

W. D. FORSYTH.
PROCESS FOR MAKING EXPANDED METAL.
APPLICATION FILED DEC. 12, 1910.

1,015,264.

Patented Jan. 16, 1912

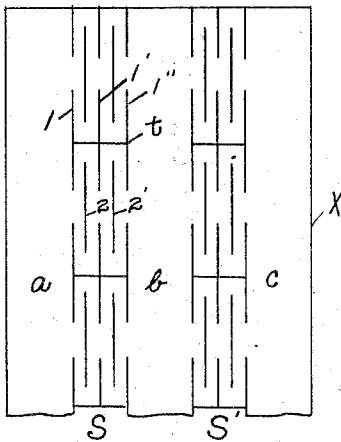


FIG. 1

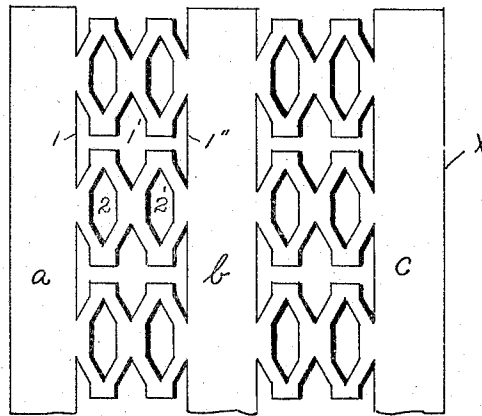


FIG. 2.

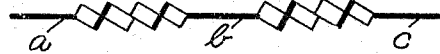


FIG. 3.

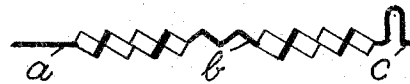


FIG. 4.

WITNESSES

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PROCESS FOR MAKING EXPANDED METAL.

1,015,264.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed December 12, 1910. Serial No. 596,761.

To all whom it may concern:

Be it known that I, WILLIAM D. FORSYTH, a citizen of the United States, residing at Youngstown, in the county of Mahoning, in the State of Ohio, have invented new and useful Improvements in Processes for Making Expanded Metal, of which the following is a specification.

My invention relates to new and useful improvements in processes for making expanded metal adapted to be used in the construction of buildings, the roofs, walls and partitions thereof, and for reinforced concrete construction.

My invention consists of a process of making expanded metal which has longitudinal and meshed members which consists in the following: 1st. Slitting a sheet of metal with series of longitudinal parallel slits made at equal intervals along said sheet, the outside line of slits of each of said series of slits being coincident with the edges of the longitudinal members of said sheet. 2nd. Slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits, parallel to, intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial point of the adjacent slits of the first mentioned series. 3rd. Transversely cutting said sheet between the outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series. 4th. Stretching said sheet laterally so as to form the meshed members thereof.

Figure 1 is a plan view of a metal sheet having the slits made therein preparatory to stretching the metal to form the meshed members of my improved expanded metal. Fig. 2 shows my improved expanded metal after the metal sheet from which the same has been made has been slitted and stretched laterally. Fig. 3 shows an end view of my expanded metal. Fig. 4 is an end view of my expanded metal with the longitudinal members represented as flat, corrugated and ribbed, at, *a*, *b* and *c* respectively.

Similar figures and letters of reference refer to like parts throughout the several figures.

In Fig. 1, *X* is a sheet of metal in which *a*, *b* and *c* represent the longitudinal members of my improved expanded metal. 1, 1', 1'' and *t*, and 2, 2', represent slits made in said sheet in two parallel series, *S*, *S'*. The slits 1, 1', 1'' and *t*, when the sheet of metal *X* is stretched laterally, form the outside edges of the meshed members of my improved expanded metal. The slits 2, 2', form the apertures in the meshes of my expanded metal. The relations of the longitudinal members *a*, *b* and *c* and the meshed members of my expanded metal when the sheets are stretched, are shown in Fig. 2.

It will be noted that when the metal sheet is slitted and stretched laterally, that the meshed members of my expanded metal separate at their extremities at the line *t*, the ends of the meshed members moving toward one another and the ends of adjacent meshed members separating at said line *t* and moving away from one another. This separating movement of the adjacent meshed members permits the stretching of the slitted sheet from which my expanded metal is formed laterally without substantial distortion of said sheet longitudinally; the longitudinal members thereof retaining substantially the same length that they had before the lateral stretching of the slitted sheet took place. This separation of adjacent meshed members and non-distortion of the longitudinal members of my novel expanded metal when the sheet from which they are formed is stretched laterally to form the meshed members thereof, is one of the essential elements of my present invention.

The series of slits *S*, *S'*, may be formed in dies or slitting machines or by rolls with proper cutters, preferably by rolls, and while the series are shown in Fig. 1 and in the drawing forming part of this specification as showing but two lines of meshed members and said meshed members having but two openings, there may be as many series of slits and as many openings in the meshed members of the expanded sheet as

may be desired, limited only by the dimensions of the sheet from which the expanded metal is formed and while the drawings show but three longitudinal members, the longitudinal members may be increased or decreased in number, and all of these variations with reference to meshed members and longitudinal members may be made without departure from the spirit of my invention.

Fig. 3 shows an end view of my expanded sheet with the longitudinal members flat.

Fig. 4 is an end view of my expanded metal showing the longitudinal member *a* flat, the longitudinal member *b* corrugated with several corrugations and the longitudinal member *c* raised in a single corrugation so as to form a rib. The form of these several longitudinal members as shown in this figure may be made by proper dies or by passing the expanded metal through rolls. All the members may be flat, as at *a*; all may be corrugated with one or more corrugations, as at *b*; or one or more of them may be formed as ribs, as at *c*.

My improved expanded metal may be used in the construction of buildings or receptacles and as a reinforcement for concrete. It may be of any weight or thickness as its immediate and particular use may require. The meshed members thereof may consist of one or more meshes. The longitudinal members may be two or any greater number and of such cross section as may be desired for any particular use to which it may be put.

On December 12, 1910, I filed an additional application for Letters Patent for a process of making expanded metal different from the process described in this application bearing Serial No. 596,763. The process described in said application, Serial No. 596,763, includes all of the steps involved in the process for the manufacture of expanded metal described and claimed in this application, and in addition thereto adds an additional operation to the process and thereby produces a different product.

In this application the process consists of four operations, the first and second slitting a sheet from which expanded metal is made to produce two series of parallel longitudinal slits, the third transversely cutting one series of said longitudinal slits and the fourth the lateral stretching of the sheet. These processes produce the product of the process herein described.

The process described and claimed in application, Serial No. 596,763, consists of five operations, the first, second and third the same in this process as the process described and claimed in this application, and the fourth is the corrugating of the slitted portions of the sheet from which the expanded metal is to be produced and is the additional operation involved in the process claimed in application 596,763 over that claimed in this

application. The fifth operation described in the application 596,763 is the same as the fourth operation described in this application, to-wit, stretching the sheet laterally. In the process described in this application the slitted sheet is not corrugated at its slitted portion, while in the process described in application 596,763 the slitted sheet is corrugated at its slitted section before being stretched. The result is that a different product is produced by the exercise of said process, the product of the exercise of the process described in this application consisting of an expanded metal with the meshes of the meshed members thereof in that position, when the expansion of the sheet is completed, that they would naturally take in diamond mesh expanded metal where the metal itself has not been stretched.

The product of the exercise of the process described in application 596,763 consists of an expanded metal with the meshed members thereof so formed that the slits of the meshed members conform to the apexes of the corrugations and the connection between said meshes themselves, and said meshes with the longitudinal members of the expanded metal conform to the bases of the corrugations made in the slitted portion of the sheet immediately before the laterally stretching thereof.

What I claim as my invention is:

1. The process of making an expanded metal having longitudinal members transversely connected by independent disconnected meshed members, which consists in slitting a sheet of metal with series of longitudinal parallel slits made at intervals along said sheet, the outside lines of slits of said series of slits being coincident with the edges of the connected longitudinal members of said expanded metal; slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits, parallel to, intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial points of the adjacent slits of the first mentioned series, transversely cutting said sheets between the outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series; then stretching said slitted sheet laterally so as to form the meshed members thereof.

2. The process of making an expanded metal having longitudinal members transversely connected by independent disconnected meshed members, which consists in slitting a sheet of metal with series of longitudinal parallel slits made at intervals along said sheet, the outside lines of slits of said series of slits being coincident with the edges

of the connected longitudinal members of said expanded metal; slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits, parallel to; intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial points of the adjacent slits of the first mentioned series; transversely cutting said sheet between the outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series; corrugating the longitudinal members so as to form more than one corrugation thereon; then stretching said slitted sheet laterally so as to form the meshed members thereof.

3. The process of making an expanded metal having longitudinal members transversely connected by independent disconnected meshed members, which consists in slitting a sheet of metal with series of longitudinal parallel slits made at intervals along said sheet, the outside lines of slits of said series of slits being coincident with the edges of the connected longitudinal members of said expanded metal; slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits, parallel to, intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial points of the adjacent slits of the first mentioned series; transversely cutting said sheets between the outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series; corrugating said longitudinal members so as to form the same into ribs; then stretching said slitted sheet laterally so as to form the meshed members thereof.

4. The process of making an expanded metal having longitudinal members transversely connected by independent disconnected meshed members, which consists in slitting a sheet of metal with series of longitudinal parallel slits made at intervals along said sheet, the outside lines of slits of said series of slits being coincident with the edges of the connected longitudinal members of said expanded metal; slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits, parallel to, intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial points of the adjacent slits of the first mentioned series; transversely cutting said sheets between the

outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series; corrugating one or more of the longitudinal members thereof so as to form more than one corrugation in the corrugated members; then stretching said slitted sheet laterally so as to form the meshed members thereof.

5. The process of making an expanded metal having longitudinal members transversely connected by independent disconnected meshed members, which consists in slitting a sheet of metal with series of longitudinal parallel slits made at intervals along said sheet, the outside lines of slits of said series of slits being coincident with the edges of the connected longitudinal members of said expanded metal; slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits, parallel to, intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial points of the adjacent slits of the first mentioned series; transversely cutting said sheet between the outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series; corrugating one or more of said longitudinal members so as to form ribs in the members so corrugated; then stretching said slitted sheet laterally so as to form the meshed members thereof.

6. The process of making an expanded metal having longitudinal members transversely connected by independent disconnected meshed members, which consists in slitting a sheet of metal with series of longitudinal parallel slits made at intervals along said sheet, the outside lines of slits of said series of slits being coincident with the edges of the connected longitudinal members of said expanded metal; slitting said sheet with other series of longitudinal parallel slits of substantially the same length as the first mentioned series of slits parallel to intermediate and between said first mentioned series of slits, the medial points in said last mentioned series of slits being substantially equidistant from the medial points of the adjacent slits of the first mentioned series; transversely cutting said sheet between the outside slits of the first mentioned series of slits between the edges of said longitudinal members at the medial points of said slits of the first mentioned series; corrugating some of the longitudinal members thereof so as to form more than one corrugation therein and corrugating the remaining longitudinal members thereof to form a single deeper corrugation or rib

therein; then stretching said slitted sheet laterally so as to form the meshed members thereof.

7. The process of forming expanded metal
5 having longitudinal and meshed members, which consists in longitudinally slitting a metal sheet with series of lines of parallel alternating slits; transversely shearing said sheet between its longitudinal members at
10 the medial points of one of said series of longitudinal slits so as to permit the forming of independent terminally disconnected

and separated meshed members transversely connecting the longitudinal members of said expanded metal; and expanding said slitted 15 sheet.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM D. FORSYTH.

Witnesses:

M. E. THOMAS,
JAMES F. CALLAHAN.