part at the exact point for effecting the necessary registry between the two parts when the device is in operation. Only insofar as the invention has been pointed out in the accompanying claim is the same to be limited.

What I claim and desire to secure by Letters Patent is:

In a combination door stop and holder for maintaining a swinging door in a position of close proximity and parallelism to one surface of a reaction member, a first part adapted to be fixedly attached to the door and a second part adapted to be fixedly attached to the reaction member in a position of register with the first part, said first part including a first shank having a first base plate formed thereon, an anchoring screw extending centrally outwardly from said first base plate and designed for reception in said door, the free end of said first shank being formed with a button thereon, a combined bumper and holder pad having a socket formed therein in which

said button is removably embedded, said pad presenting a forward face in opposition to the reaction member when the reaction member and door are in their positions of close proximity, said pad at its forward face having a socket therein presenting a relatively narrow cylindrical wall surrounding a bore having an enlarged counterbore at its mouth and terminating in an enlarged bottom, said second part comprising a second base plate, a tapered driving pin extending laterally in one direction from said second base plate and adapted to penetrate the material of said reaction member when forcibly driven thereagainst, a second shank projecting laterally in the other direction from said second base plate, and an enlargement mounted on the free end of said second shank, said enlargement, shank and base plate of said second part being receivable into the enlargement, bore and counterbore, respectively of the socket of said pad and substantially filling the same whereby said tapered driving pin is maintained in alignment with the shank of said first part when the parts are assembled in their free state and whereby said pin is caused to penetrate the material of said reaction member at a right angle to the surface thereof when the first part, with the second part assembled thereon, is fixedly attached to said door and the latter is swung forcibly to its position of close proximity with and parallelism to the surface of said reaction member, said enlarged counterbore presenting a forwardly facing radial shoulder of appreciable width designed for impact with the outer face of said second base plate when the door is thus swung forcibly to said position of close proximity with and parallelism to the surface of said reaction member for pin-penetrating purposes, the degree of resiliency of the material of said pad being such as to permit the enlargement of the second part to pass into said socket when the door and reaction member approach said position of close proximity with a predetermined maximum degree of impelling force being applied to the door, the material of said pad in the vicinity of and surrounding said counterbore serving as an impact bumper to repel said second part when a degree of impelling force insufficient to drive the enlargement of said second part into said socket is applied to said door.

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