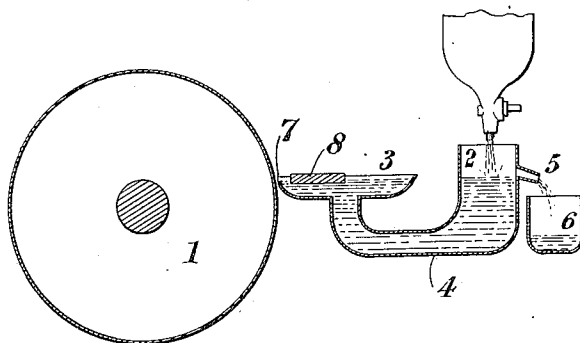


E. H. STRANGE.
APPARATUS FOR MAKING METAL STRIPS, FOIL, SHEETS, OR RIBBONS.
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993,904.

Patented May 30, 1911.



WITNESSES
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING METAL STRIPS, FOIL, SHEETS, OR RIBBONS.

993,904.

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To all whom it may concern:

Be it known that I, EDWARD HALFORD STRANGE, a subject of the King of Great Britain and Ireland, of 7 Staple Inn, in the county of London, England, have invented new and useful Improvements in Apparatus for Making Metal Strips, Foil, Sheets, or Ribbons, of which the following is a specification.

My invention relates to apparatus for making metal strips, foil, sheets, or ribbons, the apparatus being of the class in which a moving body, such as a rotating cylinder, takes up molten metal from a device which supplies the molten metal to the said moving body, on which it consolidates, and from which it is removed, or thrown off, and the object of my invention is to provide means whereby the molten metal is supplied in a regulated and very even manner without disturbance, so that an equal and steady flow of the molten metal is secured such that the metal strips, sheets, or ribbons, are of equal thickness throughout. I have found that it is necessary, in order to secure these results, to maintain a constant level of the molten metal in the vessel from which the moving body (which I will refer to as a cylinder) is supplied. This can be effected for example by supplying the molten metal from a first vessel distinct from that from which the molten metal is supplied to the cylinder and passing the said molten metal from this first vessel to a second vessel, tray, or receiver, by a communication entering it from beneath. The said second vessel, tray, or receiver, has an overflow of a length in accordance with the width of the strips, sheets, or ribbons, to be made, this overflow being in such close proximity to the circumference of the cylinder that, as the cylinder rotates, it receives the metal in a very even manner, the molten metal in the said second vessel, tray, or receiver, being, by the mode of supply and by a constant level being maintained therein, free from all disturbance so that it passes to the cylinder in a very steady and even stream.

In order to maintain the level of molten metal, the first vessel may be provided with an outlet at the same level as that which is to be maintained in the second vessel, tray, or receiver, so that any surplus molten metal will run off into any suitable receptacle, in-

stead of forming a varying "head" of molten metal which would cause inequality in the supply of molten metal to the cylinder. The proper level of the molten metal to be taken up by the cylinder can, however, be maintained by a ball-cock, or other suitable arrangement, if desired, and, instead of a second vessel, tray, or receiver, being provided with an overflow in close proximity to the cylinder, as described, the vessel, tray, or receiver, from which the molten metal is supplied to the cylinder, may, if desired, be otherwise arranged, provided that the molten metal is maintained at a practically constant level therein. In order to further insure the steady supply of the cylinder with molten metal, there may be a body floating on the molten metal, or a fixed body partly immersed therein, near to the cylinder. The metal can be maintained molten by any suitable heating means and the cylinder can be cooled where required.

The accompanying drawing shows, in diagrammatic section, an arrangement in accordance with my invention.

1 is the rotating cylinder.

2 is the first vessel into which the molten metal is dropped, or otherwise admitted.

3 is the second vessel, tray, or receiver, into the lower part of which the molten metal passes by the conduit pipe 4 from the vessel 2. A constant level of molten metal is maintained in the vessel, tray, or receiver, 3 by keeping a like level in the vessel 2, which can be effected by making an overflow outlet 5 at the necessary level in the vessel 2, so that excess of molten metal passes out into any suitable receiver 6. The overflow 7 from the vessel, tray, or receiver, 3 is in close proximity to the cylinder 1, so that, as the said cylinder rotates in either direction, it takes up a very even and constant amount of molten metal. To keep the amount of molten metal which passes from the vessel, tray, or receiver, 3 over the overflow 7 as even and constant as possible, a body, such as that shown at 8, may float upon, or be fixed so as to be partially immersed in, the molten metal near to the overflow 7, as shown.

The strip, foil, sheet, or ribbon, which forms on the cylinder 1, may be removed therefrom by a scraper if, for instance, the cylinder rotates at a comparatively low

speed, or it may be flung off when the cylinder rotates at a high speed.

What I claim is:—

1. An apparatus for forming thin metallic
5 films comprising a take up member, a feed
vessel with gravity discharge outlet for
molten metal juxtaposed to said take up
member for the purpose described, an inlet
for the molten metal to said feed vessel be-
10 low the liquid level therein and means to
maintain the liquid level in said feed vessel
constant for the purpose described.
2. An apparatus for forming thin metal-
lic films comprising a take up member, a
15 receiving vessel into which the molten metal
is admitted from above, a feed vessel with
gravity discharge outlet for the molten
metal juxtaposed to said take up member
for the purpose described, a conduit opening
20 from said receiving vessel to said feed vessel
below the liquid level in the latter together
with means for maintaining the liquid level
constant in said feed vessel.
3. An apparatus for forming thin metal-
25 lic films comprising a combined receiving
and feeding vessel having independent re-
ceiving and feeding chambers with a con-
duit between said chambers opening to said
feed chamber below the liquid level thereof,
30 in combination with gravity discharge out-
lets in each at substantially the same level to

maintain the liquid level constant in the feed chamber.

4. An apparatus for forming thin metal-
lic films comprising a take up member, a 35
feed vessel with discharge outlet for molten
metal juxtaposed to said take up member for
the purpose described, a receiving vessel for
the molten metal communicating with said
feed vessel below the liquid level in the lat- 40
ter, in combination with an overflow outlet
for said receiving vessel whereby the liquid
level in said vessel is maintained substan-
tially constant.

5. An apparatus for forming thin metal- 45
lic films comprising a take up member, a
feed vessel with discharge outlet for molten
metal juxtaposed thereto, an inlet to said
feed vessel below the liquid level thereof,
means to maintain the level of the molten 50
metal constant in said feed vessel, in combi-
nation with a body in the molten metal in
said feed vessel adjacent the outlet of the
latter to aid in maintaining the discharge
therefrom even and constant. 55

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

EDWARD HALFORD STRANGE.

Witnesses:

JOHN ROWLAND WHINCOP,
WILLIAM GERALD REYNOLDS.