J. H. CAFFREY.

APPARATUS FOR COATING METAL SHEETS.

APPLICATION FILED JULY 24, 1916.

1,243,808.

Patented Oct. 23, 1917.

2 SHEETS—SHEET 1.

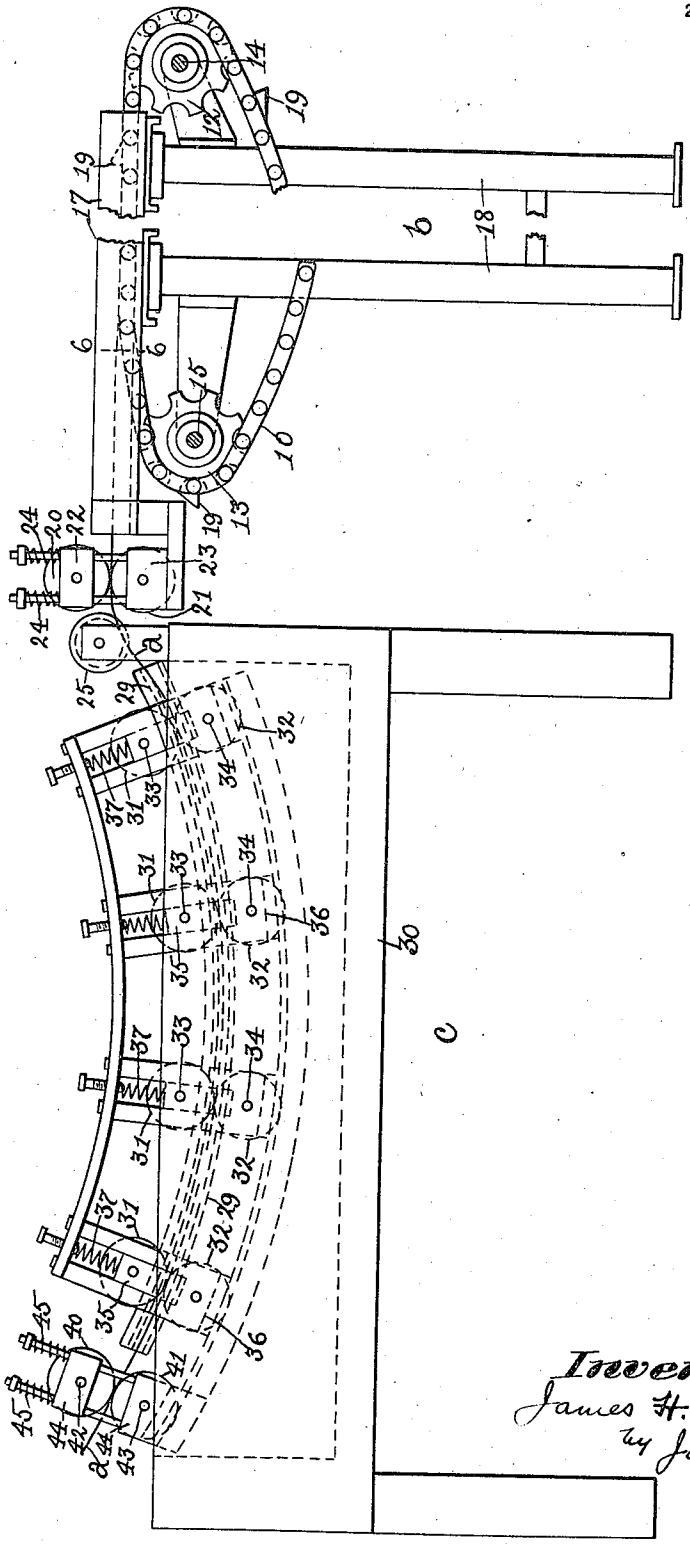


Fig. 1.

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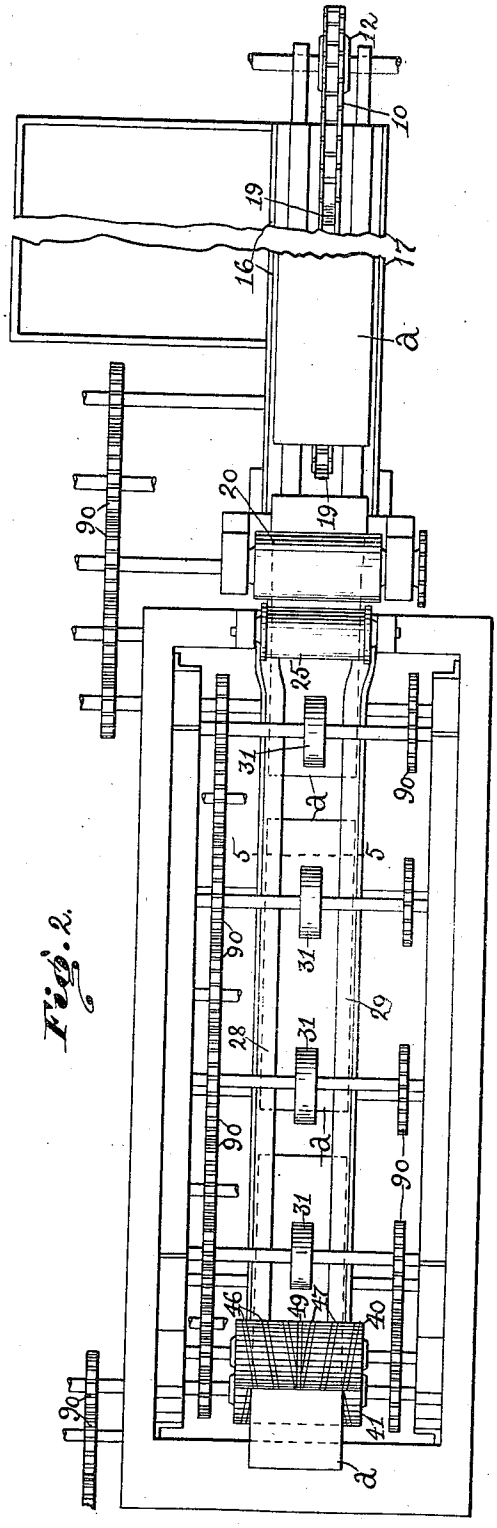


Fig. 2.

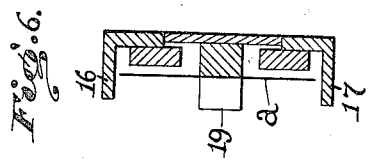


Fig. 6.

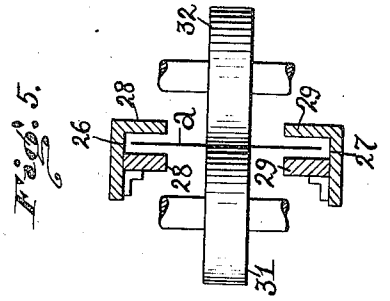


Fig. 5.

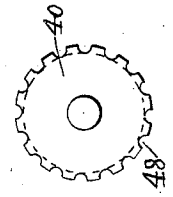


Fig. 4.

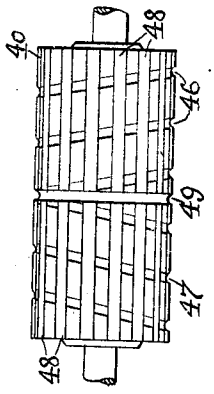


Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES H. CAFFREY, OF BEAVER FALLS, PENNSYLVANIA, ASSIGNOR TO ASBESTOS PROTECTED METAL COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

APPARATUS FOR COATING METAL SHEETS.

1,243,808. Specification of Letters Patent. Patented Oct. 23, 1917.

Original application filed October 14, 1914, Serial No. 866,685. Divided and this application filed July 24, 1916. Serial No. 110,856.

To all whom it may concern:

Be it known that I, JAMES H. CAFFREY, a citizen of the United States, and a resident of Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented an Improvement in Apparatus for Coating Metal Sheets, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This application is a division of my application Serial No. 866685 filed by me October 14, 1914.

The present invention relates to a novel apparatus for feeding a metal sheet into and through a kettle or vat containing a bath of asphalt or other adhesive coating material.

The particular features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of an apparatus embodying this invention.

Fig. 2, a plan view of the apparatus shown in Fig. 1.

Figs. 3 and 4, details of one of the distributing or spreading rolls shown in Fig. 1.

Fig. 5, an enlarged section, taken on the line 5—5, Fig. 2, and

Fig. 6, an enlarged section, taken on the line 6—6, Fig. 1.

In the present instance, I have shown one construction of apparatus in which the metal sheets *a*, which may be of relatively small size and substantially that of a shingle, are fed automatically by a feed member *b* into *a* coating member *c*, in which latter the metal shingle is provided with a coating of liquid asphalt or other adhesive material.

In the present instance, the feed member *b* is shown as an endless carrier or link chain 10, which is passed about sprocket wheels 12, 13, mounted upon shafts 14, 15, suitably supported and located at the opposite ends of a guideway, formed by side bars 16, 17, (see Figs. 2 and 6), which are supported by a framework 18.

The link chain 10 is moved in a substantially horizontal plane between the side bars 16, 17, and is provided at suitable intervals with lugs or projections 19, which serve as pushers for the metal shingle *a* to push the same forward into engagement with a pair of feed rolls 20, 21, mounted in boxes 22, 23, the upper feed roll 20 being permitted to yield with relation to the lower feed roll 21 by springs 24 in a manner well understood.

The metal shingle *a* is fed by the feed rolls 20, 21, under a guide or deflecting roll 25, which deflects the metal shingle down into guideways 26, 27, formed by guide bars 28, 29, which extend lengthwise of a kettle or vat 30 containing adhesive material, preferably asphalt or like bitumen.

The kettle 30 may be heated in any suitable manner to keep the asphalt fluid. The guide bars 28, 29 are curved, so that the metal shingle *a* on its passage through the coating bath contained in the kettle or vat 30, will be submerged in the coating bath or asphalt, so as to be entirely covered by the same.

The metal shingle *a* is fed through the coating apparatus as shown, by a plurality of pairs of feed rolls 31, 32, which are mounted on shafts 33, 34, journaled in boxes 35, 36 the upper roll 31 of each pair of feed rolls being yieldingly backed up by springs 37, so that the rolls 31 may move toward and away from the rolls 32 to compensate for different thicknesses in the shingles *a* and to impart the proper bite by the rolls 31, 32, upon the shingles.

The pairs of feed rolls 31, 32, are separated from one another by spaces, which are less than the length of the metal shingles.

At the delivery end of the kettle or vat 30, provision is made for spreading the asphalt or other coating material evenly over the greater portion of the metal shingle, and for providing for a surplus of asphalt at or near the transverse center of the metal shingle.

For this purpose, a pair of rolls 40, 41, are mounted upon shafts 42, 43, with which the upper shaft 42 journaled in boxes 44, which are yieldingly backed up by springs 45. The rolls 42, 43, are provided on their circumference with helical grooves or channels 46, 47 (see Figs. 2 and 3), which extend from at or near the center of the rolls toward their opposite ends, and said rolls are also provided with substantially parallel longitudinally extended grooves or channels 48, which intersect the helical grooves.

These grooves serve to distribute the as-

phalt evenly over the shingle from at or near the side edges thereof to the transverse center thereof. The upper roll 40 may and preferably will be provided substantially at or near its longitudinal center with an annular groove 49, which serves as a reservoir to hold a surplus quantity of asphalt.

The rolls 40, 41, also act as feed rolls to feed the coated metal shingle out of the kettle or vat 30. The rotatable members of the apparatus may be operatively connected through suitable gears 90 with a suitable driving shaft (not shown).

In the present instance, the metal sheet is described as a metal shingle and is shown of a size approximately that of the ordinary shingle, but it is not desired to limit the invention to an apparatus for handling metal shingles, as it is evident that it can be proportioned and arranged to handle metal sheets of any desired size within limits.

The operation of the apparatus may be briefly described as follows:—

Assume that the kettle 30 is heated and the asphalt bath contained therein is fluid. The operator sets the feed mechanism in motion in a known manner. He then places the shingles *a* upon the link chain 10 between the lugs 19, and each shingle is delivered to the feed rolls 20, 21, which feed it under the roll 25, by which it is deflected down into the guideways 26, 27, in the kettle 30, and is fed forward into and out of the bath of the fluid asphalt by the rolls 31, 32. The metal shingle coated with asphalt is then passed between the rolls 40, 41, which spread the asphalt evenly over the shingle except at the center of the upper surface of the shingle, which receives a surplus from the groove 49. The spreading rolls 40, 41, feed the coated shingle forward, and the helical grooves in said rolls serve to carry the surplus asphalt away from the side edges of the rolls and toward the transverse center of the same and into the annular groove 49, wherein it is retained to provide a surplus for cementing overlapping portions of a covering which may be applied to the coated metal sheet as described in my original application above referred to, which covering is not herein shown.

Claims.

1. In an apparatus of the character described, in combination, a kettle for containing a bath of adhesive material, means for feeding a metal sheet through said bath to coat the metal sheet with adhesive material, and means for spreading the coating material evenly and laterally over the surfaces of said metal sheet.

2. In an apparatus of the character described, in combination, a kettle for containing a bath of adhesive material, means for feeding a metal sheet through said bath to coat the metal sheet with adhesive material, and spreading rolls between which the coated metal sheet is passed, said spreading rolls having helically arranged channels on their circumferences.

3. In an apparatus of the character described, in combination, a kettle for containing a bath of adhesive material, means for feeding a metal sheet through said bath to coat the metal sheet with adhesive material, and spreading rolls between which the coated metal sheet is passed, said spreading rolls having helically arranged channels on their circumferences and one of said spreading rolls having an annular channel between its ends.

In testimony whereof, I have signed my name to this specification.

JAMES H. CAFFREY.