S. H. SWALLOW.

METALLIC LEAF APPLYING DEVICE.

APPLICATION FILED SEPT. 18, 1914.

1,136,497.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 1.

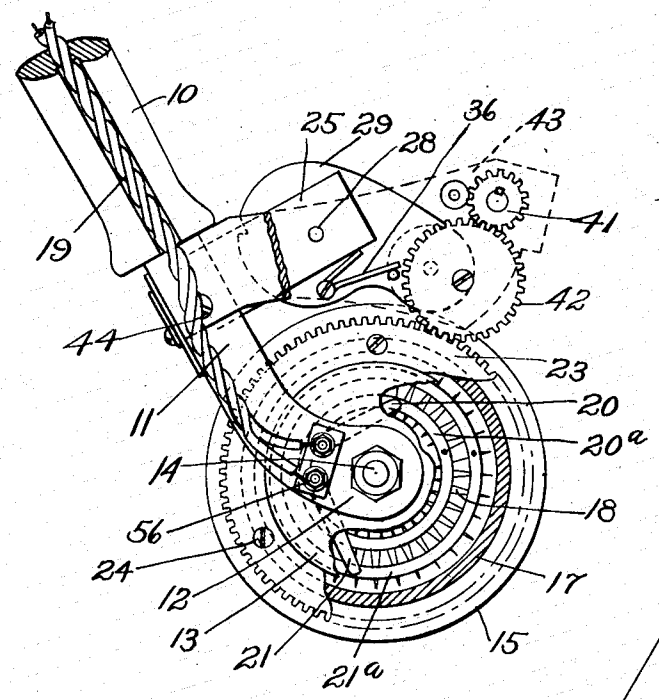


Fig. 2

Fig. 1

Witnesses

H. H. Bardsley.

A. F. Macready.

Inventor

Stuart H. Swallow.

By Howard E. Barlow

Attorney

S. H. SWALLOW.

METALLIC LEAF APPLYING DEVICE.

APPLICATION FILED SEPT. 18, 1914.

1,136,497.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 2.

Fig. 3

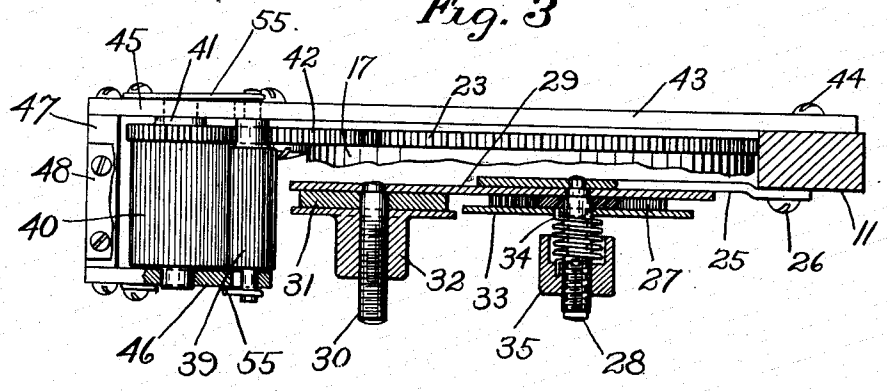


Fig. 4

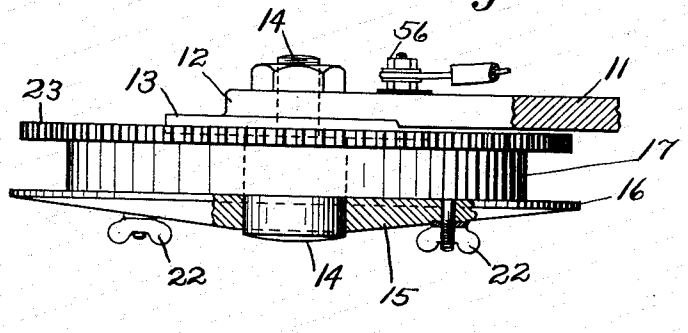


Fig. 5

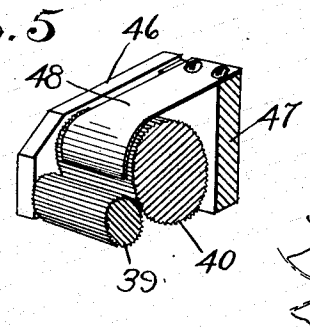
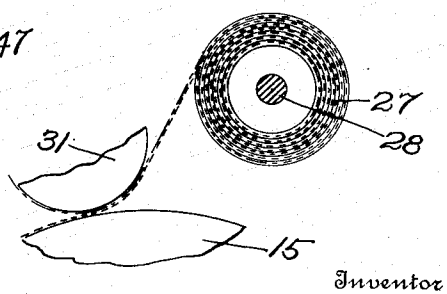


Fig. 6



Inventor

Stuart H. Swallow.

Witnesses

W. H. Baldsley

A. F. Macready

By Howard E. Barlow

Attorney

UNITED STATES PATENT OFFICE.

STUART H. SWALLOW, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO W. H. COE MANUFACTURING COMPANY, OF PROVIDENCE, RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

METALLIC-LEAF-APPLYING DEVICE.

1,136,497. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed September 18, 1914. Serial No. 862,280.

To all whom it may concern:

Be it known that I, STUART H. SWALLOW, a citizen of the United States, and resident of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Metallic-Leaf-Applying Devices, of which the following is a specification.

The invention relates to devices for applying strips of metal leaf to the surfaces of book covers or other surfaces to be ornamented, and is an improvement on prior Patent No. 929,559 and the invention has for its object to provide a device for this purpose having an automatically heated depositing roll, and designed to carry a roll of metal leaf in strip form. The device also provides means for presenting the metal leaf to the depositing roll at a surface speed exactly corresponding with that of the latter.

A further object of the invention is to provide means whereby the mechanism of the device may be readily adjusted to carry and manipulate rolls of metal leaf of different widths.

The invention further consists in providing an adjustable tension for the roll of metal leaf.

A still further object of the invention is to provide means for pressing the metal leaf onto the depositing roll and also to provide means for lifting the presser and retaining the same in suspended position.

It is found in the practical operation of a device of this character to be of utmost importance, to feed the metal leaf from the package roll to the surface of the depositing roll at a speed corresponding to the travel of that surface, for if the strip of metal leaf were fed too slow to the roll, it would be broken and spaces would be left, as there would not be sufficient metal leaf to continuously cover the working periphery of the roll and a broken or imperfect line on the work would result. Then again if the metal was fed too fast to the roll it would wrinkle and bunch itself together which would render the work uneven, ununiform and unsatisfactory and when this instrument is handling precious metals, such as gold or silver leaf, considerable loss in waste of material is entailed, in the production of such imperfect work. To obviate this serious difficulty I have provided a pair of feed rolls between the biting surfaces of which the backing strip from the package roll which supports the metal leaf, is led and which feed rolls are positively driven in time with the depositing roll in order to lead or draw out the strip in absolute time with the travel of the surface of this roll, whereby the metal carried on and by the strip is deposited on or taken up by this roll with absolute uniformity thus rendering the device capable of performing work which is absolutely perfect.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— is a front side elevation of my improved metal leaf applying device. Fig. 2— is a rear side elevation of the same partly broken away to better show the operating mechanism. Fig. 3— is a top or plan view showing a section on line 3—3 of Fig. 1, the feed rolls being shown in full. Fig. 4— is a top edge view of the fillet or depositing roll partly in section illustrating the means whereby it is rendered readily removable. Fig. 5— is a perspective view of the feed rolls and its supporting frame partly in section, showing the guide plate over-lapping the driven roll for preventing the strip of paper from winding around the same. Fig. 6— is a detail showing the package roll of metal leaf which is formed of the leaf in combination with a corresponding strip of paper, the metal leaf being on the underside of the paper strip when led over the guide roll whereby the strip may be laid upon and taken up by the surface of the depositing roll.

The invention contemplates more particularly the provision of a portable instrument adapted to be manually manipulated by the hand of the operator for the purpose of depositing strips of metal leaf for line work or for forming decorative figures on surfaces to be ornamented.

In the accompanying drawings 10 designates the operating handle which may be of wood or other suitable insulating material

to be grasped by the hand of the operator, and is connected to the forwardly turned arm or frame 11 of the device, the lower end of which arm is provided with a hub 12 to which a plate 13 is connected. To this hub is connected a laterally extending central spindle or shaft 14, see Figs. 2 and 4. On this shaft is mounted a depositing roll 15 which may be constructed of metal or any other suitable material, the peripheral working surface 16 being for the purpose of receiving the leaf metal from the package roll and depositing the same upon the surface to be decorated. The working surface of this roll may be made of any desired width and the same is removably mounted on the drum 17 in which is carried the resistance wire coil 18 for the purpose of heating this roll electrically through the wires 19, see Fig. 2, and to which the current is conducted through the contact fingers 20 and 21, and conductor rings 20^a and 21^a. In order that this roll may be readily removed from its operating position to be replaced by another of different width or style of face, I have provided thumb screws 22 or other suitable means which may be quickly and readily manipulated to accomplish this changing operation. I have also provided a large gear 23, which is connected to the drum 17 by screws 24 and on the opposite side from that of the depositing roll, which gear is for the purpose of driving the feed rolls presently described.

A rigid bracket 25 is attached to the frame 11 and is provided with a laterally extending pin 28 on which is pivotally mounted an arm 29. The outer end of this arm is provided with a roll pin 30 on which a loose contact roll 31 is mounted and held in position by the flange nut 32. On the pivot pin 28 is also mounted the package roll 27, which is held between the large flange of the arm 29 and the disk 33, which latter is mounted on the spring 34 in the nut 35 whereby a flexible or yieldable tension may be supplied to the package roll and which may be adjusted to accommodate package rolls of different widths. The roll 31 at the free end of the arm 29 is arranged to normally press the metal leaf in contact with the periphery of the depositing roll by means of the spring 36, but as it is found desirable in some cases to raise this contact roll and the metal leaf from engagement with the peripheral surface of the depositing roll, I have provided a notch 37 in the flange of the arm 29 and a spring pressed pawl 38 to engage this notch when the free end of the arm is raised to hold it in that position. This roll is shown as running free on its spindle but the roll may be positively driven to run in time with the depositing roll, if desired.

One of the essential features of my improved device is that means are provided for feeding or drawing outward the metal leaf at the peripheral speed of the depositing roll and in order to accomplish this I have provided a pair of feed rolls 39 and 40 whose working surfaces are preferably corrugated or roughened and I usually make these corrugations so sharp and deep that the surfaces practically intermesh with each other like gear teeth even when the thin backing strip is between them to cause them to positively run in time with each other. The larger roll 40 is provided with a gear 41, which is driven from the large gear 23 connected to the depositing roll through the intermediate gear 42 whereby the surfaces of the feed rolls are caused to run in absolute time with the travel of the receiving and transferring surface of the depositing roll. I have shown but one of the feed rolls as geared to the depositing roll but these two feed rolls may be geared together by another set of gears (not shown) if desired. These feed rolls are elongated to receive any width of paper strip from the package roll, and are supported in the desired relation to the other mechanism by the rigid plate 43, which is connected by screws 44 to the opposite side of the frame 11 to that of plate 25, its outer end forming the bearings 45 for one end of the feed rolls 39 and 40, which rolls receive their opposite bearings in the plate 46 supported from the main plate by the spacer plate 47. A thin guide plate 48 extends forwardly and over a portion of the larger feed roll in order to prevent the strip of paper from winding around the rolls. The smaller feed roll is held in yieldable contact with the larger by springs 55.

It is found in practice that the application of a small amount of olive oil or other suitable oily or greasy substance to the operating surface of the depositing roll, together with the application of heat to the roll, causes the metal leaf to adhere to its surface as it comes in contact therewith and serves to facilitate the deposit of the leaf onto the surfaces to be ornamented. In order to apply the oil to the roll, I have provided a roll or pad of felt or other suitable fibrous material which is adapted to be saturated with the oil, and have mounted the same on the bell crank lever 50 pivoted at 51, the other or free end of this bell crank being adapted to slide over the spring wire 52 which normally holds the oiled felt in contact with the roll, and also permits it to be moved and held in inoperative position, when desired. Heat may be applied to this roll by any suitable means but I preferably employ electricity, which may be conducted from any convenient source through the cable 53 to the end of the handle 10 where the ends are fastened to binding posts 54, and from these posts is conducted through the wires 19 along the side of the

handle to the binding posts 56 and thence to the heating coil within the drum as above described.

By the use of the word "positive" throughout the specification and claims as referring to the feed for the backing strip, it is understood that I include any means which will not permit the strip to slip or that which is capable of drawing out and presenting the metal leaf to the depositing roll at the surface speed of the latter.

I have shown and described a pair of feed rolls for engaging the paper backing on which the metallic leaf is supported in the package roll, by which the package is unrolled and the metal leaf on the face thereof is positively drawn out at a surface speed corresponding exactly with that of the depositing roll, whereby exactly the required quantity of metal leaf flows onto the surface of the depositing roll thus enabling the device to lay the leaf smoothly on the work, but I do not wish to be restricted to the exact construction herein shown and described, as any means capable of positively feeding metallic leaf to the depositing roll at the surface speed of the latter will fall within the spirit and scope of my invention.

I claim:

1. A device for applying a strip of metallic leaf comprising a depositing roll, means for carrying a roll of combined leaf and backing material, and positively driven means for drawing out the backing material to present the leaf to the depositing roll at the surface speed of the latter.

2. A device for applying strips of metallic leaf comprising a depositing roll, means for heating the same, means on the device for carrying a roll of combined leaf and backing material, and means for positively drawing out the backing strip to present the leaf to the depositing roll at the surface speed of the latter.

3. A device for applying strips of metallic leaf comprising a depositing roll, electric means for heating the same, means in the device for carrying a roll of combined leaf and backing material and a pair of driven rolls for drawing out the backing strip to present the leaf to the depositing roll at the surface speed of the latter.

4. A device for applying strips of metallic leaf comprising a depositing roll, means for heating the same, means on the device for carrying a roll of combined leaf and backing material, means for applying tension to said roll and a pair of positively driven feed rolls for drawing out the backing strip to present the leaf to the depositing roll at the surface speed of the latter.

5. A device for applying strips of metallic leaf comprising a depositing roll, means on the device for carrying a roll of combined leaf and backing material, a pair of feed rolls for drawing out the backing strip to present the leaf to the depositing roll at the surface speed of the latter and gears for driving the feed rolls in time with the depositing roll.

6. A device for applying strips of metallic leaf comprising a depositing roll, means for heating the same, positively driven rolls for feeding the leaf to said depositing roll at a surface speed corresponding with that of the latter, and means whereby the mechanism may be readily adjusted to manipulate strips of different widths.

7. A device of the character described comprising a leaf depositing roll, means whereby said roll may be readily removed and replaced by another of different width, means for carrying a roll of metallic leaf, an adjustable tension guide accommodating leaf rolls of different widths, and a pair of rolls for feeding the leaf to the depositing roll at the surface speed of the latter.

8. A device for applying strips of metallic leaf comprising a depositing roll, means for heating the same, means on the device for carrying a roll of combined leaf and backing material, and means for positively feeding the backing strip to present the leaf to the depositing roll at the surface speed of the latter, means for readily moving the strip of metallic leaf into and out of contact with said depositing roll and means for retaining the same in adjusted position.

9. A device for applying strips of metallic leaf comprising a depositing roll, means on the device for carrying a roll of combined leaf and backing material, means for positively drawing out the backing material, and means for pressing the leaf onto the working surface of the depositing roll.

10. A device for applying strips of metallic leaf comprising a depositing roll, means on the device for carrying a roll of combined leaf and backing material, positively driven means for drawing out the backing material, means for pressing the leaf onto the working surface of the depositing roll and means for raising and retaining said pressing means out of contact with said depositing roll.

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

STUART H. SWALLOW.

Witnesses:
HOWARD E. BARLOW,
A. F. MACREADY.