Oct. 8, 1929. J. FULENWIDER ET AL 1,730,361

RIDGE CAP FORMING MACHINE

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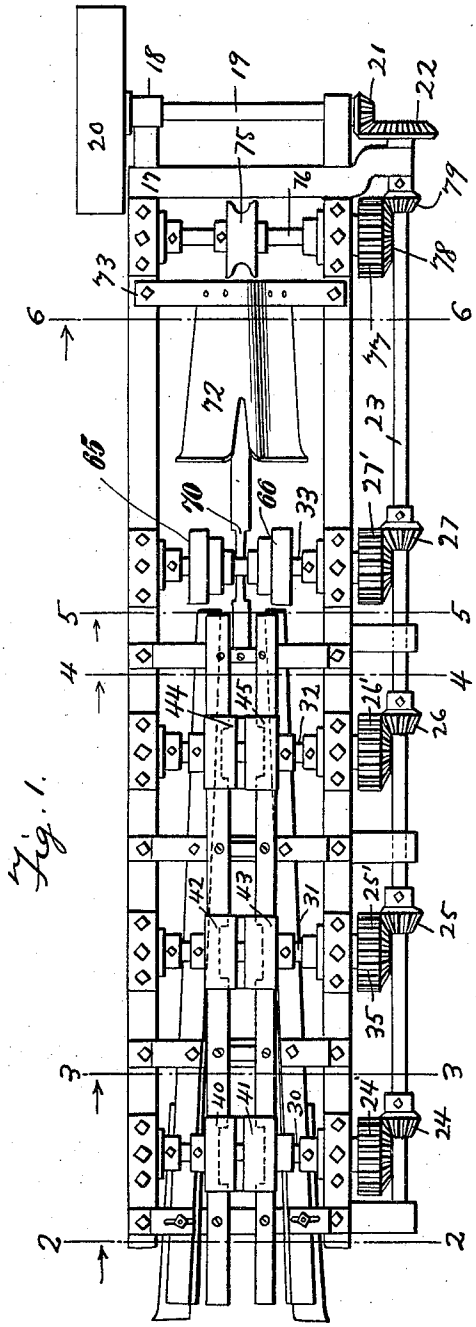


Fig. 1.

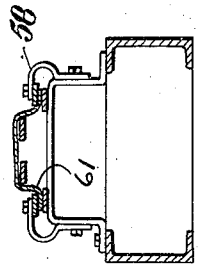


Fig. 3.

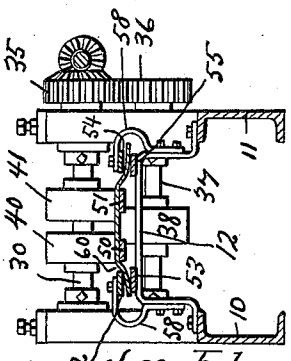


Fig. 2.

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RIDGE CAP FORMING MACHINE

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Fig. 6.

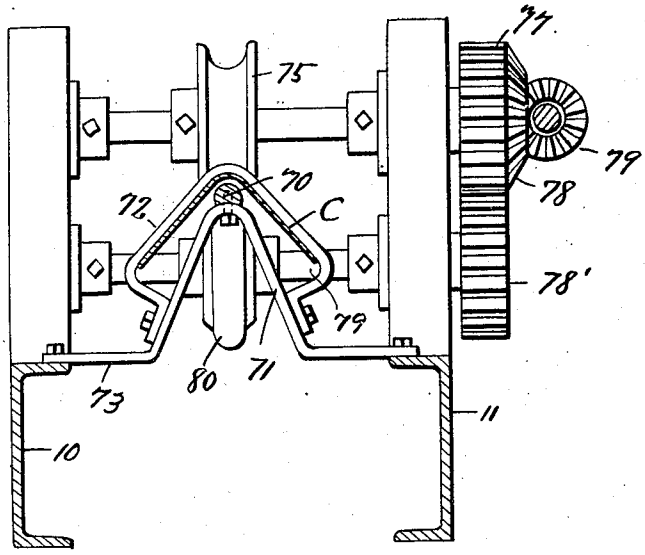
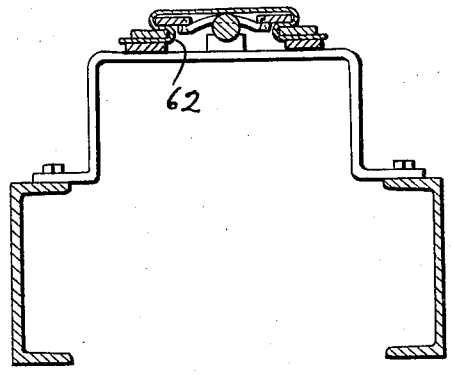


Fig. 4.



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RIDGE CAP FORMING MACHINE

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Fig. 5

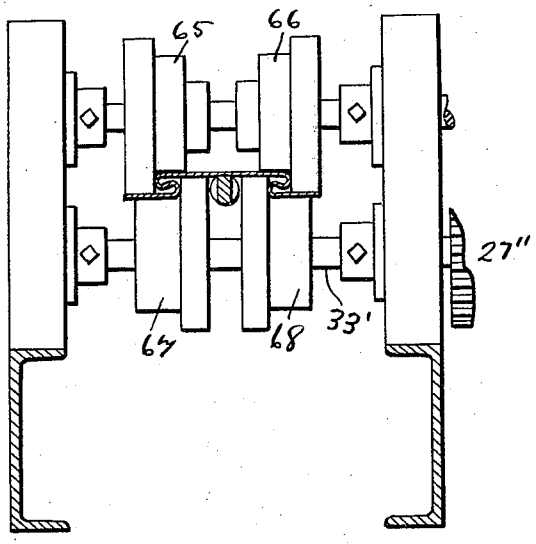
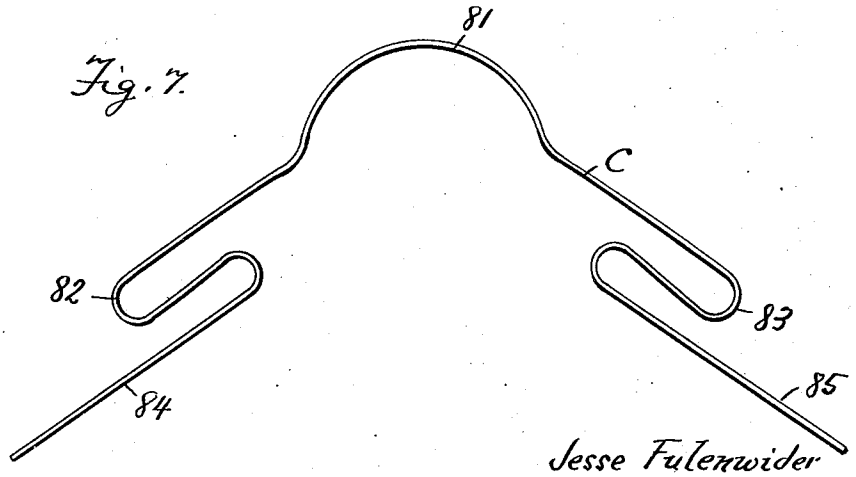


Fig. 7.



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UNITED STATES PATENT OFFICE

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RIDGE-CAP-FORMING MACHINE

Application filed June 26, 1926. Serial No. 118,722.

The object of this invention is to form a sheet metal ridge cap for roofing purposes, said cap being provided with longitudinal folds under which the roofing sheets on opposite sides of the ridge may be inserted in order to produce a tight joint.

A further object is to provide a machine employing a plurality of pairs of rolls for advancing the sheet of which the cap is to be formed; to provide forming strips arranged for producing the bends in the sheet required for the folds, these bars or forming strips converging in the manner disclosed below; to provide for rolling the folded portions; and to provide for bending the sheet longitudinally of the central portion thereof, for producing the ridge per se, by passing the sheet under a forming plate, and then between a grooved roll and a roll having a convex surface.

With the foregoing and other objects in view, the invention consists in the novel construction and arrangement of elements described, illustrated and claimed, it being understood that modifications may be made within the scope of the claims, without departing from the spirit of the invention.

In the drawings forming part of this application,

Figure 1 shows the machine in top plan.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a section on line 5—5 of Figure 1.

Figure 6 is a section on line 6—6 of Figure 1.

Figure 7 is an end elevation of the ridge cap, of the form produced by passing a plain flat sheet of metal thru the machine.

The machine includes the longitudinally extending channel beams 10 and 11, and the transversely extending frame braces, referred to below. An additional transverse member 17 mounts bearing brackets 18 for transverse shaft 19 carrying a pulley wheel 20, by means of which drive is imparted to shaft 19, and to bevelled gear wheel 21 meshing with gear wheel 22 on line shaft 23.

Carried by line shaft 23 are rigidly mounted pinions, designated 24, 25, 26 and 27. These pinions mesh with gear wheels 24′, 25′, 26′ and 27′, on transverse shafts 30, 31, 32 and 33. The bevelled gear wheels just referred to, as mounted on the transverse shafts, are formed with cylindrical portions carrying teeth 35 adapted to mesh with lower gear wheels such as wheel 36 mounted on transverse shaft 37 of Figure 2, this shaft carrying roll 38 mounted below rolls 40 and 41 of the pair at the left of Figure 1. Other pairs of rolls 42 and 43, 44 and 45, are positioned as shown in Figure 1, and additional rolls referred to below and employed in the structure shown in Figure 5 serve the purpose indicated below.

An important feature of the construction is found in the forming strips or forming bars, these being designated 50, 51, 52 and 53, and 54 and 55. In Figure 2 the bars 53 and 55 are shown as being mounted on the transverse frame braces designated 12, and bars or strips 52 and 54 are mounted on the arms 58 which are carried by the sides of frame members or braces 12.

The sheet from which the ridge cap is to be formed, passes into the machine from the left, in Figure 1, and engages bars 50 and 52, forming the bend at 60, and a similar bend is formed between bars or strips 51 and 54. In the next stage of the operation, the strips may be assumed to have reached the section line 3—3 of Figure 1, so that the strips or forming bars will be in the relative position there indicated, and a bend or fold will be produced at 61.

When the sheet reaches the point indicated by section line 4—4 of Figure 1, the forming bars will be in the position there shown, it being understood that these bars converge gradually from one end of the machine towards the other end, and a channel 62 will then be produced, in view of the relative position of the bars illustrated in Figure 4. It will be observed that the bars here present two series each comprising independent upper, lower, and intermediate

forming or folding elements, with plain parallel surfaces, and with their edges out of alinement. The sheet of material being operated upon, passes under the upper rollers of each pair, such as rollers 44 and 45, or the rollers 40 and 41 of the pair at the top of Figure 2, the sheet passing over the lower rollers 38, assumed to be employed in connection with each pair of upper rollers.

The sheet next passes under the upper stepped rolls 65, 66 of Figures 1 and 5, and between these rolls and lower rolls 67 and 68, the upper rolls being mounted on shaft 33. The lower rolls are driven by gear wheel 27′ which meshes with gear wheel 27″ on lower transverse shaft 33′. In this stage of the operation, the folds in the sheet are placed under pressure and partly flattened out.

The sheet of which the cap C is being formed, next passes over bar 70 of Figures 1 and 6, this bar having a convex surface and being mounted rigidly on transverse V-shaped brace 71. Upper forming plate 72 mounted on transverse brace 73 provides converging surfaces for contact with the upper surface of the ridge cap C, and the latter then passes under roll 75 on shaft 76 driven by gear wheel 77. This wheel carries a gear face 78 meshing with pinion 79 on line shaft 23, and gear wheel 77 drives gear wheel 78′ on lower shaft 79 mounting forming wheel 80 of Figure 6 which cooperates with grooved wheel 75 in forming the ridge per se, designated 81 in Figure 7.

The ridge cap C is then completed and includes besides the central ridge 81, the folds or flanges 82 and 83 under which the roofing sheets are placed when laid over the diverging plate portions 84 and 85 of the structure of Figure 7.

Having thus described the invention, what is claimed is:

1. In a machine of the class described, a plurality of forming bars having their adjacent surfaces each extending in a single plane and the bars being in approximately parallel relation and having their edge portions in converging relation, these bars presenting two series each comprising upper, lower, and intermediate forming elements with plain surfaces, each series producing a double fold in the material being operated upon, and upper and lower rolls for engaging a sheet to be formed by the bars and for moving said sheet longitudinally of the bars.

2. In a machine of the class described, a plurality of forming bars having their adjacent surfaces each extending in a single plane and the bars being in approximately parallel relation and having their edge portions in converging relation, these bars presenting two series each comprising upper, lower, and intermediate forming elements with plain surfaces, each series producing a double fold in the material being operated upon, upper and lower rolls for engaging a sheet to be formed by the bars and for moving said sheet longitudinally of the bars, and means for placing the formed and folded portions of the sheet under pressure after being released from engagement with the bars.

3. In a machine of the class described, a plurality of forming bars having their adjacent surfaces each extending in a single plane and the bars being in approximately parallel relation and having their edge portions in converging relation, these bars presenting two series each comprising upper, lower, and intermediate forming elements with plain surfaces, each series producing a double fold in the material being operated upon, upper and lower rolls for egaging a sheet to be formed by the bars and for moving said sheet longitudinally of the bars, and means for placing the formed and folded portions of the sheet under pressure after being released from engagement with the bars, said means last named including upper and lower stepped rolls and means for driving the rolls.

4. In a machine of the class described, a plurality of forming bars having their adjacent surfaces in approximately parallel relation and having their edge portions in converging relation, and upper and lower rolls for engaging a sheet to be formed by the bars and for moving said sheet longitudinally of the bars, and means for producing a ridge centrally of the sheet after the side portions thereof are formed by the bars.

5. In a machine of the class described, a plurality of forming bars having their adjacent surfaces in approximately parallel relation and having their edge portions in converging relation, and upper and lower rolls for engaging a sheet to be formed by the bars and for moving said sheet longitudinally of the bars, and means including a lower longitudinal bar and an upper forming plate of inverted channel form for producing a ridge centrally of the sheet after the side portions thereof are formed by the bars.

6. In a machine of the class described, a plurality of forming bars having their edge portions in converging relation, these bars presenting two series each comprising upper, lower, and intermediate forming elements with plain surfaces transversely of their edge portions, each series producing a double fold in the material being operated upon.

In testimony whereof we affix our signatures.

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