

Oct. 6, 1931.

E. T. REDDING

1,826,286

EXPANDED METAL LATH MACHINE

Filed May 12, 1926

2 Sheets-Sheet 2

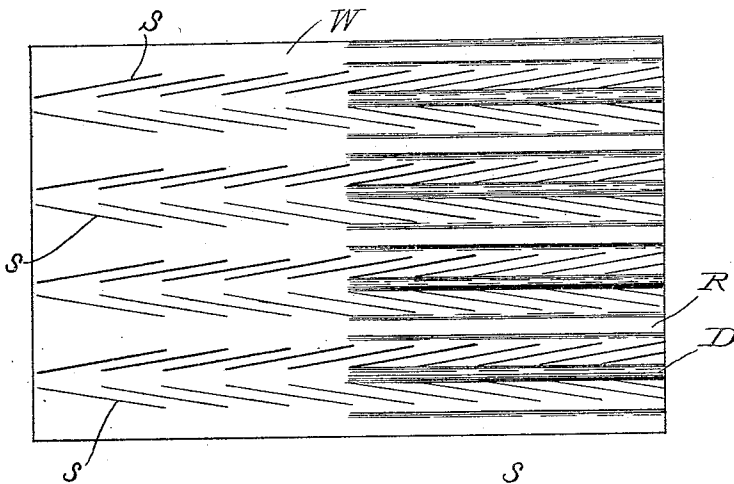


Fig. 7.

Fig. 8.

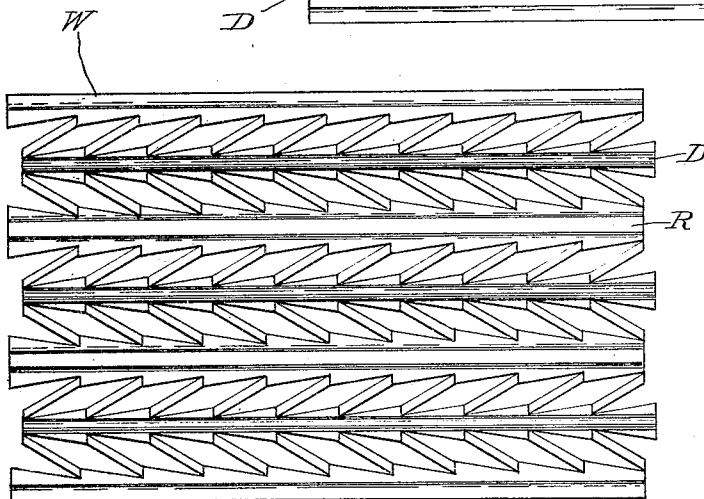
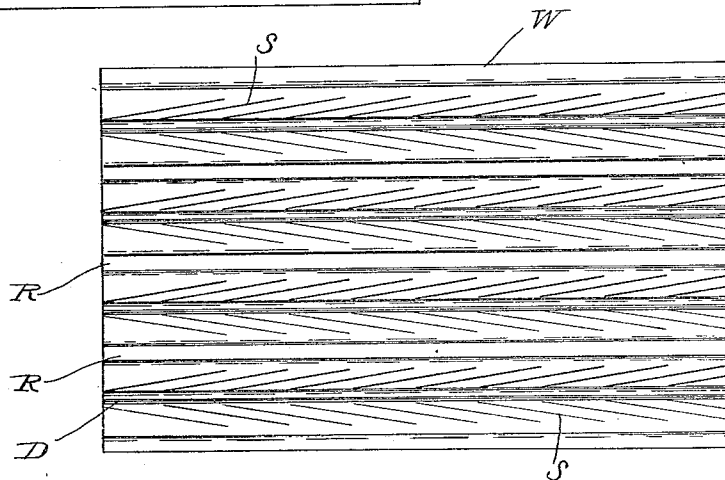


Fig. 9.

INVENTOR=

Edward T. Redding

by Macleod, Calver, Copeland & Dike
ATTORNEYS

UNITED STATES PATENT OFFICE

EDWARD T. REDDING, OF PARKERSBURG, WEST VIRGINIA, ASSIGNOR TO PENN METAL COMPANY, OF CAMBRIDGE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

EXPANDED METAL LATH MACHINE

Application filed May 12, 1926. Serial No. 108,649.

This invention relates to an improved mechanism for slitting and forming ribs in metal sheets prior to the expanding thereof, the invention being particularly, although not exclusively, adapted for use in machines for producing expanded metal lath of the flat-rib type.

An object of the invention is to provide a mechanism for forming ribbed lath, in which the ribs are formed in the metal sheet by the dies of a press and wherein the sheet is also slitted at substantially the same time, an important feature of the invention residing in the fact that the slitting mechanism is adapted to hold the sheet in proper position against distortion while the ribs are being formed in the forming dies.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views and wherein:

Fig. 1 is a fragmentary side elevation illustrating a press embodying my invention.

Fig. 2 is a fragmentary view illustrating the punch and former at the commencement of the operation.

Fig. 3 is a fragmentary section taken substantially on the lines 3—3, Fig. 2.

Fig. 4 is a fragmentary section taken on lines 4—4, Fig. 2.

Fig. 5 is a view similar to Fig. 3 illustrating the position of the punches after forming the slits in the work.

Fig. 6 is a view similar to Fig. 4 showing the forming dies in closed position.

Fig. 7 is a view showing a partially formed metal sheet.

Fig. 8 is a view of the sheet completely slitted and ribbed.

Fig. 9 is a view of the sheet after being expanded.

Heretofore in the manufacture of flat rib expanded metal lath, it was usually the practice to form the ribs in the metal sheet in two distinct operations, to slit the sheet in another operation and thereafter expand the slitted and ribbed sheet. The metal strip

or sheet to be slitted, ribbed and expanded was first fed through rolls in one machine and formed with longitudinal ribs at the edges of the strip, then fed through another set of rolls and slitted. Thereafter the sheet was fed through a second machine and the remaining ribs were formed in the sheet. All the ribs could not be formed at one operation due to the distortion of the metal, so that it heretofore required two separate mechanisms or machines and three distinct operations to form a slitted or ribbed sheet ready to be expanded.

In accordance with the present invention, I am able to produce slitted and ribbed sheets in two simultaneous operations in one press, as a result of which improved method and mechanism considerable reduction in the cost of production results and the metal lath may be produced more rapidly and in larger quantities. In addition to these advantages the present invention enables a more rigid and stronger lath to be produced since less pressure is employed in accordance with my invention than heretofore where the sheets were subjected to great pressure between the rolls which formed the slits and ribs.

Referring to the drawings wherein I have illustrated a present preferred form of my invention, it will be seen that the machine comprises a suitable stationary bed plate 20, and above this reciprocates a suitable ram 21. The parts 20 and 21 constitute the cooperating elements of the press, and the ram is connected at 22 to a suitable mechanism for reciprocating the ram vertically toward and from the stationary bed plate or press element 20. The bed plate 20 is provided with vertical guides 23 which are guided within vertical guide holes 24 formed in the ram 21.

The ram or upper press element is provided with a series of slitting punches 25. These punches as shown in Figs. 3 and 5 are mounted in alinement and extend transversely of the work W. In rear of the slitting punches the ram 21 carries a die member 26, the lower working face of which is formed with alternate depressions 26a and ribs 26b. The lower press element or bed plate 20 is provided with a hardened steel plate 27 having a

series of transverse holes 28 located in vertical alinement with the several punches 25. In rear of the guide holes 28 the plate 27 is formed with a die face having alternate ribs or depressions 27a and 27b mating with the corresponding working face of the die member or former 26.

The metal sheet or strip W is intermittently fed through the machine in the direction of the arrows in Figs. 1 and 2, in a step by step manner, the strip being fed beneath a positioning or guide plate 29 having holes 30 through which the punches 25 reciprocate. As the strip is initially fed into position beneath the punches 25, and upon descent of the ram 21, these punches will form a series or row of slits S, S transversely of the blank. After a predetermined number of feed movements the slitted portion of the blank will reach a position beneath the die member or former 26, and upon descent of the ram one portion of the sheet will be formed with ribs while a preceding portion of the sheet is formed with slits, as shown by the left and right hand portions of the sheet in Fig. 7. Thus the slitting and ribbing of the sheet is accomplished simultaneously at two successive points. The sheet is held firmly in position against any possibility of distortion by the fact that the slitting punches 25 enter the sheet in advance of the main operation of the die members 26 and thus hold the sheet in firm position. In other words the forming of the ribs, or, at least, the effective forming thereof, between the opposite die faces of the press is carried out while the sheet is held or engaged by the slitting punches. The punches preferably engage the metal sheet W at the same time as the formers or dies 26, but the punches will have penetrated the sheet and substantially completed their operation before the maximum pressure is exerted by the die members thus substantially eliminating distortion or buckling of the sheet. The punches however may be of such length as to commence to penetrate the metal sheet slightly ahead of the formers or dies. In any case the sheet is operated on by a gang or series of slitting punches which remain in the slits and hold the sheet against distortion while another gang or series of formers simultaneously form the ribs in the sheet.

Referring to Fig. 8 the ribs R between the longitudinal rows of slits are formed by the cooperating portions 26a and 27a of the formers, and the grooves D between the pairs of slits of each row are formed by the portions 26b and 27b of the formers. After the sheet has been slitted and ribbed, and is in the condition shown in Fig. 8, it is fed through an expanding mechanism which expands it into the form shown in Figure 9.

It is to be understood that by describing in detail herein any particular form, structure, or arrangement, it is not intended to limit the

invention beyond the terms of the several claims or the requirements of the prior art.

What I claim is:

1. In apparatus for preparing a lath blank for expansion the combination of a pair of cooperating press members adapted for the intermittent feed of a blank therethrough, cooperating slitting elements mounted in the press members and cooperating ribbing elements mounted in the said press members, said elements being relatively disposed and arranged to cause the ribbing elements to form ribs in the blank while the slitting elements remain in the slits produced thereby.

2. In apparatus for slitting and ribbing a metallic blank, cooperating relatively movable press members and slitting and ribbing elements associated therewith but spaced from each other, the relative arrangement of said elements including the spacing of the ribbing from the slitting elements, being such that upon actuation of the press, the ribbing is effected, while the slitting elements are engaged in the slits produced thereby and that the slitting elements, by their engagement with said slits, serve to position the blank for ribbing and prevent distortion thereof during the said ribbing.

3. In apparatus for preparing a lath blank for expansion, the combination of relatively movable press members adapted for the intermittent feed of a blank therethrough, cooperating slitting and ribbing elements associated therewith, the ribbing elements being positioned beyond the slitting elements with respect to the direction of feed through the apparatus, and said slitting and ribbing elements being relatively arranged to cause the ribbing elements to form ribs in the blank while the slitting elements are engaged in the slits produced thereby.

4. In apparatus for preparing a lath blank for expansion, the combination of relatively movable press members adapted for the intermittent feed of a blank therethrough, cooperating slitting and ribbing elements associated therewith, the relative arrangement of said elements being such that, upon actuation of the press members, the operation of the slitting elements is virtually completed before effective ribbing takes place.

5. In apparatus for preparing a lath blank for expansion, the combination of relatively movable press members adapted for the intermittent feed of a blank therethrough, cooperating slitting and ribbing elements associated therewith, the slitting elements being arranged in a series extended transversely of the blank and its direction of feed through the apparatus to slit the blank at a plurality of transversely spaced points, and the relative arrangement of said slitting and ribbing elements being such as to cause the ribbing elements to form ribs in the blank while the

slitting elements are engaged in the slits produced thereby.

6. In apparatus for preparing a lath blank for expansion, the combination of relatively movable press members adapted for the intermittent feed of a blank therethrough, cooperating slitting and ribbing elements associated therewith, the slitting and ribbing elements being spaced from each other lengthwise of the feed of the blank through the apparatus, with the slitting elements arranged in a series extended transversely of the blank and its direction of feed through the apparatus to slit the blank at a plurality of transversely spaced points, and the relative arrangement of said slitting and ribbing elements being such as to cause the ribbing elements to form ribs in the blank while the slitting elements are engaged in the slits produced thereby.

In testimony whereof I affix my signature.
EDWARD T. REDDING.