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J. W. COSGROVE ET AL

1,463,801

COATING APPARATUS

Filed Nov. 17, 1919

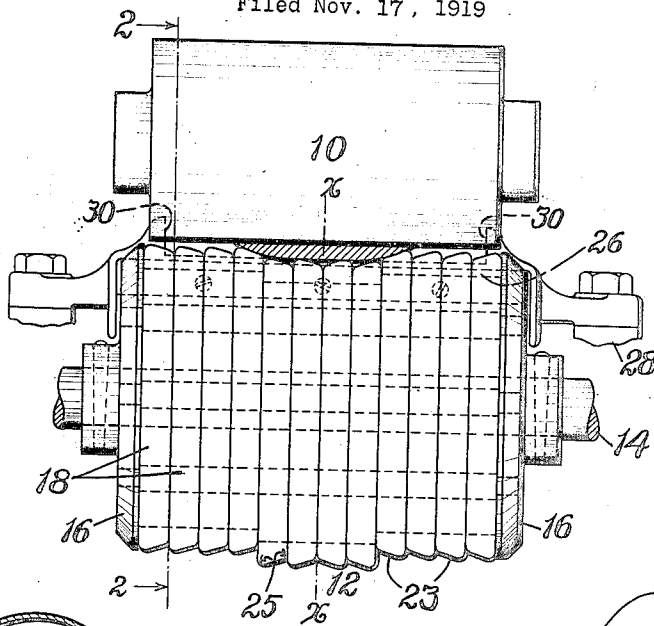


Fig. 1.

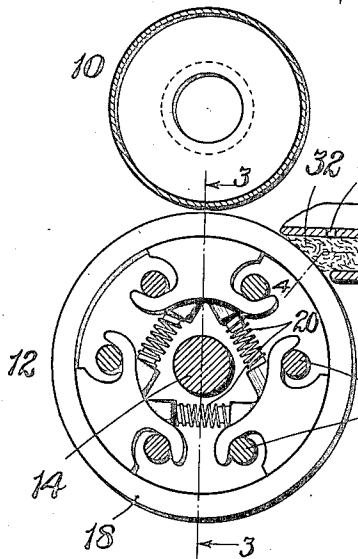


Fig. 2.

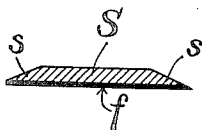


Fig. 6.

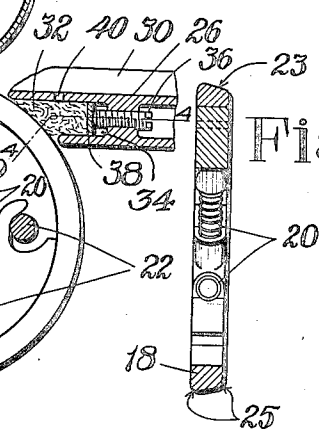


Fig. 4.

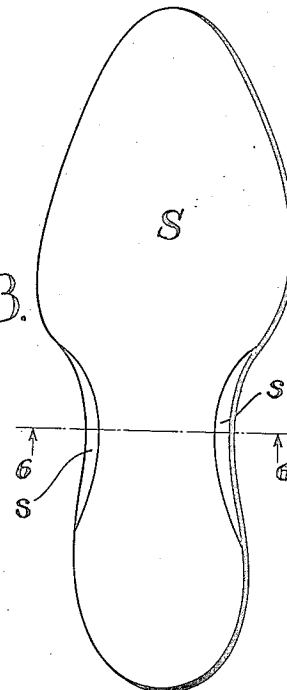
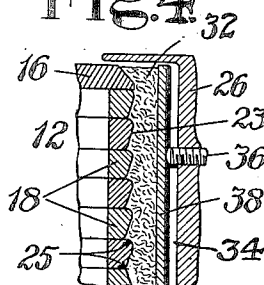


Fig. 5.

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UNITED STATES PATENT OFFICE.

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COATING APPARATUS.

Application filed November 17, 1919. Serial No. 332,510.

To all whom it may concern:

Be it known that we, JOHN W. COSGROVE and GIDEON J. JULIAN, citizens of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, and Beverly, in the county of Essex and State of Massachusetts, respectively, have invented certain Improvements in Coating Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

Our invention relates to coating apparatus, being particularly designed for operation upon material having inclined edges. An example of such work is found in the sole portions of shoes which are reduced by skiving at the opposite edges. When work of this character is cemented or otherwise coated over its plane surface by such a machine as that illustrated in Patent No. 1,145,996, Julian, July 13, 1915, it is found that frequently the presentation of the work to the yielding sections of the supporting or pressure roll will leave the thin edges unsupported, so that they are not properly brought into contact with the applying roll. This would occur, as may readily be understood by reference to Fig. 3 of the patent just noted, if the inner edge of the cylindrical periphery of a supporting roll section chanced to act against the full thickness of the sole close to the skived edge, leaving said edge extending over this section but not coming into the field of action of the next section. A space would be left between the first-mentioned section of the supporting roll and the applying roll through which the reduced edge of the sole would tend to sag away from the applying roll and fail to receive the full coating. Objects of the invention are to furnish an apparatus which will uniformly coat material of varying thickness, and to generally improve the construction of such apparatus.

To effect this uniform coating of work having inclined edges, a feature of the invention consists in providing a pressure member and a co-operating applying member, between which members the work is advanced, one of them having a surface in-

clined transversely to the direction of travel of said work and including relatively movable sections. Preferably, this surface generally corresponds in inclination to that of the edges of the work to be operated on, being formed across the periphery of each of the series of sections of a pressure or supporting roll. When the work, as is usually the case with shoe soles, has oppositely placed and oppositely reduced edges, there are furnished independent supporting portions inclined similarly to such opposite edges of the work, there being here shown a work-supporting roll with sections arranged in two series at opposite sides of a central plane, with the peripheries of the sections of the respective series lying at opposite angles. To insure the contact of each edge of the work with a peripheral pressure portion designed to co-operate with it, the effective length of each pressure portion, or series of roll sections, is preferably less than the width of the work. Consequently, opposite edges cannot be brought into contact with similarly arranged pressure portions.

In connection with work having oppositely inclined edges, as another feature of the invention, we combine with a member co-operating therewith and having correspondingly inclined, independently movable surfaces, means to position the work with its respective edges under the influence of the correct contact surfaces. This means, more specifically expressed, may consist of a gage corresponding to each arrangement of the contact surfaces. That is, for each of the differently arranged contact portions or section series, there may be a gage at its outer extremity.

Other features will hereinafter be developed, reference being had to the accompanying drawing, in which

Fig. 1 shows in front elevation the more important elements of an apparatus organized in accordance with our invention;

Fig. 2 is a transverse section on the line 2—2 of Fig. 1;

Fig. 3 is a sectional detail through the supporting roll on the line 3—3 of Fig. 2;

Fig. 4 is a partial horizontal section on the line 4—4 of Fig. 2; and

Figs. 5 and 6 show, respectively, in plan

and transverse section on the line 6—6 of Fig. 5, a sole upon which this machine is adapted to operate.

There appear in the drawing only the more essential portions of our improved apparatus, since the general construction of a machine suitable for the purpose is disclosed in the patent cited above. Receiving the cement or other coating material from a convenient source is an applying roll 10 rotatable about a horizontal axis. Co-operating with the applying roll, preferably throughout its full length, is a work-supporting roll 12 carried by a shaft 14, the two rolls being so arranged that the work is fed between them by their rotation, and is pressed toward the applying roll to receive the coating therefrom. As illustrated, the roll 12 includes separated heads 16, 16, between which are mounted independent yieldable sections in the form of rings 18 surrounding the shaft and pressed by springs 20 against retaining rods 22 connecting the heads. The peripheral surfaces of the roll sections which contact with the work are inclined at 23 in the direction of the axis of the roll or transverse to the direction of advance of the work as it is fed between the rolls. Each inclined surface is shown as gradually merging into the perpendicular side faces of the sections by laterally curved circumferential edges 25. Preferably, the roll sections are in two series situated at opposite sides of a central plane perpendicular to the axis of the roll, and indicated in Fig. 1 of the drawing by the line $x-x$. The peripheral inclination of the two series is opposite, diverging outwardly from the central plane and from the axis of the roll, and therefore converging toward the adjacent surface of the applying roll. The angles of inclination of the peripheries of both series is generally similar to those which the reduced opposite edges of the work make with the adjacent plane surface of said work. As an instance of material upon which this machine is adapted to operate, there is illustrated in Figs. 5 and 6 a sole S having at its shank opposite skived portions s, s , the angles of which to the inner face f of the sole are approximated by the angles between the peripheries of the series of roll sections and the axis. The effect of such an organization is shown in Fig. 1. Because the width of each roll section is preferably not greater than the width of the reduced portion, there is, when the skived portion of the work is passing between the rolls, always a substantial width of the inclined contact surface of either one or two of the sections bearing against each of the reduced edges, and by their similarity of angle thereto holding the opposite face f of the work in true horizontal alinement and over its entire width in close engagement

with the applying roll, so it is completely coated.

The work is fed to the rolls over a table 26 fixed upon the frame 28 of the apparatus. Rising from the table, in alinement with points within the ends of the work-supporting roll, are edge gages 30, 30. The space from the central plane $x-x$ to each of these gages transverse to the direction of feed, and therefore the effective length of the corresponding series of roll sections, should be less than the minimum width of the work at the reduced portion. As a result of this, however the work may be presented to the rolls as it is advanced from the table, its opposite reduced edges will always be in co-operation with the correspondingly inclined roll section contact surfaces, so that the work is presented to the applying roll at both sides to the best advantage, it being otherwise a matter of indifference what relation the work in its introduction shall bear to the series.

To remove cement which may drip from the applying roll upon the supporting roll, together with accumulated waste particles from the work, a cleaning member 32 is provided, this, as shown, consisting of a strip of yieldable absorbent material, such as felt, mounted in a groove 34 formed in the edge of the table parallel to the axis of the roll 12. Threaded horizontally through the table at the rear of the cleaning member are screws 36 contacting with a backing strip 38. By varying the positions of these screws, the cleaning member may be forced into effective engagement with the supporting roll. The edge of the member 32 which contacts with the roll is best formed to at least approximately correspond to the normal positions of the inclined peripheries of the sections. This, with the yieldability of the material, permits close contact between the cleaning member and the sections throughout the entire length of the roll, when the sections are not displaced by their engagement with the work. To avoid adhesion of cement to the cleaning member, we prefer to supply this with some cleansing or cement-repelling liquid, as oil. To facilitate the application of a fresh supply of the liquid to the member as it may be taken up from the absorbent material by the cement scraped from the roll, an opening 40 is formed in the table above the groove 34, through which the oil may be introduced.

In using the apparatus, the soles S or other work pieces are laid successively upon the table and advanced by the operator between the rolls, the edge gages so limiting the effective length of the series of sections that the skived or otherwise reduced portions come into contact with oppositely inclined edges of the roll sections. These, yielding, maintain in full contact with the applying

roll, not only the main surfaces of each sole against which the upper rounded edges of the roll sections bear, but also, for all positions of the work, the reduced edges to which the peripheries of the sections correspond in inclination, there being exerted radially of the supporting roll a uniform and substantially continuous pressure throughout the varying thickness of these portions. Accumulations upon the supporting roll are scraped off by the under edge of the yieldable cleaning member, the liquid with which it is saturated preventing the doffed matter from passing under said member, and, by the application of a film of this liquid to the contact surfaces of the roll sections, avoiding adhesion of the removed material thereto. The retained matter may occasionally be cleared from the scraper by the operator.

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

1. In a coating apparatus, a member having an applying surface over which the work is advanced, and a co-operating pressure member having a surface for contact with the work, one of said surfaces being inclined transversely to the direction of travel of the work and including relatively movable sections.

2. In an apparatus for coating material having an inclined edge, an applying member, and a co-operating pressure member, one of said members consisting of relatively movable sections each provided with a contact surface generally corresponding in inclination to the edge of the material.

3. In an apparatus for coating material having opposite converging edges, an applying member, and a co-operating pressure member, the pressure member having relatively movable surfaces for contact with the work, which surfaces form with the applying member angles similar to those between the edges of the material.

4. In an apparatus for coating material having an inclined edge, an applying member, and a work-supporting member of substantially greater extent than the work to be coated and comprising a plurality of yieldable surfaces each corresponding in inclination to the edge of the material, said plural surfaces being arranged to present a supporting surface conforming to the work edge however the work is positioned lengthwise of said member.

5. In a coating apparatus, a member having an applying surface, and a work-supporting roll consisting of relatively movable sections each having its periphery inclined to the applying surface in the direction of the axis of the roll.

6. In a coating apparatus, a member having an applying surface, and a work-sup-

porting member formed in relatively movable sections, each section having a surface co-operating with the applying member and being inclined thereto transversely of said sections.

7. In a coating apparatus, a member having an applying surface, and a work-supporting roll consisting of a series of yieldable sections with their peripheries co-operating with the applying member and being inclined thereto in the direction of the axis of the roll.

8. In a coating apparatus, a member having an applying surface, and a work-supporting member formed in independently yieldable sections, each section having a surface co-operating with the applying member and being inclined thereto transversely of said sections.

9. In a coating apparatus, a member having an applying surface, and a work-support having portions independent of each other inclined oppositely.

10. In an apparatus for coating material having oppositely inclined edges, an applying member, and a co-operating pressure member, one of said members having relatively movable contact surfaces generally corresponding in inclination to the edges of the material.

11. In a coating apparatus, a member having an applying surface, and a work-supporting roll having peripheral portions oppositely inclined from a plane intersecting the roll near its center, there being a plurality of the portions at each side of said plane.

12. In a coating apparatus, a member having an applying surface, and a sectional work-supporting roll, the sections being arranged in two series with the peripheries of the sections of the series oppositely inclined.

13. In a coating apparatus, a member having an applying surface, and a sectional work-supporting roll, the sections being arranged in two series with the peripheries of the sections of the series oppositely inclined, the effective length of each series being less than the width of the work.

14. In an apparatus for coating material having oppositely inclined edges, an applying member, a co-operating pressure member, one of said members having independently movable contact surfaces generally corresponding in inclination to the edges of the material, and means arranged to position the work with the opposite edges under the influence of the correspondingly inclined contact surfaces.

15. In a coating apparatus, a member having an applying surface, a work-supporting roll having peripheral portions oppositely inclined from a plane intersecting the roll near its center, there being a plurality of the portions at each side of said plane, and

means arranged to keep opposite edges of the work at opposite sides of said central plane.

16. In an apparatus for coating material having oppositely inclined edges, an applying member, a co-operating pressure member, one of said members having differently arranged relatively movable contact surfaces, and a work-gage corresponding to each arrangement of the surfaces.

17. In a coating apparatus, a member having an applying surface, a work-supporting roll having yieldable portions with peripheries oppositely inclined from a plane intersecting the roll near its center, and work-gages situated at the opposite sides of said center.

18. In a coating apparatus, a member having an applying surface, a sectional work-supporting roll, the sections being arranged in two series with the peripheries of the sections of the series oppositely inclined, the effective length of each series being less than the width of the work, and means for insuring the co-operation of the work with both series.

19. In a coating apparatus, a member having an applying surface, a sectional work-supporting roll, the sections being arranged in two series with the peripheries of the sections of the series oppositely inclined, the effective length of each series being less than the width of the work, and a work-gage situated near the extremity of each series.

20. In a coating apparatus, an applying member, a co-operating rotatable work-supporting roll having sections with inclined

peripheries, and a cleaning member co-operating with the peripheries of the sections and conforming to their inclination.

21. In a coating apparatus, an applying member, a co-operating rotatable work-supporting roll having sections with inclined peripheries, and a cleaning member of yieldable material co-operating with the peripheries of the sections and conforming to their inclination.

22. In a coating apparatus, an applying member, a co-operating rotatable work-supporting roll having sections with inclined peripheries, a guide member adjacent to the roll, a yieldable cleaning member carried by the guide member, and means arranged to force the cleaning member against the peripheries of the sections.

23. In a coating apparatus, an applying member, a co-operating rotatable pressure roll, a support adjacent to the roll, and an absorbent cleaning member carried by the support, the support being provided with means arranged to facilitate the application of a liquid to the cleaning member.

24. In a coating apparatus, an applying member, a co-operating rotatable pressure roll, a guide member situated adjacent to the roll and being provided with an opening, and an absorbent cleaning member movable in the guide member beneath the opening.

In testimony whereof we have signed our names to this specification.

JOHN W. COSGROVE.
GIDEON J. JULIAN.