Jan. 6, 1970 C. W. ELLINGSON, JR 3,487,581

ASTRAGAL FOR DOOR CLOSURE

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FIG. 1

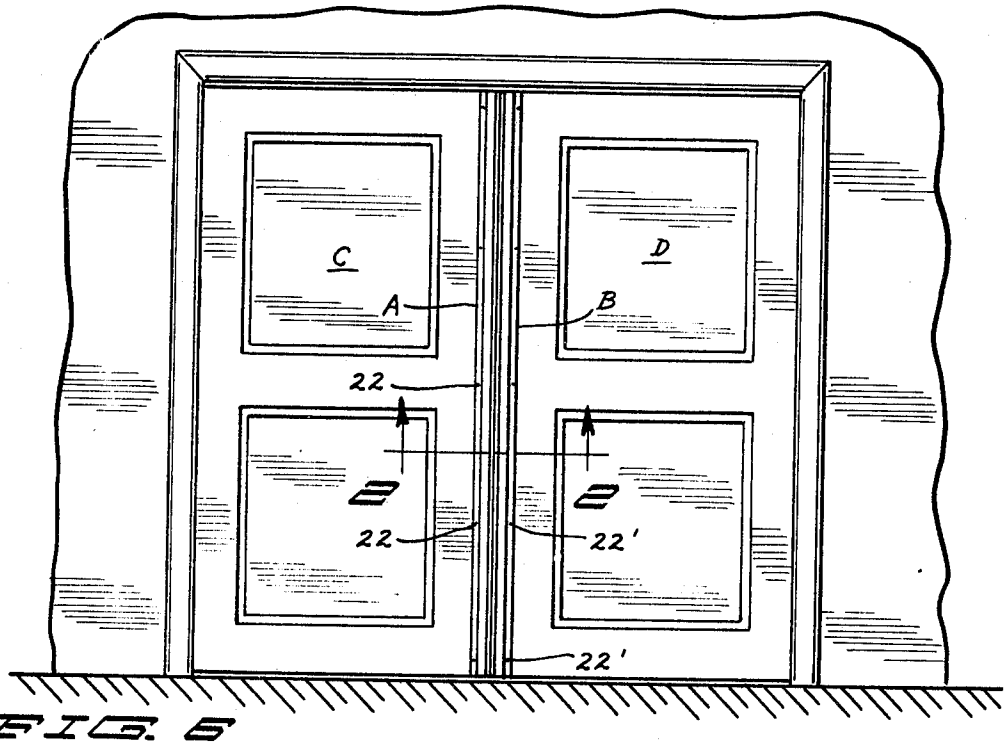


FIG. 6

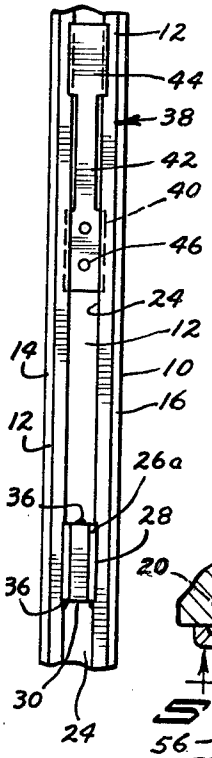


FIG. 2

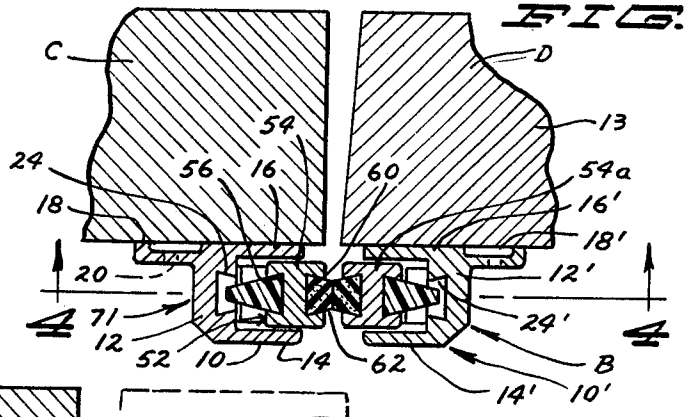
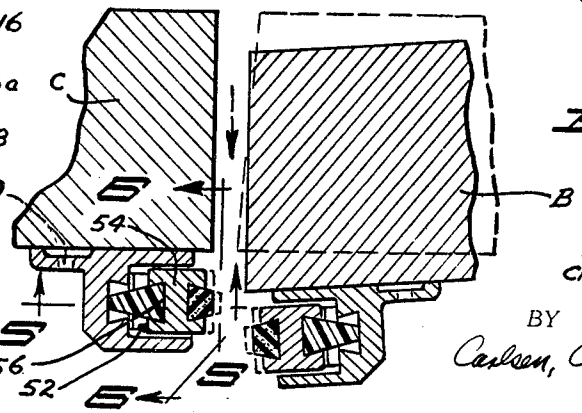


FIG. 3



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FIG. 4

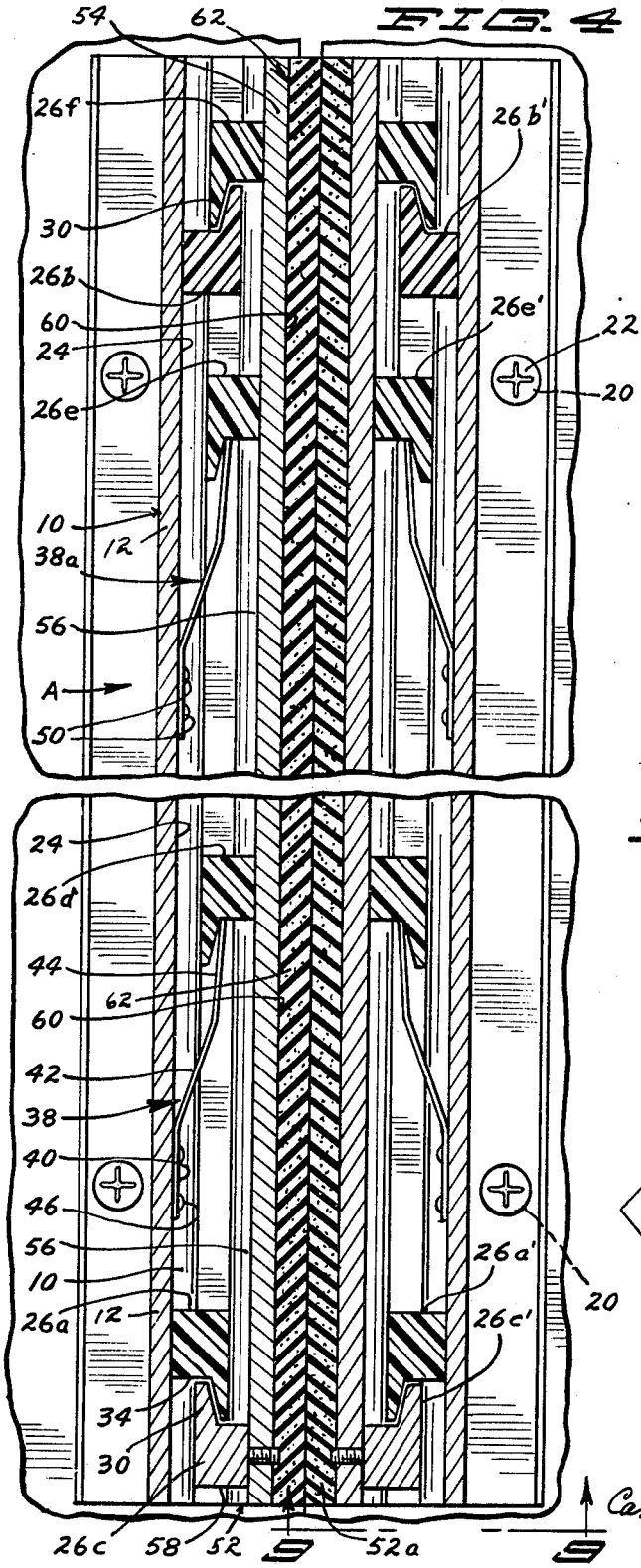
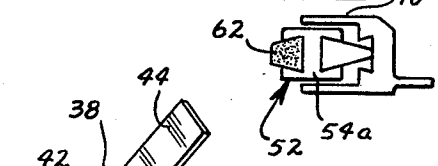


FIG. 5

FIG. 9



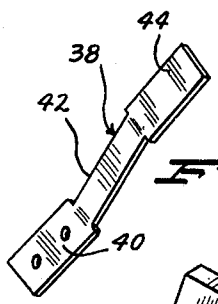


FIG. 7

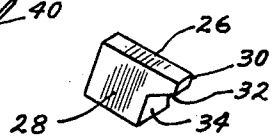


FIG. 8

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3,487,581

ASTRAGAL FOR DOOR CLOSURE

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Filed June 20, 1968, Ser. No. 738,685
Int. Cl. E05f 3/00
U.S. Cl. 49—478 4 Claims

ABSTRACT OF THE DISCLOSURE

An astragal for sealing the edge of a closure including a channel member, an astragal bar slidably engageable in the channel member, spring means in the channel, means carried by the astragal bar and engaging the spring means to normally urge the bar into a fixed relationship with the channel, the astragal bar having magnetic means for attracting the bar out of the fixed relationship with the channel together with means for limiting the outward movement of the astragal bar upon attraction of the bar by the magnetic means.

SUMMARY OF THE INVENTION

The invention relates to an improvement in astragals used to weatherproof doors. It is an object of the invention to provide an astragal having a channel member for securement to the edge or face of a door and in the channel member is mounted spring means which engages an astragal bar normally urging the bar into a fixed relationship with the channel. The astragal bar has magnetic means thereon for attracting the bar out of the fixed relationship with the channel against the action of the spring means to effect a closure.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being made to the accompanying drawings, in which:

FIG. 1 is a front elevational view of a pair of closed double doors on each f which is mounted an astragal embodying the invention.

FIG. 2 is a section on the line 2—2 of FIG. 1 showing the astragal bars in contact.

FIG. 3 is a section similar to FIG. 2 but with the doors and astragals separated slightly, the astragal bars held within the channel members.

FIG. 4 is a section on the line 4—4 of FIG. 2 with the astragal bars in magnetic engagement.

FIG. 5 is a section on the line 5—5 of FIG. 3.

FIG. 6 is a view of a portion of the channel on the line 6—6 of FIG. 3 with the astragal bar removed.

FIG. 7 is a perspective view of a retainer spring member removed from the astragal.

FIG. 8 is a perspective view of a retainer removed from the astragal.

FIG. 9 is a view on the line 9—9 of FIG. 4.

Referring to the drawings in detail, a pair of astragals A and B are shown mounted on the meeting edges of the doors C and D, respectively.

The astragals A and B are substantially identical except for left and right and as a result only A will be described in detail. The parts of B identical to those of A will bear the same reference numeral accompanied by a prime, thus ('). The astragal A includes the elongated channel member **10** which includes the base portion **12** and the spaced side walls **14** and **16** extending therefrom. Extending from the base portion **12** and parallel to the wall **16** is the flange **18** which has formed therein spaced holes **20** adapted to receive screws **22** for securing the astragal to the door C. The numeral **24** designates a dovetail groove formed in and extending throughout the length of the base portion **12**, the groove opening upon the inside of the channel member **10**.

With particular reference to FIG. 8, there is provided a retainer member **26** formed of the body **28** having a cross section in the form of a trapezoid and adapted to snugly fit in the groove **24** with the lip **30** extending from the top edge of the body thereof. The inside of the lip **30** is formed with the ramp portion **32** which terminates at its inner end in the shoulder **34**. All of the retainer members are substantially identical but are accompanied by a different lower case letter. A lower retainer member 26^a is secured in the groove **24** adjacent to but spaced from the lower end of the channel **10** with the lip **30** pointing downwardly. The retainer members **26** in each instance may be secured in the channel **10** by crimping out a portion of the channel in engagement with each end of the retainer as indicated at **36**. An upper retainer member 26^b is secured in the groove **24** adjacent to but spaced from the upper end of channel **10** with the lip **30** pointing upwardly.

Further provided are retainer springs **38** mounted in the channel **10** all of which are identical. Each spring **38** includes a flat base portion **40**, a central portion **42** extending from and angularly disposed to said flat base portion, said central portion terminating in an outer flat leg portion **44** normally substantially parallel to the base portion, particularly FIGS. 5 and 6. A lower spring **38** is positioned in channel **10** with the base **40** secured to the bottom or base **12** of the channel by means of pins **46**, the outer free end of the spring pointed upwardly and overlying the channel. An upper spring 38^a is also positioned in channel **10** and spaced from the upper end of the channel with the base **40** secured to the bottom or base **12** by means of pins **50**, the outer free end of the spring extending in an upward direction with the outer leg portion overlying the channel.

The numeral **52** designates an astragal bar which is substantially the length of the channel **10** and includes the elongated body **54** which has the longitudinally extending dovetail groove **56** formed in the inner face thereof. Secured in the dovetail groove **56** at the lower end by means of the Allen screw **58** is the lower removable retainer 26^c with the lip **30** extending upwardly, particularly FIG. 4. When the astragal bar **52** is in operative position the lip **30** of the lower retainer 26^c is in alignment with the lip of the retainer 26^a in the channel **10**. A lower intermediate retainer 26^d is secured in the groove **56** spaced from the lower retainer 26^c. An upper intermediate retainer 26^e is secured in the groove **56** spaced from the lower intermediate retainer. Further provided is the upper retainer 26^f secured in the groove **56** with the lip depending and spaced from the retainer 26^e and adjacent the upper end of the bar **52**.

The bar **52** has formed in the outer face thereof the longitudinally extending dovetail groove **60** in which is mounted the strip **62** of "magnetic rubber" by means of a dovetail connection. The "magnetic rubber" is known in the art and includes a composite of rubber or the like having associated intimately therewith particles susceptible to magnetization. This type of material is disclosed in U.S. Patent No. 2,999,275 on Mechanical Orientation of Magnetically Anisotropic Particles.

The astragal A is assembled in one manner by having the retainer 26^c removed. The bar **52** is positioned so that the retainer 26^f is above the retainer 26^b with the retainer 26^e above the end of the upper retainer spring 38^a together with retainer 26^d above the upper end of lower retainer spring **38**. In this condition the bar **52** is moved or dropped longitudinally upon channel **10** whereby the lip **30** of retainer 26^f is substantially

opposite the lip **30** of retainer **26**[b] and the upper end of spring **38**[a] is in engagement with the shoulder **34** of retainer **26**[e] with the upper end of spring **38** in engagement with the shoulder **34** of retainer **26**[d], particularly FIG. 4. The retainer **26**[c] is then secured in the dovetail groove **56** by means of the Allen screw **58** threadedly mounted in the body **54** and pressing the retainer against the flared walls of the groove. The lip **30** of the retainer **26**[c] is substantially opposite the lip of retainer **26**[a], particularly FIG. 4. In this position the springs **38** and **38**[a] contact the shoulders **34** of the retainers and bear slightly against the lips of the retainers **26**[d] and **26**[e] and normally urge the bar **52** into a fixed relationship within the channel **10** and toward the base **12**. It will be seen that with the above mentioned assembly of the bar **52** in the channel **16** there can be no displacement of the bar **52** relative to the channel due to the retainer members described.

With the astragals A and B in place on the faces of the doors C and D, respectively adjacent the edges, and the edges of the doors are placed or closed adjacent each other the magnetic attraction of the bars **52** for each other bring the same partially out of the channels and together against the action of the springs. The springs are formed of relatively weak thin stock, i.e., of such a resiliency that they yield to the attraction of the magnet bars **52**.

In FIG. 5 the bar **52** is at rest within the channel **10** by means of the springs and not withdrawn by a magnetic bar of a companion astragal bar. It will be seen that the bar **54** can be displaced from the channel only to the extent as illustrated in FIG. 4 due to the retainer members **26**[f] and **26**[c] engaging **26**[a] and **26**[b] respectively. It will be seen that due to the springs **38** and **38**[a] the astragal bar **54** remains substantially in the retracted position, except when in juxtaposition with a door frame or opposing door carrying a companion bar, thus allowing closure of the door to which the astragal is attached without the astragal bar striking the door frame or opposing door.

An astragal A may be placed on the frame of a door and the door having magnet attracting means thereon closed against the same. Also an astragal may be placed on a door with the frame having magnet attracting means which effects a seal when the door is closed. In a double swinging door two of such astragals may be used, one on the edge of each door where the same meet, so that the astragals contact each other when the doors are closed.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. An astragal for a door closure comprising:
(a) a channel member for securement to a door,
(b) an astragal bar slidably engageable in said channel member,
(c) spring means mounted in said channel,
(d) at least one first retainer member having a lip extending therefrom and carried by said astragal bar, said lip in engagement with said spring means whereby said astragal bar is normally urged into a fixed relationship with said channel,
(e) said astragal bar having magnetic means for attracting said astragal bar out of said fixed relationship with said channel and
(f) a second retainer member carried by said channel member with said lip thereof engageable with the lip of said first retainer for limiting the outward movement of the astragal bar upon attraction of said bar by said magnetic means.

2. The device of claim **1** in which the magnetic means includes a strip of magnetic rubber.

3. The device of claim **2** in which said spring means is at least one leaf spring.

4. The device of claim **3** in which said second retainer is removably secured to allow positioning of said retainer of said astragal bar relative to said leaf spring.

References Cited

UNITED STATES PATENTS

3,362,108	1/1968	Jones	49—478
3,400,964	9/1968	Baermann	49—478 X

FOREIGN PATENTS

900,492	12/1953	Germany.

J. KARL BELL, Primary Examiner

U.S. Cl. X.R.

49—366, 488