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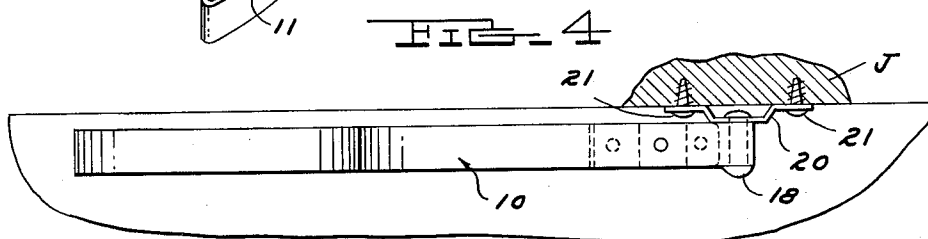
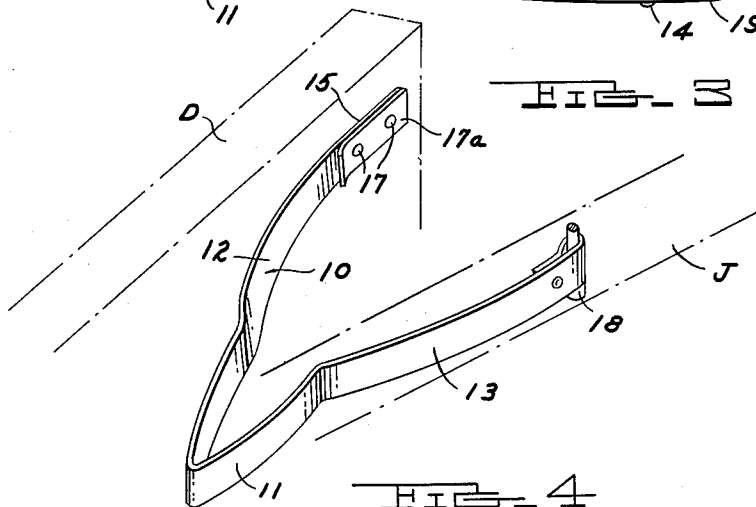
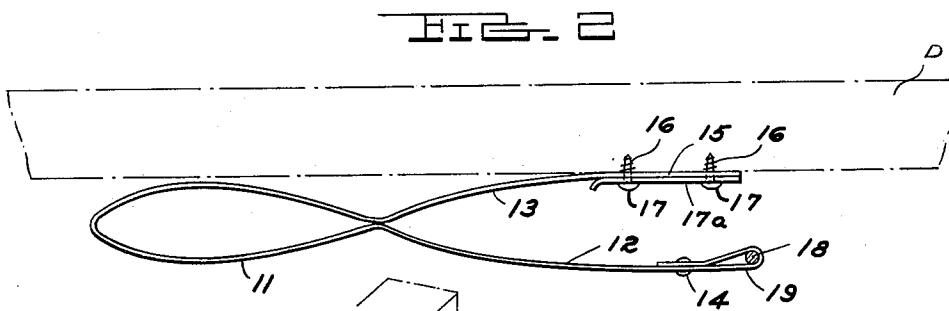
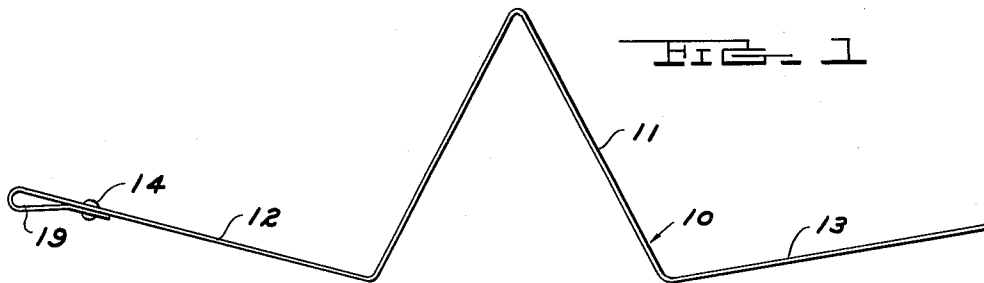
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3,137,889

DOOR CHECK

Filed Sept. 27, 1960

2 Sheets-Sheet 1



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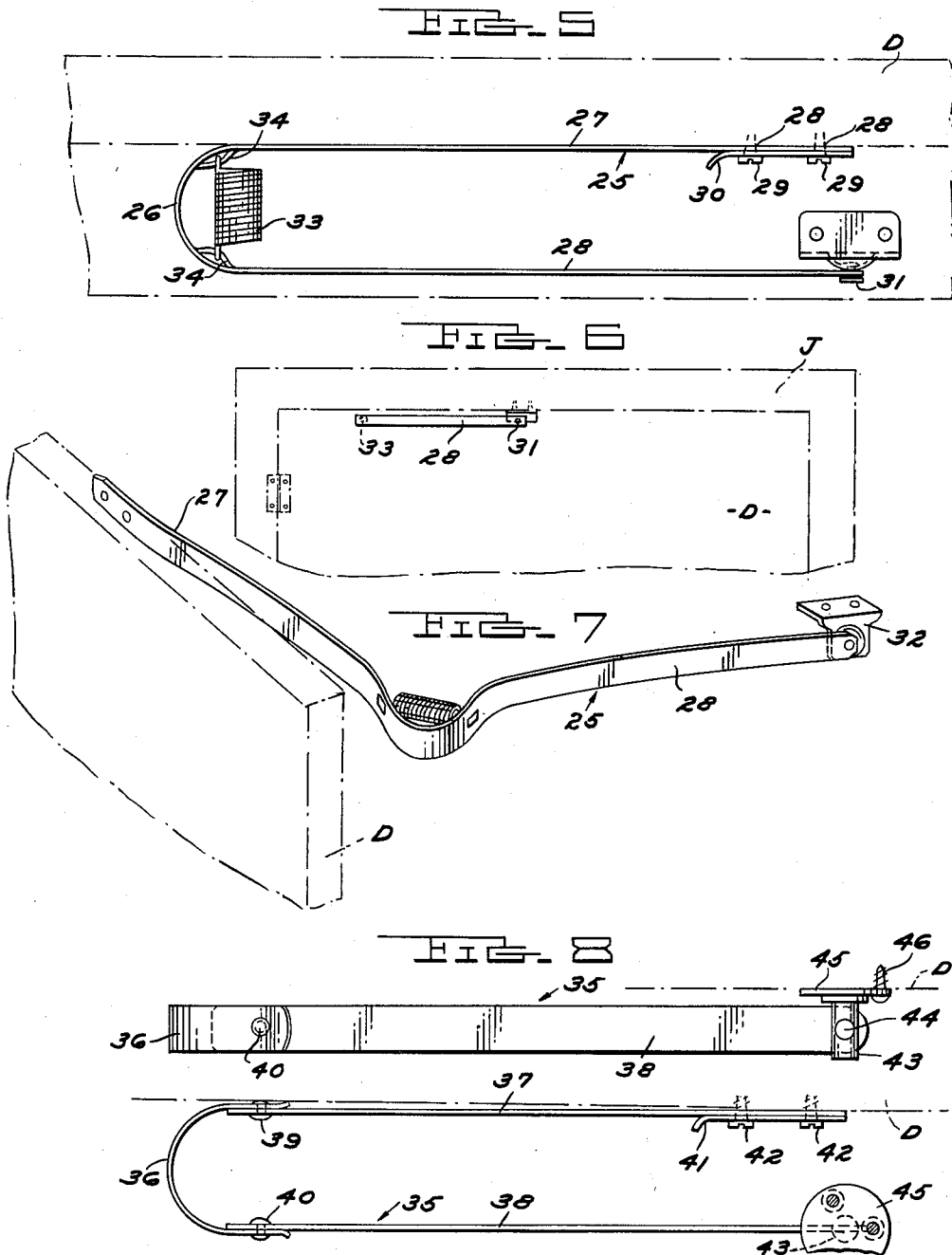
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DOOR CHECK

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This invention relates to door checks which are used to restrain and limit the opening of a door.

In doors, particularly screen doors and storm doors, it is conventional to utilize a door check which comprises a chain fastened at one end to the door and at the other end to the door jamb. When the door is opened, the chain limits the maximum position to which the door may be opened, for example, by a sudden gust of wind. Such chain has a distinct disadvantage in that it hangs downwardly and may strike either the person or the door. A further disadvantage of the chain is that it forms a solid stop very suddenly thus causing possible damage to the door or the door jamb. Therefore, a tension spring is sometimes used between one end of the chain and the point of fastening. Although this provides a yielding force, it still hangs downwardly and has the same disadvantages as the chain. In addition, tension springs have been provided to hold portions of the chain to prevent them from hanging downwardly.

It is an object of this invention to provide a door check which does not hang downwardly, which provides first a yielding force opposing movement of the door to maximum opening position and then a positive stop; and which can be manufactured at low cost and installed with a minimum of difficulty.

Basically, the door check comprises a metal strap of spring material including an intermediate yielding portion and end portions which are fastened respectively to the door and the door jamb. When the door is closed, the portions of the strap are folded into adjacent relationship and when the door is opened, the ends are first unfolded providing a yielding opposition to the opening movement of the door and then the strap is extended to the full length providing a positive stop to further opening movement of the door.

In the drawings:

FIG. 1 is a fragmentary plan view of a door check embodying the invention.

FIG. 2 is a plan view of the door check shown in FIG. 1 in position on a door and door jamb.

FIG. 3 is a fragmentary perspective view of the door check shown in FIGS. 1 and 2 showing the relative relationship of the various portions thereof when the door is partially open.

FIG. 4 is a fragmentary side elevation of the door check shown in FIG. 2.

FIG. 5 is a plan view of a modified form of door check in position on a door and door jamb.

FIG. 6 is a fragmentary elevation on a reduced scale of the door jamb shown in FIG. 5.

FIG. 7 is a fragmentary perspective view of the door jamb shown in FIGS. 5 and 6 showing the door check in open position.

FIG. 8 is a side elevation of a further modified form of door check.

FIG. 9 is a plan view of the door check shown in FIG. 8.

Referring to FIG. 1, door check 10 comprises a V-shaped central portion 11 and arms 12, 13 extending outwardly from the ends of the V-shaped portion 11. The door check 10 is made of a single piece of flat spring stock. The end of arm 12 is bent over and fastened to the body of the arm by a rivet 14 forming a loop 19 while the end 15 of arm 13 is flat and formed with openings 16 through which screws 17 may extend to fasten the end of the strap to a door D. A plate 17a overlies

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the end of arm 13 and is held in position by screws 17 to prevent tearing thereof. A vertical headed pin 18 extends through the loop 19 formed on the end of the arm 12 and is fixed on a bracket 20 that is adapted to be fastened to the horizontal surface of a door jamb J by screws 21 extending through openings in the bracket 20. In mounting the door check 10, the apex of the V-shaped intermediate portion 10 is positioned so that it extends toward the hinge of the door D to the jamb J and the arms 12, 13 extend away from the hinge. The door check 10 is mounted so that it extends generally horizontally as shown in FIGS. 3 and 4.

When the door is closed, the ends of the legs of the V-shaped portion 11 are in contact and the legs and arms 12, 13 are tensioned so that they bow outwardly as shown in FIG. 2. As the door is opened, the legs 12, 13 are moved away from one another as shown in FIG. 3. As the door is further opened, the legs of the V-shaped portion 11 are moved away from one another yieldingly resisting the opening action of the door D. Finally, when the door is fully opened, the door check 10 is fully extended into a generally straight strap providing a positive stop to the opening of the door.

Since the door check 10 is made of a single piece of flat stock and extends generally horizontally, no portion of the door check hangs downwardly or in any way obstructs the head room.

A modified form of door check is shown in FIGS. 5, 6 and 7. Door check 25 comprises a central arcuate portion 26 and straight arms 27, 28 extending away from the ends of the arcuate portion 26. Door check 25 is made from a single piece of flat spring stock. The end of the arm 27 is provided with openings 28 through which screws 29 extend to fasten the arm 27 to a door D. A plate 30 is interposed between the screws 29 and the arm 27 to prevent tearing of arm 27. The end of arm 28 is provided with an opening through which a horizontal headed pin 31 extends. Pin 31 is fastened to a bracket 32 which, in turn, is fastened to a horizontal surface of the door jamb J. In order to provide an increased yielding resistance to the opening action of the door, a tightly wound tension spring 33 is fastened to portions 34 bent outwardly from the ends of arcuate portion 26. In position, arcuate portion 26 is nearest the hinge of the door with arms 27, 28 extending horizontally away from the hinge.

As the door is opened, the arms 27, 28 are moved outwardly away from one another and tension is applied to spring 33 resisting the opening action of the door. As the door is opened to full open position, the tension on the spring 33 is at maximum and the arms 27, 28 are bent relative to the arcuate portion to a maximum position providing a positive stop to the opening movement of the door D.

A further modified form of the invention is shown in FIGS. 8 and 9 and comprises a door check 35 that is made of three sections of flat spring stock including an arcuate central portion 36 and arms 37, 38 fastened to the ends of the arcuate portion by rivets 39, 40.

The free end of arm 37 is fastened to the door jamb D in the same manner as the ends of the arms 12 and 27 of the previous forms of the invention, namely, by utilizing a tear plate 41 and screws 42 extending through openings in the tear plate and the end of the arm 37. The end of the arm 38 extends through a slot in a vertical shaft 43 and is pivoted about a horizontal axis by a cross pin 44. The shaft 43 is rotatably mounted on a bracket 45 that is fixed to the door jamb D by screws 46 extending upwardly and threaded into the door jamb.

The form of the invention shown in FIGS. 8 and 9 can be made such that the thickness and, in turn, the

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resistance to deformation of the portion 36 is greater than that of the arms 37, 38, whereby the action of the door check is substantially the same as the door check shown in FIGS. 5, 6 and 7.

It can thus be seen that I have provided a door check 5 which does not hang downwardly when the door is closed; which yieldingly opposes the door and thereafter provides a definite stop to the opening action of the door; and which can be manufactured at low cost and installed with a minimum of difficulty.

I claim:

1. A door check comprising an intermediate V-shaped yieldingly expansible portion and a pair of arms extending outwardly away from said V-shaped expansible portion, one end of one arm being fixed to one end of said expansible portion and one end of the other arm being fixed to the other end of said expansible portion, the other end of said one arm being adapted to be fastened to a door, the other end of said other arm being adapted to be pivoted directly to a door jamb, said arms lying in substantially the same plane as said expansible portion.

2. The combination set forth in claim 1 wherein said arms diverge away from one another.

3. The combination set forth in claim 1 including a plate adapted to overlies the other end of said one arm 25 which is adapted to be fastened to a door.

4. A door check comprising a central expansible por-

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tion of predetermined curvature and a pair of arms extending outwardly away from said central portion, one end of one arm being fixed to one end of said expansible portion and one end of the other arm being fixed to the other end of said expansible portion, the other end of said one arm being adapted to be fastened to a door, the other end of said other arm being adapted to be pivoted directly to a door jamb, said arms lying in substantially the same plane as said expansible portion.

5. The combination set forth in claim 4 including a tension spring extending between portions of said central expansible portion.

6. The combination set forth in claim 5 wherein said door check is made from a single piece of flat stock.

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