April 7, 1953 R. F. STOCKTON 2,633,877

WIRE AND MACHINE FOR MAKING

Filed Aug. 28, 1948

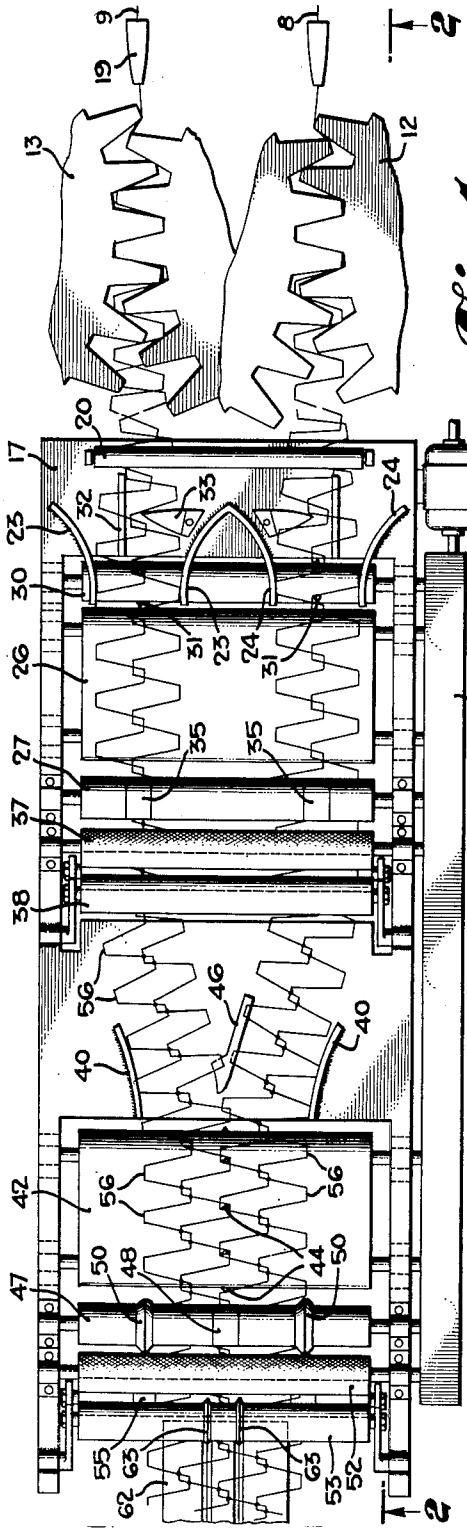


Fig. 1.

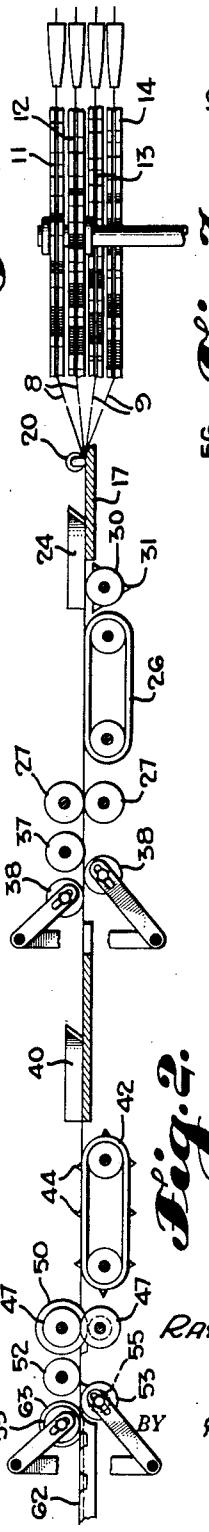


Fig. 2.

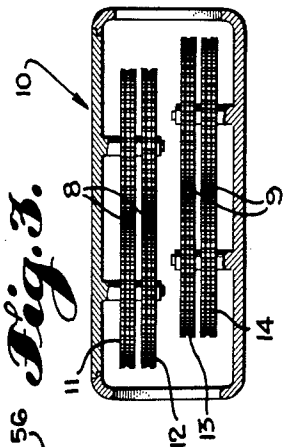


Fig. 3.

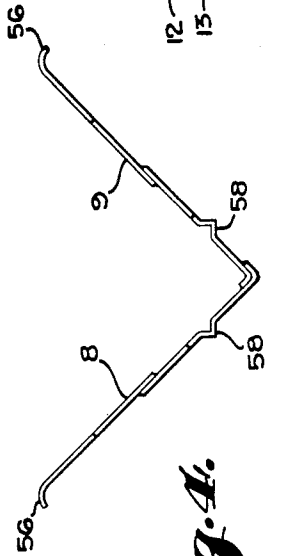


Fig. 4.

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Patented Apr. 7, 1953

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# UNITED STATES PATENT OFFICE

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## WIRE AND MACHINE FOR MAKING

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Application August 28, 1948, Serial No. 46,650

4 Claims. (Cl. 140—112)

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This invention relates to an apparatus and method for making wire lath particularly of the self-furring-plaster-reenforcing type and to an improved wire lath which may be obtained by use of the machine and method disclosed in the present application. The apparatus of the present invention can be used to carry out some of the methods disclosed in my copending applications Serial No. 28,235, filed May 20, 1948, and Serial No. 40,715, filed July 26, 1948, and the present application may be considered as a continuation in part of these prior applications.

One of the main objects of the present invention is to provide a simple and effective apparatus whereby an improved wire lath of the self-furring-plaster-reenforcing type can be cheaply, easily and continuously manufactured from unbent wire.

Another object of this invention is to provide a machine which could be used to carry out the methods disclosed in my prior identified copending applications.

Another object of this invention is to provide an apparatus for making an improved type of wire lath from sinuously bent wire.

Another object of this invention is to provide an improved type of wire lath and to provide a simple method for making this lath.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Fig. 1 discloses a plan view of the apparatus with the convolute forming gears shown broken away;

Fig. 2 is a side elevation view along lines 2—2 of Fig. 1 with the convolute forming gears being broken away;

Fig. 3 is an end elevation view to a reduced scale showing the arrangement of the convolute forming gears; and

Fig. 4 is a view of an improved wire lath embodying the present invention.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, an apparatus embodying the concepts of the present invention is shown in plan view in Fig. 1, this apparatus

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serving to form a section of wire lath and is shown as adapted to handle two pairs of wires 8 and 9 although it is to be understood that a machine could be designed for handling more or less wires and embodying the concepts of the present invention as disclosed in this application.

The pairs of wires 8 and 9 are fed through a gear system as shown in end elevation view in Fig. 3 and it can be seen that these convolute forming gears are supported in a casing 10. The upper pair of wires 8 are fed through an upper set of gears 11 and a lower set of gears 12, each set of gears operating on one of the wires 8 and the wires 9 are operated on by an upper pair of gears 13 and a lower pair of gears 14, each pair of gears operating on one of the wires 9.

In order to better show the operation of the gears in Fig. 1, the upper set of gears 11 have been deleted so as to show how the lower set of gears 12 operate on the lower wire 8 of the pair of wires 8. A motor 16 which may be used to drive all the various parts of the apparatus may be used to drive the gears which gears are initially so assembled that the convoluted wires leave the gears in staggered relationship not only with each other but each pair of wires is staggered with respect the other pair of wires. A table 17 or other suitable means is provided upon which the various parts of the apparatus may be mounted and which table serves as a conveying table for the convoluted wires 8 and 9.

It is preferable that the unbent pairs of wires 8 and 9 be fed through nozzles 19 before they enter the convolute forming gears so that any kinks or bends on the wire will be removed before the wires enter the gears.

After leaving the gears the convoluted wires are fed onto the front edge of table 17 and a roller 20 may be provided on table 17 to bring all the convoluted wires together as shown in Fig. 2.

Magnetized guides 23 for wires 9 and 24 for wires 8 are provided to arrange the wires of each pair with their inner margins in overlapping relationship as shown in Fig. 1 and an endless magnetized belt 26 is provided for conveying and feeding the overlapping convoluted wires from the magnetized guides 23 and 24 to spot welding rollers 27.

As has before been brought out, the pairs of gears 11, 12, 13 and 14 are initially assembled

so that when convolutes are formed in the pairs of wires that these convolutes will be staggered with relation to one another as shown in Fig. 1 and also so that one pair of wires has the inner convolutes therefore staggered with relation to the inner convolutes of the other pair of wires as can best be seen by viewing the left hand portions of the apparatus in Fig. 1. However, it is preferable to provide some means such as an arranging roller 30 which is provided with teeth 31 which teeth serve to insure that the convoluted wires of each pair will be in staggered relationship when the wires move onto the magnetized belt 26 which magnetized belt serves to maintain the partially overlapped and staggered relation of the wires so that the wires may be welded in that position when they reach the spot welding rollers 27.

Although it is preferred and desirable that convolute forming means such as the gears 11, 12, 13 and 14 be provided it is possible that convoluted wire, that is, sinuously bent wire can be obtained and used in the apparatus in which case the convolute forming gears would not be used and in which case auxiliary guides 32 and 33 would be provided for arranging the convoluted wires of each pair in overlapping relationship, guide 32 serving to raise the outer convoluted wire of each pair and guides 33 serving to depress the inner convoluted wires of each pair.

The spot welding rollers 27 may be constructed in any suitable manner one manner being to provide copper bands 35 therearound so that the overlapped convolutes are pressed between these copper bands and, therefore, when a sufficient voltage is applied to the copper bands the resulting current will spot weld the overlapped convolutes together in the manner shown at the left hand side of spot welding rollers 27 in Fig. 1.

It has been found that after this spot welding operation the welded units of convoluted wire are warped or otherwise affected so as to be curved and it is preferable to provide straightening rollers 37 and 38, roller 37 preferably being roughened or knurled and rollers 38 being adjustable toward and away from the wire and from roller 37 so that any suitable correction can be applied to the wire to straighten it.

Roller 38, endless belt 26, spot welding rollers 27 and straightening roller 37 are driven by any suitable means such as gearing or belts from motor 16 and the upper or lower straightening roller 38 can be driven from roller 37 by means of a counter-roller if this is found desirable.

After leaving the straightening rollers 37 and 38 the welded units of convoluted wire pass over the metal portion of table 17 and are led into magnetized guides 40 which serve to position welded unit 8 in parallel overlapping relationship with welded unit 9 and since the convolute forming gears 11, 12, 13 and 14 were originally assembled so that the inner convolutes of welded unit 8 would be staggered with relation to the inner convolutes of welded unit 9, these units will be staggered as shown above magnetized endless belt 42. It is desirable, however, to provide teeth 44 around the center of endless belt 42 which teeth serve to insure that the inner convolutes of welded unit 8 will be staggered with respect to the inner convolutes of welded unit 9, these teeth 44 entering the "eyes" formed by the overlapping of welded unit 8 with welded unit 9 and arranging the overlapping convolutes as desired.

A guide 46 is preferably provided on the middle portion of table 17, the right hand side of the guide serving to depress the inner margin of welded unit 8 and the left hand side of the guide serving to elevate the inner margin of welded unit 9 so that one unit will always overlap the other unit.

Magnetized or magnetic belt 42 maintains the partially overlapped and staggered relationship of the welded units 8 and 9 so that when the welded units are fed into second spot welding rollers 47 that the inner margins of the welded units will be spot welded together in partially overlapped and staggered relationship, as shown in the extreme left hand portion of the apparatus shown in Fig. 1. In the case of the second spot welding rollers 47, copper bands 48 may be provided to serve as conductors for the current flowing through the joint to be spot welded.

In order to make the wire lath self-furring the outer margins of welded units 8 and 9 are bent downwardly as shown in Fig. 1 and which can be best seen in Fig. 4, this downward bending being obtained by providing raised portions 50 on the upper welding roller 47 and matching grooves in the lower welding roller 47.

Straightening rollers 52 and 53 are preferably provided adjacent the spot welding rollers 47 to straighten the wire as the wire leaves the spot welding rollers and the lower roller 53 is provided with grooves 55 to allow the downwardly bent portions 56 of the wire lath to pass therethrough. Straightening rollers 53 are preferably adjustably mounted so that they can be adjusted toward and away from one another and straightening roller 52 and the wire being fed through the apparatus so that any amount of correction of the welded wire can be made and the wire will be straight after passing through the straightening rollers 52 and 53.

The wire lath shown leaving roller 52 at the left hand side of Fig. 1 may be used as a section of the finished product or downwardly extending projections 58, as shown in the case of the wire shown in Fig. 4, are preferably provided on the wire lath to make the wire lath better self-furring which projections can be easily provided by a pair of rollers (not shown), one having raised portions and the other having grooved portions thereabouts, or the straightening roller 53 could be arranged to perform this operation if desired, by providing roller 53 with raised portions 63 and by providing matching grooves in an extension table 62, into which grooves the wire is pressed by the raised portions 63. In such case, it would be desired to drive roller 53 from roller 52 by means of a counter-shaft or by other suitable means.

The wire lath section shown in Fig. 4 is bent to form an approximate right angle section and this particular section might be used for the corner of a room and the relatively flat sections shown leaving the roller 53 in Fig. 1 could be used to cover the side walls of a room. On the other hand, it may be desirable to make the sections of wire for the side walls of the room with a zigzag shape instead of the relatively flat shape and this may easily be provided by means of slanted rollers (not shown) or a roller (not shown) and a grooved member (not shown) or other suitable means (not shown) arranged beyond roller 53 so as to bend the section of wire lath an extent preferably less than that shown in Fig. 4 and the different sections of bent wire lath then joined together in zigzag shape similar

to that shown in my copending application, Serial No. 40,715 of July 26, 1948.

The belts **26** and **42** have herein been referred to as magnetic or magnetized belts but it is to be understood that these belts may be made magnetic by electrical or mechanical means, that is, providing an electromagnet (not shown) for each belt or constructing the belts of permanently magnetized material whichever is desirable.

The present invention is not intended to be limited to the particular type of convolute shown in Fig. 1 although this type of convolute provides a very effective wire lath and the words "a convolute" and "sinuous wire" when used in the specification or claims are intended to be used broadly to cover true sinuously bent wire, zigzag wire, wavy wire or other type of wire which is bent backwardly and forwardly.

The motor **16** is preferably used to drive the whole apparatus and may be provided with suitable reduction units for obtaining the desired speed of travel of the wire, the housing **60** serving to enclose the gears or belts which are used to drive most of the apparatus.

The extension **62** of table **17** serves to convey the wire away from the straightening rollers **52** and **53** and may convey the wire to bending rollers (not shown) for putting projections **58** in the wire if it is desirable, if the portions **63** are not provided on **53**.

By joining the convoluted wires in partially overlapped and staggered relationship particularly when "eyes" are provided it has been found that a superior wire lath is provided which holds plaster in an improved manner and which wire is extremely strong along one of its dimensions and will not expand thereby avoiding the difficulties encountered with partially expanded wire lath wherein further expansion is possible. This wire lath which does not expand is obtainable by providing convolutes with legs in approximate parallel relationship as the wider the legs diverge from the parallel relationship the more expansion of the wire is possible. Means (not shown) will be provided beyond the bending rollers for cutting off desired lengths of the wire lath and any suitable cutting means to perform this operation may be provided.

In the drawing in Fig. 1, it has been necessary in order to get the whole apparatus on the page to position the gears **11**, **12**, **13** and **14** closer to the table **17** than they will be positioned in the working machine. Therefore, the wires leaving these gears are shown broken so as to indicate that the gears are positioned further away from the table than as shown in the drawing.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A machine for making wire lath comprising two pairs of opposed meshing gears rotatable about vertical axes, means rotating said gears and feeding wires therebetween so that the wires may be deformed thereby into laterally corrugated wire, said pairs of gears being out of step with each other so as to deliver corrugated strands longitudinally displaced with respect to each other, means for guiding the corrugated wire strands as they issue from between their respective pairs of gears to cause them to assume a partially overlapping relation with respect to each other, and roller means for spot welding the contacting portions of the overlapped strands together.

2. A machine for making wire lath comprising a first group of pairs of opposed meshing gears rotatable about vertical axes, a second group of opposed meshing gears spaced from the first group and rotatable about vertical axes, means for rotating said gears and feeding wire between the gears of each pair so as to be corrugated thereby, means for guiding the corrugated strands issuing from between the pairs of gears of each group into overlapping relationship, roller means for spot welding the mutually contacting portions of the strands issuing from the gears of the first group together, roller means for spot welding the mutually contacting portions of the strands issuing from the gears of the second group to each other, means for guiding the spot welded pairs of strands issuing from the gears of both groups into mutually overlapping relationship, and means for spot welding the mutually contacting portions thereof together.

3. A machine for making wire lath comprising a first group of pairs of opposed meshing gears, a second group of pairs of opposed meshing gears spaced from the first group, means for rotating said gears and feeding wire between the gears of each pair so as to be corrugated thereby, the pairs of gears of the first group being out of step with each other so as to deliver corrugated strands longitudinally displaced from each other, the pairs of gears of the second group being out of step with each other and out of step with the gears of the first group so as to deliver strands that are longitudinally displaced from each other and in relation to the corrugated strands delivered from the pairs of gears of the first group, means for guiding the corrugated strands issuing from between the pairs of gears of each group into only partially overlapping relationship, roller means for spot welding the mutually contacting portions of the strands issuing from the gears of the first group together, roller means for spot welding the mutually contacting portions of the strands issuing from the gears of the second group to each other, means for guiding the spot welded pairs of strands issuing from the gears of both groups into partially overlapping relationship, and means for spot welding the mutually contacting portions thereof together.

4. A machine for making wire lath comprising a first group of pairs of opposed meshing gears, a second group of pairs of opposed meshing gears, spaced from the first group, means for rotating said gears and feeding wire between the gears of each pair so as to be corrugated thereby, the pairs of gears of the first group being out of step with each other so as to deliver corrugated strands longitudinally displaced from each other, the pairs of gears of the second group being out of step with each other and out of step with the gears of the first group so as to deliver strands that are longitudinally displaced from each other and in relation to the corrugated strands delivered from the pairs of gears of the first group, means for guiding the corrugated strands issuing from between the pairs of gears of each group into overlapping relationship, a toothed roller having teeth adapted to enter between the overlapped portions of the strands, means for rotating the toothed roller, roller means for spot welding the mutually contacting portions of the strands issuing from the gears of the first group together, means for spot welding the mutually

contacting portions of the strands issuing from the gears of the second group to each other, means for guiding the spot welded pairs of strands issuing from the gears of both groups into mutually overlapping relationship, and means for spot welding the mutually contacting portions thereof together.

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