April 24, 1928.

1,667,313

P. GALASSI

FLOOR LAYING DEVICE

Filed May 19, 1927

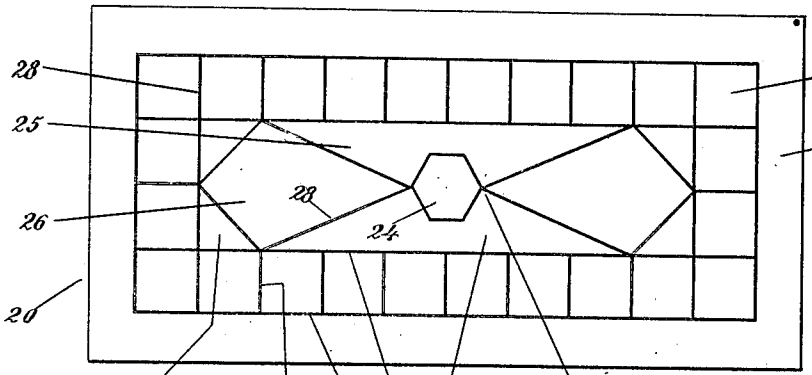


Fig. 1

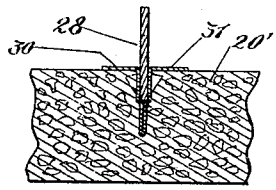


Fig. 3

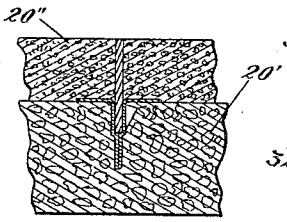


Fig. 4

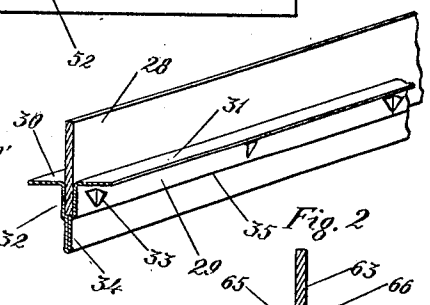


Fig. 2

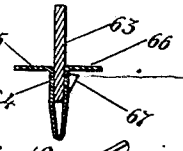


Fig. 12

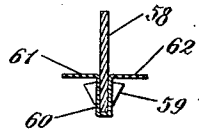


Fig. 11

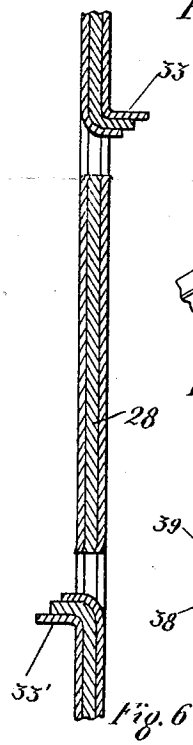


Fig. 6

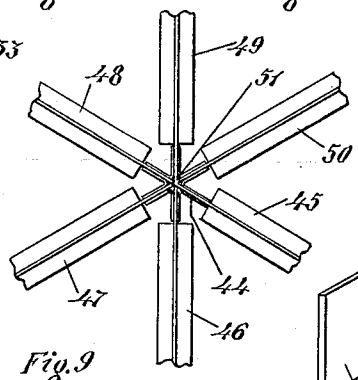


Fig. 9

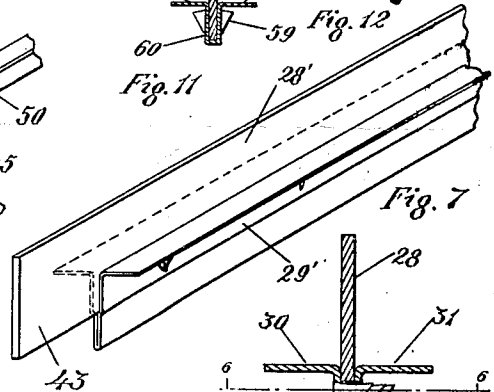


Fig. 7

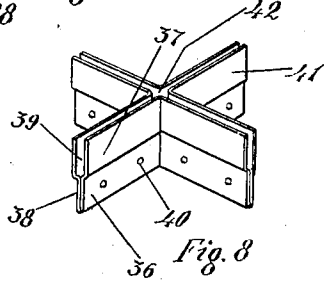


Fig. 8

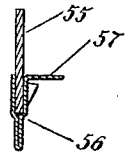


Fig. 10

Fig. 5

Inventor

Pasquale Galassi

By his Attorney

Guido M Lacidote

Patented Apr. 24, 1928. 1,667,313

UNITED STATES PATENT OFFICE.

PASQUALE GALASSI, OF NEW YORK, N. Y.

FLOOR-LAYING DEVICE.

Application filed May 19, 1927. Serial No. 192,661.

This invention relates to improvements in the construction of floors made of plastic material such as terrazzo, granolithic and stucco, and more particularly the invention refers to a novel and improved type of strip suitable for use in laying floors of the character specified for the purpose of producing various designs, at the same time preventing or localizing cracking of the floor.

Terrazzo, granolithic and similar floors where various combinations of design may be produced, usually comprise a lower bed or layer of concrete, cement, mortar or other suitable material which is spread in semi-liquid form of the proper consistency on the floor foundation, and an upper or finishing layer of better grade material, generally consisting of a mixture of marble chips and cement, by means of which a good durable surface may be obtained as well as pleasing design and color effects of a practically unlimited variety.

The upper layer is placed in position after the bed portion has been allowed to harden to a sufficient degree of consistency; said upper layer being generally divided into geometrical or ornamental units, obtained by outlining the desired design by means of wooden strips placed on the under bed or attached thereto.

These wooden strips are removed after the floor panels divided thereby are set and then the interstices or empty spaces remaining are filled, in order to complete the floor surface.

Owing to difficulties experienced in laying and removing these wooden strips, and especially owing to the fact that monolithic floors having a large surface obtained in this manner are frequently subject to cracking due to changes in temperature or due to stresses induced by the setting and drying of the material, it has become customary during recent years to define the design of the floor by means of thin metal strips set on edge, projecting from the surface of the under bed through the entire thickness of the upper layer, their upper edge being on the level with the surface of the floor when finished. These strips are permanently left in position, and become an integral part of the floor, so that the floor is effectively separated into a number of small units which are infinitely less liable to crack than a large unit and which, if they do, are easily replaced.

The strips used for this purpose, should be made of relatively soft metal, the wearing qualities of which should be approximately the same as those of the finished floor surface. In practice, I prefer to use brass strips because this metal just about answers this requirement and in addition it confers a rich and ornamental appearance to the floor.

Owing to the expensive nature of this metal however, it is desirable to economize in the quantities used, in order to keep the cost of the floor within reasonable limits; on the other hand, if the strips have to efficiently fulfill their function, they have to possess sufficient rigidity to prevent their becoming flexed or deformed while the floor is being laid.

It is also necessary for the strips to be laid in such a manner as to insure their perfect vertical alignment and also, of course, their alignment defining the design of the floor.

The strips should also be so designed that they can be laid in position with a minimum amount of labor and time for the sake of efficiency and low cost of production.

Metal strips of various designs have heretofore been used for the purpose mentioned, but it has been my experience that strips found on the market generally lack the necessary rigidity unless they are made out of heavy gauge metal entailing a correspondingly high cost. I have also found that great care is generally required in laying these strips in order to produce a perfect design and in order to insure the vertical alignment of the strips.

The primary object of this invention is to provide a type of strip suitable for the purpose specified, the construction of which is such as to automatically insure perfect vertical alignment of the strip, at the same time conferring relatively great rigidity of the strip without entailing excessive cost.

Another object is to provide a strip adapted for laying of floors of the character specified, affording convenient means for handling the strip when it is being laid, permitting its being placed in the correct position with a minimum expenditure of time and labor.

A further object is to provide a device of the character specified, of a relatively simple and inexpensive construction, provided with means for securely anchoring the strip to the floor bed.

A still further object is to provide a type

of strip for laying floors of the character specified which is well adapted for use in connection with aligning sockets arranged at the junction points of strips defining various floor panels, insuring their correct alignment, such as described and claimed in a patent entitled "Floor and method and apparatus for laying same", Serial No. 1,377,675, granted to me May 10, 1921.

Other objects and advantages of the present invention will more fully appear as the description proceeds and will be set forth and claimed in the appended claims.

My invention will be more readily understood by referring to the accompanying drawings, in which:

Fig. 1 is a plan of a floor illustrating the manner in which the strips are used;

Fig. 2 is a fragmentary view in perspective partly sectioned of the preferred construction of strip forming the object of this invention;

Fig. 3 is a vertical cross section showing the layer of concrete or other material forming the under bed of the floor with one of the strips laid in position;

Fig. 4 is a view similar to Fig. 3, showing the floor after completion;

Fig. 5 is a sectional view of the strip in an enlarged scale showing one of the ways of securely locking together the two elements of which the strip is composed at the same time providing anchoring means therefor;

Fig. 6 is a plan sectional view of the same through line 6—6 of Fig. 5;

Fig. 7 is a fragmentary view in perspective of the end of a strip especially designed for use in connection with junction sockets of the type described and claimed in my other patent above referred to;

Fig. 8 is a view in perspective illustrating one form of socket which may be used in connection with the strip illustrated in Fig. 7;

Fig. 9 is a fragmentary plan view of a six strip junction point illustrating the manner of inserting the ends of the strips into the junction socket;

Fig. 10 is a cross sectional view of a strip of a somewhat modified construction;

Fig. 11 is a cross sectional view illustrating another possible modification in the construction of a strip still included within the scope of my invention; and

Fig. 12 is a cross sectional view of still another strip of a somewhat modified construction.

In Fig. 1, 20 designates a floor comprising a border 21, an inner rectangular row of square panels 22, and a central portion 23 composed of a number of panels of various forms, 24, 25, 26, 27, said panels being divided from the border and from one another by a plurality of strips 28, defining the design of the floor. The design shown is, of course, intended only to illustrate the possibility of producing a great variety of design combinations afforded by the use of the strips.

The strip units are composed of a strip member proper 28, and a supporting member 29 therefor, extending for the entire length of the strip member or to points adjacent the ends thereof, according to the system of floor laying which may be adopted.

The supporting member is a sheath or channel made of relatively light gauge metal into which the lower edge of the strip member is inserted and retained, said sheath or channel being provided with one or two laterally extending flanges which serve as supporting and vertically aligning means for the strip unit.

According to the design shown in Figs. 2 to 7, the supporting member is obtained by folding a strip of metal of suitable length and width along its longitudinal middle line to form a U channel and then by bending sideways the two edge portions of said U shape, forming two longitudinal side flanges 30, 31.

The lower edge of the strip member is then inserted through the upper portion of the slot, separating the two legs of the U shape and the two elements are then preferably joined together by partially punching and forcing out laterally, burrs or lugs of the three adjoining thicknesses of metal, forming spaced prong members 33, laterally projecting from the channel portion of the supporting member.

These prongs may all be bent to one side or else they may be bent in alternate directions as shown in Fig. 6, where 33 designate the prongs bent to the right and 33′ those bent to the left of the strip unit.

The lower part of the U portion of the supporting member is preferably pressed so as to bring its two sides against each other forming a rib member such as shown at 34 and providing a solid support for the lower edge of the strip member by causing a supporting surface to be formed under the lower edge of the strip member by portions of the sides inwardly bent at 35 to form the rib member 34.

By virtue of this construction, the two elements of which the strip is composed are permanently and securely connected to each other to form a single unit adapted to be conveniently handled and placed in position with a minimum expenditure of time and labor.

When a floor is laid, the bed 20′ is prepared in the usual way by spreading concrete or a mixture of Portland cement and sand, or mortar, or other suitable material over the floor foundation, said bed being brought up to a level, one-half inch to three-

quarters of an inch of the finished surface. In other words, the upper layer is usually from one-half to three-quarters of an inch thick, although it can be made thinner or thicker if desired, according to conditions.

After the preparation of the bed, the strips are laid in position to outline the desired design, while the bed is still soft, and in order to do this all that is necessary is to hold the strip units composing the design by the portion of the strip member upwardly projecting from the supporting member and then to force the rib and channel members of the supporting member through the floor bed until the flanges rest on the upper surface of said bed. This automatically insures a correct vertical alignment of the strip member, eliminating the necessity of exerting the extreme care in laying which is required by other types of strips.

The laterally extending prongs 33, 33', provide very effective anchoring means for the strip units, becoming embedded in the concrete or other material of which the bed is composed, which is automatically forced all around the prongs when it is pressed down by the flanges 30, 31 coming in contact therewith.

After the outlining operation has been completed, the wearing surface 20'' may be immediately laid, although it is frequently found preferable to allow the bed to set over night, or for twenty four hours before the wearing surface is laid.

The entire surface can be laid at one time without waiting for certain sections to be set before others are laid, any mixing of the differently colored panels being avoided by the strips 28.

It is obvious that by virtue of the construction described, I provide a strip unit having great rigidity and strength, which can be laid at a single operation and which automatically insures correct vertical alignment of the strips and a firm anchorage. The strip unit thus obtained also represents a notable advantage from the standpoint of economy, because while the strip member 28 may be made of brass, the supporting member is preferably made of zinc or other suitable relatively inexpensive material.

For instance, I have found that sheet iron is also well suited for this purpose, because iron is well preserved by cement and also because an intimate contact between the two materials will be established under existing conditions, as evidenced by ordinary reinforced concrete practice.

As stated before, the strip members are preferably made of brass, of any desired thickness, the supporting members therefor being formed accordingly to receive the thickness of the metal employed. By securely joining the strip member and the supporting member, the rigidity of the system is greatly enhanced and the possibility of using relatively light gauge materials for a given length of strip is also afforded.

Although, due to the frictional resistance engendered by the surface of the supporting member in contact with the concrete or other material, and especially the resistance offered by the prongs or other anchoring means used, a strip will usually remain placed in the position in which it was originally set, yet the work of placing the strips in their correct relative position in order to produce the outline of a given design is greatly facilitated by the use of socket members at the junction point, such as described and claimed in my other patent above referred to.

These sockets are substantially in the shape of connecting members having several branches extending from a common junction point in the direction of the strips converging to said point, each branch being formed with a slotted housing having two parallel walls between which the end of a strip may be inserted and retained.

One possible manner of construction of these sockets is illustrated in Fig. 8, representing a cross shaped socket. The elements out of which sockets of various designs may be produced are lengths of strips longitudinally embossed to form a half rib portion 36 and a half housing portion 37 offset therefrom, a distance equivalent to half the thickness of the strip to be received by each branch of the socket.

In other words, if two portions of a strip thus embossed are joined side by side with their rib portions abutting, the two half rib portions will form the rib member 28 and the two half housing portions will form a housing 39, the width of which is equivalent to the thickness of the metal strip to be inserted therethrough.

By taking pieces of embossed strip of a length equivalent to twice the length of each branch of the socket to be produced, and bending them midway of their length at angles corresponding to the angular distance between adjoining branches of the same socket, it is possible to put them together to form a completed socket, the various parts being held together by rivets such as shown at 40, connecting adjoining half rib portions of said members, or by any other suitable means.

For instance, the cross shaped socket shown in Fig. 8 is composed of four members 41, each bent at right angle and put together with their apexes converging towards a central or joining point 42. By virtue of this arrangement, the half rib portion of one member abuts against the half rib portion of an adjoining member and the four members can be connected together by means of the rivets 40, as shown, the result

being the completed socket with four branches directed at right angle to one another.

A socket thus obtained can be made so that the width of its slotted portions is sufficient to receive the width of the rib portion 34 of the supporting member 29, or else it may be made so as to receive the width of the strip member 28. In the type of strip shown the thickness of rib portion 34 is practically equivalent to the thickness of the strip member 28, so that a socket member which will fit the one will also fit the other.

When the socket member is used, in connection with the rib portion 34, the rib portion 38 of the socket member will remain underneath the rib portion 34 of the strip, and therefore the socket members will be embedded in the concrete bed to a greater depth than the strips. When the depth of the floor bed is comparatively limited, it may be desirable to have the socket members embedded therethrough, at about the same depth as the strips themselves and no more, and in this case, the unitary strips may be produced with the strip member 28′ longer than the supporting member 29′, strip member 28′ projecting beyond the supporting member 29′ at both ends as shown at 43.

This may either be done when the strip is produced originally of the proper length as required by the relative position occupied by the strip in producing the outline of the design of the floor, or else the elementary strips may be cut off a suitable length and then the end portions of the supporting member may be cut and detached from the main body thereof, allowing the ends of the strip member to project outwardly as shown in Fig. 7.

In Fig. 9, I illustrate the resulting structure when a six branch socket 44 is used to connect six strips 45, 46, 47, 48, 49, 50, converging towards the central point 51. This structure is obtained by using strip units having the ends of their strip members projecting beyond the ends of their supporting members, the ends of their strip members being inserted in the branches of the socket.

This arrangement has the added advantage that the laterally extending flanges of the supporting members do not overlap one another, due to the distance separating them from the central point 51, so that a perfect leveling of the various strips is assured.

The use of the sockets is of especial advantage in the production of designs where the strips are not in alignment with one another, for instance, in such a junction arrangement as shown at 52, in Fig. 1. The sockets can also be used in square or rectangular checkered designs if desired, but in such cases, it is also easier to lay long lengths of longitudinal parallel strips such as shown at 53, 54, extending for the entire length or width of the floor and then to lay transverse strips 55 between adjoining longitudinal strips without the necessity of using sockets, if desired.

While the supporting member of the strip previously described is formed with two lateral flanges, it is also possible to obtain satisfactory results if only one flange is employed as shown in Fig. 10, where 55 designates the strip member and 56 the supporting member therefor provided with a single laterally extending flange 57.

This arrangement is also advantageous for some special purposes, like for instance, the laying of strips all around the floor separating the floor from the surrounding walls.

In this case, the side of the strip which is without flange is laid against the wall and the flanged side faces the inside of the room. It is also possible to simplify the construction of the device in other directions, for instance, the supporting member may simply be made in the form of a U housing with one or two laterally extending flanges without the rib portion 34 shown in the previous drawings, as evidenced by the arrangement illustrated in Fig. 11, where 58 is the strip member having its lower edge 59 resting on the bottom of the U housing or channel formed by the supporting member 60 which is provided like in the previous cases with one or two laterally extending flanges 61, 62.

This construction is especially desirable when an extremely thin floor bed is available. Another possible modification is illustrated in Fig. 12, where 63 designates the strip member and 64 the supporting member which is bent in V shape instead of U shape and is provided with one or two laterally extending flanges 65, 66. In order to produce the completed devices the sides of the V shape are spread apart sufficiently to receive the lower edge of the strip member between the upper portion of their legs and the two elements are connected together by punching or bending prongs 67 through the three adjoining thicknesses of metal, or in any other suitable manner as explained before.

From the foregoing, it will be observed that I produce a floor strip composed of two elements, intimately connected to each other so as to form a single unit having great rigidity and strength, and having the property of automatically producing correct vertical alignment of the strip members. The two elements of which the strip is composed are preferably formed of two different metals, one being employed for the sake of appearance and the other one being employed for the sake of economy; and furthermore, the completed unit results formed with an upwardly projecting rib member, constituted by the upper portion of the strip member affording a very convenient means for holding and handling the strip while it is being

laid, this feature facilitating the laying of the strip in position to a remarkable degree.

Various constructional details of my invention may be varied to a considerable extent without departing from the inventive idea: therefore, the drawings will be understood as being intended for illustrative purposes and not in a limiting sense.

Accordingly, I reserve myself the right to carry my invention into practice in any way or manner which may enter fairly into the scope of the appended claims.

I claim:

1. A dividing strip for terrazzo and similar floors comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, permanently connected thereto, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending from said rib member adapted to rest on top of said bed, said rib member being formed with a channel portion adapted to receive the lower edge of said strip member and a rib portion downwardly extending from said channel portion.

2. A dividing strip for terrazzo and similar floors, comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending therefrom, adapted to rest on top of said bed, said rib member being adapted to receive the lower edge of said strip member and being permanently connected thereto, by forcing outwardly portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip.

3. A dividing strip for terrazzo and similar floors, comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending therefrom, adapted to rest on top of said bed, said rib member being adapted to receive the lower edge of said strip member and being permanently connected thereto, by forcing outwardly portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip, said outwardly forced portions forming laterally extending prongs adapted to anchor said strip into said bed.

4. A dividing strip for terrazzo and similar floors comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending from said rib member adapted to rest on top of said bed, said rib member being formed with a channel portion adapted to receive the lower edge of said strip member and a rib portion downwardly extending from said channel portion, said strip member being permanently connected to said rib member by forcing outwardly, portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip.

5. A dividing strip for terrazzo and similar floors comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending from said rib member adapted to rest on top of said bed, said rib member being formed with a channel portion adapted to receive the lower edge of said strip member and a rib portion downwardly extending from said channel portion, said strip member being permanently connected to said rib member by forcing outwardly, portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip, said outwardly forced portions forming laterally extending prongs adapted to anchor said strip into said bed.

6. A dividing strip for terrazzo and similar floors comprising a strip member adapted to terminate on a level and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed and a flange laterally extending from said rib member adapted to rest on top of said bed, said rib member being formed with a channel portion adapted to receive the lower edge of said strip member and a rib portion downwardly extending from said channel portion, said strip member being permanently connected to said rib member by forcing outwardly, portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip, said outwardly forced portions forming laterally extending prongs adapted to anchor said strip into said bed.

7. In a device for laying terrazzo and similar floors, the combination of a plurality of dividing strips, each comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, permanently connected thereto, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending from said rib member adapted to rest on top of said bed, said rib member being adapted to receive the lower edge of said strip member, said strip member having its ends projecting beyond the ends of said supporting member, and socket members in-

terlocking with and connecting the projecting ends of said strip members at their junction points.

8. A dividing strip for terrazzo and similar floors comprising a strip member adapted to terminate on a level and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed and a flange at each side thereof, laterally extending from said rib member adapted to rest on top of said bed, said rib member being formed with a channel portion adapted to receive the lower edge of said strip member and a rib portion downwardly extending from said channel portion, said strip member being permanently connected to said rib member by forcing outwardly, portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip, said outwardly forced portions forming laterally extending prongs adapted to anchor said strip into said bed.

9. In a device for laying terrazzo and similar floors, the combination of a plurality of dividing strips, each comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending therefrom, adapted to rest on top of said bed, said rib member being adapted to receive the lower edge of said strip member and being permanently connected thereto, by forcing outwardly, portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip, said outwardly forced portions forming laterally extending prongs adapted to anchor said strip into said bed, said strip member having its ends projecting beyond the ends of said supporting member, and socket members interlocking with and connecting the projecting ends of said strip members at their junction points.

10. In a device for laying terrazzo and similar floors, the combination of a plurality of dividing strips, each comprising a strip member adapted to terminate on a level with and to divide the upper layer of the floor, and a supporting member therefor, comprising a rib member adapted to be inserted into the floor bed, and supporting means laterally extending therefrom, adapted to rest on top of said bed, said rib member being formed with a channel portion adapted to receive the lower edge of said strip member and a rib portion downwardly extending from said channel portion, said strip member being permanently connected to said rib member by forcing outwardly, portions of the adjoining metal surfaces of said two members at spaced intervals along the length of said strip, said outwardly forced portions forming laterally extending prongs adapted to anchor said strip into said bed, said strip member having its ends projecting beyond the ends of said supporting member, and socket members interlocking with and connecting the projecting ends of said strip members at their junction points.

PASQUALE GALASSI.