No. 832,205. PATENTED OCT. 2, 1906.

J. C. McMAHON.

WEATHER STRIP.

APPLICATION FILED FEB. 21, 1906

Fig. 1.

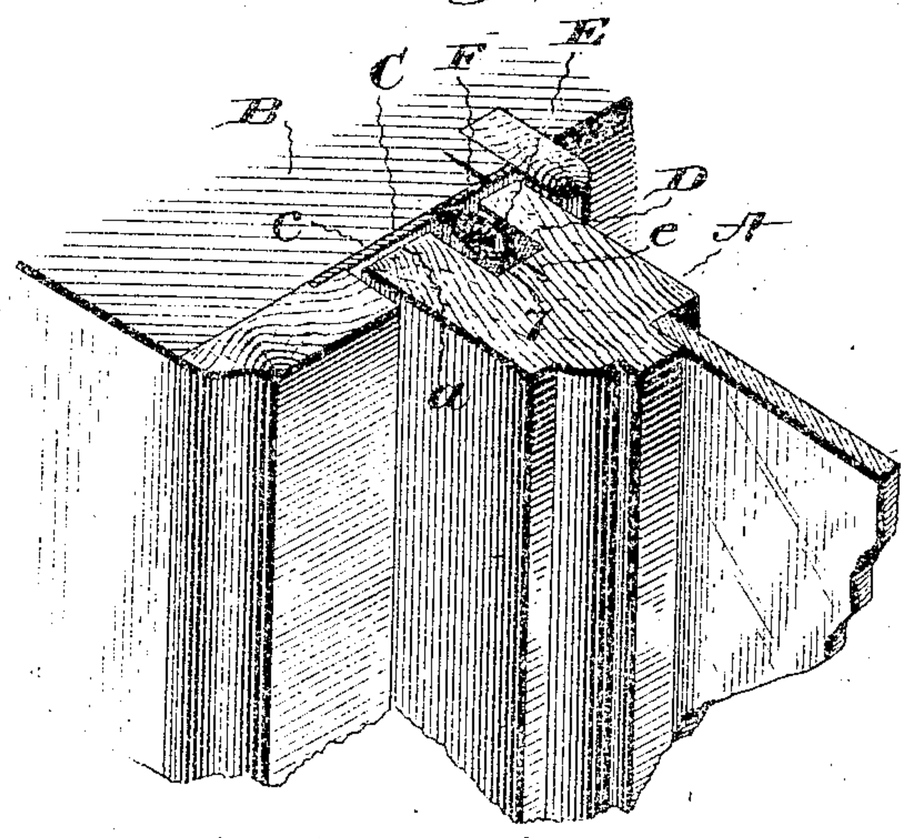

Fig. 2.

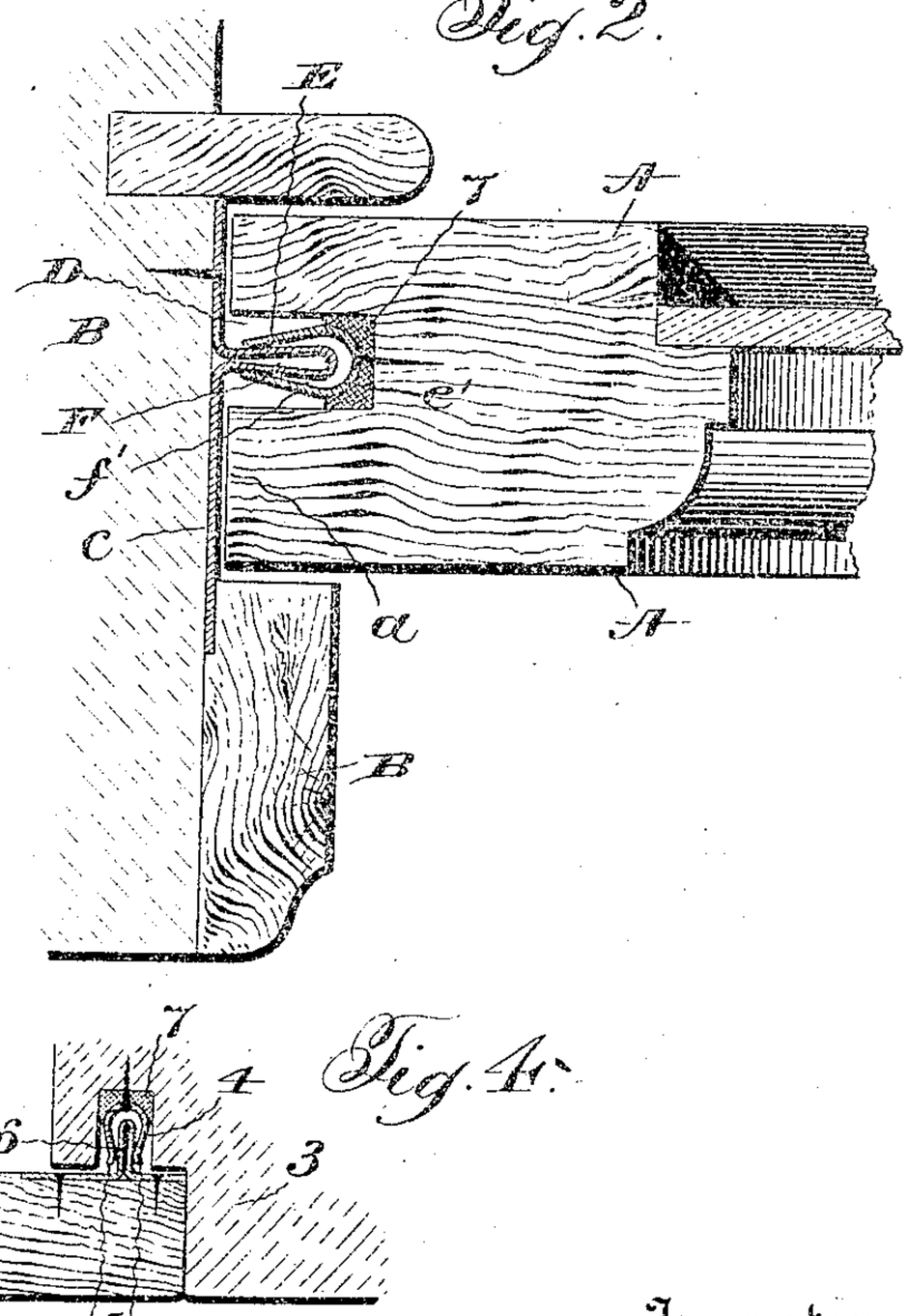

Fig. 3.

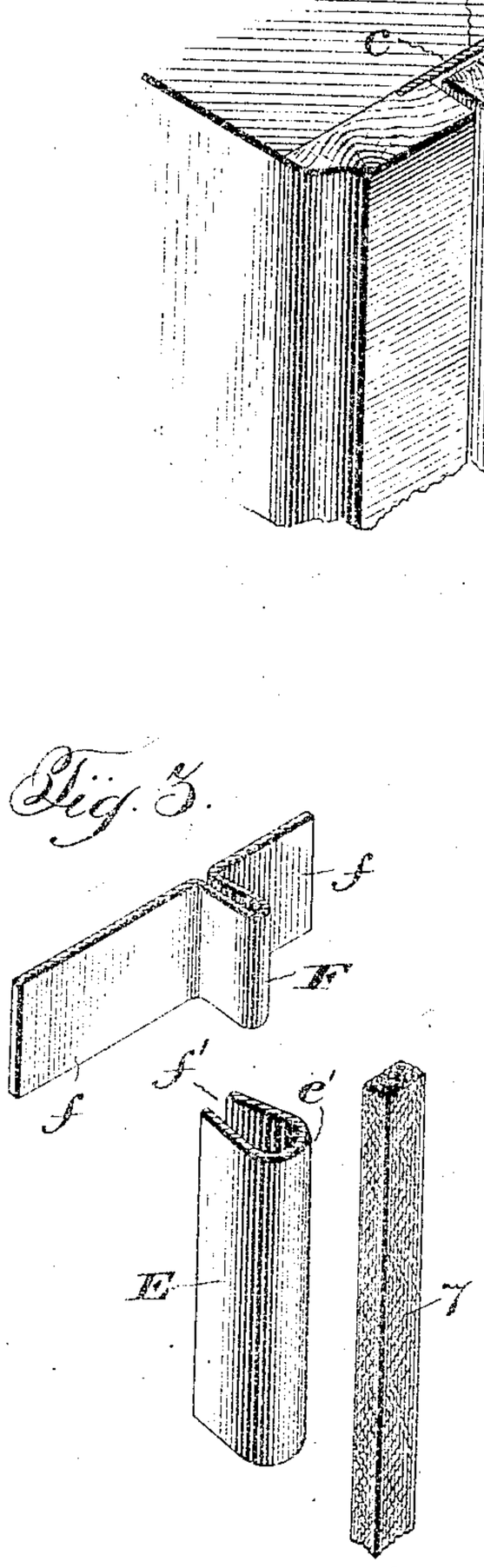

Fig. 4.

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WEATHER-STRIP.

No. 832,205. Specification of Letters Patent. Patented Oct. 2, 1906.

Application filed February 21, 1906. Serial No. 302,195.

To all whom it may concern:

Be it known that I, JOSIAH C. McMAHON, a citizen of the United States, residing at 432 Diamond street, Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Weather-Strips, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in weather-strips, and has for its object the provision of a device of this character comprising coacting metal members adapted to have relative sliding engagement when used in connection with windows or to be freely separated and reëngaged when used in connection with doors, one of the members of the strip being mounted, whereby it may move bodily relative to its primary or initial position to maintain the normal operative engagement between the members, while accommodating for shrinkage or warping of the wooden parts, such as the windows or doors or their frames, and a yieldable packing adapted to be interposed between the shiftable member of the strip and its frame or the part to which it may be attached, whereby said member, though shiftable, as stated, is sealed at its base or attaching portion to prevent passage of air, dust, water, &c., thereunder.

Convenient embodiments of the invention are illustrated in the accompanying drawings, and the novel details and arrangement of the several parts will be apparent from the detailed description hereinafter contained when read in connection with said drawings.

In the drawings, Figure 1 is a fragmentary perspective view of a window-frame and sash, showing my improved weather-strip applied thereto. Fig. 2 is an enlarged transverse sectional view through a sash, strip, and frame. Fig. 3 is a detail perspective view of the several parts of the strip detached and separated; and Fig. 4 is a view similar to Fig. 2, showing an embodiment of the invention wherein the strip is used in connection with a swinging door or window and its frame.

Referring more specifically to the drawings and for the present with reference to the first three views thereof, A designates a sliding sash, B a window frame or casing, and C the groove or runway of the frame, within which the sash works up and down in the usual manner. In the edge of the sash, preferably the surface *a* thereof which opposes the base *c* of the runway, I form a groove D. In this groove I mount a spring-metal insert E, the same in cross-section being approximately U-shaped, the free portions or flanges of which converge toward each other, while the connecting edge thereof is rounded, as shown very clearly in Fig. 2. This strip is movably secured in place, whereby it may rock or shift bodily in a lateral direction through the medium of tacks *e*, loosely engaging the rounded connecting edge or bend *e'* thereof and embedded in the material of the sash. The flanges of the insert just defined have a permanent tendency to spring in or converge toward each other, whereby their outer edges may constantly impinge upon opposite sides of a flange or rib F, arranged to project into the groove *f'* formed between the flanges of the insert, said rib or flange being in turn mounted in the base of the runway or groove of the sash-frame in any convenient manner, conveniently by means of base-flanges *f*, tacked down or held in place by overhanging portions of the sash-frame. As shown, these base-flanges and the sealing rib or flange are formed of sheet metal doubled upon itself after the fashion well known in this art.

It will be noted that the engagement of the flanges of the spring-insert with the sealing rib or flange is substantially a line contact at each side of the latter whereby rubbing frictional contact incident to the raising and lowering of the sash is minimized, while at the same time the sealing effect secured by the coöperation of said insert and the sealing rib or flange will be maintained, notwithstanding the warping or shrinkage of the sash or frame, until the parts become so separated that the sealing rib or flange is entirely withdrawn from the space within the insert, and the possibilities of any such separation are extremely remote, and as a matter of fact it is doubtful if such a condition ever arises.

The special type or rib shown in the drawings is peculiarly adapted for use in connection with my spring-insert, inasmuch as such rib has a bulged or laterally-enlarged edge, which when the sash moves away from the frame incident to shrinkage increases the sealing contact between the edges of the spring-metal insert and the side walls of the rib or flange, as will be readily appreciated.

Referring now to Fig. 4, where the members carrying the spring-insert and the sealing rib or flange are caused to approach or recede one relative to the other, 2 represents a swinging sash or door, and 3 its frame, the insert being indicated at 4 and the sealing rib or flange at 6, and in this connection it is to be noted that the free edges of the insert are rounded or turned outwardly, as at 5, to facilitate the entrance of the sealing rib or flange therebetween when the swinging sash or door is closed.

In both of the forms of strip hereinbefore described it will be noted that owing to the rounded configuration of the connecting portion of the insert and the loose fitting of the securing-tacks said insert may have a limited lateral tilting or rocking movement to preserve its normal operative relation to the sealing-strip, notwithstanding the shrinkage or warping of the wooden parts of the window, frame, &c.

The formation of parts and combinations thereof thus far set forth herein will not be broadly claimed in this application, because they constitute the subject-matter of my copending application for patent, Serial No. 256,703, filed April 21, 1905. The characteristic feature of the present invention resides in the matter now to be pointed out. Owing to the loose mounting of the spring-metal insert to permit its bodily movement or shifting in a lateral direction, the contact of the rounded or connecting portion of this insert with the base of its groove is obviously not perfect so far as sealing the space therebetween is concerned, and in order to provide an air and water tight seal at this point I interpose between the base of the groove and the rounded connecting portion of the insert a felt strip or other yieldable packing 7, through which the securing-tacks of the insert pass and are driven home sufficiently to cause the rounded connecting portion of the insert to become embedded in said packing and form a sealing engagement therebetween, while at the same time offering no perceptible interference to the lateral or rocking movements of said insert.

Owing to the converging relation of the flanges of the insert and the substantially parallel relation of the walls of the groove in which the same is mounted, there is abundant space afforded for the rocking or shifting of the insert toward either side of the groove.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with a frame member provided with a runway and a sash member mounted to coöperate with said runway, one of said members being provided with a groove, of a weather-strip interposed between said members comprising two opposing sheet-metal parts, one of said parts having a securing-flange and an outwardly-extending rib arranged to project into said groove, and the other of said parts comprising a pair of connected spring-flanges each free at its outer edge and adapted to contact with the side surfaces of said rib, the connecting portion intermediate said spring-flanges being rounded laterally, means passing through said rounded connected portion for securing said spring-flanges in place whereby their free edges are freely movable within said groove and also whereby said spring-flanges may bodily rock in a lateral direction, the side walls of the groove being spaced apart from the free edges of the spring-flanges whereby ample space is provided to permit said flanges to spring or rock laterally without interference from said side walls, and a sealing-packing interposed between the rounded connecting portion of the spring-flanges and the member to which it is attached.

2. The combination with a window-frame, of a metal weather-strip located in the runway thereof and provided with a sealing-flange extending outwardly therefrom, a sash member having a groove into which the said sealing-flange enters, a metallic member in the groove having an inwardly-bent spring part engaging the side of said flange, means for securing the last-mentioned metallic member in its groove whereby it may rock in a lateral direction, and a sealing-packing interposed between the said metallic member and the part to which it is secured.

3. The combination with a window-frame, of a metal weather-strip located in the runway thereof and provided with a sealing-flange extending outwardly therefrom, a sash member having a groove into which the said sealing-flange enters, a metallic member in the groove having an inwardly-bent spring part engaging the side of said flange, means for securing the last-mentioned metallic member in its groove whereby it may bodily shift in a lateral direction, and a sealing-packing interposed between the said metallic member and the part to which it is secured.

4. In combination with two parts, one movable relative to the other, of a weather-strip therebetween comprising two members one carried by each part and adapted to coact to seal the space therebetween, means for fastening one of said members to one of the parts whereby it may have lateral movement, and a packing between said laterally-movable member and the part to which it is secured.

5. In combination with two parts one movable relative to the other, of a weather-strip therebetween comprising two members one carried by each part and adapted to coact to seal the space therebetween, means for fas- 13

tening member of said members to one of the parts whereby it may rock laterally, and a packing between said laterally-rocking member and the part to which it is secured.

6. The combination with two parts one movable relative to the other, of a weather-strip for sealing the space therebetween comprising two metallic members one carried by each part, one of said members comprising a securing-flange and a sealing rib or flange and the other member a substantially U-shaped strip formed to receive said sealing rib or flange, and a sealing-packing interposed between the connected edge portion of said last-mentioned strip and the part to which it is attached.

7. The combination with two parts one movable relative to the other, of a weather-strip for sealing the space therebetween comprising two metallic members one carried by each part, one of said members comprising a securing-flange and a sealing rib or flange and the other member a substantially U-shaped strip mounted to shift in a lateral direction, and a sealing-packing interposed between the connected edge portion of said last-mentioned strip and the part to which it is attached.

8. The combination with two parts one movable relative to the other, of a weather-strip for sealing the space therebetween comprising two metallic members one carried by each part, one of said members comprising a securing-flange and a sealing rib or flange and the other member a substantially U-shaped strip rounded to rock in a lateral direction, and a sealing-packing interposed between the connected edge portion of said last-mentioned strip and the part to which it is attached.

9. The combination with two parts one movable relative to the other, of a weather-strip for sealing a space therebetween comprising two members one carried by each part and adapted to coact to seal the space therebetween, one of said members being formed of sheet metal bent upon itself to form a groove and the other of said members having a sealing rib or flange projecting into said groove and a packing between the base of said grooved member and the part to which it is secured.

10. In combination with two parts, one movable relative to the other, and one of said parts being provided with a groove, of a weather-strip therebetween comprising two members one carried by each part and adapted to coact to seal a space therebetween, one of said members being formed of sheet metal bent upon itself to form a groove, and the other of said members having a sealing rib or flange adapted to project into said groove, means passing through the base of said grooved member for securing the same within and to the base of the grooved part, and a packing interposed between said base of said grooved member and the base of said grooved part.

In testimony whereof I affix my signature in presence of two witnesses.

JOSIAH C. McMAHON.

Witnesses:
W. C. McClure,
W. C. Boyd.