W. P. BOSWORTH.

METHOD OF MAKING BOOT AND SHOE HEELS.

APPLICATION FILED SEPT. 12, 1908.

936,295.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.

Fig. 1

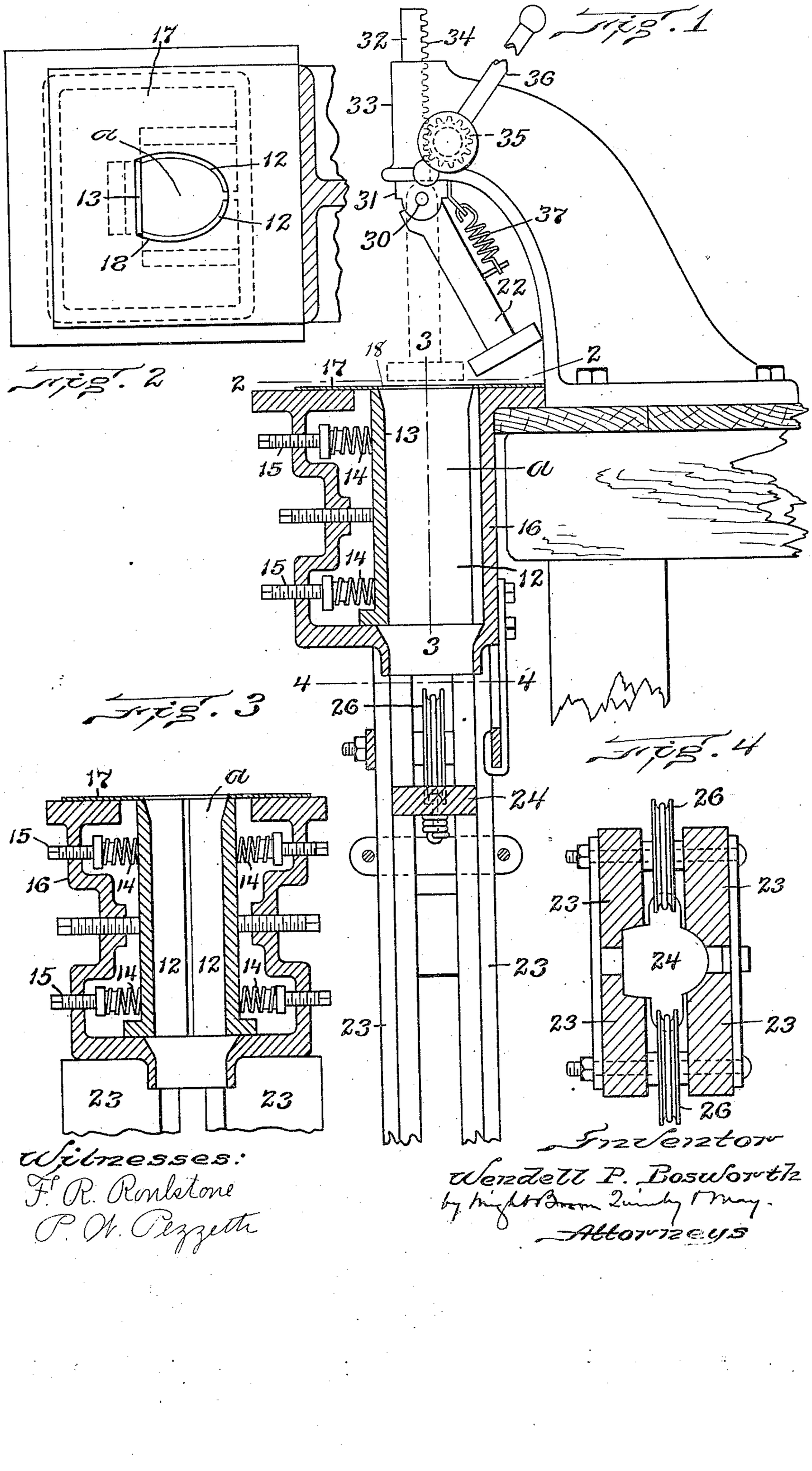

Fig. 2

Fig. 3

Fig. 4

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2 SHEETS—SHEET 2.

Fig. 5

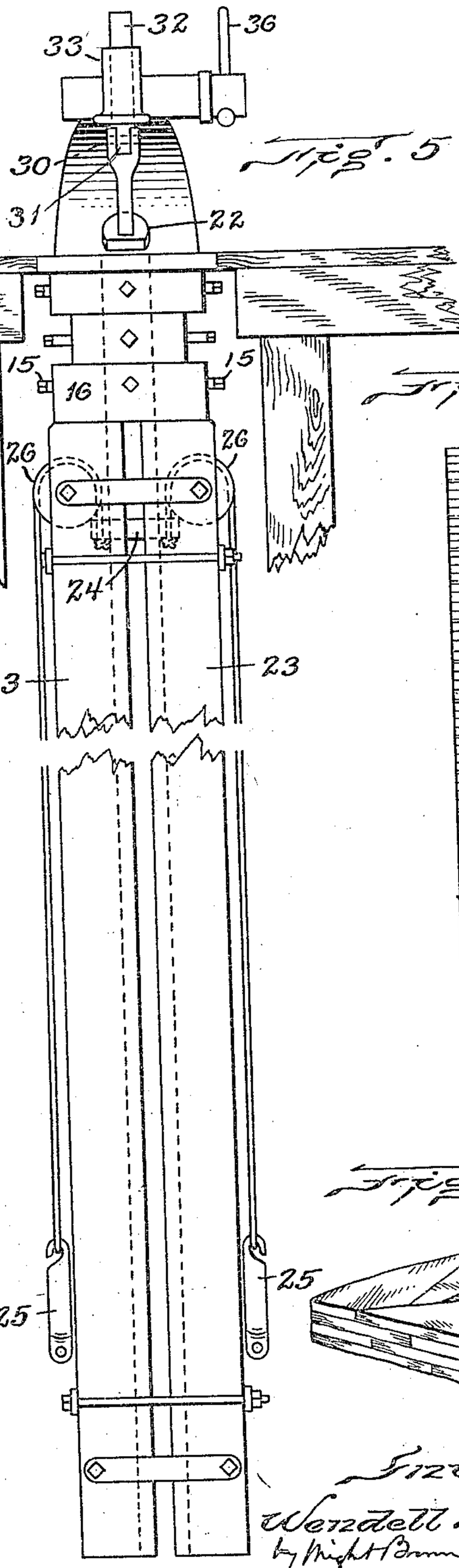


Fig. 6

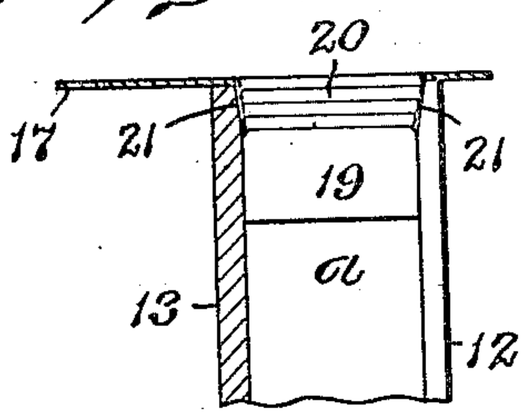


Fig. 9

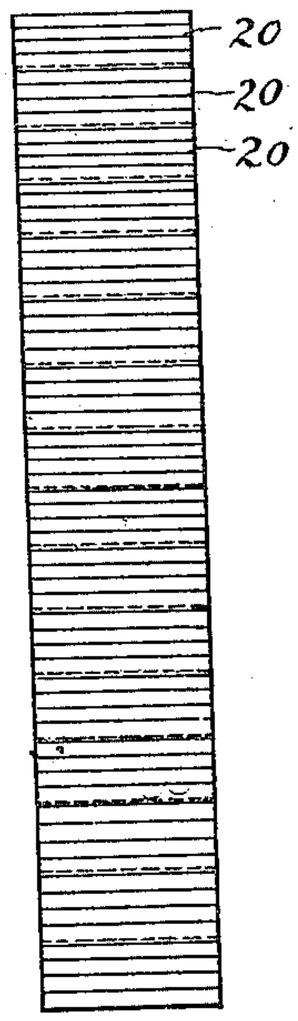


Fig. 7

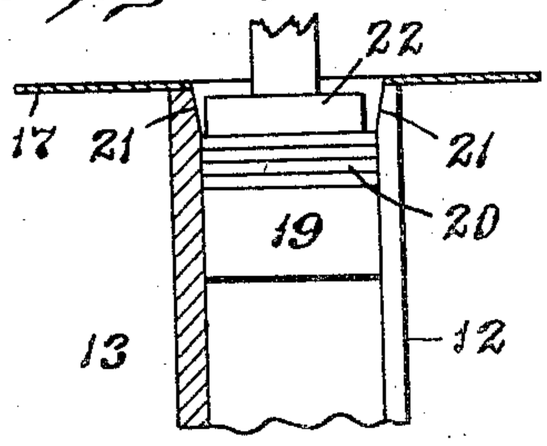


Fig. 8

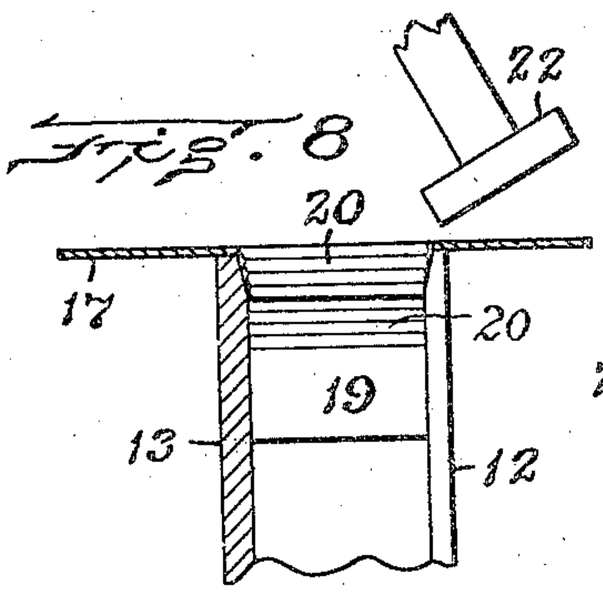
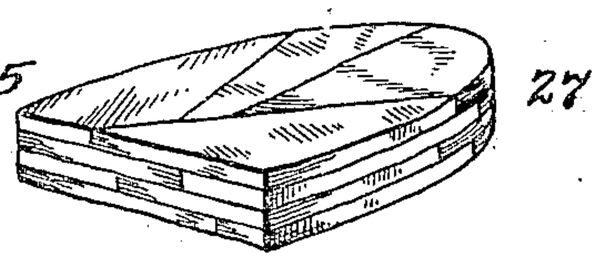


Fig. 10



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UNITED STATES PATENT OFFICE.

WENDELL P. BOSWORTH, OF BROCKTON, MASSACHUSETTS, ASSIGNOR TO BROCKTON HEEL COMPANY, OF BROCKTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

METHOD OF MAKING BOOT AND SHOE HEELS.

936,295. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed September 12, 1908. Serial No. 452,761.

To all whom it may concern:

Be it known that I, WENDELL P. BOSWORTH, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Methods of Making Boot and Shoe Heels, of which the following is a specification.

This invention has for its object to enable the bodies of boot and shoe heels to be rapidly and economically produced, and of any height or thickness that may be required. By heel bodies I mean the main portion of a boot or shoe heel minus the top lift.

The invention includes a continuous method of making heel bodies which consists in assembling or successively inserting cement-coated lifts in the receiving end of a guide until they form an elongated heel-log, or in other words, an elongated body which is heel-shaped in cross section, and is composed of lifts extending crosswise of the body, pressure being intermittently applied to the inserted lifts, to compress the same and move the log progressively endwise step-by-step, thereby projecting its advancing end from the delivering end of the guide, allowing the adhesive to harden in the advancing end portion of the log, and severing the hardened and projected portion of the log crosswise into sections or slices, each of which forms a heel body. By this method, I am enabled to produce heel bodies of any desired height, by a practically continuous operation, the insertion and compression of the freshly cemented lifts causing the projection of the hardened and completed end of the log into position for subdivision into heel bodies without other transportation of the heel log prior to its subdivision.

The invention also consists in certain improvements in apparatus adapted to practice the above described method.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a longitudinal section of a guide and suitable instrumentalities capable of use therewith in practicing my invention. Fig. 2 represents a section on line 2—2 of Fig. 1, and a plan view of the parts below said line. Fig. 3 represents a section on line 3—3 of Fig. 1. Fig. 4 represents a section on line 4—4 of Fig. 1. Fig. 5 represents a front elevation showing both the receiving and the delivering ends of the guide. Figs. 6, 7, and 8 represent fragmentary sectional views showing different stages of the log-building operation. Fig. 9 represents a perspective view of one of the sections or slices into which the log may be subdivided, said section constituting a heel body. Fig. 10 represents a view constituting a heel body.

The same reference characters indicate the same parts in all the figures.

In carrying out my invention, I first introduce a charge of heel lifts, treated with paste or other suitable adhesive, into the receiving end of an elongated guide, then apply pressure to the charge to compact it and move it along the guide to make room for another charge, then introduce a second charge and apply pressure thereto to force it against the preceding charge and cause its adhesion thereto, this operation being repeated until an elongated heel-log has been built up by successive accretions added to one end of the log and pressed against it, the log being moved endwise by the pressure applied to each charge until its advancing end is projected from the delivering end of the guide. The guide is of such length that the adhesive in the advancing end portion of the log hardens before leaving the delivering end of the guide. The projected and hardened portion of the log is severed transversely by a suitable cutter, or in any other suitable way, each sub-division being of the height or thickness required for a heel body. By this method, I am enabled to produce heel bodies of any height or thickness required, by a practically continuous operation, it being feasible to sever the log between the sides of one of the lifts composing it, so that the height of the heel body is not dependent in any way upon the number of lifts composing it.

The drawings illustrate suitable appliances adapted to be used in practicing the method above indicated, said appliances including an elongated guide which comprises a mold portion *a* adapted to exert pressure on the edges of lifts forced through it, and forms the receiving end of the guide. The mold portion *a* is heel-shaped in cross section, and is preferably composed of sections 12, 12, and 13, the sections 12, 12 being curved and constituting the side and rear end of the mold portion, while the section 13 is flat and constitutes the breast thereof.

The sections 12 and 13 are preferably backed by stout springs 14, so that they are adapted to yield somewhat to the lifts which are pressed into the mold portion, as hereinafter described, the yielding movement being sufficient only to prevent the liability of the binding or sticking of an assemblage of lifts to the walls of the mold portion. The springs 14 are supported by studs or bolts 15, which are screwed into a casing or holder 16 surrounding the mold portion. At the upper end of the mold portion is a bed plate 17 having a heel-shaped opening 18, which is preferably somewhat larger than the interior of the mold portion, as indicated in Fig. 2.

19 represents a plug having a close frictional fit within the mold portion *a*, said plug being preferably made of wood. The plug is placed in the upper end of the mold portion prior to the log-building operation, and is used during the building of the nucleus of the log, to oppose a yielding resistance to the downward movement of the log, and thus insure the application of sufficient pressure to bring the lifts firmly together. At the beginning of the operation, the plug 19 is placed somewhat below the upper end of the mold portion, as shown in Fig. 6, a recess or cavity being thus formed in the upper end of the mold portion for the reception of a charge of heel lifts 20. The upper ends of the parts 12 and 13 of the mold portion are preferably beveled at 21, so that the mouth of the cavity above the plug 19 is somewhat enlarged. The operator assembles the lifts 20 in the recess or cavity thus provided; the lifts being assembled in charges, and each charge comprising either one or a plurality of lifts. The lifts, before being inserted in the cavity, are treated with paste or other suitable adhesive. Each lift may be pieced, or in other words, composed of a plurality of pieces adapted collectively to form a heel-shaped lift.

In practice, when pieces are employed, the pieces forming one lift are shaped differently from those forming the next lift, so that the pieced lifts will break joints. After a charge of lifts has been inserted in the mold portion, they are subjected to pressure in any suitable way, preferably by a plunger 22 which is adapted to be forced downwardly into the mold portion, thus exerting pressure on the charge of lifts, and forcing said charge and the plug 19 downwardly into the mold portion, as indicated in Fig. 7. The charge of lifts is thus compacted and conformed to the interior of the mold portion, after which the plunger 22 is raised and another charge of lifts is inserted in the enlarged upper end of the mold portion, this charge being deposited upon the charge already inserted. The second charge is then subjected to pressure by the plunger 22, and forced downwardly with the first charge, and with the plug 19. The two charges now form the nucleus of a heel-log which may be built up to any desired length by repetition of the operations above described.

I contemplate extending the heel-log so that a considerable length,—say thirty to fifty or sixty feet,—will intervene and will be maintained between the freshly formed end and the point where the log is severed, the guide, as a whole, being adapted to suitably conduct the log until the adhesive with which the lifts were treated has hardened sufficiently to make the log rigid, and hold its members firmly together in its advancing end portion.

The portion of the guide which I term the mold may be of the same length as the maintained portion of the log. I prefer, however, to make the mold portion relatively short and provide as extensions thereof, completing the guide, parallel guide bars 23, which are formed to collectively engage different parts of the surface of the log, as indicated in Fig. 4, and are separated by longitudinal spaces which permit the access of air to the log for drying purposes. The arrangement of the bars is such that they offer practically no frictional resistance to the downward movement of the log between them. The lower ends of the bars 23 form the delivering end of the guide, and are located over an unobstructed space, as shown in Fig. 5.

To prevent the liability of the breaking off of the portion of the log between the bars 23 by its own weight, I provide a sliding platform or rest 24 adapted to support the lower end of the log, the rest being yieldingly supported by weights 25 on cords running over idle pulleys 26. When the lower end of the log emerges from the lower end of the mold portion of the guide, it comes in contact with the rest 24, said rest moving downwardly with the log as the length of the latter increases, until the rest reaches the lower ends of the bars 23, the advancing end portion of the log being then suitably dried so that when projected from the delivering end of the guide, it is ready for subdivision into sections 27, each of which constitutes a heel body, as shown in Fig. 10. The log is projected step-by-step from the lower end of the guide, and the projecting portion cut off after each projection of the log. The rest 24 may be projected from the guide by the advancing end of the log, and may be moved edgewise out of contact with the projected end of the log while the projected portion is being severed, the supporting cords being flexible and permitting the displacement of the rest.

For the purpose of severing a projected portion of the log, a hand operated chisel

may be employed or any equivalent appliance. Of course, whenever a lower portion of the log has been cut off, the total length of the log is temporarily less. As the log is built up at the upper end it again increases in length. The platform or rest 24 is, as has been stated, variable in height by reason of the counterweights 25, and it is laterally displaceable by reason of the supporting cords being flexible. Therefore the platform or rest 24 is constantly and easily variable in position so that it would move down with the lower end of the log as the latter emerges from the guide during the building up of the log, and it can be swung to one side to permit the removal of the cut off section or sections of the log, and is capable of immediately moving up into position to engage the new lower end of the log. If the temporary displacement of the rest 24, or the removal of a section of the lower end of the log, permits the body of the log in the guide to drop, the replacement of the support 24 may be made to immediately cause the log to be raised again to bring the upper end of it into proper relation to the presser 22. In other words, as the log lengthens and shortens, its lower end is supported in such a way as not to interfere with the detaching of sections successively from the hardened end portion.

The plunger 22 is preferably pivoted at 30 to a head 31, which is adapted to be reciprocated toward and from the mold portion, said plunger having a shank 32 which is movable in a fixed guide 33, and has rack teeth 34 engaging a rack segment 35, to which an operating lever 36 is affixed. The plunger is adapted to occupy a position in alinement with the mold portion, as indicated by dotted lines in Fig. 1, and is preferably normally swung backward from said position to the position indicated in full lines in Fig. 1, by means of a spring 37, so that the plunger is normally in position to leave the mouth of the mold portion unobstructed, so that the operator may conveniently assemble lifts or lift sections therein.

When the machine is to be operated, the operator first inserts the plug 19 in the mold portion of the guide, places a charge of lifts or lift sections on the plug, swings the plunger forward over the mold portion, and then by moving the operating lever 36, forces the plunger downward into the mold portion. The plug 19 offers a yielding resistance to the downward movement of the lifts caused by the plunger, and thus insures a firm pressure of the lifts against each other, and after the first charge has been inserted and compressed, a secure contact between each charge and the one previously inserted and compressed. The plunger is then raised by a backward movement of the operating lever, and is at the same time displaced by the spring 37.

It will be observed that the platform or rest 24 is adapted by the weights 25 to offer a yielding resistance to the inward pressure of successive charges into the mold portion by the plunger 22. As already stated, the guide bars 23 are preferably arranged so that they will permit the portion of the log which projects below the mold portion of the guide to pass freely between them without resistance other than that offered by the weighted rest 24.

The preferred practice is to make the total length of the guide, that is, the combined length of the mold portion and guide bars, sufficient to contain the entire length of a log which may be formed by one operator in the course of a day's work. The completed log may be left at the close of the day in position in the guide so that the adhesive in the log will harden before the commencement of the next day's operations, the advancing end of the log being projected from the delivering end of the guide, and subdivided, as above stated.

It will be seen that the operation of forming and subdividing the log is practically continuous, and is characterized by the successive application of freshly cemented lifts to one end of an elongated series or log of superimposed lifts, the application of pressure to the applied lifts to compress the same and move the log endwise step-by-step, the drying of the cement in the advancing portion of the log, and the successive removal of dried and hardened sections from the advancing end. There is, therefore, no such interruption of the operation as would be involved if a log of determinate length were built up and then removed bodily or as a whole from the guide in which it is built, prior to subdividing it into heel bodies. A further advantage is that every lift, and every section when cut off, has been subjected to exactly the same pressure. This is because the sections are removed from one end just as fast as they are assembled at the other end. And there can be no sections which have been subjected to any such short term pressure as to require subsequent treatment in another machine. Furthermore there need be no idle time for the machine if attended to by a succession of workmen.

I claim:

1. The improved continuous method of making heels, which consists in building up a heel log by successively adding cement coated lifts to one end of a superimposed series, applying pressure to said lifts to move the log endwise step-by-step, yieldingly supporting the log during its gradual increase in length and for a length of time to permit the cement to harden in the oppo-

site end portion of the log, and detaching sections successively from the hardened end portion, thus shortening the length of the log, and adjusting the support to the log after its length has been shortened.

2. The improved continuous method of making heels, which consists in successively locating cement coated lifts side by side and superimposing them to form a log, intermittently applying pressure to the lifts to compress the same, and move the log progressively downward, yieldingly supporting the log during its gradual increase in length and for a length of time to permit the cement to harden in the lower portion of the log, and detaching sections successively from the hardened end portion, thus shortening the length of the log, and adjusting the support to the log after its length has been shortened.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WENDELL P. BOSWORTH.

Witnesses:

FRED M. BIXBY,

STEWART B. MCLEOD.