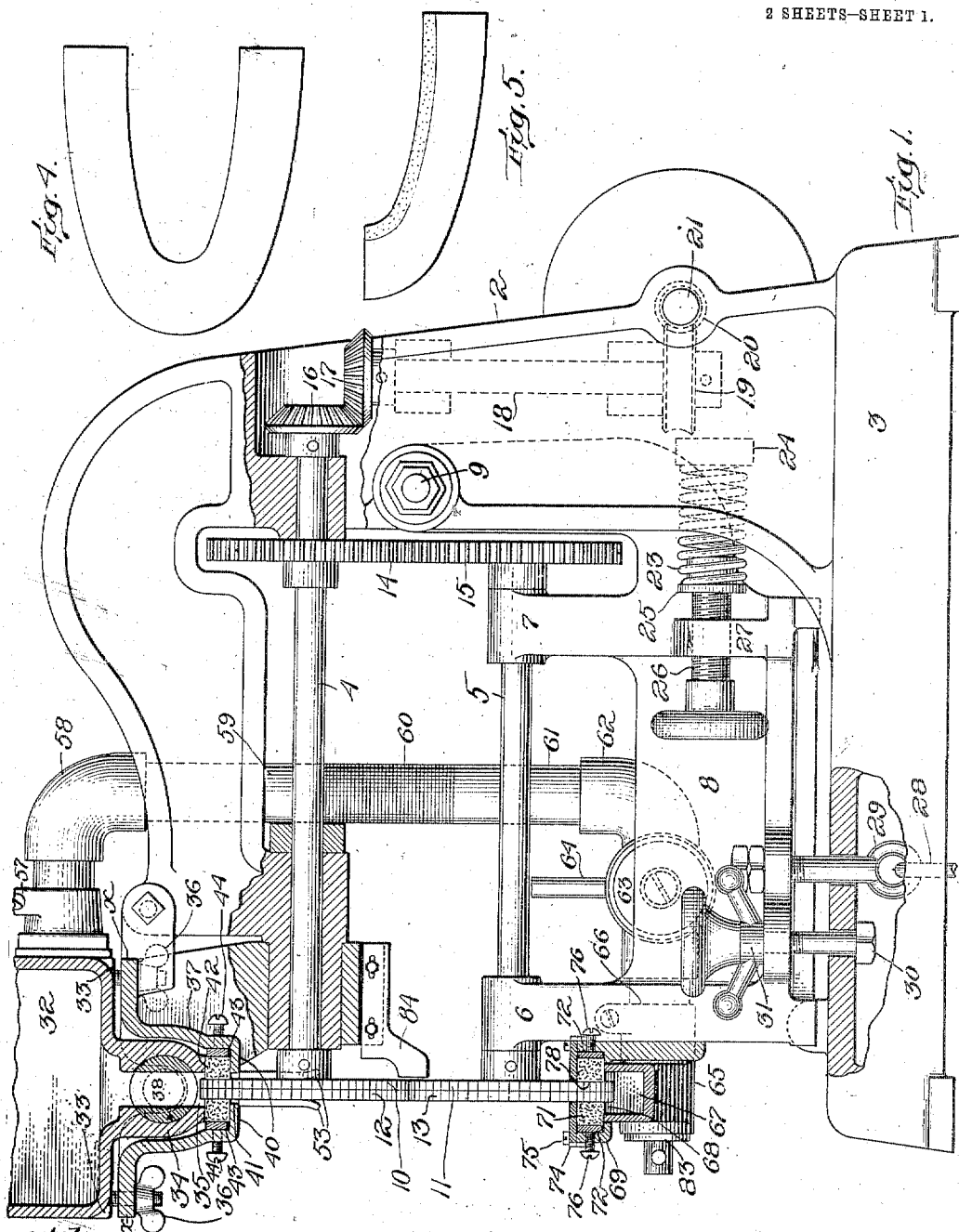


H. I. ILLINGWORTH.
 ROTARY CEMENTER.
 APPLICATION FILED MAR. 31, 1908.

986,062.

Patented Mar. 7, 1911.

2 SHEETS-SHEET 1.



Witnesses:

Alfred C. Randall,
Edward Maxwell

Inventor:

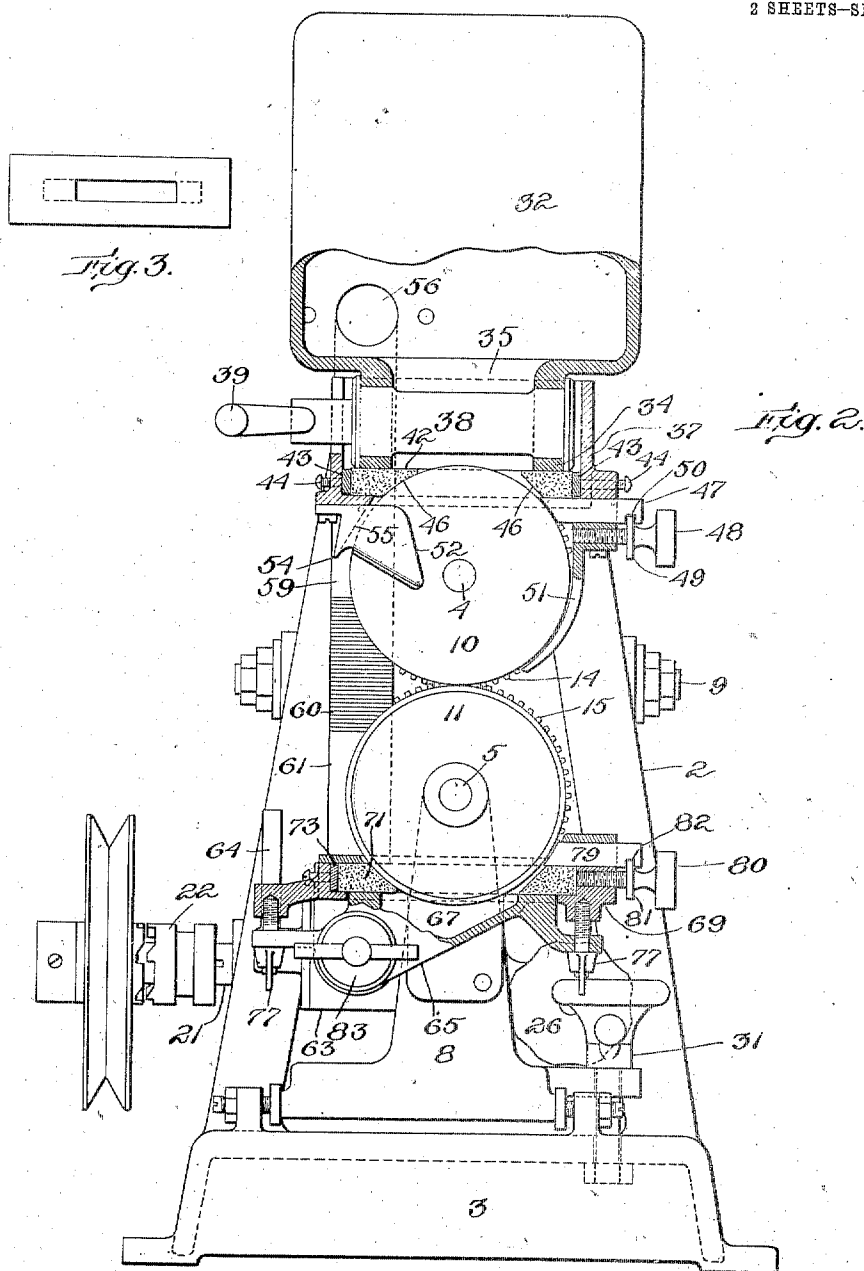
Harry I. Illingworth,
 By *Geo. H. Maxwell*

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2 SHEETS-SHEET 2.



Witnesses:

Arthur C. Randall
 Edward Maxwell

Inventor:

Harry I. Illingworth,

By Geo. H. Maxwell

Att'y.

UNITED STATES PATENT OFFICE.

HARRY I. ILLINGWORTH, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO BOSTON MACHINE WORKS COMPANY, OF LYNN, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ROTARY CEMENTER.

986,062.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed March 31, 1908. Serial No. 424,386.

To all whom it may concern:

Be it known that I, HARRY I. ILLINGWORTH, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented an Improvement in Rotary Cementers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention is a cementing machine particularly intended for the use of shoe factories and more especially for cementing such pieces as can be advantageously cemented by being folded over on themselves. For example, a shoe upper has symmetrical curves on its opposite sides and the present way of cementing the edge (when cemented by machine) is to hold the work up to the cementing wheel and dexterously turn the work so that the cementing wheel will follow around the curved edge in such a manner as to deliver the desired narrow strip or layer of cement. Inasmuch as the curve is symmetrical on its opposite sides I propose to fold the work over on itself so that the two symmetrical curves will come in accurate alinement with each other, and then apply the cement simultaneously to the opposite edges thus folded over. My present invention is a machine for accomplishing this result. By this means the cementing is accomplished in half the time previously required and much less dexterity is required on the part of the operator inasmuch as the application of the cement does not require that the work shall be turned to any great extent, *i. e.*, the direction of movement is almost in a straight line as distinguished from being in a long U-shaped curve as previously.

I have given the above illustration of cementing a shoe upper, to make clear one of the principal advantages of a main feature of my invention.

In carrying out the invention, I preferably provide, in connection with an upper cementing device and a lower cementing device, means for rendering one of these cementing devices inoperative at will or in other words my invention includes the provision of means for converting the machine into a one-side cémenter or a two-side cémenter, so that the machine can be used for cementing on one side of the work only,

whenever the nature of the work or the preference of the user demands this, or it can be used for cementing on both sides of the work.

My invention also includes means for rendering it impossible for the machine to leak or drip cement upon the work, whatever cement may leak down being automatically sucked up and returned to the cement tank by the regular operation of the machine. The mounting of the cement pot or tank is also novel, means being provided whereby it centers itself so that if put in position at all it cannot fail of being correctly placed. The regulation of the cement is made more delicate and accurate than heretofore by means of blocks or gates preferably of wood.

A further important feature or sub-combination herein claimed relates to the provision of cushioning means or spring-giving adjustment for the opposite cement applying devices whereby the same effect on the work is produced as heretofore with a cement applying roll made of resilient rubber-like material, and yet my roll or cement applying device is composed of metal or other unyielding substance.

The constructional details of my invention and further advantages thereof will be pointed out in the course of the following description, reference being had to the accompanying drawings, in which I have shown a preferred embodiment of the invention.

In the drawings, Figure 1 is a view of the machine in side elevation, parts being broken away and sectioned for clearness of illustration; Fig. 2 is a view thereof in end elevation, parts being similarly broken out and sectioned; Fig. 3 is a plan view of one of the felts; Fig. 4 is a similar view of a shoe upper in the position heretofore necessary for it to occupy when being cemented; and Fig. 5 is a plan view of the same upper folded over on itself in proper position for being cemented by my machine.

While my invention, in its broader aspects, is applicable to a wide range of cementing machines and appliances, it is more particularly adapted to a rotary cémenter, and accordingly for convenience of illustration and description, I have herein shown it applied to the type of cémenter disclosed in my Patent No. 878,959 dated Feb. 11, 1908.

Referring to the drawings, I provide a

frame comprising an overhanging arm 1, upright or standard 2, and base 3 carrying an upper shaft 4 journaled beneath the arm 1, and a lower shaft 5 journaled at 6, 7 in a hanger or carrier 8 pivoted at 9 to the standard 2. The shafts 4, 5, are provided at their outer or front ends with cement delivering wheels 10, 11, having peripheral cement carrying pockets 12, 13, and at their rear ends with intermeshing driving gears 14, 15, driven in any suitable manner. As herein shown the shaft 4 has fast thereon a bevel gear 16 meshing with a driving gear 17 fast on a vertical shaft 18 provided with a worm-wheel 19 engaged by a worm 20 on a shaft 21 provided with a spring-held clutch 22 of any suitable kind and operated in usual manner by a foot lever (not shown). The cementing wheels 10, 11, are normally held pressed tightly toward each other by suitable means, which as herein shown, consists of a spring 23 engaging at its rear end a boss 24 on the standard 2 and at its forward end held by a swiveled collar 25 adjustably supported on a hand adjusted bolt 26 mounted at 27 in the carrier 8. The cement wheels may be moved temporarily apart, and are at all times under the control of the operator by means of a strap 28 connected with a treadle (not shown) and hook 29 secured in the carrier 8, an adjustable stop 30 being mounted adjacent thereto in the base 3 and provided with a thumb nut 31 for limiting with extreme nicety the approach of one cement wheel toward or against the other.

The cement is delivered to the cement wheels from any suitable source, that herein shown consisting of a tank 32 removably mounted vertically above the wheel 10, being provided for this purpose with shoulders 33, and a central neck 34 provided lengthwise with a slit or delivery mouth 35 opening onto the top edge of the wheel 10. The front end of the arm 1 is provided with an approximately correspondingly shaped receiving surface for the cement tank, consisting of opposite flat wings shaped to receive and support the shoulders 33, secured by bolts and wing-nuts 36 and an intermediate trough or hollow, preferably rectangular, centering cavity 37. Because of this construction, the tank tends automatically to center itself and bring itself into exactly correct position over the cement wheel simply by the act of placing it more or less carelessly in position. As the neck 34 is placed over the arm 1 it slides naturally into the hollow or centering cavity 37 and is directed by the latter into correct position, so that the tank is thereby brought around into proper alinement with the wheel 10 and with the adjacent regulating pad, blocks, etc. From a practical standpoint this feature of my invention has proved of decided value,

it being remembered that cement is difficult to handle, is liable to smear and stick everything that it comes in contact with, and not easily cleaned away. The delivery opening 35 is closed by any suitable valve mechanism, a rotary valve 38 being herein shown, operated by a handle 39 whereby it may be opened or closed by a quarter rotation in one direction or the opposite. The bottom of the neck 34 is planed flat and the centering cavity 37 is provided with inwardly projecting flanges 40 separated by a slot or opening 41 for the passage of the top edge of the wheel 10, said flanges 40 serving to support in proper horizontal flat position a pad 42 preferably of felt, and adjacent clamping blocks 43 adjusted by screws 44. This felt pad, etc., construction constitutes an important feature of my invention, as it provides a construction which not only prevents leaks readily and is capable of quick renewal, easily refitted, etc., but is inexpensive, not liable to get out of order, is neat and normally out of sight. The felt pad is cut out centrally and provided with opposite beveled ends 46. The blocks 43 bear against the felt pad lengthwise and serve to crowd the latter gently forward on all sides whenever desired, so as to engage the wheel 10 exactly as required according to the consistency or kind of cement used. At the front end of the delivery means just below the felt I provide a small block of wood 47, which constitutes a gate and bears against the pocket-containing edge of the wheel 10, being delicately adjusted by a thumb nut 48 provided with a shoulder 49 engaging a notch 50 in the under side of the block 47 at its outer end. I have found that a small piece of wood directly adjacent the felt pad will produce an accuracy and nicety of cement delivery which it is impossible to secure by the felt alone. Instead of wood, fiber of suitable alloy or aluminum may be employed. At the same side or edge of the wheel 10 I provide a depending finger guard 51 which extends downwardly as close as possible to the bight of the wheels 10 and 11 without interfering with the work and prevents the possibility of the operator's fingers being caught by the wheel 10, while yet permitting the operator to feed into position small fine work which could not otherwise be done with safety.

At the rear or up going side of the wheel 10 I have provided a feature which in practice has proved very useful. One of the greatest objections to power cementers is that, at unexpected moments, they permit more or less cement to drop on the work. The present type of machine originally proved no exception to this rule, and I found that mere scrapers would not cure the difficulty as the cement would flow downward near the center at a slight distance

from the axis of the wheel until it had collected sufficiently to drip onto the work, but all this is done away with simply by embracing the rear edge of the wheel by opposite wings 52 of a cement removing device which preferably extend obliquely downward far enough to engage the sides of the wheel at the region where the cement has been accustomed to collect, as above explained. The lower edges of these wings 52 preferably flare slightly as indicated at 53, the upper portions of the wings practically engaging the sides of the wheel outwardly to its periphery. As the wheel rotates the cement which tends to collect in the path of the point of the cement removing device, is caught by the slightly flaring lower edge of the wings 52 and is gradually worked outwardly by the wings as the wheel 10 continues to rotate, until finally the cement reaches the periphery of the wheel in a globule which is held in by a flaring guard or lip 54, with the result that the globule of cement gradually works over against the periphery of the wheel and is carried gradually upward until suddenly it is sucked up, as it were, by the pockets or cement in the pockets at the periphery of the wheel and then at once disappears up into the pocket. Preferably the part 55 of the guard or end portion of the cement remover adjacent the periphery of the wheel extends obliquely toward the periphery so as to make the throat or passageway for the cement gradually smaller toward the direction of movement of the wheel 10. In practice this cement remover counteracts all tendency of the machine to drip cement, and keeps the work invariably clean.

As already stated, one of the leading and most important features of novelty of my present invention consists in providing means for cementing the work at will either on one or on both sides, and accordingly, in the preferred embodiment of my invention herein shown, I provide a duct from the cement tank 32 for delivering cement to the lower cement wheel 11, said duct being herein shown as a pipe 56 secured by a clamp 57, an elbow 58, pipe 59, flexible tube 60, pipe 61, tubular elbow and casting 62, the latter being provided with a shut off valve 63 operated by a handle 64, said elbow 62 opening into a casting 65 at 66, which is provided with a cement chamber 67 having an opening 68 at its top. Above the casting 65 is a casting 69 on whose internal ledge 70 I mount a felt pad 71 surrounded by movable clamping bars or plates 72, 73, and held in place by a plate 74 by screws 75, the clamping plate being actuated by set screws 76, and the whole held together by thumb screws 77 at the opposite ends. The wheel 11 runs in a slot 78 of the felt pad, and a wooden block 79 bears against the up going side of

the cellular cement wheel 11 the same as in the case of the block 47 already described. The block 79 is actuated by a thumb screw 80 whose rib 81 enters a groove 82 in said block. By this means the utmost nicety of cement delivery or regulation is had for the lower side of the work at wheel 11 as for the upper side of the work at wheel 10. For some kinds of work it is desirable to cement the upper side only of the stock, and accordingly, in such case, the controlling valve 63 is closed and the chamber 67 is drained, being provided for this purpose with a removable plug or closing device 83. And in this case the wooden cleaner or regulator block 79 is moved back out of engagement with the wheel 11.

In use, let it be supposed that it is desired to apply cement by both the upper and the under cement wheels on a vamp folded along its middle as shown in the drawings, both valves 38 and 63 are opened, and the felt pads and adjusting blocks of wood or equivalent material are carefully adjusted so as to cause exactly the right amount of cement to be delivered according to the requirements of the given piece of work, and then the foot lever is operated so as to throw the driving clutch 22 into operation, which causes the wheels 10 and 11 to feed the work forward, guided by a workrest 84 just at the rear of the meeting edges of the cement wheels. The result is that the work is quickly and neatly cemented with a thin narrow strip of cement exactly as required, and without danger of getting any cement elsewhere on the work. In case the operator should, through carelessness, permit the work to roll up on the top roll or otherwise clog the machine, he lets up on the clutch 22, which at once stops the machine, and then instantly depresses the treadle chain 28, thereby separating the wheels 10 and 11 sufficiently to permit the removal of the tangled piece of work. The head transmitter arrangement of the worm and worm wheel give instant stopping and starting movement so that the cement wheels can run an exceedingly short distance if desired. The spring adjustment 23-26 and the pivoting of the hanger or carrier 8 affords a yielding construction which permits the cement wheels or whatever cementing devices are used to give a cushion effect. The result is that this takes the place of the usual rubber roll, which has heretofore been considered more or less essential for shoe work, especially for cementing uppers and small work. Rubber or composition rolls, especially when used on small work such as many of the small parts of shoes, wear out rapidly and are expensive, difficult to keep in order, etc., and one of the primary purposes of my present invention and particularly of this cushion-giving construction is

to provide a durable substitute for the previous rubber roll construction. The adjustment of the spring 23 permits the pressure of the two cement wheels to be varied as desired, and by adjusting the thumb nut 31 the normal proximity of the wheels 10 and 11 may be regulated with great nicety. If it is not desired to cement both sides of a piece, as in the example previously given, the valve 63 is closed, the stop 83 is opened, permitting the cement to drain off from the lower cement wheel 11, and the wheel is run against the block 79 and the adjacent felt pads, etc., until it is entirely clean, whereupon the block 79 is moved back out of the way, and thereafter the machine is run with one cement delivery wheel only delivering cement. If at any time a different kind of cement is to be used, it is unnecessary to empty the cement pot, clean it out, etc., as heretofore; but instead thereof the valve 38 is simply closed and the thumb nuts 36 are caused to disengage the pot 32, which is then lifted from the machine and another similar pot containing the desired cement is put in place. Its neck 34 automatically centers the pot and gets it into exactly the right position with the flat bottom edges thereof in accurate engagement with the felt pad 42 all around the mouth 35, the pot being clamped and its mouth brought down with exactly the right pressure by turning up the clamping nuts 36. The wings 52 of the remover cause all the surplus cement to be carried up from the sides of the wheel 10 and back into the pot, while the finger guard 51 enables the operator to place even the smallest and most delicate work accurately between the feed wheels 10 and 11. If more cement is desired, the block 47 is moved back slightly, and if less cement is desired it is moved forward. The metal bars 43 are moved inwardly by their set screws 44 as the felt wears or needs adjustment. When the machine is used as a double cementer, the corresponding mechanism adjacent the bottom wheel is similarly adjusted.

One of my chief aims has been to provide a machine capable of handling work not only quickly but so as to deliver the cementing line with precision and neatness, and at the same time to use a minimum quantity of cement.

It will be understood that while I have described my invention in all the minute details of the preferred embodiment, this embodiment is preferred only, as my invention is capable of a wide variety of mechanical embodiments without departing from the spirit and scope thereof as defined in the appended claims.

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

1. A cementing machine, comprising op-

posite cement-applying devices adapted to handle and cement the curved edges of leather shoe-parts, said devices being arranged to engage said curved edges on the opposite sides of the leather shoe-parts simultaneously at the same point thereof, and cement-delivery mechanism operable at the will of the operator for delivering cement to one or both of said applying devices as desired, and thereby controlling the delivery of cement to the work.

2. A cementing machine, comprising narrow cement-applying wheels adapted to handle and cement the curved edges of leather shoe-parts, said wheels being arranged opposite each other to engage said curved edges at the same point tangentially of each other to permit the simultaneous cementing thereby of said curved edges at both sides of the leather part, and means including separate supplies of cement under the control of the operator to deliver cement to one or to both of said wheels as desired, and thereby to control and regulate the cementing of said edges.

3. A cementing machine, comprising a work-engaging device to engage the upper side of the work, a work-engaging device to engage the under side of the work, said two devices being adapted to handle and cement simultaneously the opposite curved edges of leather shoe-parts, and independent regulating means for separately regulating and controlling the delivery of cement to each of said two engaging devices, including means for regulating the amount of cement delivered to said edges.

4. A cementing machine, comprising a work support, a rotary cementing device co-operating therewith, adapted to handle and cement the curved edges of leather shoe-parts, means for supporting and feeding said shoe-parts at their said curved edges against the rotary cementing device, and adjustable means under the control of the operator for varying the strength of the pressure of said cementing device and of said feeding device on the leather and thereby varying the cementing of said edges.

5. A cementing machine, comprising a work support, a rotary cementing device co-operating therewith, adapted to handle and cement the curved edges of leather shoe-parts, means for supporting and feeding said shoe-parts at their said curved edges against the rotary cementing device, adjustable means under the control of the operator for varying the strength of the pressure of said cementing device and of said feeding device on the leather and thereby varying the cementing of said edges, and means under the control of the operator for instantly separating the feeding device and the cementing device whenever desired in the progress of the cementing operation.

6. A cementing machine, having a work-engaging device to engage the upper side of the work, a work-engaging device to engage the under side of the work, and means for
 5 converting the lower of said engaging devices at will into either a cementing device or simply a work support.

7. In a cementing machine, an upper cement-applying wheel, means embracing
 10 the upper edge of said wheel for delivering cement thereto, a lower cement-applying wheel, means embracing the lower edge of said lower wheel for delivering cement
 15 thereto, and means to rotate said wheels in opposite directions so as to feed the work between them at their adjacent cement-delivering edges.

8. In a cementing machine, an upper cement-applying wheel, means embracing
 20 the upper edge of said wheel for delivering cement thereto, a lower cement-applying wheel, and means embracing the lower edge of said lower wheel for delivering cement
 25 thereto, said wheels lying in substantially the same plane and having their cement-delivering edges arranged approximately tangentially of each other to engage and
 cement the work simultaneously at the same point on the opposite sides thereof.

9. In a cementing machine, an upper cement-applying wheel, means embracing
 30 the upper edge of said wheel for delivering cement thereto, a lower cement-applying wheel, means embracing the lower edge of
 35 said lower wheel for delivering cement thereto, said wheels lying in substantially the same plane and having their cement-delivering edges arranged approximately
 40 tangentially of each other to engage and cement the work simultaneously at the same point on the opposite sides thereof, and cut-off means under the control of the operator
 to supply cement to the lower wheel or withhold cement therefrom as desired.

10. In a cementing machine, opposite cement-applying means arranged simulta-
 45 neously to engage the opposite sides of the work at the same point thereof, a main cement supply tank for one of said wheels, and a branch supply device under the control
 50 of the operator extending from said main supply tank to the other of said wheels for supplying cement to the latter.

11. In a cementing machine, a work support, a rotary cementing device, and yield-
 55 ing means providing a spring-like cushion effect as the work passes over said work support and beneath said rotary device and regulating means to render the cushion gen-
 60 tle or hard as desired.

12. In a cementing machine, a rotary cement applying wheel, a stationary support
 65 above said wheel having a depending trough-like centering cavity above said wheel provided with a central slot for the

top edge of the wheel to enter, and a cement pot having a central depending neck, approximately fitting said cavity, and lateral
 shoulders therefrom to rest on said support, said pot having a discharge mouth located
 70 centrally in said neck for delivering cement to the top edge of said wheel.

13. In a cementing machine, a cement delivering device, a stationary support above
 75 said device, a cement pot in position to be carried by said support having a cement delivering mouth above said device, a yielding
 pad centrally apertured to receive said cement delivering device and having lateral
 80 portions engaged by said pot about the edges of the mouth thereof, and adjusting means for pressing said pot toward said
 support and thereby compressing said pad.

14. In a cementing machine, a cement delivering device, a stationary support above
 85 said device, a cement pot in position to be carried by said support having a cement delivering mouth above said device, a yielding
 pad centrally apertured to receive said cement delivering device and having lateral
 90 portions engaged by said pot about the edges of the mouth thereof, and lateral means carried by said support for compressing said pad horizontally at its sides toward
 said delivery device.

15. In a cementing machine, a cement delivering device, a stationary support above
 95 said device, a cement pot in position to be carried by said support having a cement delivering mouth above said device, a yielding
 100 pad centrally apertured to receive said cement delivering device and having lateral portions engaged by said pot about the
 edges of the mouth thereof, lateral means carried by said support for compressing said
 105 pad horizontally at its sides toward said delivery device, and adjusting means for pressing said pot toward said support and
 thereby compressing said pad.

16. In a cementing machine, a rotary cement wheel, means for delivering cement
 110 by gravity thereto, yielding means engaging the cement wheel to prevent an undue flow of cement, and a comparatively hard
 slightly yielding regulating block like wood
 115 bearing against the outgoing edge of the cement wheel next to said first mentioned yielding means further to limit the delivery
 of cement.

17. In a cementing machine, a rotary cement wheel, means for delivering cement by
 120 gravity thereto, yielding means engaging the cement wheel to prevent an undue flow of cement, a comparatively hard regulating
 block, provided with a relatively yielding
 125 pad at its inner side bearing against the outgoing edge of the cement wheel further to limit the delivery of cement, and slow motion means to adjust said block toward and
 from said wheel.

18. In a cementing machine, a rotary cement delivering wheel, means for delivering cement thereto, and directing means extending transversely of the wheel's axis along the side of said wheel from the return edge thereof, for directing surplus cement back away from the work.

19. In a cementing machine, a rotary cement delivering wheel, means for delivering cement thereto, and cement directing and up-sucking means extending in a direction at right angles to the wheel's axis along the side of said wheel in engagement with said side of the wheel rearwardly obliquely upward to the edge of the wheel which is moving away from the work, in position for whatever cement accumulates on the side of the wheel to follow along the edge of said directing device rearwardly and upwardly to the back edge of the wheel to be sucked up by the latter away from the work.

20. In a cementing machine, a rotary cement delivering wheel, means for deliver-

ing cement thereto, and cement directing and up-sucking means extending in a direction at right angles to the wheel's axis along the side of said wheel in engagement with said side of the wheel rearwardly obliquely upward to the return edge of the wheel which is moving away from the work, in position for whatever cement accumulates on the side of the wheel to follow along the edge of said directing device rearwardly and upwardly to the back edge of the wheel to be sucked up by the latter away from the work, said directing device having a flaring mouth embracing said edge of the wheel and converging upwardly toward the same for assisting in the return of the cement.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HARRY I. ILLINGWORTH.

Witnesses:

JOSHUA MILLS,

LOUIS H. ATTWILL.