F. G. MÜKDEN.

DOOR CATCH.

APPLICATION FILED APR 20, 1922.

1,425,271. Patented Aug. 8, 1922.

Fig. 1.

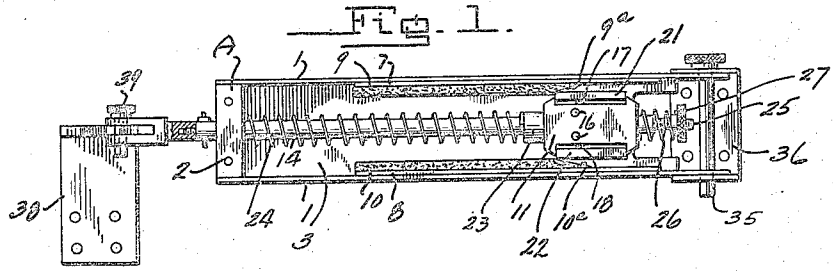


Fig. 2.

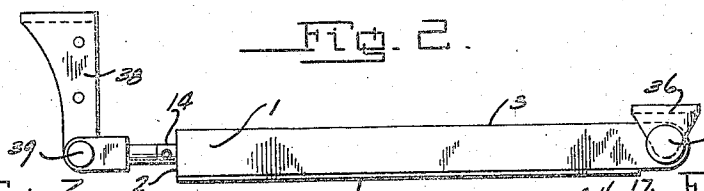


Fig. 3.

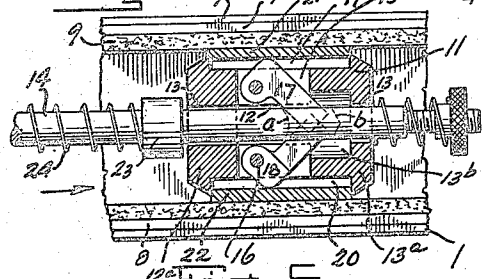


Fig. 4.

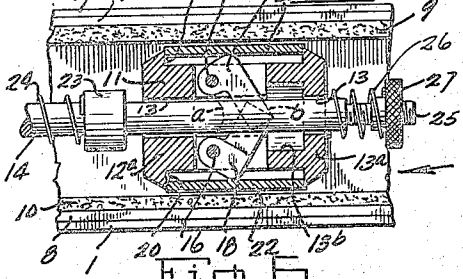


Fig. 5.

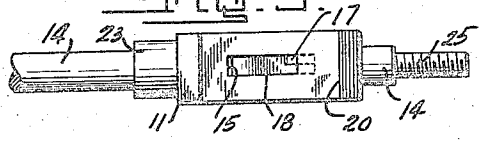


Fig. 6.

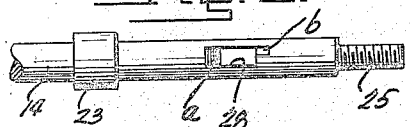


Fig. 8.

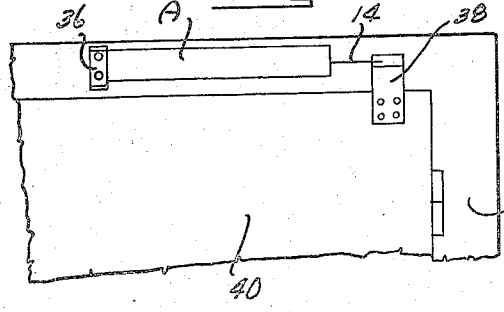
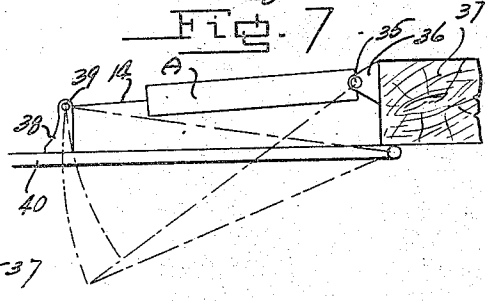


Fig. 7.



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UNITED STATES PATENT OFFICE.

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DOOR CATCH.

1,425,271. Specification of Letters Patent. Patented Aug. 8, 1922.

Application filed April 20, 1922. Serial No. 555,781.

To all whom it may concern:

Be it known that I, FRITZ G. MÜKDEN, a citizen of Czecho-Slovakia, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Door Catches, of which the following is a specification.

This invention relates to an improved device for breaking the closing action of a closure member, such as a door.

The primary object of this invention is the provision of an improved door check of relatively simple construction, which utilizes frictional resistance in buffing the closing action of a door.

A further object of the invention is the provision of a door check of the above mentioned character, which includes an improved arrangement for varying the frictional resistance with which the door buffing action may be effected during closing of the same.

A further object of the invention is the provision of a door check embodying a housing, in which a movable member is positioned, having shoes associated therewith for frictional engagement with the housing during the closing movement of a door or other closure member, in order to counteract the force tending to close the door.

Other objects and advantages will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a side elevation of the improved door check.

Figure 2 is a plan view of the improved door check.

Figure 3 is an enlarged fragmentary view, partly in section, showing the cooperation of details thereof during braking motion.

Figure 4 is a view altogether similar to that illustrated in Figure 3, showing the details of the door check as the same would appear during an opening movement of the closure member to which the same is attached, and whereby no braking action is provided by said parts.

Figure 5 is a plan view of the several cooperating details of this invention.

Figure 6 is a plan view of a detail of this invention, and

Figures 7 and 8 are diagrammatic representations of the attachment of the improved door check to a closure member.

In the drawing, wherein for the purpose of illustration is shown the preferred embodiment of this invention, the letter A designates a housing, which includes side walls 1; an end wall 2; a wall 3 connecting the side walls 1, and preferably a cover 4. Steel strips or bars 7 and 8 may be screwed or otherwise secured to the interior of the housing A upon the side walls 1 thereof, in order that the same may support leather linings 9 and 10 respectively, which form slide surfaces for the improved door check in a manner which will be subsequently described. It is preferred that the ends 9^a and 10^a of the linings 9 and 10 respectively be bevelled at the ends thereof which are remote from the end wall 2 of the housing A.

The improved door check preferably includes a metallic casing 11 adapted for reciprocatory movement within the housing A. The casing 11 is preferably provided with a slot 15 extending transversely therethrough and having recesses or depressions 19 and 20 formed inwardly from the sides thereof, and having communication with the ends of the transverse slots 15. The casing 11 is furthermore provided with a transverse slot 12 positioned at right angles to the slot 15 and intersecting the same, and with axial bores 13 in the forward and rear portions 12^a and 13^a of the casing 11. The end 13^a of the casing 11 is furthermore provided with a depression 13^b milled therein, and facing the slot 15.

A rod 14 is reciprocably mounted within the housing A, and adapted for extension through the bores 13 of the casing 11, in order to slidably support the latter thereon. The cam members 17 and 18, substantially I-shaped in formation, are pivotally connected as by pins 16 within the casing slot 15 upon opposite sides of the rod 14; said cam members 17 and 18 being provided for cooperation against the plate like brake shoes 21 and 22 respectively, which are adapted for respective sliding movement within the casing depressions 19 and 20 above described. A relatively long main spring 24 is provided for circumferential

disposition upon the rod 14 having one end thereof pressing against the end wall of the housing A and the other end normally engaging the collar 23, which is secured upon the rod 14. This spring 24 is normally under compression, for forcing the casing 11 away from the end wall 2, so that the brake shoes 21 and 22 thereof are out of engagement with the leather linings 9 and 10.

The rear end of the rod 14, and which is disposed within the housing A, is provided with a reduced screw threaded shank 25, adapted for adjustably supporting a nut 27, whereby an auxiliary compression spring 26 may be positioned intermediate said nut 27 and the rear end 13^a of the casing 11.

Referring more particularly to the manner in which the door check is connected, the rear end of the housing A is provided with a pin 35 which pivotally supports a bracket 36 thereon, whereby the bracket 36 may be attached in any preferred manner to a door or closure member casing 37, so that the housing A is swingably supported by the bracket 36. The forward end of the reciprocating rod 14 is pivoted to the bracket member 38 as by a pin 39; said bracket 38 normally being provided for secure attachment to a closure member 40, such as a door, and at a point remote from the attachment of the bracket 36 to the casing 37.

Attention is called to the fact that the free ends of the cam members 17 and 18 are slidably disposed within a slot 28 of the rod 14.

In operation, during opening of the closure member 40, it is obvious that the rod 14 will be drawn outwardly from the housing A. The effect of such action will be to compress the main spring 24. The rod 14 during such movement will engage the free ends of the cam members 17 and 18 at the rear end *b* of the rod slot 28 and rocking said cam members 17 and 18 so that the same will be out of engagement with the brake shoes 21 and 22, and permitting the retraction of said brake shoes 21 and 22 in their guide ways 19 and 20 of the casing 11, so that said casing 11 may move forwardly with the rod 14 and have the brake shoes 21 and 22 thereof out of sliding engagement with the leather brake linings 9 and 10. When the operator releases the closure member 40, the same having been opened, the main spring 24 being under compression, will tend to retract the rod 14 inwardly of the housing A for swinging the closure member 40 into a closed position. This compressing force of the spring 24 will throw the rod 14 inwardly of the housing A, with such force that the forward side *a* of the slot 28 will engage the cam members 17 and 18, adjacent their free ends, for throwing them by rocking upon their pins 16, so that the same will tend to extend into the guide ways 19 and 20, and naturally force the brake shoes 21 and 22 into firm engagement with the leather linings 9 and 10. Consequently, there will be a frictional contact between the brake shoes 21 and 22 and the linings 9 and 10 respectively, which will tend to buff the closing action which the main spring 24 has upon the door 40. These shoes 21 and 22 will slide along their respective linings until the casing 11 is at its most rearward position in the housing A, and at which point the shoes will gradually release the surface contact with the linings 9 and 10 of the bevelled ends 9^a and 10^a of the linings, so that the frictional resistance tendered by the brake shoes 21 and 22 will not be so great at the end of the closing movement, due to the fact that the compressive force of the main spring 24 is least when the casing 11 is at its most rearward position in the housing A, as can readily be understood. Due to wear upon the brake linings 9 and 10, loss of compression in the main spring 24, or other causes, it may be desirable to increase the frictional resistance which the brake shoes 21 and 22 have with the linings 9 and 10 during a door closing movement. Such additional resistance is effected by adjusting the thumb member 27 upon the rod 14, as to increase the compressive force of the auxiliary spring 26. The effect of such action upon the auxiliary spring 26 will have a tendency to normally force the casing 11 toward the collar 23, so that the cam members 17 and 18 which are pivoted to the casing 11 will be more firmly forced into engagement against the side *a* of the slot 28. Of course, during a door opening movement, the rod 14 will be withdrawn from the housing A in such rapid manner as to overcome the compressive force of the auxiliary spring 26, and even tend to further compress the same, so that the members 17 and 18 will be moved to permit retraction of the brake shoes 21 and 22 with respect to the linings 9 and 10.

From the foregoing, it can be seen that a door catch has been provided, which can be used in universal manner with closure members to effect automatic closing of the same.

Various changes in the shape, size, arrangement of parts, and substitution of materials may be made to the form of the invention herein shown and described, without departing from the spirit of this invention or the scope of the subjoined claims.

I claim:

1. A door check, comprising a housing, a rod reciprocably disposed within said housing, means including a brake shoe disposed in said housing and operated by retraction of said rod within the housing for expansion of the same into engagement with the housing, and adjustable means for regulating the frictional engagement of the shoe with respect to said housing.

2. A door check, comprising a rod, a casing slidably mounted upon said rod within said housing, a brake shoe movably mounted in said casing, a cam member movably mounted in said casing, and spring means adapted for normally retracting said rod inwardly of the housing, whereby upon starting of said retracting movement by said spring, the rod will move said cam for forcing said brake shoe into engagement with the housing for breaking the retracting movement of said casing inwardly of the housing.

3. A door check, comprising a rod, a casing slidably mounted upon said rod within said casing, a brake shoe movably mounted in said casing, a cam member movably mounted in said casing, and spring means adapted for normally retracting said rod inwardly of the housing, whereby upon starting of said retracting movement by said spring, the rod will move said cam for forcing said brake shoe into engagement with the housing for breaking the retracting movement of said casing inwardly of the housing, and adjusting means for regulating frictional engagement of said brake shoe with the housing.

4. In a door check, the combination with a support, and a closure member hingedly connected to the support, of a housing pivotally connected to said support, a rod reciprocably disposed in said housing having an outer end pivotally connected to said closure member, a brake shoe movably mounted upon said rod and within said housing, spring means in said housing for normally urging the rod inwardly thereof, and cam means in said housing for operation by the retracting movement of said rod inwardly of the housing to force said shoe into frictional engagement with the housing for braking the closing action of said closure member, said cam means adapted for releasing of said shoe upon movement of the rod outwardly of said housing.

5. In a door check, the combination with a support, and a closure member hingedly connected to the support, of a housing pivotally connected to said support, a rod reciprocably disposed in said housing having an outer end pivotally connected to said closure member, a brake shoe movably mounted upon said rod and within said housing, spring means in said housing for normally urging the rod inwardly thereof, cam means in said housing for operation by the retracting movement of said rod inwardly of the housing to force said shoe into frictional engagement with the housing for braking the closing action of said closure member, said cam means adapted for releasing of said shoe upon movement of the rod outwardly of said housing, and adjustable mechanism for control of said cam means whereby frictional engagement of the brake shoe in said housing may be varied.

6. A door check, comprising a housing, a rod movably mounted in said housing having a shoulder thereon, a compression spring disposed within said housing having one end thereof normally engaging said housing, and another end thereof engaging against the shoulder of said rod, a casing slidably mounted upon said rod intermediate the shoulder thereon and at an inner end thereof, brake shoes movably mounted in said casing, and cam members movably mounted in said casing adapted for cooperation with said rod, so that upon extending movement of the rod with respect to said housing, the said cams will be rocked for retraction of said shoes inwardly of the casing, said spring during such extension movement of the rod being normally compressed so that upon retracting movement of the rod, the cam members will be moved by said rod for throwing the shoes into frictional engagement with said housing.

7. A door check, comprising a housing, a rod reciprocably disposed within said housing, a compression spring normally maintaining said rod retracted within said housing, a casing slidably disposed upon said rod within the casing, means limiting the sliding movement of the casing upon said rod, brake shoes reciprocably carried by said casing upon opposite sides thereof, cam members for each of said brake shoes rockably carried within said casing, said rod having a slot therethrough for receiving the free ends of said cam members, and means for connecting said housing and the outer end of said rod to a support and closing member respectively, so that during opening movement of the closure member, the rod will be withdrawn from said housing to compress the spring therein, said rod during such withdrawing operation, having a side of said slot therein engage said cams for rocking them so that the brake shoes in said casing may be withdrawn therein, said closure member when released permitting expansion of said compressed spring for retracting the rod in said housing in such manner that a second side of the slot in said rod will rock said cam in opposite manner to that above described for throwing said brake shoes outwardly of the casing and into frictional engagement with the housing to buff the closing movement of said closure member.

8. A door check, comprising a housing, brake linings mounted upon opposite sides within said housing, a rod reciprocably disposed within said housing, a collar intermediate the ends of said rod, a spring disposed circumferentially about said rod having one end thereof engaging in said housing and the other end engaging said collar, a nut

adjustably mounted upon the end of said rod within said housing, a spring engaging against said nut, a casing slidably mounted upon said rod intermediate said last mentioned spring and said collar, said rod having a slot transversely therethrough in communication with said casing, brake shoes movably carried within said casing upon opposite sides thereof for proximate positioning with respect to said brake linings in the housing, and cam members pivotally connected in said casing upon opposite sides of said rod having the free ends thereof extending into the slot of said rod, whereby upon withdrawing movement of the rod with respect to said housing, the free ends of said cams will be rocked to permit retraction of the brake shoes within said casing out of engagement with the lining of said housing, and upon the expansion of the compression spring intermediate the housing and said shoulder for retraction of the rod inwardly of the housing said cams adapted for being rocked in such manner by the rod that the same will force said brake shoes into engagement with the linings in said housing for frictional sliding contact therewith.

FRITZ G. MÜKDEN.