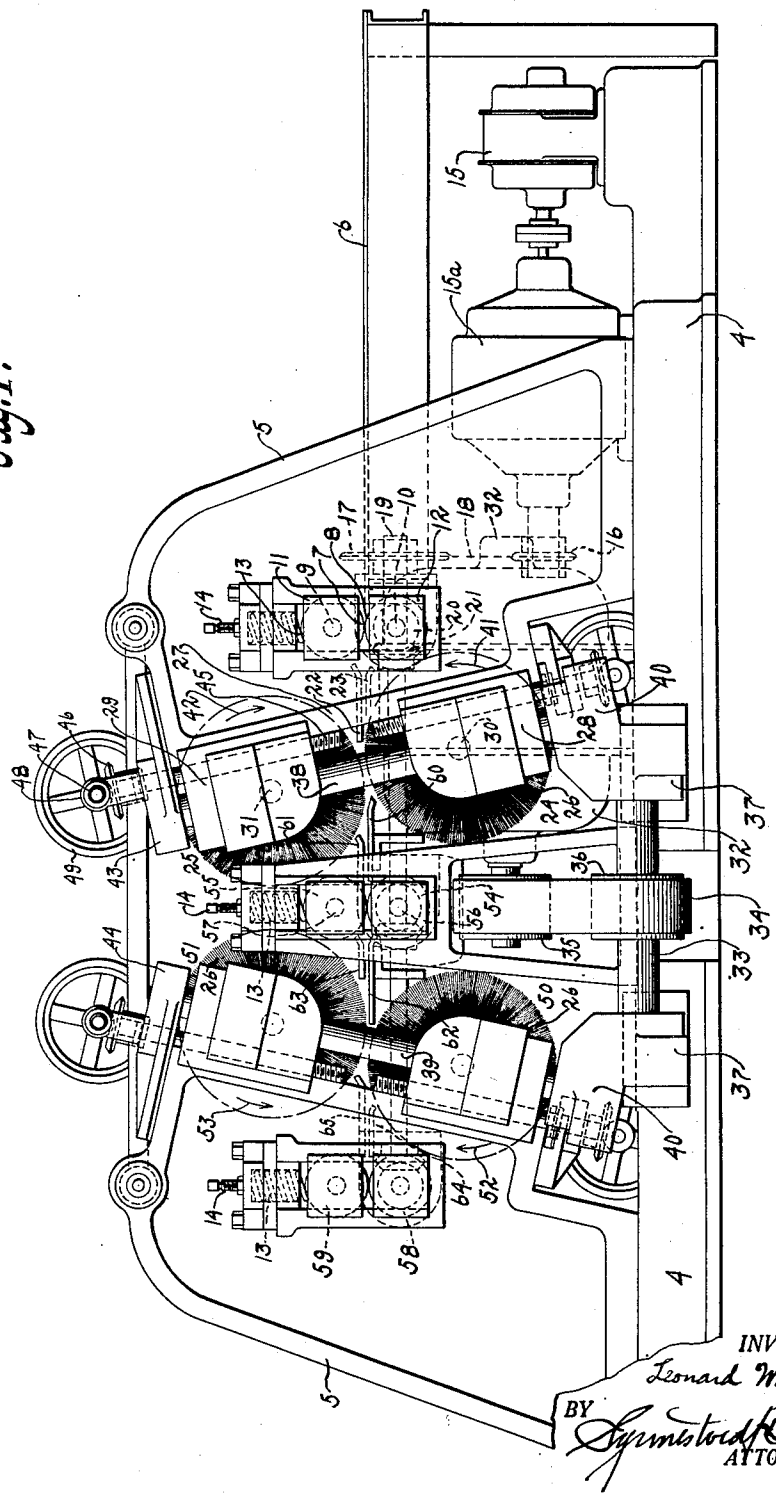
March 6, 1934. L. W. CROSS 1,950,372

EXPANDED METAL AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Filed May 18, 1931 2 Sheets-Sheet 1

Fig. 1.



INVENTOR.
Leonard W. Cross
BY Symmes Hood & Kechner
ATTORNEYS.

March 6, 1934. L. W. CROSS 1,950,372

EXPANDED METAL AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Filed May 18, 1931 2 Sheets-Sheet 2

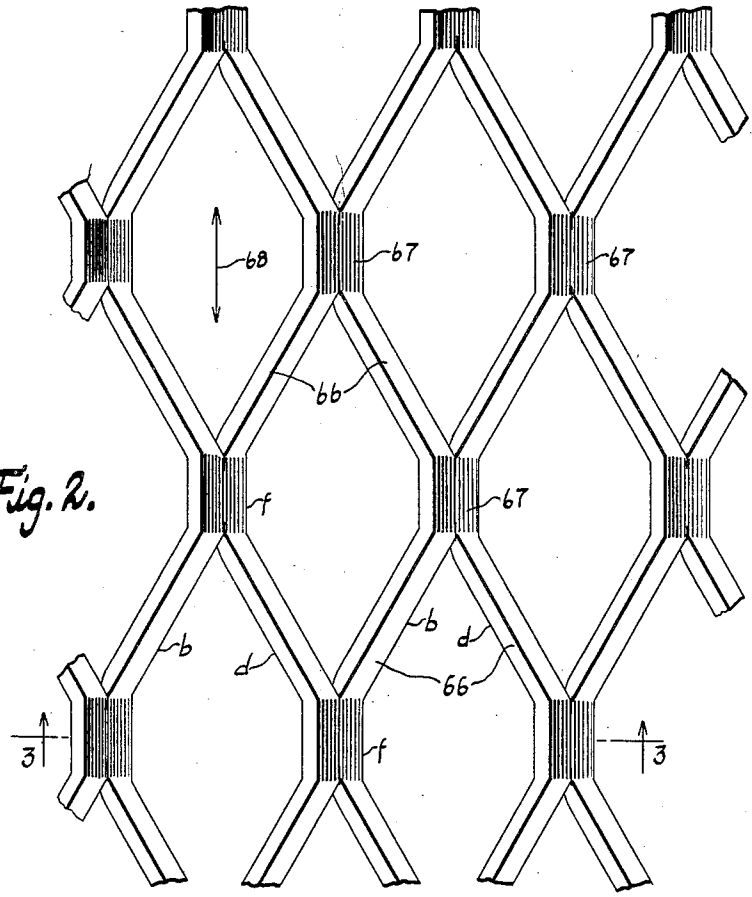


Fig. 2.

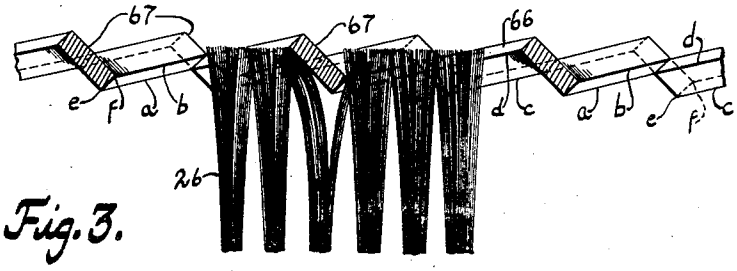


Fig. 3.

INVENTOR.
Leonard W. Cross
BY Symmes Dyer & Zerbe
ATTORNEYS.

Patented Mar. 6, 1934 1,950,372

UNITED STATES PATENT OFFICE

1,950,372

EXPANDED METAL AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Leonard W. Cross, Wheeling, W. Va., assignor to The Consolidated Expanded Metal Companies, Wheeling, W. Va., a corporation of West Virginia

Application May 18, 1931, Serial No. 538,062

22 Claims. (Cl. 164—17)

This invention relates to a method and apparatus for finishing metallic fabric and is particularly concerned with the removal of "knife-edges" or metal slivers which are often if not generally found at the edges of strands of the meshwork as a result of its manufacture.

In considerng the nature of the present invention it should be borne in mind that in the production of so-called "expanded metal lath" or fabric the apparatus employed generally includes slitting knives or cutters which serve to produce openings or slots in sheet metal blanks. In some instances the slitting elements themselves also serve to effect the expansion of the slitted blanks. In accordance with other methods the expansion is accomplished by the use of separate expanding elements or machines. In either event the action of the slitters in penetrating the blanks results in the production of very sharp and jagged slivers or knife-edges at the points of slitting.

This rough or sharp character of metallic fabric heretofore produced has considerably restricted and impaired the usefulness thereof. For example, as will readily be understood, sharp and jagged edges of the character referred to are very dangerous to the workmen handling the material, such sharp edges frequently resulting in cuts or injury. Furthermore, this condition is especially serious where metallic fabric of relatively large gauge as well as large meshwork is concerned. By way of example it should be noted that in the production of so-called "Golding" fabric, material as great as three-eighths of one inch in thickness is sometimes used. According to the Golding method of production, furthermore, the metal blanks are fed to a combined slitting and expanding apparatus in the nature of a reciprocating press mechanism, the press mechanism including co-operating slitting elements mounted in relatively movable press members. The details of this method of producing expanded metal fabric need not be considered in detail herein especially since this method is well known as well as well understood in this art. However, it should be borne in mind that this so-called "Golding" method is capable of producing expanded fabric from material of very heavy gauge, for example of the character above referred to. In addition, according to this method, the meshwork openings, which are usually substantially diamond-shaped, may be made as large as four to six inches in length, such fabric being employed for a number of purposes among which might be mentioned concrete reenforcement and outdoor fencing or indoor openwork partitions.

While it should be understood that various features of the present invention are not limited, in their application, to relatively large mesh fabric of this character, still the present invention is particularly useful in connection with the finishing of such material or its preparation for handling and use. In this connection note that where relatively heavy gauge and large mesh material is being produced the dangerous and undesirable sharp or knife-edge condition is more pronounced than in smaller gauge fabric, for example, of the plaster lathing type.

The present invention, therefore, is particularly concerned, in its broad aspect, with the extension of the usefulness, and the usefulness with safety, of expanded fabrics of all kinds. With this primary object in view the present invention makes provision for the removal of all rough or knife-like strand or bridge edges in order to eliminate dangers heretofore encountered in handling and installing such fabrics. It should also be borne in mind that with sharp or rough edges removed in accordance with the present invention metallic fabric, particularly of the larger gauges is entirely suitable for use as fencing for enclosures, such for example, as children's playgrounds or animals' pastures. Still further, fabric treated in accordance with the present invention may safely be employed for openwork interior partitions and the like such as frequently are employed in factories and zoological gardens.

How the foregoing objects and advantages are obtained together with others which will occur to those skilled in the art will be apparent from consideration of the following description making reference to the accompanying drawings in which

Figure 1 is a side elevational view of a finishing or brushing apparatus embodying various features of the present invention;

Figure 2 is a top plan view of a portion of a metallic fabric to the finishing of which the apparatus of Figure 1 is particularly adapted; and

Figure 3 is a vertical sectional view of fabric of the character illustrated in Figure 2, taken substantially on the line 3—3 of Figure 2, this figure including a somewhat diagrammatic showing of the manner in which brush bristles of the apparatus of Figure 1 operate on the meshwork.

Referring now particularly to Figure 1 it will be seen that the apparatus here illustrated in-

cludes a base or supporting structure 4 on which the upwardly extending framing 5 is mounted. Additionally a work supporting table 6 is preferably arranged at one end of the apparatus in order to facilitate the feeding of fabric sheets to and through the various feeding rollers and brushing elements. Upon the feeding of a sheet from the table 6 to the apparatus, the sheet is first engaged by a pair of feed rolls 7 and 8 both of which are mounted on shafts 9 and 10 respectively. Suitable bearing blocks 11 and 12 are also disposed at the ends of the shafts 9 and 10. The upper shaft 9 and its associated bearing block or blocks 11 are preferably urged downwardly by means of the spring device 13, an adjustment bolt 14 being provided for control of the spring reaction. The roller shaft 10 is preferably driven as by means of motor illustrated at 15 which is connected thereto (preferably through the intermediate reduction gearing 15a) as by means of sprockets 16 and 17, chain 18, shaft 19 and bevel gears 20 and 21.

After discharge from the feed rolls 7 and 8 the material passes through co-operating upper and lower stationary guide plates or fingers 22 and 23 which support the material in its forward progress during at least a portion of the operation performed by the first brushing roll with which the material contacts.

Proceeding now to the brushing elements themselves it will be apparent that the general arrangement thereof includes the disposition of four brushes in two pairs, the brushes in each pair being disposed above and below the path of travel of the material being treated. The brushes of the first pair are indicated at 24 and 25, it being noted that in the preferred form each brush is provided throughout its length with wire or steel bristles 26.

In addition to the disposition of the four brushes in pairs, it should be noted that those of each pair are disposed, not vertically with respect to each other, but in a somewhat staggered fashion. For example, in the first pair, the brush 24 is arranged to contact with the material at the lower side thereof before engagement, for effective operation, of the upper brush 25. Reasons for this staggered disposition will be discussed in detail hereinafter although it should be noted, at this point, that, with the staggered arrangement, the upper guide device 22 may be extended over the brush 24 to a point lying substantially vertically above the center or axis thereof. This will be apparent from inspection of Figure 1 and is desirable as it provides a firm supporting or backing for the material during the brushing operation. In this connection, it should be noted that with relatively heavy gauge material the brushing reaction or force must be very substantial in order completely to eliminate the knife-edges.

The mounting for the brushes of each pair is substantially the same so that only one of them need be described in detail. Making reference, therefore, to the pair including brushes 24 and 25, the mounting includes an inclined bracket element 27 associated with the supporting structure 5 on which brush supporting members or bearing blocks 28 and 29 are slidably arranged. Each brush, of course, is mounted on a central shaft 30—31, these shafts being supported for rotation in the bearing blocks 28 and 29.

In addition, the various brushes are driven as by means of a motor 32 which may suitably be connected to the main drive shaft 33 as by means of belt 34 and pulleys 35 and 36. The drive shaft 33 extends generally lengthwise of the apparatus and is journaled in boxes 37. Power is transmitted from the shaft 33 to the upwardly extended shafts 38 and 39 for the two pairs of brushes, these shafts 38 and 39 being operatively connected to the shaft 33 as by means of bevel gears (not shown) disposed and mounted within the casings 40. At their upper ends the shafts 38 and 39 are suitably journaled in bearings 43 and 44, respectively. It will be understood, of course, that each one of the brush mounting shafts is also geared to an upwardly extended driving shaft 38 or 39.

With respect to the drive of the brushes of each pair attention is called to the fact that in the preferred arrangement the lower and upper brushes of the first pair will be suitably geared to the driving elements to cause rotation thereof in the direction indicated by the arrows 41 and 42, respectively.

At this point it should also be observed that each one of the brush supporting bearing devices 28 and 29 is provided with means for adjusting the position thereof with respect to the mounting structure 5 and 27. This means includes, for the upper brush 25, a threaded shaft 45 engaged in a suitably threaded aperture in a portion of the bearing structure 29 and extended above this bearing structure through the bracket 43 to provide a support for bevel gear 46. It will be understood, of course, that a bearing block 29 is disposed at each end of the brush shaft 30 and that the adusting mechanism for the brush journal device 29 is also duplicated at the two sides of the apparatus. In order to provide for manual adjustment, for example, to compensate for wear of the brush bristles, I have mounted a shaft 47 above the ends of the threaded shafts 45 and have provided this shaft 47 with suitable bevel gears 48 disposed in position to mesh with gears 46. A hand wheel or other device 49 may be employed for convenience in manipulation.

A similar structure is also associated with the bearing block 28 in order to provide for upward and downward adjustments of the brush 24. In addition, it should be noted that all of the foregoing brush mounting, driving and adjusting elements and members are substantially duplicated for the brushes 50 and 51 of the other pair. These parts, therefore, need not be described in detail herein as the foregoing description thereof is equally applicable to the brushes of each pair. It should be borne in mind, however, that the brushes 50 and 51 of the second pair, speaking with reference to the time at which the brushes operate upon the material, are oppositely inclined or angled, with respect to the vertical, and also that in the preferred arrangement the brushes 50 and 51 are connected to the power shaft 33 in such manner as to be driven in the direction indicated by the arrows 52 and 53. Further reasons why the brushes are angled in the manner referred to as well as the advantages of driving all the various brushes in the directions indicated will be considered more in detail hereinafter.

In order to insure positive and accurate feeding of the material between the two pairs of brushes, I have arranged an additional pair of feed rolls 54 and 55 which are mounted in a manner entirely similar to that described above in connection with the feed rolls 7 and 8, it being noted that the shaft 56 for the lower roll is

driven from the shaft 19 while the upper roll including its shaft 57 is resiliently urged downwardly by a spring device 13 and an adjusting bolt 14 all of which parts are entirely similar to those described hereinbefore. At this point it might also be noted that a third pair of feed rolls 58 and 59 is disposed beyond the last pair of brushes 50—51, these rolls also being similarly driven and mounted.

Additional lower and upper guide plates 60—61 and 62—63 are arranged in pairs in front and to the rear of the feed rolls 54 and 55. The lower guide 60 is preferably extended well under the brush 25 in order to provide a rigid point of reaction for this brush and the lower guide 62 is simlarly disposed well beneath the brush 51 for the same purpose. Finally, a pair of upper and lower guides 64 and 65 are arranged beyond the second set of brushes 50—51, the upper one of these guides being extended well above the brush 50 for the purpose already noted. This staggered arrangement of upper and lower guide elements above and below the lower and upper brushes is made possible by virtue of the angular disposition of the brushes of each pair, the result being that the material is adequately supported at all times during the brushing operations.

Referring now more particularly to Figures 2 and 3, attention is first called to the character or configuration of the fabric illustrated. This fabric, which may advantageously be produced in accordance with the "Golding" method above referred to, includes strands or strips of metal 66 which are interconnected at their ends by the bridges or bonds 67. As appears most clearly in Figure 3 the bonds are substantially angled with respect to the general plane of the fabric, the inclination being upwardly and to the left when viewed as in Figure 3. The strands 66, it will also be observed, extend from the lower portion of one bond to an upper portion of another bond or bridge so that each strand also takes up an angular or inclined position with respect to the general plane of the fabric. Still further, in view of the manner in which the strands extend as a result of the method of production, each strand is turned somewhat about its longitudinal axis, to a position in which corners or edges thereof are presented toward each face of the fabric. In other words, the sides or faces of the strands themselves are angled, transversely thereof, with respect to the general plane of the fabric. This configuration will be apparent upon inspection of Figure 2 particularly.

Before considering the manner in which the brush bristles attack and remove the metal slivers or rough edges from the material, it should be noted that such rough edges might and, indeed, usually are formed, as a result of the slitting, at each corner of each strand. Also it will be understood that the "knife-edges" will be more pronounced at one side of the fabric than at the other. However, in order to completely finish a product of this character and thus provide for safe handling and use thereof it is highly desirable that every edge of each strand as well as the connecting bonds or bridges should be thoroughly subjected to the action of the brushes.

The manner in which this complete brushing action is provided for in accordance with the present invention will be apparent from the following discussion making particular reference to Figure 3:

In the traverse of the material through the apparatus each sheet is fed in such manner as to cause the meshwork openings to move, with respect to the brushes, generally lengthwise of such openings, that is, in either one of the directions indicated by the double-headed arrow 68 applied to Figure 2. Thus the brush bristles move generally in a direction substantially at right angles to the direction of cutting or shearing during formation of the strands and bridges 66 and 67. Assuming, therefore, that the brush bristles 26 diagrammatically illustrated in Figure 3 are moving, with respect to the fabric, in the direction indicated by the upper head of the arrow 68 on Figure 2, the strand edges *a*, *b*, *c* and *d* will be attacked angularly by the bristles 26, so that the movement of the bristles with respect to the strand edges, after the initial attack or contact, will be of a somewhat sliding or "wiping" nature. Additionally, as will be apparent from inspection of Figure 3 the bristles will be divided or separated into groups at either side of the connecting bridges 67 which are located at the sides of each meshwork opening, while the bridges 67 which are disposed at the ends thereof, together with the immediately associated strands will form converging pockets into the apices of which at least certain of the bristles become grouped. Upon still further relative advance of the fabric and the bristles, the latter, of course, will become disengaged from the pairs of strands which diverge in one direction (lengthwise of the meshwork openings) and enter succeeding or further meshwork openings. This movement of the bristles from one meshwork opening to another, as will also be apparent from inspection of Figure 3, will subject both of the lower edges *e* and *f* of the bridges 67 to very thorough brushing action.

It will be apparent, therefore, that a single brush, for example a brush such as illustrated in Figure 3, moving in one direction over one surface of the fabric (lengthwise of the meshwork openings) will subject all the edges *a*, *b*, *c* and *d* of the strands which converge in the direction of movement to at least some brushing action. However, a single brush is primarily effective to clean or remove metal slivers from the edges of only such strands as converge toward connecting bridges disposed beyond the brush bristles in the direction of their movement. It is therefore desirable to brush the material, lengthwise of the meshwork openings, in each direction. This, of course, subjects the corresponding edges of the remaining strands, that is, those which converge in the opposite direction, to a similar brushing action. With similar two-way brushing on both faces of the fabric all strand and bridge edges are thoroughly finished or smoothed.

This fourfold brushing action is provided for by the two pairs of brushes illustrated in Figure 1, it being noted that the two brushes disposed above the path of travel of the fabric through the apparatus move in opposite directions while those disposed below similarly move in opposite directions. The result, therefore, is complete brushing or finishing of all edges of all the strands as well as connecting bridges.

At this point it should be borne in mind that even with a fourfold brushing action of the character herein disclosed all strand and bridge edges would not be effectively brushed if material of the character disclosed in Figures 2 and 3 is fed through the apparatus transversely of the meshwork openings. This will be more apparent from consideration of Figure 3 in which the connecting bridges are illustrated as being very substan-

tially angled with respect to the general plane of the fabric. This angular arrangement of connecting bridges is customary in this general type of fabric and, if the fabric is brushed transversely instead of lengthwise of the bridges, certain strand edges would be almost completely shielded from the bristles.

It will be understood that the apparatus illustrated in Figure 1 is of such width as to accommodate any of the standard lathing or fabric sheets and that each one of the brushes 24, 25, 50 and 51 is provided with bristles substantially throughout their entire length.

It will also be apparent that any suitable form of driving mechanism may be employed for the feed rolls as well as for the brushes themselves, the important feature in this connection being the drive of the brushes in the various directions indicated by the arrows in Figure 1 in order to produce the fourfold brushing action referred to.

The brush adjusting mechanism including the manually operable control elements 49 are advantageous as they permit of adjustments to compensate for wear or to accommodate the apparatus to material of different characteristics. For example, it may be found to be desirable, where material of meshwork configuration different from that described in Figures 2 and 3 is being finished, to provide a very substantial alteration in bristle disposition with respect to the path of travel. Additionally, the position of the brushes might advantageously be altered to accommodate the apparatus to "Golding" meshwork of different gauges. In this connection, it should be borne in mind that while the present invention is particularly adapted to brush or finish "Golding" fabric, it is to be understood that at least certain features of the invention are equally applicable to other fabrics, for example those of the herring bone type.

Referring again to the offset disposition of the brushes of each pair it should be noted that, when disposed in this manner, the intermediate as well as the feeding and delivery guide devices may be arranged to provide a firm backing against which each one of the individual brushes may operate thus providing against bowing or transverse displacement, even of relatively thin gauge material, during the brushing operation. Additionally, this offset arrangement of brushes is advantageous as it permits the disposition of the brushes of each pair in such manner as to provide for the extension of the bristles thereof even through meshwork openings to project at the opposite side of the fabric, without interference or inter-engagement of the brushes of the pairs. This extension is clearly illustrated in Figure 3.

In conclusion it should also be borne in mind that the general arrangement of the apparatus including the staggered disposition of the brushes for effective brushing as well as for power drive thereof is advantageous from the standpoint of construction as well as smooth and even operation, it being noted that the finishing action is enhanced where only one brush operates on the material at one point and at one time. Finally, the general arrangement of the apparatus as well as the method of brushing provides for rapid and continuous operation so that a minimum of time and handling is consumed, it being understood that the use of feed rolls and stationary guiding elements, as well as of a work supporting or feed table, materially simplifies the feed of the sheets through the apparatus. A table or support similar to feeding table 6 illustrated in Figure 1 may also be provided at the discharge end of the apparatus in order to receive the blanks as they are finished.

I claim:—

1. Apparatus for removing rough edges from slitted and expanded metallic fabric, including a pair of brushes arranged to receive fabric sheets fed therebetween, said brushes being offset from each other lengthwise of the feed.

2. Apparatus for removing rough edges from slitted and expanded metallic fabric, including a pair of brushes arranged to receive fabric sheets fed therebetween, said brushes being offset from each other lengthwise of the feed, together with a guide device arranged at one side of the path of feed and having a part disposed substantially opposite the brush at the other side of said path, transversely thereof.

3. Apparatus for removing rough edges from slitted and expanded metallic fabric, including a pair of rotary brushes arranged to receive fabric sheets fed therebetween, a similar pair of brushes disposed beyond the pair first mentioned, feeding rolls arranged between the pairs of brushes, and stationary guide devices extended from each side of the feed rolls to the pairs of brushes, the brushes of each pair being offset from each other lengthwise of the feed and said guide devices including parts disposed substantially vertically of at least certain brushes.

4. Apparatus of the character described including feeding and guiding mechanism adapted to advance slitted and expanded metallic fabric sheets having elongated meshwork openings, lengthwise of said openings, and rotary brushes disposed transversely of the path of travel of the sheets and arranged at opposite sides thereof, there being at least two oppositely rotating brushes at each side of the said path.

5. Apparatus of the character described including feeding and guiding mechanism adapted to advance slitted and expanded metallic fabric sheets, and at least two oppositely rotating rotary brushes disposed transversely and at one side of the path of travel of the sheets, together with guide means including parts disposed at the other side of said path substantially opposite said brushes to provide a support or backing for the sheets during brushing.

6. Apparatus of the character described including feeding and guiding mechanism adapted to advance slitted and expanded metallic fabric sheets, at least two oppositely rotating rotary brushes disposed transversely and at one side of the path of travel of the sheets, and at least two oppositely rotating rotary brushes similarly disposed at the opposite side of said path.

7. Apparatus of the character described including feeding and guiding mechanism adapted to advance slitted and expanded metallic fabric sheets, at least two oppositely rotating rotary brushes disposed transversely and at one side of the path of travel of the sheets, and at least two oppositely rotating rotary brushes similarly disposed at the opposite side of said path, a brush at one side of the said path being grouped with a brush at the other side as a pair for mounting purposes, together with a mounting structure associated with this pair, including separate devices for adjusting the brushes of the pair with respect to the said path of travel of the sheets.

8. Apparatus for brushing slitted and expanded meshwork sheets including at least four rotary

bristled brushes adapted for the passage of the sheets therebetween with at least two brushes at each side thereof, means for feeding the sheets in one direction between said brushes, and means for driving brushes on one side in opposite directions and for driving brushes on the other side also in opposite directions, whereby, during passage of the sheets between the brushes, each side thereof is subjected to a brushing action in two opposite directions.

9. Apparatus for removing rough edges from slitted and expanded metallic meshwork, including a pair of rotary brushes arranged to receive fabric sheets fed therebetween, said brushes being offset from each other lengthwise of the feed, and being so set with respect to the mean plane of the sheets when passing therethrough as to provide for extension of the bristles of the brush at one side through meshwork openings beyond said mean plane.

10. The method of removing rough edges from slitted and expanded metallic fabric having elongated openings therein, which includes subjecting the fabric to brushing by a metallic-bristled rotary brush the bristles of which move at relatively high velocity with respect to said edges in a plane substantially perpendicular to the plane of the fabric and substantially parallel the long dimension of said openings.

11. The method of smoothing the edges of cut or slitted and expanded metal fabric, which includes subjecting the fabric to brushing by a metallic-bristled rotary brush the bristles of which move at relatively high velocity with respect to said edges in a plane substantially perpendicular to the plane of the fabric.

12. The method of removing burrs from metallic edges which includes subjecting such edges to brushing by a metallic-bristled brush the bristles of which move at relatively high velocity with respect to said edges in a direction across said edges.

13. In the manufacture of expanded metal fabric, the method which includes slitting and expanding a sheet to form meshwork having strands defining generally diamond shaped openings, and removing the rough edges produced on the strands of the meshwork as a result of the slitting by subjecting the meshwork to the action of a brush over substantially the entire area of the expanded metal body.

14. In the manufacture of expanded metal fabric, the method which includes slitting and expanding a sheet to form meshwork having strands defining generally diamond shaped openings, and removing the rough edges produced on the strands of the meshwork as a result of the slitting by subjecting the meshwork to the action of a brush the bristles of which have movement with respect to the meshwork in a direction generally paralleling the long dimension of said diamond shaped openings.

15. Metallic fabric of the slit and expanded type having strands and strand interconnecting bonds forming meshwork openings having relatively sharp corners at points where strands and bonds are interconnected, said fabric being characterized by edges and corners which are smooth to the touch throughout the entire expanded metal body.

16. Metallic fabric of the slit and expanded type having strands and strand interconnecting bonds forming mesh work openings having relatively sharp corners at points where strands and bonds are interconnected, said fabric having the edges and corners throughout the entire expanded metal body brushed smooth.

17. Apparatus of the character described including feeding and guiding mechanism adapted to advance slitted and expanded metallic fabric sheets, and at least two oppositely rotating rotary brushes disposed transversely of and at one side of the path of travel of the sheets, the driving and guiding mechanism being so arranged as to cause the sheets to move successively past and in operative engagement with such brushes.

18. Apparatus for brushing slitted and expanded metallic meshwork sheets including cooperating brush and guide devices, the bristles of the brush device having relative movement with respect to the fabric sheets, and the said devices being relatively so located as to position the meshwork sheets during brushing thereof so that the ends of the brush bristles project through meshwork openings at least to the median plane of the sheets.

19. Apparatus of the character described including feeding and guiding mechanism adapted to advance slitted and expanded metallic sheets, and a rotary brush adjacent to the path of movement of the sheets, the guiding mechanism and the brush being relatively so located as to position the meshwork sheets during brushing thereof so that the ends of the brush bristles project through meshwork openings at least to the median plane of the sheets.

20. Apparatus for brushing slitted and expanded metallic meshwork sheets including a brush device and means for effecting relative movement between the bristles of said device and the sheets to be brushed, the brush device and said means being relatively so located as to position the meshwork sheets during brushing thereof so that the ends of the brush bristles project through meshwork openings at least to the median plane of the sheets.

21. Apparatus for brushing slitted and expanded metallic sheets having elongated meshwork openings, including a brush device and means for effecting relative movement between the bristles of said device and the sheets to be brushed, in a direction lengthwise of said openings.

22. Apparatus for brushing slitted and expanded metallic sheets having elongated meshwork openings, including a brush device and means for effecting relative movement between the bristles of said device and the sheets to be brushed, in a direction lengthwise of said openings, the brush device and said means being relatively so located as to position the meshwork sheets during brushing thereof so that the ends of the brush bristles project through meshwork openings at least to the median plane of the sheets.

LEONARD W. CROSS.

DISCLAIMER

1,950,372.—*Leonard W. Cross*, Wheeling, W. Va. EXPANDED METAL AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME. Patent dated March 6, 1934. Disclaimer filed April 12, 1940, by the assignee, *The Consolidated Expanded Metal Companies*.

Hereby enters this disclaimer to claim 15 of said Letters Patent.

[*Official Gazette April 30, 1940.*]