To whom it may concern:

Be it known that I, JOHN A. HANLON, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Scrapers for Galvanizing-Pots, of which the following is a specification.

This invention relates to apparatus for coating strips or sheets of steel or iron with metal, and particularly to a scraping or wiping device for removing the surplus coating metal.

The object is to produce simple and effective apparatus for scraping off or removing from the strip or sheet the superfluous coating metal and dress and pressing the remaining coating metal into the pores of the base metal to leave a thin closely adhering coating which will not crack or peel off when the sheet or strip is bent.

In the accompanying drawings Figure 1 is a longitudinal section through a coating tank or kettle with my improved scraping device therein; Fig. 2 is a plan view of the scraping device; Fig. 3 is a transverse section taken on the line 3-3, Fig. 2, looking in the direction of the arrows, one of the levers being shown in dotted lines in raised position; Fig. 4 is a longitudinal section on the line 4-4, Fig. 2; and Fig. 5 is an enlarged longitudinal section on the line 5-5, Fig. 2.

In the drawings, 1 indicates a suitable metal kettle or tank mounted in a setting 2 and containing the splinter or other molten coating metal 3, all as is usual in the art of coating with metal. Located in the kettle or tank near one end thereof is a transverse section support for the scraping device, said support comprising a bar 4 having upwardly turned end portions 4a shown as secured to the side walls of the tank or kettle but which may be supported on the setting 2 or in any suitable way.

The scraping device comprises a metal frame composed of two side members 5 and transverse members 8, 8a suitably secured to the side members. The forward ends of the side members are provided with downwardly bent hooks 6 to engage the supporting bar 4, while their rear ends form handles 7 by means of which the scraping device can be lifted out of the pot and placed in position therein.

The supporting bar 4 is preferably located a short distance below the surface of the molten metal in the tank or kettle, and the transverse members 8, 8a are located near the forward end of the frame in such position as to be above the surface of the molten metal, the side members 5 to the rear of the transverse bars being offset upwardly, as at 19, with their rear ends or handles 7 resting on the setting 2.

The scraping devices are supported on the transverse members 8, 8a, and in the drawings four sets of scraping devices are shown, two on each side of the longitudinal central line of the device and one pair in advance of the other, so that each strip or sheet being coated is subjected to the action of two scraping devices. All of the scraping devices are alike so that a description of one suffices.

Each scraping device comprises a bottom blade or scraper 13 carried by plate 12 secured to the transverse members 8, 8a, and a cooperating upper blade or scraper 14 carried by a lever 15 pivotally connected at its inner end at 11° to the upper end of a screw 11 engaging a threaded hole in the horizontal portion of an angle bracket 9 secured to a transverse member 8 or 8a at its longitudinal center. The scrapers or blades 13 and 14 are suitably secured to their supports so as to be rigid therewith and removable therefrom and each pair is of sufficient length to permit the passage of a plurality of strips 20 being coated. These scrapers or blades are preferably formed of rolled steel having either flat or slightly rounded edge portions between which the strips or sheets being coated are drawn. The vertically adjustable pivot member 11 provides a suitable means for keeping the edges of the scraping blades in parallelism irrespective of the thickness of the strips or sheets passing therebetween. By lifting the lever to vertical position, as shown at A, Fig. 3, it can be readily rotated to either elevate or lower the pivot 11°, and adjust the scrapers to the thickness of the sheet or strip being coated. The outer ends of the levers 15 are offset upwardly to pass over the side walls of the kettle or tank and form lever arms 16 for the application to the scrapers of the necessary pressure to remove the surplus coating metal and press the remainder into the pores of the metal. This pressure may be applied by...
plied either by hand or by weight, as indicated at 17, attached to a hole 17 in the outer end of said lever arms. The lever arms are guided vertically between spaced vertical guide members 18 secured to the frame side members 5 and to the transverse members 8 and 9.

In the use of the apparatus, the scraping device is placed in position in the pot and strips or sheets of metal 20 to be coated are led from suitable rolls or reels through the pot and through the two tandem pairs of scrapers to a suitable winding or other traction mechanism. The device is intended particularly for coating long strips of metal, such as hoop or band iron or the like, which in use must be bent and which should be capable of being bent at a sharp angle without cracking, crazing or peeling the coating metal. The drawings show three strips 20, such as hoop or band iron, passing through each pair of scrapers, but obviously, the scraping device can be made of such size as to accommodate any desired number of strips or sheets. After the strips or sheets are passed through the scraping device and connected to a suitable winding or other traction device, weight is applied to the handle levers 16 of the upper scraping blades to press them down upon the strips with sufficient force to remove the surplus coating metal and from both sides of the strips and thin and spread the remaining coating metal and force it into the pores of the strip.

The formation of the edges of the scraping blades and the pressure applied to the scrapers is such as to form a very thin, unbroken coating of metal on the strip or sheet and which very tenaciously adheres thereto so that it will not crack or peel when the strip is bent even to sharp angles. The blades are of such formation as to prevent excessive coating metal from passing through them and that which is scraped off drops back into the tank or kettle. The first set of scrapers takes off the major portion of the excess coating metal, leaving merely a thin film, while the succeeding scraper further reduces this film, spreads and compacts the same and forces it into the pores of the metal so that a very firm physical bond is formed between the base metal and the coating.

While round edged scrapers may be used and will accomplish the desired results with some degree of success, I prefer to use scrapers or blades having substantially square or flat scraping edges, as shown in cross section in Fig. 4.

The device described is simple and inexpensive and results in a considerable saving in the amount of metal necessary to secure a good protecting coat for the strip or sheet. It can be operated at a high speed, as its action is not limited by the ability of the surplus coating metal to flow from the strip or sheet but positively removes the same, and it removes considerable more metal than can be removed by ordinary wiping rolls or merely allowing the surplus metal itself to flow from the strip or sheet, besides forcing the coating metal into the pores of the base metal to form a more uniform and tenacious coating.

What I claim is:

1. Wiping apparatus for use in galvanizing strips, comprising a frame, a fixed wiping member secured therein and adapted to wipe over one surface of the strip, a cooperating wiping member for the other surface of the strip and movable toward and from said fixed wiping member, a lever arranged to swing in a vertical plane and carrying said movable wiping member, and a threaded pivot member carried by the frame with its axis vertical and supporting said lever, said pivot member being threaded into the frame and adjustable vertically therein, whereby said wiping members may be adjusted relatively to each other.

2. Apparatus for use in connection with galvanizing pots, comprising a frame adapted to be supported over the pot and carrying a fixed wiping member, a vertically movable wiping member cooperating with said fixed wiping member, a pivot member threaded into said frame on a vertical axis and adjustable vertically therein, and a lever pivotally connected to said pivot member on a horizontal axis and carrying said movable wiping member.

3. Apparatus for use in connection with galvanizing pots, comprising a frame having side members each terminating at one end in a hook and at its opposite end forming a handle, cross bars connecting said side frame members, fixed wiping members carried by said cross bars, and movable wiping members pivotally connected to said cross bars and cooperating with said fixed wiping members.

4. Wiping apparatus for use in galvanizing strips, comprising a portable frame adapted to be supported over the galvanizing tank, cross members on said frame spaced apart horizontally and each carrying a fixed wiping member, and levers pivoted in said frame and carrying cooperating wiping members, said levers being independently adjustable in a vertical direction to vary the distance between the cooperating wiping members of each pair.

5. Wiping apparatus for use in galvanizing strips, comprising a frame adapted to be supported over the galvanizing tank, said frame including a cross member carrying a plurality of fixed wiping members, a pair of levers pivoted at or near the middle of said frame and extending in opposite directions laterally thereof, each lever carrying
a movable wiping member for cooperating with one of said fixed wiping members, and threaded members for independently adjusting said levers vertically to vary the distance between said wiping members, said levers extending in one direction only from the threaded members.

6. Wiping apparatus for use in galvanizing strips, comprising a frame adapted to be supported over the galvanizing tank, said frame including a cross member carrying a fixed wiping member, a lever carrying a movable wiping member for cooperation with said fixed wiping member, a support to which said lever is pivotally connected, said support being threaded into and vertically adjustable in said frame, and vertical guides for said lever, said guides being free of connection at their upper ends and adapted to permit said lever to be raised and turned on a vertical axis to adjust the wiping members relatively to each other.

In testimony whereof, I have hereunto set my hand.

JOHN A. HANLON.

Witnesses:
ELBERT L. HYDE,
J. L. THRALLER, JR.