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W. E. BENEDICT ET AL
WIPER FOR CALENDER ROLLS

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2 Sheets-Sheet 1

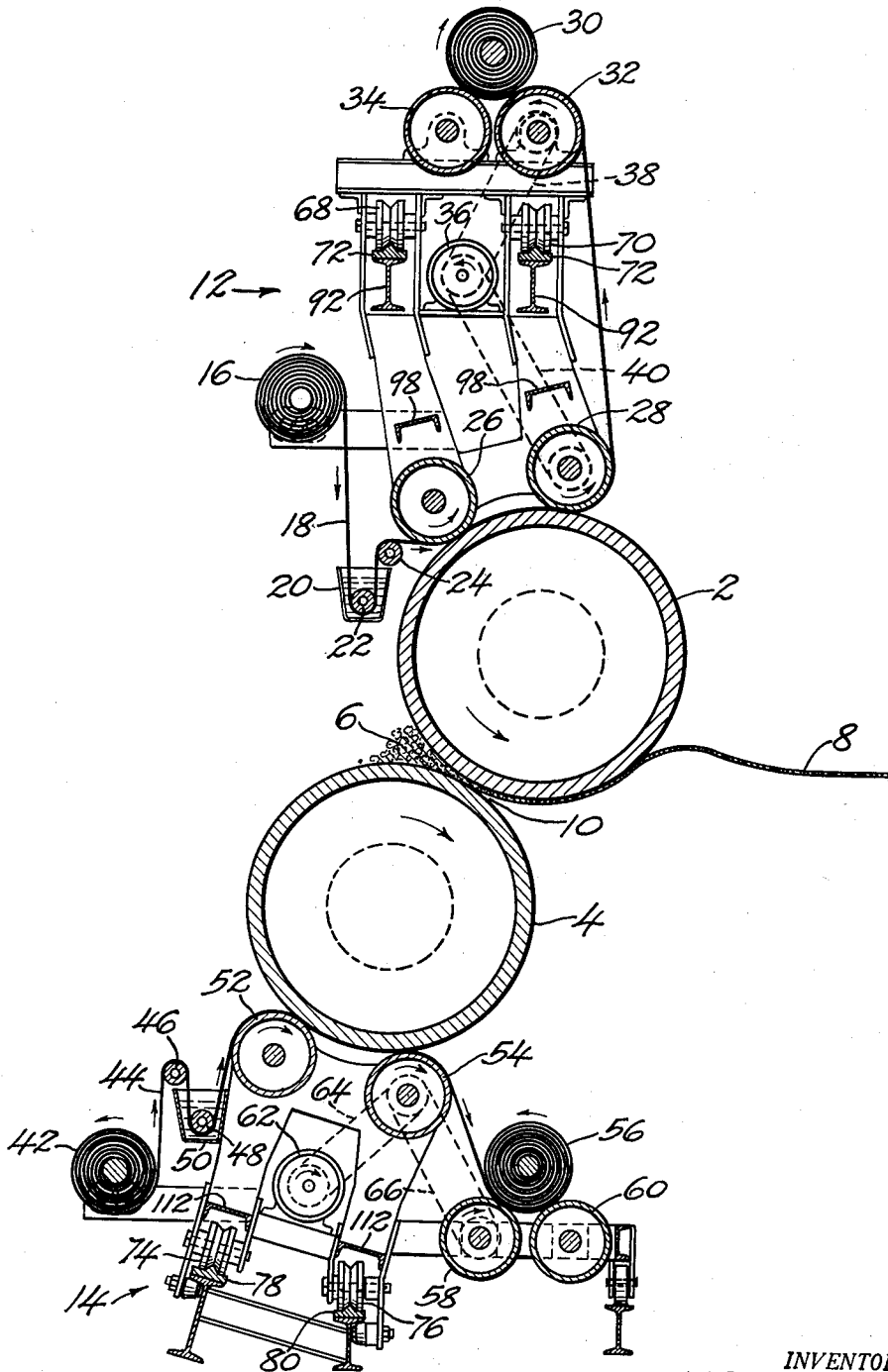


Fig. 1.

BY

INVENTOR,
WALTER E. BENEDICT.
JOSEPH F. DOBRY.

Albert Sperry.
ATTORNEY

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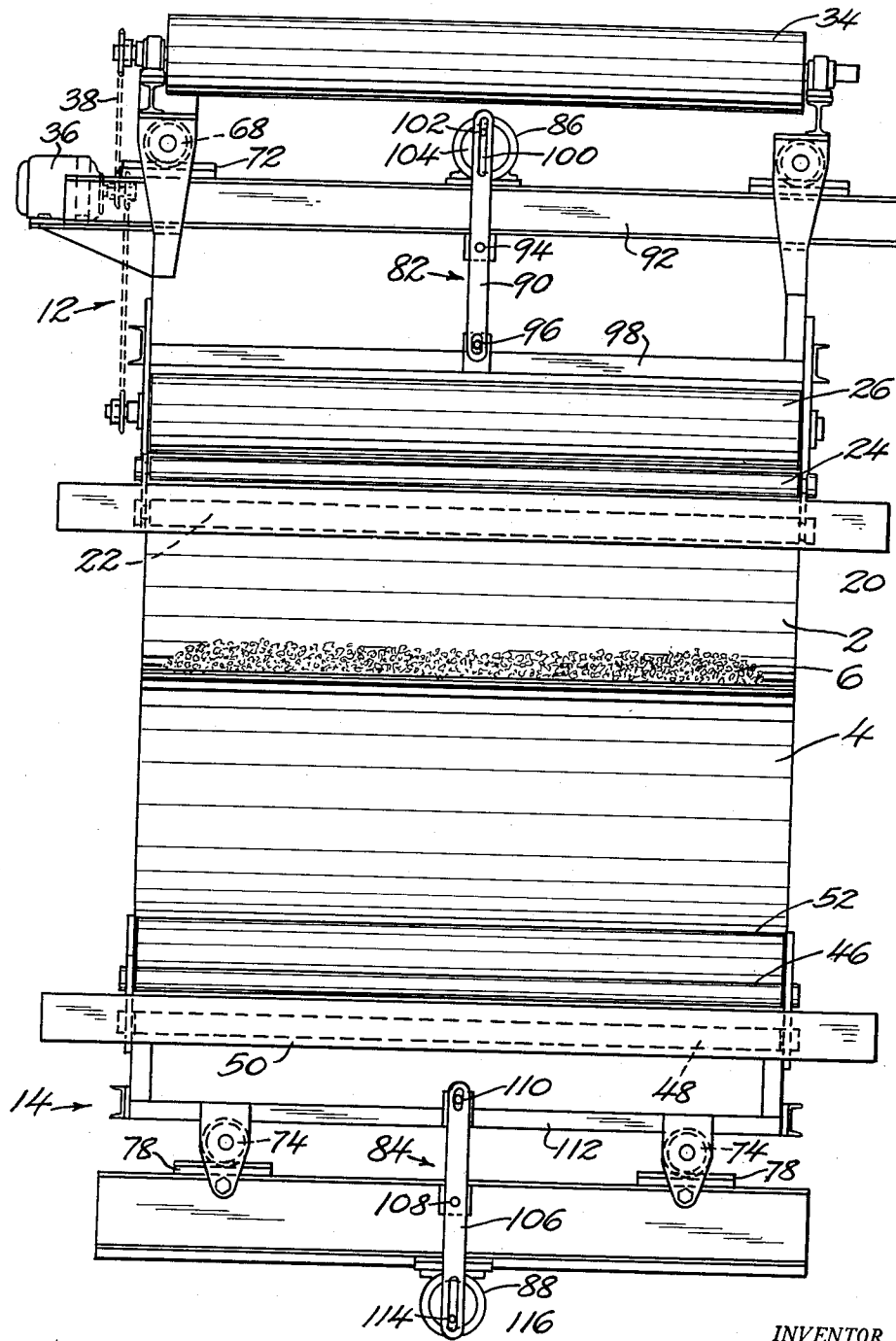


FIG. 2.

INVENTOR,
WALTER E. BENEDICT.
BY JOSEPH F. DOBRY.
Albert Sperry
ATTORNEY

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WIPER FOR CALENDER ROLLS

Walter E. Benedict, Newtown, and Joseph F. Dobry, Langhorne, Pa., assignors, by mesne assignments, to Congoleum-Nairn Inc., Kearny, N. J., a corporation of New York

Application July 22, 1950, Serial No. 175,410

9 Claims. (Cl. 18—2)

This invention relates to calenders such as those employed in the manufacture of sheeted linoleum compositions, and is directed particularly to constructions wherein the surfaces of the rolls of the calender are effectively cleaned or lubricated during the operation of the calender.

In the co-pending application of Dobry Serial No. 143,080, filed February 8, 1950, now issued as Patent No. 2,624,068 dated January 6, 1953 a method of calendering linoleum compositions is described wherein the surfaces of the calender rolls are cleaned or lubricated and novel effects are thereby attained in the finished product. Under such conditions the film of linoleum composition which adheres to the rolls is removed and elongation, distortion or smearing of the pieces or particles of linoleum composition is reduced and individual pieces or particles may be identified in the calendered sheet. Such products differ markedly in appearance from the usual streaked, striated and marble designs produced by conventional calendering operations.

The operation of adequately cleaning or lubricating the surfaces of the calender rolls presents a difficult problem since brushes or wiping rollers tend to accumulate the linoleum composition removed from the calender rolls and soon become so clogged and dirty that the effectiveness of the cleaning operation is diminished and the action of the calender rolls on the linoleum composition being sheeted is altered.

In accordance with the present invention this difficulty is overcome and the calender rolls are maintained in a clean lubricated condition by employing wiping means which present a continuously renewed wiping surface to carry away the linoleum composition removed from the surface of the roll engaged thereby. It has further been found that the cleaning action can be improved by moving the wiping member in a direction parallel to the axis of the roll or transversely to its direction of rotation so as to avoid any tendency to form streaks on the surface of the roll during the cleaning operation.

One of the objects of the present invention is to provide novel means for use in cleaning and lubricating the surfaces of calender rolls.

Another object of the invention is to provide means for insuring effective cleaning of calender rolls used in the production of sheeted linoleum compositions.

A particular object of the invention is to provide a calender with wiping means which present a continuously renewed wiping surface for engagement with the rolls of the calender.

A further object of the invention is to provide wiping means for calender rolls which are movable transversely of the direction of rotation of the surface being cleaned.

These and other objects and features of the present invention will appear from the following description thereof in which reference is made to the figures of the accompanying drawings.

In the drawings:

Fig. 1 is a vertical sectional view through a typical

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form of calender embodying the present invention; and Fig. 2 is a rear elevation of a portion of the calender illustrated in Fig. 1.

In that form of the invention illustrated in the drawings the calender is provided with an upper calender roll 2 and a lower calender roll 4 which as shown are preferably positioned so that their axes are displaced horizontally to enable the pieces or particles of linoleum composition indicated at 6 to be fed to the calender rolls more effectively. The resulting sheet of calendered linoleum indicated at 8 emerges from the nip 10 of the calender rolls and normally adheres for a short distance to the surface of that calender roll which is maintained at the lower temperature. As shown the upper calender roll 2 would be at a lower temperature than the lower calender roll 4 and the sheeted material 8 accordingly tends to adhere to the roll 2 as it emerges from between the rolls.

The mechanism employed in accordance with the present invention for cleaning the surfaces of the calender rolls is positioned to engage the rolls at points remote from the nip of the rolls and for convenience includes an upper cleaning assembly 12 and a lower cleaning assembly 14 whereby each roll may be cleaned and lubricated separately and in the manner and to the extent desired. The cleaning member employed in each case is preferably in the form of a web of sheet material such as paper toweling, fabric or the like which passes from a supply roll through a bath of cleaning liquid and then travels in a direction opposite to the surface of the roll and in contact therewith and finally is wound up on a receiving roll. After passing in contact with the calender roll the web of material may be discarded or reconditioned for use.

The upper cleaning assembly 12 as shown includes the supply roll 16 of paper toweling or the like from which web 18 is drawn and passes downward into the bath of cleaning fluid in receptacle 20 beneath the roll 22. The web then passes upward over the roll 24 and beneath the press roll 26 into contact with the face of the upper calender roll 2. The cleaning web moves over the surface of the calender roll in a direction opposite to that in which said surface moves and passes about press roll 28 so that it is pressed against the surface to be cleaned as it carries the cleaning liquid or lubricant thereto. From press roll 28 the web travels upward to the take-up roll 30 which rests upon a pair of rollers 32 and 34. The roller 32 is driven by the motor 36 through the belt 38 to wind up the soiled cleaning web on roll 30. Motor 36 further serves to drive the roll 28 through the belt 40 to cause the paper toweling to be drawn from the supply roll 16 and pass through the bath of cleaning and lubricating liquid contained in the liquid receptacle 20 and thence to pass in wiping contact with the calender roll 2 against the action of said roll. As a result the toweling serves to brush and dissolve away from the surface of the roll 2 the film of linoleum composition which normally tends to adhere thereto.

The lower cleaning assembly which serves to clean the surface of the lower calender roll 4 is generally similar to the upper cleaning assembly 12. It includes a supply roll 42 from which a web 44 of paper toweling or other wiping material is drawn so as to pass over idler roll 46 and then downward beneath the roll 48 in the liquid receiving chamber 50. The moistened web then passes upward about the press roll 52 into contact with the surface of the calender roll 4. The cleaning web travels in the direction opposite to the surface of the roll it engages and about the press roll 54. The soiled web leaving the calender roll passes from the press roll 54 to the take-up roll 56 supported on the rollers 58 and 60. The press roll 54 is driven from the motor 62 by

the belt 64 to draw the cleaning web from the supply roll 42, whereas the roll 53 is driven from the motor by means of the belt 66 to wind up the soiled web on take-up roll 56.

With this construction both rolls of the calender are continuously cleaned and lubricated by the action of the webs of paper toweling or other wiping material employed, and this material is held in contact with the surfaces of the calender rolls and travels in a direction opposite to said surfaces so as to effectively wipe and clean the surfaces of the rolls before they are again brought into contact with the linoleum composition 6 which is being sheeted.

In order to provide a more effective cleaning action and attain a transverse wiping effect which serves to eliminate all streaks and smears in the direction of rotation of the rolls, both the upper and lower wiping assemblies are preferably designed to be bodily moved in a direction parallel to the axes of the calender rolls. For this purpose the upper assembly 12 is mounted on rollers 68 and 70 designed to travel on the horizontal tracks 72. In a similar way the lower assembly 14 is provided with rolls 74 and 76 which engage tracks 78 and 80 respectively. The upper assembly is caused to oscillate back and forth along the tracks 72 to move the wiping material transversely of the direction of movement of the surface of the calender roll 2 which is to be cleaned. At the same time the web travels in a counter-direction in engagement with the surface of the roll as previously described. The wiping assembly 14 is oscillated in a similar manner so that both rolls are effectively cleaned.

The oscillation of the wiping assemblies is preferably accomplished by means of toggle devices as shown at 82 and 84 in Fig. 2, the upper assembly being actuated by the toggle 82 driven by a motor 86 and the lower assembly being actuated by the toggle 84 driven by motor 88. The toggle 82 is in the form of a lever 90 pivotally mounted near its center on the stationary beams 92 as shown at 94, and having its lower end pivotally connected at 96 to the roll assembly frame member 98. The upper end of lever 90 is slotted as shown at 100 and receives a roller 102 mounted on a rotatable plate 104 driven by the motor 86.

The toggle 84 for actuating the lower wiping assembly includes lever 106 pivotally mounted at 108 and connected at one end to the stationary stud 110 on roll assembly frame member 112. The opposite end of the lever is slotted to receive roller 114 on the plate 116 driven by motor 88.

Each of the assemblies 12 and 14 is thus movable back and forth along the tracks on which it is mounted. The motors 86 and 88 rotate the plates 104 and 116 to cause the adjacent ends of the levers 90 and 106 to rock about the stationary studs 96 and 110 on the calender frame. The pivotal connections of the levers to their respective carriages of the cleaning assemblies then act as levers to move the carriages back and forth. The connections between the levers and the stationary studs 96 and 110 on the calender frame are preferably in the form of elongated slots to allow for the arcuate movement of the levers about their respective pivots on the cleaning assemblies.

The motors 86 and 88 which oscillate the cleaning assemblies as well as the motors 36 and 62 which move the cleaning web may be driven independently so that each roll may be cleaned or lubricated in the manner and to the extent which will be most effective for the purpose desired. Similarly the cleaning or lubricating compositions supplied to the liquid receiving chambers may be chosen to impart the same or a different cleaning and lubricating effect to each roll of the calender. The type and speed of travel of the cleaning webs also may be varied as desired and they may be easily renewed or replaced as desired.

It will therefore be apparent that numerous changes

and modifications may be made in the construction and method of operating mechanism embodying the present invention. In view thereof it should be understood that the particular embodiment of the invention shown in the drawings and herein described is intended to be illustrative only and is not intended to limit the scope of the invention.

We claim:

1. A calender comprising a pair of calender rolls, a cleaning assembly associated with one of said rolls including means for holding a web of cleaning material in engagement with the surface of a calender roll at a point spaced from the nip of the rolls, liquid receiving means, and means for moving said web longitudinally through said liquid receiving means and past said holding means into contact with the calender roll while travelling in a direction opposite to the movement of the surface of the calender roll to be cleaned.
2. A calender comprising a pair of calender rolls, a cleaning assembly associated with each of said rolls, each of said cleaning assemblies including means for holding a web of cleaning material in engagement with the surface of a calender roll at a point spaced from the nip of the rolls, liquid receiving means and means for moving said web longitudinally through said liquid receiving means and past said holding means into contact with the calender roll while travelling in a direction opposite to the movement of the surface of the calender roll to be cleaned.
3. A calender comprising a pair of calender rolls, a cleaning assembly associated with one of said rolls including means for holding a web of cleaning material in engagement with the surface of a calender roll at a point spaced from the nip of the rolls, liquid receiving means, means for moving said web longitudinally through said liquid receiving means and past said holding means into contact with the calender roll while travelling in a direction opposite to the movement of the surface of the calender roll to be cleaned, and means for moving said web transversely of said surface during longitudinal movement of the web.
4. A calender comprising a pair of calender rolls, a cleaning assembly associated with one of said rolls including means for holding a web of cleaning material in engagement with the surface of a calender roll at a point spaced from the nip of the rolls, liquid receiving means and means for moving said web longitudinally through said liquid receiving means and past said holding means into contact with the calender roll while travelling in a direction opposite to the movement of the surface of the calender roll to be cleaned and means for oscillating said web in a direction parallel to the axes of said rolls during longitudinal movement of said web.
5. A calender comprising a pair of calender rolls, a cleaning assembly associated with each of said rolls, each of said cleaning assemblies including means for holding a web of cleaning material in engagement with the surface of a calender roll at a point spaced from the nip of the rolls, liquid receiving means, means for moving said web longitudinally through said liquid receiving means and past said holding means into contact with the calender roll while travelling in a direction opposite to the movement of the surface of the calender roll to be cleaned, rollers upon which said assemblies are mounted, horizontally extending tracks along which said rollers and assemblies are movable parallel to the axes of said calender rolls, a lever pivotally connected to each assembly and having one end thereof pivotally connected to a stationary element of the calender, the opposite end of each lever being connected to an eccentrically mounted rotatable member, and means for rotating said members to move the cleaning assemblies back and forth along said tracks to oscillate said web during longitudinal movement thereof.
6. Apparatus for use in the manufacture of linoleum

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comprising a calender roll and means for cleaning the surface of said roll during rotation thereof including an elongated web of flexible wiping material, means for applying a cleaning agent to said wiping material, and means for moving said web of wiping material with respect to the surface of said calender roll and in continuous contact with said surface during rotation of the calender roll.

7. Apparatus for use in the manufacture of linoleum comprising a calender roll and means for cleaning the surface of said roll during rotation thereof including an elongated flexible wiping element, means for applying a cleaning agent to the wiping element, and means for moving said wiping element in a direction opposite to the direction of movement of the surface of the calender roll and in continuous contact with said surface during rotation of the calender roll.

8. Apparatus for use in the manufacture of linoleum comprising a calender roll and means for cleaning the surface of said roll during rotation thereof including an elongated flexible wiping element in the form of a web of flexible material, means for moistening said web with a liquid cleaning agent, and means for moving the moistened web in a direction opposite to the direction of movement of the surface of the calender roll and in continuous contact with said surface during rotation of the calender roll.

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9. Apparatus for use in the manufacture of linoleum comprising a calender roll and means for continuously cleaning the surface of said roll during rotation thereof including an elongated flexible wiping element in the form of a web of flexible material, means for moistening said web with a liquid cleaning agent, means for moving the moistened web in a direction opposite to the direction of movement of the surface of the roll and in continuous contact with said surface during rotation of the calender roll, and means for shifting said web back and forth transversely of the web and axially with respect to said roll while in contact with the roll.

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