

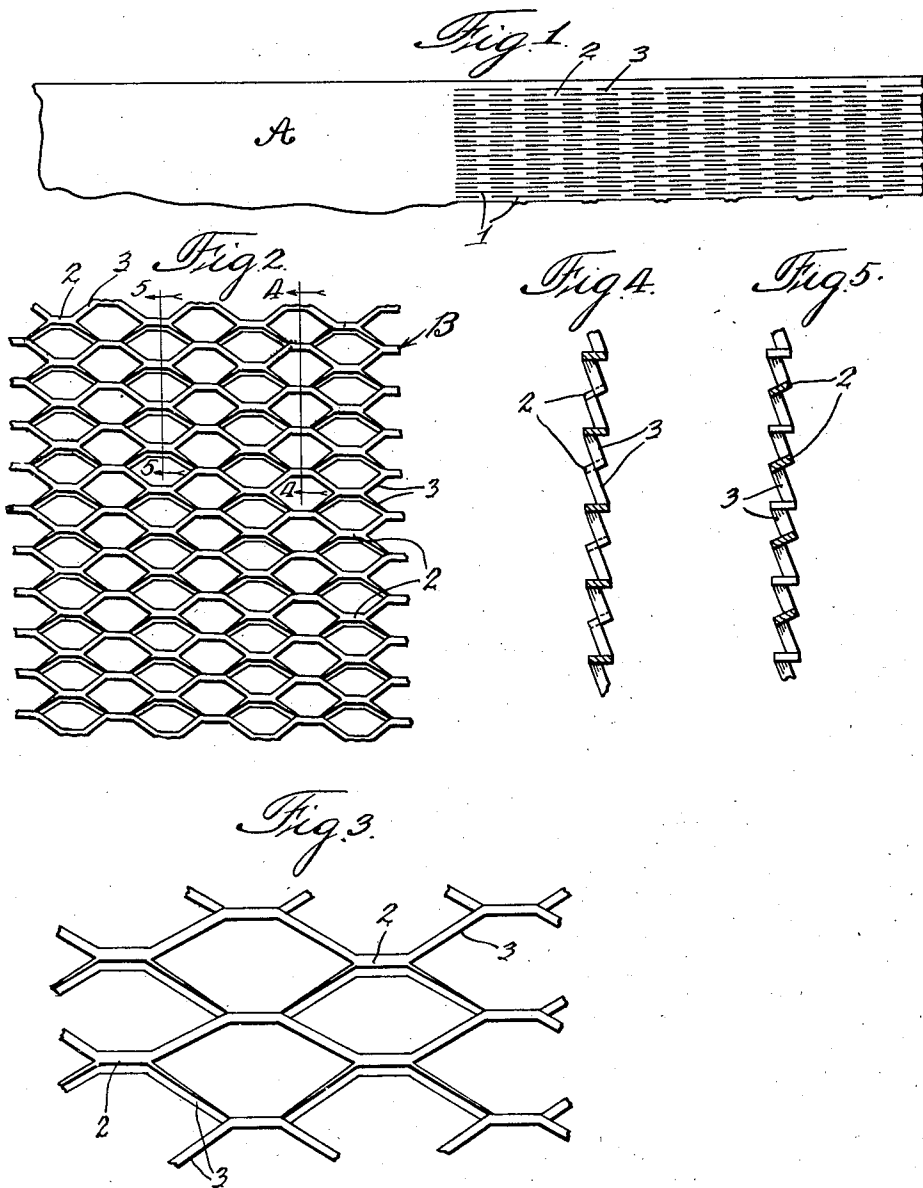
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EXPANDED METAL LATH

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## UNITED STATES PATENT OFFICE

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## EXPANDED METAL LATH

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9 Claims. (Cl. 72—117)

The invention relates to expanded metal lath, having small diamond shaped meshes, which lath is designed to be used as a plaster base. More particularly it refers to expanded metal lath which has been expanded to a greater extent than heretofore and in which the metal is distributed throughout the sheets in a novel manner.

In forming the lath of this invention, a steel blank is first slitted on a slitting machine and then expanded so that there is no substantial stretching of the strands during the expanding step.

It has long been the practice, both in forming metal lath in accordance with the method disclosed in Pearce Patent No. 1,743,800 and prior thereto, to form sheets weighing 2.2 lbs., 2.5 lbs., 3.0 lbs., and 3.4 lbs. per square yard by expanding slitted steel sheets of respectively 27, 26, 25, and 24 gauge to three times the width of the original blank. Thus the blank employed was 8 inches wide by about 108 to 110 inches long. After expansion the sheet measured about 24 inches wide and about 96 or 97 inches in length.

In accordance with the present invention, an 8" blank about 108 to 110 inches long may be expanded to about 3.375 times its original width to produce a finished lath which is about 27 inches or slightly more in width and about 97 inches in length. The strands and bonds are made narrower than has heretofore been customary and, in forming lath of the standard weights, heavier or thicker blanks are employed so that, although the blank is expanded at about 3.375 times its original width the expanded metal itself will come within the standard weights. For example in forming lath which weighs 2.2 lbs. per square yard instead of employing 27 gauge steel blanks as has heretofore been customary, substantially one gauge thicker steel is employed, or approximately 26 gauge. As the strands formed will therefore be thicker and narrower, they are more nearly square in cross section and the perimeter of each strand, taken in cross section, will be less than the perimeter of the strands of the prior art. In this way bonds and strands are formed that are able to withstand corrosion for a much longer period of time under the most disadvantageous conditions.

In the new form of lath, the bonds are preferably formed shorter than the strands. Therefore, by employing approximately one gauge thicker steel blanks than heretofore employed to form the same weight lath, a greater proportion of the additional thickness of metal will be supplied to the strands.

This new type of lath may be more rapidly produced at a materially lower cost. As the blanks may be expanded from 8 inches to 27 inches instead of from 8 to 24 inches, as has heretofore been done, there is produced an increase in square

yardage of about 12½ per cent per unit of time. Thus, if a single machine could fabricate 32 tons of steel a day, in forming the prior art lath the same machine would be able to handle approximately 36 tons of steel, which would mean about 12½ per cent greater yardage per day. If a machine formerly produced 20,000 square yards a day, in forming the new type of lath it would be able to produce about 2,500 additional yards in the same time.

Not only will the same amount of work produce 12½ per cent more of the new lath of the same weights per square yard, but the cost of the steel per ton, due to the greater thickness of the sheets employed, is less than in making the usual type of metal lath. The saving may run from about one to four dollars a ton, depending upon the type of material employed. There is therefore not only a 12½ per cent increase in production, but the total cost of the metal employed is less, making a double saving through the manufacture of this new type of expanded metal lath, which is preferably 27 inches in width.

Further objects and advantages will be apparent from the following description when taken with the accompanying drawing, in which latter:

Figure 1 is a diagrammatic view of a portion of a steel blank, one end of which is shown as having been slitted preparatory to expanding;

Figure 2 is another diagrammatic view of a portion of a sheet of expanded metal formed in accordance with the present invention;

Fig. 3 is an enlarged view of a small section of the expanded metal sheet;

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 2; and

Fig. 5 is a cross sectional view taken on the line 5—5 of Fig. 2.

In forming expanded metal lath in accordance with the present invention, a blank (A), 8 inches wide, is preferably employed. This may be expanded to form a sheet (B), 27 inches or more in width. To produce the standard weight laths, that is, 2.2 lbs., 2.5 lbs., 3.0 lbs. and 3.4 lbs. per square yard, instead of employing 27, 26, 25 and 24 gauge steel, respectively, as has heretofore been done, I employ blanks which are approximately one gauge thicker, that is, about 26, 25, 24 and 23 gauge, respectively. Transverse rows of overlapping slits (1) are formed in the blank on the usual type of slitting machine, such as a rotary cutter, to form bonds (2) and strands (3). I have found that if the slits are made about 45 thousands of an inch apart to form a strand approximately the same width and a bond of substantially twice this width, a very satisfactory sheet results. Although it is possible, it is not desirable to make the strands substantially more than 47 thousands of an inch in width.

While various cutters may be employed, I have found that a 30 or 32 notch rotary cutter, of about 8 inches in diameter when new, is very satisfactory.

- 5 After the blank has been slitted as above described, it is next passed through an expanding machine of any suitable type such, for instance, as one having adjustable expander arms. In this operation the blank (A) is pulled out to  
 10 about 3.375 times its original width; that is, if an 8" blank is employed, the finished sheet (B) will be approximately 27 inches wide. Ordinarily the expansion is slightly greater than this to provide margins on each edge of the sheet.  
 15 During the expanding, the blank is reduced in length so that the finished sheet is approximately 97 inches long. This permits necessary trimming.

- Although it is preferable to employ an 8" blank to produce a 27" sheet, as in this case, the same machine with only minor modifications may be  
 20 employed to produce either a 24" sheet or a 27" sheet merely by changing the cutters and the angle of the expander arms. Other width blanks may also be employed. For instance, a 7" blank  
 25 could be used to produce the ordinary 24" sheet.

- It is also possible to employ blanks which are more than one gauge thicker than that heretofore used, in which case the sheet would preferably be expanded to more than 3.375 times the  
 30 original width. For example, a 6 $\frac{1}{4}$ " steel blank, of a thickness substantially the same as 25 gauge, after being slitted could be expanded to 24 inches to produce lath weighing approximately 2.2 lbs.  
 35 per square yard. In this case, the strands (3) could be made even narrower, such as about 40 to 44 thousandths of an inch in width or in some cases a little less.

- I have found it generally desirable to form the strands (3) longer than the bonds (2). In some  
 40 instances this may be in the ratio of 2 to 1. It must, of course, be understood that the relative length of the strands to the bonds will vary to some extent, particularly when rotary cutters  
 45 are employed. In rotary cutters the notches remain constant in length so that the bonds will be substantially the same length while the distance between the notches gradually decreases as the cutters are worn down and decrease in circumference. This causes the slits and thereby  
 50 the strands to decrease in length as the cutter is reduced in size. It is preferable to form the bonds (2) not over approximately 185 thousandths of an inch in length and bonds of 125 thousandths  
 55 of an inch in length have proved quite satisfactory.

- In order to keep the perimeter of the strands, when taken in cross section, sufficiently low to protect the same against corrosion, I have ascertained that the ratio of the width to the thickness  
 60 should be not more than about 2.75, 2.4, 2.0 and 1.6 to 1 for, respectively, 2.2 lb., 2.5 lb., 3.0 lb. and 3.4 lb. lath, and it is preferable that the ratios for the same weight laths be about 2.6, 2.25, 1.9 and 1.5 to 1. Of course, if thicker blanks are  
 65 employed the ratio of the thickness to the width will be even less.

- While I have shown and described a particular type of expanded metal lath, it is to be understood that various changes and modifications may  
 70 be made therein without departing from this invention, and I therefore wish to be limited only by the prior art and the scope of the appended claims.

#### I claim:

1. Expanded metal lath for use as a plaster base weighing per square yard approximately one of the following weights: 2.2 lbs., 2.5 lbs., 3.0 lbs., 3.4 lbs.; made respectively from slitted steel  
 5 blanks of an original thickness, before slitting, of substantially not less than 26, 25, 24 and 23 gauge and being expanded not substantially less than 3.375 times the width of the original blank.

2. Expanded metal lath for use as a plaster  
 10 base weighing per square yard approximately one of the following weights: 2.2 lbs., 2.5 lbs., 3.0 lbs., 3.4 lbs.; made respectively from slitted steel blanks of an original thickness, before slitting, of substantially 26-25, 25-24, 24-23, 23-22, gauge, 15 and being expanded not substantially less than 3.375 times the width of the original blank.

3. Expanded metal lath weighing per square yard approximately one of the following weights: 2.2 lbs., 2.5 lbs., and 3.4 lbs.; made respectively from steel blanks of a thickness substantially the same as or greater than 26, 25, 24,  
 20 and 23 gauge and being expanded from approximately 3.375 to 4.5 times the width of the blank.

4. Expanded metal lath weighing per square  
 25 yard approximately one of the following weights: 2.2 lbs., 2.5 lbs., 3.0 lbs., and 3.4 lbs.; made respectively from steel blanks of a thickness substantially the same as or greater than 26, 25, 24, and 23 gauge and being expanded not substantially less than 3.375 times the original width of  
 30 the blank and having strands not more than about 47 thousandths of an inch in width.

5. Expanded metal lath weighing per square  
 35 yard approximately one of the following weights: 2.2 lbs., 2.5 lbs., 3.0 lbs., and 3.4 lbs.; being expanded not substantially less than 3.375 times the original width of the blank from which it was made and having strands the ratio of whose width to thickness for the above recited respective  
 40 weights being not more than 2.75, 2.4, 2.0 and 1.6 to 1.

6. Expanded metal lath weighing per square  
 45 yard approximately one of the following weights: 2.2 lbs., 2.5 lbs., 3.0 lbs., and 3.4 lbs.; being expanded not substantially less than 3.375 times the original width of the blank from which it was made and having strands the ratio of whose width to thickness for the above recited respective  
 50 weights being not more than 2.75, 2.4, 2.0 and 1.6 to 1, said strands being not substantially more than 47 thousandths of an inch in width.

7. Expanded metal lath weighing per square  
 55 yard approximately 2.2 lbs., made from a steel blank of a thickness substantially the same as or greater than 26 gauge and being expanded not substantially less than 3.375 times the original width of the blank.

8. Expanded metal lath weighing per square  
 60 yard approximately 3 lbs., made from steel blanks of a thickness substantially the same as or greater than 24 gauge and being expanded not substantially less than 3.375 times the original width of the blank.

9. Expanded metal lath weighing per square  
 65 yard approximately 3.4 lbs., made from steel blanks of a thickness substantially the same as or greater than 23 gauge and being expanded not substantially less than 3.375 times the original  
 70 width of the blank.

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