

No. 728,793.

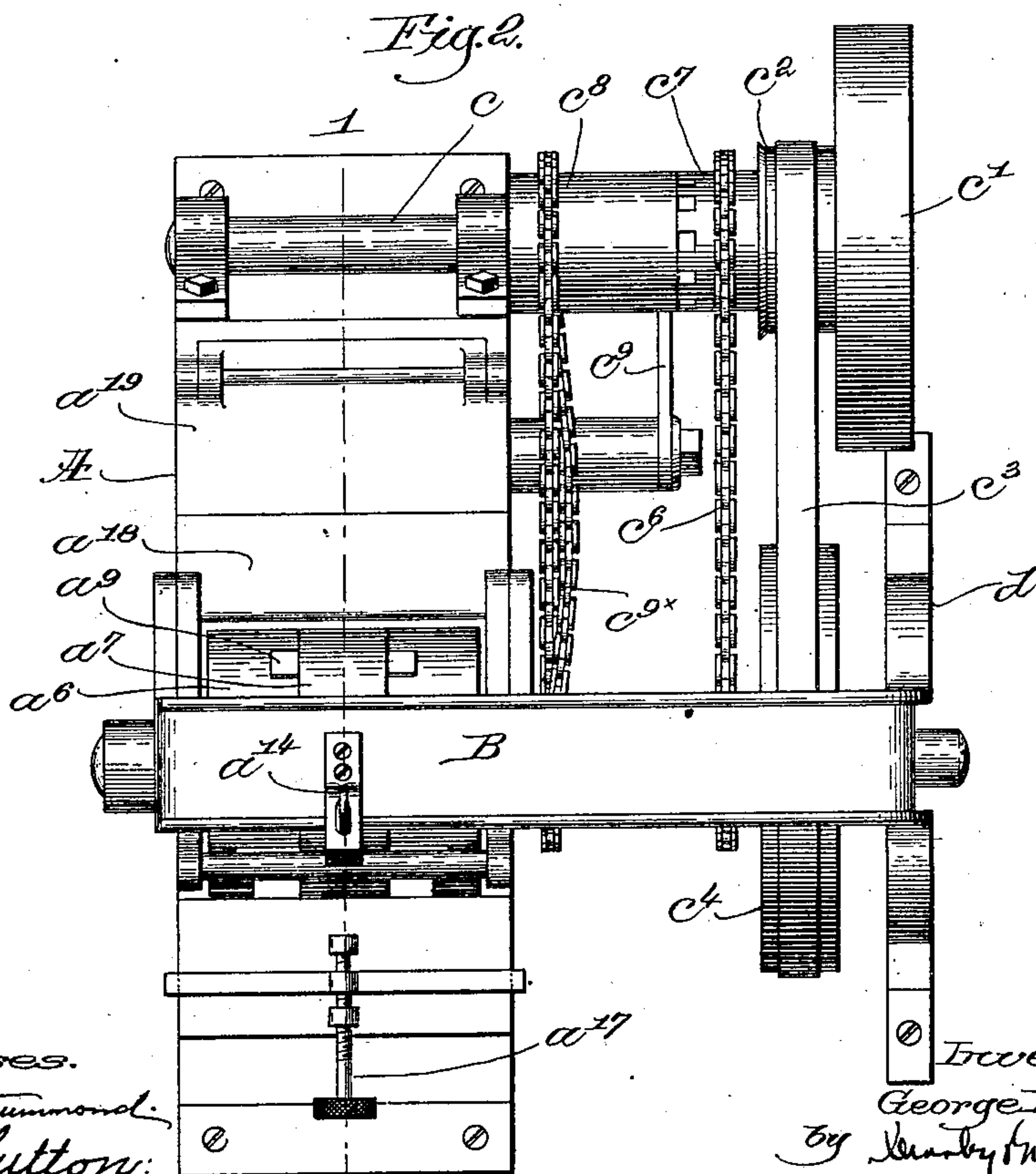
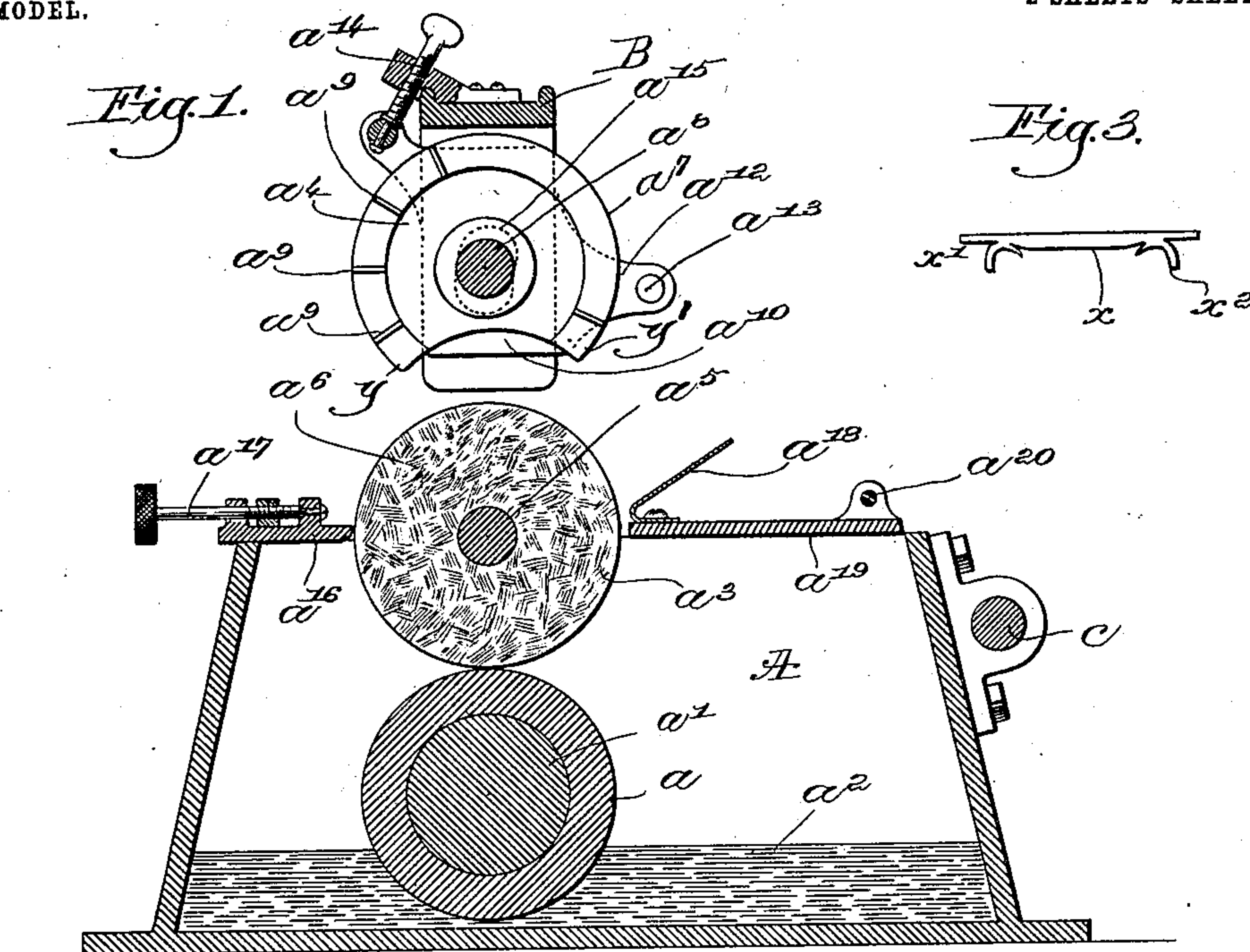
PATENTED MAY 19, 1903.

G. F. DUNN.
INNERSOLE CEMENT MACHINE.

APPLICATION FILED DEC. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.
Thomas J. Drummond.
L. Wm. Lutton.

Inventor.
George F. Dunn,
by Henry Gregory *att'y*.

No. 728,793.

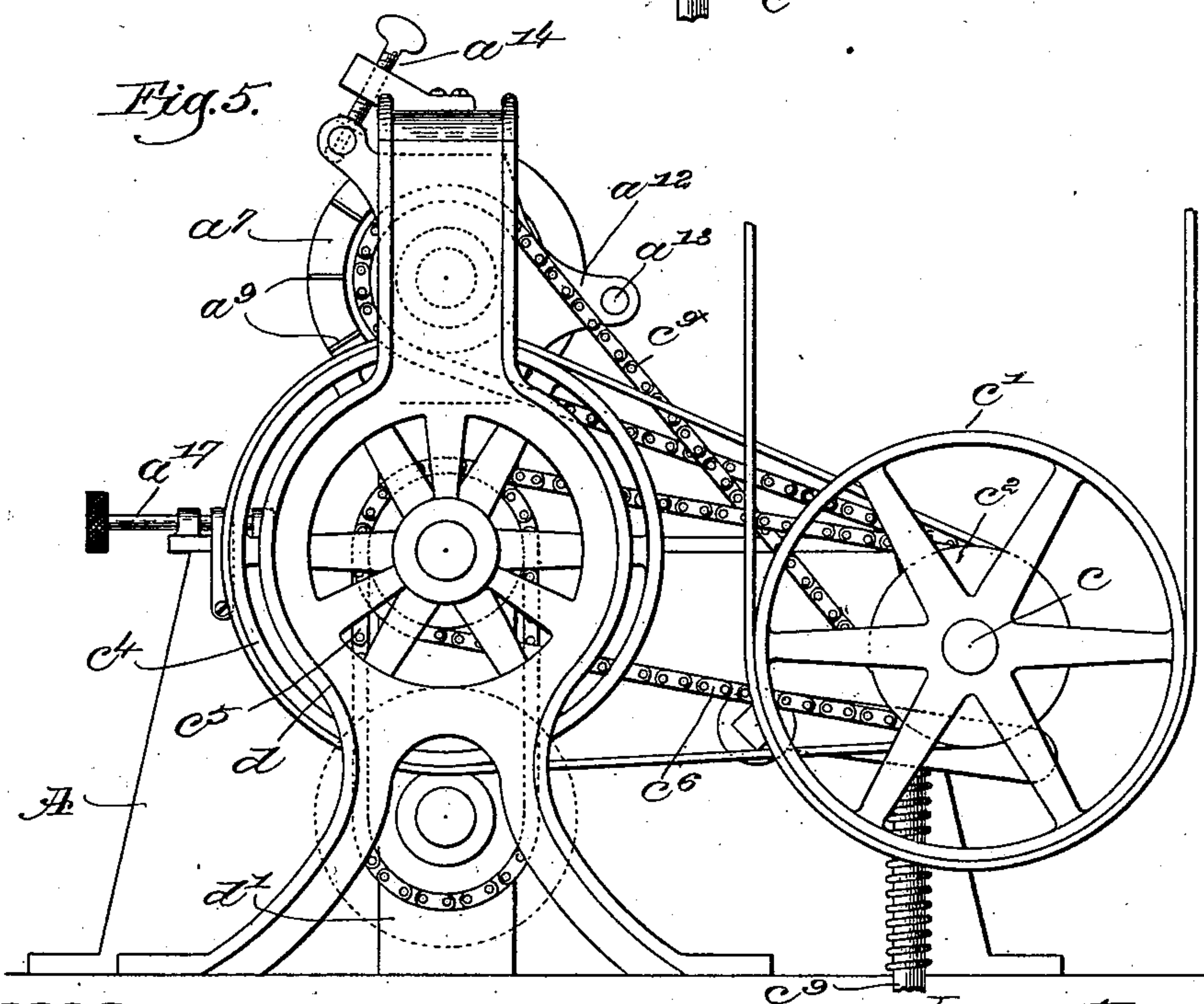
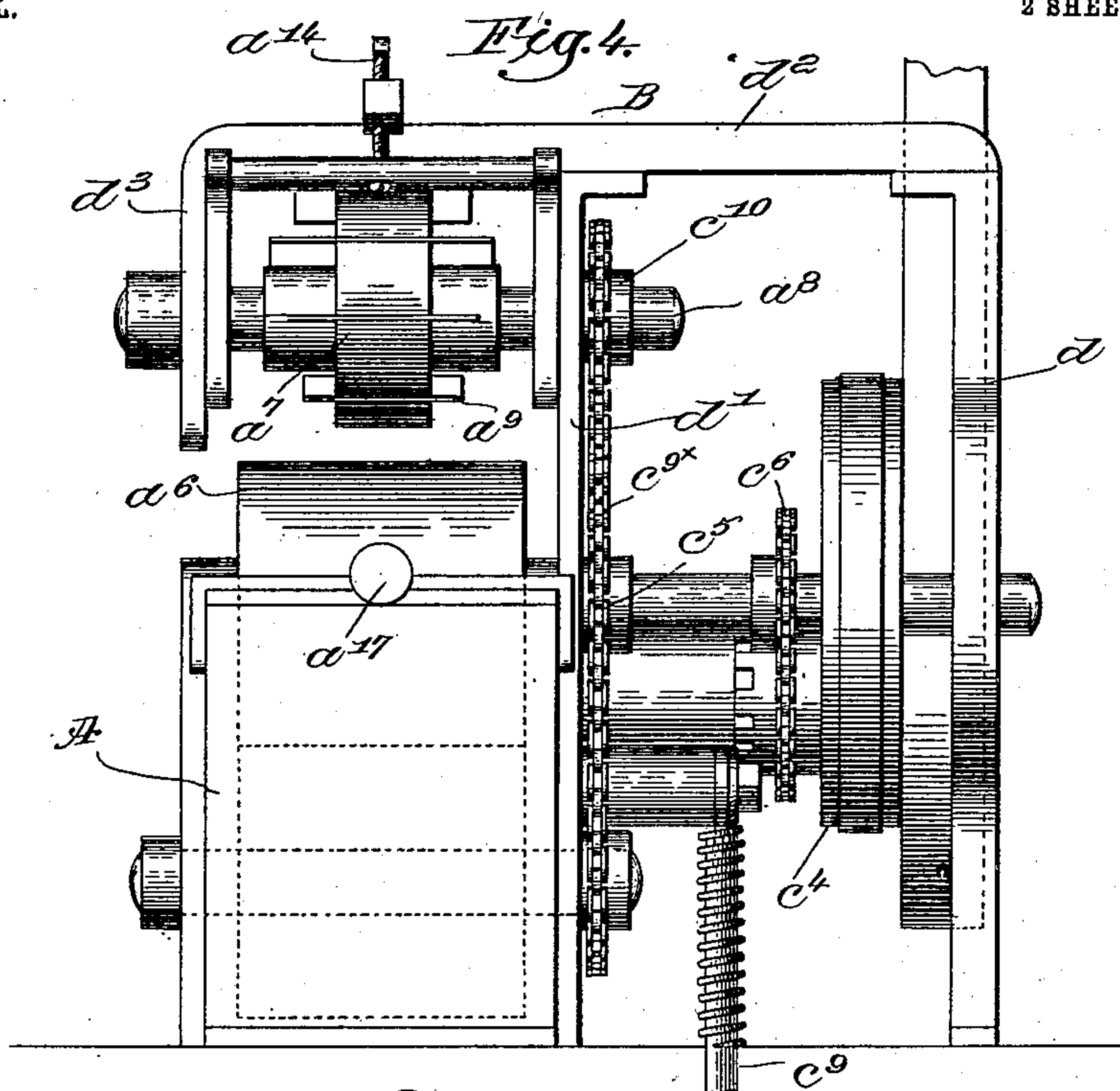
PATENTED MAY 19, 1903.

G. F. DUNN.
INNERSOLE CEMENT MACHINE.

APPLICATION FILED DEC. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:
Thomas J. Hammond.
J. Wm. Lutten.

Erverton.
George F. Dunn,
by Crosby Ferguson,
attys.

UNITED STATES PATENT OFFICE.

GEORGE F. DUNN, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO WILLIAM B. ARNOLD, OF NORTH ABINGTON, MASSACHUSETTS.

INNERSOLE-CEMENT MACHINE.

SPECIFICATION forming part of Letters Patent No. 728,793, dated May 19, 1903.

Application filed December 8, 1902. Serial No. 133,680. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. DUNN, a citizen of the United States, and a resident of Brockton, county of Plymouth, State of Massachusetts, have invented an Improvement in Innersole-Cement Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a machine for laying cement over the surface of the leather portion of innersoles employed in the manufacture of boots and shoes.

Innersoles have a peculiar surface, irregular in cross-section, the innersole being of varying thicknesses and having several recesses, the result being that it has been exceedingly difficult to get the cementitious substance applied properly at all points of this irregular and recessed surface. The middle portion of an innersole is thicker than the edge portion and is peripherally surrounded with a still thicker portion or upturned lips, at one or both sides of which are incisions at the bases of the lips which constitute the recesses referred to, and it is desirable that these recesses and lips should have a thoroughly-applied and relatively heavy coating of cement, while the middle portion of the innersole should have a thin coating of cement. Accordingly I have devised the hereinafter-described mechanism for accomplishing the proper spreading and application of the cement.

In the drawings in which I have shown a preferred embodiment of my invention, Figure 1 is a central longitudinal section of the machine, taken on the line 1, Fig. 2. Fig. 2 is a top plan view of the machine. Fig. 3 is a sectional view of one form of innersole, this figure being shown for the purpose of enabling my invention to be more clearly understood. Fig. 4 is a front elevation of the machine. Fig. 5 shows the machine in side elevation.

The cement which is commonly employed for the purposes herein set forth is what is known as "rubber-cement," being very viscous and requiring to set for a considerable time after it has been applied to the leather

surface before it is ready to unite parts together. Because of these and other peculiarities of the cement and of the formation of the innersole the problem of properly applying the cement has proved to be far from easy of solution. The present machine aims to accomplish all that is desired, however, and aims to do it in a rapid as well as efficient manner.

In a suitable tank A, made as close as possible in order to prevent undue evaporation of the volatile portions of the cement, I provide a distributing-roll a , mounted on a shaft a' and dipping into the cement body a^2 for transferring the cement to a superposed roll a^3 , which receives the innersole when fed thereto by a feed-roll or feed-wheel a^4 . The roll a^3 constitutes one of the most important and distinctive features of my invention. It will be observed that this roll has a small shaft a^5 , which is peripherally surrounded by a very thick part a^6 . Two things are essential in this roll, the first requirement being that the part a^6 shall be made of exceedingly resilient material and the second that it shall have great depth, as indicated, or, in other words, this roll is so constituted that it yields just sufficiently to prevent squeezing out all the cement and yet apply only a thin layer of cement to the part x of the innersole (see Fig. 3) and a heavy coating of cement to the parts x' thereof, the lips x^2 pressing freely into the surface of the part a^6 , so that the cement is forced into the recesses and over the thin surfaces x' , this being accomplished with such pliability of cement-spreading surface as to thoroughly coat the lips and all portions of the under side of the innersole, as it is shown in Fig. 3. The soft highly resilient substance a^6 acts like a brush to deftly wipe or brush the cement into the irregular surfaces and recesses of the innersole, and hence in the claims I have referred to it as being capable of softly encompassing or embracing the projecting and irregular portions of the innersole. By "softly" I mean that it follows the sinuities and reentrant angles and other irregular and uneven surface or superficial contour daintily or delicately in such a manner as to apply the proper coating of cement to all portions of the adjacent surface of the innersole.

I have found by experiment that this is possible, and this result is secured by making this surface of great depth and great resiliency, as otherwise if the part a^6 were shallow or were relatively hard (as in a printing-roll or ordinary paste-spreader) it would simply apply the cement to the recesses and would wipe it clean from the projecting portions and from the thicker parts of the innersole.

As the cement which is used in shoe factories contains naphtha it is desirable that the part a^6 shall not contain rubber, but is composed of composition such as is employed in making printing-press rolls excepting that it is much more resilient or readily yielding. Neither a thin roll nor a relatively hard roll would accomplish the purpose, and I expressly disclaim the same, as they would in no sense be equivalents of my roll, and so for this reason I wish it understood that no rubber or other yielding roll as is found in corn-cob-pipe fillers will accomplish my purpose. This part of the invention resides in discovering that this exceedingly tacky cement may be spread exactly as required into the recesses and over the projecting lips and the thin and thick portions by a roll having great amplitude of resiliency and freedom of yielding movement in all directions. The feed-roll is also of special formation for preventing smearing and promoting free depression and feeding and constitutes another important and distinctive feature of my invention, being shown best in Figs. 1 and 4, where it will be seen that in its preferred form it comprises a central rib or projection a^7 , mounted on a hub or shaft a^8 and provided with laterally-extending plates or wings a^9 , said rib or projection being cut away, as indicated at a^{10} , and having a length from the point designated as y over to the point designated as y' , Fig. 1, substantially equal to the length of the largest-sized innersole to be treated. The plates a^9 vary in length to conform to the general shape of an innersole, and the roll a^4 is adjustable up and down relatively to the roll a^6 , being herein shown as carried in hangers a^{12} , pivotally mounted at a^{13} in the frame of the machine and provided with adjusting means a^{14} , mounted in the top of the frame B, the ends of the shaft a^8 projecting through slots a^{15} in the frame B. (Shown in dotted lines in Fig. 1.) I regard this feed-roll as of much value, as by its use the upper surface of the innersole is kept from getting smeared and spoiled with the tacky cement, the plates simply bearing thereon at widely-separated intervals, and that portion of the feed-roll which carries said plates, if used, being narrow, so as not to get in contact with any cement. The projecting ends of the plates a^9 may dip occasionally into the cement on the roll a^3 ; but their bearing engagement with the innersole is so slight that there is no tendency to spread or squeeze out a blotch of cement thereby, as would be the case if a regular feed-roll were employed, and the plates are spaced

apart wide enough to prevent the tacky cement stringing across from one to the other as they revolve.

In front of the roll a^6 I provide a cement-evenner a^{16} , adjustable by a thumb-screw a^{17} , and at the rear end I provide a shield or deflector a^{18} , the top a^{19} of the tank A being pivoted at a^{20} to the frame of the machine.

The driving mechanism may be of any kind desired, it being desirable, however, to drive the rolls a^3 continuously and the roll a^4 intermittently. For this purpose I have provided a shaft c at the rear of the machine having a loose drive-pulley c' at one end, secured to which is a drum c^2 , carrying a belt c^3 , which passes over a pulley c^4 , fast on the shaft a^5 . The roll a is driven from shaft a^5 by a sprocket-chain c^5 , and another sprocket-chain c^6 passes from said shaft to a clutch c^7 , loose on shaft c and adapted to be thrown at will into engagement with a fast drum c^8 by any usual mechanism, a foot-lever c^9 being herein shown for the purpose, and from said drum c^8 a crossed sprocket-chain c^{9x} passes over a sprocket-wheel c^{10} on the shaft a^8 . It will be understood, however, that I do not limit myself to the constructional details of the machine, and especially so with regard to the parts just explained, as many changes in construction and arrangement of parts may be resorted to without departing from the spirit and scope of my invention.

The roll a^3 is kept rotating continuously, so that the layer of cement may be maintained uniform in amount and consistency, and the reciprocating feed mechanism is halted at proper intervals to permit the innersole to be placed in accurate position for proper feeding, the change in its reciprocation being usually sufficient to enable the sole to be accurately positioned.

The mechanism is carried in any suitable frame, that herein shown comprising uprights d d' , connected at the top by a bar d^2 , which overhangs at d^3 to provide proper journal-bearings for the feed-roll.

In use the innersole is placed against the feed-roll a^4 , so that its end comes approximately at the point y . The clutch is operated by the foot, and thereupon the feed-roll presses the innersole down against the roll a^6 as the innersole is fed along between the two moving surfaces, the body or inner portion x of the innersole being pressed down firmly by the rib part a^7 of the feed-roll, and the wings or plates a^9 holding the edges thereof sufficiently and at the same time preventing any slipping of the innersole. As the innersole moves along the yielding and embracing surface of the roll a^6 carries the cement into the recesses x' and smears the cement thinly over the body x and at other points with the degree of application desired, as already explained, the cement being brought up by the constantly-rotating rolls a^3 and evened by the scraper or evenner a^{16} .

As already intimated, I do not intend to restrict myself otherwise than as expressed in the claims, taken in connection with this description, and in some of those claims it will be observed that I have given prominence broadly to one of the features of my invention and in other claims similarly to another feature thereof without reference to the special other details and combinations herein shown.

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

1. An innersole-cement machine, comprising a cement-tank, applying means for receiving cement from said tank and applying the same to one side of an innersole, and work-feeding mechanism, for feeding the innersole without smearing the adjacent side thereof with cement, including separated engaging devices for contacting with the innersole at a plurality of points of small areas widely apart.

2. A device of the kind described, comprising a cement-tank, a cement-applying roll, and work-feeding mechanism for feeding the innersole to said roll, said roll having great amplitude of resiliency and freedom of yielding movement in all directions for softly encompassing or embracing the projecting and irregular portions of the innersole, said work-feeding mechanism including engaging means for contacting with the innersole at a plurality of points widely apart and each of small area.

3. A device of the kind described, comprising a cement-tank, a cement-applying roll, a distributing-roll for delivering cement to said applying-roll, and work-feeding mechanism for engaging and feeding the innersole to said cement-applying roll, said work-feeding mechanism including means for preventing smearing the cement on the surface of the innersole out of contact with the cement-applying roll, said cement-applying roll having great amplitude of resiliency and freedom of yielding movement in all directions for softly encompassing or embracing the projecting and irregular portions of the innersole.

4. A device of the kind described, comprising a cement-tank, a cement-applying roll, a feed-roll for feeding the innersoles to said cement-applying roll, said feeding-roll having a central rib provided at intervals with laterally-extending plates, and mechanism for continuously rotating said cement-applying roll and intermittently rotating said feed-roll, said cement-applying roll being large in diameter and consisting of a small shaft provided with a composition extending from said shaft to the periphery, having great resiliency throughout its entire depth, rendering it capable of readily yielding in all directions to the irregular surface of the innersole to be cemented.

5. A device of the kind described, comprising a cement-tank, a cement-applying roll, and feeding mechanism for feeding the innersoles to said cement-applying roll, said feeding mechanism containing widely-separated laterally-extending wings or plates to contact with the innersole over limited areas far apart.

6. A device of the kind described, comprising a cement-tank, a cement-applying roll, a feed mechanism for feeding the innersoles to said cement-applying roll, and operating mechanism including means for continuously rotating said cement-applying roll and means for intermittently halting said feed mechanism, said cement-applying roll being large in diameter and consisting of a small shaft provided with a composition extending from said shaft to the periphery, having great resiliency throughout its entire depth, rendering it capable of readily yielding in all directions to the irregular surface of the innersole to be cemented.

7. A device of the kind described, comprising a cement-tank, a cement-applying roll, mechanism for feeding the innersoles to said cement-applying roll, said feeding mechanism including means located above the cement-applying roll provided with separated depressing devices for contacting with the innersole over limited areas widely apart for pressing the innersole down into the cement-applying roll, said cement-applying roll being large in diameter and consisting of a small shaft provided with a composition extending from said shaft to the periphery, having great resiliency throughout its entire depth, rendering it capable of readily yielding in all directions to the irregular surface of the innersole to be cemented, and applying approximately the same embracing pressure at all points of the innersole contacting therewith.

8. A device of the kind described, comprising a cement-tank, a cement-applying roll, a work-feeding mechanism provided with separated devices of small contacting area extending transversely to the direction of feed of the innersole for feeding the innersole to said roll, and positively-operated adjusting means for adjusting said feeding mechanism to different thicknesses of innersoles, said cement-applying roll being large in diameter and consisting of a small shaft provided with a composition extending from said shaft to the periphery, having great resiliency throughout its entire depth, rendering it capable of readily yielding in all directions to the irregular surface of the innersole to be cemented.

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

GEORGE F. DUNN.

Witnesses:

GEO. H. MAXWELL,

WILHELMINA C. HEUSER.