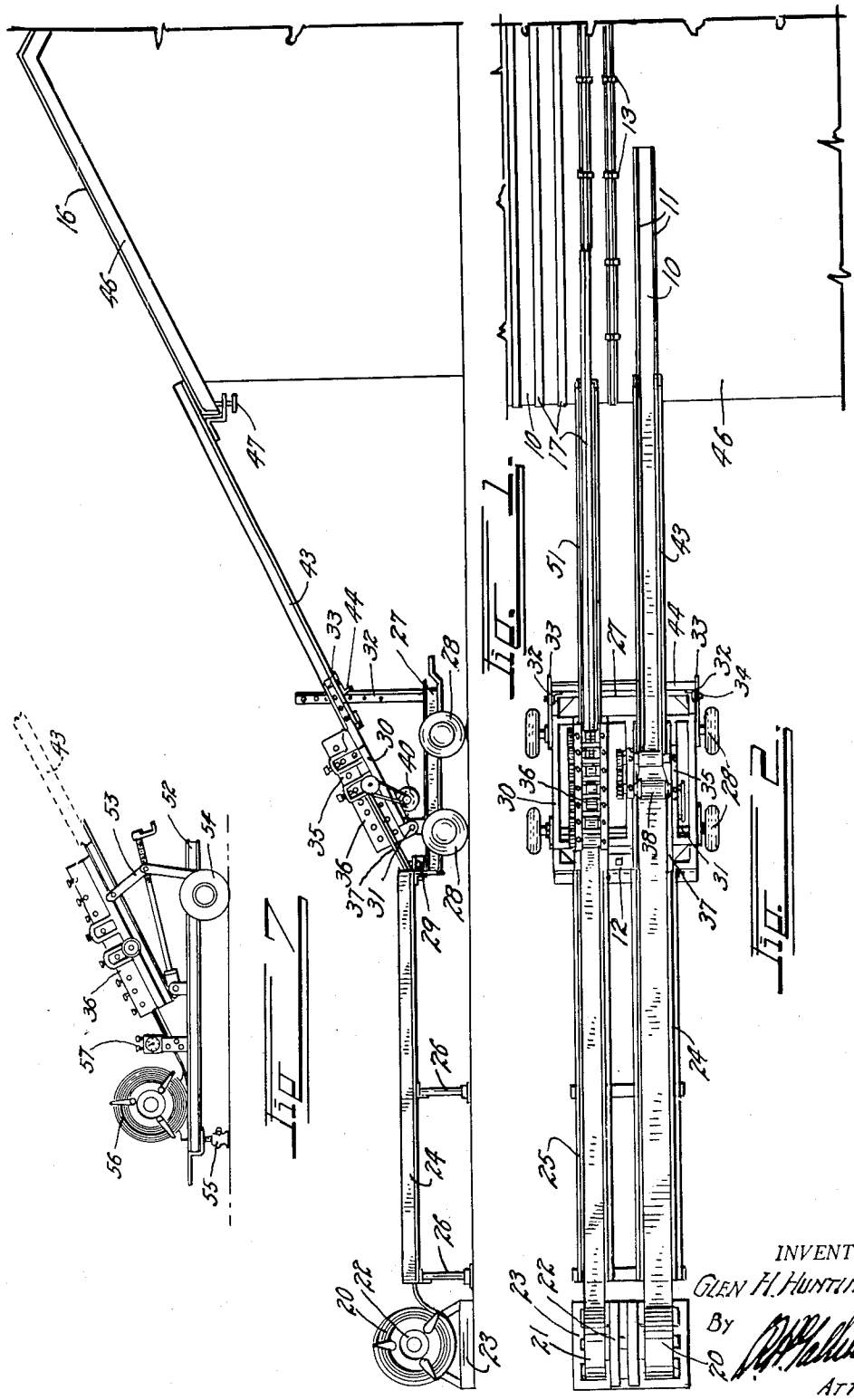
June 26, 1956 G. H. HUNTINGTON 2,751,673

METHODS AND MEANS FOR PREPARING AND LAYING SHEET METAL ROOFING

Filed Jan. 8, 1951 2 Sheets-Sheet 1



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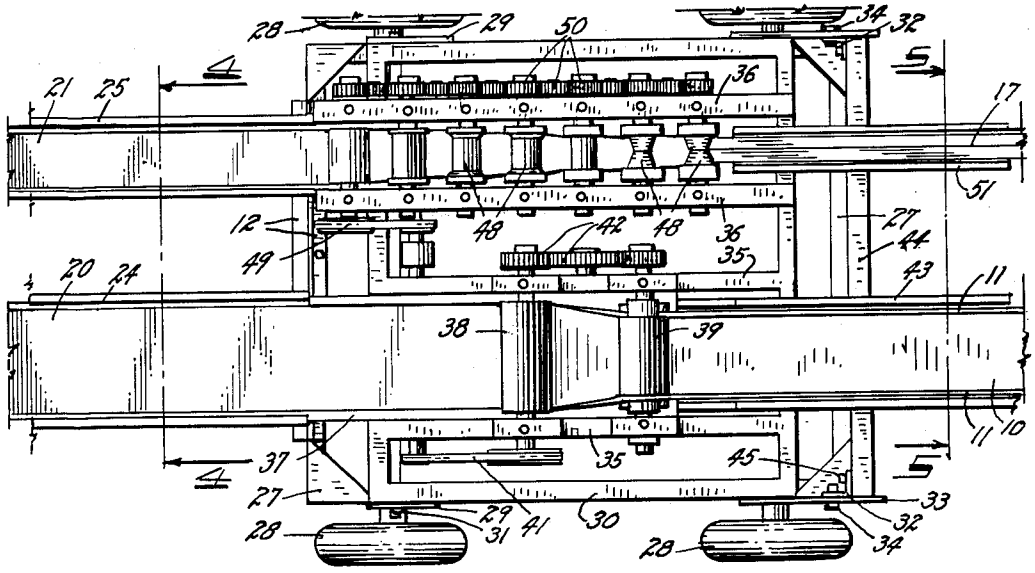


Fig. 3.



Fig. 4.

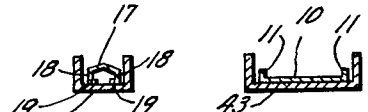


Fig. 5.

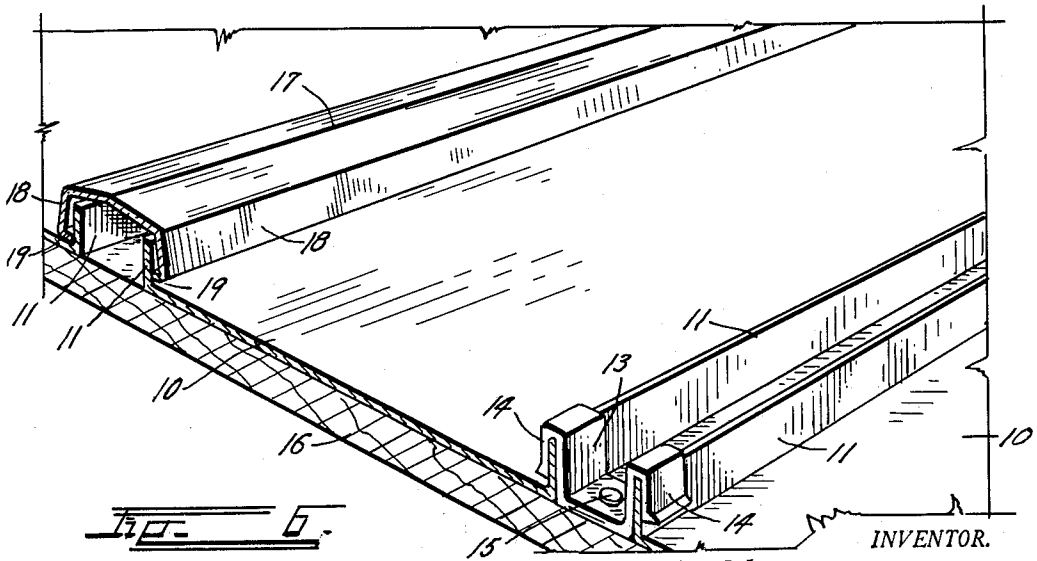


Fig. 6.

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METHODS AND MEANS FOR PREPARING AND LAYING SHEET METAL ROOFING

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Application January 8, 1951, Serial No. 204,952

4 Claims. (Cl. 29—429)

This invention relates to a method and means for applying sheet metal roofing, more particulary the type of roofing illustrated and described in applicant's prior Patent No. 2,408,557, issued October 1, 1946.

Roofing of this type is usually supplied in long strips which require expensive crating to prevent damage to the strips by bending or kinking. The length of the strips is definitely limited, not only by the crating problems, but by the length of the railway cars and trucks used for transporting the strips. As a result the strips must often be pieced or joined on the job to provide the lengths required. This not only adds to the labor costs of installation, but results in joints or seams which may open to cause leakage.

The principal object of this invention is to provide a method and means for installing roofing of this type which will eliminate all expensive crating, and which will allow strips of any desired length to be formed directly on the job without joints or seams in their lengths.

Other objects of the invention are to provide a method and means whereby long strips of sheet metal roofing will be delivered in place on the roof without additional hoisting equipment and without danger of bending, kinking, or damaging the roofing, and whereby all storage of strips on the job and on the roof will be eliminated.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

Briefly, the objects of the invention are attained by supplying the required metal to the job in coils or rolls containing many hundreds of feet of flexible metal of the required width, kind, and weight, thence forming the metal into continuous formed strips on an incline corresponding to and connecting with the roof to be covered, the forming mechanism acting to slide the formed strips directly into place on the roof without bending or distorting the strips in any way. Each strip is cut from the continuously flowing strip to provide individual, in place, strips of the desired length.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawings:

Fig. 1 is a side view of a typical arrangement for employing the improved method to install sheet metal roofing on a typical roof;

Fig. 2 is a plan view of the arrangement of Fig. 1;

Fig. 3 is an enlarged top view of a strip-forming mechanism employed in the improved process;

Figs. 4 and 5 are cross-sections, taken on the lines 4—4 and 5—5, respectively, Fig. 3;

Fig. 6 is an enlarged, fragmentary, perspective view, illustrating a type of roofing to which the improved method and means is applicable; and

Fig. 7 is a side view of an alternate form of device for carrying out the improved method.

Sheet metal roofing of the type to which this invention applies consists of elongated sheet metal roofing strips **10** having their two side edges turned upwardly at right angles to the plane of the strips to form vertical side flanges **11**. Adjacent strips are secured to the roof by means of clips **13** having hooked extremities **14** for engaging the flanges **11** of two adjacent strips and provided with a central nail hole for receiving an attachment nail **15** for securing the clips to roof sheathing **16**.

The clips **13** maintain the adjacent strips in parallel, spaced-apart relation, and the intervening space is covered by an elongated batten strip **17** having downwardly turned sides **18** terminating in inwardly turned hooked edges **19**. The hooked edges **19** engage beneath the hooked extremities **14** of the clips **13** to maintain the batten strips **17** in place.

It can be readily seen that it is impossible to bend the strips **10** or the batten strip **17** in any direction without distorting or kinking the latter, due to the angularly turned edges **11**, **18**, and **19**. Therefore, means are provided for placing both the strips **10** and the strips **17** upon the roof sheathing **16** without distortion.

This is accomplished by delivering the metal for the strips in long, flat bands **20** and **21** which are rolled in coils. At the job, the coiled strips or bands **20** and **21** are mounted on demountable reels **22** upon a reel base **23**. The band **20** provides the metal for the strips **10**, and the band **21** provides the metal for the strips **17**. The metal band **20** is unrolled onto a channel table **24**, and the band **21** is unrolled onto a similar narrower channel table **25**. The tables **24** and **25** are supported upon suitable demountable legs **26**. The tables are supported at their forward extremities from a portable truck frame **27** mounted on wheels **28**. The truck frame is provided with suitable attachment means **12** to which the forward extremities of the tables **24** and **25** are secured.

A tilting frame **30** is pivotally mounted by means of hinge ears **29** upon a suitable hinge shaft **31** on the truck **27**. The tilting frame **30** is supported at any desired incline by means of angle posts **32**. Attachment straps **33** extend from the tilting frame **30** to suitable attachment bolts **34** on the posts **32**. The tilting frame supports two sets of roller frames **35** and **36**.

The sheet metal band **20** is led from its roll or coil over the table **24** and onto an apron **37**, from whence it passes between a pair of pressure rolls **38** and a pair of flanging rolls **39** which form the roofing strips **10** with their upstanding side flanges **11**. The pairs of rolls **38** and **39** are driven in any desired manner, such as from a suitable electric motor **40** through the medium of a drive belt **41** and intermeshing gears **42**.

The continuous formed strip **10** passes from the pair of flanging rolls **39** onto an inclined chute **43**. The lower extremity of the chute **43** is supported from the truck frame, such as by an adjustable angle beam **44** which is adjustably secured upon the posts **32** by means of suitable attachment bolts **45**. The chute **43** extends to, and on the incline of, the roof upon which the roofing is to be placed, indicated at **46**. Suitable removable attachment means may be provided on the chute **43**, as indicated at **47**, for attaching the chute to the eave of the roof **46**.

The strip **10** is forced onto the roof and to the ridge of the latter under the power of the motor **40**. It can then be cut from the continuous strip to the desired length for the selected roof **46**.

The set of roller frames **36** carry a series of pairs of forming rolls **48** driven in any desired manner, such as from the motor **40** through a suitable belt drive **49** and intermeshing gears **50**. The pairs of forming rolls **48**

are of the usual continuous strip-forming type and are designed to progressively form the continuous band of metal **21** into the cross-sectional shape of the batten strip **17**, as shown in Figs. 5 and 6.

The completely formed, continuous batten strip **17** flows from the forming rolls **48** onto a second inclined chute **51** leading to the roof **46**, where the batten strips are delivered continuously under the power of the rolls **48**.

The strips **10** and **17** may be cut to the desired lengths after they reach the roof, or, if preferred, they may be cut to the desired lengths on the receiving tables **24** and **25**, thence delivered to the roof through the forming rolls by means of the chutes **43** and **51**.

It will be noted that the above method of applying strip type sheet metal roofing obviates crating and handling the formed strips. It also eliminates any possibility of damaging the strips by bending or kinking, and it avoids all joints in the lengths of the strips. The metal is simply delivered to any size job in rolls and only sufficient metal need to be formed to complete the selected roof, the excess remaining in its coiled, easily handled form for use on the next succeeding job.

The tables **24** and **25**, and the forming truck **27** with its delivery chute **43**, are all easily portable so that they may be moved from job to job or along the roof of a single job. No hoisting equipment of any kind is necessary.

In Fig. 7 an alternate form of forming truck is illustrated, consisting of a truck chassis **52** mounted on rear wheels **54** and arranged to be towed from a suitable tow car by means of a draw bar **58**. When disconnected from the tow car, the forward extremity of the chassis **52** is leveled and supported on jacks **55**. Metal band reels **56** are mounted directly on the chassis **52** and feed into the forming machines previously described. The incline of the forming machines is regulated by means of a lever jack arrangement **53**.

In the alternate form the measuring tables are eliminated and the measuring is done continuously by means of a rotary lineal measuring unit **57**, through which the band passes on its way to the forming rolls.

In most cases it will be found impossible, or at least impractical, to move the device along the length of the roof. In such cases the strips **10** and **17** will be formed and cut to proper length and piled in the chutes **43** and **51**, from which they may be easily withdrawn by the workmen for application to the roof.

While the invention has for, descriptive purposes, been described as placing roofing strips upon what is generally known as a roof, it is, of course, obvious that the same means and method could be used for applying similar strips to floors, platforms, sides, and walls of buildings and similar structures, if desired.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A device for forming and laying sheet metal roofing comprising: a wheeled truck frame; a hinge shaft supported by said truck frame; a tilting frame hingedly mounted at its one extremity on said hinge shaft and extending over said truck frame; adjustable means supporting the free extremity of said tilting frame at any desired height; a plurality of strip-forming rolls rotatably supported by said tilting frame in parallel, aligned relation; means for supporting a reel of sheet metal strip adjacent the hinged extremity of said tilting frame; a delivery chute; adjustable supporting means supporting one extremity of said delivery chute in aligned relation with said rolls; and means for supporting the other extremity of said delivery chute at an elevation to cause the chute to incline in correspondence with the incline of said tilting frame.

2. Transportable apparatus for forming and delivering preformed roofing strips to a inclined roof comprising: a movable truck for carrying the apparatus; a reel positioned adjacent said truck for feeding a continuous band of material to be formed into roofing strips; strip forming and advancing means comprising a series of forming rolls mounted on an inclined platform in position to receive the band of material from said reel; a channel shaped delivery chute forming a continuation of said inclined platform at the same inclination therewith; means for supporting said platform in its inclined position embodying means for varying the inclination of said platform and chute so as to correspond to the inclination of the roof; means at the extremity of the chute for attaching the same to the edge of a roof; and means for driving said forming rolls whereby the strip may be advanced as it is formed so as to deliver a preformed strip from said chute onto said inclined roof.

3. Transportable apparatus for forming and delivering preformed roofing strips to an inclined roof as defined in claim 2, wherein said inclination varying means includes toggle mechanism and screw adjusting means for said toggle.

4. A method of forming and laying a length of formed strip material upon an inclined roof in one continuous operation, comprising: positioning a series of forming rolls and a delivery chute on a platform, at an inclination substantially the same as that of the inclined roof and in alignment therewith; advancing a strip of roof material, as it is formed, up said incline; utilizing the advancing action of the forming rolls to feed a formed strip up the incline at an angle corresponding to the angle of the roof; and shifting the platform laterally as required, so as to present the strip to the desired point along the roof.

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