May 24, 1966 W. W. KORF 3,252,263

CONCRETE REINFORCING NETWORK AND METHOD OF MAKING THE SAME

Filed March 8, 1963 3 Sheets-Sheet 1

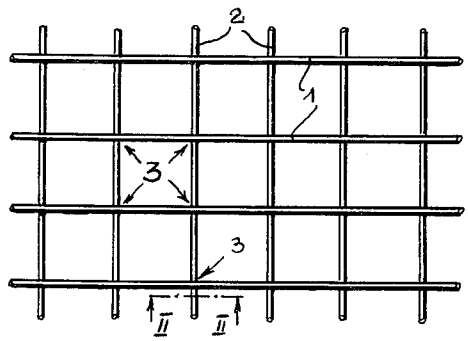


Fig. 1

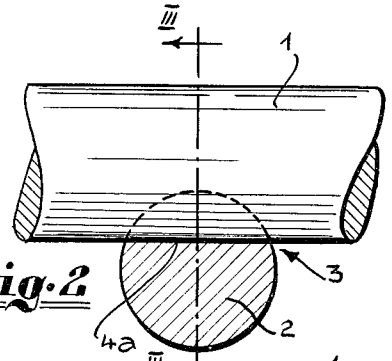


Fig. 2

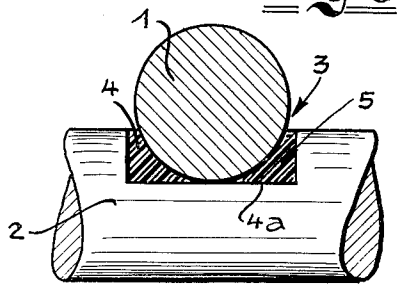


Fig. 3

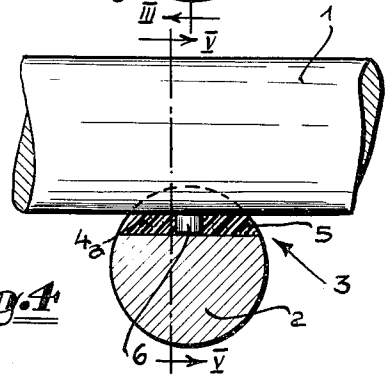


Fig. 4

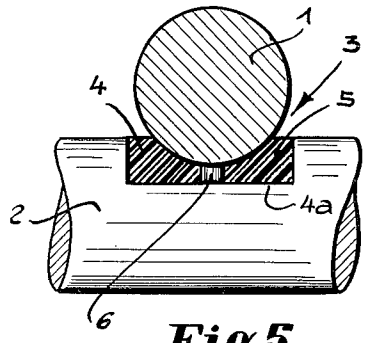


Fig. 5

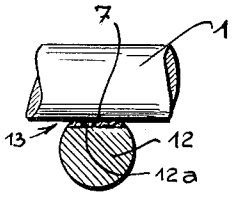


Fig. 6

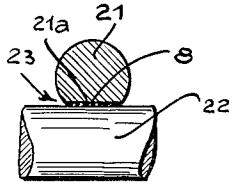


Fig. 7

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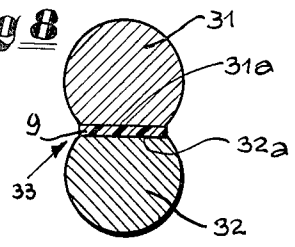
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CONCRETE REINFORCING NETWORK AND METHOD OF MAKING THE SAME

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Fig 8



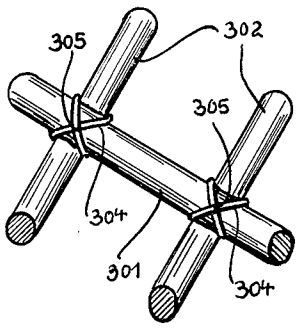
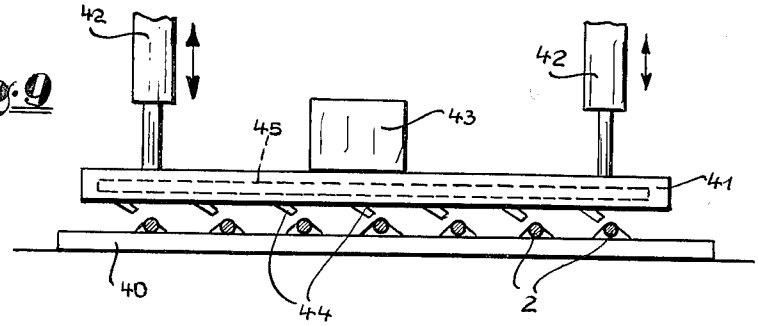


Fig 14

Fig 9



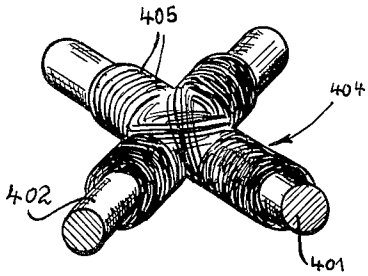


Fig 15

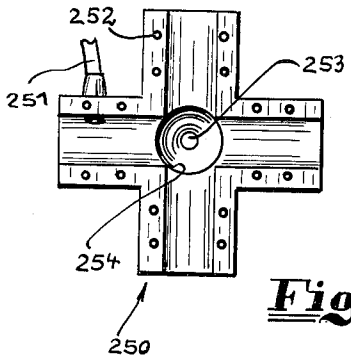


Fig 13

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Fig. 10

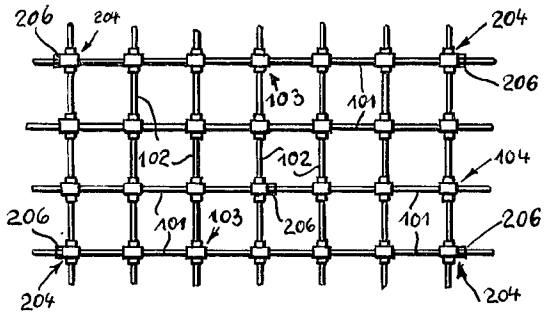


Fig. 11

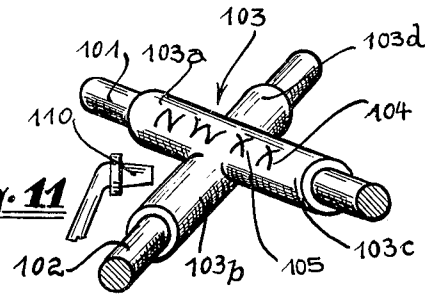
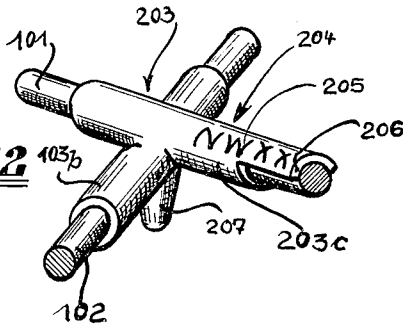


Fig. 12



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CONCRETE REINFORCING NETWORK AND METHOD OF MAKING THE SAME

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5 Claims. (Cl. 52—105)

The present invention relates to reinforcements for concrete in general, and more particularly to a network of interconnected metallic rods which form a reinforcing mat for concrete. Still more particularly, the invention relates to an improved concrete reinforcing network and to a novel method of assembling and joining the components of such reinforcing networks.

It is well known to form a concrete reinforcing network by welding longitudinally and transversely extending metallic bars (such as rods or wires) at the intersections in such a way that the resulting network may be handled as a unit during shipment or storage and during introduction into a form. A serious drawback of such networks is that heat necessary to carry out the welding operation often affects the quality of metallic materials at the joints, that such networks are often too rigid so that vibrations of a given reinforcing bar are transmitted to all bars which are connected therewith, and also that the generation of elevated temperatures necessary to form welded joints may involve additional costs which are reflected in the price of the ultimate product. Furthermore, it is necessary to keep the surfaces of the bars very clean, particularly at the intersections, in order to insure that the welded joints will be of satisfactory strength. Spot welding machines which are normally utilized in such work require bulky transformers and other electrical equipment all of which adds to the manufacturing cost.

Certain older methods of making concrete reinforcing networks include placing the bars or wires into the mold and thereupon manualy connecting the intersecting bars by loops of wire or other metallic material. Such practice is being discontinued because it requires too much time and high labor costs.

Accordingly, it is an important object of the present invention to provide a novel method of making concrete reinforcing networks according to which the reinforcing bars may be connected to each other at temperatures well below those necessary for metal-to-metal welding of the bars, according to which the bars may be connected to each other in such a way that vibrations to which one of the bars might be subjected in actual use need not be transmitted to the other bars or are at least damped by the joints between the bars, and according to which the joints are capable of resisting corrosion much better than a conventional welded joint.

Another object of the invention is to provide a method of the just outlined characteristics according to which a concrete reinforcing network may be assembled in such a way that the formation of joints between the intersecting bars does not affect the characteristics of metallic materials of which the bars are made and that the joints exhibit at least some resiliency and permit, within limits, relative movements of interconnected bars with respect to each other.

A further object of the invention is to provide a method of making concrete reinforcing networks according to which several joints between the intersecting bars may be formed in a simultaneous operation and which can produce joints whose strength at least equals but may exceed the strength of welded metal-to-metal joints.

An additional object of the invention is to provide a

novel concrete reinforcing network which is constructed and assembled in accordance with the above outlined method and whose weight may be even less than the weight of a conventional network wherein the joints are formed by direct welding of metallic bars to each other.

A concomitant object of the invention is to provide a network of the just outlined characteristics which is constructed and whose elements are configurated in such a way that the adhesion between the bars and the body of concrete in which the network is embedded is at least as strong as in conventional reinforced concrete.

A further object of the invention is to provide a novel apparatus for making the improved network in accordance with my method.

An additional object of the invention is to provide a concrete reinforcing mat which is constructed and assembled in such a way that it automatically assumes a position at requisite distance from the walls when it is inserted in a form into which concrete is poured to obtain a block, a slab or an otherwise configurated body of reinforced concrete.

With the above objects in view, one feature of my invention resides in the provision of a concrete reinforcing network which comprises a plurality of longitudinally and transversely extending elongated metallic members which normally assume the form of steel bars made of round stock and which intersect each other at a plurality of spaced points, and the bodies or layers of cementitious material securing or bonding the members to each other at some or all points of intersection. The material used at the points of intersection may actually bond the bars to each other or such material may be used to form a series of wrappers or loops around the bars. The cement may completely surround the points of intersection or it may form layers betweeen the adjacent surface portions of the crossing bars.

The expressions "adhesive," "metal-to-metal adhesive," "cement," "body of cement" and "layer of cementitious material" used in this specification and in the claims are intended to embrace all such kinds of adhesive which consists of any material that can be prepared in granular, plastic or liquid form and which hardens at normal temperatures, at below normal temperatures or at elevated temperatures to bond together metallic surfaces or to secure the reinforcing bars at the points of intersection so that the bars together form a self-supporting mat.

The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The improved network itself, however, both as to its construction and the method of making the same, together with additional features and advantages thereof, will be best understood from the following detailed description of certain specific embodiments with reference to the accompanying drawings, in which:

FIG. 1 is a top plan view of a concrete reinforcing network which is assembled in accordance with one embodiment of my invention and wherein the crossing bars are merely bonded but are not surrounded by layers of cementitious material;

FIG. 2 is an enlarged fragmentary detail sectional view of the network as seen in the direction of arrows from the line II—II of FIG. 1, showing a joint at a point of intersection between a pair of cross bars;

FIG. 3 is a section as seen in the direction of arrows from the line III—III of FIG. 2;

FIG. 4 is a fragmentary detail sectional view of a modified network wherein one of each pair of crossing bars is provided with a projection which abuts against the other bar;

FIG. 5 is a section as seen in the direction of arrows from the line V—V of FIG. 4;

FIG. 6 is a fragmentary detail sectional view of a further network wherein one of each pair of crossing bars is formed with a flat surface portion which extends the full length thereof;

FIG. 7 is a similar fragmentary sectional view of a network wherein the other of each pair of crossing bars is formed with a longitudinally extending flat surface portion;

FIG. 8 is a fragmentary detail sectional view of an additional network wherein each reinforcing bar comprises a flat surface portion;

FIG. 9 is an elevational view of a portion of an apparatus which is used to produce the network of FIGS. 1 to 3;

FIG. 10 is a top plan view of a different concrete reinforcing network wherein the bars are secured to each other by cruciform jackets of cementitious material;

FIG. 11 is an enlarged perspective view of a joint between a pair of crossing bars which form part of the network shown in FIG. 10;

FIG. 12 is a similar perspective view of a slightly different joint wherein the jacket is provided with a spacing or distancing extension which is perpendicular to the intersecting bars;

FIG. 13 is a top plan view of one section of a mold which is used to form the jacket of FIG. 12;

FIG. 14 is a fragmentary perspective view of a further concrete reinforcing network wherein the crossing bars are secure to each other by loops of wire-like or cord-like synthetic plastic material; and

FIG. 15 is a perspective view of a joint which is formed by a length of convoluted tape consisting of or coated at one or both sides with cementitious material.

Referring now in greater detail to the illustrated embodiments, and first to FIG. 1, there is shown a concrete reinforcing network, also called mat, which comprises a plurality of longitudinally extending coplanar metallic members **1** (also called bars which may be inflexible rods or flexible wires of round steel stock) which are parallel with and equidistant from each other, and a plurality of transversely extending coplanar metallic members or bars **2** which also consists of round steel stock and which are parallel with and equidistant from each other, i.e. the bars **1** and **2** form a pattern of squares or rectangles. The bars **1** and **2** cross each other and form joints at a plurality of points (identified by reference numerals **3**), and such points are spaced from each other in the longitudinal direction of the bars.

A joint at a point **3** defined by a bar **1** and a bar **2** is shown in greater detail in FIGS. 2 and 3. The bar **2** is formed with a recess or cutout **4** which is bounded by a flat bottom surface **4***a* and into which the adjacent portion of the bar **1** extends so that the bar **1** actually abuts against the bottom surface **4***a*. The recess **4** is filled at least in part with a hardened layer of cementitious material **5** which forms a firm bond between the bars **1** and **2** which preferably coats the entire bottom surface **4***a*. It will be noted that the length of the recess **4** (as viewed in the longitudinal direction of the bar **2**) at least equals the diameter of the bar **1** so that there is room for a body of cementitious material which adheres to a substantial peripheral surface portion of the bar **1** in addition to adhering to the surfaces bounding the recess **4**. While the bar **1** is theoretically in mere linear contact with the bottom surface **4***a* the extent of contact is actually greater because the bar **1** might not be truly round because the bar **1** might have been deformed at the time it was introduced into the recess **4**, or because the bar **1** might have penetrated under pressure into the material of the bar **2**. In other words, at least a small portion of that part of the bar **1** which extends into the recess **4** is not coated with cement.

In order to improve the bond between the pairs of intersecting bars at the points **3**, the reinforcing network of FIGS. 1–3 may be modified in a manner as shown

in FIGS. 4 and 5. In this embodiment of my invention, one of each pair of bars **1**, **2** (for example, the bar **2**) may be formed with a recess or cutout **4** and with one or more projections **6** which extend from the bottom surface **4***a* of the recess. The height of these projections (only one is shown in FIGS. 4 and 5) is less than the depth of the recess **4** so that a portion of the bar **1** extends into the recess at the time it comes into abutment with the tip of the projection or projections **6**. The projection illustrated in FIGS. 4 and 5 assumes the form of a cylindrical stud which is located in the central portion of the recess **4**. This recess is filled with a body of cementitious material **5** which forms a firm bond between the bars **1** and **2**, and this bond is even stronger than the bond between the pair of bars shown in FIGS. 2 and 3 because a larger surface portion of the bar **1** is in actual contact with the layer **5**. In other words, the purpose of the projection or projections **6** is to maintain the bar **1** at a certain distance from the bottom surface **4***a* so that a larger area of the bar **1** may come into contact with the adhesive.

It goes without saying that the bars **1**, **2** need not be perpendicular to each other and that the bars **1** and/or **2** need not be equidistant from each other. The number of joints formed by layers or bodies of cementitious material should be sufficient to insure that the resulting network forms a self-supporting structure for easy handling in storage and shipment as well as at the locale of actual use.

FIG. 6 illustrates a different joint **13** at a point of intersection which is formed by a longitudinally extending bar **1** of round metallic stock and by a transversely extending bar **12** which is nearly round and which is formed with a longitudinally extending flat surface portion **12***a* adjacent to the bar **1**. This flat surface portion **12***a* is coated with a layer **7** of cementitious material whose thickness is sufficient to insure that the layer coats a portion of the surface of the bar **1** so as to form a satisfactory bond between the bars **1**, **12**.

The joint **23** at the point of intersection between the bars **21** and **22** of FIG. 7 is very similar to the one shown in FIG. 6, excepting that the transversely extending bar **22** is of round stock whereas the longitudinally extending bar **21** comprises a flat surface portion **21***a* which extends along the entire length thereof. The joint is formed by a layer **8** of cementitious material.

FIG. 8 illustrates a joint **33** at the point of intersection between a pair of bars **31**, **32** which are respectively provided with flat surface portions **21***a*, **22***a*. These surface portions are closely adjacent to each other and are separated by a layer **9** of cementitious material. Thus, it is possible to provide flat surface portions on the one, on the other or on both bars of each pair of intersecting bars.

The material of the bodies or layers **5**, **7**, **8** and **9** may be a cold or hot set adhesive, for example, a vinyl adhesive. Such adhesives are well known in the art of plastics and are readily available on the market.

FIG. 9 illustrates a portion of the apparatus which is utilized to make a concrete reinforcing network with joints of the type shown in FIGS. 2 and 3. This apparatus comprises a base **40** which serves as a support for one group of bars, for example, the bars **2**, and which may be formed with suitable guides for the bars **2** so that the latter may be moved endwise in a direction at right angles to the plane of FIG. 9. The base **40** cooperates with an elongated ram **41** which serves as a means for deforming the bars **2** and for providing therein recesses **4** of the type shown in FIGS. 2 and 3. This ram is reciprocable by hydraulic cylinders **42** and may carry a source **43** of plastic or plasticized cement which is supplied to nozzles **44**. If the nature of cement is such that it must be heated in order to set and to form a strong bond between the intersecting bars, the ram **41** and/or the base **40** may be provided with a suitable heating device **45**.

The nozzles 44 are of well-known construction and are adapted to discharge measured quantities of plastic cement such as are necessary to form a layer 5.

In the first step, the bars 2 are placed onto the base 40 and the ram 41 is caused to descend so as to simultaneously deform all of the bars and to provide in their uppersides a row of aligned recesses such as the recess 4 of FIGS. 2 and 3. In the next step, the ram 41 is lifted and the nozzles 44 discharge measured quantities of plastic cement into the respective recesses. Finally, the machine or the operator places a bar 1 (not shown in FIG. 9) across the bars 2 in such a way that the superimposed bar comes to rest on the batches of plastic cement and is bonded to the bars 2. If necessary, the ram 41 may descend for a second time in order to press the superimposed bar into the recesses and to subject the superimposed bar to pressure while the cement hardens. The heating element 45 accelerates the setting of cement so that the entire operation requires very little time.

The machine then advances the bars 2 through a distance which is equal to the distance between a pair of adjacent bars 1 in FIG. 1, and the operation is repeated in the same way as described hereinbefore, i.e., the ram descends to form in the bars 2 a new set of aligned recesses, the nozzles 44 eject measured quantities of plastic cement into the newly formed recesses and a new bar 1 is placed onto the bars 2 so as to come to rest on plastic cement and to be bonded to the bars 2.

The network is cut into sections of requisite dimensions and such sections are ready for storage or for transportation to the construction site.

If desired, the ram 41 may be provided with suitable rollers or heads which come into actual deforming engagement with the bars 2 to provide therein recesses of requisite depth and length. When the bars 2 are to be formed with projections of the type shown in FIGS. 4 and 5, the underside of the ram 41 is provided with blind bores so that the projections are formed in a fully automatic way in response to engagement between the underside of the ram and the bars 2.

The bars 1 may be supplied intermittently by a suitable chute or the like, not shown, or such bars may be severed from a continuous length of metallic stock at such intervals as are necessary to synchronize the cutting operation with the operation of the ram 41. In such instances, and if it is desired to form concrete reinforcing networks of the type shown in FIGS. 7 or 8, the bars 1 may be caused to pass through a deforming device which flattens portions of their peripheral surfaces or which provides the bars 1 with continuous surface portions 21*a* or 31*a*.

In accordance with another embodiment of my method, networks of the type shown in FIG. 8 may be formed by simply pressing the bars 31, 32 against each other to form flat surface portions 31*a*, 32*a* at each intersection. In a following step, the thus deformed bars are moved apart so that the nozzles may inject requisite quantities of plastic cement between the respective surfaces 31*a*, 32*a*. In the final step, the bars are again moved toward each other to insure that the cement fills the gaps between the cooperating surfaces 31*a*, 32*a* and that the cement sets while in contact with both bars at each point of intersection or at all such points where a joint is to be formed.

Of course, it is equally possible to subject the bars to deformation at the time the bars are being made and to assemble such prefabricated bars in such simpler apparatus which require no deforming means but solely a device which delivers measured quantities of plastic cement to some or all points of intersection. For example, the bars may assume the form of hot-rolled wires or they may assume the form of comparatively thick rods of circular cross section, of polygonal cross section or of any other suitable profile.

It was found that the strength of concrete reinforcing networks of the type shown in FIGS. 1 to 8 at least equals the strength of networks which consist of spot welded bars even though the manufacturing cost is but a fraction of the cost of spot welded networks. The current consumption of machines used in the manufacture of my improved network is very low and the material of the bars remains unchanged because the joints need not be heated to temperatures which are necessary for spot welding.

FIG. 10 illustrates a concrete reinforcing network which comprises a series of longitudinally extending coplanar bars 101 and a sceries of transversely extending coplanar bars 102. Certain joints at the points of intersection between these two groups of bars are identified by reference numerals 103 and one such joint is shown on an enlarged scale in FIG. 11. This joint 103 comprises a cruciform jacket 104 of hardened synthetic plastic adhesive which completely surrounds the point of intersection and whose four sleeves 103*a*, 103*b*, 103*c*, 103*d* surround portions of the bars 101, 102. The exposed side of the jacket 104 is provided with identifying indicia in the form of numerals and/or characters 105 which enable a person to immediately determine the gauge of the bars 101, 102, the dimensions of the network, the number of joints in the network, the mesh of the network, or to obtain any other information which is necessary in connection with the use of such structures. The jacket 104 is formed in a suitable mold by pouring or by injection of plasticized synthetic material which is thereupon permitted to set at normal, below-normal or elevated temperatures so as to form a firm bond between the intersecting bars. The thus obtained joint 103 exhibits at least some resiliency, depending on the characteristics of the plastic material, and such material will damp at least some vibrations to which the bar 101 or 102 might be subjected, i.e., the jacket will not transmit all vibrations from the one bar to the other bar or vice versa. The thickness of the jacket depends on the required strength of the joint and on the characteristics of the plastic material.

It goes without saying that indicia similar to those identified by the numeral 105 or a different set of indicia may be provided at the underside of the jacket 104 so that at least some indicia will remain visible regardless of which side of the network is turned toward the observer. Replicas of such indicia are preferably engraved into or project from the mold walls so that the indicia are formed automatically when the mold receives a supply of plasticized cement. Thus, the indicia may assume the form of impressions or they may project from the surface of the jacket.

A nozzle 110 shown in FIG. 11 is used to direct blasts of a heating fluid (such as air or steam) against the intersecting portions of the bars 101, 102 so as to raise the temperature of the bars prior to pouring or injection of cementitious material. Of course, it is equally possible to heat all of the bars which form a network by means of electric current or in any other suitable manner.

The material which forms the joint 104 may be introduced into the mold in granular form, as a paste or as a liquid. It is also possible to use a granular plastic which is mixed with a suitable adhesive binder. In such instances, the binder must be selected with a view to permit consolidation of granulate in response to heating of the mold. If the binder is a paste, the granulate may be applied around the intersecting bars without resorting to molds and is thereupon heated to form a solid jacket.

FIG. 12 illustrates a somewhat different joint 203 which is formed at the intersection of two bars 101, 102 and which consists of a jacket 204 having on its sleeve 203*c* an axially outwardly extending tongue 206 whose exposed side carries some or all of the indicia 205. In addition, this jacket 204 is provided with a conical extension 207 which is preferably perpendicular to the bars 101, 102 and which serves as a spacing or distancing means in that its tip may abut against the bottom wall

of the form into which the concrete is poured. Such extensions **207** may be provided or two or more spaced joints **204** and, together with the tongues **206**, facilitate the task of a workman in locating the indicia **205**. It will be readily understood that the indicia need not always be provided on each and every jacket. For example, and as shown in FIG. 10, the jackets at the four corners and one jacket in the center of the network may be formed in a manner as shown in FIG. 12.

One section **250** of a mold which is used to form the joint **204** is shown in FIG. 13. This mold may be connected with a conduit **251** leading to a source of coolant (such as air or water) which is circulated in channels **252** to cool the plastic material which is poured or injected through an opening **253**. The cavity of the mold section **250** comprises a conical bore **254** which receives plastic material serving to form the extension **207**. The other mold section which cooperates with the section **250** is of similar shape and its cavity comprises a portion which serves to receive plastic material forming the tongue **206**. Of course, if the material used to form the jacket **104** or **204** hardens at room temperature (i.e., without cooling), the conduit **251** and the channels **252** may be omitted.

The material of the jackets **104**, **204** may contain coloring matter to facilitate rapid identification of the network. For example, a network comprising bars with a diameter of ⅜" may include red jackets, whereas a network comprising bars with a diameter of ½" may be provided with green jackets. Thus, the coloring material may be used in addition to or as a substitute for the indicia **105**, **205**.

The method of making the joints **104** and **204** may be carried out in an apparatus which is somewhat similar to the apparatus of FIG. 9. Thus, one section of each mold may be mounted on a base and the other section of each mold may be mounted on a ram which is reciprocable toward and away from the base. Nozzles (analogous to the nozzles **44**) are provided to pour or to inject requisite quantities of liquid or pasty cement which is thereupon caused to harden and to form the jacket **104** or **204**. The formation of jackets is preferably carried out in stepwise fashion, i.e., from the one toward the other end of the network, and one set of bars is moved intermittently with respect to the base in the same way as described in connection with FIG. 9. In other words, all of the bars **101** may be connected with a bar **102** in a simultaneous operation, or vice versa, whereupon the bars **101** advance a step and are connected with the next bar **102**. Of course, it is equally possible to move the ram and the mold sections with respect to the longitudinal bars **101** which remain stationary.

FIG. 14 illustrates a portion of a different concrete reinforcing network which comprises longitudinally extending bars **301** (only one shown) and transversely extending bars **302**. At the points of intersection, the bars **301**, **302** are secured to each other by wires or cords **304** of synthetic plastic material which may form one, two or more loops around the intersecting portions of the bars and whose free ends are welded or heat-sealed to each other, as at **305**.

Referring to FIG. 15, there is shown a joint **404** which resembles the joint **104** of FIG. 11 and which is formed by wrapping a band or tape **205** consisting at least in part of synthetic plastic material around the intersecting bars **401**, **402**. The tape is thereupon allowed to set or is heated or cooled, as the case may be, to rapidly form a strong jacket around the point of intersection. The entire tape **404** may consist of cementitious material or, alternatively, this tape may include a flexible carrier one or both sides of which are coated with an adhesive substance. The carrier may consist of textile material, of woven metallic threads or the like. In response to heating of the tape, the individual coats of cement melt together and form a solid one-piece jacket which is similar to the jacket **104** or **204**.

An important advantage of the joints which are shown in FIGS. 10 to 15 is that the entire intersection is surrounded by cementitious material so that the area of contact between each pair of crossing bars and the respective jacket is normally greater than in the networks of the type shown in FIGS. 1–8. Furthermore, the cross-sectional dimensions of the bars need not be reduced by flattening at the points of intersection so that the strength of each bar remains intact. In other words, the strength characteristics of the bars remain unchanged in all zones thereof and the vibration strength of such networks is much greater than that of networks wherein the bars are spot welded to each other. It is well known that the vibration strength of concrete reinforcing networks which consist of welded steel bars is very low at the welded joints so that such networks are not suited for a number of uses wherein the reinforced concrete is subjected to constant or frequent vibrations.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute esential characteristics of the generic and specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A concrete reinforcing network comprising a plurality of longitudinally and transversely extending elongated metallic members of non-circular cross-section which intersect each other at a plurality of spaced points; and jackets of resilient synthetic resin material surrounding and firmly bonded to said members so as to firmly, but resiliently, secure said members to each other at least at some of said points, whereby any vibrations caused in any of said elongated metallic members will be dampened by said jackets of resilient synthetic resin material surrounding and firmly bonded to said members without said jackets becoming loosened, and whereby said vibrations will thus not be transmitted to others of said elongated metallic members.

2. A concrete reinforcing network comprising a plurality of longitudinally and transversely extending elongated metallic members which intersect each other at a plurality of spaced points; and jackets of resilient synthetic resin material surrounding and firmly bonded to said members so as to firmly, but resiliently, secure said members to each other at least at some of said points, whereby any vibrations caused in any of said elongated metallic members will be dampened by said jackets of resilient synthetic resin material surrounding and firmly bonded to said members without said jackets becoming loosened, and whereby said vibrations will thus not be transmitted to others of said elongated metallic members.

3. A concrete reinforcing network comprising a plurality of longitudinally and transversely extending elongated metallic members which intersect each other at a plurality of spaced points; and jackets of resilient synthetic resin material surrounding and firmly bonded to said members so as to secure the intersecting members firmly, but resilently, to each other, whereby any vibrations caused in any of said elongated metallic members will be dampened by said jackets of resilient synthetic resin material surrounding and firmly bonded to said members without said jackets becoming loosened, and whereby said vibrations will thus not be transmitted to others of said elongated members, said jackets containing coloring matter and being provided with indicia for facilitating identification of the network.

4. A concrete reinforcing network comprising a plurality of longitudinally and transversely extending elongated metallic members which intersect each other at a

plurality of spaced points; and jackets of resilient synthetic resin material surrounding and firmly bonded to said members at said points so as to firmly, but resiliently, secure said members to each other, whereby any vibrations caused in any of said elongated metallic members will be dampened by said jackets of resilient synthetic resin material surrounding and firmly bonded to said members without said jackets becoming loosened, and whereby said vibrations will thus not be transmitted to others of said elongated metallic members, at least some of said jackets comprising distancing projections which are perpendicular to the respective intersecting members.

5. A concrete reinforcing network comprising, in combination, a plurality of longitudinally and transversely extending steel bars which intersect each other at a plurality of spaced points; jackets of a resilient synthetic resin material surrounding and firmly bonded to said bars at said points so as to firmly, but resiliently, secure the intersecting bars to each other, whereby any vibrations caused in any of said elongated metallic members will be dampened by said jackets of resilient synthetic resin material surrounding and firmly bonded to said members without said jackets becoming loosened, and whereby said vibrations will thus not be transmitted to others of said elongated metallic members; and means integral with at least some of said jackets for facilitating identification of the network; at least some of said jackets comprising distancing extensions which are substantially perpendicular to the respective intersecting bars.

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