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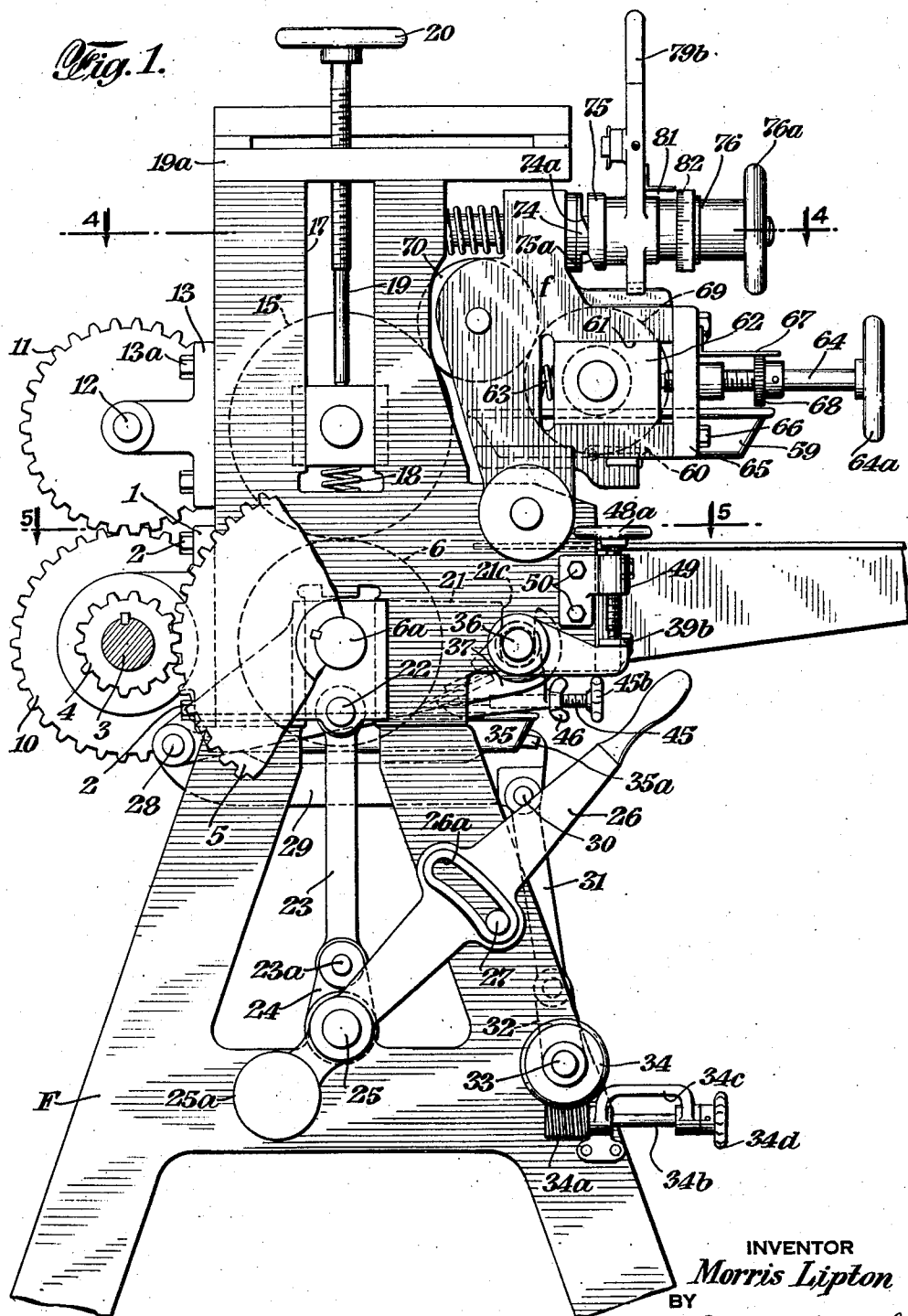
M. LIPTON

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COATING MACHINE

Filed April 23, 1937

5 Sheets-Sheet 1



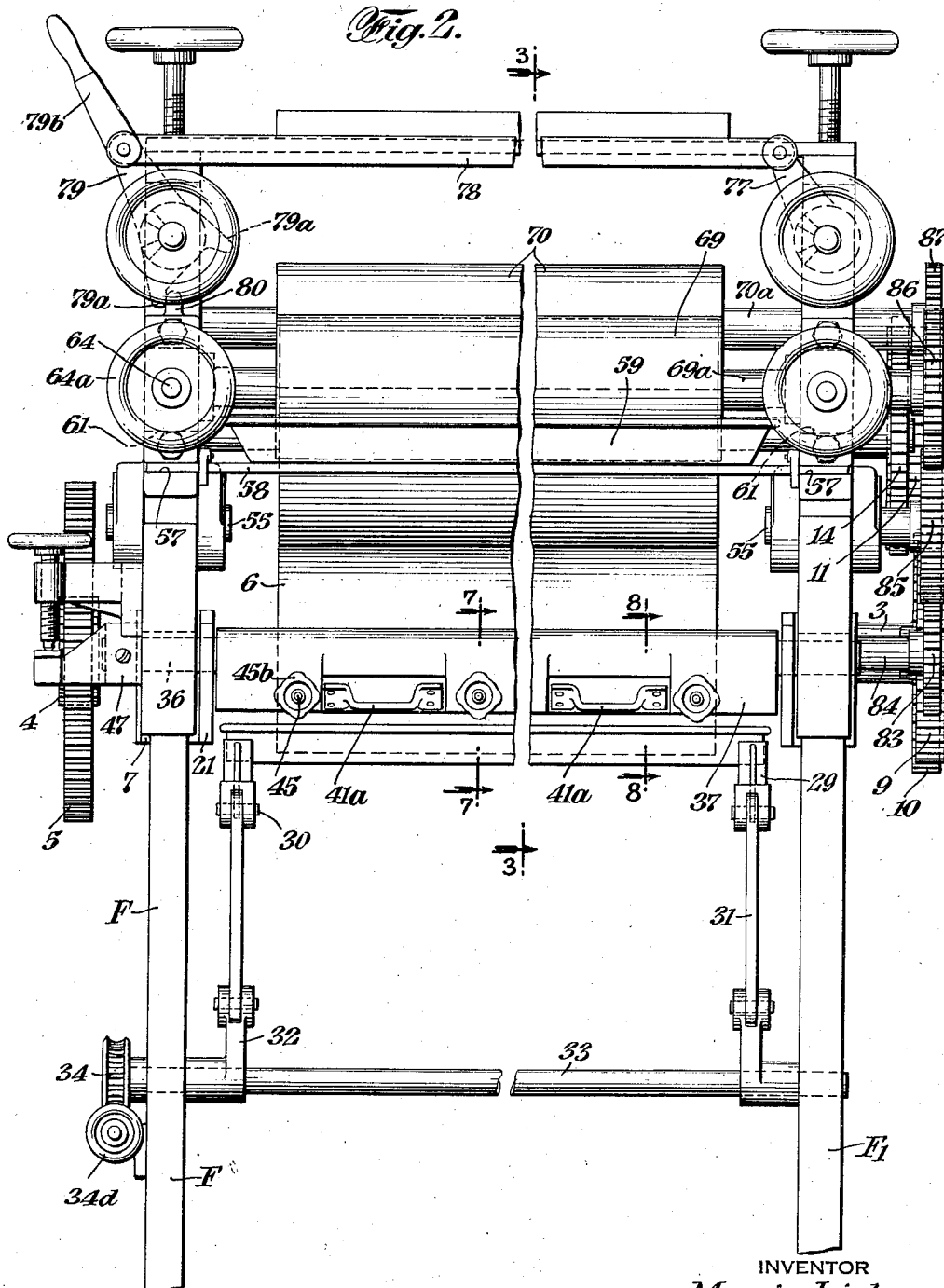
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5 Sheets-Sheet 2



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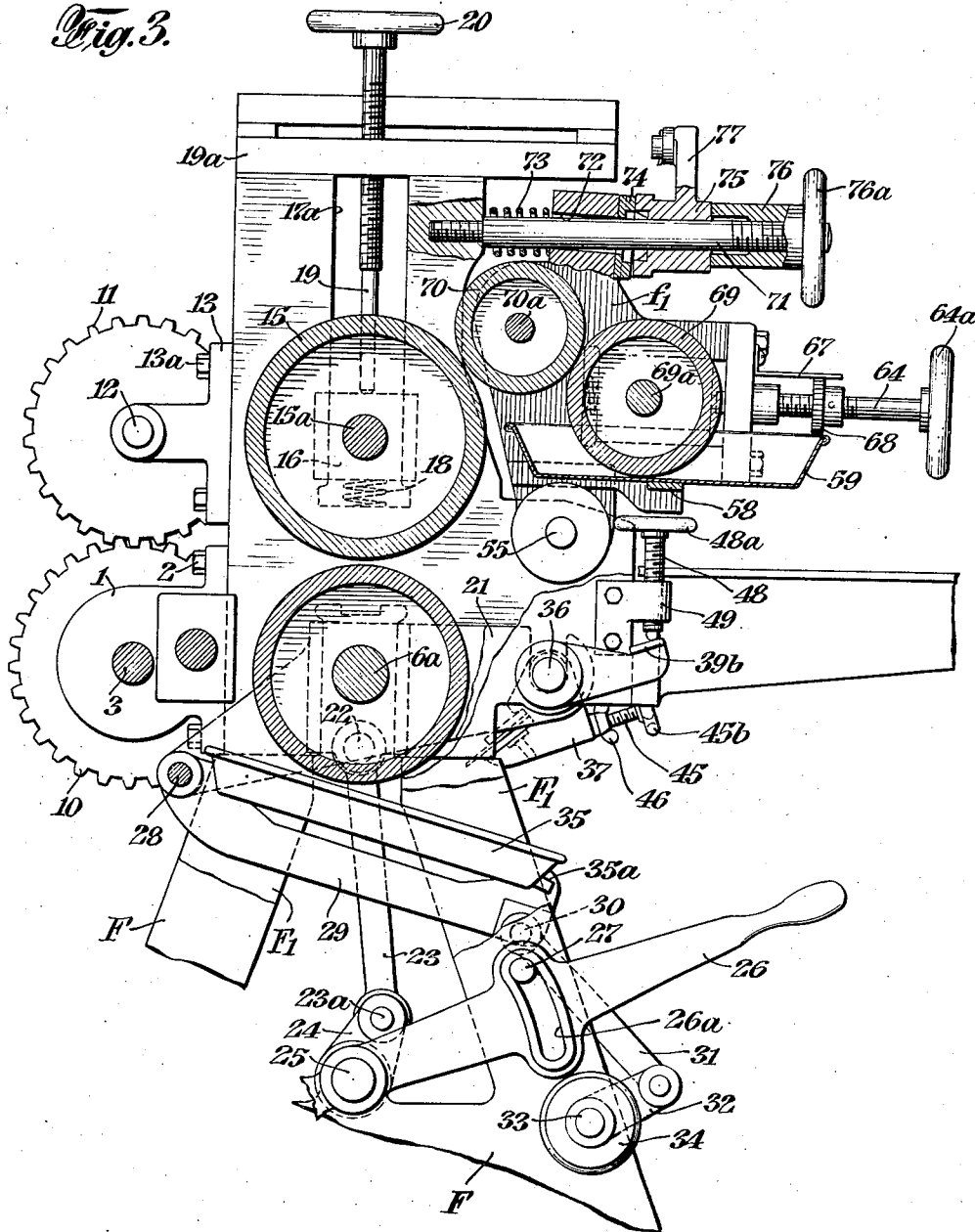
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Fig. 3.



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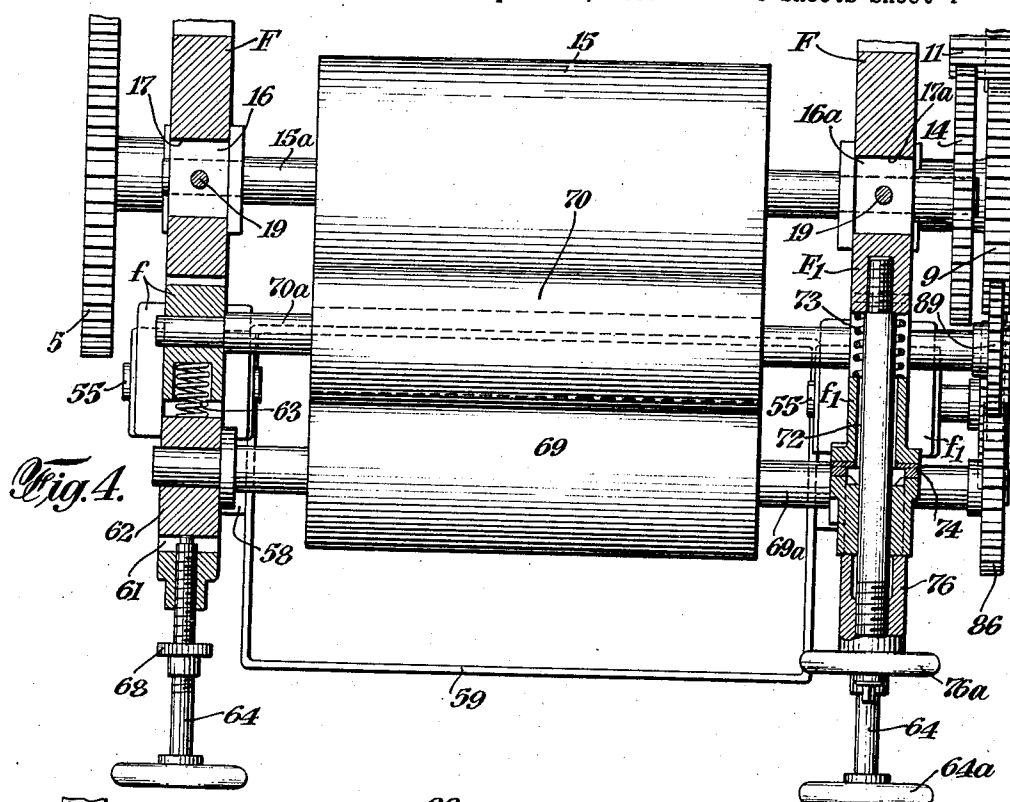
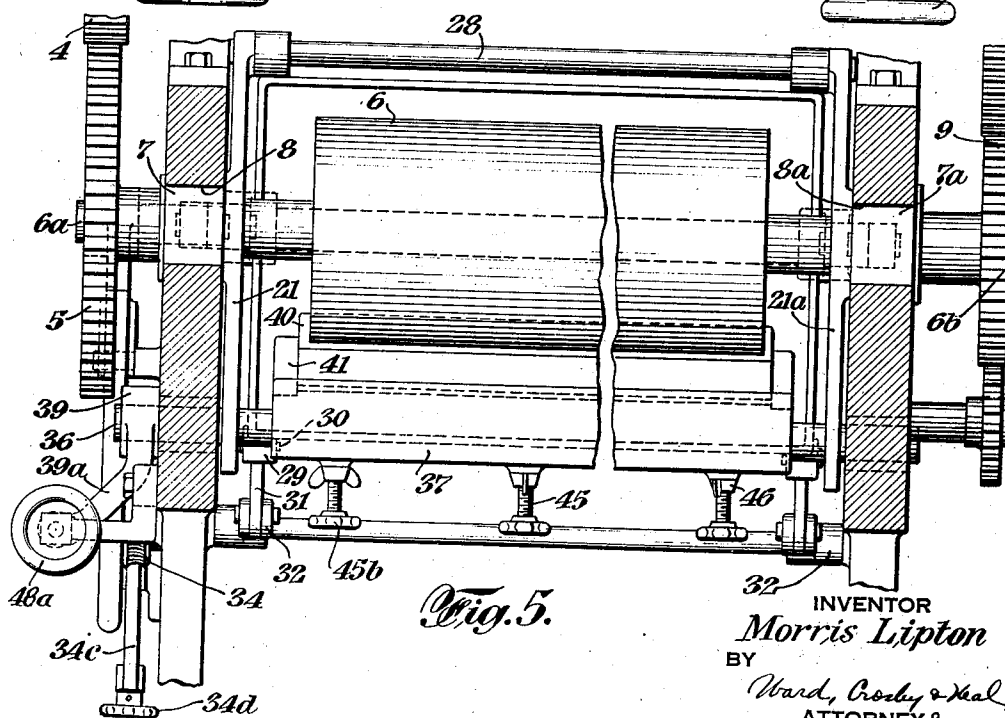
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COATING MACHINE

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5 Sheets-Sheet 4



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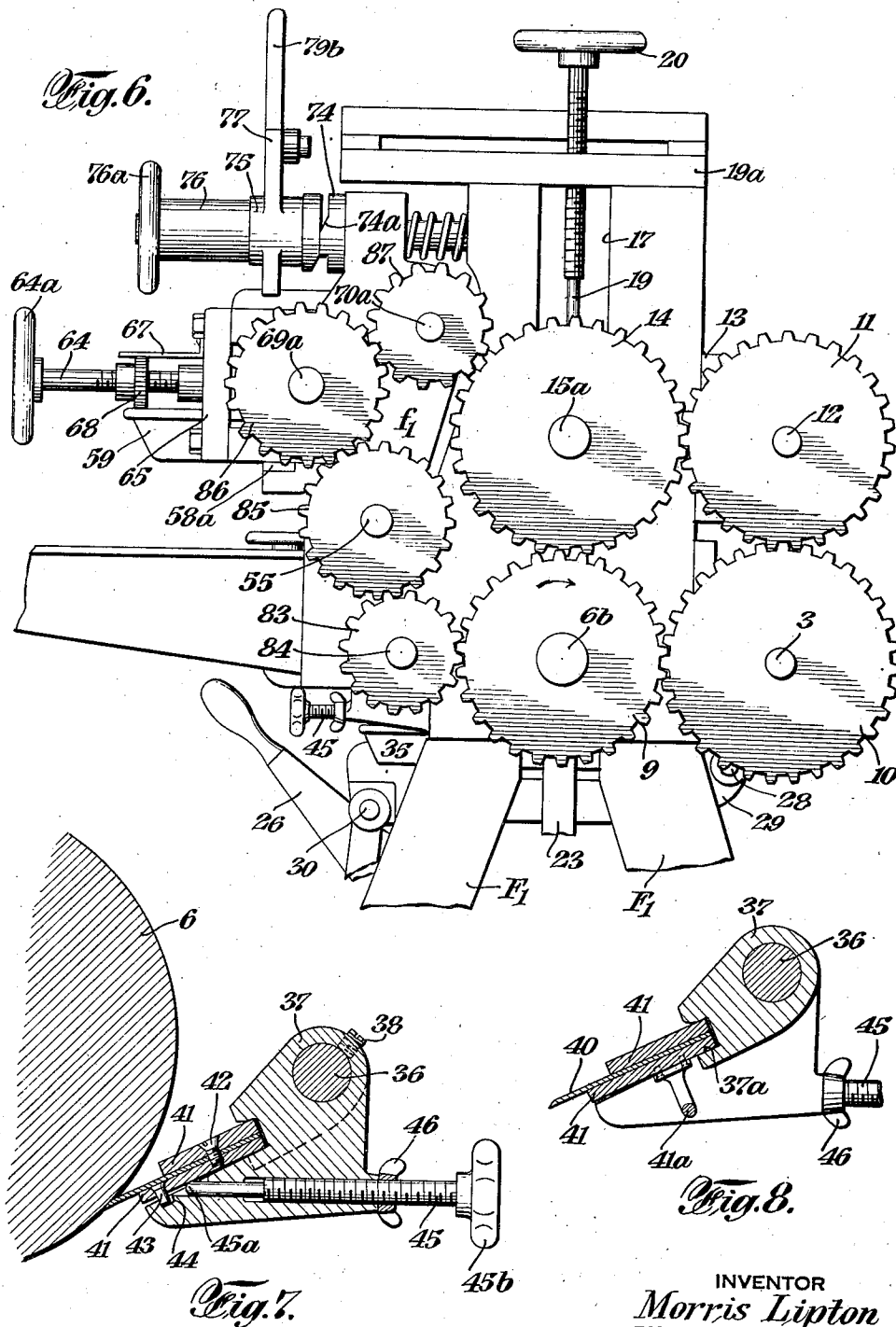
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COATING MACHINE

Filed April 23, 1937

5 Sheets-Sheet 5



UNITED STATES PATENT OFFICE

2,236,239

COATING MACHINE

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Application April 23, 1937, Serial No. 138,512

13 Claims. (Cl. 91—50)

My invention relates to machines utilizable for applying a coating of a liquid material such, for example, as ink, varnish, paint or the like to sheets of material of a desired character.

5 Machines of this general type are commonly utilized for applying a suitable coating to metal sheets both before and after a printing operation effected on said metal sheets. It shall be understood that the present invention is not to be limited to the treatment of metal sheets.

10 My invention has particular reference to improvements in coating machines of the class described whereby they may be operated effectively and efficiently for the intended purposes.

15 More particularly, my invention relates to a novel mounting arrangement for the coating machine assembly comprising the fountain and transfer roller and, further, the invention relates to a novel adjusting and mounting arrangement for a scraper knife, to a novel mounting and tilting arrangement for a pan or receptacle disposed below the supporting roller of said coating machine, and to a novel gear arrangement for operating the fountain and transfer roller of the coating machine.

25 Various other objects, advantages and characteristics of my invention will become apparent from the following detailed description.

30 My invention resides in the coating machine, features, arrangements and combinations of the character hereinafter described and claimed.

For an understanding of my invention and for an illustration of one of the forms thereof, reference is to be had to the accompanying drawings, in which:

Figure 1 is a side elevational view, partly broken away, showing a coating machine as constructed in accordance with my invention;

40 Fig. 2 is a front view of the machine shown in Fig. 1;

Fig. 3 is a vertical sectional view, partly in elevation, and is taken on the line 3—3 of Fig. 2;

45 Fig. 4 is a horizontal sectional view, partly in plan, and is taken substantially on the line 4—4 of Fig. 1;

Fig. 5 is a horizontal sectional view, partly in plan, and is taken on the line 5—5 of Fig. 1;

50 Fig. 6 is a side elevational view showing the coating machine of my invention;

Fig. 7 is an enlarged, fragmentary sectional view taken substantially on the line 7—7 of Fig. 2 looking in the direction of the arrows; and

55 Fig. 8 is a fragmentary, sectional view taken

substantially on the line 8—8 of Fig. 2 looking in the direction of the arrows.

Referring particularly to Fig. 2, F, F' represent spaced frame members as well known in the coating machine art, these frame members being connected together and braced in any suitable manner. Each of these frame members has a bearing bracket 1 suitably secured thereto, as by the screws 2, Fig. 1, these brackets 1 being disposed in horizontal alinement so as to form 10 bearings for a horizontal drive shaft 3 adapted to be rotated by an electrical motor or other suitable source of power, not shown.

Secured to one end of the shaft 3 and rotatable therewith is a pinion 4 which meshes with and 15 drives a gear wheel 5 secured to and rotatable with the extreme end 6a of one shaft extension of a supporting roller 6 formed from suitable material as known in the art, the shaft extensions of which are mounted in bearings formed in the respective blocks 7, 7a mounted for slidable movement in vertical slots 8, 8a formed, respectively, in the frame members F, F', these blocks 7, 7a being suitably supported in slidable fashion as hereinafter described. At the side 25 of the supporting roller 6 opposite the aforesaid shaft end 6a, the shaft extension of said roller 6 terminates in an end 6b to which is fixed a gear wheel 9 meshing with and driving a gear wheel 10 loosely mounted, for example, on the aforesaid shaft 3. The gear wheel 10 meshes with and drives a gear wheel 11 disposed thereabove, Figs. 1 and 6, said gear wheel 11 being mounted on an axle 12 rotatably mounted in a supporting bracket 13 secured to the frame F' 35 by screws 13a, and said gear wheel 11 being of double-width so that one peripheral section thereof meshes with the aforesaid gear wheel 10 while another peripheral section thereof meshes with and drives a gear wheel 14 mounted on the extreme end 15a of one shaft extension of a composition roller 15, the shaft extensions of which are mounted, respectively, in bearing blocks 16, 16a slidable in the respective vertical slots 17, 17a formed in the frame members F, F'. 45

As indicated in Figs. 1 and 3, each of the bearing blocks 16, 16a is biased upwardly by a helical spring 18 and, further, each bearing block may be moved downwardly against the expansive 50 force of the associated helical spring 18 by a rod 19, these rods 19 being suitably threaded through the respective members 19a suitably fixed to the upper sections of the respective frame members F, F', and each rod 19 comprising a hand

wheel 20. Obviously, by adjustment of the wheels 20, the composition roller 15 may be moved to a suitable vertical position as determined by proper operating practice.

Former integrally with or suitably secured to the aforesaid bearing blocks 7, 7a are the respective supporting plates 21, 21a, Figs. 1 and 5, these plates being disposed immediately adjacent the respective interior surfaces of the frame members F, F1, and the shaft extensions of the roller 6 extending loosely therethrough, respectively. Secured to each of the above noted supporting plates is a transverse pin 22 and, to each pin 22, there is pivoted a downwardly extending link 23, the lower end of each link 23 being pivotally connected, by a pin 23a, to a lever arm 24, and the lever arms 24 being secured to and oscillatory with a shaft 25 extending horizontally between and mounted in bearings in the frame members F and F1. The shaft 25, at one end thereof, has secured thereto an arm 26 which, as shown in Fig. 1, may comprise an arcuate slot 26a cooperative with a pin 27 carried by and projecting from the adjacent frame member. As illustrated in Fig. 1, the shaft 25 carries a counter-balancing weight 25a.

Toward the rear of the machine, Fig. 5, the aforesaid supporting plates 21, 21a carry a horizontally disposed transverse rod 28 to which, adjacent each end thereof, a supporting bar 29 is pivotally secured, Fig. 1, these supporting bars 29 extending toward the front of the machine and, at their forward ends, carrying the respective pivot pins 30. Pivoted to each pin 30 is a link 31, these links 31 extending downwardly and being secured to the respective lever arms 32 which are oscillatory with a horizontal shaft 33 mounted in bearings in the frame members F and F1, said shaft 33 adjacent the outside face of the frame member F, carrying a worm wheel 34 with which meshes a worm 34a carried by a shaft 34b mounted in bearings formed by a bracket 34c secured to said frame member F, the shaft 34b carrying an actuating hand wheel 34d. As indicated in Figs. 1 and 3, the bars 29 are shaped in such manner that they form a stable support for a pan or receptacle 35 having an outlet pipe 35a, the pan resting on said bars 29 and, as will be understood, is readily detachable from said bars 29 when they are positioned as shown in Fig. 3.

The aforesaid supporting plates 21, 21a, at their forward ends, are provided, respectively, with horizontally aligned slots or oval passages 21c forming bearings for a horizontally disposed shaft 36 which, between the supporting members 21, 21a, has a scraper blade holder 37 suitably secured thereto, as by set screws 38, Fig. 7. As shown in Fig. 5, the shaft 36 may extend through passages formed in the respective frame members F, F1, such passages being sufficiently large to prevent contact of the respective shaft ends with said frame members.

Coactable with the supporting roller 6 is a scraper blade 40 formed from suitable spring steel, or equivalent, said scraper blade 40 being held tightly between clamping members 41 by a plurality of screws 42, Fig. 7, and the lower clamping member 41 carrying a plurality of handles 41a accessible through passages formed in the holder 37, Fig. 2. The assembly comprising the scraper blade 40 and clamping members 41 is disposed in an inclined channel 37a extending lengthwise of the scraper blade holder 37. Preferably, in accordance with the invention, the lower clamp-

ing member 41 has a plurality of lugs 43, Fig. 7, projecting downwardly therefrom and received, respectively, in recesses 44 formed in the adjacent surface of the scraper blade holder 37. In accordance with the invention, the scraper blade 5 holder 37 is provided with a plurality, as five or more, of passages which extend substantially horizontally when said scraper blade holder 37 is positioned as shown in Fig. 7, these passages being internally threaded for the reception of the 10 respective adjusting screws 45, each of which terminates at one end in a section 45a coactable with the scraper blade assembly and at its other end in a finger wheel 45b. In order that the adjusting screws 45 may be locked in desired positions, each of them may have a wing nut 46 15 threaded thereto, each wing nut being coactable with an adjacent surface of the scraper blade holder 37.

At its projecting end adjacent the frame member F, the aforesaid shaft 36 has a hub 47 fixed thereto so as to be oscillatory therewith, this hub comprising a projecting arm 39a which terminates in a lateral section 39b, Fig. 1. Coactable with this lateral section 39b is a screw 48 hav- 25 ing an operating hand wheel 48a, this screw 48 being threaded through and adjustably mounted in a bracket arm 49 secured to the adjacent frame member F by bolts 50, Fig. 3, and said screw 48 carrying a locking nut, if desired. 30

Referring to Fig. 4, each of the frame members F, F1 is shown as supporting a transverse bearing member 55, these members 55 being horizontally aligned, Fig. 2, and, in turn, pivotally supporting the respective side frame members f, 35 f1 of the fountain assembly, these frame members extending upwardly from the fork-shaped sections thereof which are associated with the respective members 55 and said frame members f, f1 being disposed in alignment with the respec- 40 tive frame members F, F1, Fig. 4.

Each of the frame members f, f1 is provided with a slot 57 and these slots are disposed in horizontal alignment for the reception of a bar 58 which is soldered or otherwise suitably secured 45 to the bottom of the fountain pan or receptacle 59, said bar 58 projecting beyond opposite respective sides of the pan 59 so as to be received in the respective slots 57, and said pan 59 being received between the frame members f, f1, Fig. 2. 50 Each frame member f, f1 may have a hook 60, Fig. 1, pivoted thereto, these hooks cooperating with the bar 58 to positively retain the pan 59 detachably in its intended position.

Each of the frame members f, f1 is provided 55 with a passage 61, these passages being disposed in horizontal alignment and each passage having a block 62 suitably guided therein in a freely slidable manner. Each block 62 is suitably biased toward the front of the machine, or from 60 left to right, Fig. 1, by a helical spring 63 mounted in suitable manner and, further, each block 62 has associated therewith in threaded relation a screw 64 provided with a hand wheel 64a. Each screw 64 is threaded through a plate 65 65 suitably secured to the adjacent side member by screws 66, the screw threads between the screw 64, the block 62 and the plate 65 being in compound relation. Usually, it is desirable that a pointer 67 be secured to each plate 65, each 70 pointer 67 coacting with a drum 68 rotatable with the adjacent screw 64.

The aforesaid blocks 62 serve as bearings for the shaft ends of a roller 69 which dips into the liquid medium contained in the fountain pan 59, 75

the roller 69, as well known in the art, being designated as the fountain roller.

Coactable with the fountain roller 69 and with the aforesaid composition roller 15 is a transfer roller 70, this roller being horizontally disposed and the shaft ends thereof being journaled in the respective frame members *f*, *f*1.

At the upper end of the machine, each of the frame members *F*, *F*1 carries a fixed projecting member 71, Fig. 3, these members 71 being disposed in horizontal, parallel relation and extending toward the front of the machine. As indicated in Figs. 1 and 4, the members 71 extend loosely through the respective passages 72 formed in the upper sections of the frame members *f*, *f*1, respectively, the frame members *f*, *f*1 being biased in a clockwise direction, Figs. 1 and 3, by the respective springs 73 helically disposed on the members 71, respectively, each spring 73 having a guard sleeve, not shown, disposed therearound if desired. As shown in Figs. 1 and 6, the front face of each of the aforesaid upper sections of the frame members *f*, *f*1 has fixed thereto a ring-shaped member 74 through which the adjacent member 71 extends. Each member 74 comprises a front cam-shaped surface 74a with which coacts a cam surface 75a of a sleeve 75 loosely mounted on the associated projecting member 71 which extends therethrough. As clearly appears from the drawings, the extreme front end of each member 71 has a sleeve nut 76 threaded thereto, each sleeve nut 76 comprising an operating hand wheel 76a.

As shown in Figs. 2 and 3, that cam sleeve 75 at the right comprises an arm 77 which, by a link 78, is connected to an arm 79 of the cam sleeve 75 at the left, said arm 79 comprising a pair of spaced lugs 79a coactable with an abutment 80 upstanding from the adjacent frame member *f*, said arm 79 further comprising an actuating handle 79b.

As shown on the drawings, each of the aforesaid arms 77 and 79 has secured thereto a pointer 81 which coacts with a scale formed on the periphery of a drum 82, each of the sleeve nuts 76 having one of these drums 82 associated therewith if desired.

In accordance with the invention, the hereinbefore described fountain and transfer rollers 69 and 70 are rotated by power supplied thereto through a gear arrangement of novel construction.

Thus, the aforesaid gear wheel 9, which is connected directly to the source of power as described and which does not mesh with the gear wheel 14, Fig. 6, is disposed in meshing relation with respect to a gear wheel 83 mounted on an axle 84 projecting horizontally from the frame member *F*1. The gear wheel 83 meshes with a gear wheel 85 rotatably mounted on the aforesaid bearing member 55 which connects the frame members *F*1 and *f*1 together. The gear wheel 85 meshes with a gear wheel 86 mounted on the end 69a of one shaft extension of the fountain roller 69. The gear wheel 86 meshes with a gear wheel 87 mounted on the end 70a of one shaft extension of the transfer roller 70. As clearly appears from a consideration of Fig. 6, the gear wheel 87 does not mesh with the aforesaid gear wheel 14.

With the parts positioned as shown in Figs. 1 and 2, the supporting roller 6 is in its upper position and the composition roller 15, under the control of the threaded rods 19, is in a lower position so that it is in engagement with said supporting roller 6.

Under such circumstances, the hereinbefore de-

scribed source of power may be connected to the drive shaft 3 so as to rotate the same with the result that the pinion 4 operates the gear wheel 5 whereby rotation is imparted to the supporting roller 6 in a counter-clockwise direction, Fig. 1.

Rotation of the supporting roller 6 effects rotation of the gear wheel 9 in a clockwise direction, Fig. 6, whereby, through the driving connection formed by the gear wheels 10 and 11, the gear wheel 14 is rotated counter-clockwise, Fig. 6, to thereby rotate the composition roller 15, the latter, as shown in Fig. 1, rotating in a clockwise direction.

As stated above, the gear wheel 9 rotates in a clockwise direction, Fig. 6. This gear wheel 9 15 meshes with and drives the gear wheel 83 which, in turn, drives the associated gear wheel 85. The latter, namely, the gear wheel 85 meshes with and drives the gear wheel 86 which is mounted on the end 69a of one shaft extension of the fountain roller 69. As a result, the fountain roller 69, as shown in Fig. 1, is rotated in a clockwise direction. The gear wheel 86 of the fountain roller meshes with and drives the gear wheel 87 which is secured to the end 70a of one shaft extension 25 of the transfer roller 70 whereby the latter is rotated in a counter-clockwise direction, Fig. 1.

The fountain roller 69 dips in that liquid coating agent, ink, varnish, paint or the like, which is contained in the receptacle 59 and, in the usual manner as known to the art, rotation of said fountain roller 69 causes a film or layer of such coating agent to be deposited upon the transfer roller 70 which, in turn, effects the deposition of a film or layer of the coating agent upon the com- 35 position roller 15.

With the various rollers rotating in the respective directions, Fig. 1, described immediately above, the operator causes the sheet material which is to be coated to be moved from right to left, Fig. 1, so that the same passes between the supporting roller 6 and the composition roller 15 whereby the liquid coating agent from the receptacle 59 is applied as a thin film or layer upon the upper surface of sheet material, the latter, when 45 passing beyond the two rollers 6 and 15, moving downward into engagement with a set of belts, not shown, carried by pulleys, not shown, the latter being mounted on a shaft adjacent the supporting roller 6, this shaft being driven by a con- 50 nection to the main shaft 3.

The operation described above is the same or substantially the same as is customarily practiced in connection with coating machines of the prior art. However, the machine of my invention embodies several improved features as hereinafter more fully described.

Thus, with reference to the fountain assembly, the hand wheel 84a of screw 84 may be rotated 60 in one direction or the other to cause the fountain roller 69 to move laterally of its horizontal axis so that the pressure with which it engages the transfer roller 70 may be adjusted as desired to effect a desired application of the liquid coating agent to said transfer roller 70. Thereafter, when the actuating handle 79b is positioned as shown in Figs. 1 and 2 to hold the fountain assembly toward the composition roller 15, the hand wheels 76a of the respective sleeve nuts 76 may 70 be rotated in one direction or the other to thereby slightly move the fountain assembly either toward or from the composition roller 15 whereby the transfer roller 70 is caused to engage said composition roller 15 with a desired degree of pres- 75

sure to thereby effect a desired application of the liquid coating agent to the composition roller.

Subsequently, when operation of the machine is discontinued for any reason, the handle 79b may be swung in a clockwise direction, Fig. 2, whereby the cam surfaces 75a of the respective sleeves 75 are moved so that they face the respective cam surfaces 74a of the members 74, respectively. When these cam surfaces are thus related, the springs 73 become effective to swing the fountain assembly clockwise about its pivotal axis from the position thereof shown in Fig. 1 whereby the transfer roller 70 is disengaged from the composition roller 15. In as simple a manner, when operation of the machine is again to be initiated, the handle section 79b may be returned to the position thereof shown in Fig. 2 whereby the pairs of cam surfaces described above coact to swing the fountain assembly counter-clockwise to its position as shown in Fig. 1 whereby the transfer roller 70 is returned to its former selected position in engagement with the composition roller 15.

The adjusted positions of the fountain roller 69 and the fountain assembly per se as effected by rotation of the respective hand wheels 64a and 76a may be noted by observation of the position of the pointer 67 with respect to the scale on the drum 68, and also by observation of the positions of the pointers 81 with respect to the scales on the respective drums 82. Therefore, when it becomes necessary to change any previous setting of the fountain roller 69 or the fountain assembly per se for cleansing, repair or other purposes, it is very simple thereafter to restore the previous settings with a marked degree of precision.

As hereinbefore described and by reference to Fig. 6, it will be noted that power for operating the fountain roller 69 and transfer roller 70 is obtained from a mechanical connection leading to the gear wheel 9 on the shaft end 6b of the supporting roller 6. In contra-distinction to prior art arrangements, power is thus supplied to said fountain and transfer rollers independently of the composition roller 15 or the gear wheel associated therewith. Accordingly, the fountain assembly may be moved in either direction about its pivotal axis as hereinbefore described and, in so doing, no problem arises with respect to meshing of the gear wheels 14 and 87, Fig. 6, since, as shown, these gear wheels are never in meshing relation and there is no necessity of having them thus related.

Aside from the foregoing, it is advantageous and desirable for the power which operates the composition roller 15 on the one hand and the foundation roller 69 together with the transfer roller 70 on the other hand to be applied over separate connections leading from the gear wheel 9. Moreover, with the disclosed arrangement, the gear wheel 85 may be rotatably mounted on the pivotal axis of the fountain assembly and this is desirable because eliminating any need for disturbing the meshing relation of any of the gear wheels when said fountain assembly is moved on its pivotal axis.

With the arrangement of my invention and as disclosed herein, the scraper blade 40 may be removed from the machine and reassociated therewith at will with a minimum of inconvenience. Thus, when the hand wheel 48a is operated to move the screw 48 upwardly, Fig. 1, the holder 37, under the influence of gravity, swings in a counter-clockwise direction, Fig. 1,

whereby the scraper blade assembly is removed from contact with the supporting roller 6. With the holder 37 in the position just described, the operator may grasp the handles 41a and, after elevating the scraper blade assembly so that the lugs 43 clear their respective recesses 44, said scraper blade assembly may be moved forwardly and downwardly whereupon it may be turned sidewise and removed from the machine. Usually, the scraper blade assembly is thus removed from the machine when it is desired to clean the same. After this has been done, it is obvious, in view of the description appearing above, that said scraper blade assembly may be reassociated with the holder 37 in a ready manner whereupon the screw 48 may be threaded downwardly to return the holder 37 to its original position and thereby cause the scraper blade 40 to again come into contact with the supporting roller 6.

In case the described movement of the screw 48 does not position the scraper blade 40 in proper scraping relation with respect to the supporting roller 6 throughout the entire length thereof, one or more of the screws 45 may be adjusted to thereby positively force any desired section of said scraper blade 40 into close engagement with a desired surface of said supporting roller 6. Obviously, such adjustment of one or more of the screws 45 so controls the position of the scraper blade 40 that the entire length thereof may readily be disposed in proper manner with respect to said supporting roller 6.

In accordance with an important feature of the invention, the scraper blade assembly may be removed from the holder 37 for cleansing or other purposes in the manner described above, this being accomplished without changing the adjustment of any of the screws 45. Therefore, when said scraper blade assembly is returned to its normal position in the holder 37, it necessarily assumes the same relation as previously existed with respect to the surface of the supporting roller 6. This, obviously, is a decided improvement as compared with prior art arrangements.

The receptacle 35 is adapted to contain a liquid agent, such as one of the same character as is contained by the receptacle 59, the supporting roller 6 dipping into the liquid agent contained in said receptacle 35 so that any of the coating agent which is transferred to said supporting roller 6 from the coating roller 15, particularly at the supporting roller edges and longitudinally thereof along the boundary line between the edges of the sheets to be coated, is kept in moist condition so that it may readily be removed by the scraper blade 40. Further, this liquid agent in the receptacle 35 lubricates the entire peripheral surface of the supporting roller 6 so as to prevent the formation of dry areas or zones with which the scraper blade 40 would otherwise contact with resultant undue wear of the inter-engaging parts. Overflow from the receptacle 35 occurs by way of the outlet pipe 35a which may be disposed above a suitable bucket, not shown.

In accordance with an important phase of the invention, the hand wheel 34d, Fig. 1, may be rotated to lower the supporting bars 29 to the position illustrated in Fig. 3, for example, so that the receptacle 35 assumes a tilted relation as shown, the liquid contents thereof meanwhile escaping by way of the pipe 35a. When thus positioned, the receptacle 35 may readily be grasped by the hands of the operator, removed, cleaned, and then returned to the position shown, whereupon the hand wheel 34d may again be operated

to raise the bars 29 and receptacle 35 to the normal position thereof shown in Fig. 1.

When the supporting roller 6 is to be lowered, the arm 26 is moved downward from the position thereof shown in Fig. 1 to that shown in Fig.

3. In so doing, the supporting plates 21, 21a are moved downwardly a distance corresponding with the downward movement of the bearing blocks 7, 7a. Accordingly, the ends of the bars 29 at the transverse rod 28 are moved downwardly to a slight extent although the ends of said bars 29 at the pivot pins 30 remain substantially stationary. Therefore, when the supporting roller 6 is moved downwardly under the control of the arm 26 as stated, the receptacle 35 is moved downward in a tilting manner and thus is removed from the downward path of movement of said supporting roller 6 so as not to impede downward movement thereof.

The adjustments which may be imparted to the fountain roller and to the fountain assembly have been described hereinbefore in some detail. These features of the invention are of distinct importance because adjustment of the fountain roller 69 with respect to the transfer roller 70 does not change any relation which had been previously established between the transfer roller 70 and the composition roller 15. Further, the adjustment of the transfer roller 70 with respect to the composition roller 15, which, as stated, is effected by manipulation of the sleeve nuts 76, does not change any relation which had been previously established between the fountain roller 69 and the transfer roller 70.

The composition material on the operative face of the roller 15 is apt to and does sag when said roller 15 remains stationary for any appreciable length of time. Therefore, in accordance with the invention, a suitable electric motor, not shown, may be geared to the composition roller 15 so as to rotate the latter at a very slow rate of speed when the machine is idle.

While the invention has been described with respect to a certain particular preferred example which gives satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a machine of the class described, the combination with a roller adapted to apply a liquid coating to sheets of material, of a fountain assembly adapted to transfer the liquid material to said roller, said fountain assembly comprising a fountain roller coactable with a transfer roller which in turn is coactable with said first named roller, said fountain roller being rotatably mounted on a laterally adjustable axis and said transfer roller being rotatably mounted on a fixed axis, means for adjusting the position of said fountain roller with respect to said transfer roller, means forming a pivotal mounting for said fountain assembly, and means for holding said fountain assembly in such position that the transfer roller is maintained in suitable coating relation with said first named roller, said last named means comprising a spring arrangement for biasing said fountain assembly in one direction, said last named means further comprising a cam arrangement for moving said fountain assembly against the force of said spring arrange-

ment, said last named means further comprising mechanism for adjusting said cam arrangement whereby the operative position of said transfer roller with respect to said first named roller may be determined with precision.

2. In a machine of the class described, a frame structure, horizontally aligned bearing blocks mounted for vertical movement in said frame structure, a supporting roller rotatably mounted in said bearing blocks, a plate fixed to each bearing block, means whereby the plates form a support for a receptacle disposed beneath said supporting roller, and manually controlled means fixed to the plates whereby said supporting roller may be raised or lowered at will.

3. In a machine of the class described, a frame structure, horizontally aligned bearing blocks mounted for vertical movement in said frame structure, a supporting roller rotatably mounted in said bearing blocks, a plate fixed to each bearing block, a supporting bar arrangement pivoted to the plates, a receptacle carried by said supporting bar arrangement and adapted to contain a liquid medium into which said supporting roller dips, and manually controlled means fixed to the plates whereby said supporting roller may be raised or lowered at will.

4. In a machine of the class described, a lower supporting roller and an upper composition roller for coating sheets of material, a fountain roller and an associated transfer roller for transferring liquid material to said composition roller, means for operating said supporting and composition rollers, and means for operating said fountain and transfer rollers, said last named means being independent of said composition roller.

5. In a machine of the class described, a lower supporting roller and an upper composition roller for coating sheets of materials, a fountain roller and an associated transfer roller for transferring liquid material to said composition roller, and means driven by said supporting roller for operating said composition roller on the one hand and said fountain and transfer rollers on the other hand, said means comprising power-transmitting connections leading in different directions from said supporting roller.

6. In a machine of the class described, a lower supporting roller and an upper composition roller for coating sheets of material, a pivoted assembly comprising a fountain roller and an associated transfer roller for transferring liquid material to said composition roller, means for operating said supporting and composition rollers, and means for operating said fountain and transfer rollers, said last named means comprising a gear wheel rotatable on the pivotal axis of said assembly.

7. A fountain assembly for a machine of the class described, said fountain assembly comprising a fountain receptacle adapted to contain a liquid medium, a fountain roller adapted to rotate in such liquid medium, means forming an axis on which said fountain roller is adjustable laterally of its longitudinal axis, a transfer roller, means forming a fixed axis for said transfer roller, means for adjusting the position of said fountain roller with respect to said transfer roller, and means forming a pivotal mounting for said fountain assembly.

8. In a machine of the class described, the combination with a supporting roller for the sheets of material, of a receptacle beneath the supporting roller and adapted to contain a liquid

medium into which said supporting roller dips, a support which holds said receptacle normally in substantially a horizontal position beneath said supporting roller, means forming a pivotal mounting for said receptacle adjacent one end thereof, and means for moving said support on its pivotal mounting whereby said receptacle may be gradually tilted into an inclined position.

9. In a machine of the class described, the combination with a supporting roller for the sheets of material, of a receptacle beneath the supporting roller and adapted to contain a liquid medium into which said supporting roller dips, a support which holds said receptacle normally in substantially a horizontal position beneath said supporting roller, means forming a pivotal mounting for said receptacle adjacent one end thereof, and means for moving said support on its pivotal mounting whereby said receptacle may be gradually tilted into an inclined position, said last named means comprising worm and worm wheel mechanism manually operative for the purpose specified, said receptacle being readily removable from said support when the latter is in a lower tilted position.

10. An arrangement for cleaning the surface of a coating machine supporting roller, said arrangement comprising supporting means, a shaft mounted for oscillatory movement on said supporting means, a holder carried by said shaft and movable therewith, a scraper blade carried by said holder for coaction with said supporting roller, and means for retaining said holder in such position that the scraper blade is in engagement with said supporting roller, said means being operable to release said holder whereby said scraper blade may be spaced a substantial distance from said supporting roller, said means comprising a single operating member having a threaded shaft coactable with an arm projecting from one end of said first named shaft.

11. In a machine of the class described, a frame structure, horizontally aligned bearing blocks mounted for a vertical movement in said frame structure, a supporting roller rotatably mounted in said bearing blocks, a plate fixed to each bearing block, a supporting bar arrange-

ment pivoted to the plates, a receptacle carried by said supporting bar arrangement and adapted to contain a liquid medium into which said supporting roller dips, and a manually actuable means for tilting said supporting bar arrangement.

12. In a machine of the class described, the combination with a roller adapted to apply a liquid coating to sheets of material, a fountain roller, a transfer roller, spaced frame members in which said fountain and transfer rollers are journaled, said spaced frame members together with said fountain and transfer rollers comprising a fountain assembly, means forming a pivotal mounting for said fountain assembly, and means for moving said fountain assembly either toward or from said first named roller, said last named means comprising a cam for moving said fountain assembly toward said first named roller and a spring for biasing said fountain assembly from said first named roller, said last named means further comprising an operating member for adjusting said cam whereby the operative position of said fountain assembly may be determined with precision.

13. An arrangement for cleaning the surface of a coating machine supporting roller, said arrangement comprising supporting means, a shaft mounted for oscillatory movement on said supporting means, a holder carried by said shaft and movable therewith, a scraper blade carried by said holder for coaction with said supporting roller, clamping members secured to said scraper blade, and means for retaining said holder in such position that the scraper blade is in engagement with said supporting roller, said means being operable to release said holder whereby said scraper blade may be spaced a substantial distance from said supporting roller, the assembly comprising said scraper blade and said clamping members being readily detachable as a unit from said holder when the latter is in the position last named, said means comprising a single operating member having a threaded shaft coactable with an arm projecting from said first named shaft.

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