

H. M. NAUGLE.  
 KNOCKDOWN METAL FORM FOR CONCRETE SIDEWALKS.  
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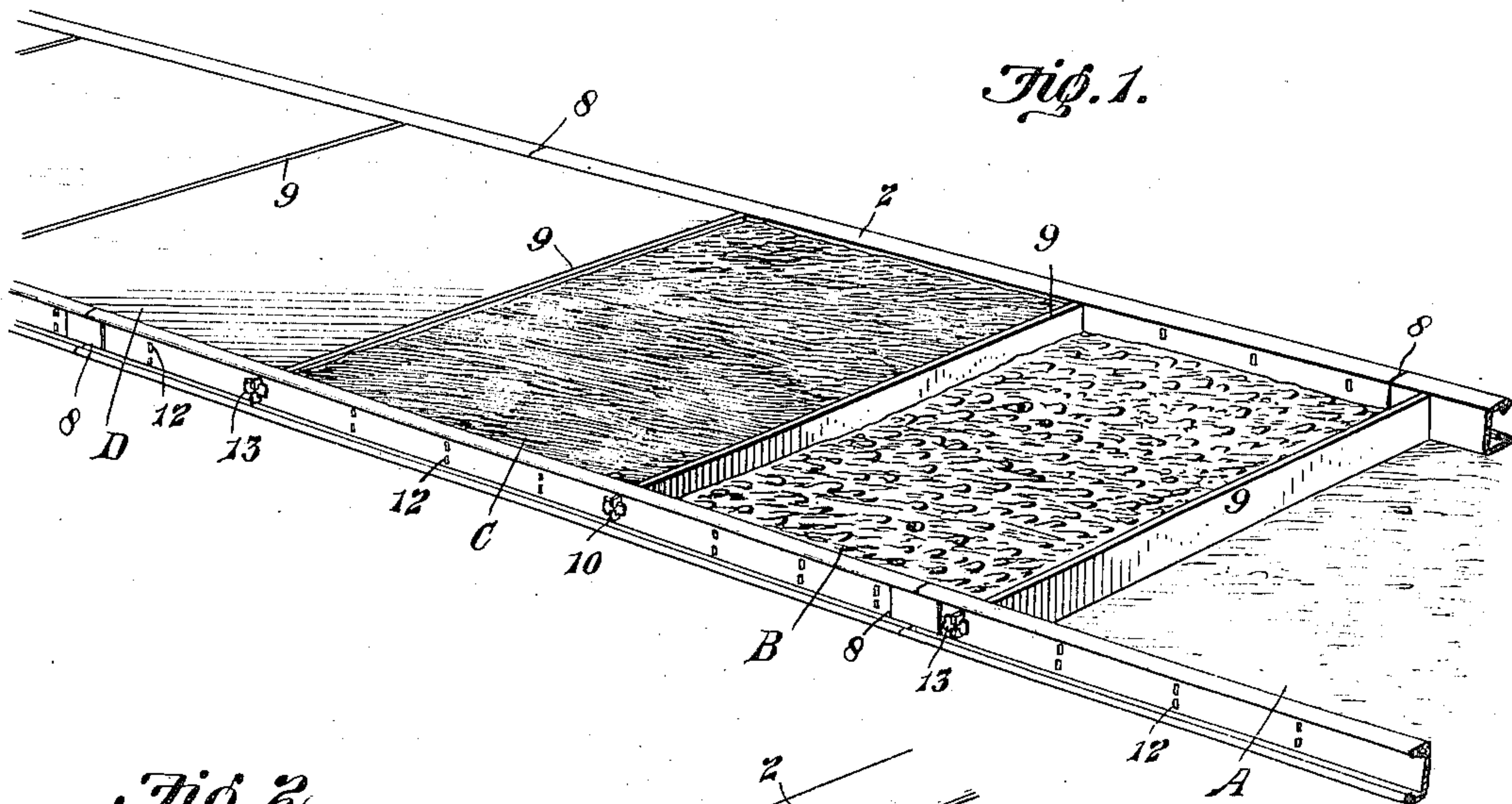


Fig. 2.

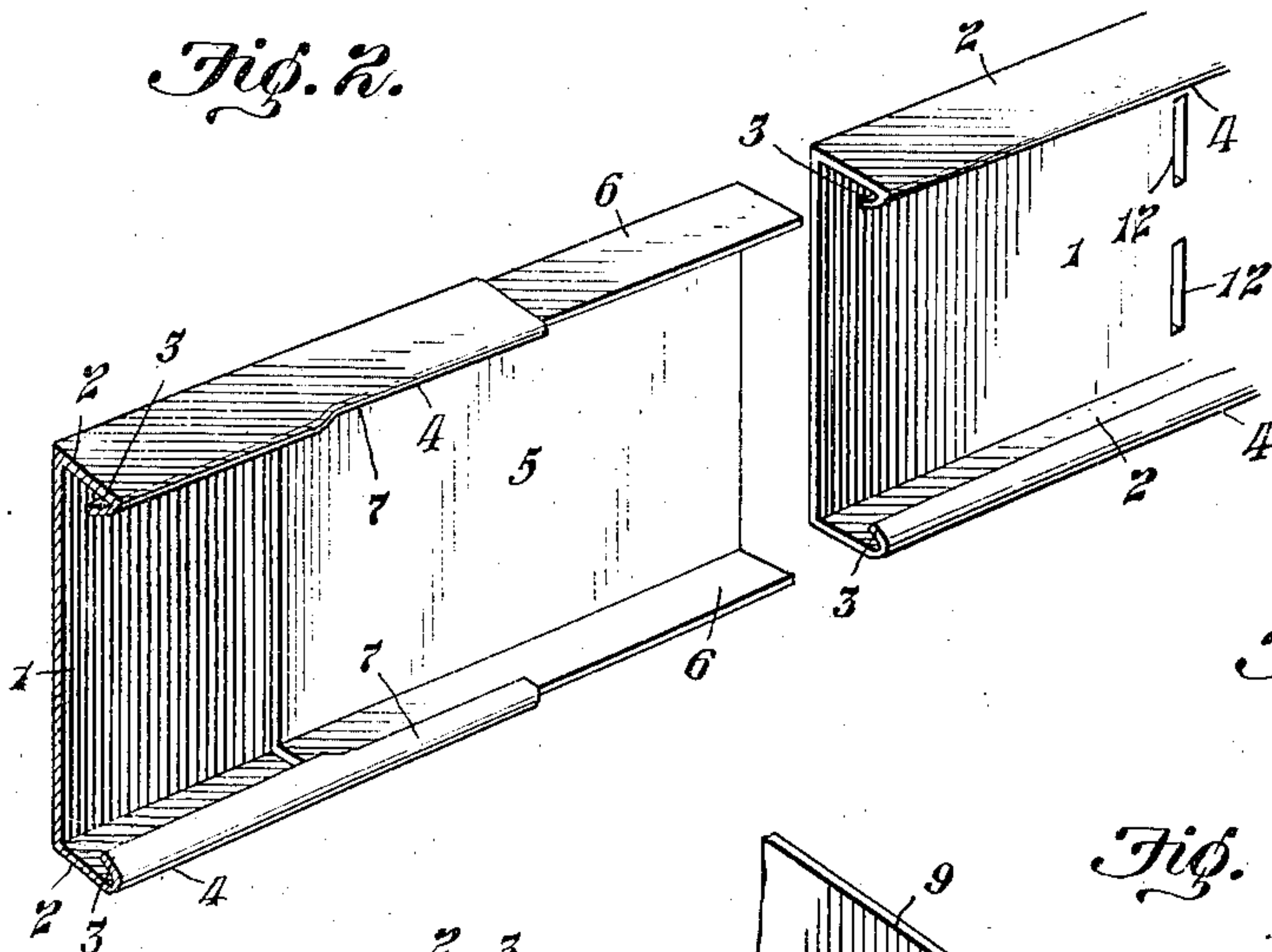


Fig. 5.

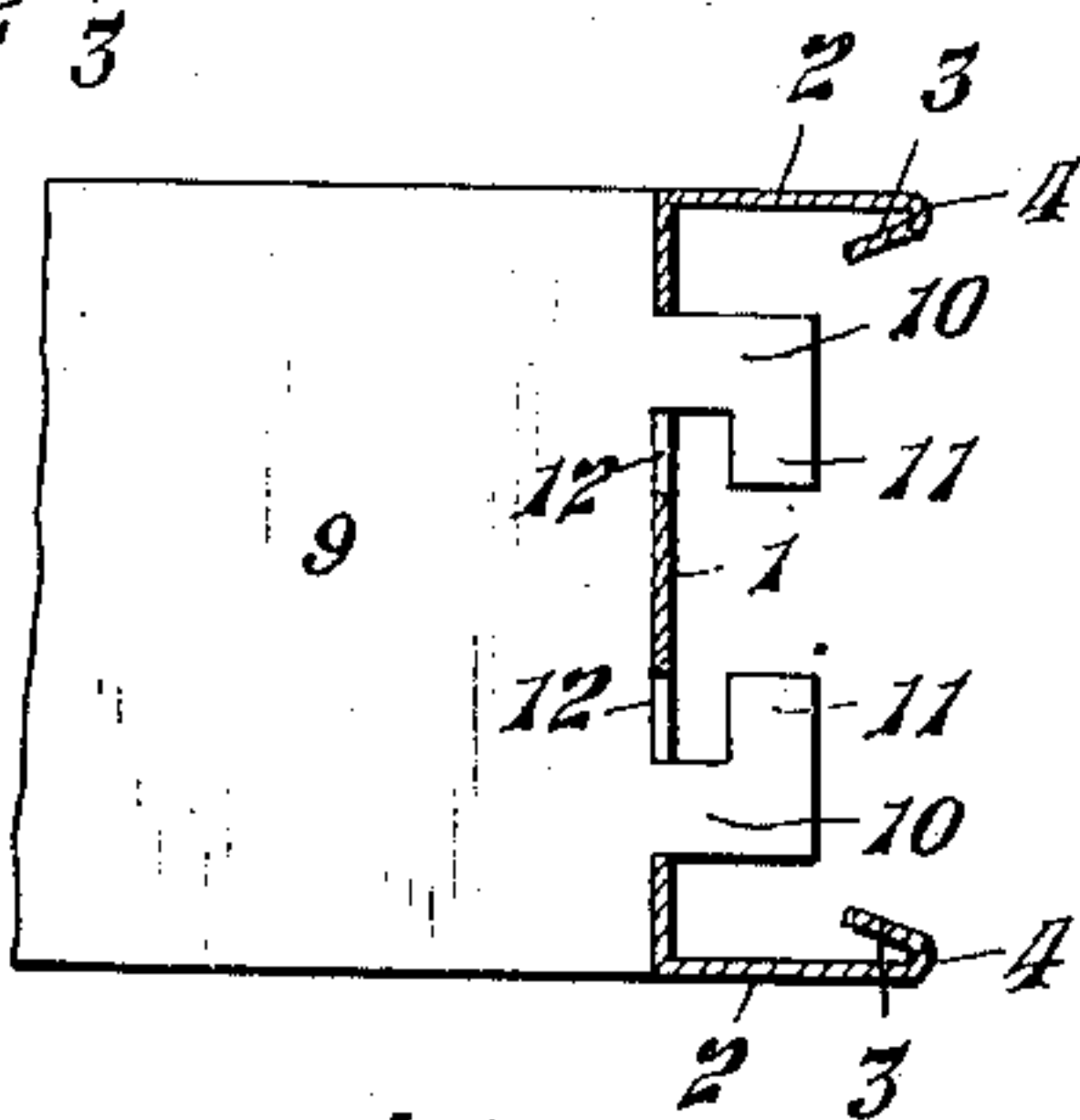
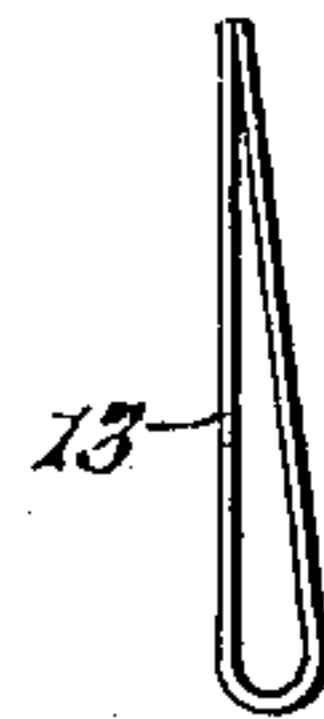


Fig. 3.

Witnesses  
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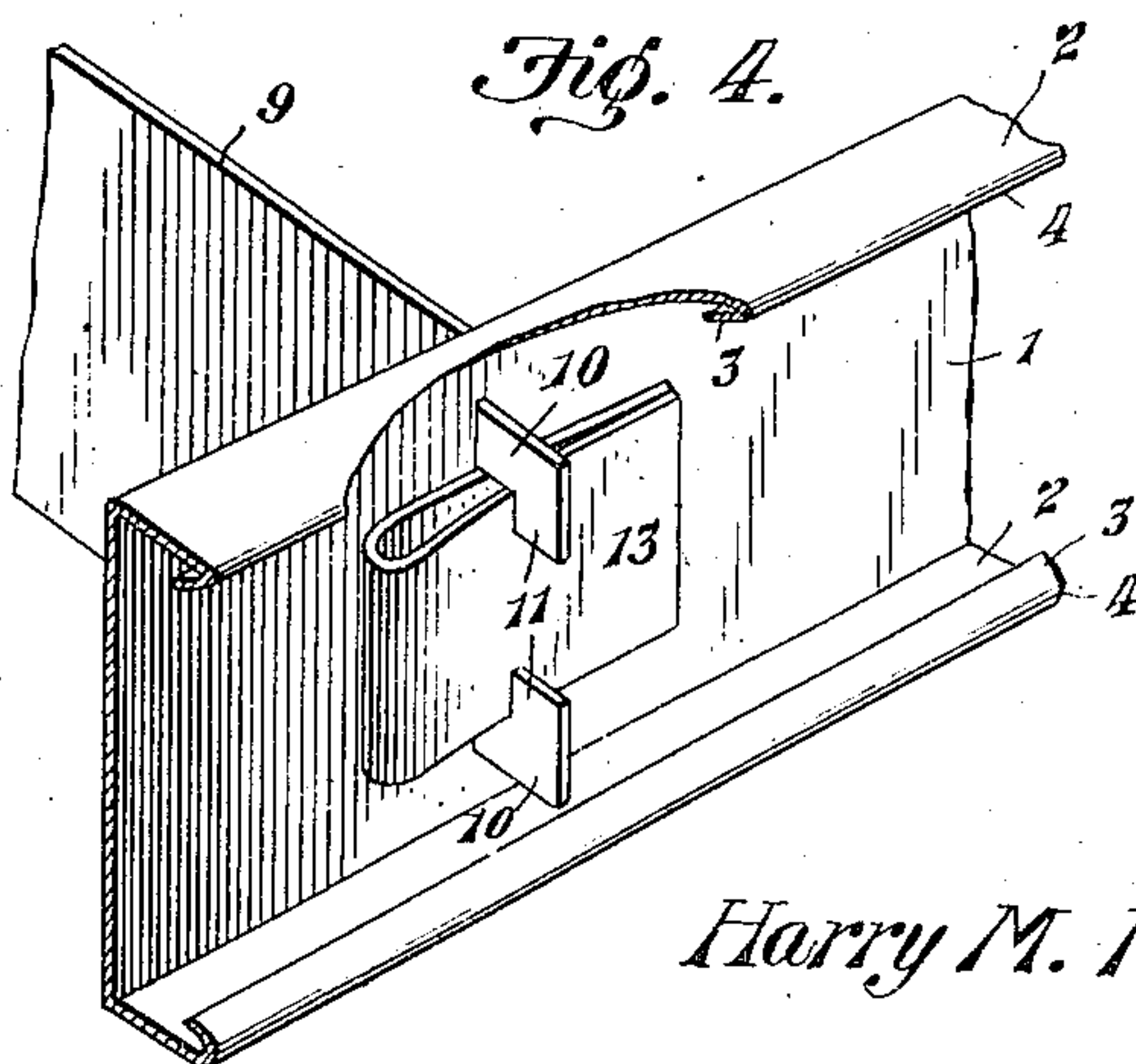


Fig. 4.

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# UNITED STATES PATENT OFFICE.

HARRY M. NAUGLE, OF CANTON, OHIO, ASSIGNOR TO THE BERGER MANUFACTURING COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

KNOCKDOWN METAL FORM FOR CONCRETE SIDEWALKS.

995,630.

Specification of Letters Patent. Patented June 20, 1911.

Application filed May 20, 1910. Serial No. 562,464.

*To all whom it may concern:*

Be it known that I, HARRY M. NAUGLE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Knockdown Metal Form for Concrete Sidewalks, of which the following is a specification.

My invention relates to improvements in knock-down forms used in the construction of concrete sidewalks, to hold the concrete in place until it has sufficiently set so that it will no longer require a form to sustain it, and has special reference to a form of the character mentioned made of metal and having certain peculiarities of construction hereinafter fully described and particularly pointed out in the claims.

Heretofore in the construction of concrete sidewalks it has been customary to employ wooden side pieces arranged end to end along both sides of the walk and held in place by wooden stakes driven into the ground at the outer sides of said side pieces. The difficulty in obtaining suitable wooden pieces in a true, straight and unwarped condition together with the fact that it is difficult to drive said wooden stakes in a true manner has made the method heretofore employed unsatisfactory and the extra labor and cost of lumber because of the injury to the same by driving nails therein, etc., has made even more apparent the necessity of providing a better construction for such sidewalk forms.

Accordingly, the objects of my improvement are to entirely eliminate the use of wood in concrete sidewalk forms, to do away with the necessity of driving stakes to hold such forms in place, to provide a means for holding the side pieces of the form in place while at the same time dividing the concrete into entirely separate and distinct blocks and to provide means for readily connecting the parts comprising said forms for use so that the same may be held firmly in position while at the same time being readily and quickly taken apart when desired. These objects together with other objects readily apparent to those skilled in the art, I attain by the construction illustrated in the accompanying drawing, although my invention may be embodied in other mechanical forms, the construction illustrated being chosen by way of example.

In the drawing, Figure 1 is a perspective view of a knock-down metal form for concrete sidewalks embodying my invention, showing the same in use. Fig. 2 is a perspective view of the meeting ends of longitudinally adjacent side pieces showing the same separated from each other to illustrate more fully the method of connection. Fig. 3 is a fragmentary view partly in section illustrating one end of a division plate and a side piece in proper relative position for use. Fig. 4 is a fragmentary perspective view showing the method of locking the division plates to the side piece. Fig. 5 is an edge view of one of the spring wedges employed in locking the division plates to the side pieces.

Throughout the several views similar reference numerals indicate similar parts.

The side pieces are preferably formed of sheet metal and are provided with the flat web portion 1 and the integral, outwardly extending flanges 2 having short integral return flanges 3 on their inner sides. The relative disposition of the various parts of the side pieces is well illustrated in Fig. 3 and it will be noted that the inner side of the web portion 1 which is adapted to be turned toward the concrete is plain and smooth from edge to edge and that the flanges 2 and 3 will act to greatly strengthen and rigidly support the web portion 1 while at the same time the flanges 2, being provided with the return flanges 3, will present an outward rounding edge 4 instead of a raw cut edge. In addition the flanges 3 assist in fastening longitudinally adjacent side pieces together in the manner now to be described. The side pieces are made in such lengths as may be convenient to handle and use and when in use are arranged in longitudinal series on both sides of the walk as illustrated in Fig. 1. At one end of each side piece a joint plate comprising the web portion 5 and the integral flanges 6 is provided. The web 5 is of such width as to just fit on the outer side of the web portion 1 and between the flanges 2 thereof. The flanges 6 are of such width as to extend from the web 1 on the inner sides of the flanges 2 to the point where the integral return flanges 3 are arranged. One end of the joint plate is arranged with its flanges 6 inside the flanges 2 of a side piece as illustrated in Fig. 2 and the flanges 3 are then



bent down upon the flanges 6, as at 7, to fasten the joint plate to the side piece. If desired other fastening means may be used for the purpose of rendering the fastening more secure, or the electric welding process may be used to advantage in fastening the joint plate to the side piece. The portion of the joint plate extending beyond the end of the side piece forms a reduced channel shaped tongue which may be slidably inserted on the outer side of the web portion 1 and within the flanges 2 and 3 of the end of the longitudinally adjacent side piece, this method of fastening being readily apparent from an inspection of Fig. 2. The side pieces should be moved longitudinally with reference to each other until their ends abut, the joint plate then acting to couple, aline and hold the side pieces at the joint in a firm and true manner. The holding of the ends of the side pieces adjacent the joints in a true and firm manner is of great importance. The joint plates reinforcing the adjacent ends in all their parts, including the web portion, the flanges, and the return flanges insure against any giving at the joints which would tend to weaken the forms or cause unevenness in the finished walk. Joints thus formed in the structure as they appear in use are shown at 8 in Fig. 1. By means of this construction the side pieces may very readily be connected to each other or disconnected when desired. When the side pieces are so connected the inner surfaces of the two joined side pieces will be flush with each other so that there may be no break to interrupt the continuity of the edge surface of the finished walk. It should also be noted that by reason of this construction finishing tools for finishing the edges of the walk may be guided by the upper inner edges of the side pieces without inconvenience which would otherwise be produced by any roughness or break at the joints.

Each division plate 9 is preferably formed of sheet metal and of substantially the same width as the side pieces. The length of the division plates may vary in accordance with the width of walk desired, all division plates for use on any one walk, however, being of the same length. At both ends of each division plate relatively near the lateral edges thereof, spaced, lugged tenons 10 are provided, the lugs 11 on said tenons extending toward each other as illustrated in Fig. 3.

In the web portion 1 of the side pieces are arranged, at uniform distances from each other, paired slots 12, the two slots in each pair being vertically alined and arranged relatively near the flanges on the lateral edges of said side pieces and each slot being of sufficient width and length to permit the passage therethrough of one of the lugged tenons 10. The slots being vertically alined,

the division plates will be held in a true vertical position when in use.

In assembling the form the side pieces are joined together and the division plates are then arranged at uniform distances from each other with the lugged tenons extending through the appropriate paired slots, as illustrated in Fig. 1. For the purpose of locking the division plates to the side pieces the spring wedges 13 are provided. Each wedge consists of a plate of metal bent upon itself, with its sides adjacent the bend spaced from each other and the ends of the plate brought together to form the thin end of the wedge, as illustrated in Fig. 5. The width of each wedge is such as to permit it to be inserted between the tenons 10 where they extend through the side pieces. The thin end of the wedge is inserted and the wedge then driven up tightly, the lugs 11 of the tenons bearing against the outer side of the wedge and the inner side of the wedge bearing flat against the web 1. As the wedge is driven firmly into place the outer side thereof will spring slightly inwardly, as illustrated in Fig. 4, thus locking the division plates to the side pieces in a firm, yet readily removable manner. Particular attention should be called to the fact that the wedge being of some considerable width and bearing flat against the web 1 will support and hold the said web in a true and straight position and will distribute the strain at the locking point over a considerable surface of the said web. It should be also noted that by reason of the fact that the tenons 10 are located relatively near the lateral edges of the side pieces the edges of said side pieces where the flanges 2 are located will be held properly in alinement and in proper engagement with the division plates so that there may be no crowding out of the side pieces at their edges by reason of the pressure of the concrete against them. My invented construction in this regard is of peculiar importance as the side pieces and division plates are at all times held in true and proper relation with each other, insuring a first class concrete walk in so far as a true and satisfactory form can make it so.

In Fig. 1 several divisions or blocks of the walk are illustrated. In division A no concrete has been placed, the surface of the walk foundation or earth being visible, and the form shown as lying upon said earth without being fastened to stakes as has been heretofore thought necessary. In division B the coarse lower stratum of concrete has been arranged while in division C the upper portion of the block has been filled in with finer concrete and in division D is shown the finished upper surface. The forms are allowed to stand undisturbed until the concrete has sufficiently set so that they may be safely removed. The wedges 13 are then



loosened and removed, thus permitting the side pieces to be taken away. The division plates are then carefully removed, thus leaving the concrete in entirely separate, distinct and disconnected blocks or divisions as is well known to be desirable.

It will be understood that the top edges of the division plates as well as the top edges of the side pieces are of great assistance in leveling up, striking off and finishing the upper surface of the walk.

I claim:

1. In a device of the character described a side piece and a division plate adapted to be locked to each other by a wedge, and a spring wedge for connecting said piece and plate, said wedge formed of a plate of metal bent upon itself with its sides spaced from each other adjacent the bend and the free ends lying close together to form the thin end of the wedge.

2. A device of the character described comprising, side pieces having web portions and integral, outwardly extending flanges with short integral return flanges on their inner sides, a joint plate attached to one end of each side piece, said plate comprising a web portion and flange portions and adapted to slidably enter between the web portion and flanges of a longitudinally adjacent side piece, division plates, both ends of each division plate having spaced, lugged tenons, the lugs extending toward each other, the web portions of said side pieces provided with paired slots adapted to receive the said lugged tenons, and spring wedges adapted to be inserted between said tenons, to engage the lugs thereof.

3. A device of the character described comprising, side pieces provided with web

portions and integral, outwardly extending flanges having short integral return flanges on their inner sides, each side piece provided with paired slots in the web portion thereof and a joint plate forming a channel shaped tongue attached to one end, said tongue adapted to slidably enter between the web and flange portions of a longitudinally adjacent side piece to couple and align said pieces, division plates, provided with spaced, lugged tenons, the lugs extending toward each other and said tenons adapted to pass through the paired slots in the side pieces and wedges formed of a plate of metal bent upon itself, with its sides spaced from each other adjacent the bend and the ends lying close together to form the thin end of the wedge, said wedges adapted to be inserted between said tenons after they have passed through said slots, to engage the lugs thereof and to lie flat against the web portions of said side pieces.

4. A device of the character described comprising a side piece provided with paired apertures vertically disposed and relatively near the lateral edges of said side piece, a division plate provided with spaced tenons adapted to project through said apertures and a single spring element constituting means removably engaging both of said tenons and the outer side of said side piece from aperture to aperture for locking said side piece and division plate together.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

HARRY M. NAUGLE.

Witnesses:

JOHN H. SPONSELLER,  
F. W. BOND.