

N. E. CLARK.
EXPANDED METAL MANUFACTURE.
APPLICATION FILED APR. 11, 1908.

979,130.

Patented Dec. 20, 1910.

Fig. 1.

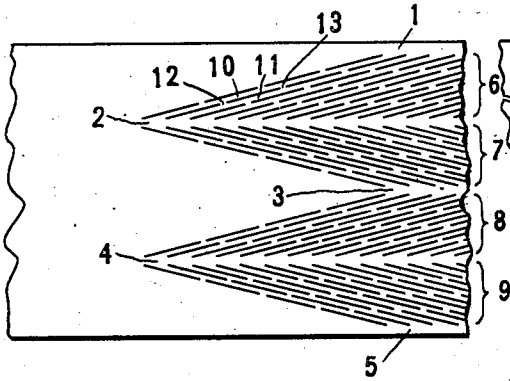


Fig. 2.

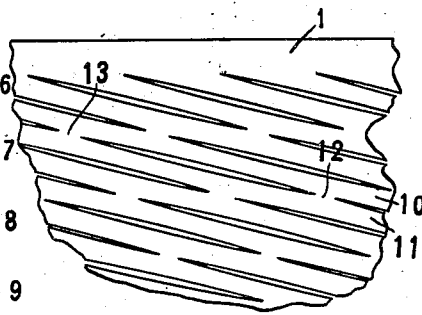


Fig. 3.

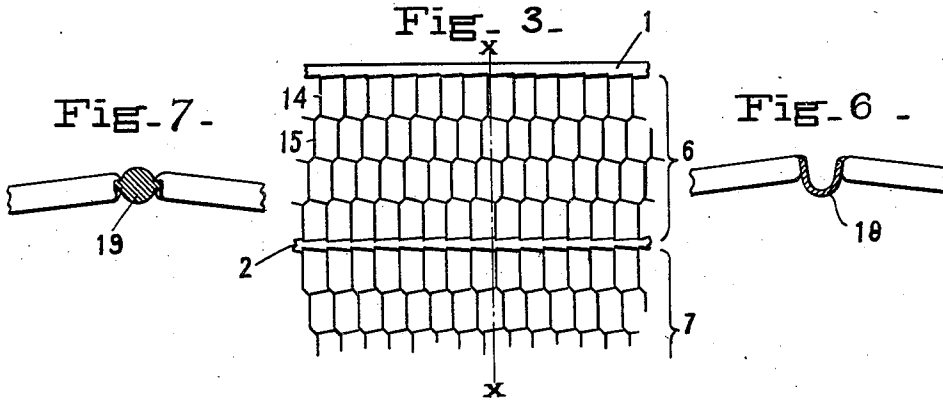


Fig. 7.

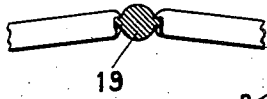


Fig. 6.



Fig. 4.

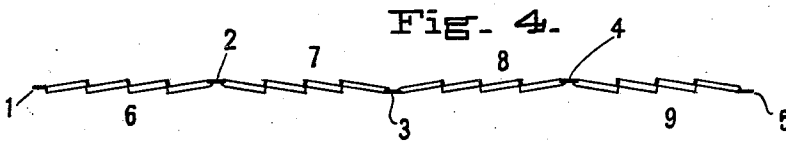
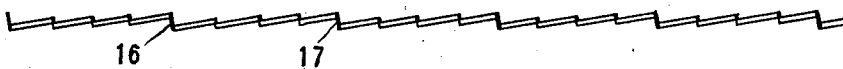


Fig. 5.



WITNESSES

J. C. Kippen
Alia P. Koller

INVENTOR

Norris Elmore Clark

W. H. Allen
ATTORNEY

UNITED STATES PATENT OFFICE.

NORRIS ELMORE CLARK, OF PLAINVILLE, CONNECTICUT.

EXPANDED-METAL MANUFACTURE.

979,130.

Specification of Letters Patent. Patented Dec. 20, 1910.

Application filed April 11, 1908. Serial No. 426,557.

To all whom it may concern:

Be it known that I, NORRIS ELMORE CLARK, 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 Manufacture, of which the following is a specification.

My invention relates to an improved method of manufacturing expanded metal.

The main objects are to produce a fabric particularly suitable for concrete reinforcement and lathing, cheaply and uniformly.

Another object is to produce a fabric which while sufficiently rigid is also flexible enough to permit bending uniformly. I have sought to avoid having the cut edges catch in expanding. I have desired to produce a fabric having longitudinal tension members united by cross strands producing a nearly square mesh with the strands on edge.

The most important features of this new method are first, the slitting or lancing of a strip in staggered arrangement but inclined to the direction of feed, so as to produce longitudinal tension members or bars united by extensible bodies; second, flattening the slitted stock so as to slightly open the slits and separate the rough cut edges and third applying longitudinal tension to the tension members as well as lateral tension, so as to separate the tension members laterally and move some of them longitudinally.

Figure 1. shows the arrangement of slitting. Fig. 2. shows a fragment after flattening enlarged so as to exaggerate the opening of the slits. Fig. 3. shows a piece of the material expanded or stretched. Fig. 4. is a sectional view of the same on the plane of the line X. X. Fig. 5. is a similar view of a modification, the tension member being inclined. Fig. 6. is a fragmentary sectional view showing a tension member grooved or corrugated. Fig. 7. is a similar view showing a tension member round in cross section.

The stock is preferably fed longitudinally and slitted by suitable cutters so as to leave continuous tension members such as 1, 2, 3, 4, and 5 connected by extensible areas such as 6, 7, 8 and 9. Each of these areas is made up of a plurality of parallel strips such as 10 and 11 connected together at a plurality of points such as 12 and 13,

the connections throughout the area being staggered relatively to a direction at right angles to the slits. In order to avoid waste the slitting of alternate areas such as 6 and 7 may be reversely inclined as shown. The slitting sometimes produces slight burs on the edges of the strands which tend to interfere with expansion. This difficulty is overcome by flattening the stock, preferably by rolling, after slitting. This separates the edges and also removes any unevenness or buckling of the strands and renders the subsequent expansion more uniform. The flattening may be done in the same machine with the slitting, in a separate operation, or in the same machine which is to expand the material.

After slitting and flattening as described, the material is stretched or expanded by suitable mechanism. The longitudinal members 1, 2, 3, 4 and 5 are drawn apart so as to bend the strips such as 10 and 11 Fig. 1, into the zigzag form shown in Fig. 3. In this bending the strips turn on edge if their width is greater than the thickness of stock. During the lateral expansion the alternate members such as 2 and 4 tend to move longitudinally relative to the other members 1, 3 and 5. The resistance to such movement is however so great that it is not practical to carry the expansion to such an extent as to bend the strands 14, 15 etc. at right angles to the tension members. I have found that the mesh can be opened out nearly rectangular by applying longitudinal tension to the alternate members 1, 3 and 5 in a direction relatively opposite to tension applied to members 2 and 4 either during the lateral expansion or subsequent thereto. Such longitudinal tension is advantageous for assisting the lateral expansion even when it is not carried to such an extent as to open the mesh fully.

The tension members of the fabric as shown in Figs. 3 and 4 are flat and the fabric is flexible so that it may be readily bent, curved or otherwise formed but it is nevertheless sufficiently rigid for purposes of erection.

When the intermediate tension members are allowed to turn on edge as shown at 16 and 17 in Fig. 5, the material is less flexible but has its own advantages. If desired the tension members may be grooved or corrugated as shown in section at 18 in Fig. 6. Material may be made according to my im-

proved method from stock having longitudinal ribs such as 19 in Fig. 7. Such stock would be slitted and rolled between the ribs and then expanded.

5. What I claim is:

1. The method of forming reticulated metal fabric which consists in slitting a sheet so that it is composed of a plurality of extensible sections and tension members, each section having a plurality of parallel strips connecting two tension members and inclined relative thereto and connected to each other at a plurality of points, the strips of one section being inclined relative to the strips of the adjacent section, and then drawing apart the tension members so as to bend the strips into zig-zag form and open the slits.

2. The method of forming an expanded metal fabric which includes slitting the stock in staggered arrangement inclined relative to the edges and leaving longitudinal tension members, flattening the slitted area so as to open the slits slightly and then drawing apart the tension members and opening the slits to form the meshes.

3. The method of forming an expanded metal fabric which includes slitting the stock so as to produce longitudinal members united by an extensible body composed of narrow strips and then drawing apart the longitudinal members and subjecting alternate members to relatively opposite longitudinal tension to bend the strips and form the meshes.

4. The method of forming an expanded metal fabric which includes, slitting stock in staggered arrangement inclined relative to the direction of the edges of the stock, rolling the slitted portions flat and then expanding the slitted portions and allowing the strands to turn edgewise.

5. The method of forming an expanded metal fabric which includes slitting stock so that it is composed of longitudinal tension members united by a laterally extensible body, flattening said body after slit-

ting and then expanding said body by drawing said tension members apart.

6. The method of forming an expanded metal fabric which includes slitting stock so that it is composed of longitudinal tension members united by a laterally extensible body, flattening said body after slitting and then expanding said body by drawing said tension members apart, and subjecting one member to longitudinal tension in one direction and subjecting the adjacent member to longitudinal tension in the opposite direction.

7. The method of forming reticulated metal fabric which consists in slitting a sheet so that it is composed of a plurality of extensible sections and tension members, each section having a plurality of parallel strips connecting two tension members and inclined relative thereto and connected to each other at a plurality of points, the strips of one section inclined relative to the strips of the adjacent section, and then drawing apart the tension members so as to bend the strips into zig-zag form on edge and open the slits while maintaining the tension members parallel to the plane of the fabric.

8. The method of forming reticulated metal fabric which consists in slitting a sheet so that it is composed of a plurality of extensible sections and tension members, each section having a plurality of parallel strips connecting two tension members and inclined relative thereto and connected to each other at a plurality of points, the strips of one section being inclined relative to the strips of the adjacent section, and then drawing apart the tension members so as to bend the strips into zig-zag form and open the slits, the bonds connecting adjacent strips being inclined relative to the length of the tension members.

NORRIS ELMORE CLARK.

Witnesses:

ALICE P. GOELLER,
ROBT. S. ALLYN.