March 17, 1959 H. EHLERMANN 2,877,473

APPLICATOR APPARATUS

Filed May 23, 1955 4 Sheets-Sheet 1

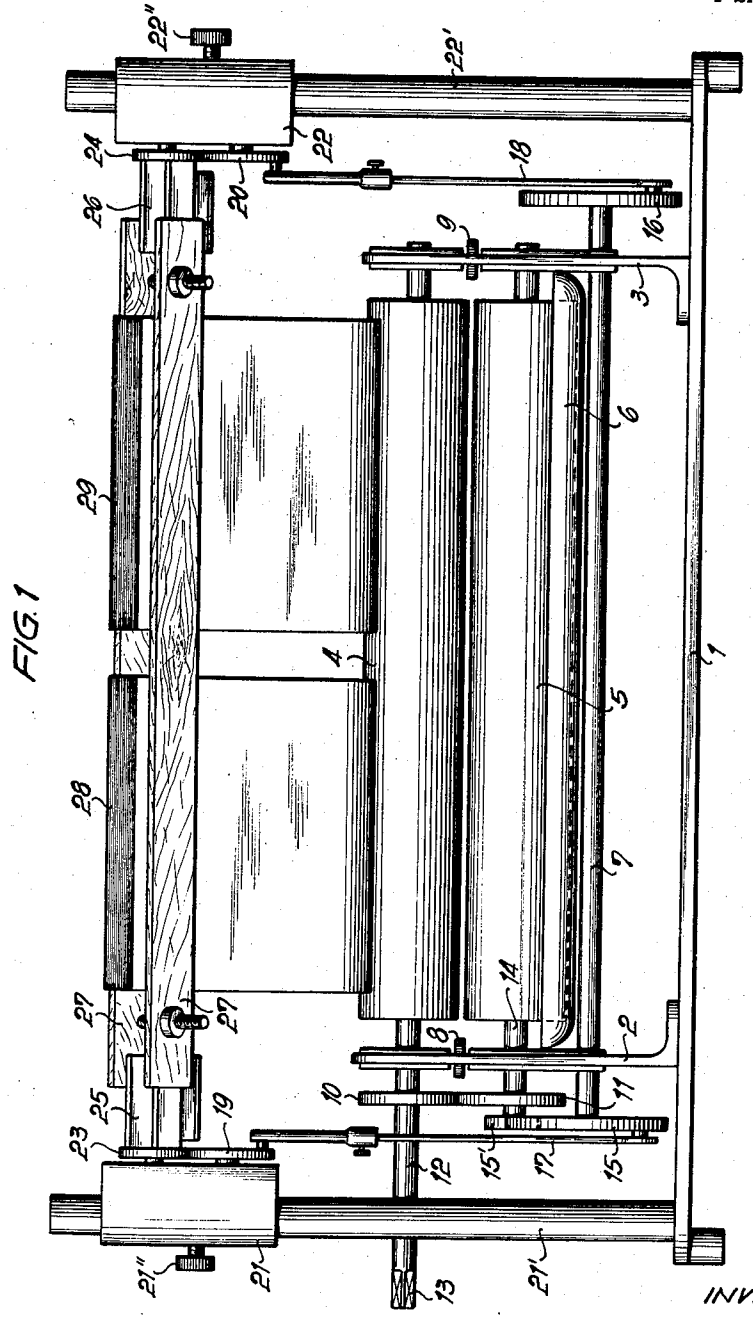


FIG. 1

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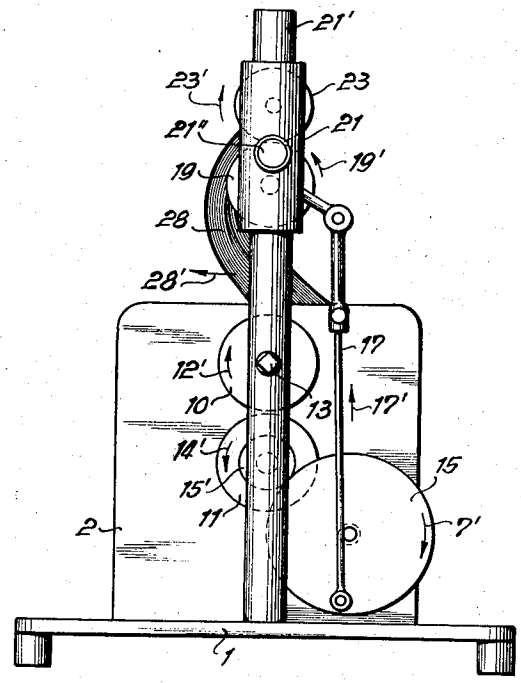
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FIG. 1a



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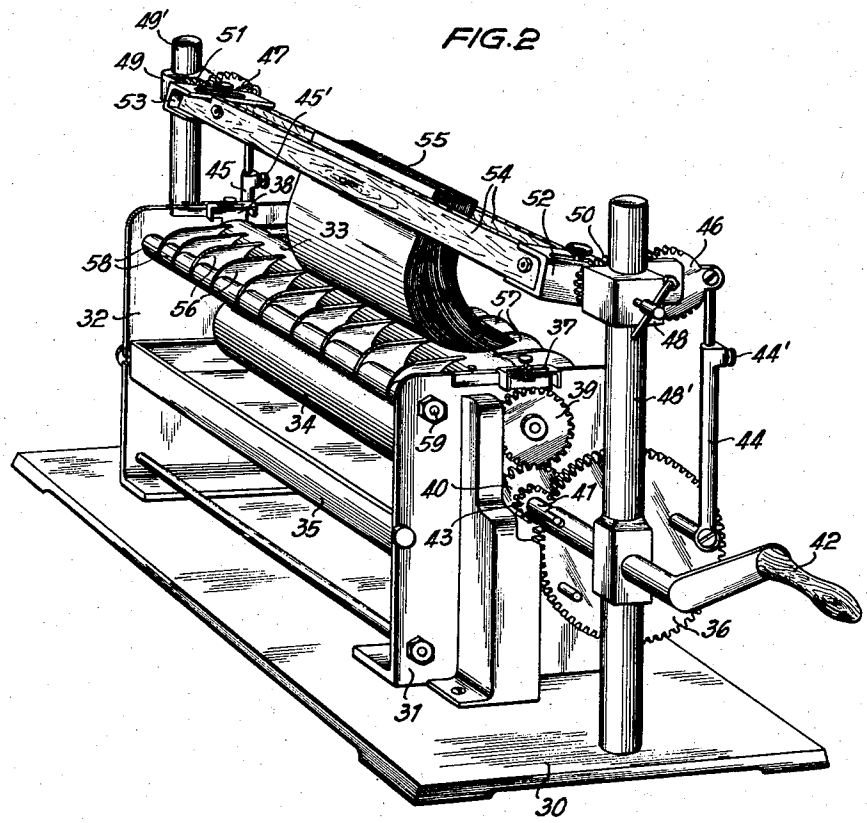
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4 Sheets-Sheet 3

FIG. 2



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2,877,473

APPLICATOR APPARATUS

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FIG. 3

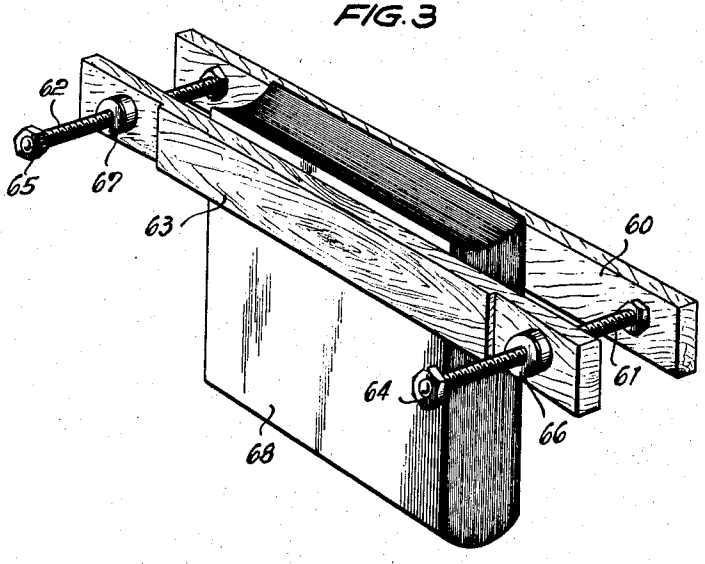
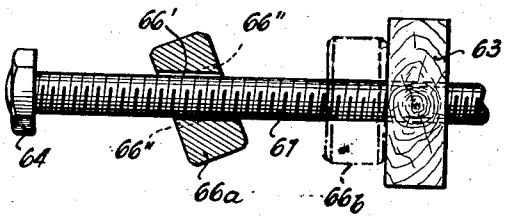


FIG. 4



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Patented Mar. 17, 1959

2,877,473

APPLICATOR APPARATUS

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Application May 23, 1955, Serial No. 510,395
In Germany October 1, 1948

Public Law 619, August 23, 1954
Patent expires October 1, 1968

12 Claims. (Cl. 11—1)

The present invention relates to applicator apparatus. More particularly, the present invention relates to applicator apparatus for use in a book binding process.

There exist book binding processes wherein the individual pages of a book to be bound are sewed to each other. Such processes require complicated and therefore expensive machinery, and it is therefore one of the objects of the present invention to provide an applicator apparatus by means of which a binding material for adhesive substance may be applied to the edges of sheets of paper to be bound to each other.

Another object of the present invention is to provide an applicator apparatus which is easy to operate so that the same may be serviced even by inexperienced personnel.

It is another object of the present invention to provide an applicator apparatus which is rugged, which is capable of giving long periods of trouble-free service, which comprises a minimum of parts and which may therefore be constructed very economically.

The objects of the present invention also include the provision of a clamping arrangement for use with an applicator apparatus, by means of which clamping arrangement sheets of paper to be bound together, or other work pieces, may readily be clamped.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a front elevational view of a preferred embodiment of the present invention;

Fig. 1*a* is a side elevational view of the embodiment illustrated in Fig. 1;

Fig. 2 is a perspective view of another preferred embodiment of the present invention;

Fig. 3 is a perspective view of a preferred embodiment of a clamping arrangement according to the present invention; and

Fig. 4 is a fragmentary side view, partly in section, of a detail of the clamping arrangement illustrated in Fig. 3.

Referring now to the drawing, and to Figs. 1 and 1*a* thereof in particular, there is illustrated applicator apparatus having a support base **1** upon which are mounted two opposite support brackets **2** and **3**. The support brackets rotatably support a substantially cylindrical applicator member or roller **4**, as well as a substantially cylindrical supply member or roller **5**. A container means or trough **6** is also supported by the brackets **2** and **3**, and is arranged below the roller **5** so as to be traversed by the outer peripheral portion thereof. The trough **6** is filled with a binding material such as adhesive, gum, or paste or with an impregnating or other substance which is to be applied to the work pieces to be treated. The spacing between the rollers **4** and **5** is such that the substance in

the trough **6** will be transferred therefrom to the outer peripheral portion of the roller **4** by way of the roller **5** during rotation of at least the latter roller but preferably during rotation of both rollers so that the entire surface of the roller **4** will be covered with the substance. If desired, suitable adjusting means **8**, **9** may be provided for varying the distance between the rollers **4** and **5** so that the quantity of substance transferred from the trough **6** to the peripheral portion of the roller **4** may be varied.

The roller **4** is mounted upon an axle or spindle **12** and may be rotated at **13**. The roller **5** is mounted upon an axle or spindle **14** which carries a motion transmitting member **11** which cooperates with a motion transmitting member **10** which is mounted upon the axle **12**. The members **10** and **11** are so connected to each other that the roller **5** will rotate when the axle **12** is turned. The members **10** and **11** may be a pair of meshing gears, so that the rollers **4** and **5** rotate in opposite directions.

Another spindle or axle **7** is turnably mounted on the brackets **2** and **3**. The spindle **7** carries at its opposite free ends the disc-shaped members **15** and **16**, and the member **15** is a motion transmitting member and is in axial alignment with a motion transmitting member **15'** which is mounted upon the axle **14**. The members **15** and **15'** are so connected to each other that the spindle **7** will rotate when the axle **14** is rotated, and the members **15** and **15'** may be a pair of meshing gears so that the roller **5** and the spindle **7** rotate in opposite directions.

A work piece carrier means, a preferred embodiment of which will be described below, is pivotally mounted upon support stands **21** and **22** which are secured on support posts **21'** and **22'**, respectively, which supports posts are firmly mounted on the support base **1**. The support stands **21** and **22** are slidable relative to their respective posts, and may be held in position by means of set screws **21''** and **22''**, respectively, in a manner well known in the art, so that the distance between the pivot axis of the work piece carrier means from the roller **4** may be varied.

The work piece carrier means includes two clamping members **27** which are adapted to clamp work pieces **28** and **29** therebetween. Opposite ends of the clamping members **27** are secured, respectively, at **25** and **26** to motion transmitting members **23** and **24**, each of which is turnably mounted upon its respective support stand, so that it will be readily understood that the work piece carrier means may pivot about a preferably horizontal axis which is substantially parallel to the spindle **12**. The support stands **21** and **22** further turnably support motion transmitting members **19** and **20**, respectively, which members cooperate with the members **23** and **24**, respectively. Motion transmitting rod means **17** and **18** interconnect, respectively, members **15** and **19** and members **16** and **20**. The rod means **17** and **18**, the lengths of which may be adjustable, are eccentrically mounted on the members **15** and **16** so that continuous rotation of the spindle **7** will cause oscillating movement of the members **19** and **20** and consequently oscillating pivotal movement of the members **23** and **24**, together with the clamping structure which supports the work pieces **28** and **29**.

The operation of the device is as follows:

When the spindle **12** is rotated at **13** in a clockwise direction as indicated by the arrow **12'** in Fig. 1*a*, the spindle **14** has imparted thereto rotational movement in a counterclockwise direction as indicated by the arrow **14'**. This in turn will cause the spindle **7** to rotate in a clockwise direction as indicated by the arrow **7'** and this will cause upward movement of the rod means **17** as indicated by the arrow **17'**. This in turn brings about counterclockwise rotation of the member **19**, indicated by the arrow **19'** which produces counterclockwise rotation of the member **23** in the direc-

tion of the arrow 23', together with counterclockwise rotation of the work piece carrier means and the work pieces 28, 29 as indicated at 28'.

It will be understood that the parts, in the position illustrated in Fig. 1*a*, will move as described above, and that during continuous rotation of the spindle 12 in the direction of the arrow 12' the rod means 17 will reciprocate, rather than move upwardly at a steady rate, and this, in turn, will bring about oscillation of the work tool carrier means about the pivot axis.

It is clear that during the entire operation any desired amount of adhesive substance or the like is transferred from the trough 6 to the roller 4.

As mentioned above, the support stands 21 and 22 are movable relative to the posts 21' and 22', so that the lower these stands are, the nearer will those parts of the work pieces to which the substance is to be applied be to the peripheral portion of the roller 4, and the greater will be the force of engagement between the work pieces and the roller 4. It will be understood, therefore, that the degree of contact between the work pieces and the roller 4 may be adjusted.

Referring now to Fig. 2, there is shown an applicator apparatus comprising a support base 30 upon which are mounted two support brackets 31 and 32. The support brackets support an applicator roller 33 and a supply roller 34, as well as a trough 35 and a spindle corresponding to the spindle 7 of the above-described embodiment. The distance between the rollers 33 and 34 is adjustable by means of an adjusting mechanism 37, 38, so that the quantity of the substance transferred from the trough to the roller 33 may be varied.

The rollers 33 and 34 are turnably connected to each other by means of a pair of meshing gears 39 and 40 and the roller 34 is mounted upon an axle 41 which has a protruding free end portion adapted to be connected to a hand-operated crank 42.

The free end portion of the axle 41 is provided with a gear 43 which meshes with a gear 36 which is mounted upon the above-mentioned spindle which corresponds to the spindle 7. The other free end of the spindle is provided with another member similar to the gear 36 (not shown), and motion transmitting rod means 44 and 45 are connected to these members eccentrically. The length of these rod means is preferably adjustable by means of a suitable telescoping sliding rod and set screw arrangement 44', 45'. The free ends of the rod means 45 and 46 are connected to gears 46 and 47, respectively, which gears mesh with gears 50 and 51, respectively. A work piece carrier means which includes two cooperating clamping members 54 is connected at 52 and 53 to the gears 50 and 51, respectively, and the entire arrangement is mounted upon support stands 48 and 49, which are slidably arranged on support posts 48', 49'. The position of the stands 48 and 49 is variable, and suitable set screw means may be provided for securing the support stands 48 and 49 in place.

The embodiment of Fig. 2 is provided with a shielding or grid arrangement by means of which the work piece is prevented from engaging all but the uppermost part of the peripheral portion of the applicator roller 33. The shielding arrangement includes a plurality of ribs 56, 57, about ten of which are arranged on either side of a vertical plane passing through the turning axis of the roller 33 and the pivot axis of the work piece carrier means. The upper edges of the ribs lie in a horizontal plane which is normal to this vertical plane and which is just below another horizontal plane which passes through the vertical plane along a line which is spaced from the turning axis of the roller 33 a distance equal to the radius of this roller 33.

The individual ribs 56, 57 are preferably parallel to each other and are spaced from each other by means of suitable spacers 58. According to the illustrated embodiment a fastening rod 59 is mounted on the support brackets 31 and 32 and passes alternately through the spacers and the ribs.

The ribs permit free rotation of the roller 33 and thus do not interfere with the application of the substance onto the work piece.

The free ends of the ribs, i. e., those ends of the ribs which are spaced from the surface of the roller 33, are curved downwardly, as may readily be seen in the drawing. By virtue of this arrangement, the sheets to be bound together are spread evenly as they pass over the downwardly curved portions of the ribs during oscillation of the work piece carrier means, so that when the edges of the sheets to be bound together pass over the exposed portion of the surface of the roller 33 the substance will be applied evenly thereto.

Referring now to Figs. 3 and 4, the same illustrate a preferred embodiment of a work piece carrier means which may advantageously be used in applicator apparatus such as are shown in Figs. 1, 1*a* and 2. Such work tool carrier means may comprise a clamping arrangement which includes a first clamping member 60 which is provided with at least one, and preferably two threaded bolts 61 and 62. A second clamping member which is formed with openings having inside diameters greater than the outside diameters of the bolts is placed as shown in the drawing, so that a work piece, such as is a book to be bound, is clamped between the clamping members 60 and 63. If desired, the openings may be lined with suitable sleeves. The free end portions of the clamping member 63 are formed with slightly tapered inwardly directed surfaces.

Two nuts 66 and 67 are placed on the bolts 61 and 62, respectively, and end screws 64 and 65 prevent the removal of the nuts 66 and 67.

As is best shown in Fig. 4, each of the nuts is formed with a compound opening means therethrough. This compound opening means is constituted by a cylindrical passage 66' which has an inside diameter greater than the outside diameter of the bolt 61 and a cylindrical bore portion 66'' which has internal threads corresponding to the threads of the bolt member. The axes of the passage and bore portion intersect one another, and the arrangement is such that a part of each end of the compound opening means is threaded throughout a portion of its circumference. It will be understood, from the above, that the nut is freely movable along the bolt when the passage 66' is in alignment with the bolt, i. e., when the nut is in the position shown at 66*a* in Fig. 4, but that the nut and bolt are in threaded engagement with each other when the bore portion 66'' is in alignment with the bolt, i. e., when the nut is in the position shown in 66*b*.

According to the above arrangement a work piece may readily be placed between the two clamping members 60 and 63, which members are then brought toward each other. If the clamping members are held in an attitude wherein the bolts 61 and 62 extend upwardly, the nuts 66 and 67 will, under the influence of their own weight, fall toward the slanting surfaces of the end portions of the member 63. The work piece is firmly pressed or clamped between the members 60 and 63, so that when the manual or other force which clamps the work piece is released, the inherent resiliency thereof, or the inherent resiliency of the member 63, will tend to move the nuts 66 and 67 leftwardly, as viewed in the drawings. However, in doing so, the nuts 66 and 67 will be forced into a position corresponding to the position 66*b*, shown in Fig. 4, i. e., into a position in which the threaded bore portion 66'' is in alignment with the bolt and in which the nut and bolt are in threaded engagement with each other. In this way, a self-locking clamping arrangement is obtained, which arrangement may advantageously be incorporated in the applicator apparatus described above.

It will be understood that each of the elements described above, or two or more together, may also find a

useful application in other types of applicator apparatus differing from the types described above.

While the invention has been illustrated and described as embodied in an applicator apparatus for book binding purposes, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

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

1. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; and moving means for simultaneously rotating said applicator member about said turning axis and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said peripheral portion of said applicator member.

2. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; and moving means for simultaneously rotating said applicator member about said turning axis and oscillating said work piece carrier means about said pivot axis between two angular end positions on opposite sides of a plane passing through both of said axes so that different portions of part of a work piece carried by said work piece carrier means are successively in contact with said peripheral portion of said applicator member.

3. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a first turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said first turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece, said substance supply means including a substantially cylindrical supply member having an outer peripheral portion mounted on said support for rotational movement relative thereto about a second turning axis substantially parallel to said first turning axis and spaced therefrom a distance approximately equal to the sum of the radii of said applicator member and said supply member, and container means adapted to receive the substance and further adapted to be traversed by said peripheral portion of said supply member while the latter rotates about said second turning axis so that a substance in said container means will be transferred from said container means by way of said peripheral portion of said supply member to said peripheral portion of said applicator member during rotation of said supply member about said second turning axis; and moving means for simultaneously rotating said applicator member about said first turning axis, rotating said supply member of said supply means about said second turning axis, and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said peripheral portion of said applicator member.

4. An applicator apparatus as defined in claim 3, and adjusting means for varying the distance between said first and second turning axes and consequently the distance between said peripheral portions of said applicator member and said supply member so that the quantity of substance transferred from said container means to said peripheral portion of said applicator member may be varied.

5. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a first turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said first turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece, said substance supply means including a substantially cylindrical supply member having an outer peripheral portion mounted on said support for rotational movement relative thereto about a second turning axis substantially parallel to said first turning axis and spaced therefrom a distance approximately equal to the sum of the radii of said applicator member and said supply member, and container means adapted to receive the substance and further adapted to be traversed by said peripheral portion of said supply member while the latter rotates about said second turning axis so that a substance in said container means will be transferred from said container means by way of said peripheral portion of said supply member to said peripheral portion of said applicator member during rotation of said supply member about said second turning axis; and moving means for simultaneously rotating said applicator member about said first turning axis, rotating said supply member of said supply means about said second turning axis, and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said peripheral portion of said applicator member, said moving means including a spin-

dle member mounted on said support for rotation relative thereto about a third turning axis substantially parallel to said first and second turning axes, said spindle member being operatively connected to one of said other members in such a manner that said spindle member rotates about said third turning axis during rotation of said one of said other members about its axis, and motion transmitting means connected to said work piece carrier means and eccentrically mounted on said spindle member for imparting oscillating movement to said work piece carrier means during rotation of said spindle member.

6. An applicator apparatus as defined in claim 5 wherein said first turning axis is below said pivot axis, said second turning axis is below said first turning axis, said third turning axis is below and laterally displaced relative to said second turning axis, and said spindle member is operatively connected to said supply member.

7. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; adjusting means for varying the distance between said axes so that the degree of contact between said portions of said part of a work piece and said peripheral portion of said applicator member may be varied; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; and moving means for simultaneously rotating said applicator member about said turning axis, and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said peripheral portion of said applicator member.

8. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; shielding means having a shielding surface in a plane substantially normal to a plane passing through both of said axes, said shielding means being mounted on said support in the region of said applicator member, with said shielding surface intermediate said axes and in the region of said peripheral portion of said applicator member, in such a manner so as to leave exposed only that portion of said peripheral portion of said applicator member which is nearest to said pivot axis so that a work piece carried by said work piece carrier means may engage only the last-mentioned portion of said peripheral portion of said applicator member; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; and moving means for simultaneously rotating said applicator member about said turning axis and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said last-mentioned portion of said peripheral portion of said applicator member.

9. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis above and substantially parallel to said turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; shielding means having a shielding surface in a horizontal plane substantially normal to a vertical plane passing through both of said axes, said shielding means being mounted on said support in the region of said applicator member, with said shielding surface intermediate said axes and in the region of said peripheral portion of sad applicator member, in such a manner so as to leave exposed only that portion of said peripheral portion of said applicator member which is nearest to said pivot axis so that a work piece carried by said work piece carrier means may engage only the last-mentioned portion of said peripheral portion of said applicator member, said shielding surface extending laterally on opposite sides of said vertical plane and curving downwardly at free edges spaced therefrom; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; and moving means for simultaneously rotating said applicator member about said turning axis and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said last-mentioned portion of said peripheral portion of said applicator member.

10. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; shielding means having a shielding surface in a plane substantially normal to a plane passing through both of said axes, said shielding means being mounted on said support in the region of said applicator member, with said shielding surface intermediate said axes and in the region of said peripheral portion of said applicator member, in such a manner so as to leave exposed only that portion of said peripheral portion of said applicator member which is nearest to said pivot axis so that a work piece carried by said work piece carrier means may engage only the last-mentioned portion of said peripheral portion of said applicator member, said shielding means including a plurality of spaced parallel ribs, said ribs being normal to said plane passing through said axes; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; and moving means for simultaneously rotating said applicator member about said turning axis and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are

successively in contact with said last-mentioned portion of said peripheral portion of said applicator member.

11. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a first turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis substantially parallel to said first turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece; moving means for simultaneously rotating said applicator member about said first turning axis and oscillating said work piece carrier means about said pivot axis between different angular positions wherein different portions of part of a work piece carried thereby are successively in contact with said peripheral portion of said applicator member; and at least one smoothing roller mounted on said support for rotational movement relative thereto about a second turning axis substantially parallel to said first turning axis and spaced therefrom a distance substantially equal to the sum of the radii of said applicator member and said smoothing roller so as to smoothen the substance on said peripheral portion of said applicator member after the substance has been applied thereto by said substance supply means but before said portions of said part of the work piece have contacted said peripheral portion of said applicator member.

12. An applicator apparatus comprising, in combination, a support; a substantially cylindrical applicator member having an outer peripheral portion and mounted on said support for rotational movement relative thereto about a first turning axis; work piece carrier means mounted on said support for pivotal movement relative thereto about a pivot axis above and substantially parallel to said first turning axis, said work piece carrier means being adapted to carry a work piece in such a manner that portions of a part thereof are successively in contact with said peripheral portion of said applicator member while said work piece carrier means is moving between different angular positions relative to said support; shielding means having a shielding surface in a horizontal plane substantially normal to a vertical plane passing through said first turning axis and said pivot axis, said shielding means being mounted on said support in the region of said applicator member, with said shielding surface intermediate said first turning axis and said pivot axis and in the region of said peripheral portion of said applicator member, in such a manner so as to leave exposed only that portion of said peripheral portion of said applicator member which is nearest to said pivot axis so that a work piece carried by said work piece carrier means may engage only the last-mentioned portion of said peripheral portion of said applicator member, said shielding surface extending laterally on opposite sides of said vertical plane and curving downwardly at free edges spaced therefrom, said shielding means including a plurality of spaced parallel ribs, said ribs being normal to said vertical plane; substance supply means for supplying to said peripheral portion of said applicator member a substance to be applied to said part of the work piece, said substance supply means including a substantially cylindrical supply member having an outer peripheral portion mounted on said support for rotational movement relative thereto about a second turning axis below and substantially parallel to said first turning axis and spaced therefrom a distance approximately equal to the sum of the radii of said applicator member and said supply member, and container means adapted to receive the substance and mounted on said support below said supply member so as to be traversed by said peripheral portion thereof while the latter rotates about said second turning axis so that a substance in said container means will be transferred therefrom to said peripheral portion of said applicator member by way of said peripheral portion of said supply member during rotation thereof about said second turning axis; moving means for simultaneously rotating said applicator member about said first turning axis, rotating said supply member of said supply means about said second turning axis, and oscillating said work piece carrier means about said pivot axis between two angular end positions on opposite sides of said vertical plane so that different portions of part of a work piece carried by said work piece carrier means are successively in contact with said last-mentioned portion of said peripheral portion of said applicator member, said moving means including a spindle member mounted on said support for rotation relative thereto about a third turning axis below, laterally displaced relative to and substantially parallel to said second turning axis, said spindle member being operatively connected to said supply member in such a manner that said spindle member rotates about said third turning axis during rotation of said supply member about said second axis, and motion transmitting means connected to said work piece carrier means and eccentrically mounted on said spindle member for imparting oscillating movement to said work piece carrier means during rotation of said spindle member; first adjusting means for varying the distance between said first and second turning axes and consequently the distance between said peripheral portions of said applicator member and said supply member so that the quantity of substance transferred from said container means to said peripheral portion of said applicator member may be varied; and second adjusting means for varying the distance between said first turning axis and said pivot axis so that the degree of contact between said portions of said part of a work piece and said last-mentioned portion of said peripheral portion of said applicator member may be varied.

References Cited in the file of this patent

UNITED STATES PATENTS

1,741,269	Alger	Dec. 31, 1929
1,747,581	Frazier	Feb. 18, 1930
1,849,302	Kinney	Mar. 15, 1932
2,174,041	Pratt	Sept. 26, 1939

FOREIGN PATENTS

681,858	Great Britain	Oct. 29, 1952