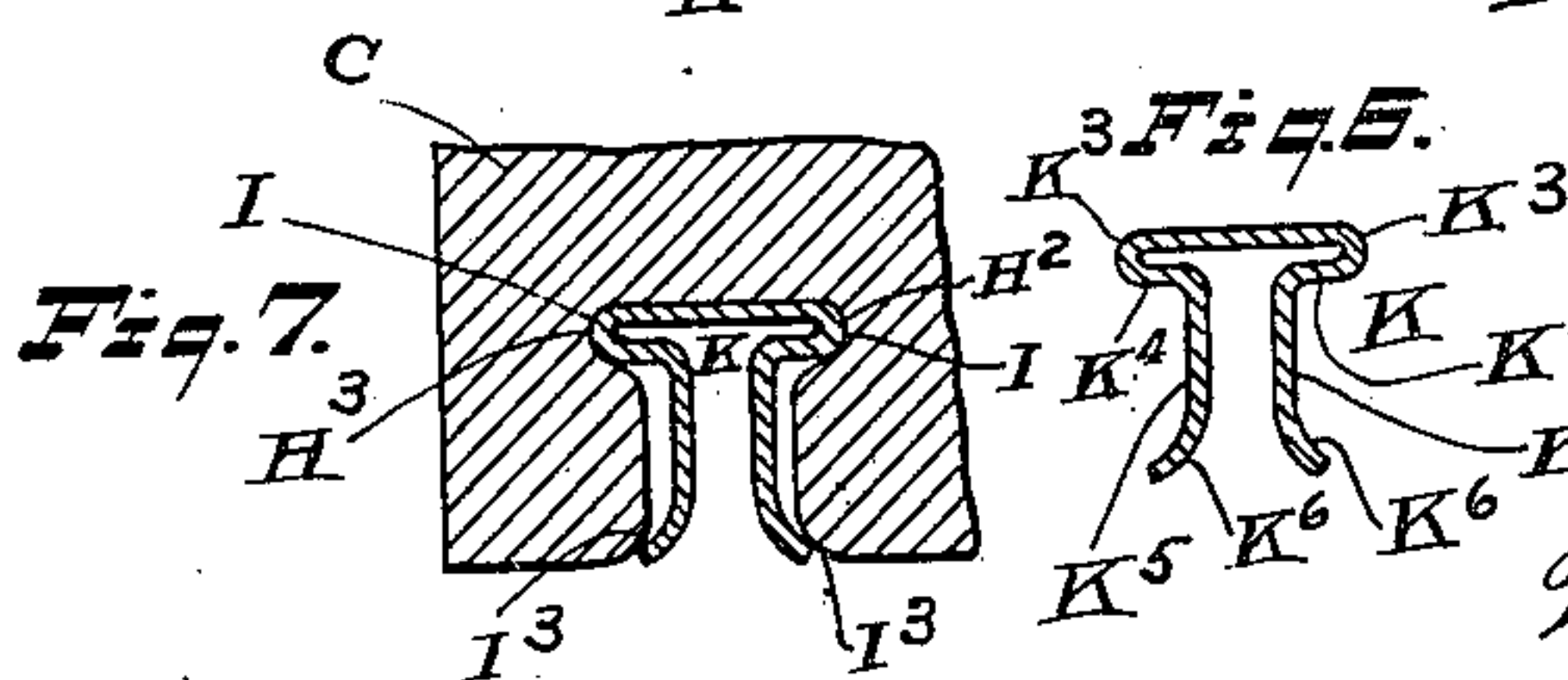
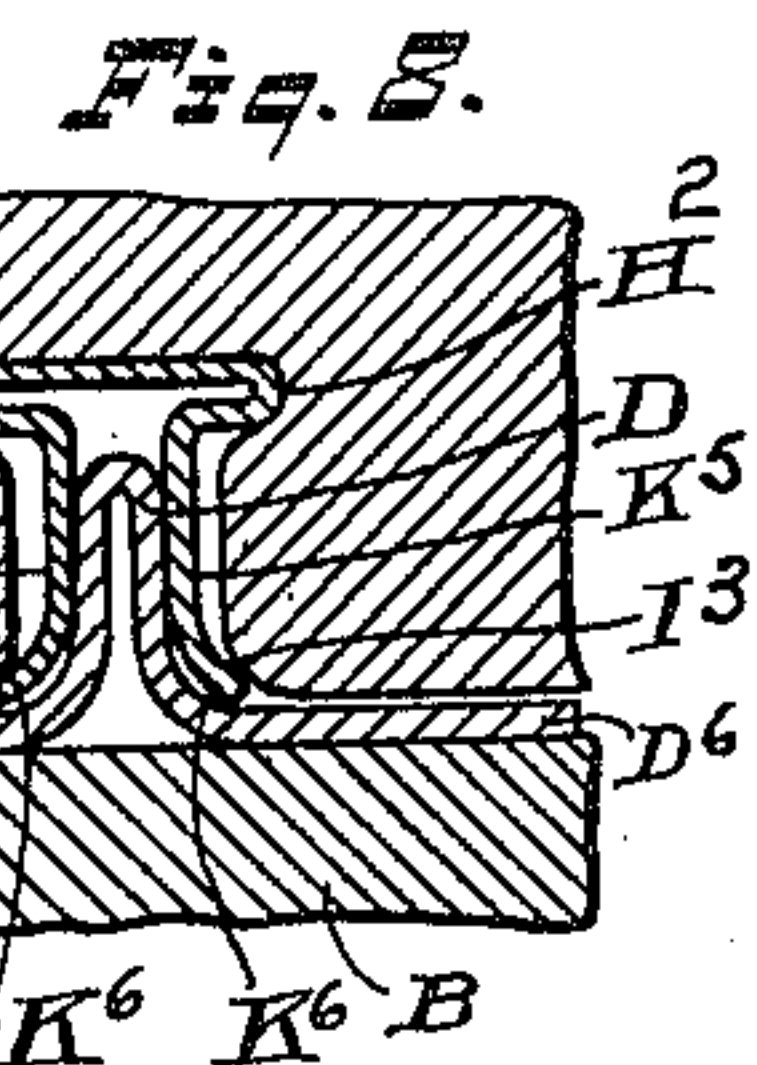
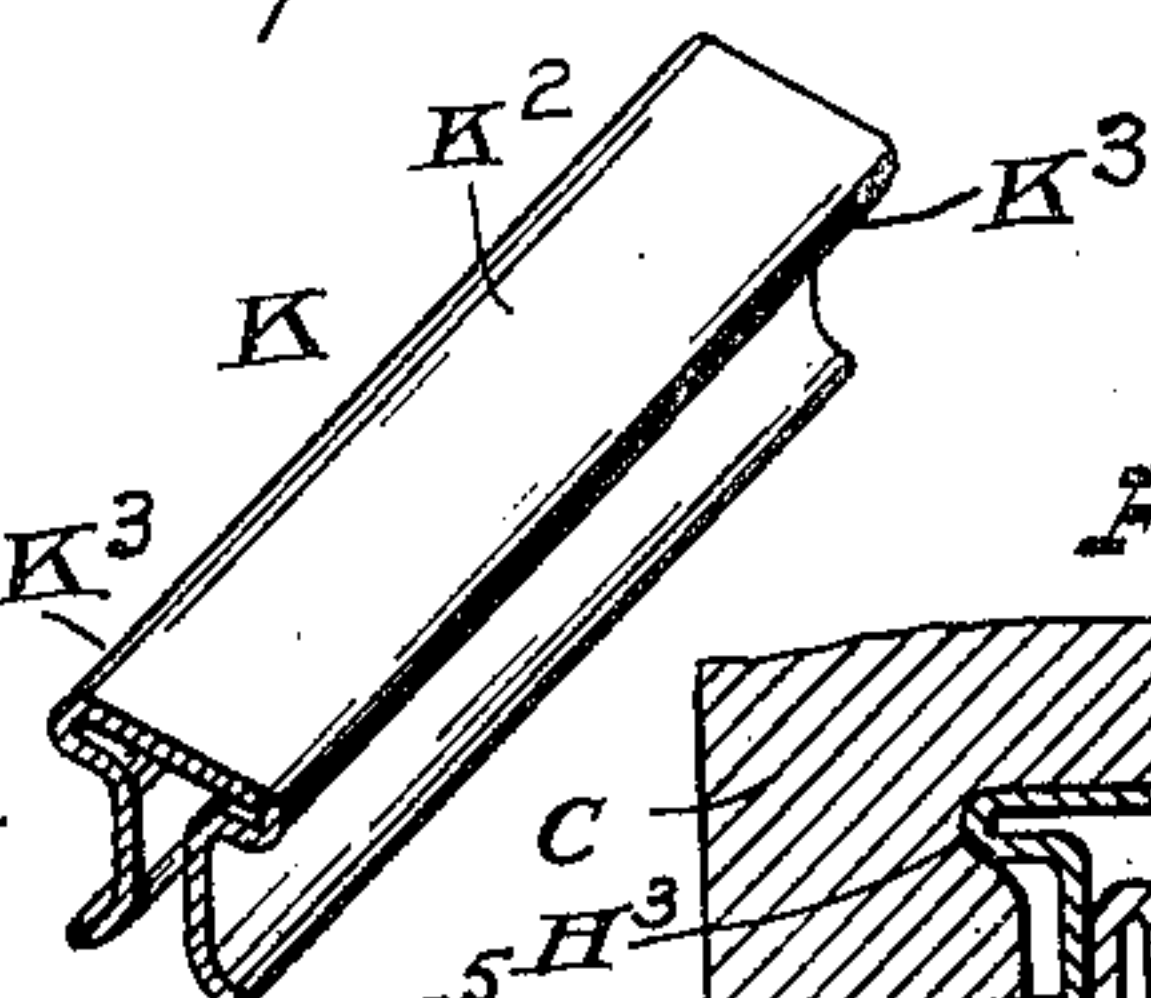
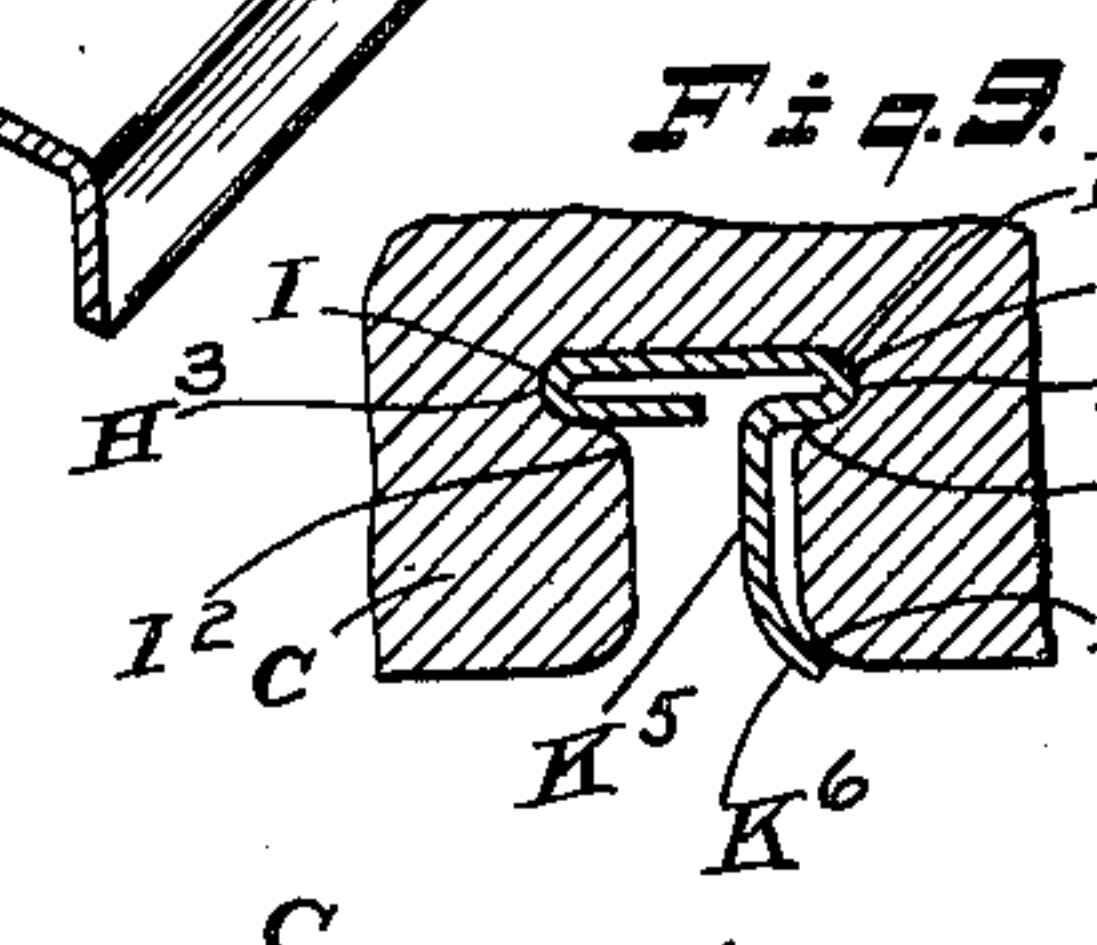
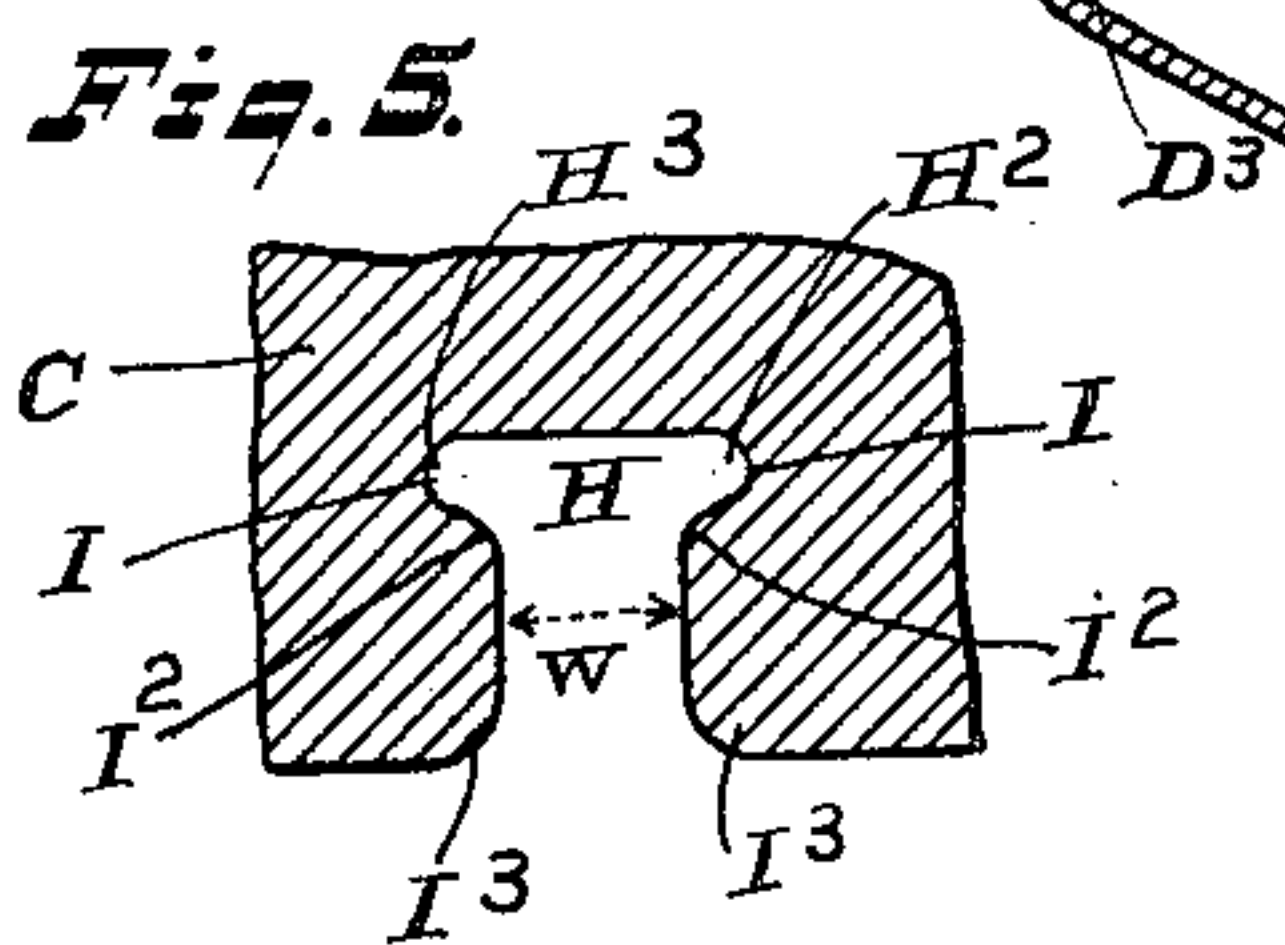
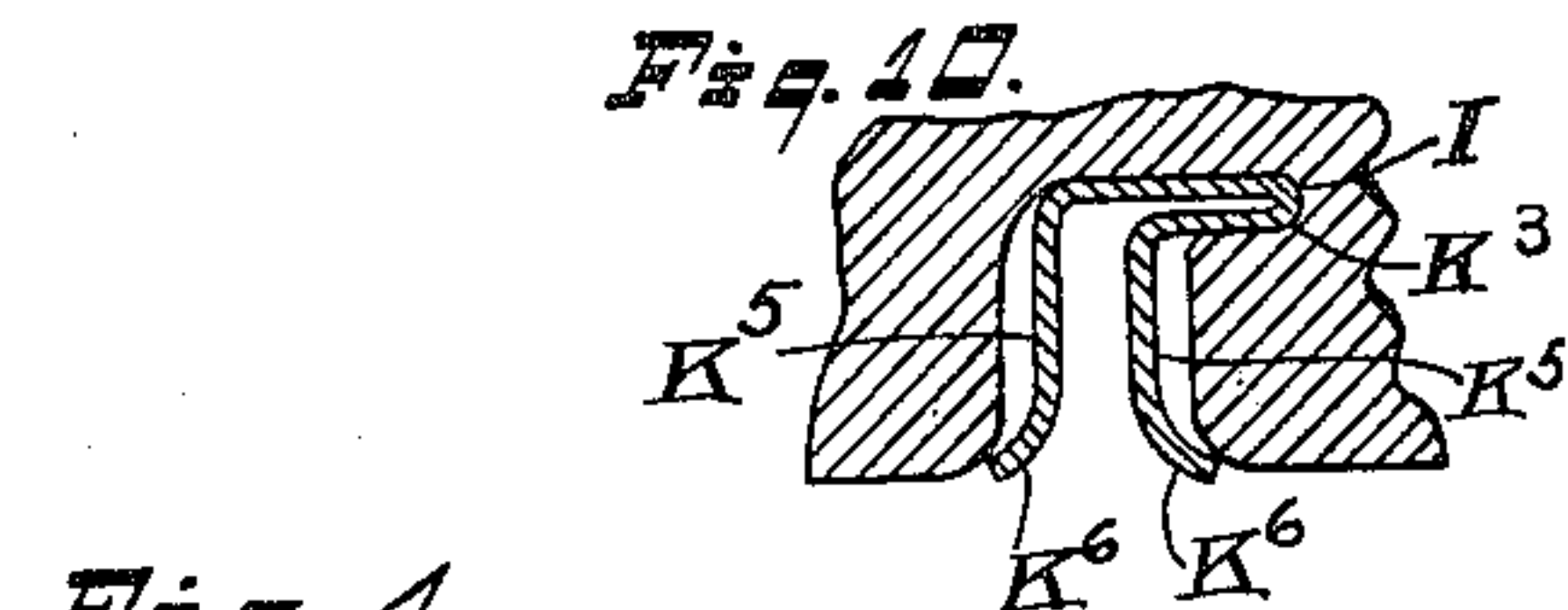
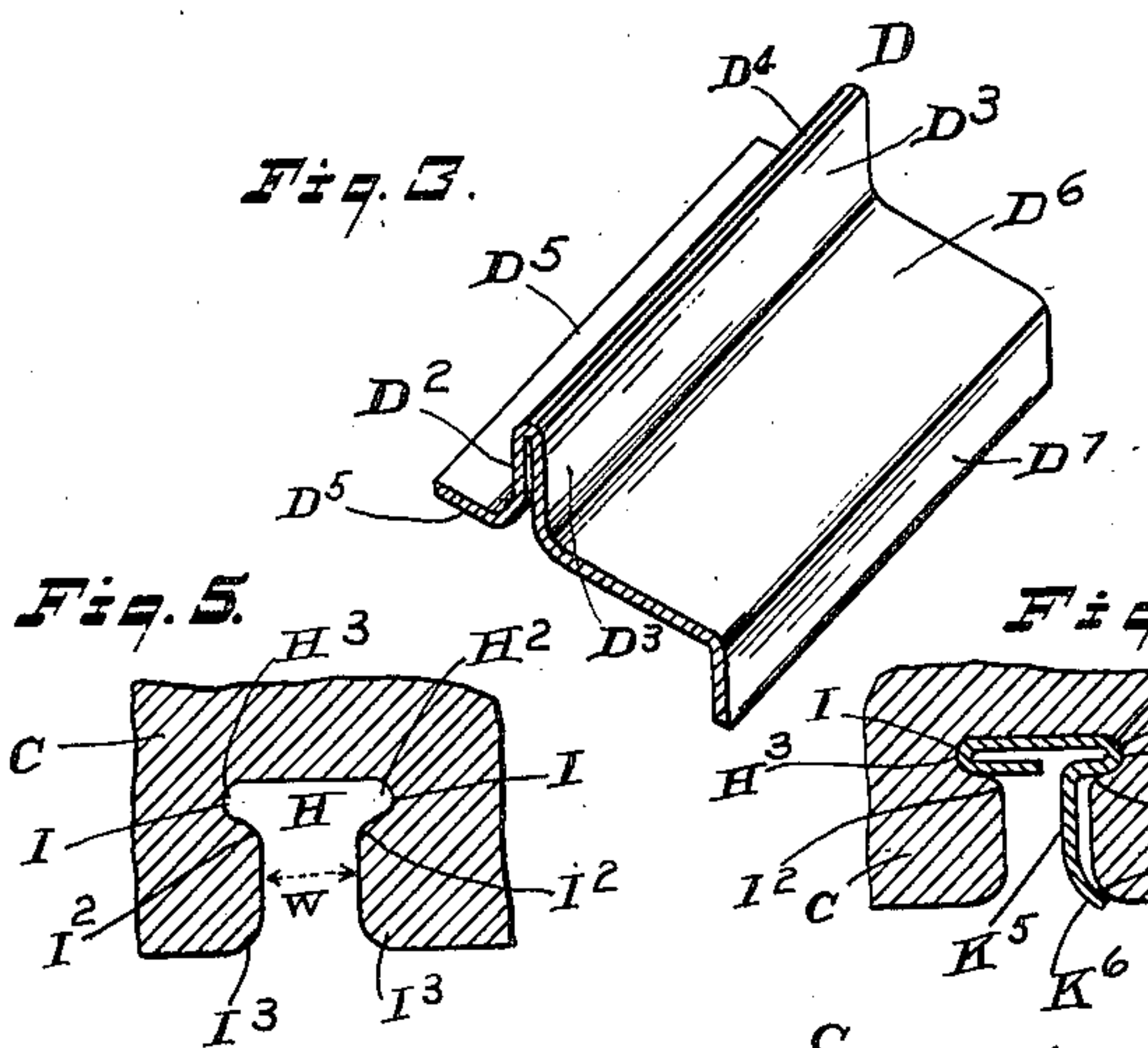
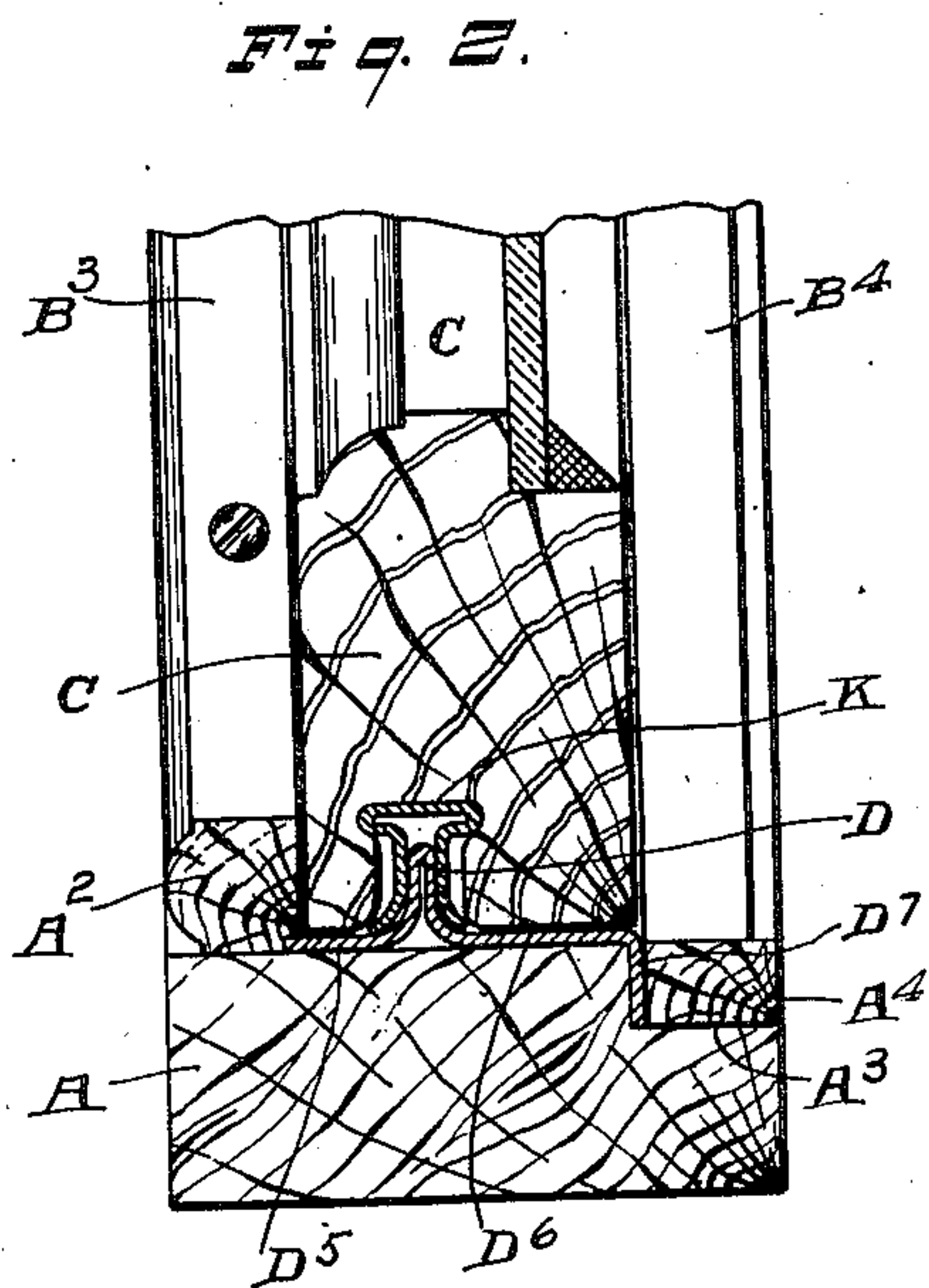
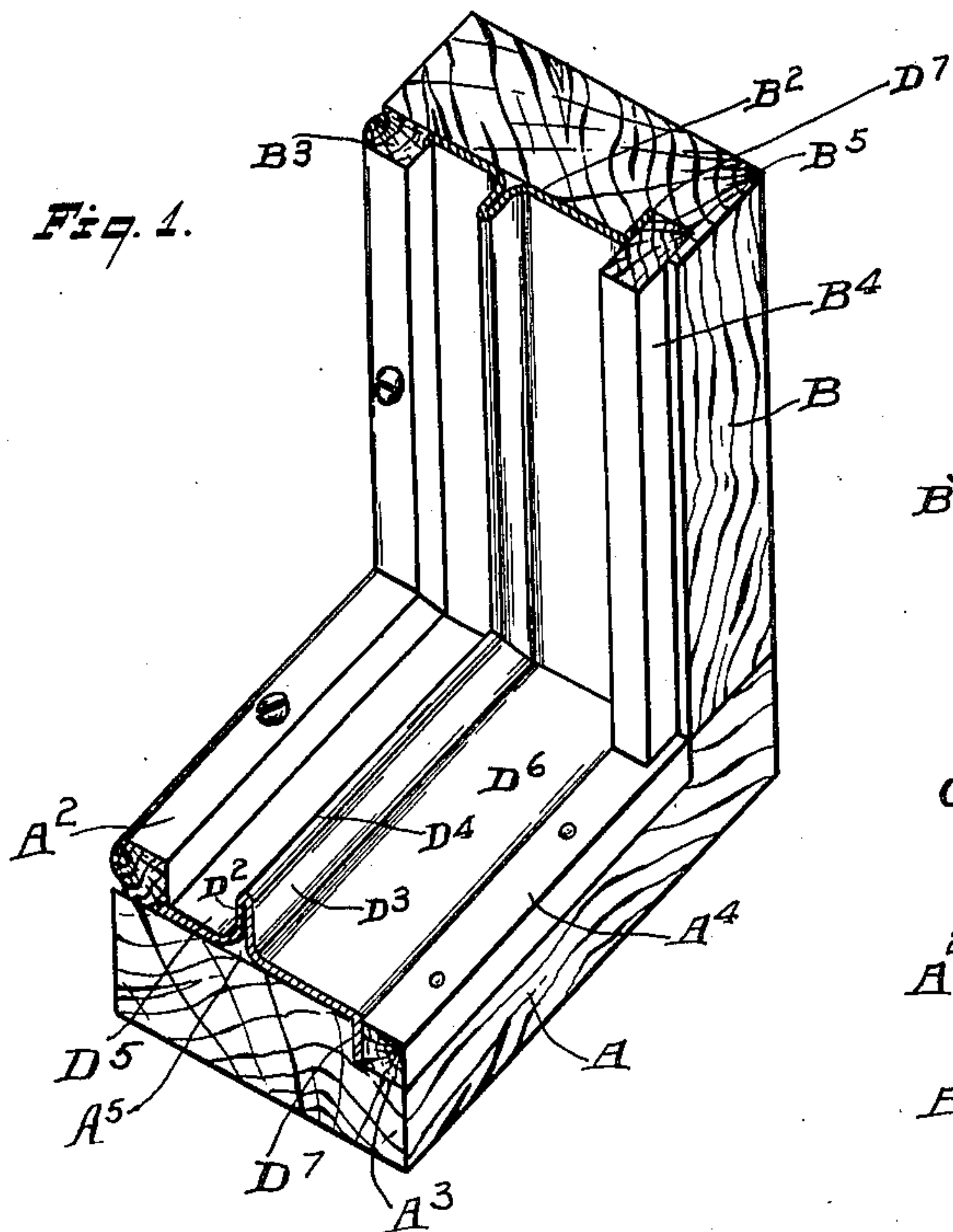


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WEATHER STRIP FOR WINDOWS.
APPLICATION FILED APR. 12, 1909.

Patented Sept. 21, 1909.

934,609.



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WEATHER-STRIP FOR WINDOWS.

934,609.

Specification of Letters Patent. Patented Sept. 21, 1909.

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To all whom it may concern:

Be it known that I, HENRY HIGGIN, a citizen of the United States, and a resident of the city of Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Weather-Strips for Windows, of which the following is a specification.

The first object of my invention is to provide a device which can be combined with windows and with doors, and which shall, in connection with such window or door, effectually exclude dust, air, moisture or liquid from the room, chamber or apartment provided with such window or door.

One of the objects of my invention is to provide a weather strip which shall be durable.

Another of the objects of my invention is to provide a metallic insert whose back or rear edge shall not oscillate, but shall be held fixedly and firmly to the back of the groove in which the insert is located.

Another object of my invention is to reduce the friction between parts that come into contact.

Another object of my invention is a formation and arrangement whereby the lower portion of those sides or portions of the insert which extend in the groove from the back of the insert to the mouth of the groove conform in shape to the curved portion of the lower or mouth portion of the groove, and lie in close juxtaposition thereto.

Other objects of my invention will be hereinafter apparent.

The several features of my invention and the various advantages derived from their use conjointly or otherwise will be apparent from the following description and claims.

In the accompanying drawing making a part of this specification, and in which similar characters of reference indicate corresponding parts,—Figure 1 is a perspective view of a corner portion of a window frame and attachments. Fig. 2 is a vertical cross section of a window frame and of an adjacent portion of a window sash combined with my invention. In Figs. 1 and 2, the grain of the sectioned sides of the wood is shown. Fig. 3 is a perspective view of a

short length of the flanged metal strip. Fig. 4 is a short length of the metal piece, herein denominated the insert. Fig. 5 is an end elevation of the groove. Fig. 6 is an end elevation of the insert. Fig. 7 is an end elevation of the insert in place in the groove, as it is in practice and in readiness to receive the tongue for closing or sealing the joint between the window or door and the frame adjacent to said window or door. Fig. 8 is an end elevation of the groove and of the insert in place in the groove, and of an end elevation of the sealing tongue or rib attached to one of the members of the window, and inserted in the insert, in working position. Fig. 9 is an end elevation in cross section, illustrating a construction modified in a specific feature. Fig. 10 is an end elevation in cross section, of the grooved member and the insert within the groove, showing a simplified form of construction.

I will now proceed to describe my invention in detail.

A indicates a portion of the length of the bottom piece of a window frame or casing.

B indicates a portion of the length of either one of the upright parts or sides of the window frame.

B² indicates the well known groove in a vertical portion of the window frame, and in which groove the adjacent edge portion of the window sash moves. This groove B² may be cut in the window frame, but it is usually formed by side strips B³, B⁴, either laid flat on the sash frame or set in a recess of the frame. In windows having two sashes the strip B⁴ is the partition strip or tongue between the sashes, and is then usually set in a recess. These strips B³, B⁴, when present are secured in any well known manner. Such grooves B² are present on both edges of the window, one in the vertical portion of the sash frame on the left, and another in the vertical portion of the sash frame on the right. The bottom A of the sash frame is well known as the window sill. This sill A is usually provided with a strip A², which rises above the surface of the sill A and is located at that side of the sill which is next to the room, and it is secured to the sill in any suitable manner. This sill strip A²

serves to prevent the rain which gathers on the sill from entering the room.

D indicates a tongue securely held in any proper manner to the surface of the window frame. This tongue D may be a single solid piece or strip of metal, but preferably it consists of a piece of metal bent or folded back upon itself, and thus consisting of two thicknesses D^2 and D^3 of metal, whose free edge D^4 is rounded and smooth as shown. The preferred mode of securing this tongue D^2 , D^3 , to the window frame is as follows: From the bottom of the portion D^2 extends out a flange D^5 , at substantially a right angle from the plane of the portion D^2 . From the bottom of the portion D^3 extends out a flange D^6 , at substantially a right angle from the plane of the portion D^3 . The foot flanges D^6 and D^5 are secured in place either by nails, or screws and the like, or in case of constructions where these flanges D^6 and D^5 are sunk into the wood, or in part covered with binding strips which contribute to hold these flanges in place, such nails or screws may, in many cases, be dispensed with. In the drawing, one mode of holding these flanges D^3 and D^5 in position on the window frame is illustrated. This mode consists in adding the flange D^7 , extending at a right angle from the part D^5 and the part D^6 . Thus the tongue D and the flange D^7 extend in parallel planes. The tongue D extends in one direction from the plane of the flange D^6 , and the flange D^7 extends in the other direction from the plane of the flange D^6 . This flange D^7 extends on the side of a recess A^5 in the window casing. On the vertical side of the window casing B, a strip of wood B^4 secured in the recess B^5 holds the flange D^7 in place. On the window sill A a strip of wood A^4 secures the flange D^7 in position in the recess A^3 . Whatever be the manner of securing this tongue D in place, it is to extend out from the plane of the casing A or B, and in a plane at substantially a right angle from the latter, as indicated in the drawing.

In the window sash C I form a compound groove. The first part H of this groove begins at the outer edge of the sash frame and extends inwardly as far as may be. At the rear end of this groove H, I provide on the right side of this groove H, a groove H^2 , and I provide on the left side of this groove H, a groove H^3 . The inner or back sides of these grooves are in the plane of the back side of the groove H. The part I or outer side of each of the grooves H^2 and H^3 is preferably rounded and the forward outer side I^2 of each of the said grooves H^2 and H^3 is preferably rounded or inclined toward the main groove H into the adjacent side of which latter it merges. The front corners I^3 , I^3 of the groove H are rounded or curved substantially as shown.

I provide an insert K, such as is illustrated in Figs. 2, 4 and 6. This insert K is preferably made of sheet metal. It has a broad back K^2 substantially flat. The corners K^3 , K^3 , when the insert is made of sheet metal, will be somewhat rounded, and each side K^4 will be bent back from the corner toward the mid-line of the main groove. Each portion K^5 of the insert then extends toward the front end of the groove, in preferably a straight line. Near the mouth of the groove, the portion K^6 begins and curvilinearly inclines outwardly away from the mid-line of the groove. For convenience of reference, I shall term the portion K^5 a plate or side portion of the insert. The outer width of the insert from each corner K^3 is but slightly less than that of the groove from corner H^2 to the corner H^3 . This groove H being made to receive this peculiar form of insert K, readily does so.

When the insert K is in position within this groove H, one of the corners K^3 fits in the corner H^2 of the groove H, and the other of the corners K^3 fits in the corner H^3 of the groove. One curved end K^6 of the insert K is preferably in contact with the adjacent curved corner I^3 of the groove H, and the other curved end K^6 of the insert K is preferably in contact with the other curved corner I^3 of the groove H, substantially as shown in Fig. 7. The insert K when located therein is now in readiness to receive, as occasion calls, the tongue D. The sides or walls of the insert K are elastic. As the tongue D enters the groove H of the insert, it presses against the opposite walls or sides K^5 , K^5 , and moves them outward and away from each other the thickness of this tongue. The walls or sides K^5 , K^5 , being elastic readily thus yield. As the curve of each side K^5 is thus straightened, the said side is, while the tongue occupies the groove, made somewhat longer relatively to the distance from the base of the groove to the end of its mouth, and the curved lip K^6 will be moved on and will slide a little around the curved edge I^3 of the groove H, and at the same time will remain in close contact with the said curved edge I^3 . Thus all side or lateral oscillation of the sides I^2 , I^3 of the insert is obviated. There is also no oscillation of the back K^2 of the insert, and consequently any such strain upon the insert is avoided. In cases where, in the manufacture of my insert and groove, the lips K^6 do not abut against the sides of the groove, that feature of the insert which consists of the specially formed back K^2 having corners K^3 , K^3 will yet be of great advantage, as will be obvious. It will be at once obvious that this combination of these peculiarly shaped members thus qualified, also affords other certain marked and valuable advantages. The first of these

advantages is that the insert is securely held in place within the groove without nails, screws or rivets. The corners K^3 , K^3 respectively engage the corresponding portions of the grooves H^2 and H^3 , and as the aperture of the groove at the dotted line W, see Fig. 5, is less than the width of the back K^3 of the insert, the insert and the said corners of the groove and of the insert closely interfit, the insert can neither fall out of the groove nor can it, the insert, sag at all from place. The second of these advantages is that the sides of the insert at and in the neighborhood of the parts K^5 , K^5 , are free to move outwardly, when the tongue D is entered between them. The space between each wall I^3 of the groove and the adjacent wall or part K^5 of the insert is quite sufficient to readily admit the tongue as shown in Fig. 2. The elasticity of the walls K^5 , K^5 of the insert causes these walls to press closely against the tongue, and to keep it in contact therewith.

The curved lips K^6 , K^6 , not only permit the tongue to enter, but form a guideway for the tongue to enter easily and without any possible interruption. This guideway K^6 , K^6 is of advantage when the tongue is on the side of the sash frame and the sash is being put into place, because it does not compel special and unremitting care to see that the tongue enters the insert while the sash is being put into place.

In the majority of instances, I locate a tongue on the window sill and an insert in the bottom of the sash. Insomuch as every time after the sash is lifted, and then lowered, the tongue must enter the insert, it is evident that this elastic guideway of the insert is of primary importance, because it prevents all danger of the window sash not seating itself down upon the sill, and also not completing the sealing of the sill and sash against the ingress of air, dirt and moisture.

It will be obvious from the preceding description that the combination of the groove, with insert, and the tongue for insertion therein, is to be used on the vertical window frames, in connection with the respective adjacent vertical edges of the window sashes. And the said combination is to be used when desired at the sill of the window frame in connection with the bottom of the lower sash, and also to be used when desired at the upper or top frame of the window, in connection with the upper edge of the upper sash. While it is preferable to use the said combination at all of these places on a given window, the use of the said combination may be omitted from certain part or parts of the window and its use confined to another or other parts.

It is further obvious, and I intend to in-

clude it in my invention, that the groove and insert may be located in the window frame, and the tongue be located on the sash, but such location of the groove and insert in the window frame is not as desirable as the location of them in the window sash, because the insert is not so readily located in the groove in the window frame, as it is in a groove in the window sash, because the insert is readily inserted in the end of the groove of the sash, and when inserted a slight detent or projection prevents it from slipping lengthwise in the groove.

Certain obvious modifications of the construction hereinbefore specified, and which modifications, although not the preferred constructions, are advantageous, are as follows:

In Fig. 9, I have shown a construction wherein the insert carries one elastic plate K^5 instead of two. In such a case, the sealing tongue D makes contact with one side of said plate, and also when the curve K^6 of the plate is present causes this curve K^6 to make a close contact with the adjacent curved side I^3 of the groove H.

In Fig. 10, a construction is obtained wherein the enlargement at the back of the main groove is at one side and to a greater depth in the direction of the line of the back than in the other figures. In this groove H with the enlargement H^2 is located an insert whose back is extended at K^3 to one side and interfits the back of said groove H and its said enlargement. Therein this insert is thus held in place. The elastic plates K^5 , K^5 of this construction are competent to receive the sealing tongue between them and to make close contact therewith.

What I claim as new, and of my invention and desire to secure by Letters Patent, is:—

1. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove, having at each of the sides of its back a sub-groove, and an insert having a back and corners at the sides of said back, these corners formed by the folding back of the metal of the insert, fitting the back of the groove and the corners of the insert respectively fitting the said sub-grooves, and there held securely in place, the front of the insert adapted to receive the sealing tongue and make contact therewith, substantially as and for the purposes specified.

2. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove, which latter is provided with recesses or grooves at each side of its back, and whose sides thereafter approach each other, and

near the mouth of the groove curve farther away from each other in curvilinear lines, thus ending the groove, and an insert wide at its back and its sides approaching each other, the extended back and corner of the insert respectively filling the back of the groove and the enlarged ends or sub-grooves, the plates of the insert standing away somewhat from the sides of the groove, and the lower or outer edges of the insert being curved after the manner of the outer corners of the groove and lying in contact therewith, substantially as and for the purposes specified.

3. For a weather strip, the combination of a window sash and a sash frame, and a sealing tongue located upon one member, and an insert whose back is wide, and whose plates from their junction with the back approach each other and terminate in curvilinear lips, extending away from each other, the member opposite the sealing tongue having a groove enlarged at its base or back and thereafter narrowed and adapted to closely receive the enlarged back of the insert in its enlarged base, and hold the insert firmly in position without oscillation, substantially as and for the purposes specified.

4. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove, the sides or edges of the groove being curved outwardly toward the end of the mouth, this groove being provided at its back on each side with a sub-groove or recess, and an insert consisting of a back adapted to fit the back of the main groove and also occupy the said side sub-grooves, two elastic plates of this insert extending away from this back and toward the mouth, and terminating in curved end portions respectively lying close against the said adjacent curved end portions of the mouth of the said groove, the central portions of the sides of the grooves being spaced away from the adjacent central portions of the said plates, substantially as and for the purposes specified.

5. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove, the sides or edges of the groove being curved outwardly toward the end of the mouth, this groove being provided at its back on each side with a sub-groove or recess, and an insert consisting of a back adapted to fit the back of the main groove and also occupy the said side sub-grooves, two elastic plates of this insert extending away from this back and toward the mouth, and terminating in curved end portions respectively lying close against the said adjacent curved end portions of the mouth of the said groove, the

central portions of the sides of the grooves being spaced away from the adjacent central portions of the said plates, the said elastic plates between the back of the insert and their curvilinear ends being parallel, substantially as and for the purposes specified.

6. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove enlarged at its back by additional grooves, and an insert having a back fitted in the back of said groove and the sub-grooves, and having two plates extending from the said back in parallel lines and spaced away from the sides of said groove, the insert being adapted to receive between said plates the sealing tongue and make contact therewith, substantially as and for the purposes specified.

7. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove enlarged at the back, and the sides of which groove near its mouth curve away from each other in curvilinear lines, thus ending the groove, and an insert wide at its back, this extended back interfitting the back of the groove and its enlargement, the insert provided with plates extending from the said back, the outer edge portions of this insert being curved after the manner of the outer corners of the groove, and contacting therewith, substantially as and for the purposes specified.

8. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove enlarged at the back, and an insert wide at its back, this extended back interfitting the back of the groove and its enlargement, the insert provided with plates extending from the said back, said plates adapted to receive the sealing tongue between them, substantially as and for the purposes specified.

9. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove, enlarged at the back, and an insert also enlarged at its back, the enlarged back of the insert interfitting the enlarged back of the groove, the insert provided with an elastic extension extending from the back forwardly and outwardly in the groove and adapted to make contact with the sealing tongue, substantially as and for the purposes specified.

10. For a weather strip, the combination of a window sash and a window frame, a sealing tongue located upon one member, and the opposite member provided with a groove,

enlarged at the back, and an insert also enlarged at its back, the enlarged back of the insert interfitting the enlarged back of the groove, the insert provided with an elastic
5 extension extending from the back forwardly and outwardly in the groove and adapted to make contact with the sealing tongue, the groove curvilinear in shape at its

mouth, and the elastic extension of the insert curved to lie against said curved adjacent side of the groove, substantially as and for the purposes specified.

HENRY HIGGIN.

Attest:

M. LAURA ROBERTS,
GEO. E. RICHARDS.