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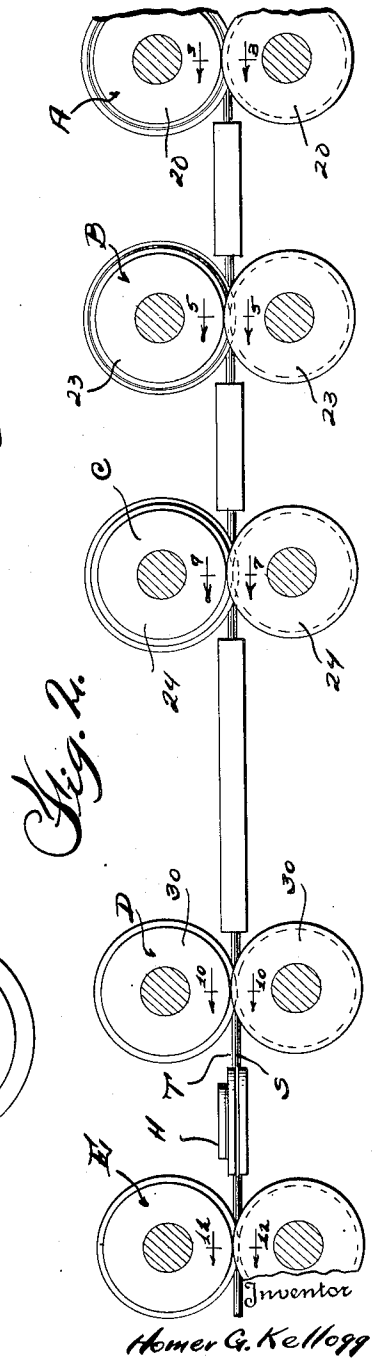
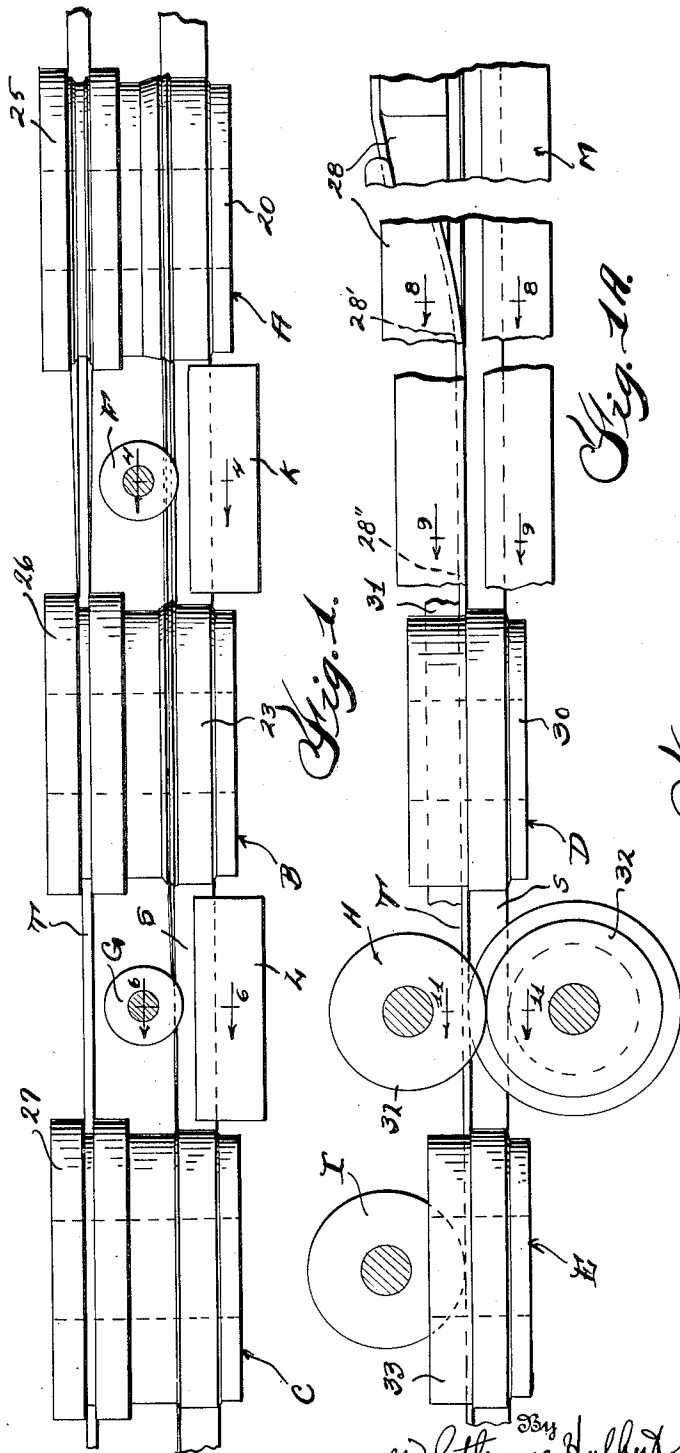
H. G. KELLOGG

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METHOD OF AND APPARATUS FOR MAKING COMPOSITE STRIPS

Filed May 1, 1933

3 Sheets-Sheet 1



Inventor
Homer G. Kellogg

By Edw. H. Hittner & Herbert W. Hittner Attorneys

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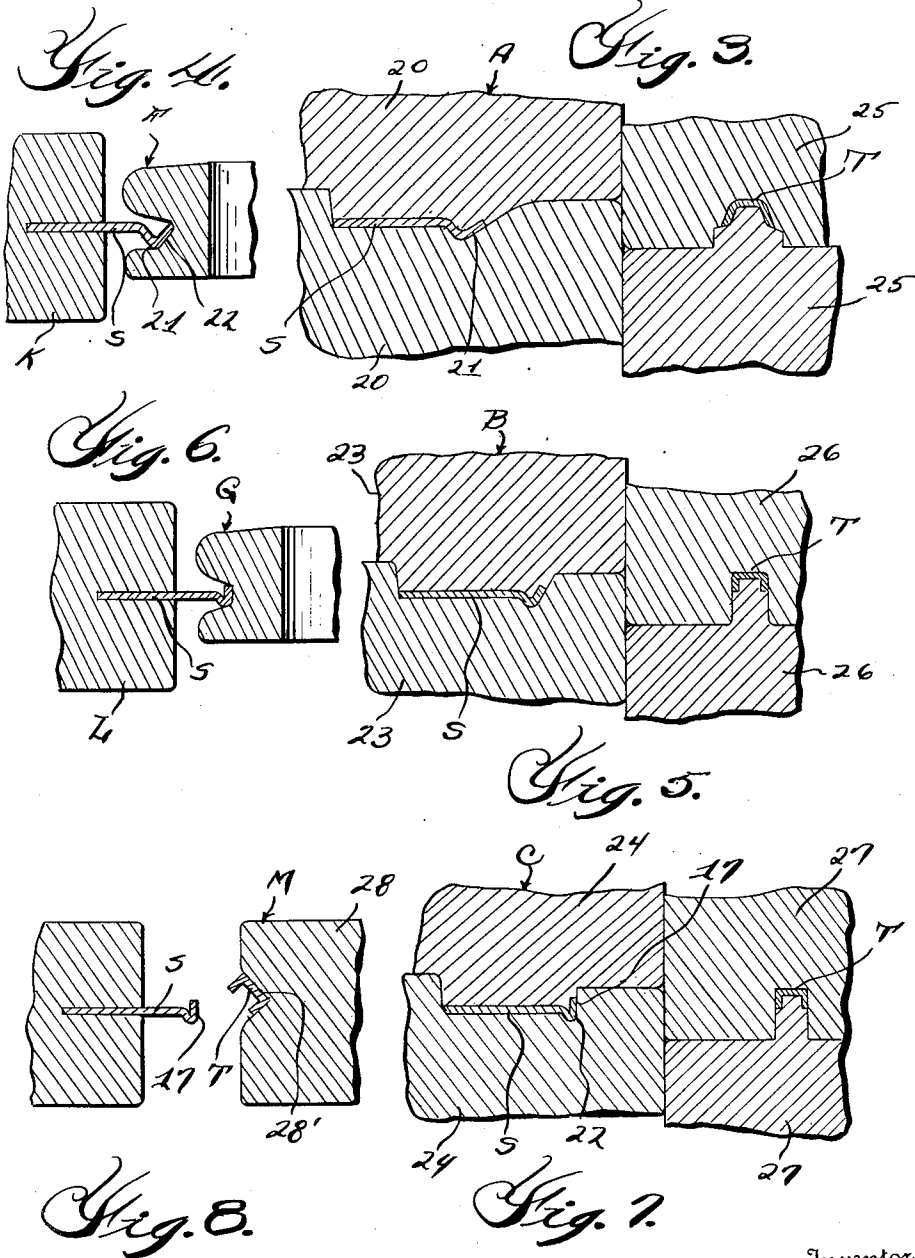
H. G. KELLOGG

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METHOD OF AND APPARATUS FOR MAKING COMPOSITE STRIPS

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3 Sheets-Sheet 2



Inventor
Homer G. Kellogg

W. H. Kellogg & Co. Attorneys

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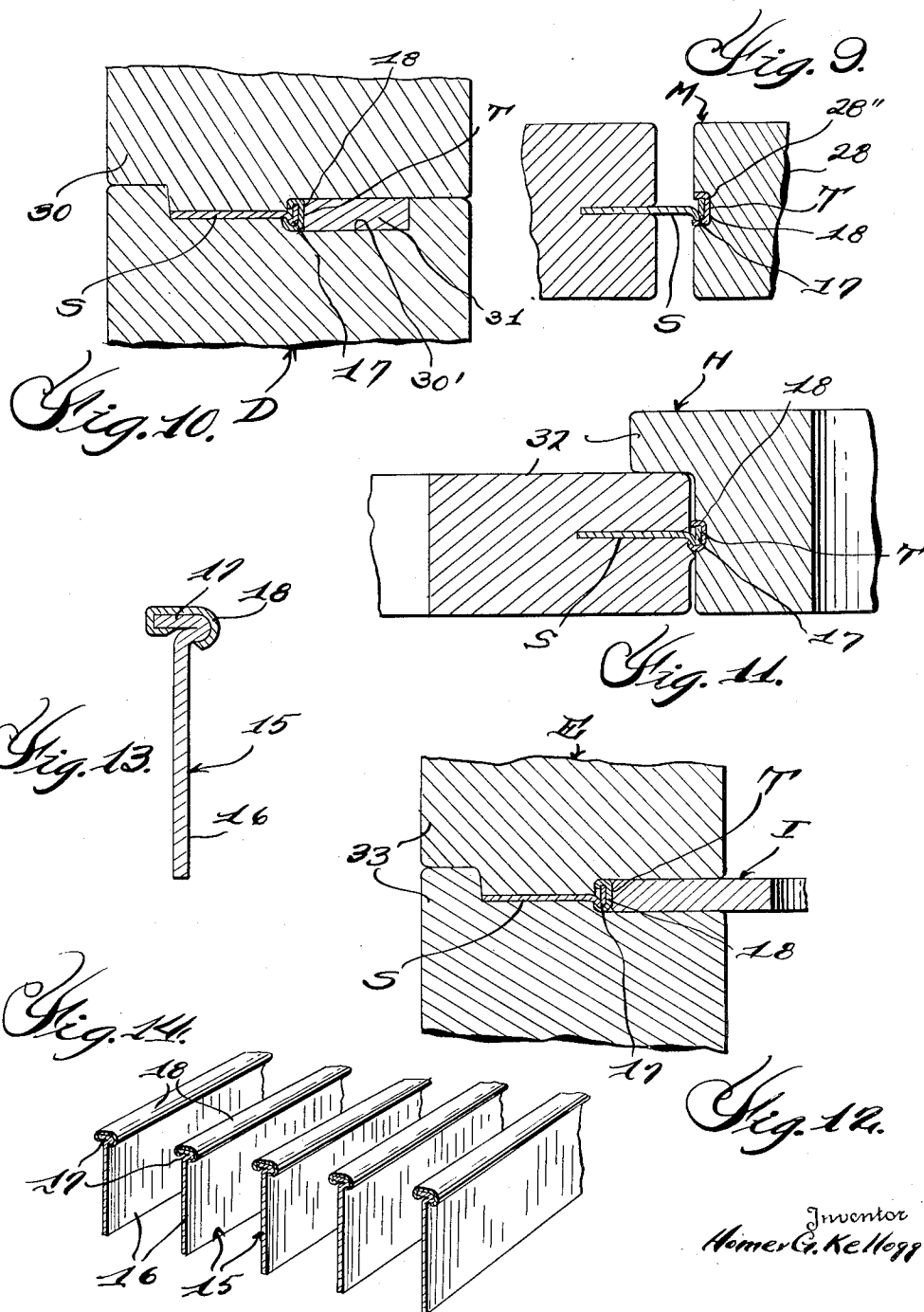
H. G. KELLOGG

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METHOD OF AND APPARATUS FOR MAKING COMPOSITE STRIPS

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3 Sheets-Sheet 3



Inventor
Homer G. Kellogg

W. H. Kellogg & Co. 334
W. H. Kellogg & Co. 334
Attorneys

UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR
MAKING COMPOSITE STRIPSHomer G. Kellogg, Detroit, Mich., assignor to
Motor Products Corporation, Detroit, Mich., a
corporation of New York

Application May 1, 1933, Serial No. 668,891

8 Claims. (Cl. 153—1)

This invention relates to a method of and apparatus for forming composite strips, the product produced being particularly adapted for use in the production of radiator grills and the like.

One of the objects of this invention is to provide a method and apparatus whereby composite strips of the character above indicated may be continuously formed from continuous strips of metal on a rolling machine.

In accordance with this invention, a pair of continuous strips are progressively advanced and during their advancement are fashioned to predetermined cross sectional contours, these two strips being subsequently brought together and united or joined during their continued advancement through the rolling machine.

In accordance with this invention, strips used in the construction of radiator grills and the like may be produced, the resulting composite strip comprising the louver blade of the grill together with a trim or finished strip attached thereto.

The several objects, advantages, and novel details of construction of the invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein

Figures 1 and 1A are a top plan view of a rolling machine constructed in accordance with this invention;

Figure 2 is a side elevational view of the structure illustrated in Figures 1 and 1A;

Figure 3 is an enlarged sectional view taken on line 3—3 of Figure 2;

Figure 4 is an enlarged section taken on line 4—4 of Figure 1;

Figure 5 is an enlarged view taken on line 5—5 of Figure 2;

Figure 6 is an enlarged section taken on line 6—6 of Figure 1;

Figure 7 is an enlarged view taken on line 7—7 of Figure 2;

Figure 8 is an enlarged section taken on line 8—8 of Figure 1A;

Figure 9 is an enlarged section taken on line 9—9 of Figure 1A;

Figure 10 is an enlarged section taken on line 10—10 of Figure 2;

Figure 11 is an enlarged view taken on line 11—11 of Figure 1A;

Figure 12 is an enlarged section taken on line 12—12 of Figure 2;

Figure 13 is an enlarged detail sectional view through one of the composite strips produced by this invention, and

Figure 14 is a fragmentary perspective view of a

grill or the like constructed of these composite strips.

Referring now more particularly to the drawings wherein like reference characters indicate like parts, and more especially to Figure 13 thereof, it will be seen that with the present invention a composite strip 15 is produced having a body portion 16, a head portion 17 with which latter portion a trim or finish strip 18 is associated. If the composite strips are assembled to produce a grill for radiators or the like, as illustrated in Figure 14, the body portion 16 of the strips will constitute the louvers or blades of the grill and the finish or trim strips 18 may be chrome plated or finished in some other manner to provide decorative or trim strips which will enhance the appearance of the grill. In this manner, the body of the grill may be formed of ordinary metal and only the exposed edge finished by the application of the finish or trim strips 18.

The apparatus about to be described comprises sets of forming rolls together with guides or guide means whereby two flat strips of metal may be continuously advanced, and during the initial portion of their advancement may be separately formed to predetermined cross sectional contour and thereafter during their advancement united to form the composite strip. Thus the apparatus comprises sets of rolls A, B, C, D and E, each provided with horizontal axes. There is also provided rolls F, G, H and I having vertical axes. The rolls F and G cooperate with horizontally arranged guides K and L respectively, whereas the other roll I of this group cooperates with the set of rolls E.

Arranged between the sets of rolls C and D is a set of guides M the function of which is to bring together the two previously preformed strips whereby upon the continued movement of the strips the remaining units of the apparatus function to unite the same.

The evolution of the stock is illustrated in Figures 3 to 12, inclusive, from which it will be noted that the strips S and T, which initially are flat strips, are progressively fashioned and subsequently united all in one continuous operation.

From Figure 3 it will be noted that the strip S when passing through the rolls 20 of the first set A is bent from a flat strip into a cross sectional contour providing an angular V-shaped rib 21 at one longitudinal edge thereof. The roll F and guide K combine to compress or close this substantially V-shaped rib, as indicated at 22. The rolls 23 of the set of rolls B; the guide

L and roll G, and the rolls 24 of the set of rolls C all continue to act upon the rib 21 to bend the same into a substantially T-shaped head arranged at substantial right angles to the body of the strip, this head having been previously referred to in the finished composite strip by the reference character 17.

Simultaneously with the fashioning of the strip S the initially flat strip T is fashioned. When the strip T passes through the rolls 25 of the set of rolls A it is bent from a flat strip into a contour which is substantially U-shape in cross section. The strip T next passes between the rolls 26 of the set of rolls B and is bent into more of a channel shape, the angularity of the bends being more pronounced. This shaping of the strip T continues in the rolls 27 of the set of rolls C.

Upon leaving the set of rolls C, the strip S is engaged by a guide 28 of the set of guides M and is turned through an angle of substantially 90° so that the channel portion of the strip which initially faced downwardly is now turned to face sidewardly in the direction of the head of the strip S which is then opposed thereto. As the channel 28' of the guide 28 turns the strip T to an angle of 90°, it also approaches the other section 29 of the set of guides M so that at the point 28'' the channel of the guide 28 presents the strip T to the strip S and engages the channel recess of the strip T with the head of the strip S. This step in the process is illustrated in Figure 9.

The strips S and T are then passed through the rolls 30 of the set of rolls D in order to roll the legs of the channel of the strip T into engagement with the head of the strip S. At the same time, lateral pressure is exerted upon the strips by means of a guide 31 which works in a recess 30' in the lower roll of the set of rolls 30. This action rolls or clinches the channel shaped strip T on the head of the strip S as will be apparent.

The action of further rolling or clinching the channel shaped strip T into engagement with the head of the strip S is continued in the rolls 32 of the set of rolls H and is finally completed and the united strips squared or shaped by means of the rolls 33 of the set of rolls E in combination with the laterally acting roll I.

Thus as seen clearly from Figure 13, the strip T, which in Figure 13 is designated by the reference character 18, is longitudinally united with the head 17 of the strip 15 and encloses and conceals the one longitudinal edge of this strip 15.

As has been heretofore mentioned, the strip 18 may be chrome plated or in some other manner rendered decorative and can thus provide a trim or finish strip for the strips 15 when the latter are used in the construction of radiator grills and the like.

In accordance with the present invention, the entire operation is a continuous one wherein two flat strips are introduced into the apparatus and the completely formed composite strip emerges from the machine. The use of a rolling machine in the production of these strips enables the composite strips to be rapidly and economically produced in an entirely automatic manner.

While the embodiment of the invention herein illustrated has been found in practice to give entirely satisfactory results, it will be readily apparent to those skilled in this art that both the herein described method and apparatus may be altered in many non-essential respects with-

out departing from the spirit and scope of this invention, and to this end reservation is made to make such changes as may come within the purview of the accompanying claims.

What I claim as my invention is:

1. In an apparatus for forming composite strips and the like, means for continuously advancing a pair of strips, means for simultaneously fashioning one strip into a substantially channel shape and for fashioning the other strip to provide a head portion along one longitudinal edge thereof, means for engaging the channel portion of the one strip with the head portion of the other, and means for rolling the channel shaped strip into engagement with the head portion of the other strip to permanently unite the same.

2. In an apparatus of the character described, means for simultaneously advancing a pair of strips and fashioning one of said strips into a substantially channel shaped cross sectional contour and the other of said strips to provide a substantially T-shaped head along one longitudinal edge thereof, means operating during the continued advancement of said strip for engaging the channel portion of one strip with the head portion of the other, and means also operating during the further continued advancement of said strips for clinching the channel portion of one strip onto the head of the other strip.

3. In an apparatus for forming a composite strip from a pair of continuous flat strips, means for initially separately advancing and fashioning one of said strips into a substantially channel shaped cross sectional contour and the other of said strips to provide a substantially T-shaped head along one edge thereof, means operating during the continued advancement of said strips for superimposing the channel shaped strip on the other strip with the channel portion engaging the head thereof, and means during the further advancement of said strips for rolling the channel shaped strip into permanent engagement with the head of the other strip.

4. In the method of forming a composite strip, those steps which consist in continuously advancing a pair of strips, fashioning one of the strips during continued advancement thereof to provide the same with a channel shaped portion, fashioning the other of said strips while the latter is advanced with the strip aforesaid to provide the same with a head portion, subsequently assembling the strips during continued advancement thereof with the head portion of the second strip in the channel of the first strip and clinching the legs of the channel over said head portion to permanently unite said strips.

5. In a continuous method of forming composite strips, those steps which consist in progressively advancing a pair of strips and during their advancement fashioning one of the strips into a substantially U-shaped cross sectional contour and the other of the strips to provide a head portion, relatively rotating the strips during continued advancement thereof to position the channel of the U-shaped strip opposite the head of the other strip, engaging the head of the latter strip within the channel of the U-shaped strip, and uniting said strips.

6. In an apparatus for forming composite strips and the like, means for advancing a pair of strips, means operable during advancement of the strips for fashioning one strip into a substantially channel shape and for fashioning the other strip to

provide a head portion along one longitudinal edge thereof, means for relatively moving the strip during continued advancement thereof to engage the channel portion of the one strip with
5 the head portion of the other, and means for bending the legs of the channel shaped strip over the head of the other strip.

7. In an apparatus for forming composite strips and the like, means for advancing a pair of strips,
10 means for fashioning one of the strips to impart a channel-shaped cross section to the latter, means for fashioning the other strip to provide a head portion, means operable subsequent to the operation of both of the aforesaid means and dur-
15 ing the advancement of the strips to relatively rotate the latter about an axis extending longitudinally of the same to position the channel of the channel-shaped strip and the head portion of the

other strip in registration and to engage the head portion in said channel.

8. In an apparatus for forming composite strips and the like, means for advancing a pair of strips, means for fashioning one of the strips to impart
5 a channel-shaped cross section to the latter, means for fashioning the other strip to provide a head portion, means operable subsequent to the operation of both of the aforesaid means during the advancement of the strips to relatively rotate
10 the latter about an axis extending longitudinally of the same to position the channel of the first strip in registration with the head portion of the second strip and to engage the head portion in
15 said channel, and means for uniting said strips by bending the legs of the channel-shaped strip into engagement with the head of the other strip.

HOMER G. KELLOGG.