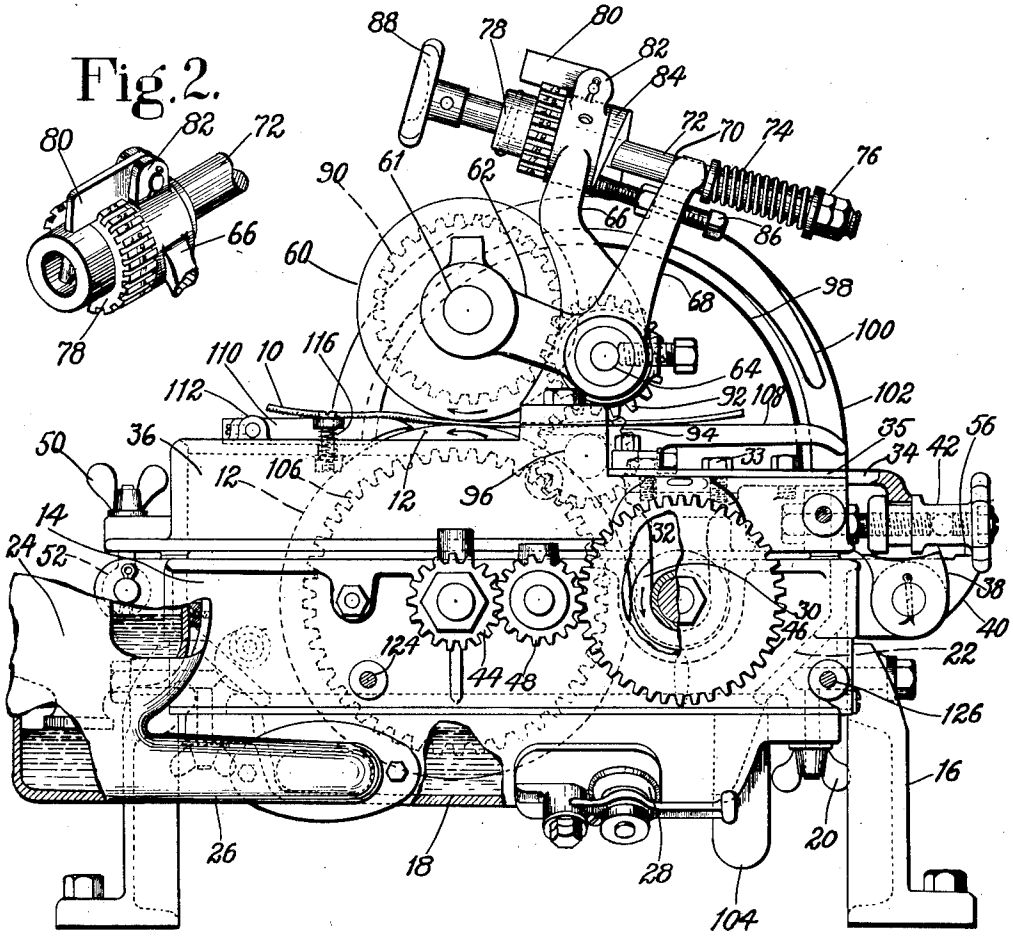
Nov. 4, 1930. J. W. COSGROVE 1,780,341

CEMENTING MACHINE

Filed July 22, 1927 2 Sheets-Sheet 1

Fig. 1.

Fig. 2.



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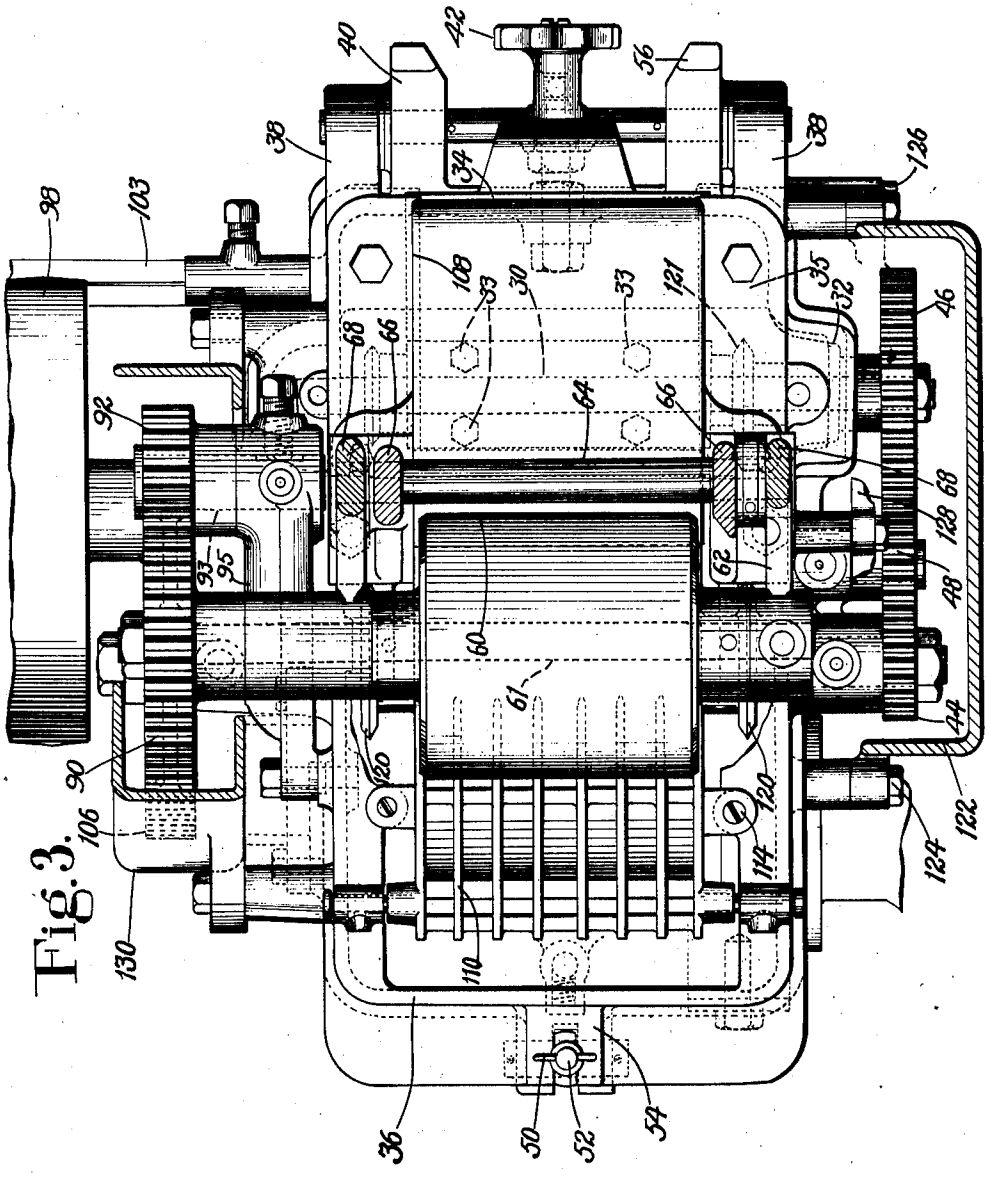


Fig. 3.

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UNITED STATES PATENT OFFICE

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CEMENTING MACHINE

Application filed July 22, 1927. Serial No. 207,737.

This invention relates to cementing machines and is herein illustrated as embodied in a machine arranged to apply a coating of cement to the whole of one surface of a piece of work such, for example, as the sole of a shoe.

Cementing machines for coating the whole of one surface of a piece of work are commonly provided with an applying roll which dips in or receives a supply of cement from a receptacle and with a cooperating pressure member for holding the work against the applying roll. Such a pressure member may be a roll journaled in a pivotally mounted bracket which is spring-pressed to urge the roll toward but out of contact with the applying roll. In view of the different thicknesses of various pieces of work, it is usual to provide means for adjusting the initial position of the pressure device, that is, its position before it is slightly displaced by a piece of work, in order not only that the pressure may be neither too great nor too little, but also so that the leading end of the work will not be disfigured by unduly rough contact with the rolls when inserted in the machine. One object of the present invention is to provide a cementing machine having an improved mechanism for adjusting the relation of a pressure device to the applying roll of a cementing machine so that the desired pressure may readily be obtained.

In accordance with the above object, in the illustrated machine, operator-controlled means are provided for adjusting the initial position of a pressure-roll-supporting bracket, which means comprise a manually operable cam and means for locking the cam in adjusted position. A spring is provided arranged to urge the pressure roll and this bracket toward the applying roll.

The operating parts of such machines must be cleaned at intervals, especially when the cement used in such machines is rubber latex, and, with latex, there is a tendency for the formation of a precipitate in the receptacle which must be removed after it has accumulated sufficiently. Accordingly, another object of the invention is to provide an improved cementing machine so arranged that the operator may conveniently obtain access to all the operating parts of the machine without disturbing their adjustment or being obliged to dismantle the machine.

To this end, in the illustrated machine, the pressure roll is mounted upon one part of a divided frame while the applying roll is mounted upon the other part of the frame and the two frame parts are constructed and arranged for relative separating movement, thereby allowing access to the various operating parts of the machine. Further to facilitate obtaining access to the operating parts of the machine without disturbing their adjustment, the driving connections for the rolls are constructed and arranged to be broken by relative separating movement of the two parts of the frame and to be restored when the frame parts are brought together again.

In cementing machines of the type referred to, provision is made for draining the cement receptacle but, usually, such access to the interior of the receptacle as is necessary for the removal of a precipitated mass from the bottom can only be obtained with difficulty and results in disturbing one or more adjustments. To facilitate the cleaning of the receptacle, the illustrated machine, in accordance with still another feature of the invention, has a readily detachable cement pan secured to the under side of the frame of the machine between legs which elevate the machine above a bench or other support. Thus the pan may be removed laterally away from the machine without disturbing the relation of the machine to its bench or other support. This pan is supplied with cement from a barometric supply device attached thereto which, preferably, keeps the level of the cement below the upper edge of the detachable pan. A drainage valve is provided in the pan. When it is desired to remove said pan for cleaning it is only necessary to drain out the cement from the pan and the barometric supply, after which the pan may be dropped down away from the machine and out of engagement with the applying roll which dips into said pan.

Adjustment or control of the quantity of latex or other cement taken up by the applying roll is made easy, in accordance with another feature of the invention, by journaling a driven doctor roll, which is normally associated with the applying roll, in an adjustable cover for a portion of the frame part which carries the pressure roll. This provides a compact and simple construction in which, by adjusting the position of this cover, it is possible thereby to adjust the relation between the doctor roll and the applying roll.

These and other features of the invention are illustrated in the accompanying drawings, in which—

Fig. 1 is a side elevation of a cementing machine embodying the invention with parts broken away and in section;

Fig. 2 is a detail view in perspective of the locking mechanism for the manually operable cam for adjusting the position of the pressure roll; and

Fig. 3 is a plan view of the machine with certain parts removed and with parts in section.

The cement, such as latex, is applied to pieces of work such as an outsole 10 by means of a cylindrical applying roll 12 which is journaled in the sides of a main frame 14 which is hollow and generally rectangular and is provided with legs 16 by means of which it is elevated above a bench or other support (not shown). This applying roll 12 dips in a cement receptacle 18 in the form of a shallow pan which is detachably secured to the under side of the main frame 14, as by means of wing nuts 20. It will be noted that the construction of the main frame 14 provides inclined surfaces 22 leading to the edge of the pan 18 so that any cement spattered on the inside of the main frame will drain back into said pan 18. A barometric feed supply tank 24 leads through a conduit 26 which is attached to the side of the pan 18 and a drainage valve 28 is also provided on the side of the pan 18. Consequently, when it is desired to remove the pan for cleaning, such as may be required because of the formation of a precipitate when latex is used as a cement, it is only necessary to drain out the remaining latex by opening the valve 28, after which the pan 18 with the attached supply 24 may be dropped down from the main frame 14 and away from the applying roll 12 and removed laterally from beneath the machine so that it is conveniently accessible.

It has been found that, when latex is used as the cement to be applied by the machine, the quantity carried by the applying roll 12 can best be controlled by the use of a driven doctor roll 30 the position of which is adjustable with respect to the applying roll. This doctor roll is journaled in hangers 32 secured by bolts 33 to the under side of a cover 34 slidably mounted and retained by side plates 35 in an auxiliary, separable, hollow frame 36 having lugs 38 by means of which it is pivotally attached to co-operating lugs 40 upon the main frame 14. The position of the sliding cover 34 which carries the doctor roll 30 in this auxiliary frame 36 is adjusted by means of a hand screw 42. It is thus possible to determine very exactly the relation of the doctor roll to the applying roll and thereby to control the quantity of latex carried over to be applied by the roll 10. A pinion 44 is provided upon the near end of the shaft of the applying roll, and a pinion 46 is mounted on the end of the shaft of the doctor roll 30. An idler 48 is interposed between these pinions so that the direction of rotation of the doctor roll is the same as that of the applying roll whereby the coacting surfaces of the two rolls move in opposite directions and thereby avoid any tendency to coagulation of the latex such as would be encountered if the doctor roll were driven in the opposite direction or if a scraper were substituted for the doctor roll. It will be noted that the range of adjustment of the cover 34 carrying the doctor roll 30 is so slight that it does not disturb the meshing of the pinion 46 with the idler 48. The auxiliary frame 36 is detachably secured to the main frame by means of a thumb nut 50 cooperating with a swinging bolt 52 pivoted between lugs on the main frame and entering the notch of an extension 54 on the auxiliary frame. A loosening of the thumb nut 50 and a swinging aside of the bolt 52 allows the raising of the auxiliary frame 36 to an upright position in which it will be supported by stop surfaces 56 on the lugs 40 of the main frame.

As is usual in this type of machine, means are provided for holding the pieces of work 10 against the applying roll 12. For this purpose, the machine is provided with a driven pressure roll 60 on a shaft 61 which is journaled in a mounting comprising a carrier 62 pivotally mounted on a fixed shaft 64 passing through the sides of a U-shaped upward extension 66 of the auxiliary frame, this extension being bolted to the upper side of said frame. The pivotally mounted carrier 62 is provided with an upwardly extending arm 68 by means of which pressure may be applied to the pressure roll 60 and the initial position of said roll exactly determined. This arm 68 is also U-shaped and is provided with a forked upper end 70 surrounding a spindle 72 upon which is provided a spring 74 the compression of which may be determined by an adjusting nut 76. Upon this spindle 72 which is normal to the axis of the carrier and of each roll is mounted a collar 78 which is pinned to the spindle 72 to resist the reaction of the spring 74. On the other side of the frame extension 66 a cam member 84

is secured to the spindle so that it is rotatable therewith and the cam surface of this member bears against the end of an adjustable bolt 86 threaded in the arm 68 of the pivoted carrier 62, thereby to adjust the initial position of the pressure roll 60 to determine the separation of the rolls 12 and 60 when no work is in the machine. In order that the adjustment of the spindle 72 may be maintained, a pivoted latch 80 is provided which is loosely pivoted between ears 82 at the top of the frame extension 66 and this latch enters slots in the periphery of the collar 78. The bolt 86 is threaded through the arm 68 of the carrier 62 and provided with a lock nut so that its position may be maintained. An operating handle 88 is secured to the outer end of the spindle to facilitate the turning of the spindle when the latch 80 has been released. If desired, the collar 78 may be provided with indicia between the various slots so that the initial position of the pressure roll may be made to correspond to the thickness in irons of the sole to be cemented.

The pressure roll 60 is positively driven in the opposite direction of rotation from the applying roll by means of a gear 90 secured to the pressure roll shaft and an idler 92 journaled on a stud 93 (Fig. 3) supported in a bracket 95 attached to the auxiliary frame 36. This idler 92 engages a pinion 94 (Fig. 1) on a drive shaft 96 to which there is attached a driving pulley 98 (Fig. 3) and a loose pulley (not shown). A belt-shifting fork 100 adjustably secured to a movable ring 102 laterally slidable on a square stud 103 is provided for shifting the belt from the loose pulley to the tight pulley. This ring has a depending handle 104 (Fig. 1.) The pinion 94 upon the driving shaft 96 is arranged to mesh with a gear 106 on the shaft of the applying roll 12 and the arrangement is such that the pressure roll and the applying roll are driven in opposite directions so that their adjacent surfaces move in the same direction, thus facilitating the feeding of the work through the machine. The driving connections between the applying roll and the doctor roll and between the applying roll and the pressure roll may, thus, be readily separated upon the lifting of the auxiliary frame 36 and as readily reengaged when the auxiliary frame is replaced.

An elevated table 108 is bolted to the upper side of the auxiliary frame 36 over the adjustable cover 34 and is arranged at such a height that it directs pieces of work 10 exactly to the bite of the rolls 60 and 12. On the delivery side of the machine a stripper in the form of a grid 110 is provided, the pointed forward ends of said grid being positioned closely adjacent to but not touching the applying roll. This grid is pivoted between ears 112 on the auxiliary frame 36, and adjusting screws 114 passing through lugs on said grid and surrounded by springs 116 allow exact adjustment of the position of the tips of this grid 110 with respect to the applying roll to prevent pieces of work from following around said roll. Such a grid allows surplus accumulated cement to drip back into the receptacle.

In order that the latex or other cement may not creep into the bearings of the machine, the shaft of the applying roll 12 is provided with disk-like projections 120 having sharpened peripheries. The doctor roll 30 has similar projections 121. These disk-like projections 120 and 121 cause any cement traveling along the shafts of the cement-carrying rolls to drip back into the receptacle without being carried over into the bearings of the machine.

A cover 122 secured by bolts 124 and 126 is attached to the main frame 14 in position partially to cover the pinions 44, 46 and 48, and a cooperating cover over the top of the pinion 46, a fragment of which is shown at 128 in Fig. 3, is attached to the auxiliary frame 36 so that it is lifted with the auxiliary frame and the pinion 46. A similar cover 130 attached to the auxiliary frame is provided for the gears 90, 92, 94 and 106 on the other side of the machine.

When using the machine, assuming that the receptacle 24 and pan 18 are filled with cement, the doctor roll 30 will first be adjusted by sliding the cover 34 by means of the handle 42 so that the quantity of cement taken up by the applying roll is just the amount required for application to the given work. The initial position of the pressure roll 60 will then be adjusted by releasing the latch 80 and turning the adjusting handle 88, after which the latch will be replaced. Successive pieces of work may then be presented to the machine, being first placed on the table 108 and then taken up and fed through the machine by the co-action of the driven rolls 12 and 60.

When it is desired to clean the machine, the cement will be drained off by the use of the valve 28 and then the inside of the machine may be cleaned by lifting up the auxiliary frame 36 to allow access to the applying roll 12 and the doctor roll 30. This will also give opportunity to remove any excess cement from the inside of the auxiliary frame 36 and of the main frame 14 if it is necessary or desirable. Since the large applying roll 12 and the driving pulleys are mounted on the main frame instead of mounting all of the operating parts on the auxiliary frame, the weight to be lifted in moving the auxiliary frame is very much lessened without lessening the accessibility of the various operating parts and of the inside surfaces of the frames. Whenever it is desirable to clean the pan 18, that may be readily dropped

down, after removing the wing nuts 20, and taken from the machine.

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

1. In a cementing machine, an applying roll, a pressure roll associated with said applying roll, a pivotal mounting for said pressure roll, a spring urging said pivotal mounting in a direction to carry the pressure roll toward the applying roll, and means for determining the initial separation of the pressure roll from the applying roll comprising a manually operable member rotatable about an axis normal to the axis of one of said rolls arranged to move said pivotal mounting against the tension of said spring.

2. In a cementing machine, an applying roll, a pressure roll co-operating with said applying roll, a fixed bracket, a carrier for said pressure roll pivotally mounted on an axis parallel to the axis of said pressure roll, a spring urging said carrier in a direction to carry the pressure roll toward the applying roll, means for determining the initial separation of the pressure roll from the applying roll comprising a spindle rotatably mounted in said bracket on an axis normal to the axis of said pressure roll and provided with a cam surface adapted to move said carrier against the tension of said spring, and means for locking said spindle in its adjusted position.

3. In a cementing machine, a frame, an applying roll, a pressure roll co-operating with said applying roll, a pivotal mounting for said pressure roll comprising a carrier having an outwardly extending arm, said frame having an extension reaching beyond said pressure roll, and a rotatable spindle journaled in said frame extension, said spindle being fixed against longitudinal movement and provided with a cam surface arranged to co-operate with the arm of said pivotal mounting positively to separate the two rolls, and a spring surrounding said spindle also co-operating with the arm of said pivotal mounting and arranged to urge the pressure roll toward the applying roll.

4. In a cementing machine, a pressure roll, an adjustable support for said pressure roll, a rotatable member for adjusting said support having a longitudinally slotted periphery, and means for locking said rotatable member in adjusted position comprising a pivoted latch arranged to enter one of the slots in the periphery of said adjusting member.

5. In a cementing machine, a cement receptacle, an applying roll dipping in said receptacle, an adjustable cover closing a portion of said receptacle, and a doctor roll journaled upon the under side of said cover whereby the relation of the doctor roll to the applying roll may be determined by adjustment of the cover.

6. In a cementing machine, a hollow frame providing a cement receptacle, an applying roll journaled in said frame and dipping in said receptacle, a driven doctor roll co-operating with said applying roll at one side thereof, an adjustable cover for said frame above said doctor roll, and hangers on said cover providing journals for said doctor roll whereby the relation of said doctor roll and the applying roll may be adjusted by adjusting said cover.

7. In a cementing machine, a hollow frame, an applying roll journaled in said frame, said frame being provided with legs so that it may be raised above the surface of a support for the machine, and a cement pan having an upstanding barometric feed tank secured thereto at one side, said pan being detachably secured to the under side of said frame and being smaller than the space between said legs so that said pan may be detached and dropped away from said applying roll to rest temporarily on the support for the machine and removed laterally from the machine without disturbing the relation of the machine to its support or the barometric tank with respect to said pan.

8. In a cementing machine, a hollow frame, an applying roll journaled in said frame, a shallow cement pan detachably secured to the under side of said frame, a barometric feeding device supported upon and conducting cement to said pan and arranged to maintain the level of cement beneath the upper edge of the pan, and a valve in said pan permitting drainage of the pan prior to its removal from the machine for cleaning purposes.

9. In a cementing machine, co-operating rolls each of which is coated with cement during the use of the machine, which are relatively adjustable and are normally both disposed beneath work to be coated, a two-part frame for supporting said rolls with one roll in each part of said frame, and means for securing said frame parts together constructed and arranged to permit separation of the parts, as for cleaning, and the bringing of them together without disturbing the relative adjustment of said rolls.

10. In a cementing machine, an applying roll, a co-operating doctor roll, each of which becomes coated with cement during the use of the machine, a divided frame each part of which supports one of the rolls, one roll being adjustably mounted in its frame part to vary its relation to the other roll, and means for securing said frame parts together constructed and arranged to permit separation of said parts and the bringing of them together without disturbing the adjustment of said doctor roll.

11. In a cementing machine, a receptacle, an applying roll journaled in said receptacle,

a cover for said receptacle, a doctor roll journaled in said cover, and means for separably connecting said cover with said receptacle constructed and arranged to allow the separation of the cover with its doctor roll and its repositioning upon the receptacle without disturbing the relative adjustment of the two rolls.

12. In a cementing machine, a hollow frame carrying a cement receptacle, an applying roll journaled in said frame, a second hollow frame, and a plurality of co-operating rolls journaled therein, said second frame being pivotally attached to said first-mentioned frame whereby the pivotally mounted frame may be displaced to furnish convenient access for cleaning not only the parts of the machine attached to said pivotally mounted frame but the applying roll in the first-mentioned frame as well.

13. In a cementing machine, a main frame provided with a cement receptacle, an applying roll journaled in said frame, a driving pulley connected to said applying roll and also journaled in said main frame, an auxiliary frame separably secured to said main frame, a presser roll mounted on said auxiliary frame, a doctor roll adjustably mounted on said auxiliary frame arranged to control the quantity of cement on the applying roll, and driving connections between said roll on the auxiliary frame and the applying roll constructed and arranged to be broken by movement of the auxiliary frame away from the main frame and to be restored upon return movement of the auxiliary frame without disturbing any adjustment.

14. In a cementing machine, a main frame provided with a receptacle, an applying roll journaled in said main frame and dipping in said receptacle, an auxiliary frame pivotally attached to said main frame, a driven pressure roll journaled in said auxiliary frame, a driven doctor roll, arranged to cooperate with said applying roll, also journaled in said auxiliary frame, and readily detachable driving connections between one of said rolls and said applying roll whereby said auxiliary frame may be lifted up to provide access to the interior of the machine for cleaning the respective parts thereof.

15. In a cementing machine, three cooperating rolls including an applying roll, a cooperating pressure roll, a doctor roll for controlling the quantity of cement taken up by said applying roll, a two-part frame one part of which supports one of said rolls and the other part of which supports the other two rolls, and driving connections between said applying roll and said other two rolls, said frame and said connections being constructed and arranged to permit the upper part of the frame to be readily displaced from the lower part of the frame thereby providing convenient access to the rolls for cleaning purposes.

16. In a cementing machine, an applying roll, a cooperating pressure roll, a driven doctor roll for controlling the quantity of cement taken up by said applying roll, a two-part frame, one part of which supports the pressure roll and the doctor roll and the other part of which supports the applying roll, and driving connections between said applying roll and said other rolls, said frame and said connections being constructed and arranged to permit one part of the frame to be readily displaced from the other part of the frame, thereby providing convenient access to the rolls for cleaning purposes.

In testimony whereof I have signed my name to this specification.

JOHN W. COSGROVE.