May 11, 1943. P. H. DIXON 2,318,600

CEMENTING MACHINE FOR THIN MATERIAL

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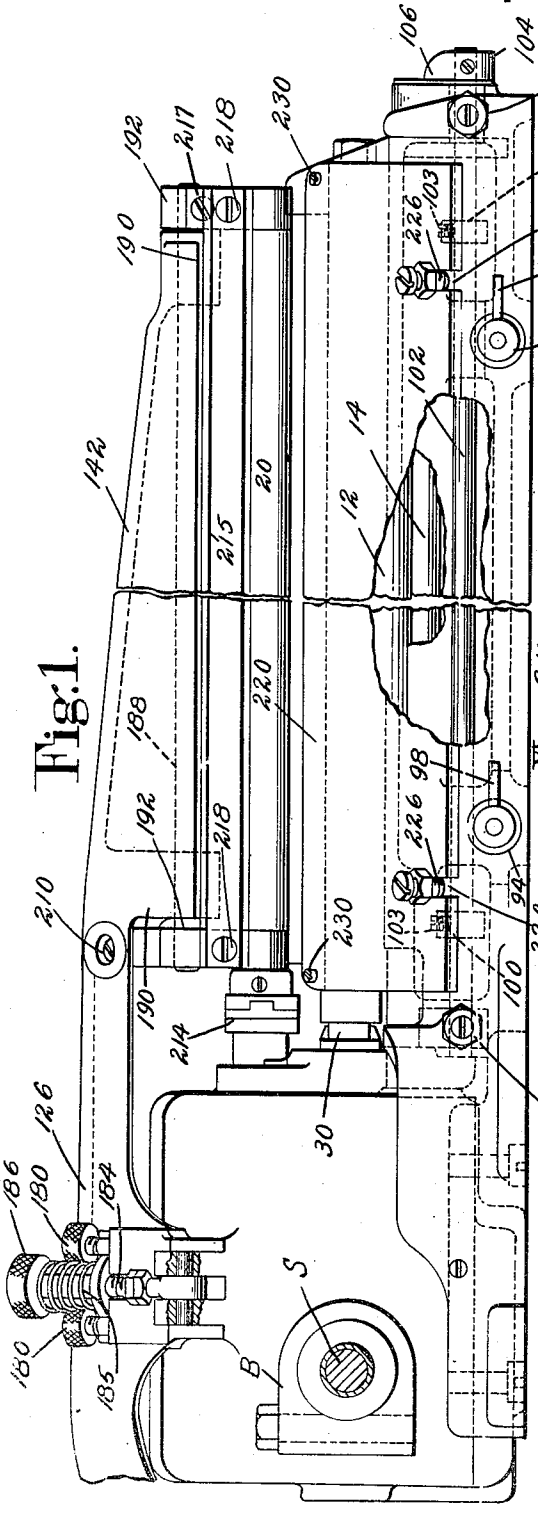


Fig. 1.

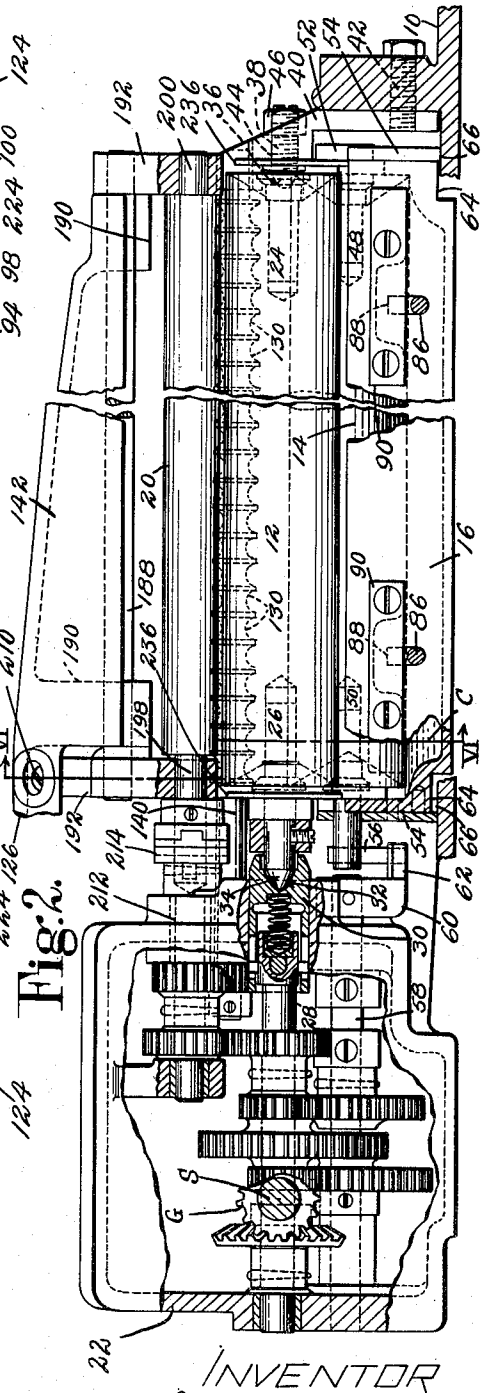


Fig. 2.

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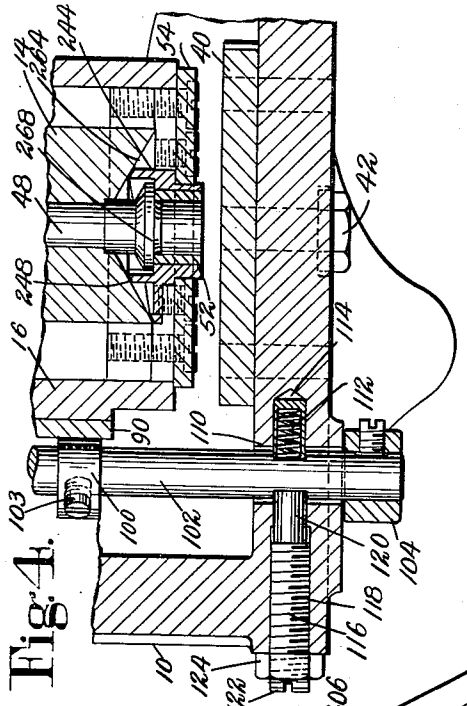


Fig. 4.

Fig. 3.

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Fig. 5.

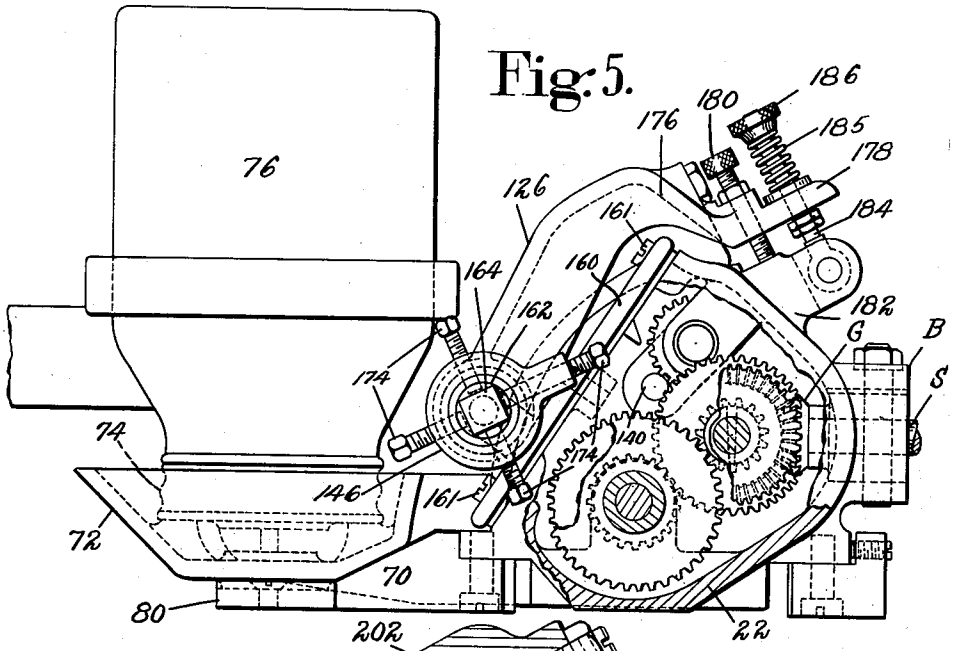
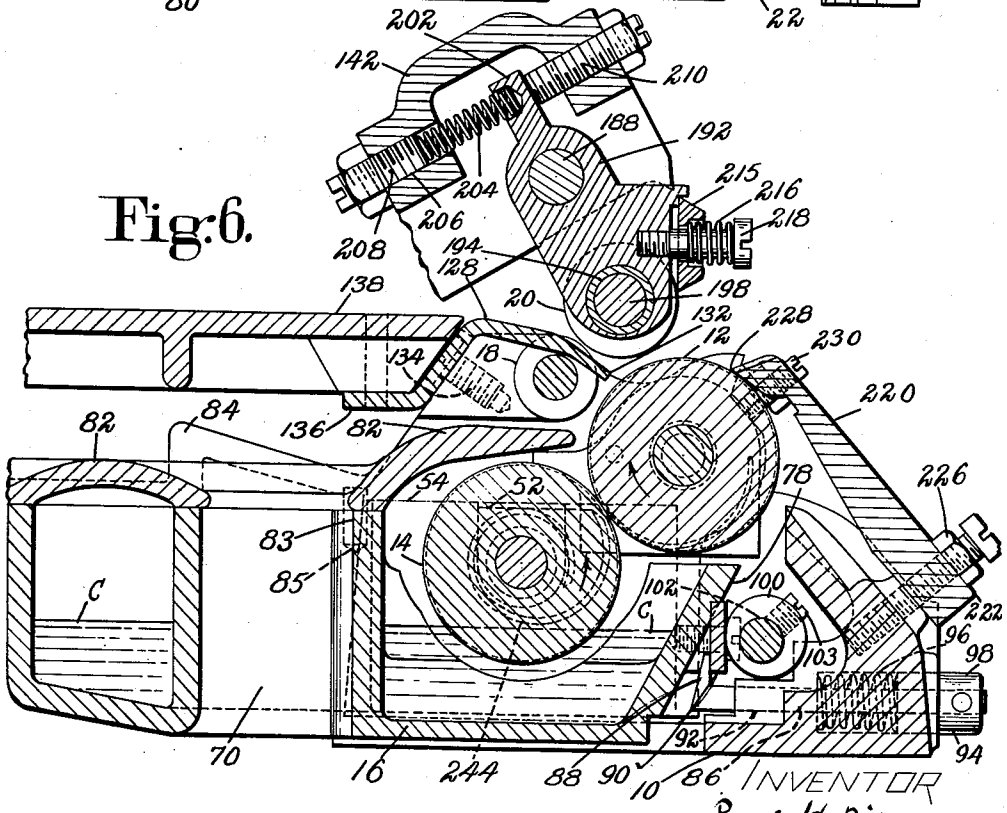


Fig. 6.



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Fig. 7.

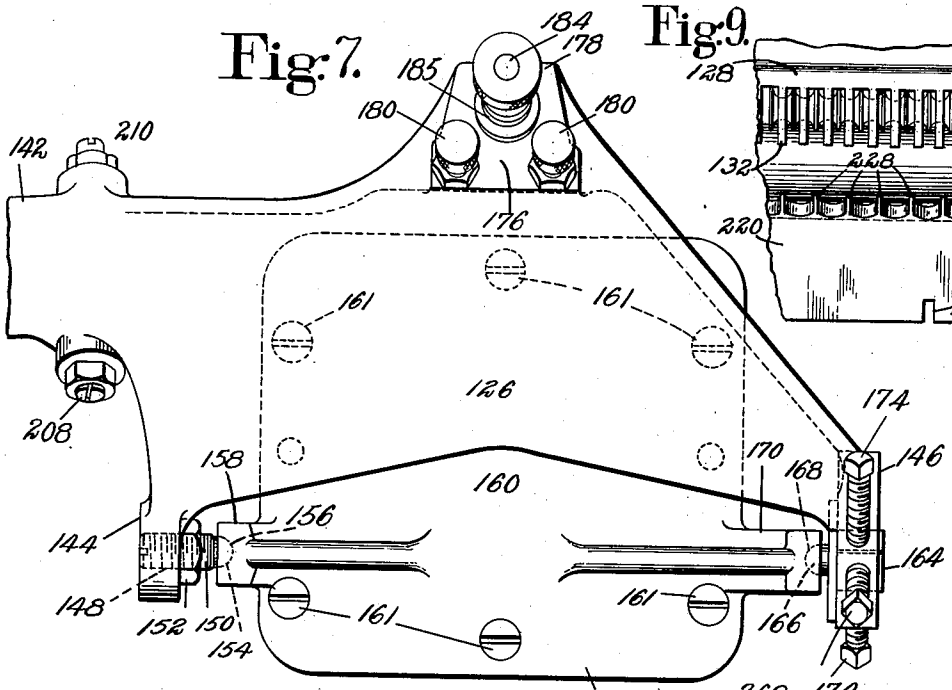
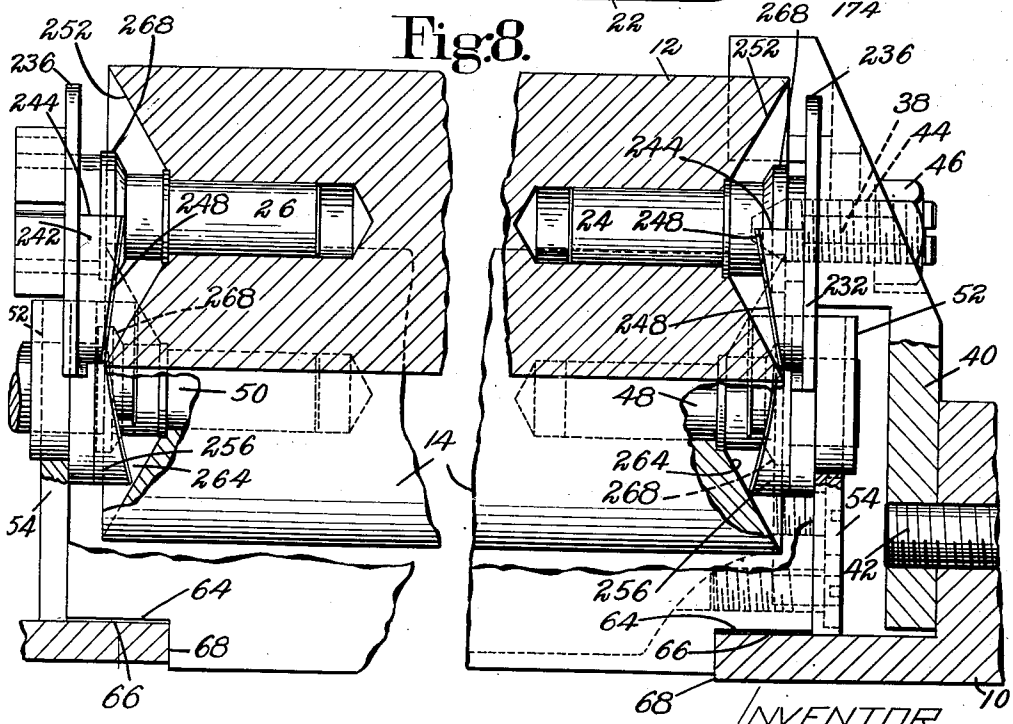


Fig. 9.

Fig. 8.



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Fig:13.

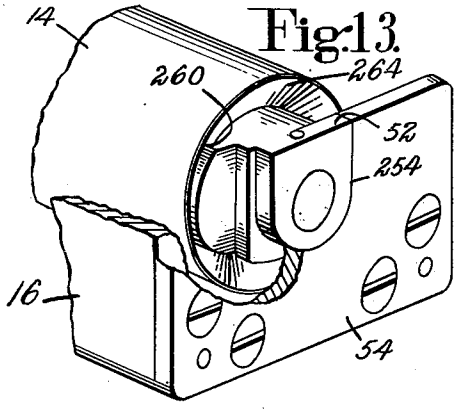


Fig:10.

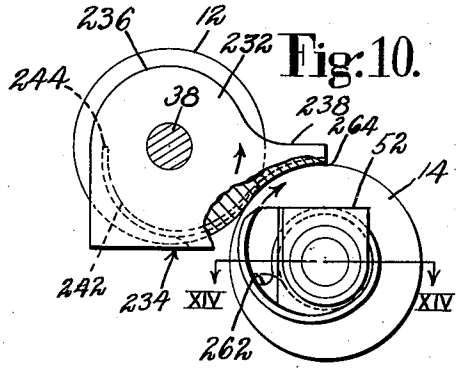


Fig:12.

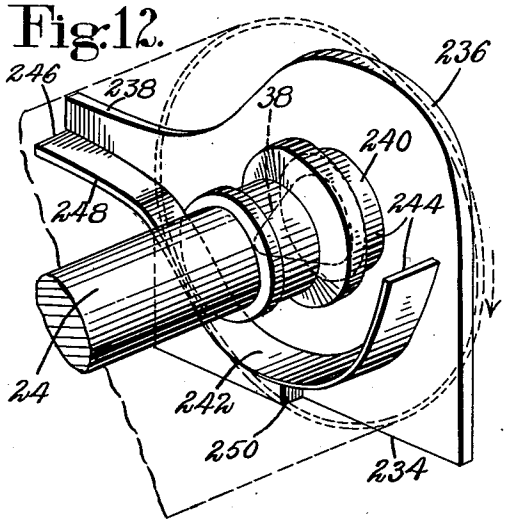


Fig:15.

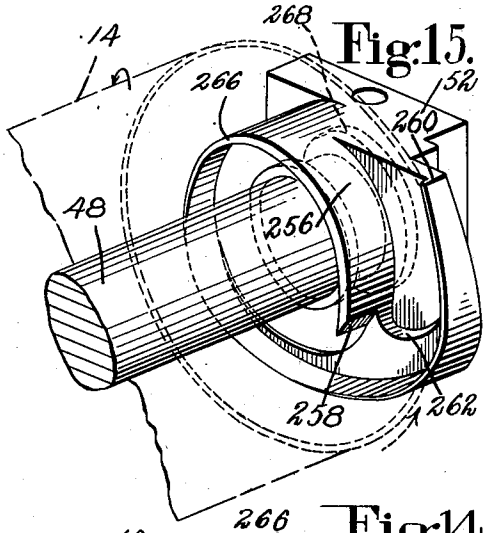


Fig:11.

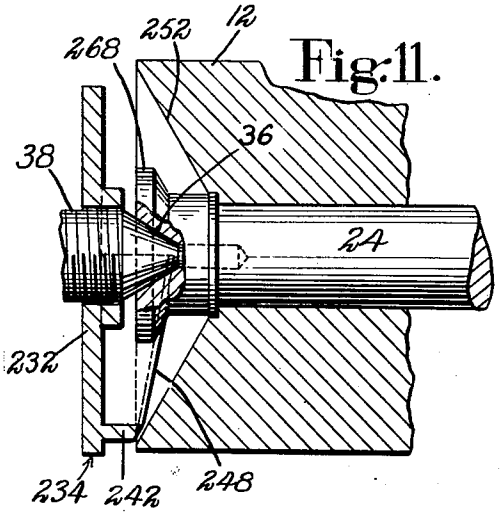
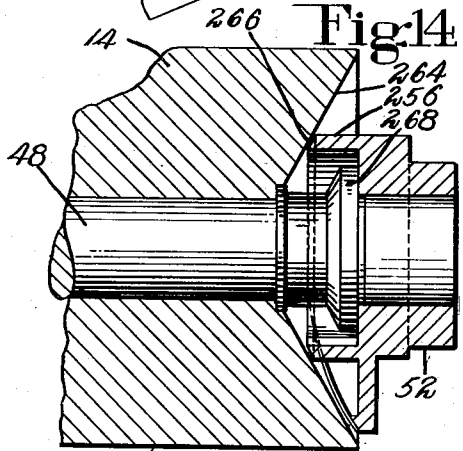


Fig:14.



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Patented May 11, 1943

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UNITED STATES PATENT OFFICE

2,318,600

CEMENTING MACHINE FOR THIN MATERIAL

Paul H. Dixon, Wenham, Mass., assignor to United Shoe Machinery Corporation, Borough of Flemington, N. J., a corporation of New Jersey

Application September 11, 1939, Serial No. 294,248

17 Claims. (Cl. 91—50)

The present invention relates to an improved machine for applying cement to parts of shoes and pertains, in particular, to a machine designed to apply a uniform coating of latex cement to one side of parts of shoes in preparation for the manufacture of the shoes.

The invention has as an object the provision of an improved machine by which a uniform coating of cement can more readily be applied to one side of unassembled parts of shoes composed of thin limp material, such as sock linings, heel covers, etc., in a rapid and efficient manner without smearing the display side thereof and without requiring attention on the part of the operator, other than to introduce the part.

Coating machines in which a presser roll holds the work directly in contact with an applying roll are not suitable for such thin material because of the danger of smearing the presser roll and thereby soiling the work. Accordingly, machines have been employed in which coacting feed rolls are positioned at a distance from the applying roll and serve to direct the ingoing edge of the work against the upgoing side of the applying roll.

As illustrated, a feature of the present invention resides in the provision of means for tilting the axis of the upper feed roll in horizontal and vertical planes to bring the upper roll into parallel alinement with the lower feed roll so that the work will be fed forward uniformly and in means for moving the upper roll in an arc about the lower roll to vary the angle of the plane passing through the axis of the rolls according to the thickness of the work so as to cause it to hug the applying roll.

Invention is also to be recognized in the arrangement for varying the thickness of the coating of cement on the applying roll by accurately controlling the distance between the roll which picks the cement up from a receptacle and the surface of the applying roll to which the cement is delivered. In the illustrated machine the pick-up roll is journaled in the receptacle from which it removes cement, and means is provided for moving the receptacle to vary the distance between the surfaces of the two rolls. To insure accurate control of the movement of this receptacle by the aforesaid means the receptacle is yieldably locked to the frame of the machine by a pair of spring-retracted, hook-ended bolts which are arranged to engage an edge of a catch plate fastened to the receptacle.

Considerable annoyance and loss of time may be caused by clogging of the bearings of the pick-up and applying rolls, especially when latex is employed. As illustrated, the ends of the rolls are provided with conical recesses, and another feature of the invention resides in the provision of baffles mounted between the ends of the cement-carrying rolls and their bearings, each baffle having a spiral flange on the side toward the end of the roll, the edge of the flange being equidistant from the surface of the conical recess at all points, thereby to move the latex which creeps over the end of the roll progressively outwardly of the end of the roll to the periphery of the same where it is combined with the newly picked-up cement.

The invention is illustrated in detail in the accompanying drawings, in which

Fig. 1 is a front elevational view of the machine broken away in part;

Fig. 2 is a front elevational view of the machine, partly in section and partly broken away longitudinally thereof;

Fig. 3 is an end elevation as viewed from the right-hand end of the machine and broken away in part;

Fig. 4 is a fragmentary sectional view taken on the line IV—IV of Fig. 3;

Fig. 5 is an end elevation as viewed from the left-hand end and is broken away in part;

Fig. 6 is a vertical section through the machine on the line VI—VI of Fig. 2;

Fig. 7 is a plan view of the machine showing the bracket mounting for the upper feed roll;

Fig. 8 is an enlarged vertical elevation, partly in section and partly cut away, of the baffles for the bearings of the pick-up and applying rolls;

Fig. 9 is a fragmentary plan view in which the top feed roll is rocked back so as to show the work guide and the stripper plate;

Fig. 10 shows the relative positions of the baffles employed for the applying roll and pick-up roll;

Figs. 11 and 12 show enlarged views of the baffles at the left and right ends, respectively, of the applying roll;

Fig. 13 shows the baffle employed at the left end of the pick-up roll;

Fig. 14 shows an enlarged sectional view of the baffle taken on the line XIV—XIV of Fig. 10; and

Fig. 15 shows an enlarged perspective view of the construction of the baffle used for the right end of the pick-up roll.

Referring to the drawings for a specific embodiment of the invention, and particularly to Figs. 2 and 6 for the general organization of the same, the machine comprises a frame 10 including a gear box 22 arranged to support a cement-

applying roll 12 above a coacting pick-up roll 14 dipping in a cement receptacle 16; and a pair of feed rolls 18 and 20 adapted to feed pieces of thin material to the applying roll 12, the gear box 22 containing the necessary mechanism to drive said rolls.

The cement-applying roll 12 is supplied with cement by the aforesaid pick-up roll 14 and since the former is exposed to the air cement will gradually coagulate on its surface during its use and particularly when it is allowed to remain idle, for example, during the night. For proper operation the roll must be cleaned of the accumulated cement after a period of use and therefore the roll is so mounted that it can readily be removed from the machine. To this end, the ends of the roll 12 are provided with gudgeons 24 and 26, the gudgeon 26 being connected to a shaft 28, extending from the gear casing, by a spring-pressed coupling 30 the inner end of which is slidably connected to the shaft 28, said coupling having a conical recess 32 in its free end to receive the conical end 34 of the gudgeon 26. The gudgeon 24 is provided with a conical recess 36 in its free end adapted to receive a conical-ended bearing stud 38, said bearing stud being carried by a bearing plate 40 secured to the end of the frame 10 by bolts 42. The bearing stud 38 is threaded through an aperture 44 formed in the bearing plate 40 and adjustably held therein by a lock nut 46.

While the machine is adapted to apply any kind of cement to sheet material, it is designed particularly to permit the use of latex which heretofore was difficult to use because of its marked tendency to gum the machine. It has been found that latex must not be subjected to pressure between rolls because if pressure is applied to a thin film of latex there is a tendency for the rubber particles to deposit rubber out of solution onto the surface of the rolls. Therefore, if two rolls are rotated at the same speed with their surfaces closely adjacent, a thick deposit of rubber will build up shortly and render the machine inoperative. In the present invention this tendency of the rubber to deposit out of solution has been overcome by mounting the pick-up roll 14 so as to rotate in the opposite direction from the applying roll 12 and connecting the former to a gear train which will rotate it about one-tenth as fast as the applying roll. While the speed ratio of 1 to 10 has been specified, this ratio may be changed readily to provide other speed ratios by the substitution of other gears. The ratio in any case should be such that the pick-up roll does not supply cement to the applying roll greatly in excess of that required. The result of this arrangement is that the surfaces of the two rolls are moving in the same direction at the point of contact (see Figs. 3 and 6) and the surface of the applying roll instead of pressing the latex onto the surface of the pick-up roll merely brushes off a quantity of cement as it sweeps by.

The pick-up roll 14 is provided at its ends with gudgeons 48 and 50 (Fig. 2) by which it is mounted for rotation in the cement receptacle 16, the gudgeons extending through bearings 52 supported in bearing plates 54 secured to the end walls of the cement receptacle 16. The inner gudgeon 50 extends beyond its bearing 52 and is provided with a diametrically mounted pin 56 which forms a flexible driving connection with a shaft 58 extending from the gear box, said shaft having a collar 60 pinned thereto with a lug 62 extending into the path of the pin 56 so that the rotation of the shaft 58 will drive the roll 14. The bottom of the roll 14 dips into the cement C in the receptacle, the level of which is maintained constant by a barometric feed which will be referred to hereinafter. Rotation of the pick-up roll 14 lifts cement from the receptacle to the surface of the applying roll 12 which, as described above, brushes a film of cement from the surface of the pick-up roll.

It is desirable to vary the thickness of the film of cement brushed from the pick-up roll 14 by the applying roll 12 for different kinds of work and in the present invention this is accomplished by varying the distance between the surfaces of the two rolls. To this end, the receptacle 16, in the end walls of which the pick-up roll 14 is journaled, is arranged for limited movement relatively to the frame of the machine.

The receptacle 16 is rectangular in shape and is rabbeted at 64 along its lateral bottom edges to slide on a pair of ways 66 formed on the frame of the machine, the back of the frame having an opening 68 (Fig. 8) whereby the receptacle 16 may be moved into and out of the frame at will. A trough 70 extends laterally from the back side of the receptacle 16 and terminates in an enlargement 72 adapted to receive the neck 74 of a bottle 76 which provides a barometric feed for the receptacle. The receptacle 16 which has a sloping front wall 78 normally occupies a position within the frame of the machine with the top edge of the wall 78 a little in advance of the lowest point of the applying roll 12, the bottom of the receptacle resting at its edges on the ways 66 and the enlargement 72 resting on a bracket extension 80 (Fig. 5) fixed to the frame at the rear of the machine. A cover plate 82 rests on top of the receptacle and trough to prevent access of air to the cement, said cover being provided with a lip 84 (Figs. 3 and 6) by which it may be grasped to facilitate removal thereof and a locating pin 83 arranged to enter a hole 85 drilled in the wall of the receptacle 16.

The receptacle is yieldably locked to the frame of the machine in the aforesaid position by means of a pair of spring-retracted hook-ended bolts 86, the hook portions 88 of which may be rotated into locking position behind the edge of a plate 90 secured to the sloping wall 78 of the receptacle. The hook-ended bolts 86 are mounted for longitudinal and rotational movement in apertures 92 in the frame of the machine, the outer ends of the bolts having heads 94 secured thereto by pins 98 and behind the heads 94 are compression springs 96. The pins 98 are extended (Fig. 1) so as to provide handles by which the bolts 86 may be rotated to lock the receptacle to the frame, it merely being necessary to push the bolts 86 in against the action of the springs 96 until the hook ends 88 are beyond the plate 90 and then to rotate the hooks into a vertical position and release the pins which will then be retracted by the springs and hold the receptacle in place.

A limited movement of the receptacle 16 in its locked position may be effected, thereby to adjust the pick-up roll 14 relatively to the applying roll 12, by a pair of cams 100 arranged to bear against the front face of the plate 90, said cams being mounted for rotation on a cam shaft 102 the ends of which are journaled in the frame of the machine. The cams are secured to the shaft 102 by set screws 103 and one end of the cam shaft extends beyond its bearing and has fixed thereto a collar 104 having a pointer 106 thereon adapted to register with marks on a scale 108 on the frame, said scale being properly calibrated to

give the exact separation of the rolls as the cams are rotated by moving the pointer along a scale.

It is essential that the pick-up roll 14 and the applying roll 12 shall be parallel in order to secure an even distribution of cement and therefore the ends of the cam shaft are adjustably mounted so that the shaft and cams may be shifted slightly to bring the receptacle into a position where the pick-up roll will be parallel with the applying roll. To provide for this bearings 110 for the shaft are enlarged somewhat (Fig. 4) so that the ends of the cam shaft may be shifted therein slightly to orient the receptacle so that the pick-up roll journaled therein may be made parallel to the applying roll. Compression springs 112 are disposed in recesses 114 extending radially of the bearings 110 into the frame of the machine, one end of each of the springs bearing against the shaft and urging it toward the opposite side of the bearings. Diametrically opposite to the springs 112, screws 116 are threaded through bores 118 formed in the frame, the inner ends of the screws bearing against the ends of floating pins 120 the opposite ends of which bear against the shaft. The outer ends of the screws 116 are provided with kerfs 122 by which they may be rotated so as to move the pins and in turn the shaft against the springs. Lock nuts 124 are provided on the threaded screws to lock the same in position.

In a machine of this type, it is desirable to maintain the means for feeding the sheet material to the applying roll at such a distance therefrom that there will be no possibility for cement to get on the feeding means and smear the finished surface of the material. In the present instance the feeding means comprises the coacting rolls 18 and 20, the lower roll 18 being mounted for rotation in the frame of the machine and the upper roll being mounted for rotation in a bracket 126 which is in turn mounted on the frame of the machine. By reason of the fact that the material is limp and there is considerable distance between the nip of the feed rolls and the surface of the applying roll where the material first contacts, the front edge might adhere to the lower feed roll 18 and wrap around it instead of traveling across the open space to the surface of the applying roll 12. To prevent this a guide 128 (Fig. 3) is provided to direct the sheet away from the surface of the roll 18 when it leaves the bite of the feed rolls. To this end the bottom feed roll 18 is circumferentially fluted, the flutes 130 (Fig. 2) being deep enough to accommodate flat spaced fingers 132 (Fig. 6) projecting from the front edge of the guide, the fingers 132 lying below the periphery of the roll 18 and sloping downwardly toward the applying roll, the ends of the fingers extending just far enough in advance of the roll 18 to divert the material from following the surface of the same and terminating short of the surface of the applying roll. The guide 128 is secured to the frame of the machine behind the roll 18 by screws 134 and for convenience is provided with a ledge 136 upon which the work feeding platform 138 may be supported. The fluted roll 18 is journaled at one end in the bearing plate 40 and connected at its other end with a driving shaft 140 from the gear box, said roll being fixed in its relation to the applying roll.

The upper feed roll 20, as previously stated, is supported above the lower feed roll 18 by a bracket 126, the bracket being mounted so that it may be tilted from a position in which the upper feed roll is in feeding relation with the lower feed roll to a position remote from the feeding roll to facilitate removal of the applying roll and cleaning of the same and the other rolls. The bracket 126 (Fig. 7) is a yoke-shaped casting having an arm 142 extending from one side thereof and a pair of ears 144 and 146 at the ends of the bracket by which it is mounted upon the gear casing portion of the frame so that the arm 142 overhangs the lower feed roll. The ear 144 is provided with a threaded aperture 148 in which there is a round-ended stud 150 locked in position by means of a lock nut 152, the rounded end 154 of the stud resting in a hemispherical recess 156 formed in a boss 158 cast on a cover plate 160 secured to the gear casing by screws 161. The other ear 146 is provided with an enlarged aperture 162 through which a square-headed and round-ended stud 164 is passed, the rounded end 166 thereof resting in a recess 168 similar to the recess 156, said recess being formed in a boss 170. The head of the stud 164 is squared and four radially disposed bolts 174 are threaded through the ear 146 so that their inner ends engage respectively the four faces of the head. By this arrangement a universal movement of the bracket 126 about the boss 158 as a pivot point may be had by a simple adjustment of the bolts 174 whereby the arm 142 which carries the upper feed roll may be tilted in horizontal and vertical planes to secure parallel alinement between the two feed rolls. The shoulder of the yoke is extended in a bent-over portion 176 (Fig. 5) which terminates in a broad tongue 178. A pair of bolts 180 are threaded through the tongue 178, the lower ends of the bolts butting a ledge 182 projecting from the front wall of the gear casing whereby the position of the yoke around the axis of the studs 150 and 164 is determined, this in turn permitting the plane containing the axes of the feed rolls and hence the bite between the rolls to be changed slightly to vary its angle to the horizontal and the approach of the work to the applying roll. The yoke 126 is yieldably locked in the aforesaid predetermined position by an eye-bolt 184 pivotally secured in a slot at the end of the ledge 182. The shaft of the bolt 184 extends upwardly through an open-ended slot in the end of the tongue 178 and a spring 185 is disposed axially thereon between the top of the tongue and a nut 186 threaded onto the end of the bolt shaft.

While the arrangement just described permits adjustment between the upper feed roll and the lower feed roll and also permits the upper roll to be thrown back away from the lower roll for cleaning purposes, it is desirable to arrange the upper roll so that it will yield with respect to the lower roll to permit sheet material of different thicknesses to pass between the rolls without binding. To this end a spindle 188 is mounted longitudinally of the overhanging arm 142, said spindle being supported near its ends in depending flanges 190 (Fig. 1) formed on the under side of the arm 142. Adjacent each end of the spindle 188 a hanger 192 (Figs. 3 and 6) is pivotally suspended on the spindle, said hangers being provided with bearings 194 at their lower extremities to receive gudgeons 198 and 200 in the upper feed roll. The upper extremity of each hanger 192 terminates in a nub 202. One face of each of the nubs 202 is recessed to receive the end of a compression spring 204, the other end of which is seated in a bore 206 formed in the arm, the open end of the bore being closed by a threaded stud 208 the rotation of which will

change the compression of the spring. The opposite face of the nub 202 butts against the inner end of a threaded stud 210 extending through an aperture in the frame which stud limits the proximity of the two rolls. The gudgeon 198 at the inner end of the roll is connected to a drive shaft 212 (Fig. 1) from the gear casing by an Oldham coupling 214 so as to permit the aforesaid adjustment of the feed roll 20.

As previously indicated, limp sheet material has a tendency to follow the surface of the feed rolls and while there is much less tendency for this to occur with respect to the upper feed roll, nevertheless it is advisable to provide a clearer bar 215 (Fig. 6). This bar 215 is yieldably secured to the hangers 192 at each end so as to contact the upcoming side of the upper feed roll 20 by means of compression springs 216 and bolts 218. To prevent the bar 215 from tipping, a small block 217 (Fig. 3) is arranged to engage the upper edge of the same and a screw 219 is provided whereby the heightwise position of the block may be adjusted. The clearer also serves to remove any lint or sticky surface dressing that may have been deposited on the surface as the sheet material passed between the rolls so as to insure a clean dry surface for the succeeding work.

The stripper for the applying roll 12 consists of a rectangular plate 220 (Fig. 1), the lower edge 222 being slotted at 224 to receive the shanks of a pair of bolts 226 threaded in the frame, the ends of the slots resting on the shanks of said bolts. The upper edge of the stripper plate is scalloped and beveled off to provide a series of pointed teeth 228 (Fig. 9), said edge being held at a predetermined distance from the surface of the applying roll below the top point thereof on the downgoing side by a pair of adjustable stop screws 230, one at each end of the plate, the ends of which rest on the frame of the machine at each end of the roll. The bottoms of the scallops are sloped downwardly toward the surface of the applying roll so as to cause cement deposited thereon by the material to run back onto the surface of the applying roll. The wetting action of the latex on the thin material causes a slight amount of stretching which results in the formation of waves or crinkles along the edge of very limp work when it is wet, for example, with cement. A common knife edge stripper cannot, therefore, be employed with any satisfaction since the work invariably catches on the edge of the stripper and crumples. In providing the novel stripper of the present invention with the aforesaid series of spaced teeth joined by reversed scallops, a substantially wave-like edge, corresponding to the edge of the work, is presented thereto for stripping the same. This reduction of the forward active stripping edge to a series of spaced teeth facilitates the stripping since the opportunity for the high points of the waves to slide over the relatively few spaced teeth of the stripper is much greater than it is for the entire edge of the work to slide over the unbroken edge of the usual stripper. As soon as the high points engage the teeth of the stripper, the entire edge of the work is lifted sufficiently to clear the edge of the scalloped portions of the stripper so that the low points of the edge of the work rest against the inclined surfaces of the scallops. These inclined surfaces co-operate with the teeth to complete the stripping. During the stripping operation a certain amount of the cement is rubbed from the surface of the work by the stripper. In this improved stripper, however, the actual rubbing surface is greatly reduced, as heretofore described; and since, as previously indicated, the scalloped portions of the stripper slope downwardly toward the cement applying roll, any cement that is scraped from the work runs by gravity down the scalloped portions and is deposited on the cement applying roll.

In accordance with the previously described tendency for the rubber particles in the latex to deposit in bearings the present invention includes baffles arranged between the ends of the pick-up and applying rolls and their bearings to divert from the bearings the latex which creeps over the ends of these rolls. While the principle involved is the same for the baffles used for each of the rolls, the construction is somewhat different and they will, therefore, be described separately. Referring to Figs. 8, 10, 11 and 12, each of the baffles for the applying roll 12 is a flat plate 232 having a straight lower edge 234 and an arcuate upper edge 236 joining the ends of the lower edge, one side of the arcuate edge, however, having a lip 238 extending therefrom. The plate is apertured at its center nub 240 and a curved flange 242 is secured to the inner face of the plate, said flange beginning at a point 244 substantially at a horizontal diameter through the center of the plate and spiraling outwardly therefrom below the aperture, the end of the flange terminating at 246 in the end of the lip 238. The flange is widest at its beginning 244 and narrows down progressively to the end 246, the edge of the flange being beveled at 248 so as to deposit the cement accumulated thereon on the peripheral surface of the pick-up roll. In order to gather the cement scraped from the end of the roll at the edge of the flange, the full width of the flange is partially blocked off by a projection 250, of substantially less thickness than the width of the flange at its narrowest point, formed on the plate 232 below the flange, said projection occupying the lower left quarter section of the plate below the flange, as viewed in Fig. 12. The baffle plates 232 are mounted at the ends of the roll 12, the lower edges 234 thereof resting on the top edges of the cement receptacle 16. The conical ends of the stud 38 at one end of the roll and of the gudgeon 26 at the other end of the roll extend freely through the aperture in the nub 240 without touching. The lips 238 and flanges 246 thereon extend over the ends of the pick-up roll 14, the lips and flanges being curved to conform to the curvature of the pick-up roll. The flanges 242 extend into conical recesses 252 formed in the ends of the roll 12, the beveled edges 248 thereof being parallel to and equidistant from the conical end surfaces of said roll at all points so as to almost touch the conical surface whereby the latex which creeps over the end of the roll will be removed therefrom.

The baffles for the pick-up roll 14 are somewhat different from those just described in that they are combined with the bearings 52. The pick-up roll 14 is mounted at its ends in the end plates 54 attached to the cut-away end walls of the cement receptacle 16 and these plates are provided with U-shaped notches 254 in their upper edges. The bearings, as indicated in Figs. 13 and 15, are U-shaped blocks 52 adapted to fit into the notches 254. Each block 52 has formed on its inner face a spiral flange 256, said flange beginning at a point 258 substantially on a horizontal diameter close to the center of the bearing and spiraling outward to terminate at a point 260 remote from the center and at the top surface of the bearing block, said flange progressively de-

creasing in width from its inner end to its outer end and being beveled along its edge at 266. At the mouth of the spiral a notch 262 is formed between the inner end of the spiral and the outer end thereof. When placed in position with the ends of the gudgeons 48 and 50 extending through the bearings, the spiral flanges 256 project into the conical recesses 264 formed in the ends of the roll 14, the beveled edges 266 of the same being parallel and equidistant from the surface of the recesses 264 at all points, for the purpose hereinafter described.

Each gudgeon is provided with a collar 268 which bears against the inner surface of the baffle and maintains the same in such a position with respect to the end of the roll that the distance at any point between the conical surface of the roll and the edge of the flange is approximately .0001 of an inch.

The construction of the aforesaid baffles is such that when the latex creeps over the ends of the rolls it will be brushed therefrom, as the end surfaces of the rolls move past the spiral flanges, onto the outer surface of the flanges and progressively move toward the periphery of the rolls, the action being a scraping or brushing rather than a rubbing action as would occur if the flanges were actually in rubbing contact with the ends of the rolls. In the case of the pick-up roll, the latex directed to the periphery of the same by the flange is deposited thereon at 260 and carried back into the cement bath. The notch 262 catches any latex accidentally spilled between the end of the roll and the bearing and prevents it from gaining access to the inner surface of the flange. In the case of the applying roll the cement is moved along the flange and out on the under surface of the lip 238 where it is deposited on the surface of the pick-up roll and carried down into the cement bath. The projection 250 extends close to the pick-up roll and causes the cement to gather at the edge of the flange so that it will be more readily picked up by the surface of the pick-up roll.

The cement rolls and feed rolls are, as previously indicated, driven by shafts extending from the gear box 22, the shafts having keyed to their inner ends a series of gears arranged to give the proper speed ratios to the rolls, the gears being driven in turn from a master gear G secured to the end of a drive shaft S journaled in a boss B formed on the front of the gear casing.

In setting the machine for operation, certain initial adjustments must be made. One of these is to aline the pick-up roll and the applying roll so that they are parallel. This is done by moving the receptacle 16, in the walls of which the pick-up roll is journaled, into the frame 10 and locking it in place by means of the bolts 86 (Fig. 6). The cam shaft 102 is then shifted by means of the threaded studs 116 (Figs. 3 and 4) until the receptacle 16 occupies a position in which the coadjacent surfaces of the rolls are parallel. The other important preliminary adjustment is to aline the feed rolls, which is accomplished by adjusting the screws 174 (Figs. 3 and 5) so as to move the bracket 126 and its arm 142 into a position such that the roll 20 will be parallel with the roll 18.

When these preliminary adjustments have been made, the remaining adjustments can be made by the operator as he receives his work in accordance with the thickness of the material. The adjustment of the feed rolls, for thickness of the work for instance, is taken care of by the longitudinal position of the stud 210 (Fig. 6) which may be varied to limit the proximity of the rolls 18 and 20. The angle at which the work is fed to the applying roll must varied in accordance with the thickness of the work and this is controlled by adjustment of the screw 180 (Fig. 5) to tilt the whole bracket 126, 142. It is also desirable to vary the thickness of the coat of cement to be applied to the work in accordance with the thickness of the material, since an excess of cement on thin material may discolor it. The subsequent particular use of the material may also make it desirable to vary the thickness of the applied coating. This variation will be effected by rotation of a cam shaft 102 (Fig. 3), the actual thickness of the film of cement on the applying roll being indicated on the scale provided for that purpose.

Pieces of work W may then be fed from the table 138 by the right hand and caught with the left hand as they pass the work stripper 220, 228.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation thereon, a pair of feed rolls, one of which is mounted for rotation on said frame adjacent the applying roll, means for tilting the axis of the upper roll in horizontal and vertical planes to bring the upper roll into parallel alinement with the lower roll, and means for moving the upper roll in an arc about the lower roll to change the angle of the plane passing through the axis of the feed rolls.

2. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation thereon, a pair of feed rolls, one of which is mounted for rotation on said frame adjacent the applying roll, a bracket mounted on the frame and arranged to support the upper feed roll in feeding relation with the lower feed roll, means to move the bracket to bring the upper feed roll into parallel alinement with the lower feed roll, and means to move the bracket so as to change the angle of the plane passing through the axis of the feed rolls.

3. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation on the frame, a pair of superposed feed rolls, one of which is mounted for rotation on said frame adjacent to the applying roll, a bracket, bearings in said bracket for the reception of the ends of the upper roll whereby the upper roll is supported adjacent to the lower roll, a pair of pivots for supporting said bracket on the frame for tilting movement about an axis parallel to the axis of the lower feed roll, and means associated with one pivot for tilting the bracket universally about the other so as to bring the upper roll into parallel alinement with the lower roll.

4. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation thereon, a pair of feed rolls, one of which is mounted for rotation on said frame adjacent the applying roll, a bracket for supporting the upper roll adjacent the lower roll, pivots arranged to support the bracket on the frame, means for adjusting at least one of said pivots to secure alinement of the feed rolls, and means to move said bracket about the line of centers of said pivots whereby the angle of the plane passing through the axis of said feed rolls may be varied.

5. A machine for applying cement to sheet ma-

terial comprising a frame, an applying roll mounted for rotation thereon, a pair of superposed feed rolls, the lower roll of which is mounted for rotation on said frame adjacent the applying roll, a bracket mounted on said frame opposite one end of the lower roll for tilting movement about an axis parallel to the axis of the lower feed roll, means for tilting said bracket universally about a point along said axis, an arm extending laterally from said bracket over the lower feed roll, and means on said arm constructed and arranged yieldably to hold the upper roll relative to the bracket and adjacent to the lower roll.

6. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation thereon, a pair of superposed feed rolls, the lower roll of which is mounted for rotation on said frame adjacent to the applying roll, a bracket mounted on said frame opposite the end of the lower roll for tilting movement about an axis parallel to the axis of the lower feed roll, means for tilting said bracket universally about a point along said axis, a spindle mounted on the bracket in a position to overlie and be parallel to the lower roll, and means arranged on the spindle yieldably to support the upper roll adjacent to the lower roll.

7. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation thereon, a pair of superposed feed rolls, the lower of which is mounted for rotation on said frame adjacent to the applying roll, a bracket mounted on said frame opposite one end of the lower roll for tilting movement about an axis parallel to the axis of the lower feed roll, means for tilting said bracket universally about a point along said axis, hangers pivotally suspended above said lower roll from the bracket, and bearings in the lower extremities of said hangers to rotatably receive the ends of the upper roll.

8. A machine for applying cement to sheet material comprising a frame, an applying roll mounted for rotation thereon, a pair of superposed feed rolls, the lower roll of which is mounted for rotation on said frame adjacent the applying roll, a bracket on said frame, hangers pivotally suspended from the bracket, the upper roll being journaled in the hangers, and means carried solely by said bracket and cooperating with the hangers to hold the upper roll a predetermined distance from the lower roll.

9. In a cementing machine for applying latex to sheet material, a frame, a rotatable applying roll journaled therein, a receptacle constructed and arranged to move relatively to the frame, a pick-up roll journaled in the receptacle, a catch plate on the receptacle, spring-retracted hook-ended bolts mounted in the frame, means to rotate the hooks into engagement with said catch plate to yieldably lock the receptacle to the frame, and means arranged to move said receptacle relatively to the frame against the opposition of the spring-retracted bolts.

10. In a cementing machine for applying latex to sheet material, a frame, a rotatable applying roll journaled therein, a receptacle constructed and arranged to move relatively to the frame, a pick-up roll journaled in the receptacle, a catch plate on the receptacle, spring-retracted hook-ended bolts mounted in the frame, means to rotate the hooks into engagement with said catch plate to yieldably lock the receptacle to the frame, cams arranged to contact the catch plate, and a cam shaft operable to rotate said cams so as to move the receptacle against the opposition of the spring-retracted bolts.

11. In a cementing machine, a frame, an applying roll journaled therein, the ends of said roll having conical recesses, baffles between the conical ends of the roll and the bearings, and spiral flanges on said baffles, the edges of the spiral flanges being equidistant from the conical ends of the roll at all points.

12. In a cementing machine of the kind in which cement is transferred from one to the other of coacting rolls, means at the end of one roll to divert cement from the end of said roll to the peripheral surface of the other roll, said means having an edge a portion of which lies close to the end surface of said one of the rolls and a portion of which conforms to and lies close to the peripheral surface of said other of the rolls at an end thereof, the rotation of said one roll being such that the cement picked up by said first-named portion of said means is delivered successively to said second-named portion and the peripheral surface of said other roll.

13. In a cementing machine of the kind in which coacting rolls are disposed at different levels and latex is transferred from one roll to the other, a baffle at each end of the upper roll, a spiral flange on each baffle extending toward the end of the roll, one end of the spiral flange terminating close to the peripheral surface of the lower feed roll, said spiral flange serving to conduct latex accidentally deposited on the ends of the upper roll to the peripheral surface of the lower roll, and means projecting inwardly of the baffle below said flange to confine the flow of latex to the under marginal edge of the flange.

14. In a cementing machine of the kind in which coacting rolls are disposed at different levels and latex is transferred from one roll to the other, a baffle at each end of the upper roll, means on each baffle extending toward the end of the upper roll to scrape latex accidentally deposited on the ends of the upper roll from said ends, a portion of said means lying close to the peripheral surface of the lower roll, and a projection extending inwardly of the baffle below said means, the edge of said projection being parallel to the edge of said means, said projection serving to confine the latex to that portion of said means closest to the end of the lower roll to aid said means in delivering the latex.

15. In a cementing machine of the kind in which coacting rolls are disposed at different levels and latex is transferred from one roll to the other, a baffle at each end of the upper roll, a lip on each of said baffles extending over the peripheral surface of the lower roll, and stripper means on the baffles to pick up latex from the ends of said upper roll, said means affording a conductor for progressively carrying latex from the end face of the upper roll to the end of the lip.

16. In a cementing machine of the kind in which an applying roll and a pick-up roll coact to cause the pick-up roll to furnish latex to the applying roll, said pick-up roll having conical recesses at its ends, gudgeons extending from the ends of said roll, bearings for receiving the gudgeons of said pick-up roll, and spiral baffle means on each of said bearings, said baffle means having a stripper edge equidistant from the surface of said conical recesses at every point, said spiral baffles serving to conduct the latex from the ends of the roll to the peripheral surface of the pick-up roll.

17. In a cementing machine of the kind in which an applying roll and a pick-up roll coact to cause the pick-up roll to furnish latex to the applying roll, said pick-up roll having conical recesses at its ends, gudgeons extending from the ends of said pick-up roll, bearings for receiving the gudgeons of the pick-up roll, a spiral baffle on each of said bearings, the edges of said baffles being equidistant from the conical surfaces of the pick-up roll at all points, and means between the inner end and the outer end of the spiral baffle to prevent latex from gaining access to the inner surface of the spiral baffle.

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