

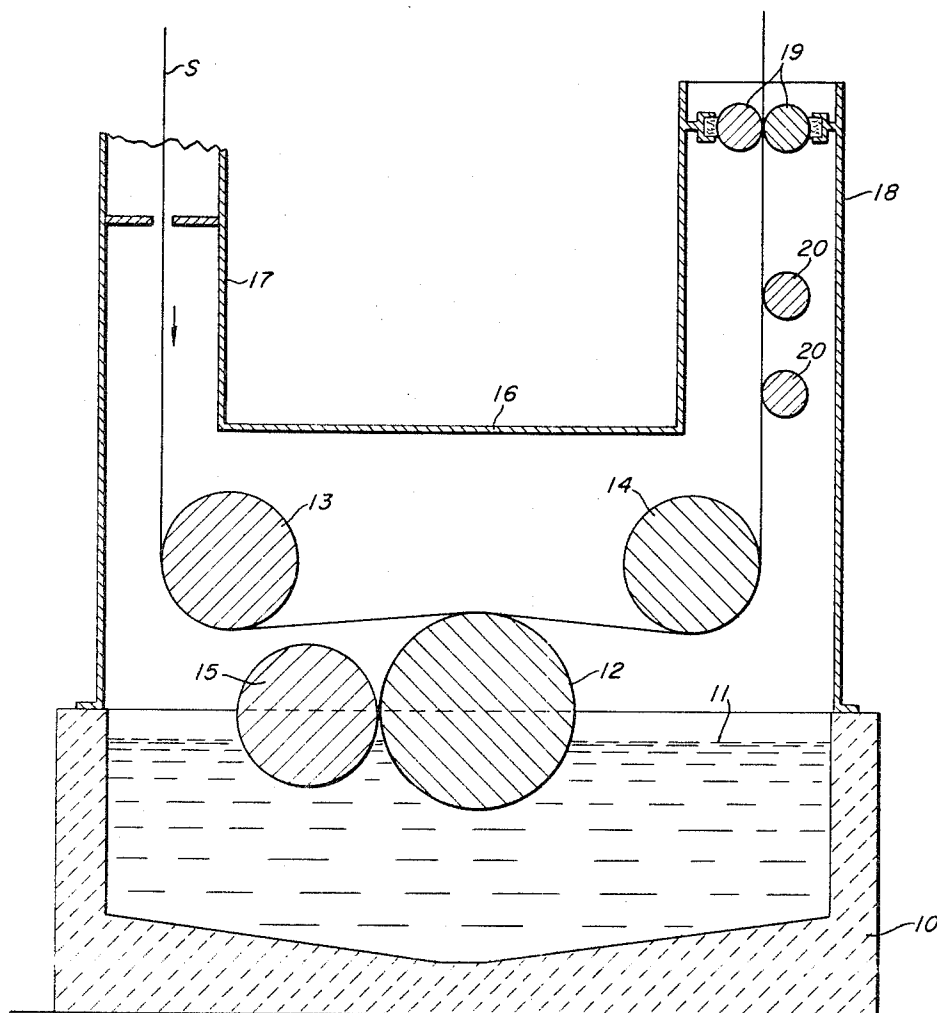
Jan. 11, 1966

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3,228,788

METHOD AND APPARATUS FOR GALVANIZING STEEL STRIP ON ONE SIDE

Filed May 4, 1962



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3,228,788

METHOD AND APPARATUS FOR GALVANIZING
STEEL STRIP ON ONE SIDE

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Filed May 4, 1962, Ser. No. 192,387
1 Claim. (Cl. 117—111)

This invention relates to the manufacture of sheet steel
galvanized on one side only and particularly to an im-
proved method and apparatus for making such product
continuously.

For certain industrial uses, sheet steel galvanized on
one side but bare on the other is desirable. Green et al.
Patent #2,894,850 discloses one method of making the
product but that method has some disadvantages. It is
accordingly the object of my invention to provide a sim-
ple, inexpensive and efficient process which is readily
adaptable to present galvanizing lines.

In a preferred embodiment and practice of my inven-
tion, I journal a coating roll horizontally above a spelter
bath so that the lower portion of the roll is immersed in
the bath. I pass steel strip over the roll and in contact
with the top portion of its periphery. The roll turns in
the spelter, picks up a film thereof and applies it to the
lower surface of the strip. The surface of the spelter
and the coating roll are preferably enclosed in a muffle
and a shielding or gaging roll is journaled closely adjacent
the coating roll, approximately at the level of the surface
of the bath.

A complete understanding of the invention may be
obtained from the following detailed description and ex-
planation which refer to the accompanying drawings il-
lustrating the present preferred embodiment. In the
drawings, the single figure is a central vertical section
through a galvanizing pot having mounted thereon the
apparatus for carrying out my improved method.

Referring now in detail to the drawing, a galvanizing
pot 10 is provided with any conventional heating means
(not shown) and is filled with molten spelter up to a
level 11, slightly below the upper edges of the pot walls.
A coating roll 12 is journaled horizontally near the level
11, conveniently in bearings (not shown) secured to the
pot walls. As shown, the lower portion only of the roll
is immersed in the spelter. Deflector rolls 13 and 14 are
similarly journaled, one on each side of and above roll
12 so as to guide strip S strained around them into contact
with the upper portion of roll 12.

A shielding, pumping and gaging roll 15 is journaled
similarly adjacent the top of the bath as shown and is
preferably adjustable toward and from roll 12. Roll 15
prevents dross floating on the bath from approaching
the ascending side of roll 12, aids the latter by a pump-
ing action to pick up a spelter film, and may also serve
to determine the thickness of the film picked up.

A muffle 16 encloses the space above the bath surface
12 and, at its entrance end 17, it communicates with a
strip annealing furnace. The special atmosphere in the
furnace therefore fills the muffle and continues to protect
the strip S while passing therethrough. The exit end 18
of the muffle is provided with sealing rolls 19 between
which the strip passes. Between roll 14 and rolls 19 are
positioned smoothing rolls 20 adapted to engage the gal-
vanized side of strip S while the coating is still molten,
to spread it uniformly over the strip surface. Rolls 20
are journaled in bearings (not shown) suitably supported
on the pot 10 or muffle 16.

Low-carbon steel strip S entering the inlet end of the
muffle passes around deflector roll 13, over coating roll

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12, then around deflector roll 14 and past smoothing rolls
20 before passing out of the muffle between sealing rolls
19. As already indicated, the roll 12 picks up a film of
molten zinc from the surface of the bath and applies it
to the lower surface of strip S. The coating thus applied
is still soft enough to be spread and smoothed uniformly
by rolls 20 as the strip comes in contact therewith but is
solidified before the strip enters the sealing rolls. Arti-
ficial cooling may be applied in any convenient manner,
if necessary, to achieve such solidification.

Roll 12 may be driven, if desired, at a peripheral speed
equal to or greater than that of the strip. The strip is
drawn through the annealing furnace and the galvanizing
apparatus by conventional traction means not shown.
Rolls 12 and 15 may have special surfaces, i.e., grooved
or knurled, if needed, to aid them in picking up a film
of spelter from bath 11. Roll 14 should have a length
less than the width of strip S so it will not pick up spelter
which may creep around the strip edges by capillary at-
traction.

After the strip emerges from the exit end 19 of the
muffle 16 it may be cooled by contact with the atmos-
phere or otherwise and is then finished and sheared into
sheets or coiled, in the known manner.

It will be recognized that my invention is character-
ized by important advantages. It is readily adaptable to ex-
isting continuous strip-galvanizing lines and requires but
little change in present installations. It does not involve
any change in established annealing practice or other pre-
coating treatment. The cost of the operation is no more
than that of coating on both sides and the material cost
is reduced about half.

Although I have disclosed herein the preferred em-
bodiment and practice of my invention, I intend to cover
as well any change or modification therein which may be
made without departing from the spirit and scope of the
invention.

I claim:

A method of galvanizing a sheet steel base on one side
only comprising providing a bath of molten zinc having
dross therein, causing a rotating horizontal roll to dip
below the surface of the bath to pick up a zinc film
therefrom over the full width thereof, providing a sec-
ond rotating roll of substantially the same length as the
first roll with a portion thereof below the surface of the
bath, positioning the second roll with its axis substantially
parallel to the axis of the first roll and its outer surface
spaced a short distance from the outer surface of the
first roll at the line of approximate tangency to gage the
film on the second roll and prevent dross from approach-
ing the ascending side of the first roll, and bringing a
sheet-steel base over said first mentioned roll in contact
with an arc of the circumference thereof, whereby said
film is transferred to said base.

References Cited by the Examiner

UNITED STATES PATENTS

1,928,160	9/1933	Watkins et al.	118—22
2,462,474	2/1949	Delano	118—118
2,483,652	10/1949	Lee	118—118
2,556,262	6/1951	Faerber	117—111
2,611,717	9/1952	Sooy et al.	117—111
2,937,108	5/1960	Toye	117—51
2,968,091	1/1961	Schoenfeld	117—111 X
3,086,879	4/1963	Lassifer	117—111 X

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