Feb. 17, 1925.

1,526,899

H. W. BUNDY

METAL COATING MACHINE

Filed June 23, 1924

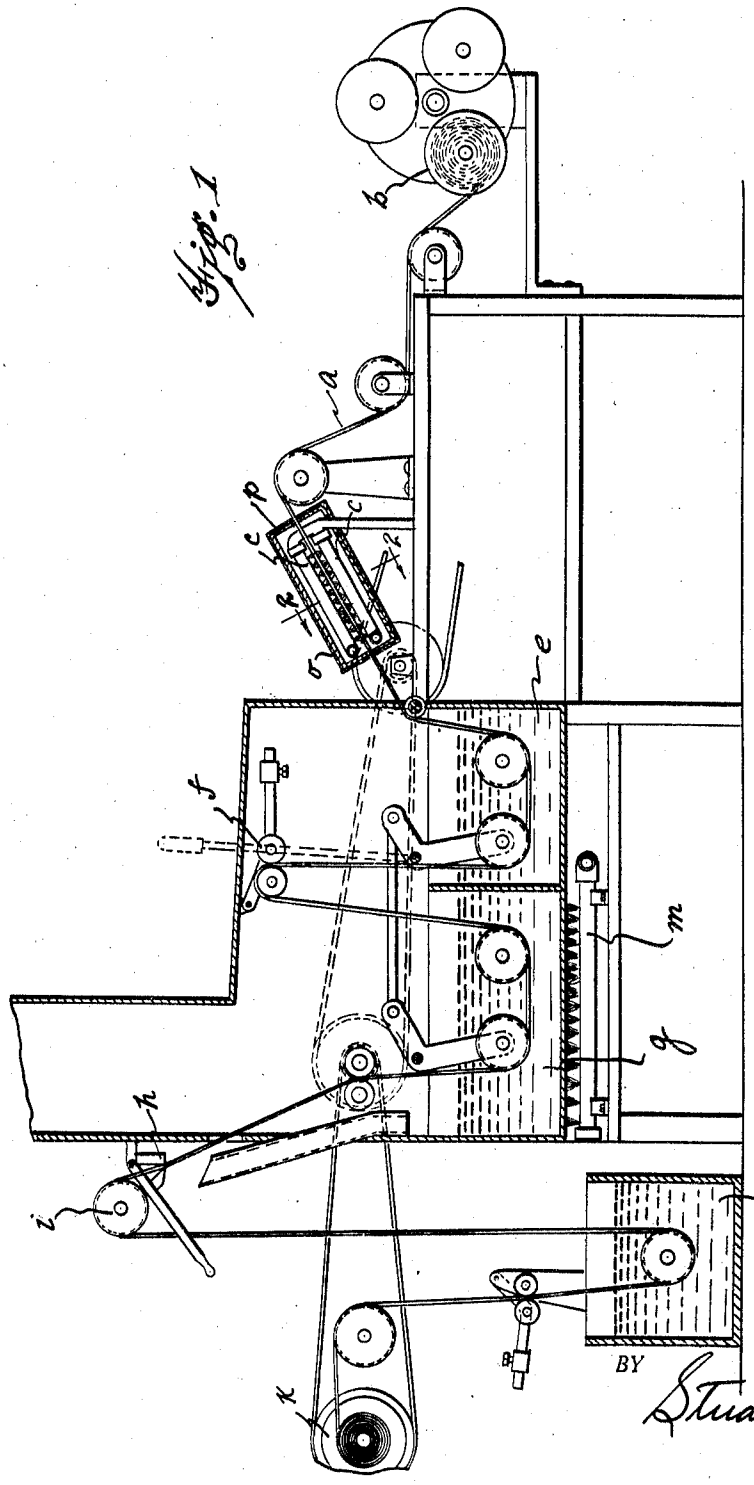


Fig. 1

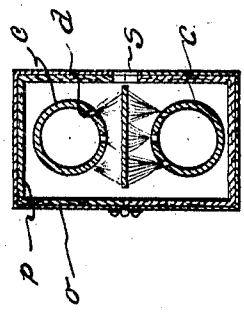


Fig. 2

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UNITED STATES PATENT OFFICE.

HARRY W. BUNDY, OF DETROIT, MICHIGAN.

METAL-COATING MACHINE.

Application filed June 23, 1924. Serial No. 721,727.

To all whom it may concern:

Be it known that I, HARRY W. BUNDY, a citizen of the United States, residing at 249 Trowbridge Avenue, Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Metal-Coating Machines, of which the following is a specification.

This invention relates to a machine for preparing and tinning strip steel stock. The invention more particularly pertains to the means for preparing this stock by removing the oil film from the surface of the stock.

This oil film which covers the stock prevents the same from rusting and deteriorating and it is necessary to remove the oil film before the tinning operation. It would be possible to remove this oil film by passing the stock through the acid bath, but it would be necessary to have the stock in contact with the acid for a sufficient length of time to thoroughly clean the stock. Due to the speed of the machine, which is rather rapid —in fact the stock passes through the machine at a speed of approximately 400 feet per minute—it would require numerous acid baths or one bath of some length, so that the stock would be in contact with the acid for a sufficient length of time to clean the same. This is impractical from a manufacturing standpoint and it is the object of my invention to remove this oil film instantaneously by passing the stock through a hot flame to burn the oil film.

This process of burning the oil film from the surface of the stock is done so rapidly that the fine surface texture of the steel is not injured, as the speed at which the stock travels through the flame is such that it does not have time to absorb many heat units.

Another advantage of burning the oil off the stock is that the stock becomes slightly warmed during the burning operation and it is then passed through the fluxing acid before it has time to cool, and because of the fact that the stock is slightly warm, the fluxing acid will spread more rapidly over the steel and make possible a more efficient and even tinning of the stock.

In the drawings:

Fig. 1 is a side elevation of the machine partly in section.

Fig. 2 is a section on the line 2—2 of Fig. 1 showing arrangement of the burners with respect to the stock.

The strip steel stock *a* is unwound from the reel *b*, runs over suitable rollers and is passed between the burners *c*. These burners are provided with a plurality of jet openings *d* so as to direct the flame on both sides of the stock as the same passes between the burners.

The stock is now led through the fluxing bath and then up between the wiping rolls *f* for wiping off the surplus fluxing acid. The stock is then passed through the tinning bath *g* and then upwardly and out of the machine housing through the scrapers *h* over the rollers *i* and then through the water bath *j* for cooling the tinned product, which is then wound upon the drums *k* so that the same may be stored for future use.

A burner *m* is located beneath the tank which contains the tin for the purpose of heating the same and keeping the tin in a molten condition.

The stock travels at such a speed (about 400 feet per minute) between the burners *c* which are approximately about one foot in length, that the stock is only exposed to the flame for about one-fifth of a second, which is not sufficient to heat the steel to the danger point, which would destroy the surface texture or warp the strip.

The slight warming of the strip stock enables one to pass the same through the fluxing acid at a rapid rate, as the fact that the stock is slightly warmed, tends to assist the fluxing acid in distributing itself over the surface of the stock so that when the stock is passed through the tinning bath, the tin readily coats the stock, in spite of the fact that the stock is travelling at such a rapid speed.

A housing *o* lined with asbestos *p* or other suitable heat insulating material is secured about the burners *c* to prevent the wasting of the heat. I preferably form the housing of two parts hinged together so that access may readily be had to the interior of the housing. I also provide a slot *s* in one side of the box so that one may look into the interior of the housing.

What I claim is:

1. In a tinning machine, the combination of means for moving a piece of strip stock through the machine, means for applying a flame to the strip stock to remove the oil film therefrom, and means for applying tin to the stock after the oil is removed.

2. In a tinning machine, the combination of means for moving a piece of strip stock

through the machine, means for applying a flame simultaneously to both sides of the strip stock to instantaneously remove the oil film therefrom and means for subsequently passing the stock through a fluxing and tinning bath.

3. In a tinning machine, the combination of means for moving a piece of strip stock through the machine, burners positioned to direct a flame on both sides of said strip stock while the same is so travelling to remove the oil film therefrom, and means for subsequently passing the stock through a fluxing bath, and for applying a metal coating thereto.

4. In a machine for the purpose specified, the combination of means for moving a piece of stock through the machine at a relatively high speed, means for removing the oil from the stock while so travelling by combustion and means for subsequently applying the metal coating to the stock.

5. In a machine for applying a metal coating, the combination of means for moving a piece of strip stock through the machine at a relatively high speed, means for applying an igneous blast to the strip stock to remove any oil therefrom, means for applying a fluxing acid to said strip stock while so travelling and means for applying a coating of metal to such stock while so travelling after the igneous blast and the fluxing acid has been applied to the stock.

In testimony whereof I have affixed my signature.

HARRY W. BUNDY.