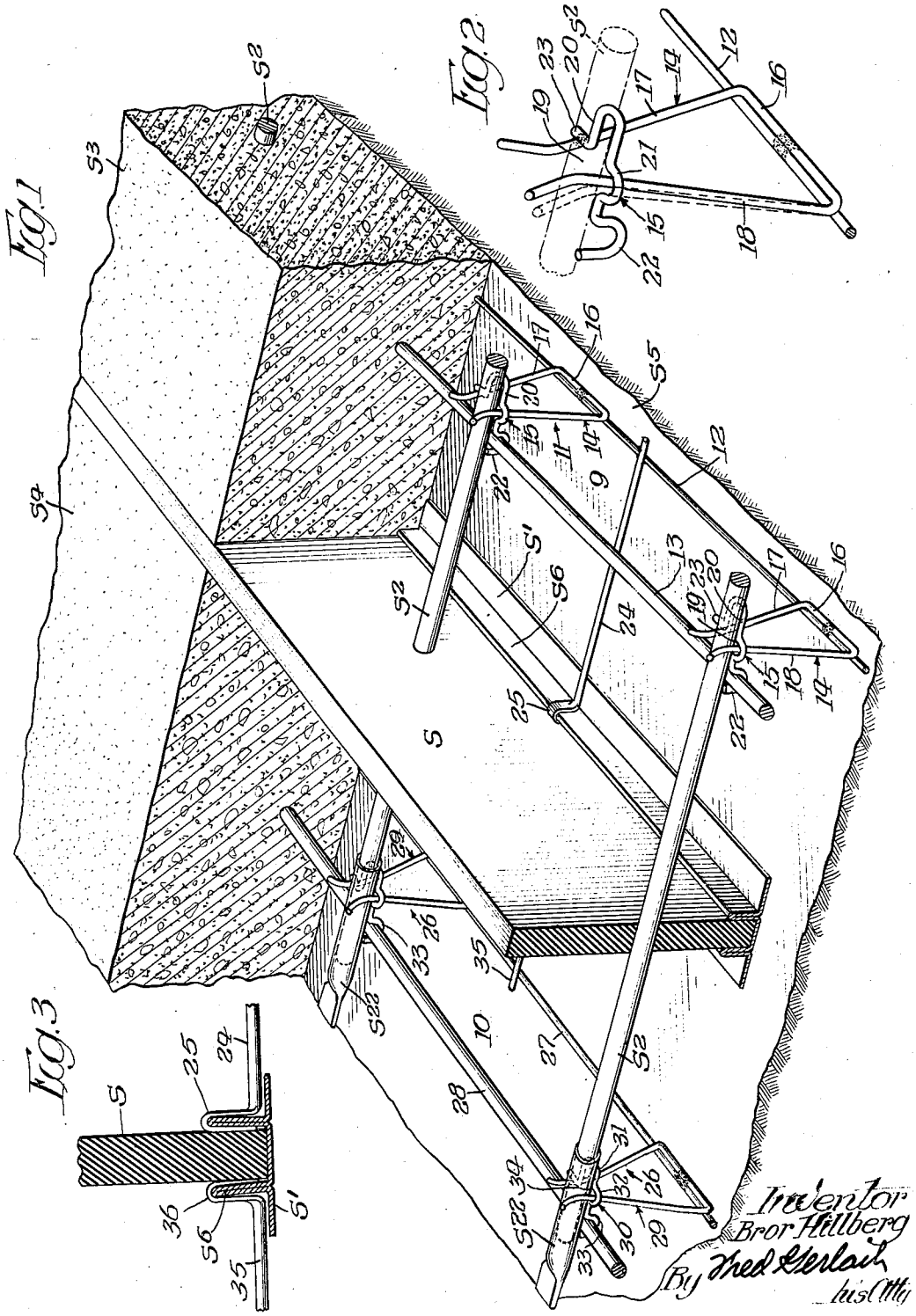
July 28, 1942. B. HILLBERG 2,291,157

COMBINED BAR SUPPORT AND SPACER

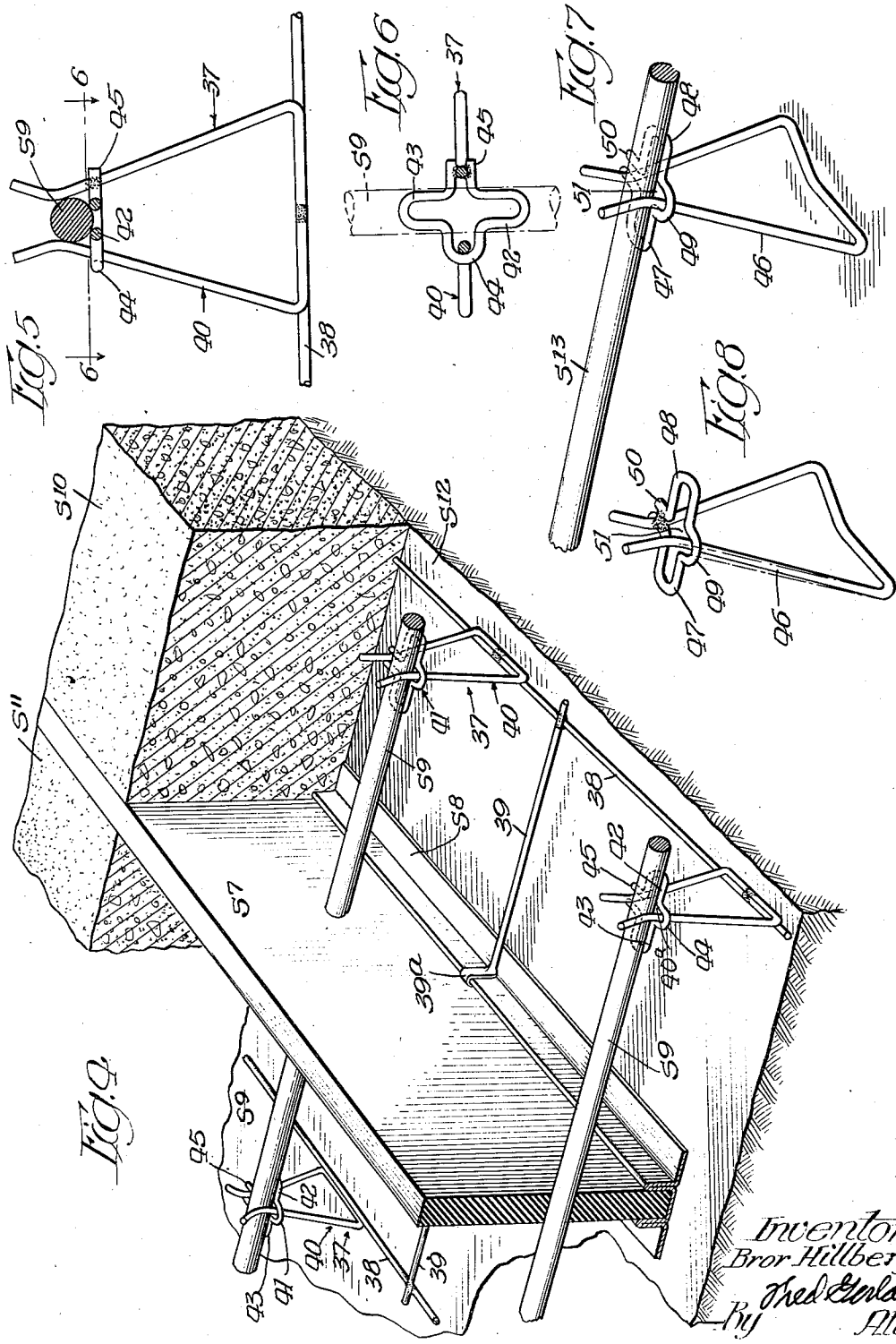
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July 28, 1942. B. HILLBERG 2,291,157

COMBINED BAR SUPPORT AND SPACER

Filed July 3, 1939 2 Sheets-Sheet 2



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COMBINED BAR SUPPORT AND SPACER

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Application July 3, 1939, Serial No. 282,586

10 Claims. (Cl. 94—8)

The present invention relates generally to combined supports and spacers for bars. More particularly, the invention relates to that type of combined support and spacer which is adapted for use in connection with the formation of a concrete structure and comprises a series of upstanding wire-formed chairs which are secured to and spaced equidistantly along a horizontally extending, transversely disposed spacer rod, have pockets at their upper ends for receiving a series of parallel horizontally extending longitudinally disposed bars such as dowel or reinforcing bars, and are designed to support above the spacer rod and adjacent to the pockets a horizontally extending, transversely disposed rod for maintaining or holding the bars in horizontal alignment.

One object of the invention is to provide a combined bar support and spacer of this type which is an improvement upon and has certain advantages over previously designed combined bar supports and spacers, including that which is shown in and forms the subject matter of United States Letters Patent No. 2,154,748 granted to me April 18, 1939.

Another object of the invention is to provide a combined support and spacer of the type under consideration in which the wire-formed chairs for supporting the bars in elevated position with respect to the spacer rod comprise U-shaped members the side pieces of which extend upwardly and inwardly and have the upper extremities thereof bent outwardly to form or define the bar receiving pockets, and also comprise horizontally extending cross-members which are positioned beneath the bent portion of the upper extremities of the side pieces of the U-shaped members and form seats at the bottom of the pockets for the bars.

Another object of the invention is to provide a combined support and spacer of the last mentioned character in which the cross-members of the wire-formed chairs embody elongated end loops whereby the rods when in the pockets are held truly at right angles to the U-shaped members and in a fixed horizontal position and also embody upwardly facing U-shaped stirrups for holding and supporting in proper position adjacent to the bottom of the pockets the bar aligning rod.

Another object of the invention provides a combined support and spacer of the type and character under consideration in which the cross-members of the chairs are welded or otherwise fixedly secured to the side pieces of the U-shaped members at one side of the chairs and embody side loops at the other side of the chairs for limiting outward movement of the adjacent side pieces of the U-shaped members in such manner that when the bars are inserted into the pockets, they are so frictionally gripped by the upper extremities of the side pieces that they are securely held in place against accidental dislodgment.

A further object of the invention is to provide a combined support and spacer which, in conjunction with a like support and spacer and with wire-formed cross-rods of novel design between it and the like combined support and spacer is adapted to form a unit for supporting a concrete roadway joint of the compressible filler strip and dowel bar type.

A still further object of the invention is to provide a combined bar support and spacer which is capable of quick and ready assembly with the bar aligning rod and the bars at the place of installation and is of such simple design that it may be manufactured at a low and reasonable cost.

Other objects of the invention will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by the claims at the conclusion hereof.

In the drawings which accompany and form a part of this specification or disclosure and in which like letters and numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective of a joint-supporting unit embodying one form of the invention;

Figure 2 is a perspective of one of the wire-formed bar supporting chairs of the unit of Figure 1;

Figure 3 is a fragmentary section illustrating in detail the manner in which the inner ends of the cross-rods of the unit of Figure 1 are connected to the side flanges of a sheet metal channel strip under the compressible filler strip of the roadway-forming joint;

Figure 4 is a perspective of a joint-supporting unit embodying another form of the invention;

Figure 5 is a front view of one of the chairs of the unit of Figure 4, parts of the cross-member being shown in section for purposes of illustration;

Figure 6 is a horizontal section taken on the line 6—6 of Figure 5 and illustrating in detail the construction and design of the cross-members of the above chairs of the unit of Figure 4;

Figure 7 is a perspective of a single wire-formed chair illustrating the manner in which it serves to support a reinforcing bar; and

Figure 8 is a perspective of the chair of Figure 7, illustrating the manner in which the side loop of the cross-member thereof serves to restrict outward swinging movement or flexure of the adjacent side piece of the U-shaped member of the chair.

The unit which is shown in Figures 1, 2 and 3

of the drawings constitutes one embodiment of the invention and is adapted for use in connection with a concrete roadway joint consisting of a compressible filler strip *s*, a sheet metal filler strip supporting channel strip s^1, and a series of parallel horizontally extending dowel bars s^2. The joint is adapted for disposition between a pair of adjoining roadway-forming slabs s^3 and s^4 on a sub-grade s^5, and, as well understood in the art, permits the slabs to expand and contract in response to changes in temperature. The strip *s* is formed of composition material and fits in an upstanding position between the slabs s^3 and s^4 as shown in Figure 1. The channel strip s^1 rests upon the sub-grade s^5 and embodies side flange s^6 between which the lower margin or portion of the filer strip *s* fits. The dowel bars s^2 extend through holes in the central portion of the filler strip *s* and constitute load transfer members whereby a load on one of the slabs is transmitted to the other. They extend lengthwise of the slabs and are coated with grease or graphite so that during pouring of the concrete for the slabs, the concrete will not adhere thereto. In addition to the filler strip *s*, the channel strip s^1 and the dowel bars s^2, the joint includes a set of sheet metal sleeves s^{22}. These sleeves are slidably mounted on the ends of the dowel bars at one side of the filler strip *s* and form air pockets outwardly of such ends whereby sliding movement of the dowel bars is permitted in response to expansion of the slabs. As a result of the grease or graphite which is applied to the bars, the bars after setting of the slabs are free to slide longitudinally and permit the slabs to move to and from one another in response to expansion and contraction.

The unit of Figures 1, 2 and 3 serves to hold the joint in place during pouring of the concrete in connection with the formation of the slabs s^3 and s^4. It is adapted to become permanently associated with and also to reinforce the concrete and consists of a pair of combined bar supports and spacers **9** and **10**. The combined support and spacer **9** is located at one side of the compressible filler strip *s* of the joint and serves to support the adjoining ends of the dowel bars s^2. The combined support and spacer **10** is located on the other side of the strip *s* and is associated with and serves to support the other ends of the dowel bars.

The combined support and spacer **9** extends substantially parallel to the compressible filler strip *s* and comprises a series of chairs **11**. The latter underlie the adjacent ends of the dowel bars, are secured as hereinafter described to a spacer rod **12**, and carry a bar aligning rod **13**. The rod **12** extends horizontally and is designed to rest flatly on the subgrade s^5. It is formed of comparatively stiff wire and extends in parallel relation with the compressible filler strip *s*. The chairs **11** are equidistantly spaced along the spacer rod **12** and correspond in number to the dowel rods s^2. They are adapted, together with the aligning rod **13**, to support the dowel rods in a truly horizontal plane and parallel relation and comprise U-shaped members **14** and cross-members **15**. The U-shaped members are formed of stiff wire of substantially the same gauge as the spacer rod **12** and consist of straight horizontally extending intermediate bottom pieces **16** and pairs of upstanding side pieces **17** and **18**. The intermediate bottom pieces **16** fit against and are preferably welded to the outer side portion of the spacer rod **12** and are preferably all of the same length. The side pieces **17** and **18** of the U-shaped members **14** are formed integrally with the ends of the intermediate bottom pieces **16**. They extend upwardly and inwardly as shown in the Figures 1 and 2 and have the upper extremities thereof bent outwardly to form or define pockets **19** for the adjoining or adjacent ends of the dowel bars s^2. Such ends of the dowel bars are adapted to be inserted into the pockets by urging or shifting them downwards between the upper extremities of the side pieces of the U-shaped members and thence past the bent portions of such extremities. By having the upper extremities of the side pieces extend outwards, the mouth portions of the pockets **19** are enlarged and hence the bars may be readily inserted into the pockets. When the bars are in place in the pockets **19**, they are disposed slightly beneath the bent portions of the upper extremities of the side pieces of the U-shaped members and are securely held in place by such portions. The cross-members **15** of the chairs **11** are disposed beneath the bent portions of the upper extremities of the side pieces **17** and **18** of the U-shaped members and form seats for the adjacent ends of the dowel bars s^2. They are formed of stiff wire of the same gauge as the U-shaped members **14** and are shaped to form flat horizontally extending end loops **20**, flat horizontally extending side loops **21** and U-shaped stirrups **22**. The end loops **20** project outwards of the U-shaped members **14** and form horizontal seats for the lower portions of the dowel bars s^2 when the dowel bars are in place in the pockets **19**. They are preferably of such length that when the dowel bars are in place in the pockets, the bars are held truly at right angles with respect to the U-shaped members **14** of the chairs **11**. At one side the loops **20** are provided with laterally extending end parts **23**. These parts extend parallel to the spacer rod **12** and are welded to the side pieces **17** of the U-shaped members **14** in order fixedly or rigidly to connect the cross-members **15** to the U-shaped members **14** The side loops **21** are joined to and formed integrally with the end loops **20** and are positioned in opposed relation with the end parts **23**. They surround the side pieces **18** and serve so to restrict outward flexure or swinging of such pieces that the dowel bars when in the pockets **19** are securely held in place against the end loops **20** and between the bent portions of the upper extremities of the side pieces **17** and **18**. As shown in Figure 2, the side loops **21** are so spaced from the end parts **23** that when the adjacent portions of the side pieces **18** are in abutment thereagainst the bent portions of the side pieces **17** and **18** are spaced apart a distance slightly less than the diameter of the dowel bars. As a result of this, the dowel bars must be forcibly shifted downwards into the pockets past the bent portions of the upper extremities of the side pieces **17** and **18**, and when in place are urged or pressed outwardly by the bent portions into flatly seated relation with the end loops **20**. The stirrups **22** are disposed inwardly of the side pieces of the chairs **11** and are formed integrally with and project inwardly from the side loops **21**. They extend beneath the end and side loops as shown in Figure 2 and serve to support the aligning rod **13** so that the upper portion thereof is in alignment with the bottom of the pockets **19**. When the rod **13** is in place in the stirrups **22** of the cross-members of the chairs, it serves to align the adjoining or adjacent ends of the dowel bars

s^2 and coacts with the end loops **20** to hold such ends of the dowel bars at right angles to the U-shaped members **14** of the chairs **11**. The rod **13** is formed of slightly heavier stock or gauge material than the spacer rod **12**. It is designed to extend transversely through and to become bonded to the slab s^3. The stirrups **22** are arranged so that they support the aligning rod **13** in parallel relation with the spacer rod **12** and the compressible filler strip *s*. By having the end loops **20** of the cross-members **15** at one side of the U-shaped members **14** and the rod supporting stirrups **22** at the other side of the members **14**, the dowel bars when in place in the pockets **19** are firmly held against tilting and are maintained in horizontal alignment. In addition to the chairs **11** and the rods **12** and **13**, the combined support and spacer **9** comprises a plurality of cross-rods **24**. These rods extend parallel to the dowel bars s^2 and are formed of stiff wire of the same gauge or size as the spacer rod **12** and the U-shaped members and cross-members of the chairs **11**. The outer ends of the cross-rods **24** are welded or otherwise fixedly secured to the spacer rod **12**. The inner ends of the cross-rods are flattened and bent to form downwardly facing hooks **25**. The latter overlie and grip the side flange of the channel strip s^1 that is on the same side of the compressible strip *s* as the combined support and spacer **9**. The cross-rods **24** serve to connect the combined support and spacer **9** to the channel strip s^1 and hold it in spaced and parallel relation with the compressible strip *s*.

The combined support and spacer **10** on the opposite side of the compressible strip *s* is exactly the same in design and construction as the support and spacer **10**. It operates, as hereinbefore described, to support the adjoining ends of the dowel bars s^2 and consists of a series of chairs **26**, a spacer rod **27** and a bar aligning rod **28**. The chairs **26** are formed of wire and are disposed in opposed relation with the chairs **11**. They are the same in shape and design as the chairs **11** and consist of U-shaped members **29** and cross-members **30**. The intermediate bottom pieces of the U-shaped members **29** are welded to the spacer rod **27**. The cross-members **30** comprise end loops **31**, side loops **32** and stirrups **33**. The end loops **31** function the same as the end loops **20** of the cross-members **15** and, together with the upper end extremities of the side pieces of the U-shaped members **29** define open top pockets **34** for the adjacent ends of the dowel bars s^2. The aligning rod **28** is the same in size as the aligning rod **13** of the combined support and spacer **9** and fits within and is carried by the stirrups **33**. In addition to the aforementioned parts, the combined support and spacer **10** includes rods **35**. These rods are welded to the spacer rod **27** and have flattened hooks **36** for engagement with the side flange of the channel strip s^1 that is at the same side of the filler strip as the combined support and spacer **10**.

In assembling the joint and unit of Figures 1, 2 and 3, the channel strip s^1 is first placed transversely across the sub-grade s^5. Thereafter, the combined supports and spacers **9** and **10** are positioned at opposite sides of the strip s^1 and are arranged in such manner that the spacer rods **12** and **27** fit flatly against the sub-grade s^5 and are in parallel relation with the channel strip s^1. After so positioning the combined supports and spacers **9** and **10**, the hooks **25** and **36** of the cross-rods **24** and **35** are hooked onto the side flanges s^6 of the channel strip. At the conclusion of this operation, the aligning rod **13** is placed in the stirrups **22** of the chairs **11** and the aligning rod **28** is placed in the stirrups **33** of the chairs **26**. In order to complete the assembly, the dowel bars s^2 are inserted through the holes in the central portion of the compressible filler strip *s* and the filler strip and bars are manipulated so as to bring the lower margin of the strip between the side flanges of the channel strip s^1 and the ends of the dowel bars into seated relation with respect to the pockets **19** and **34**. The bars are brought into seated relation with the pockets by forcing the ends thereof downwards between the upper extremities of the side pieces of the U-shaped members of the chairs. When the dowel bars are in place, they are maintained by the combined supports and spacers **9** and **10** in a truly horizontal position and against vertical tilting. After assembly of the joint and unit, concrete is poured at the sides of the strip *s* to form the roadway slabs s^3 and s^4. After setting of the concrete, the dowel bars s^2 form load-transfer members as hereinbefore pointed out.

The unit which is shown in Figures 4, 5 and 6 of the drawings constitutes a modified or second form of the invention and is illustrated in connection with a concrete roadway joint consisting of a compressible filler strip s^7, a sheet metal channel strip s^8 and a series of parallel horizontally extending dowel bars s^9. The joint is disposed between a pair of roadway-forming slabs s^{10} and s^{11} on a sub-grade s^{12} and is the same in design as the joint of Figure 1. The unit which constitutes the modified form of the invention comprises a pair of combined supports and spacers on opposite sides of the compressible filler strip s^7. These supports and spacers serve the same purpose as the combined supports and spacers **9** and **10** of the unit of Figures 1, 2 and 3 and consist of dowel bars supporting chairs **37**, spacer rods **38** and cross-rods **39**. The spacer rods **38** are two in number and are positioned on opposite sides of, and in parallel relation with, the compressible filler strip s^7. They are designed to rest flatly against the sub-grade s^{12} beneath the slabs s^{10} and s^{11} and are spaced from the filler strip supporting channel strip s^8 by way of the cross-rods **39**. The latter are the same in construction and design as the cross-rods **24** and **35** of the unit of Figures 1, 2 and 3 and have the outer ends thereof welded to the spacer rods **38**. The inner ends of the cross-rods are shaped to form hooks 39^a and these, as shown in Figure 4, are designed to hook over the side flange of the channel strip s^8. The chairs **37** are formed of stiff wire-like chairs **11** and **26** and comprise U-shaped members **40** and cross-members **41**. The intermediate bottom pieces of the U-shaped members **40** are welded to the spacer rods **38** and the upper extremities of the side pieces of said members are bent outwardly and define with the cross pieces **41**, bar-receiving pockets 40^a. The unit of Figures 4, 5 and 6 differs from the unit of Figures 1, 2 and 3 in that it includes no horizontally extending, transversely disposed aligning rods. The cross-members **41** of the chairs **37** are formed of stiff wire of the same gauge as the U-shaped members **37** and are shaped so that they include outer end loops **42**, inner end loops **43** and side loops **44**. These loops extend horizontally and define the bottom of the bar-receiving pockets **42**. The inner and outer end loops **42** and **43** are positioned in opposite relation and extend in opposite direc-

tions. They serve to support and hold against tilting the dowel bars s^9 and have at one side thereof outwardly extending end parts **45**. These parts are welded or otherwise fixedly secured to the side pieces at one side of the U-shaped members **40**. The side loops **44** are formed integrally with the outer and inner end loops **42** and **43**, and serve to limit outward flexure or swinging movement of the adjacent side pieces of the U-shaped members **40**. They are positioned in opposite relation with the end parts **45** and function the same as the side loops **21** and **32** of the cross-members of the chairs **14** and **26**. As shown in Figure 5, the cross-members **41** of the chairs **37** are positioned beneath the bent portions of the upper extremities of the side pieces of the U-shaped members **40** with the result that the dowel bars when they are disposed in the pockets **42** are urged downwards under spring pressure against the outer and inner end loops **42** and **43**. Such end loops constitute or form elongated bearing members whereby the bars when in place in the pockets **40**[a] are securely held at right angles to the U-shaped members **40** and against vertical tilting. The joint and unit of Figures 4, 5 and 6 is assembled, for the most part, like the joint and unit of Figures 1, 2 and 3. After placement of the channel strip s^8 transversely across the sub-grade s^{12}, the combined supports and spacers are mounted in place and then the filler strip s with the dowel bars s^9 extending therethrough, is manipulated so as to bring the lower margin thereof between the side flanges of the strip s^8. During lowering of the filler strip s^7, the ends of the dowel bars s^9 are urged downwards between the upper extremities of the side pieces of the U-shaped members **40** of the chairs **37** until they are brought into proper position within the pockets **49**[a] and in seated relation with the outer and inner end loops **42** and **43** of the cross-members **41** of said chairs.

The chair of Figures 7 and 8, is a separate or independent chair and is designed to support a concrete reinforcing bar s^{13} in spaced relation with a form (not shown). It is substantially the same as the chairs **37** of the unit of Figures 4, 5 and 6 and comprises a U-shaped member **46** and a cross-member **47**. The U-shaped member **46** is like the U-shaped member **40** of the chairs **37**, except that the central part or portion of the intermediate bottom piece is bent so that the end parts are angularly arranged and serve when in abutment with a flat horizontal surface to hold the chair in an upstanding position. The cross-member **47** is like the cross-member **41** and comprises a pair of oppositely extending end loops **48**, a side loop **49** at one side of the end loops and a pair of end parts **50** at the other side of the end loops. The end parts **50** are welded to one of the side pieces of the U-shaped member **46**. The side loop **49** functions like the side loops **44** of the cross-members **41** of the chairs **37** and serves to limit or restrict outward flexure of the other side pieces of the member **46**. The cross-member **47** is located beneath the bent portions of the upper end extremities of the side pieces of the U-shaped member **46** and serve as a bearing for the bar s^3 and to define, with the upper extremities of said side pieces an open top pocket **51** for the bar. When the bar is in place in this pocket, it is so held against the end loops **48** that it cannot tilt relatively to the chair.

Whereas, the invention has been described as relating or pertaining to combined supports and spacers for bars, it is to be understood that it comprehends a single bar-supporting chair such as the reinforcing bar chair of Figures 7 and 8. It is also to be understood that the invention is not to be restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit or scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A combined support and spacer for parallel substantially horizontal, laterally spaced bars, comprising a horizontal spacer rod adapted to be positioned beneath and at right angles to the bars, and a series of laterally spaced chairs corresponding in number to, and adapted to be associated respectively with, the bars, and each consisting of a pair of side pieces having the lower ends thereof connected to the spacer rod and their upper ends extending slightly inwards and then bent outwards at their upper extremities to form an open top restricted entrance bar-receiving pocket, and a separate wire-formed cross-member connected to one of the side pieces beneath its bend and having a part shaped to form an elongated substantially flat horizontally extending loop at the bottom of the pocket and at right angles to the spacer rod for supporting and directly engaging the bar associated therewith and preventing tilting thereof when it is in place in the pocket.

2. A combined support and spacer for parallel substantially horizontal laterally spaced bars, comprising a horizontal spacer rod adapted to be positioned beneath and at right angles to the bars, and a series of laterally spaced chairs corresponding in number to, and adapted to be associated respectively with, the bars and each consisting of an upstanding wire-formed U-shaped member having the intermediate bottom piece thereof secured to the spacer rod and its side pieces extending upwardly and inwardly and bent outwardly adjacent to the upper extremities thereof to form between and beneath the bent portions open top restricted entrance pocket for its bars, and a separate wire-formed cross-member connected to one of the side pieces beneath its bent portion but not to the other side piece and shaped to form an elongated substantially flat horizontally extending end loop at the bottom of the pocket and at right angles to said spacer rod for supporting and engaging directly the bar associated therewith and preventing tilting thereof when it is in place in the pocket.

3. A combined support and spacer for parallel substantially horizontal laterally spaced bars, comprising a horizontal spacer rod beneath and at right angles to the bars, and a series of laterally spaced chairs corresponding in number to, and associated respectively with, the bars and consisting of upstanding wire-formed U-shaped members having the intermediate bottom pieces thereof secured to the spacer rod and their side pieces flexible laterally and shaped at the upper extremities thereof to form open top pockets for the bars, and separately formed cross-members connected to the side pieces at one side of the U-shaped member but not to the other side pieces and having parts thereof shaped to form elongated loop type bearing or seat forming elements at the bottom of the pockets and at right angles to the spacer rod for supporting the bars when the latter are in place in the pockets, and in addition having parts for limiting or restricting

outward flexure of the side pieces at the other side of said U-shaped members.

4. A combined support and spacer for parallel substantially horizontal laterally extending bars, comprising a spacer rod beneath and at right angles to the bars, and a series of laterally spaced chairs corresponding in number to, and associated respectively with, the bars and consisting of upstanding wire-formed U-shaped members having the intermediate bottom pieces thereof secured to the spacer rod and their side pieces flexible laterally and extending upwardly and inwardly and bent outwardly adjacent to the upper extremities thereof to form between and beneath the bent portions open top restricted entrance pockets for the bars, and separate wire-formed cross-members connected to the side pieces at one side of the U-shaped members and at a point beneath the bent portions thereof and shaped to form elongated horizontally extending end loops at the bottom of the pockets for supporting the bars and preventing tilting thereof when they are in place in the pockets, and in addition side loops extending around the side pieces at the other side of said U-shaped members at a point beneath the bent portions thereof and serving to limit or restrict outward flexure of the last mentioned side pieces in connection with insertion of the bars into the pockets.

5. A combined support and spacer for parallel substantially horizontal laterally spaced bars, comprising a spacer rod beneath and at right angles to the bars; a series of laterally spaced chairs corresponding in number to, and associated respectively with, the bars and consisting of upstanding members in the form of pairs of side pieces with the lower ends thereof connected to the spacer rod and their upper ends shaped to form open top bar-receiving pockets, and separate wire-formed cross-members connected to certain of the side pieces and having parts shaped to form elongated substantially flat horizontal end loops extending in one direction and at right angles to the spacer rod and adapted to support the bars when they are in place in the pockets, and in addition having other parts shaped to form open top stirrups disposed adjacent to the pocket bottoms and extending in the opposite direction and at right angles to said spacer rod; and a rod in parallel relation with the spacer rod fitting in and carried by the stirrups and serving together with the end loops to support and align the bars.

6. A combined support and spacer adapted for use in connection with a roadway joint in the form of a horizontally elongated upstanding compressible element, a channel type strip extending longitudinally of and disposed under and around the bottom portion of the element and a series of laterally spaced substantially horizontal dowel bars extending through the central portion of the element, and comprising a spacer rod disposed on one side of, and in substantial parallel relation with, the element, a series of laterally spaced chairs corresponding in number to and associated respectively with, the dowel bars, connected to and extending upwardly from the spacer rod, and having pockets at the upper ends thereof for the adjacent ends of the bars, and cross-rods between the spacer rod and the element for supporting the rod in spaced relation with said element, having the outer ends thereof connected to the spacer rod and having their inner ends bent and shaped to form downwardly facing hooks in hooked relation with the side flange of the strip at said one side of the element.

7. As a new article of manufacture, a chair adapted to support a substantially horizontal reinforcing bar and comprising a U-shaped member having the side pieces thereof extending upwardly and inwardly and bent outwardly adjacent to the upper extremities thereof to form between and beneath the bent portions an open top restricted entrance pocket for the bar, and a separate wire-formed cross-member having one part thereof connected to one of the side pieces beneath the bent portion thereof and another part shaped to form an elongated substantially flat horizontally extending U-shaped end loop at the bottom of the pocket for supporting and directly engaging the bar and preventing the same from tilting vertically relatively to the chair.

8. As a new article of manufacture, a chair adapted to support a substantially horizontal reinforcing bar and comprising an upstanding wire-formed U-shaped member having the side pieces thereof flexible to and from one another and extending upwardly and inwardly and bent outwardly adjacent to the upper extremities thereof to form between and beneath the bent portions an open top restricted entrance pocket for the bar, and a separate wire-formed cross-member connected to one of the side pieces beneath the bent portion thereof and shaped to form an elongated horizontally extending end loop at the bottom of the pocket for supporting the bar and preventing it from tilting vertically relatively to the chair when it is in place in the pocket, and in addition a horizontally extending side loop extending around the other side piece at a point beneath the bend thereof and serving to limit or restrict outward flexure of said other side piece.

9. As a new article of manufacture, a chair adapted to support a substantially horizontal reinforcing bar and comprising a U-shaped member having the side pieces thereof extending upwardly and shaped to form at their upper extremities an open top pocket for the bar, and a separate wire formed cross member fixedly connected to one of the side pieces but not the other side piece and having parts thereof shaped to form at the bottom of the pocket a pair of oppositely extending elongated flat horizontal U-shaped end loops for supporting the bar and preventing the latter from tilting vertically relatively to the chair when it is in place in the pocket.

10. As a new article of manufacture, a chair adapted to support a substantially horizontal reinforcing bar and comprising an upstanding U-shaped member having the side pieces thereof adapted to flex to and from one another and shaped at their upper extremities to form an open top pocket for the bar, and a separate wire formed cross member having one part thereof fixedly connected to one of the side pieces and another part shaped to form at the bottom of the pocket a side loop extending around the other side piece and serving to limit or restrict outward flexure thereof.

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