L. B. WEYMOUTH.

MACHINE FOR APPLYING METALLIC LEAF.

APPLICATION FILED OCT. 6, 1913.

1,239,149.

Patented Sept. 4, 1917.

4 SHEETS—SHEET 1.

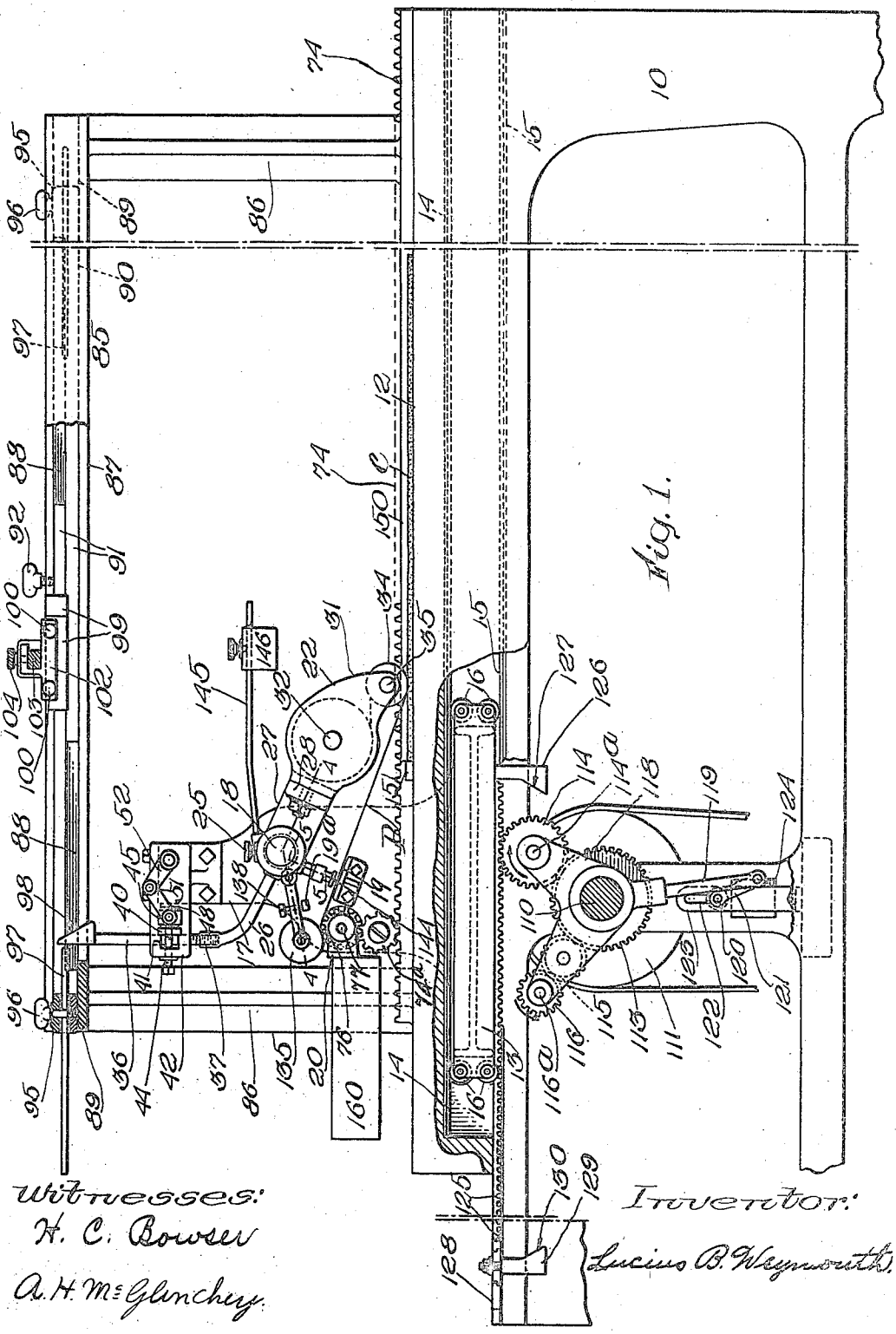


Fig. 1.

Witnesses:
H. C. Bowser
A. H. McGlanchey.

Inventor:
Lucius B. Weymouth.

L. B. WEYMOUTH.

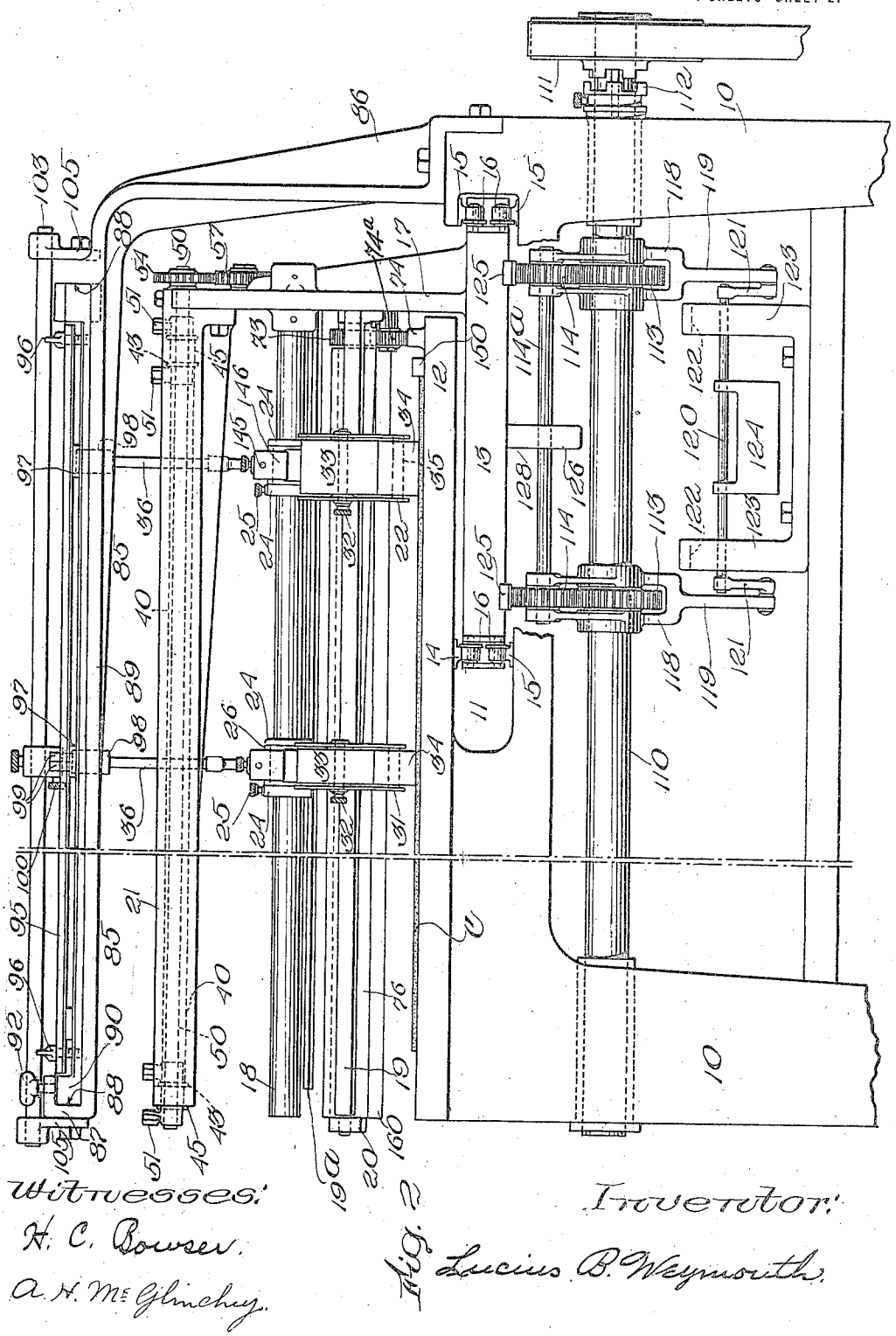
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4 SHEETS—SHEET 2.



Witnesses:
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A. H. McGlinchey.

Inventor:
Lucius B. Weymouth.

L. B. WEYMOUTH.

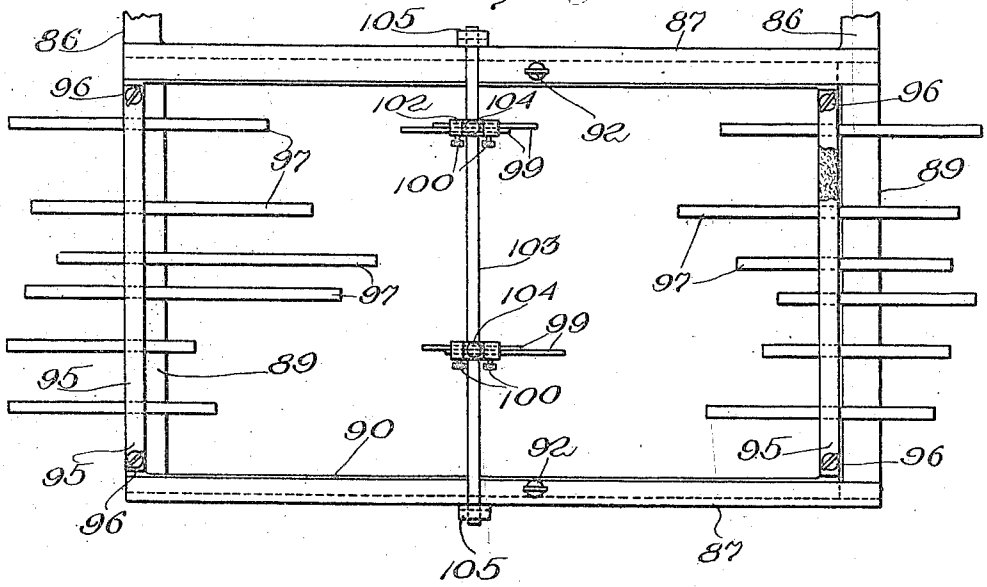
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4 SHEETS—SHEET 3.

Fig. 3.



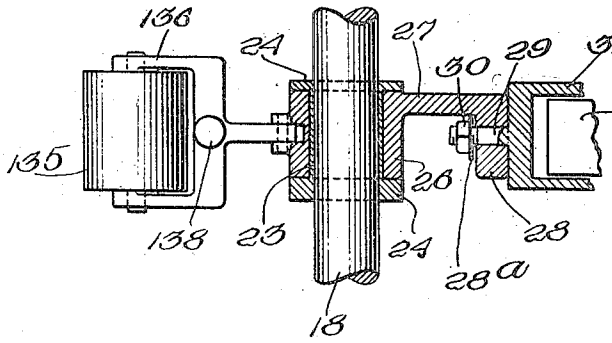


Fig 4.

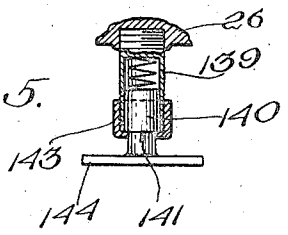


Fig. 5.

Witnesses:

H. C. Bowen.

A. H. McGlinchey.

Inventor:

Lucius B. Weymouth.

L. B. WEYMOUTH.

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4 SHEETS—SHEET 4.

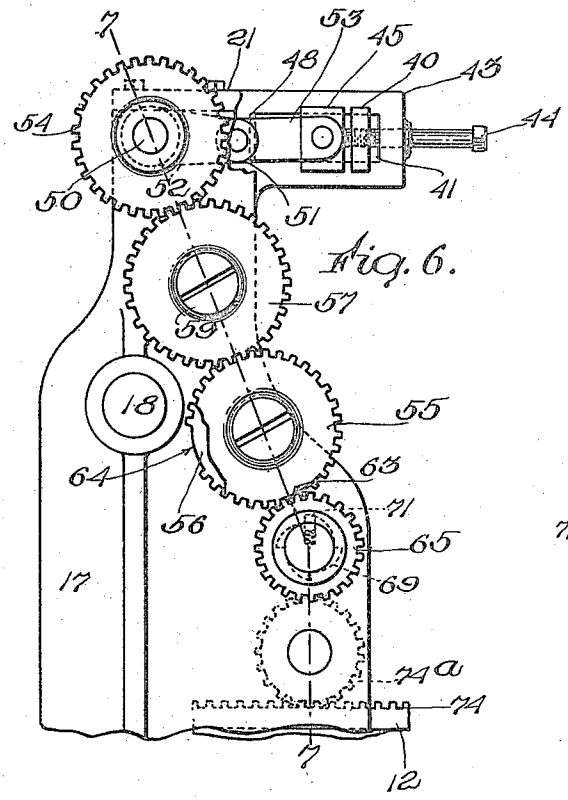


Fig. 6.

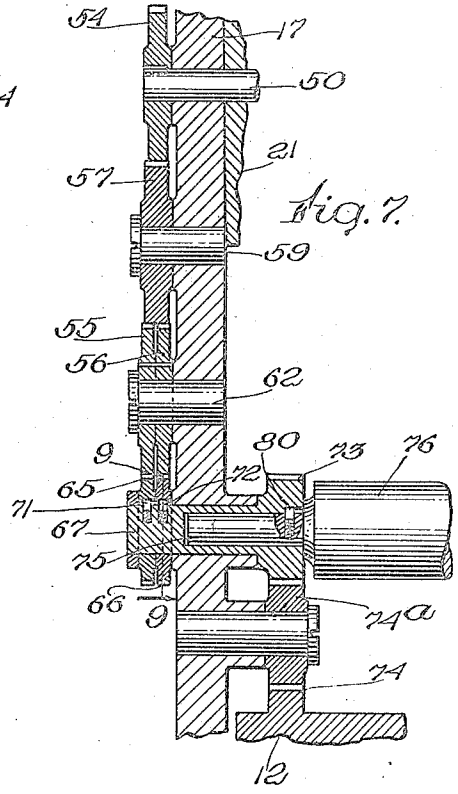


Fig. 7.

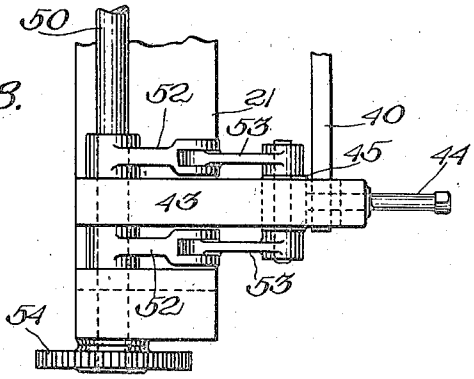


Fig. 8.

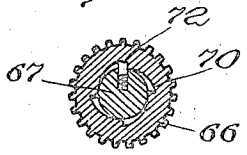


Fig. 9.

Witnesses:
H. C. Bowser
B. C. Smith

Inventor:
Lucius B. Weymouth.

UNITED STATES PATENT OFFICE.

LUCIUS B. WEYMOUTH, OF HYDE PARK, MASSACHUSETTS.

MACHINE FOR APPLYING METALLIC LEAF.

1,239,149. Specification of Letters Patent. Patented Sept. 4, 1917.

Application filed October 6, 1913. Serial No. 793,512.

To all whom it may concern:

Be it known that I, LUCIUS B. WEYMOUTH, of Hyde Park, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Applying Metallic Leaf, of which the following is a specification.

My invention has reference to improvements in machines for applying metallic leaf to articles, particularly book covers, preparatory to the operation thereon of the stamping press.

The objects of the invention are to provide an efficient machine which may be readily adjusted to automatically and in one operation deposit strips of metallic leaf, on the article to be ornamented, of any desired number, widths, lengths and in any desired positions. Other objects of the invention will appear from the following description.

The invention consists in the means for automatically controlling the operation of a series of metallic leaf applicators and further consists in such other novel features of construction, operation and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

Referring to the drawings:—

Figure 1 represents a side view in elevation of a machine embodying my invention, with parts broken away to save space and parts in section.

Fig. 2 represents a front view in elevation of same.

Fig. 3 represents a reduced plan view of the form and its supporting bed.

Fig. 4 represents an enlarged fragmentary sectional view on the line 4—4 of Fig. 1.

Fig. 5 represents an enlarged fragmentary sectional view, partly in elevation on the line 5—5 of Fig. 1.

Fig. 6 represents an enlarged fragmentary side elevation of a portion of the machine.

Fig. 7 represents a sectional view on the line 7—7 of Fig. 6.

Fig. 8 represents a fragmentary plan view of Fig. 6.

Fig. 9 represents a sectional view on the line 9—9 of Fig. 7.

Like reference characters designate corresponding parts throughout.

In the frame 10 of the machine is the opening 11, the top of which is partially closed by the stationary bed plate or table 12 integral with said frame. Within said opening is the reciprocating carriage 13 supported and guided by the track 14, secured to the underside of said table, and the tracks 15, secured to said frame, which are engaged by flanged wheels 16 journaled on pins carried by said carriage. The latter is provided with the upright 17 from which and firmly secured thereto project transversely to and above said table the cylindrical supporting rod 18, the paper gripping bracket 19, the rod 19^a, the bracket 20 and the bracket 21.

Excepting the variation in the width of the package roll holders 22, they and also the means connecting them with the supporting rod 18 are identical so that a description of one of the package roll holders and its connecting mechanism will suffice for all. Upon the rod 18 is placed the sleeve 23 provided with flanges 24 at its ends, which is secured in any desired position on said rod by the set screw 25. Pivoted on said sleeve, between its flanges, is the lever 26 and formed on the end of the arm 27 of said lever is the lug 28 provided with the leaf spring 28^a. Detachably secured to said lug is the package roll holder 22 by means of the stud 29 projecting from said holder through suitable apertures in said lug and said spring and provided at its end with a nut 30.

The package roll holder is provided with the fork 31 between which is supported on the detachable pin 32 the package roll 33, and the pressure applicator which in the present instance is in the form of a pressure roller 34 journaled on the pin 35 extending through the ends thereof. The arm 36 of the lever 26 extends uprightly and in order to secure longitudinal adjustment of said arm it is made in two parts, the upper part being threaded into the other at 37.

The arm 36 bears against the adjustable stop bar 40, the ends of which extend through and are guided by a horizontal slot 41 in each of the projections 42 and 43 at the ends of the bracket 21. Extending through and guided by apertures in the ends of said projections are set screws 44 which are threaded through the ends of said stop-bar and engage blocks 45. The latter extend through and are guided by the slots 41 and their forward movement is limited by

the pads 48 at the forward ends of said slots. Connecting said blocks with the shaft 50 journaled in the ends of the bracket 21 are the two sets of toggles 51 which consist of arms 52 fixed to said shaft and links 53 connecting said arms with the blocks 45. One end of the shaft extends through the upright 17 and on said end is fixed the gear 54 which is in mesh with the gears 55 and 56 through the idle gear 57 on the stud 59 projecting from said upright. The gears 55 and 56 which are integral, are journaled on the stud 62 projecting from the upright 17 and the portions 63 and 64 respectively of their peripheries are free of teeth. The latter gears are intermittently driven by the gears 65 and 66 respectively on the outer end of the short shaft 67 extending through and journaled in a suitable bearing in the upright 17. The gears 65 and 66 are respectively provided with oppositely disposed internal ratchet teeth 69 and 70 which are adapted to be engaged by suitable spring actuated pawls 71 and 72 in the short shaft 67. Integral with the inner end of said short shaft is the gear 73 which meshes with the rack 74 extending the length of the table 12 through the intermediate gear 74ª. Journaled in the inner end of the shaft 67 is the trunnion 75 on one end of the take-up roller 76 and on the other end of said roller is the trunnion 77 journaled in the outer end of the bracket 20. The gear 73 is provided with internal ratchet teeth which are engaged by the spring actuated pawl 80 in the trunnion 75.

Extending at a suitable height above the table 12 is the form supporting bed 85 provided with supporting posts 86 bolted to the frame of the machine. Said form supporting bed consists of bars 87 provided with U-shaped grooves 88 and end plates 89. Within the grooves 88 are supported the longitudinal sides of the form frame 90 which consists of two members having overlapping tongues 91 and said members are held stationary in their bed by the set screws 92. Extending over the ends of said frame are the clamping bars 95 the under surfaces of which and the top surfaces of the ends of said frame are coated with felt or other suitable material between which are clamped by the set screws 96 any desired number of plates 97 which are adapted to be engaged by beveled surfaces 98 on the ends of the arms 36 of the package roll holder lever 26. The beveled surfaces 98 may also engage adjustable plates 99 held by set screws 100 in grooves on the bottom of hangers 102. As many of the latter as may be desired are suspended from the rod 103 and detachably secured thereto by set screws 104. The rod 103 is supported at its ends in brackets 105 secured longitudinally adjustable to the bars 87 of the form supporting bed 85.

In the frame 10 of the machine is journaled the main shaft 110 which is driven by the pulley 111 through the clutch 112. On said shaft are fixed corresponding gears 113, which mesh with the gears 114 and through the idlers 115 mesh with the gears 116. The gears 114 and 116 are journaled on rods 114ª and 116ª respectively connecting the forked elbow levers 118, 118 pivoted on the shaft 110 astraddle the gears 113, 113. On each of said elbow levers is a downwardly projecting arm 119 which is connected to the rod 120 through the links 121. Said rod extends through and is guided by slots 122 in the posts 123 secured to the frame and at the center of said rod is suspended a weight 124. The gears 114 and 116 alternately mesh with the racks 125 secured to the under side of the carriage 13. Projecting downwardly from said carriage, near its front end, is a stud 126 provided with a beveled surface 127 and adjustably secured to the slotted elongated bar 128 secured to the rear of said carriage is the downwardly projecting stud 129 provided with a beveled surface 130.

The hub of the package roll holder lever 26 is connected to the pressure roller 135, adapted to engage the take-up roller 76, by the link 136 extending over the rod 19ª and provided with an adjusting screw 138. Secured to said hub is the downwardly projecting cylinder 139, extending into which is the spring pressed plunger 140 limited in its downward movement by the shoulder 141 thereon engaging the corresponding shoulder on the sleeve 143 threaded on the end of said cylinder. The end of said plunger is provided with the gripping plate 144. Projecting from the top of said hub is the rod 145 on which is the adjustable weight 146.

The machine may be operated as follows:—

The article to be ornamented C is placed on the table 12, against the guides 150 and 151, secured to the top of said table, either by a suitable feeding mechanism or manually. As the operations necessary for applying all the strips of metallic leaf are the same, a description of the operations necessary for applying only one strip of metallic leaf will suffice for all. The lever 26 with the package roll holder 22 containing the desired width roll 33 of metallic leaf is placed on the supporting rod 18 in line with the portion of the surface of the book cover where the metallic strip is to be deposited. The carriage 13 is then moved forward until the center of the pressure roller 34 is directly above the line where the strip to be applied is to end. In turn a plate 97 is clamped in the front end of the form frame 90 with its inner end up to the end 98 of the lever 26. The carriage is then moved to the limit of its back stroke. The paper strip is in turn passed from the pressure

roller 34, between the gripping bracket 19 and gripping plate 144, between the take-up roller 76 and the pressure roller 135 and pulled into the tray 160 carried by the bracket 20, until the end of the metallic leaf is directly in line with the center of said pressure roller 34. It is to be understood that all the package rolls of metallic leaf may be applied to the machine before the form is adjusted and during the above described forward movement of the carriage the form is adjusted for them all, so that now no further adjustment is necessary, and all that is necessary to deposit the strips of leaf is to apply power to the shaft 110. As the carriage 13 is moved to the limit of its back stroke the beveled surface 127 will engage the rod 114ª forcing the gears 114 into mesh with the racks 125. The rotation of the gears 114 will, through the racks 125, now force the carriage 13 on its forward stroke. During the latter stroke of the carriage the gears 114 will be sustained in mesh with the racks 125 by the weight 124 through their connecting mechanism. During the forward movement of the carriage, as the end 98 of a lever 26 passes the end of its plate 97, its pressure roller 34 is pressed down on to the book cover by gravity of the weight 146, the pressure roller will then be rotated by contact with the book cover until it is moved up out of contact by the beveled surface 98 engaging its plate 97 at the front end of the form. When the strip or strips which extend the farthest forward have been deposited the beveled surface 130 on the stud 129 engages the rod 116ª which rocks the elbow levers 18 thereby disengaging the gears 114 from the racks 125 and engaging the gears 116 with said racks. As the gears 116 are driven through the idlers 115 by the gears 113 which are continually rotating in the same direction, the gears 116 will be rotated in an opposite direction to the gears 114 which will force the carriage 13 on its back or return stroke and the gears 116 will be held in mesh with the racks 125 by the weight 124. It is to be noted that the shaft 110 continually rotates in the same direction and through the mechanism connecting it with the carriage 13, the latter will be automatically reciprocated, the length of said reciprocation depending on the distance the studs 129 and 126 are apart. As the stud 129 is adjustable said distance may be varied as desired.

When the pressure roller 34 is in contact with the article the pressure roller 135 will hold the paper strip in contact with the take-up roller 76 and the gripping plate 144 will be out of contact with said strip allowing the take-up roller by rotating to remove the paper strip from the metallic leaf as the latter is applied. As each of the levers 26 is tilted to move the pressure roller 34 out of contact with the article to be ornamented the adjusting screw 138 will engage the rod 19ª which will swing the pressure roller 135 away from said take-up roller and gripping plate 144 will be moved down to coöperate with the gripping bracket 19 to grip the paper strip. This is an important feature, for if the paper were not gripped it might adhere to the take-up roller and thereby unwind the package roll or it might drop down between the take-up roller and the pressure roller.

During the forward stroke of said carriage the take-up roller 76, which is common to all the paper strips, is rotated but during the return stroke of said carriage said take-up roller does not rotate, this is due to the ratchet and pawl connection with its driving gear 73 driven by the rack 74. At the start of the return stroke of the carriage 13 the rotation of the short shaft 67 through the gear 73 74ª and rack 74 will rotate the gear 65 through their ratchet and pawl connection which will rotate the shaft 50 through their connecting chain of reducing gears until the toggles 51 are moved from the position shown in Fig. 1 to the position shown in Fig. 6, when the shaft 50 will come to rest due to the lack of teeth on the portion 63 of the gear 65. This straightening of the toggles will lift the pressure rollers 34 through the connecting mechanism away from the article on which the strips of metallic leaf have been deposited. At the start of the forward stroke of the carriage the shaft 50 will be rotated by the shaft 67 through their connecting chain of gears, until the toggles have returned to their initial position due to the lack of teeth on the portion 64 of the gear 66 allowing the pressure rollers 34 to operate upon the next article except so far as they are limited by the form plates 97.

It is to be understood that after the machine is started it will operate wholly automatically and it is only necessary to feed each article to be ornamented onto the table and at the completion of the forward stroke of the carriage the desired amount of metallic leaf will be deposited, then the article is removed from the table during the return stroke of the carriage and a new one is placed on the table by the time the carriage has moved forward sufficiently for the pressure rollers to operate.

The downward movement of the pressure rollers 34 is limited by the stop bar 40 which may be varied by manipulating the screws 44.

It may be desired to vary the length of the form 90 and this is accomplished by loosening the set screws 92 and sliding the two members of the form toward or away from each other.

The swivel connection of the package roll and pressure roller holder 22 with its sup-

porting lever 26 will allow said pressure roller to adjust itself to any irregularity of the surface of the article to be ornamented.

When it is desired to lay two or more strips in the same line but some distance apart the adjustable plates 99 may be employed as hereinbefore described.

While I have shown but one form of my invention, it is to be understood that this form is but one of many that might be employed and still be within the scope of the following claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A machine for applying metallic leaf comprising a series of traveling pressure applicators, means for supplying metallic leaf thereto, means for traversing said applicators simultaneously, and means irrespective of the distance said applicators are traversed for limiting the effective strokes of one or more of said applicators.

2. A machine for applying metallic leaf comprising a series of independently acting pressure applicators, means for traversing said applicators in unison a fixed distance, and means coöperating with members of said applicators for controlling the effective strokes thereof irrespective of the fixed distance said applicators are traversed.

3. In a machine for applying metallic leaf the combination of a pressure applicator, means for supplying metallic leaf thereto, means for traversing said pressure applicator, with means for controlling the effective operation thereof irrespective of the length of the stroke of said applicator.

4. In a machine for applying metallic leaf the combination of a pressure applicator, means for supplying metallic leaf thereto, means for horizontally traversing said pressure applicator, with automatic means for raising and lowering said pressure applicator two or more times during a single stroke thereof.

5. In a machine for applying metallic leaf the combination of a support for a strip of metallic leaf, a roller for applying the metallic leaf to the article to be ornamented when it is rotated in contact with said article, with automatic means for bringing said roller into and out of contact with the said article for predetermined periods.

6. In a machine for applying metallic leaf the combination of a support for a package roll of metallic leaf, means for applying predetermined length portions of the said metallic leaf to the article to be ornamented, a take-up mechanism for removing the paper strip from the metallic leaf as the latter is being applied, with means for operatively engaging and disengaging said take-up mechanism and said paper strip at predetermined intervals.

7. In a machine for applying metallic leaf the combination of a supported arm, a package roll and a pressure roller holder, a swivel connection between said arm and said holder with means for operating the pressure roller to apply a predetermined length strip of metallic leaf on the article to be ornamented.

8. In a machine for applying metallic leaf the combination of a package roll and a pressure roller holder carried by an automatically reciprocated carriage, with means for varying the stroke thereof.

9. In a machine for applying metallic leaf the combination of a package roll and a pressure roller holder carried by a carriage, a rotating shaft, an elbow lever pivoted on said shaft, a gear at one end of said lever and in mesh with a gear fixed to said shaft, a gear at the other end of said elbow lever and in mesh with said gear fixed to said shaft through an idler, an arm projecting downwardly from said elbow lever and connected to a horizontal rod by a link, said rod extending through and guided by a vertical slot, a weight supported by said rod, with means for intermittently swinging said elbow lever to alternately move the said gears at the ends of said lever in and out of mesh with a rack secured to the underside of said carriage.

10. In a machine for applying metallic leaf the combination of a table, a supporting rod projecting transversely to said table from a reciprocating carriage, a package roll and a pressure roller holder pivotally connected to said rod, with means for swinging said holder on its pivot so as to move the pressure roller contained therein away from the plane of said table.

11. In a machine for applying metallic leaf the combination of a reciprocating carriage, a horizontal rod secured to said carriage, a sleeve provided with flanges secured to said rod, a package roll and a pressure roller holder secured to one arm of said lever, with mechanism for operating on the other arm of said lever to rock said lever on its pivot for the purpose described.

12. In a machine for applying metallic leaf the combination of a reciprocating carriage, a horizontal rod secured at one end to an upright on said carriage, a lever pivoted on said rod, a package roll and a pressure roller holder secured to an end of one arm of said lever, the other arm of said lever engaging an adjustable stop-bar which extends through and is guided by slots in each end of a horizontal bracket projecting from the end of said upright, with means for sliding said stop-bar in said slots for the purpose specified.

13. In a machine for applying metallic leaf the combination of a reciprocating carriage, a plurality of package roll and pres-

sure roller holders secured to levers pivoted on a rod carried by said carriage, a stationary table beneath said holders, an adjustable form above said holders adapted to operate independently upon said levers to swing the pressure rollers contained in said holders away from the plane of said table for the purpose described.

14. A machine for applying metallic leaf comprising a series of pressure rollers, means for supplying metallic leaf thereto, means for traversing said rollers simultaneously, and means for limiting the effective strokes of one or more of said rollers.

15. A machine for applying metallic leaf comprising a series of pressure rollers, means for supplying metallic leaf thereto, means for traversing said rollers in unison a fixed distance, and means for controlling the effective strokes of each of said rollers.

16. A machine for applying metallic leaf comprising a series of independently acting pressure rollers, means for supplying metallic leaf thereto, means for traversing said rollers in unison a fixed distance, and means coöperating with members of said rollers for controlling the effective strokes thereof irrespective of the fixed distance said rollers are traversed.

17. In a machine for applying metallic leaf the combination of a support for a strip of metallic leaf, a roller for supplying the metallic leaf to the article to be ornamented when it is rotated in contact with said article, with means for lifting said roller out of contact with said article at predetermined intervals to deposit two or more predetermined length portions of said strip in the same line on said article.

18. In a machine for applying metallic leaf the combination of a supported arm provided with an aperture, a stud projecting from a package roll and a pressure roller holder extending through the aperture in said arm, a nut on the end of said stud, with means for operating the pressure roller to apply a predetermined length strip of metallic leaf from a package roll contained in said roll holder.

19. In a machine for applying metallic leaf the combination of a supported arm provided with a lug, a stud projecting from a package roll and a pressure roller holder extending through an aperture in said lug, a nut on the end of said stud, a spring between said nut and said lug, with means for operating the pressure roller to apply a predetermined length strip of metallic leaf from a package roll contained in said package roll holder.

20. In a machine for applying metallic leaf the combination of a pressure applicator, means for supplying metallic leaf thereto, means for traversing said applicator, means for lifting said applicator at predetermined intervals, with means for varying the distance which said pressure applicator is lifted.

21. In a machine for applying metallic leaf the combination of a series of pressure applicators, means for supplying metallic leaf thereto, means for reciprocating said applicators simultaneously, means for independently lifting said applicators at predetermined intervals during their forward stroke, with means for sustaining said applicators in their lifted positions during their back stroke.

22. In a machine for applying metallic leaf the combination of a movable carrier, means thereon for supporting a package roll of metallic leaf, a roller for applying the metallic leaf to the article to be ornamented, with means including a feed roller carried by said carrier for removing the paper strip from the metallic leaf as the latter is being applied to the said article.

23. In a machine for applying metallic leaf, the combination of a movable carrier, means thereon for supporting a package roll of metallic leaf, a roller operated through movement of said carrier for applying the metallic leaf, with means including a pair of feed rollers carried by said carrier for removing the paper strip from the metallic leaf as the latter is being applied.

24. In a machine for applying metallic leaf, the combination of a movable carrier, means thereon for supporting a package roll of metallic leaf, a roller operated through movement of said carrier for applying the metallic leaf, with means including a positively driven feed roller carried by said carrier for feeding the paper strip at the same relative speed as the metallic leaf is applied.

25. In a machine for applying metallic leaf the combination of a movable carrier, means thereon for supporting a package roll of metallic leaf, with means including a positively driven feed roller carried by said carrier for feeding the paper strip from the package roll to apply the leaf at the same relative speed as the travel of said carrier.

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

LUCIUS B. WEYMOUTH.

Witnesses:

CLARENCE F. RAY,

PHILIP WILLIAM LEE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."