





# UNITED STATES PATENT OFFICE.

RICHARD GUBIN, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO GUBINOL GESELLSCHAFT M. B. H., OF VIENNA, AUSTRIA-HUNGARY.

## METHOD AND DEVICE FOR PREPARING METAL LEAVES FOR RAISED-PRINTING IMPRESSIONS OR FOR OTHER PURPOSES.

No. 929,421.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed December 18, 1907. Serial No. 407,030.

*To all whom it may concern:*

Be it known that I, RICHARD GUBIN, a subject of the Emperor of Austria-Hungary, resident at 307 Rechte Wienzeile, Vienna, XIII, Austria-Hungary, have invented new and useful Improvements in Methods and Devices for Preparing Metal Leaves for Raised-Printing Impressions or for other Purposes, of which the following is a specification.

This invention relates to improvements in and to a method and an apparatus for preparing leaf metal for covering embossed printing on the surfaces of flat bodies and the object of the invention is to strengthen the metal leaf so that it can be readily handled and applied to the surface without the necessity of employing an agglutinant, when applied.

A further object of the invention is to treat ordinary leaf metal, other than gold leaf, so that it can be employed in the place thereof and rendered weather proof.

A further object of the invention is to provide a method in the means for treating ordinary leaf metal in such a manner that it can be used in place of gold leaf and can be given any desired color so as to resemble gold leaf or other leaf metal as it appears in its actual state.

The invention will be more fully described in connection with the accompanying drawing and will be more particularly pointed out and ascertained in and by the appended claims.

In the drawing:—Figure 1 is a vertical longitudinal sectional view of a device embodying the main features of my invention and illustrating one form of apparatus whereby the improved process may be carried out. Fig. 2 illustrates a modification of a portion of the device shown in Fig. 1.

Like characters of reference designate similar parts throughout the different figures of the drawing.

The preferred method substantially consists in placing the leaf metal sheets on a traveling band, in overlapping relation with each other and depositing upon the band a liquid agglutinant and subsequently hardening the agglutinant upon the metal sheets. The agglutinant may consist of a substance which will only become viscous or

adhesive when heated and not at ordinary temperature, such for instance as rosin, gelatin or the like. If the metal leaf is to be used as a substitute for gold leaf and is intended to be weather-proof and present the color and appearance of gold leaf or other leaf, a solution of varnish is used, which melts only at a high temperature, such as Indian copal or like varnish, and the desired color is mixed with the varnish, in the form of a powder. By means of such coating of an agglutinant the metal leaf becomes considerably more rigid and can be more readily handled without being torn and when it is coated with varnish the leaves can be given any desired shade or color. Furthermore cheaper leaf such as aluminum leaf can readily be used for gold leaf.

The sheets of leaf metal are disposed in longitudinal relation, with their adjacent margins overlapping, upon a carrier band P and are wound about the roller 3 as shown in Fig. 1. It will be obvious that the metal leaf will always be protected by the band when the roll is being handled. Preferably the roll 3 is polygonal in cross-section so as to facilitate a perfect winding of the band and metal leaf thereon. It will thus be seen that when the roll 3 is placed in the machine it will be disposed upon a revoluble shaft a which may be arranged in the casing 2. The casing 2 may be provided with a hinged lid as shown to facilitate insertion and removal and also inspection of the roll 3. A spray chamber 1 is disposed adjacent to and communicates with the casing 2 and is provided with an outlet A to convey the vapors to the outer air. In the spray chamber 1 a nozzle 5 is disposed and the agglutinant is conveyed thereto by a pipe 6 and may be atomized through the nozzle by an air pipe 7, communicating with suitable source of supply of compressed air, not shown. The flow of the agglutinant and the air pressure may be controlled by a valve 8, which may be of any desired and well known construction. The sides of the spray chamber 1, may be provided with members 4, one of which is shown, to prevent the agglutinant from flowing laterally over the sides of the band P.

A guide 9 is provided for supporting the traveling band P and as shown said guide 9 is elevated somewhat with respect to the



point at which the band P unrolls or is delivered from the roll 3 and the nozzle 5 is angularly disposed so that the spray will be delivered to the metal leaf at an acute angle with respect to the direction of travel thereof. By means of this angular disposition of the metal leaf with respect to the axial flow of the spray the agglutinant runs down the metal leaf toward the roll 3 and effectively coats the leaf throughout the entire area presented to the spray. Furthermore by means of this inclination of the band P the metal leaf is immediately coated when it is released from the roll 3 and is prevented from bulging or being lifted up as the result of the pressure or impact of the spray on those portions of the metal leaf between the areas directly acted upon by the spray and the bottom of the roll 3. Pipe 4<sup>a</sup> may be provided for conducting the surplus liquid from points adjacent the members 4.

A pipe 10 is disposed adjacent the guide 9 and is provided with a plurality of apertures through which air is forced against the band P for the purpose of freeing the metal sheets therefrom. The band P descends over roller 11 to a roller 14 and travels forwardly to a roller 22 and rearwardly to a roller 12. The metal sheets travel forwardly after being freed from the band P over a heating surface 21, heated by burner 13, which surface serves to act upon the agglutinant to harden and dry the same. The heating or supporting surface 21 is disposed between the rollers 11 and 12 and permits the metal sheets to bridge the gaps therebetween and continue in a straight line upon the band P. It will be seen that the hot air rising from the upper surface of the part 21 will tend to elevate the joined leaves of metal and as the roller 14 will hold the band P tightly against the roller 11 it will be impossible for the band P to raise and therefore the air pressure discharging through pipe 10 and forced through band P will raise the metal leaves and separate it from the band P. The band P travels forwardly over the roller 12 to roller 17 and downwardly about a roll 18, which is preferably polygonal in cross-section. The roll 18 may be driven in any desirable manner as by a pulley and belt 19 so as to advance the band through the device and unwind it from the roll 3.

If it should be found that the heating surface 21 failed to harden the agglutinant a second surface 16 may be provided, the same being heated by burners 15. When the band leaves the spray chamber 1 it travels through a housing 20 from which the vapors are delivered by an outlet A'. In order to provide a further preventative for adhesion of the metal leaf to the band the latter may be sprinkled or coated with a suitable absorbent such as rock-lime so that when the band passes over the roller 12 and again engages the metal leaf the absorbent will take up any

small globules of viscous or soft agglutinant leaving the surface of the metal perfectly dry. The action of the absorbent is assisted materially by the heating surface 16. A receptacle 24 is provided for sprinkling the lime upon the band P and brushes 25 are provided for preventing excessive accumulations of the absorbent material upon the band, it merely being desirable to coat the band with the lime.

The band P and the metal leaves may be wound upon the roll 18 and removed and cut off in suitable lengths when desired or a receiving table M may be provided to receive the strips of metal which may be cut off into sheets by a suitable knife M'. As the knife M' and the sorting table and the devices necessary therefor are not features of the present invention, the same are not shown in detail.

As shown in Fig. 2, an auxiliary band H is interposed between the metal leaf or strip and the supporting band P. The auxiliary band serves as a foundation for the metal strip so that when the same is cut off it can be more readily handled, and the operator will not have to touch the metal leaf with his hands directly.

I claim:—

1. The herein described method which consists in disposing a plurality of metal leaves on a band in overlapping relation with respect to each other, in moving said band under a spray composed of a solvent containing agglutinant, in applying air under pressure to separate the united leaves from said band, and in heating the leaves to volatilize the solvent.

2. A method of preparing metal-leaves for raised printing or impression, or for other purposes, consisting in placing separate metal-leaves overlapping one another on a foundation band, in moving the latter under a jet and spraying the same with a varnish which can be melted with difficulty containing desired color, whereby the separate metal-leaves are formed into a metal band on said foundation band, in applying air under pressure to separate said bands and in heating the metal band whereby the solvent on the same is volatilized, as set forth.

3. An apparatus of the class described comprising in combination, a supporting band, a spraying nozzle directed toward said band, means for moving said band, and means for guiding said band at an acute angle with respect to the axis of said nozzle.

4. An apparatus of the class described comprising, a pair of rollers spaced apart from each other, a supporting band wound about said rollers, means for rotating one of said rollers to move said band, a pair of guiding rollers for said band located between and elevated with respect to said first mentioned rollers, and a spraying nozzle disposed



in a manner to direct a spray on said band at a point between one of said lower first mentioned rollers and the adjacent higher or guiding rollers.

5 5. An apparatus of the class described comprising; a pair of rollers spaced apart from each other, a supporting band wound about said roller, means for rotating one of said rollers to move said band, a pair of guid-  
10 ing rollers for said band located between and elevated with respect to said first mentioned rollers, a spraying nozzle disposed in a manner to direct a spray on said band at a point between one of said lower first men-  
15 tioned rollers and the adjacent higher or guiding rollers, and heating devices disposed beneath said band and between said pairs of rollers:

20 6. An apparatus of the class described comprising, a pair of rollers of polygonal cross section spaced apart from each other, a supporting band wound about said roller, means for rotating one of said rollers to move said band, a pair of guiding rollers for  
25 said band located between and elevated with respect to said first mentioned rollers, and a spraying nozzle disposed in a manner to direct a spray on said band at a point between one of said lower first mentioned rollers and  
30 the adjacent higher or guiding rollers.

35 7. An apparatus of the class described comprising in combination, a supporting band, a roller from which said band is adapted to be unwound, a spraying nozzle directed toward said band, and a compressed air nozzle guiding said band at an angle acute with the axis of said nozzle.

40 8. The herein described method of preparing leaf metal which consists in advancing separate metallic leaf sheets in overlapping relation upon a carrier, in directing a spray of an agglutinant upon said separate leaves

to form the same into a continuous band, in applying air under pressure to separate the band from the carrier after passing the spray, 45 in applying heat to the separated band to harden the agglutinant, in applying an absorbent to the carrier while the same is out of supporting relation with respect to the band, in bringing the carrier into supporting 50 relation with the band to absorb the remaining viscous portions of agglutinant remaining thereon, and in finally applying heat to the band to further harden the agglutinant.

9. The herein described method of prepar- 55 ing leaf metal which consists in advancing separate metallic leaf sheets in overlapping relation upon a carrier, in directing a spray of an agglutinant upon said leaves to form the same into a continuous band, in apply- 60 ing air under pressure to separate the band from the carrier after passing the spray, in applying heat to the separated band to harden the agglutinant, in again bringing the carrier into supporting relation with the 65 band, and in finally applying heat to the band to harden the agglutinant.

10. The herein described method of pre- 70 paring leaf metal which consists in advancing separate metallic leaf sheets in overlap- 75 ping relation, in directing a spray of an agglutinant upon said leaves to form the same into a continuous band and at an acute angle with respect to the line of travel of the band, in separating the band from the carrier after it leaves the spray, and in finally heating the separated band to harden the agglutinant thereon.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD GUBIN.

Witnesses:

IGNAZ KNORFELMACHER,  
ROBERT W. HEINGARTNER.