N. E. CLARK.

EXPANDED METAL FABRIC.

APPLICATION FILED APR. 11, 1908.

930,350.

Patented Aug. 10, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

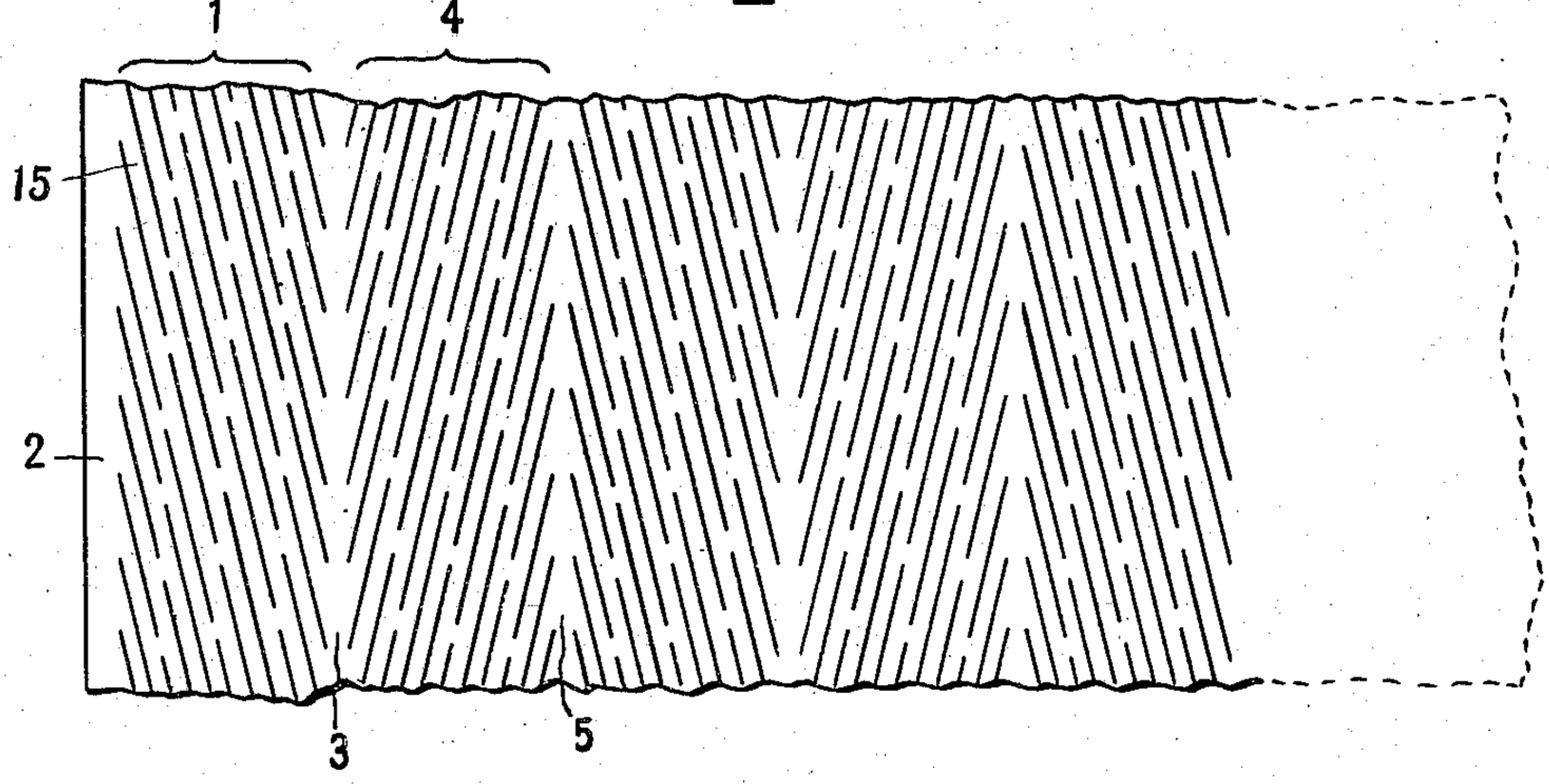


Fig. 2.

Fig. 3.

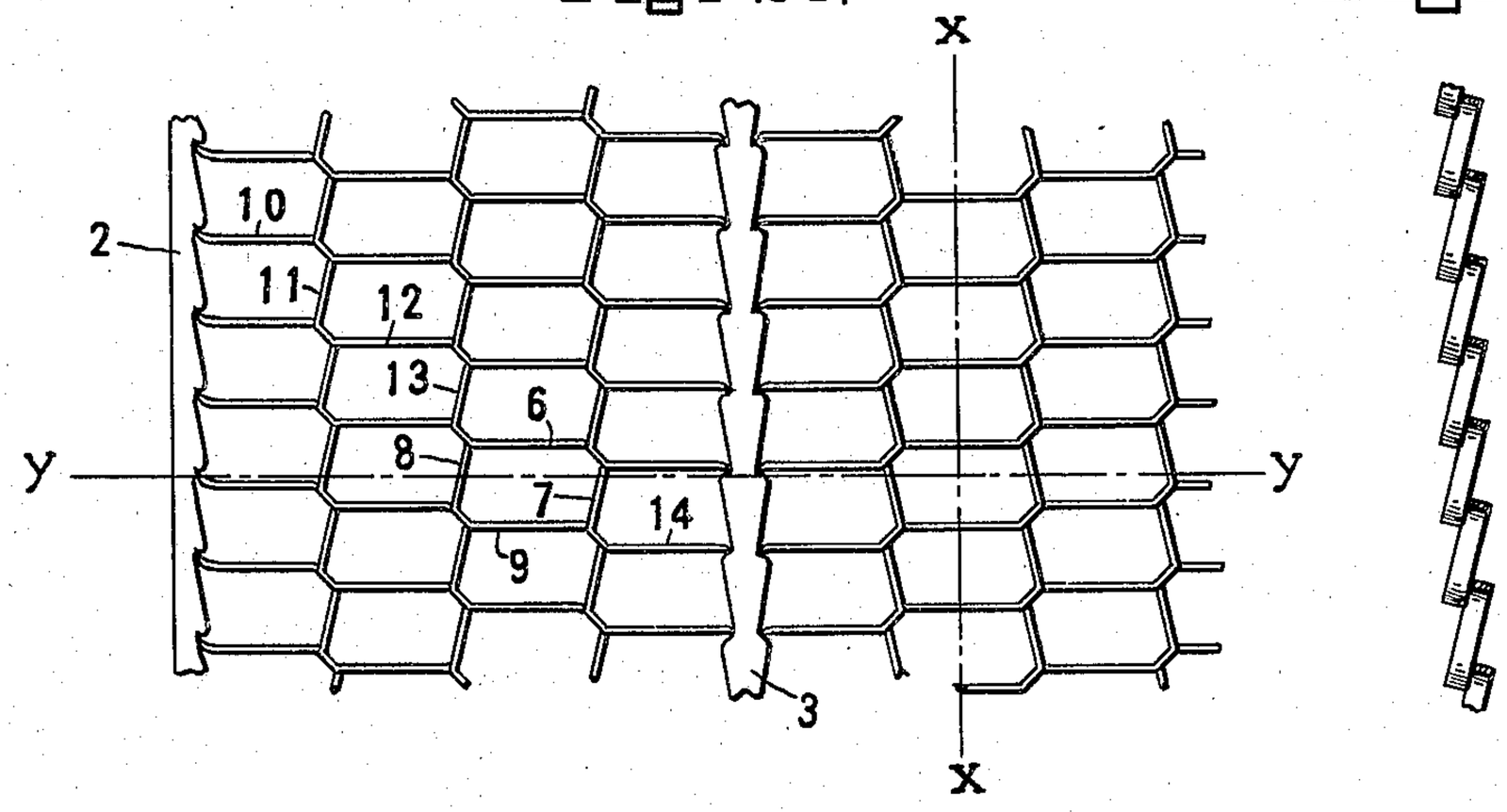
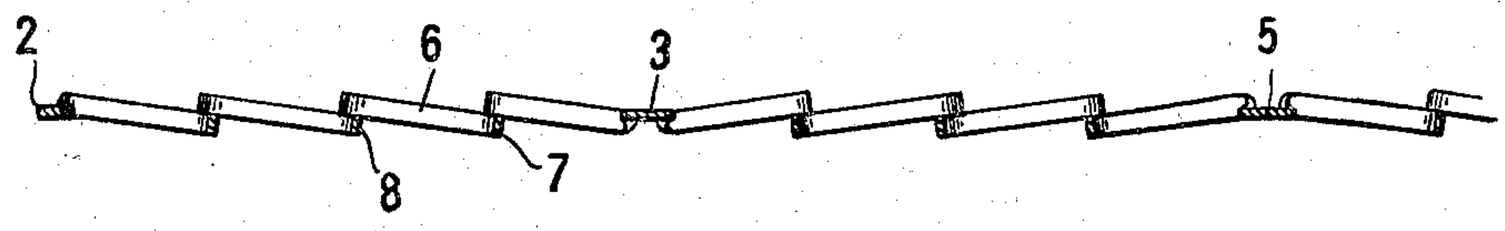


Fig. 4.



WITNESSES

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N. E. CLARK.

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2 SHEETS—SHEET 2.

Fig. 5.

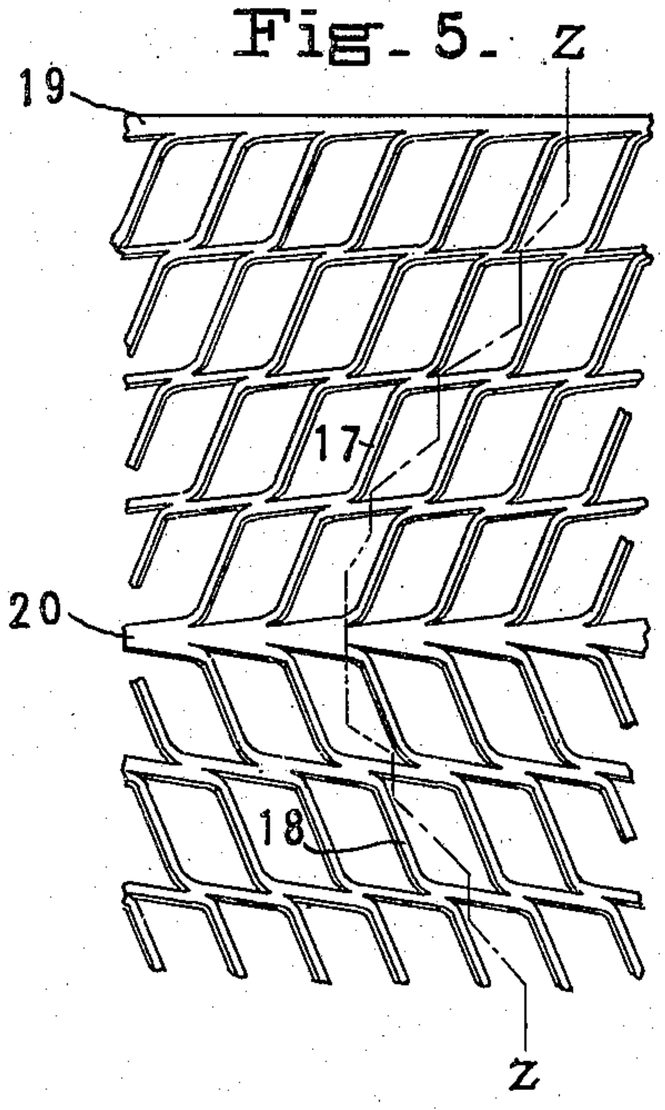


Fig. 6.

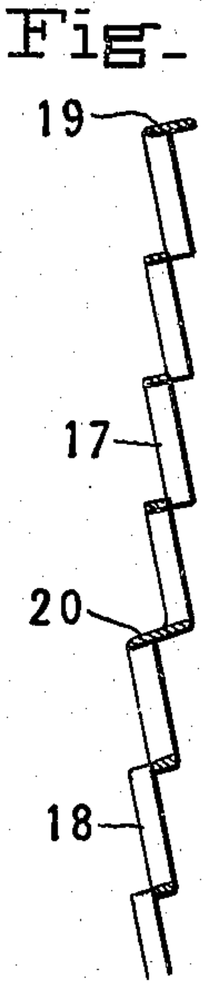


Fig. 7.

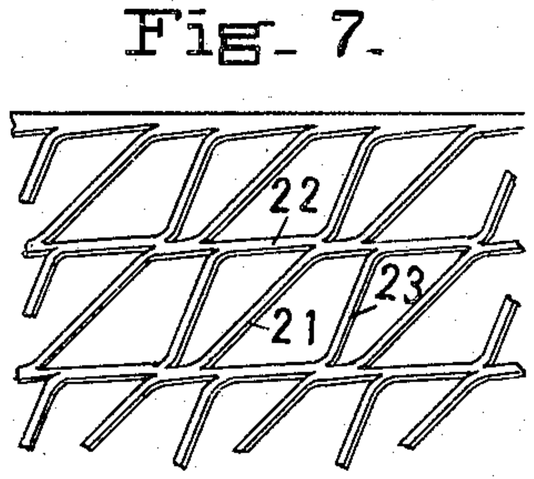


Fig. 8.

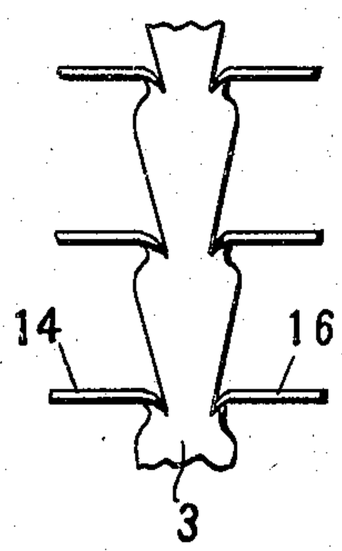


Fig. 10.

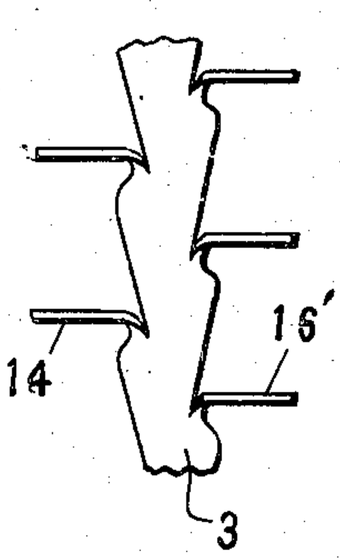


Fig. 11.

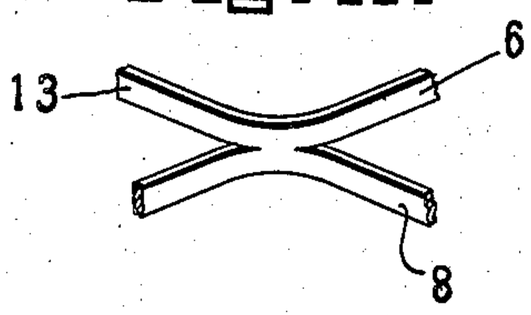


Fig. 9.

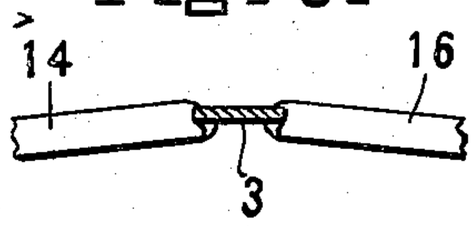


Fig. 12.

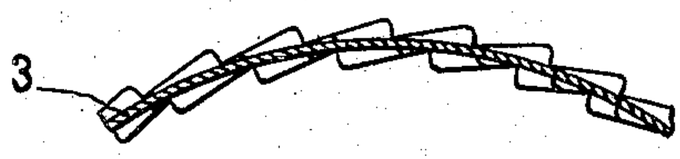


Fig. 13.

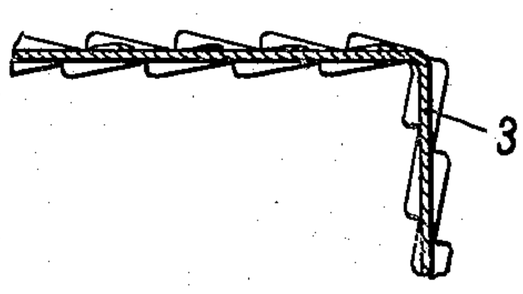


Fig. 14.

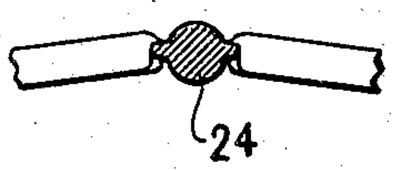
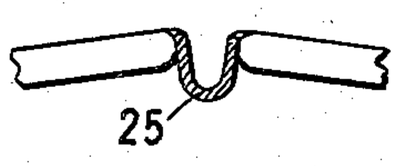


Fig. 15.



WITNESSES

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UNITED STATES PATENT OFFICE.

NORRIS ELMORE CLARK, OF PLAINVILLE, CONNECTICUT.

EXPANDED-METAL FABRIC.

No. 930,350. Specification of Letters Patent. Patented Aug. 10, 1909.

Application filed April 11, 1908. Serial No. 426,558.

To all whom it may concern:

Be it known that I, NORRIS ELMORE CLARK, a citizen of the United States, and resident of Plainville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Expanded-Metal Fabrics, of which the following is a specification.

My invention relates to improvements in expanded metal fabrics, particularly for lathing and concrete reinforcement.

The main objects of the invention are to provide a construction of this character which has good holding capacity, and which is rigid and has great tensile strength and yet is adapted to a great variety of uses, and which can be manufactured cheaply.

The invention will be found to consist of improvements as hereinafter more fully set forth and illustrated in the accompanying two sheets of drawings:—

Figure 1. is a view showing the arrangement or layout of slitting; Fig. 2. shows a fragment of the material expanded in the preferred manner; Fig. 3. is a sectional view of same on the plane of the vertical line X X Fig. 2; Fig. 4. is a sectional view on the plane of the horizontal line Y Y Fig. 2; Fig. 5. is a fragmentary view of the product formed in a somewhat different manner; Fig. 6. is a sectional view of the same on the plane of the vertical line Z Z Fig. 5; Fig. 7. is a detail of a fragment of a modification of the fabric; Fig. 8. is a detail on a larger scale showing a fragment of one of the tension strips; Fig. 9. is a sectional view of the same; Fig. 10. is a view similar to Fig. 8. of a modified strip; Fig. 11. is a detail view on a large scale of a fragment showing a bond; Fig. 12. is a detail sectional view along one of the tension strips showing the fabric curved as for a cornice; Fig. 13. is a similar view showing the fabric bent at a sharp angle; Figs. 14. and 15. are fragmentary sections of round and corrugated tension members respectively.

The material is preferably first slitted by suitable cutters and then expanded by other means. The slitting is in an arrangement as shown in Fig. 1, in which the material as in area 1 is perforated, lanced or slitted in uniform staggered arrangement as is usual in expanded metal manufacture but along lines inclined relative to the sides of the sheet. Area 1, may be considered as a unit with the left hand border strip 2, and the right hand border strip 3, which strips serve as longitudinal tension members. The unit may be repeated to obtain the width desired, reversing the direction of inclination of the slits in order to avoid waste of material. For instance the slits in area 4 slope upwardly to the right while those in area 1 slope upwardly to the left. Tension strip 5 bounds area 4 on the right.

After slitting as described, the material is expanded or stretched in any suitable manner so as to open the slits. The tension strips or members such as 2, 3 and 5 are preferably left flat (see Figs. 8 and 9) so that they may be curved or bent when desired (see Figs. 12 and 13). The central meshes of each unit area are bounded by strands such as 6, 7, 8 and 9 which stand substantially on edge and thus form convenient supports for plaster when the fabric is used for lathing. Strands 10, 11, 12, 13, 6, 7 and 14 constituted originally one straight strip 15 in the slitted stock Fig. 1. The strands 10 and 14 are turned flat just as they join the tension members 2 and 3 respectively. All the bonds between the strands being as shown in Fig. 11 permit the body of the fabric to be curved, or formed as desired. The strands of the adjacent areas are preferably connected opposite one another as are the strands 14 and 16 in Fig. 8. but may be alternate, as are strands 14 and 16′ in Fig. 10. Each form requires its own arrangement of slitting.

When the width of the strand is greater than the thickness of the metal and the sheet of slitted material is stretched as shown in Fig. 5. the strands 17 and 18, the bonds and the tension members 19 and 20 all tend to turn on edge as shown in Fig. 6. unless otherwise directed or treated. This is useful in some ways but cannot be curved without buckling the tension members.

In the form of body shown in Fig. 7. the strands are arranged somewhat differently. Strand 21 is longer than either 22 or 23 and thus forms the diagonal of a large mesh. This also forms a flexible body. The strands of the body being arranged on edge make the fabric sufficiently rigid for purposes of erection. The type of bond however permits the body to be curved or readily formed. The longitudinal members serve to give direct tensional strength and being flat they may be bent uniformly without buckling. The tension members being in the general plane of the material and the strands substantially at right angles thereto, the fabric is particu-

larly adapted to uses where vibration might tend to loosen the fabric from the plaster or concrete in which it is embedded. The arrangement of the slitting shown which permits the formation of a rhombic mesh is preferred. The bonds are all parallel but are inclined relatively to the direction of the tension members. Other proportions may be used however if desired so far as the broad claims herein are concerned. So also if desired the fabric may be made from specially rolled sections in which the tension members are round or otherwise shaped in cross section as at 24 in Fig. 14. The strips or tension members may also be corrugated or grooved if desired as at 25 in Fig. 15. These forms do not have the flexibility of the preferred form of Figs. 2, 3 and 4 but have their own advantages.

What I claim is:

1. An expanded metal fabric consisting of flat longitudinal tension members connected by zig-zag strands connected at a plurality of intervals and arranged on edge.

2. An expanded metal fabric consisting of longitudinal tension members connected by parallel, zig-zag strips connected by bonds inclined relatively to the direction of the tension members.

3. An expanded metal fabric comprising substantially parallel tension members and a plurality of zig-zag bent strips integrally connecting the tension members, the strips being arranged edgewise to the general plane of the fabric and all extending in the same direction, each strip being integrally united with the adjacent strip at a plurality of points.

4. An expanded metal structure comprising a central tension member, two side tension members, a plurality of zig-zag strips integrally connecting the central and side members, each strip being on edge and integrally connected to each adjacent strip at a plurality of points.

5. An expanded metal fabric comprising substantially parallel straight members whose principal surfaces are substantially parallel with the plane of the fabric, zig-zag strands connected to each other at a plurality of points and arranged on edge and connecting the adjacent edges of adjacent members and inclined relative thereto, the direction of inclination of the strands in one section being opposite to the direction of inclination of the strands of the adjacent sections.

NORRIS ELMORE CLARK

Witnesses:

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ROBT. S. ALLYN.