

Oct. 31, 1950

G. W. LATHEM ET AL

2,527,744

TINNING MACHINE

Filed Sept. 12, 1946

FIG. 1.

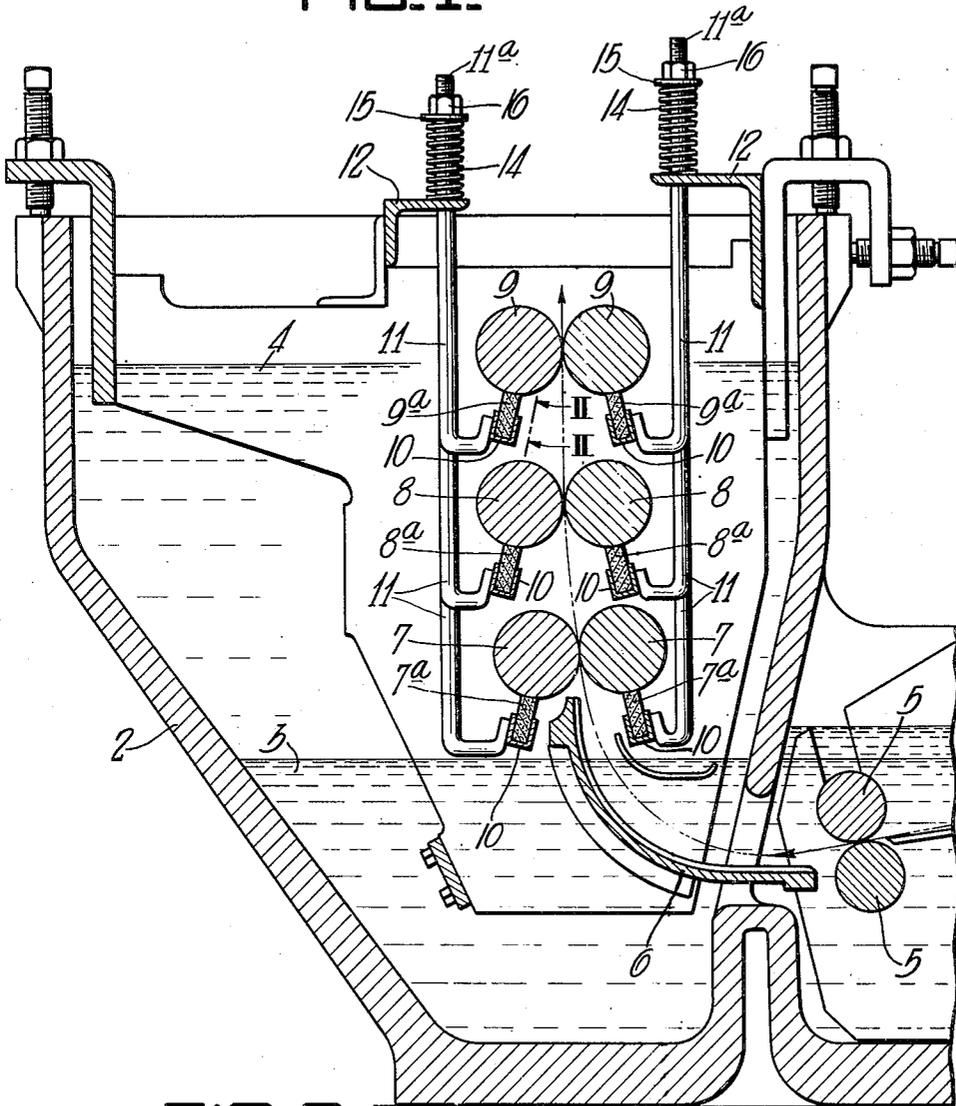
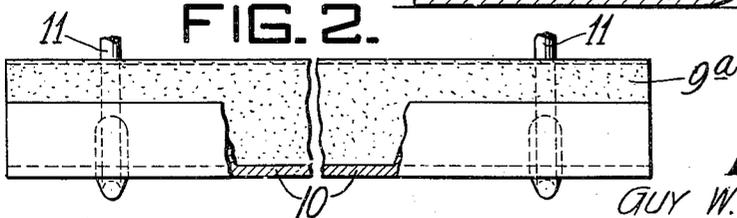


FIG. 2.



Inventors:
GUY W. LATHEM and
HOWARD C. RODGERS,
by: *Donald S. Dalton*
their Attorney.

UNITED STATES PATENT OFFICE

2,527,744

TINNING MACHINE

Guy W. Lathem, Bessemer, and Howard C. Rodgers, Birmingham, Ala., assignors to Tennessee Coal, Iron and Railroad Company, a corporation of Alabama

Application September 12, 1946, Serial No. 696,602

2 Claims. (Cl. 91—59.2)

1

This invention relates to improvements in tinning machines, and more particularly to mechanism for feeding tin plate or sheets from such machines after they have received the conventional metal coating and while they are in the usual palm oil bath.

In the past, considerable difficulty has been experienced in conveying tin plates through and from the usual liquid metal and palm oil baths. The tin plates as they emerge from the metal bath are conveyed by means of a plurality of rolls upwardly through the palm oil one at a time. The effect of these rolls is to pinch the plates as they come through and remove excess liquid metal from their surfaces before the metal coating solidifies after leaving the palm oil bath. It will be readily apparent that the surfaces of the feeding rolls must be kept in perfect condition, otherwise there will be imperfections in the coated surfaces of the plates or sheets. In other words, if the tin on the plates had impurities or sediment from the metal and palm oil baths which collected on the roll surfaces and were not removed, uneven contact with the plates or sheets would result. Uneven protuberances on the surfaces of the rolls will produce what is known in the art as "freckles" on the coated surfaces of the finished plate, while indentations in the roll surfaces, however slight, will cause "slobbers" on the plate surfaces.

Various types of materials have been used for wiping the rolls in an attempt to prevent "freckles" and "slobbers," but none have proved to be entirely satisfactory. For example, soapstone and asbestos have been used, but soapstone does not wipe enough while asbestos wipes too much.

It is therefore an object of our invention to provide a brush which wipes and polishes the surfaces of the rolls in order to obtain perfectly coated plates.

This and other objects will be more apparent after referring to the following drawings, in which:

Figure 1 is a sectional elevation of a conventional tinning machine with its usual sheet or plate feeding mechanism.

Figure 2 is a view taken on the line II—II of Figure 1.

Referring more particularly to the drawing, the numeral 2 designates a conventional tinning machine, or "tin pot," which contains the usual liquid metal 3 with the palm oil bath 4 floating on its surface.

2

plates or sheets are fed into the pot 2 by means of a pair of pinch-rolls 5 which are positioned below the surface of the liquid metal. The sheets or plates are deflected upwardly out of the metal bath by means of a deflector plate 6, and into the palm oil bath 4. A plurality of pairs of rolls are disposed beneath the surface of the palm oil for squeezing the surplus liquid metal from the surfaces of the sheets or plates and conveying them upwardly out of the palm oil and tin pot. These groups of rolls are indicated in the drawing at 7, 8 and 9, and are each provided with a brush for maintaining the roll surface perfectly smooth and clean.

The brushes for the lower two pairs of rolls 7 and 8 are designated at 7^a and 8^a, respectively, and comprise an elongated surface for contacting the entire roll.

The top or uppermost pair of rolls indicated at 9 are provided with brushes 9^a similar in shape to those for the rolls below. The rolls 9 are located adjacent or slightly above the surface of the palm oil 4 in order to feed the sheets or plates out of the tinning machine.

Each of the brushes 7^a, 8^a and 9^a are held in a suitable trough, generally indicated at 10, each of the troughs being suspended on rods 11 which are provided with upper threaded portions 11^a. The upper threaded portions 11^a of the rods are extended through suitable apertures in angles 12 which are secured to the upper portion of the tinning machine, and resiliently and adjustably hold the brushes against the roll surfaces by means of a spring 14, washer 15, and a nut 16 which is threaded on the end of the rod.

In accordance with the present invention, the brushes 7^a, 8^a and 9^a are made of a composition which has an effective wiping action and also an effective polishing action on the surfaces of the rolls as they wipe off the molten metal transferred thereto from the tin sheets being conveyed by the rolls out of the palm oil and tin plate. Thus the roll surfaces are given a very fine cleaning and polishing. The composition used is preferably a hard and dense mixture of asbestos and Portland cement with best results being obtained by using between approximately twenty-five to thirty-four per cent asbestos and between approximately seventy-five to sixty-six per cent hydrated Portland cement. African asbestos has proved to be very satisfactory. One suitable material coming within this range is that known to the trade as "Transite." If desired, diatomaceous earth and a cement binder may be substituted for the hydrated Portland cement in the

In accordance with conventional practice, the

3

4

composition. One suitable material of this type is that known to the trade as "Marinite."

Asbestos has previously been used in brushes, but it is too soft when used alone and wipes off too much metal.

It has been found in practice that the improved asbestos Portland cement and the asbestos diatomaceous earth brushes of the present invention give surprisingly and unexpectedly improved results both in the quality of the tin coating and in the life of the equipment. The amount of the asbestos in the brushes can be varied as desired to give different degrees of wiping of the rolls, the greater the wiping action desired the greater will be the per cent of asbestos in the composition. The fibers of the asbestos in the composition giving the wiping action to the rolls while the Portland cement and the diatomaceous earth give a continuous fine polishing action to the surface of the steel rolls, thus preventing the formation of the iron tin alloy thereon.

While two embodiments of our invention have been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. A tinning machine having a plurality of

sheet feeding rolls and brushes for at least one pair of said rolls, each of said brushes comprising a hard and dense bonded mixture of asbestos and hydrated Portland cement.

2. A tinning machine having a plurality of sheet feeding rolls and brushes for at least one pair of said rolls, each of said brushes comprising a hard and dense bonded mixture of asbestos and hydrated Portland cement in which the asbestos is present in an amount of from approximately twenty-five per cent to approximately thirty-four per cent and the balance is essentially hydrated Portland cement.

GUY W. LATHAM,
HOWARD C. RODGERS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS:

Number	Name	Date
843,223	Maskrey	Feb. 5, 1907
1,659,984	Steele	Feb. 21, 1928
1,933,136	Bollinger et al.	Oct. 31, 1933
2,227,976	McLin	Jan. 7, 1941
2,317,533	Joslin	Apr. 27, 1943
2,338,438	Keller	Jan. 4, 1944