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3,199,155

FLOOR SEAL

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2 Sheets-Sheet 1

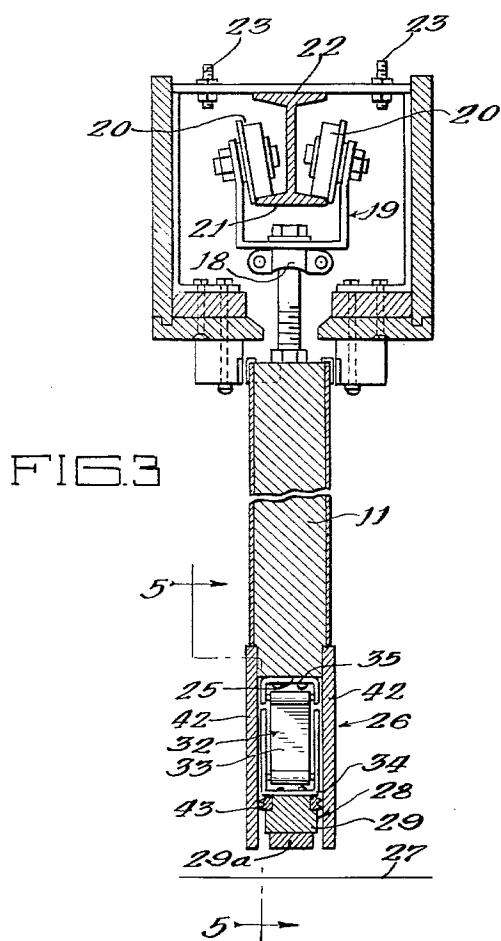
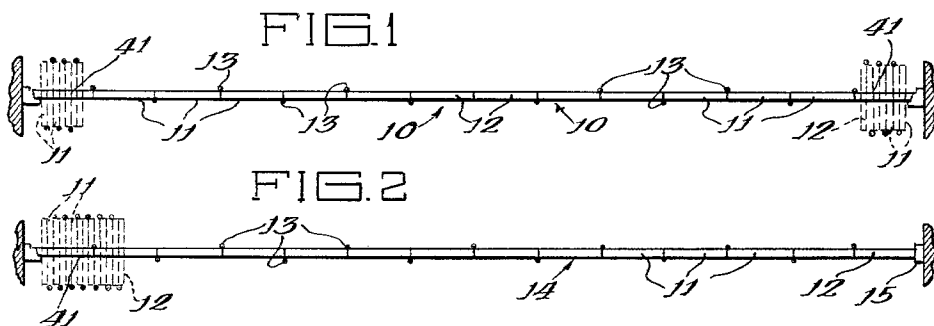
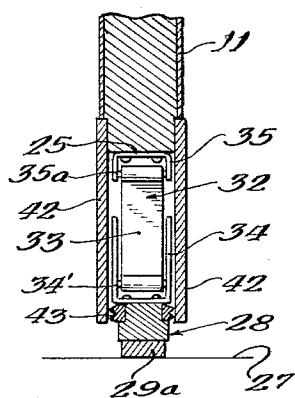


FIG. 4



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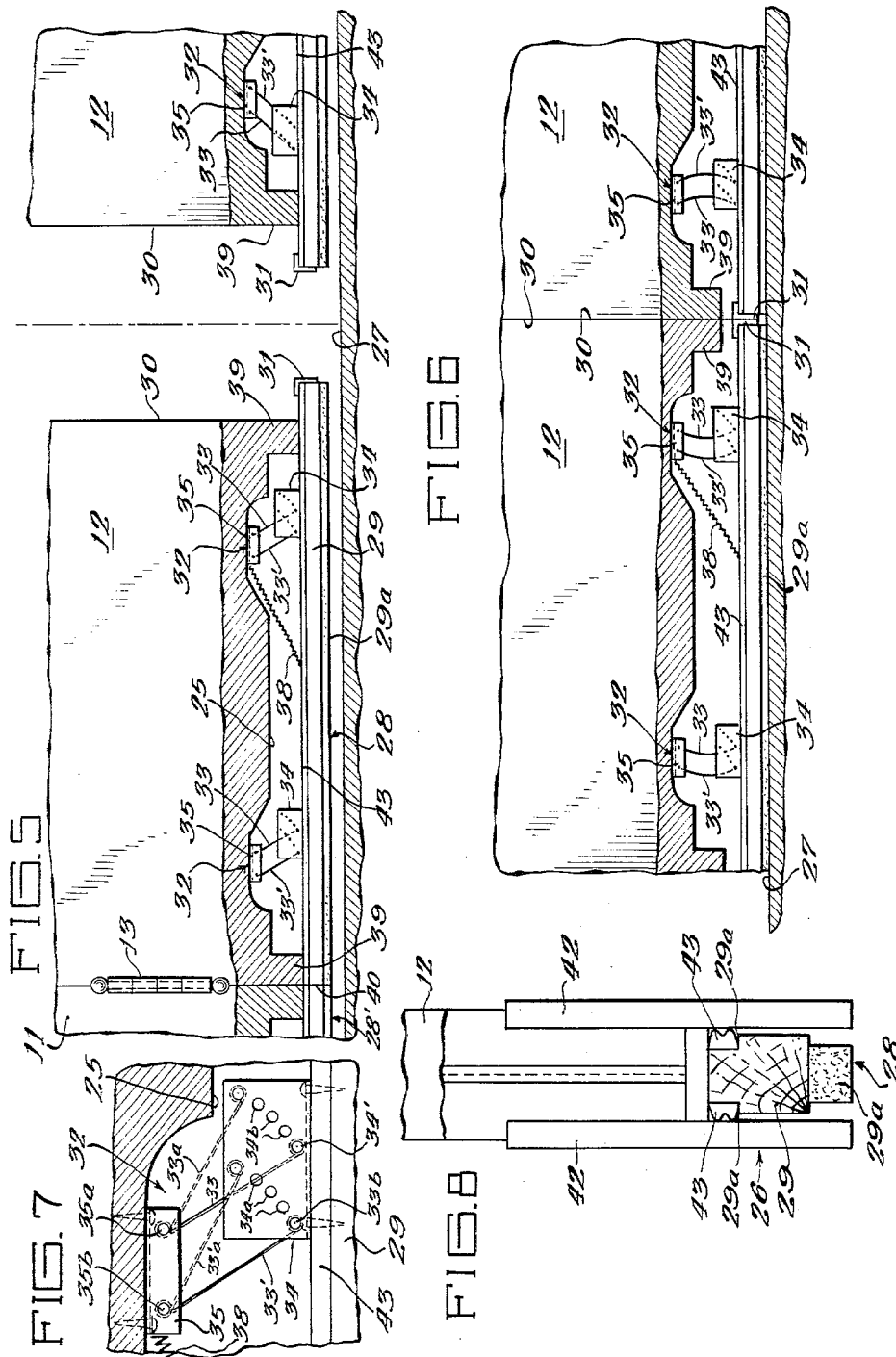
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3,199,155

FLOOR SEAL

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2 Claims. (Cl. 20—68)

This invention relates to a baffle arrangement, and more particularly to a floor seal for a folding or sliding door, partition, or other closure panel.

An object of the invention is to provide an improved baffle arrangement, such as a floor seal, for a folding or sliding door, partition, or other closure panel.

Floor seals are installed on the bottom edge of a folding or sliding door, partition, or other closure panel, and are automatically moved into engagement with the floor as the closure panel is closed. Such floor seals have included a spring device for resiliently urging a baffle member of the floor seal into engagement with the floor. However, the same spring device is also usually employed to maintain the baffle member retracted and out of engagement with the floor when the closure panel is in other than the closed position, resulting in the spring device becoming weakened and ineffective for properly urging the floor seal against the floor. Known floor seals have also proved to be unsatisfactory in that they have in general been restricted to use with only one floor to ceiling dimension, and also in that they have not provided an effective seal when the floor surface against which they are engaging is not level. Additionally, known floor seals have exhibited poor acoustical properties.

A more specific object of this invention is to provide a new and improved floor seal for closing a gap between an edge of a closure panel and an adjacent surface, which is adapted for use with varying floor to ceiling dimensions and with uneven floor surfaces, wherein the floor seal has a baffle member adjustably mounted on the closure panel for movement from a retracted position adjacent the closure panel to an extended position away from the edge, where it is resiliently urged against the surface.

Another object is to provide a new and improved floor seal for closing a gap between the bottom edge of a closure panel and the floor therebeneath including a sealing member mounted in an elongate channel in the bottom of the panel and sealing strips on opposite sides of the sealing member engaging the side walls of the channel to prevent the transmission of sound between the sealing bar and the panel.

Other objects and advantages of the invention will become readily apparent from the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 and FIG. 2 are schematic plan views of folding partitions incorporating the floor seal;

FIG. 3 is a fragmentary vertical transverse sectional view of a panel of either of the folding partitions illustrated in FIG. 1 or FIG. 2, prior to closing of the partition;

FIG. 4 is a view of the lower portion of FIG. 3, but with the floor seal in the closed position;

FIG. 5 is a fragmentary elevational view of a lower portion of the folding partition illustrated in FIG. 1, taken substantially as indicated along line 5—5 of FIG. 3, with the floor seal retracted prior to closing of the partition, and with the parts broken away to more clearly illustrate the construction;

FIG. 6 is a fragmentary side view similar to FIG. 5, but with the partition closed and the floor seal extended into engagement with the floor, and with parts broken away to more clearly illustrate the construction;

FIG. 7 is an enlarged fragmentary view of the floor seal mounting; and

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FIG. 8 is an end view of the structure illustrated in FIG. 5 with various parts removed.

While an illustrative embodiment of the invention is shown in the drawings and will be described in detail herein, the invention is susceptible of embodiment in many different forms, and it should be understood that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, FIG. 1 shows a folding partition having two sections 10, each with a plurality of closure panels, such as inner partition panels 11 and free end partition panels 12 which abut each other in the closed position. The panels have adjacent vertical side edges connected by hinges 13 on alternate faces of the panels 11 and 12 for opening each section 10 so that the partition panels 11 and 12 are folded face to face adjacent opposite walls, as indicated by the dotted lines in FIG. 1. FIG. 2 shows a folding partition having one section 14 with a plurality of inner partition panels 11 and one free end partition panel 12 abutting a bumper jamb on one wall, with the panels 11 and 12 similarly connected by hinges 13 for moving the partition to the open position adjacent an opposite wall, as indicated by the dotted lines.

Referring now to FIG. 3, all partition panels are suitably suspended for movement, either manually or automatically, between the open and closed positions. For example, each partition panel may be secured by a rotatable connection 18 to a trolley 19 having wheels 20 riding on opposite edge portions of the lower flange 21 of an I-beam track 22 which is attached in a suitable manner to hanger rods 23. The bottom edges 25 of the partition panels 11 and 12 are provided with a floor seal, such as a baffle arrangement 26, for engaging an adjacent surface, such as a floor 27, when the partition is closed.

The baffle arrangement 26 includes baffle members 28 on the free end partition panels 12 which are longer than the width of the respective panels, and baffle members 28' on the partition panels 11, which are the same length as the width of the respective panels, as will be further discussed hereinafter. The following description is directed to a baffle member 28 on a free end partition panel 12. Each baffle member 28 includes an elongated rigid strip or carrier bar 29, and a resilient sealing strip 29a secured to the bottom face of the carrier bar 29 for engaging the floor 27 and compensating for irregularities on the surface of the floor. The bar 29 is mounted on the partition panel 12 for movement in the plane of the partition panel from a raised retracted position, shown in FIG. 3 and FIG. 5, in which the baffle member 28 is adjacent the lower edge 25 of the closure panel and spaced from the floor 27 to an operative lower or extended position in which the baffle member 28 is moved longitudinally of the lower edge 25 in a given direction, away from a free side edge 30 of the partition panel and away from the bottom edge 25 of the partition panel, with the resilient strip 29a in engagement with the floor 27 to close the gap between the partition panel and the floor. As the partition is moved into the closed position, a free outer end 31 of the baffle member 28 engages a similar free outer end 31' on an opposite baffle member (or the bumper jamb 15 in the arrangement illustrated in FIG. 2), to move the baffle member 28 longitudinally of the partition panel lower edge in the given direction, that is, away from the partition panel free side edge 30. Actuating devices 32 which are longitudinally spaced on the partition panel lower edge 25, provide means responsive to such longitudinal movement of the baffle member 28 for moving the baffle member 28 from the retracted position to a posi-

tion away from the lower edge 25 and resiliently into engagement with the floor 27, so that the baffle member is in the extended position.

Each device 32 includes a pair of parallel, spaced-apart leaf springs 33 and 33', each having opposite ends with eyes each freely receiving a pin; spring 33 having pin 35a at the top thereof and pin 34' at the bottom thereof, and spring 33' having pin 35b at the top thereof and pin 33b at the bottom. The pins are pivotally connected with opposite side walls of respective U-shaped fixtures 34 and removably pivotally secured to fixtures 35 for rotatably mounting the springs on the fixtures. The fixtures are secured, respectively, to the bar 29 and within the recess channel in the closure panel lower edge 25. In the retracted position, the leaf springs 33 and 33' are slanted away from the partition panel lower edge 25 in a direction toward the closure panel free side edge 30. Each bracket 34 is provided with a pair of arcuate rows of spaced holes 34a and 34b, as is best seen in FIG. 7, the former concentric about 35b and the latter concentric about 35a. It will be readily understood that by connecting the lower end of leaf springs 33 and 33' to the uppermost holes in the rows 34a and 34b, as in position 33a and 33'a, baffle member 28 will be able to swing through a much greater vertical extent (with springs 33 and 33' unstressed) than when the leaf springs 33 and 33' are connected to the lowermost holes in rows 34a and 34b. By selecting an appropriate opening on the rows 34a and 34b, the panels are capable of accommodating rooms having widely varying floor to ceiling dimensions.

For example, in an actual installation, wherein the carrier bar 29 and sealing strip 29a move $\frac{1}{4}$ " longitudinally between the retracted position and the sealing position, it is possible to vary the vertical travel of the bar, before stressing the leaf spring members, by as much as $\frac{1}{2}$ ". Specifically, when the lower ends of the leaf spring members are mounted in the lowermost mounting holes, the lower ends of the springs move vertically down only $\frac{1}{2}$ " without stress during the $\frac{1}{4}$ " longitudinal movement. In contrast, when the lower ends of the springs are mounted in the uppermost apertures, the vertical movement is 2" without stress during comparable $\frac{1}{4}$ " longitudinal movement. The apertures intermediate the uppermost and lowermost apertures enable other variable vertical travel between $\frac{1}{2}$ " and 2". The advantage of the adjustability will be understood when it is noted that if the lower ends of the springs were permanently mounted in the lowermost aperture, the bottom sealing strip 29a would never engage a floor space more than $\frac{1}{2}$ " below the bottom surface of the sealing strip in its retracted position. If the space is on the order of $\frac{3}{4}$ ", permanent mounting of the lower ends of the springs in the uppermost apertures would result in excessive stress on the springs, leading to premature breakdown. It will be understood that the adjustment provided may be utilized where substantially flat, level floors vary in elevation from one installation to another, as well as in the situation where a particular floor may not be level and varies in elevation within the length of a particular panel. In the latter case, the springs at opposite ends of the panel may be adjusted differently.

As the partition panel 12 closes, thereby moving the baffle member 28 longitudinally with respect to the partition panel lower edge 25, a tension spring 38, which is connected between the edge 25 and the upper surface of bar 29, is stressed. The actuating device leaf springs 33 and 33' are rotated about their connections with the partition panel 12 and the bar 29 to assume a bowed shape, thereby lowering the baffle member 28 into engagement with the floor 27. Continued movement of the partition panel 12 into the closed position causes the sealing strip 29a to be pressed firmly against the floor surface 27. In this position the leaf springs resiliently urge the baffle member into tight engagement with the floor 27 and exerts little

force tending to return the baffle member. As the partition is opened, a partition panel 12 moves away from the closed position, releasing springs 33 and 33' from their bowed positions allowing the baffle member 28 to be moved into the retracted position by tension spring 38.

The leaf springs 33 and 33' are unstressed in the retracted position through the cooperative effort of spring means in the form of the tension spring 38 and abutment 39 on partition panel 12. Abutment 39 and the upper portion of the bar 29 cooperate to form stop means which define the retracted position for bar 29. Each tension spring 38, two or more of which may be utilized in each panel, is slanted away from the partition panel lower edge 25 in a direction away from the closure panel free side edge 30, providing means for urging the bar 29 upwardly and into engagement with the abutment 39, and longitudinally of the edge in a direction toward the closure panel free side edge 30, so that the leaf springs 33 and 33' are unstressed while the baffle member is in the retracted position.

The baffle member 28 for the free end partition panel 12 is slightly longer than the width of the panel, for movement of the free outer end 31 of the baffle member 28 into alignment with the partition panel free side edge 30. The baffle members 28' on the inner partition panels 11 are of the same length as the width of the panels 11. As the partition section is closed, an inner end 40 of the baffle member 28 moves the adjacent baffle member 28' longitudinally of the lower edge 25 of partition panel 11, and as previously described, the baffle member 28' moves from the retracted to the extended position. The baffle member on the wall partition panel 41 may be as much shorter than the panel as the baffle member 28 is longer than its panel 12, to provide an even outer edge.

Suitable cover plates 42 are secured to opposite faces of each partition panel and, with the bottom of the panel, define a channel-shaped recess. The plates 42 are co-extensive with the partition panel lower edge 25, extend downwardly, are spaced from the floor 27, and overlie the baffle member 28 in both the retracted and extended positions, covering the gap between the partition panel lower edge 25 and the baffle member.

As is best seen in FIG. 8, the longitudinally extending bars 29 are provided adjacent their upper ends at opposed sides with longitudinally extending shoulders 29a. Sound deadening members 43, formed of an elastomeric material or of other appropriate sound deadening materials, are nested in the grooves at the upper portion of the longitudinally extending bar 29 that are formed by shoulders 29a, and are adapted to engage the adjacent surfaces of the cover plates 42. It will be readily understood that the sound deadening members 43 engage the cover plates 42 in both the retracted and the extended positions, so that the transmission of sound over and under the baffle member 28 is effectively prevented when the baffle members are in the lowered position, through the cooperative effort of sound deadening members 43 and sealing members 29a.

Aside from the difference in length of the baffle members 28, the structure and function of the baffle arrangements 26 is identical for all panels. In the single baffle section arrangement of FIG. 2, the free end 31 of the baffle member 28 engages the bumper jamb 15, rather than another end 31, but all other structure is identical to that previously described.

The baffle arrangement herein described provides an effective and efficient floor seal in which the actuating devices 32 and their leaf springs 33 and 33' are unstressed except when they are needed for resiliently urging the baffle members into engagement with the floor 27, and the spiral tension springs 38 which may be easily and economically replaced, support the baffle member in the inoperative retractive position. By selection of an appropriate opening on rows 34a and 34b, the partition is capable of being used in different rooms having varying

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floor to ceiling heights. The longitudinally extending sound deadening members 43 effectively prevent the transmission of sound under the partition when the floor seal is in the extended position. Thus, it should be apparent that each of the objects of the invention has been fully achieved.

Although the baffle arrangement has been described in the environment of a floor seal for folding or sliding doors or partitions, it is applicable to closing a gap between any members having a similar relationship.

I claim:

1. A floor seal for closing the gap between a floor and the bottom edge of a folding or sliding door, partition, or similar closure panel, comprising: a sealing strip mounted on said panel adjacent the bottom edge thereof for movement back and forth longitudinally of the bottom edge and up and down relative thereto in the plane of the panel from a raised retracted position and a lower sealing position in which the lower edge of the strip is urged outwardly from the bottom edge of the closure panel; means connected to the closure panel and the sealing strip for urging the strip longitudinally and upwardly to said retracted position; means for resiliently urging the strip to said sealing position when moved longitudinally, including a pair of generally parallel flat leaf spring members spaced longitudinally of the strip and inclined downwardly and back when the strip is retracted, each spring having an upper end pivotally mounted on the panel and a lower end pivotally mounted on the sealing strip, said lower ends, when the strip is moved longitudinally, being movable closer to the upper ends and longitudinally of the bottom edge to positions where the springs are bowed to urge the strip downwardly and exert a sealing force; and means for adjustably mounting the lower end of each spring on the sealing strip to vary the vertical travel of the sealing strip required to place the spring under predetermined stress, said last named means including a pivot pin for mounting the lower end of the spring on the sealing strip and a series of apertures in the sealing strip angularly spaced about the upper pivotal mounting of the spring.

2. A floor seal for closing the gap between a floor and the bottom edge of a folding or sliding door, partition, or similar closure panel, comprising: an elongate seal carrier bar mounted in an elongate channel-shaped recess in said panel at the bottom edge thereof for movement longitudinally of the bottom edge and up and down relative thereto in the plane of the panel from a raised retracted position in which one end of the bar projects outwardly of one upright edge of the closure panel for engagement with a cooperating abutment and an operative lower sealing position in which the bar is urged outwardly from the recess at the bottom edge of the closure panel; a resilient sealing strip on the bottom of

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the bar engageable with a floor for closing the gap between the panel and the floor, a tension spring disposed generally parallel to movement of the bar and having opposite ends connected respectively to the closure panel and the bar for urging the bar longitudinally and upwardly to said retracted position; cooperating stop means on the bar and the panel defining the retracted position; means for resiliently urging the bar to said sealing position when moved longitudinally by engagement of the projecting end with said cooperating abutment, including a pair of parallel flat leaf spring members spaced longitudinally of the strip and inclined downwardly and toward the projecting end of the strip when the latter is retracted, each said spring having an upper end pivotally mounted on the closure member about an axis parallel to the plane of the spring and normal to the plane of the closure panel and a lower end pivotally mounted on the bar about an axis parallel to the plane of the spring and normal to the plane of the closure panel, said lower end spaced from the upper end by the length of the spring when the bar is retracted so that the spring is unstressed, said lower ends, when the bar is moved longitudinally, being movable closer to the upper ends and longitudinally of the bottom edge to positions in which the springs are bowed each with a concavity facing toward said normally projecting end thereby to urge said bar downwardly and exert a sealing force; sealing strips respectively on opposite sides of said bar extending substantially from end to end thereof to engage the side walls of said recess to prevent the transmission of sound between the sealing bar and the panel; and means for adjusting the amount of vertical travel of the sealing strip occurring before the leaf spring members are stressed including a series of apertures in the sealing strip angularly spaced on an arc concentric about the upper pivotal mounting of each spring and a pivot pin at the lower end of each spring for adjustably mounting the lower end of each spring on the sealing strip.

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