

No. 637,779.

Patented Nov. 28, 1899.

A. GROESCHEL.

MACHINE FOR PROVIDING LEATHER SOLES WITH PLUGS.

(Application filed Mar. 18, 1899.)

(No Model.)

3 Sheets—Sheet 1.

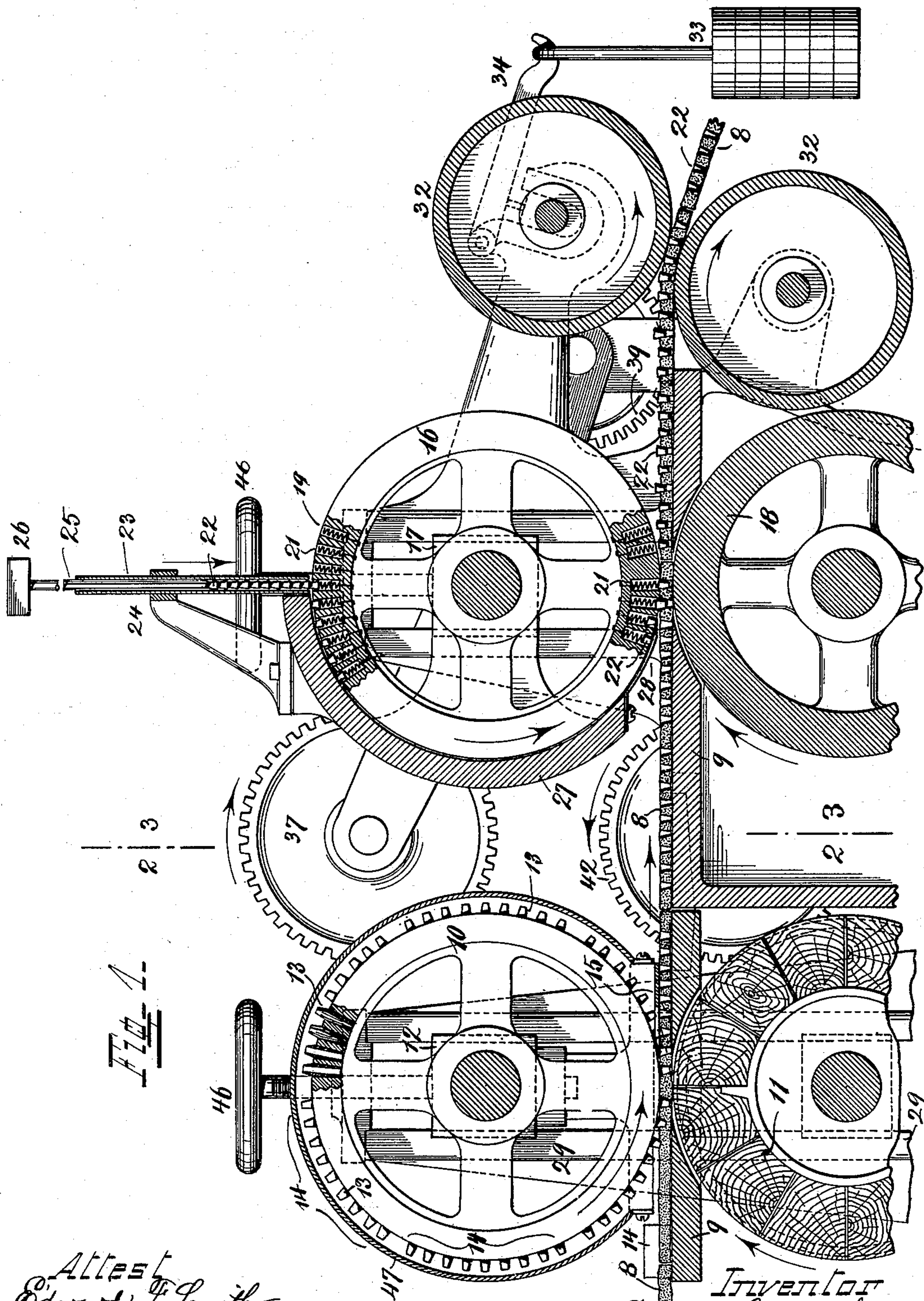


Fig. 1.

Attest
Edward F. Smith
B. A. Litchfield

Inventor
Anton Groeschel
by C. Spengel atty.

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Fig. 2.

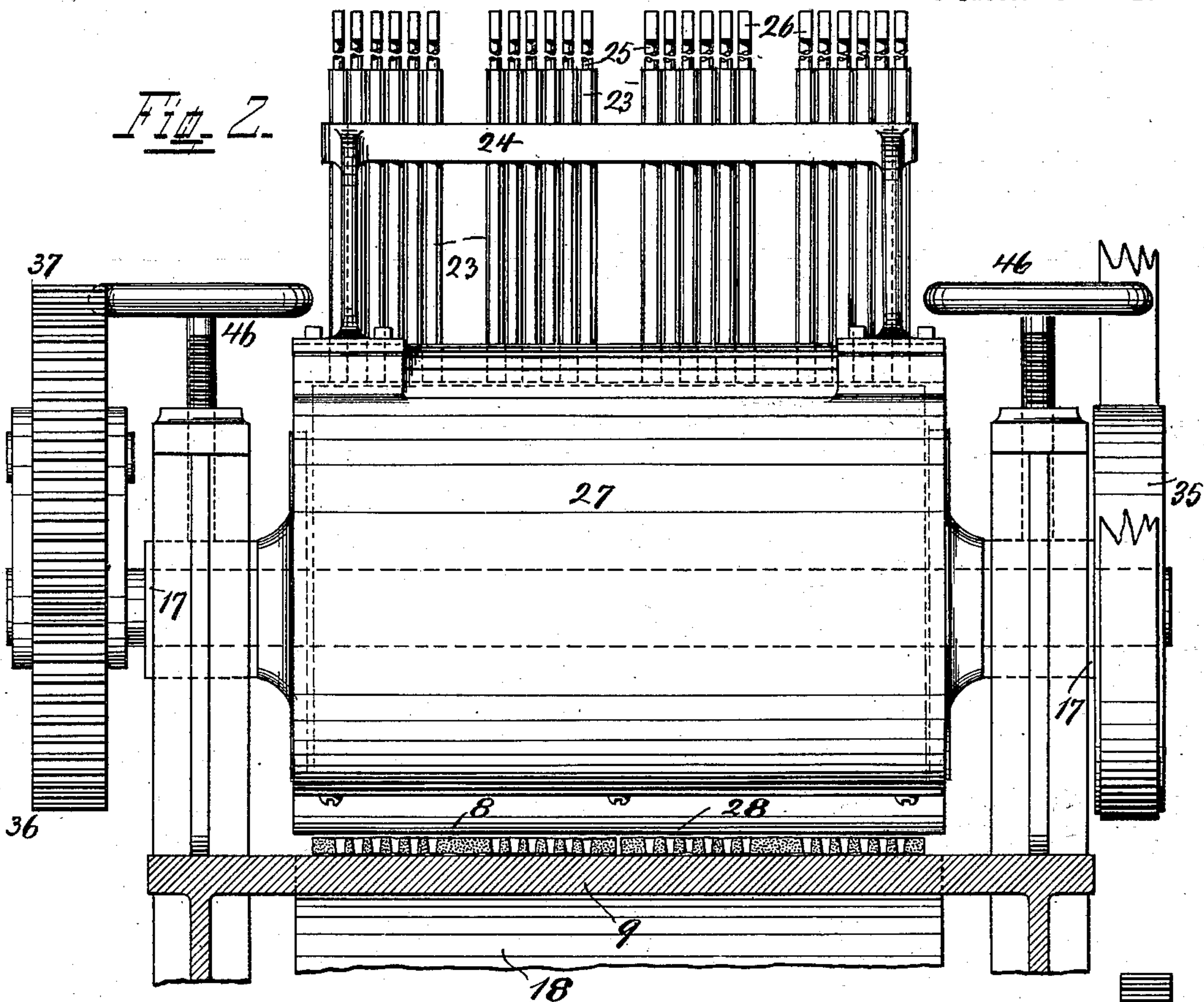
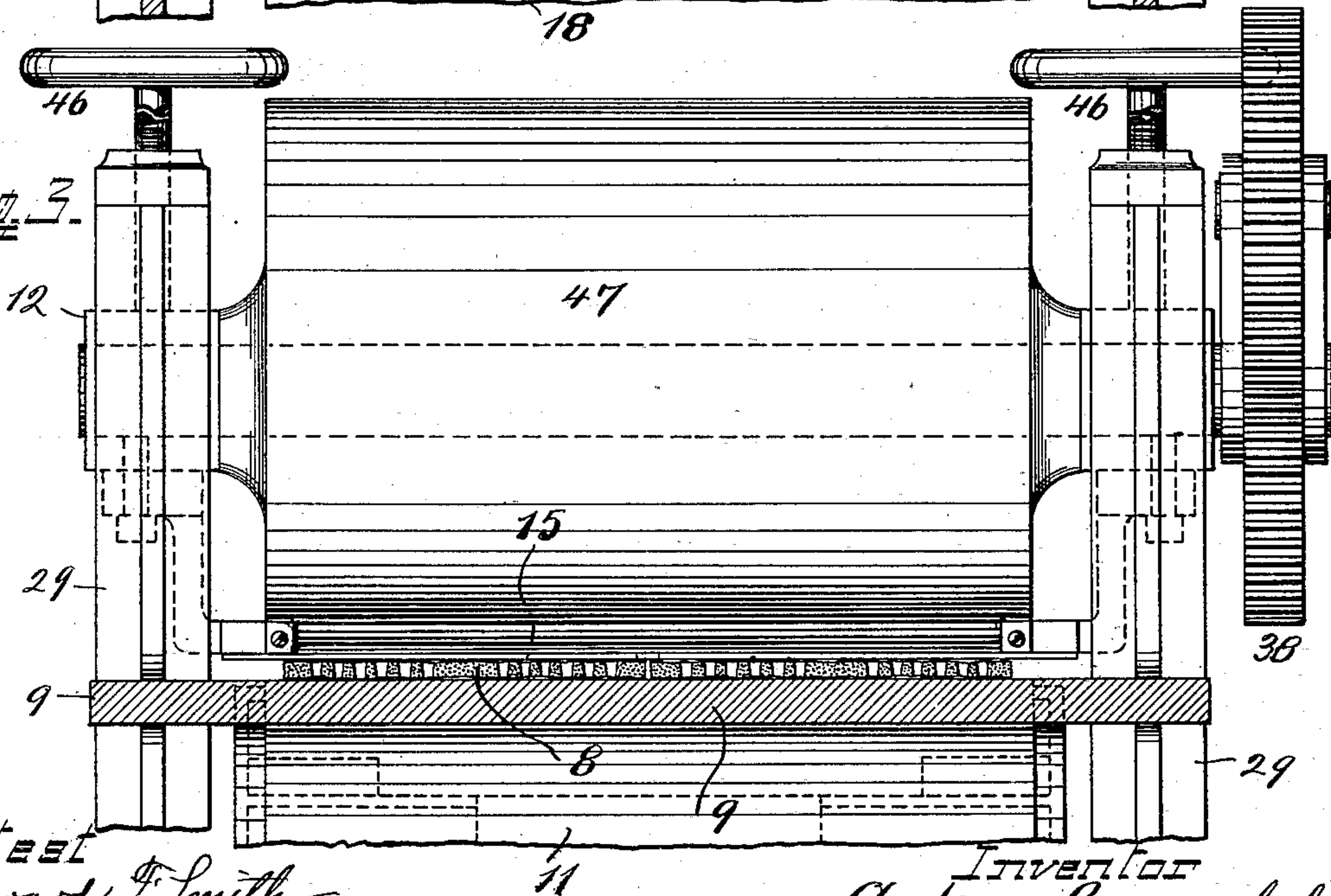


Fig. 3.



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Fig. 4.

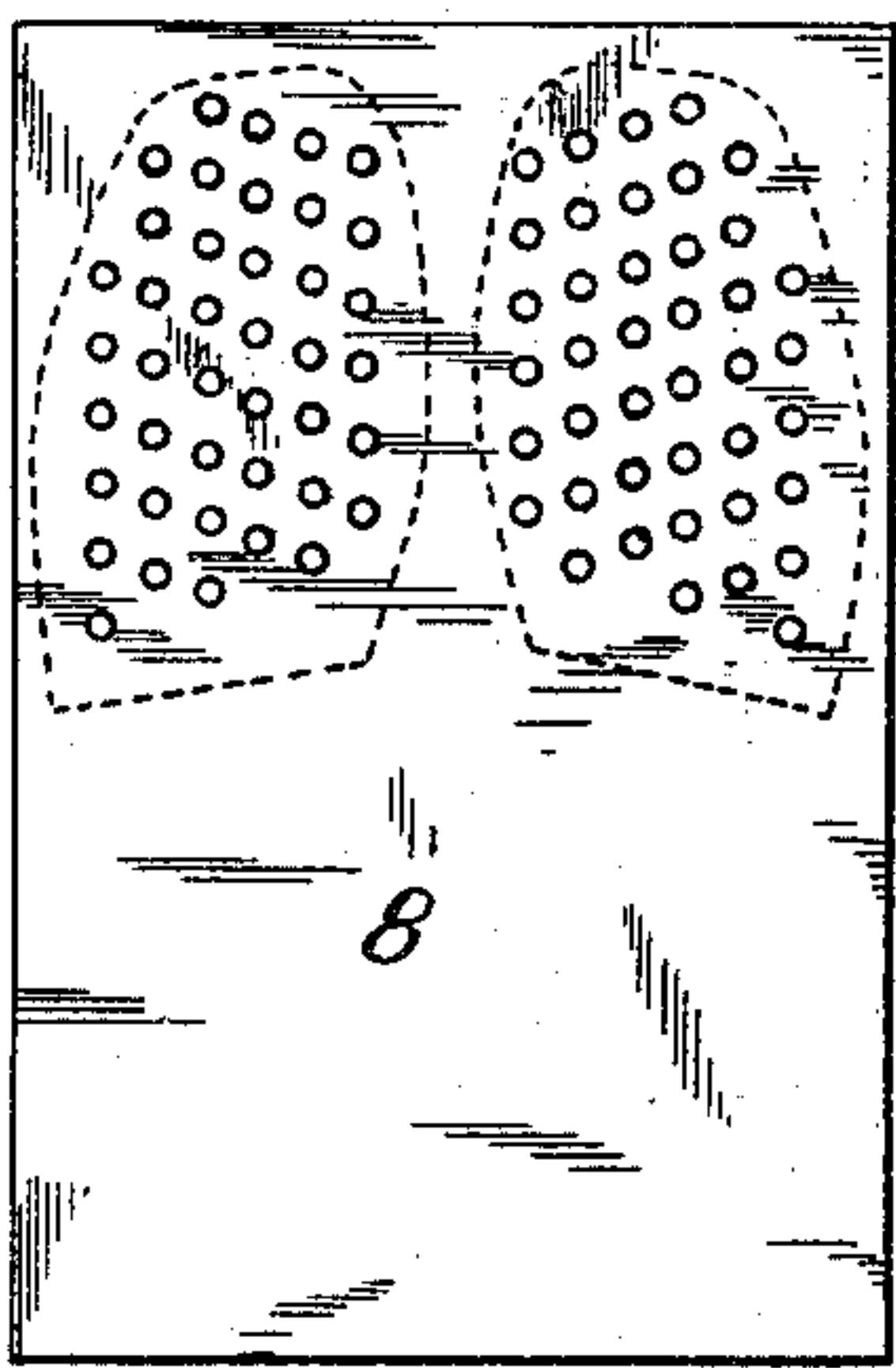
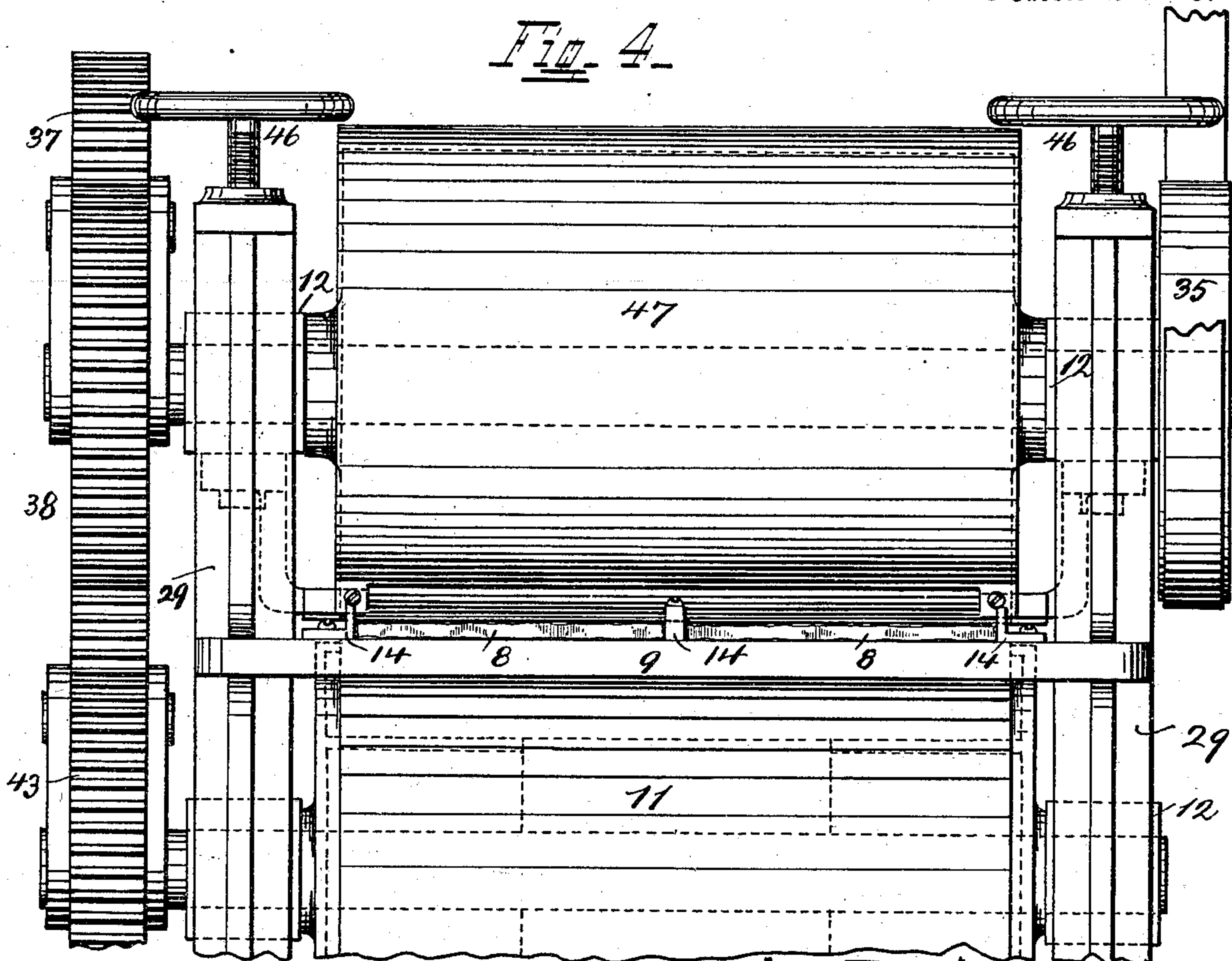
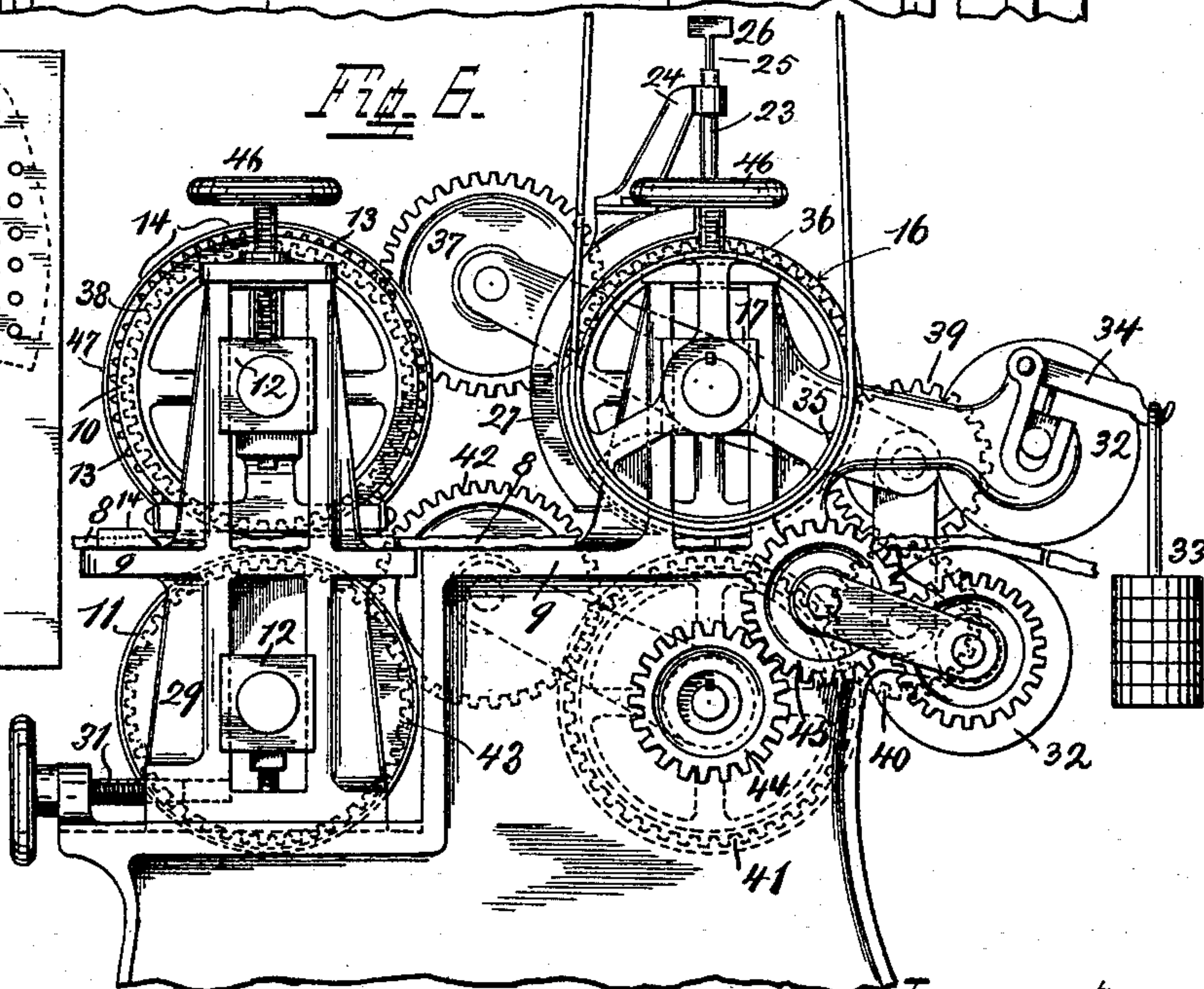


Fig. 5.

Fig. 6.



Attest
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B. A. Litchfield

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by C. Spengel atty.

UNITED STATES PATENT OFFICE.

ANTON GROESCHEL, OF CINCINNATI, OHIO.

MACHINE FOR PROVIDING LEATHER SOLES WITH PLUGS.

SPECIFICATION forming part of Letters Patent No. 637,779, dated November 28, 1899.

Application filed March 18, 1899. Serial No. 709,607. (No model.)

To all whom it may concern:

Be it known that I, ANTON GROESCHEL, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Machine for Providing Leather Soles with Plugs; and I do hereby declare that the following is a clear, full, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying three sheets of drawings, with the reference-numerals marked thereon, which form a part of this specification.

This invention relates to a device and machinery to be used for the purpose of providing shoe-soles with plugs or pegs which are inserted into the leather out of which they are formed, the object being to increase the durability and resistance to wear of such soles. For such purpose these plugs are manufactured of a material which is harder than leather, a suitable wood being preferred. Of shape they are preferably tapering, and they are so inserted as to bring their thinner ends all to the same side of the sole, so that when this latter is connected to the shoe in a manner to cause this side to be outward the plugs are readily held in position by their inwardly-increasing taper.

My invention contemplates machinery for punching holes into the leather, which holes are afterward filled with the plugs. For such purpose it comprises, first, a punching device which perforates the leather blanks, next a filling device whereby a plug is inserted in each of the previously-punched holes, and, finally, an equalizing device which drives all plugs home and forces them firmly into the leather. All these devices embody rollers and operate by rotation in this manner that one device acts as a feeding device to the other by supplying the work thereto. This work comes in the shape of blanks of a suitable size and each accommodates, preferably, a number of soles.

In the following specification and particularly pointed out in the claims at the end thereof is found a full description of my invention, together with its operation, parts, and construction, which latter is also illustrated in the annexed drawings, in which—

Figure 1 is a central longitudinal section of

the machine complete. Figs. 2 and 3 are views resulting, respectively, from a section on line 2 3 2 3 of Fig. 1 and show in the first a front view of the filling device and in the other a rear view of the punching device. Fig. 4 is a front view of the machine and particularly of the punching device where the work is introduced. Fig. 5 shows a view of a blank intended to provide for four soles, the holes for two of them having been punched. Fig. 6 shows at reduced scale a side elevation of the machine.

The leather blanks 8, properly cut, as shown in Fig. 5, are placed upon a table 9, from which they are fed to the punching device, consisting of the punching-cylinder 10 and a feed-roller 11, the two revolving at equal speed in opposite directions and between which two the blanks are introduced. The space between them may be regulated to suit the thickness of the leather, and for which purpose they are supported in boxes 12, the position of which is adjustable. The surface of the punching-cylinder is studded with punches 13, arranged in groups 14, so as to punch groups of holes covering about the area of a sole, as shown in Fig. 5. The number of such groups, which may be arranged circumferentially around the cylinder, depends on the diameter of the latter. As shown it accommodates six—that is to say, six soles may be provided with holes in succession during one revolution of the cylinder. Laterally the capacity depends on the length of the cylinder, and, as shown, it provides for four groups of punches arranged side by side, so that, as shown, the capacity of the punching-cylinder is twenty-four soles to one revolution of the same. For the more convenient handling they are distributed in blanks of a certain size to accommodate a certain number—for instance, four, as shown in Fig. 5, which figure shows such a blank after having passed half through between the rollers. The punches are further so placed as to permit the soles to be cut out in pairs, as indicated in dotted lines in Fig. 5, and they are hollow to permit escape of the waste leather. In view of the difficulty in punching leather the punches are so distanced and placed in rows so disposed that only a limited number are at once engaged in action upon the leather. The face of roller 11, against

which the punches cut, is formed of wood to prevent injury to the cutting edges of the same. Combined guides and gages 14 are provided upon the feed-table 9, which are attached with a screw connection, whereby they are rendered adjustable or may be replaced by others to suit the exact width of the blanks when soles of different sizes are operated upon. Back of the punching-cylinder I provide a guard 15, the object of which is to prevent the leather from sticking to the punches and following around with the cylinder. This is accomplished as soon as the front edge of the blank passes under said guard, whereby the blank is forced to travel straight ahead, and passing over table 9 reaches in due time the filling device, to which the now perforated blanks are supplied by cylinder 10 and roller 11, the two acting now for such purpose simply as a feed device to the filling device. This latter consists of a cylinder 16, also mounted in adjustably-supported boxes 17 and operating in conjunction with another roller 18 below it, the two rotating at equal speed in opposite directions, so as to advance the leather at the same time while acting upon it, thereby serving as feed-rollers for themselves and for the device operating upon the leather subsequently.

The respective diameters of cylinders 10 and 16 are alike, and the face of the latter cylinder is provided with sockets 19, arranged in groups and disposed as to position, location, spaces between them, and in every other particular exactly like the punches on cylinder 10. Spiral springs 21 are contained in each one of these sockets and attached to the bottom thereof.

The plugs 22 to be inserted into the perforations of the leather are contained in a row of tubes 23, supported above cylinder 16 on a frame 24. There is one of these tubes for each of the circumferential rows of sockets, and they are so located as to be in line with said rows, so that during the course of rotation of cylinder 10 the sockets while moving through the zenith of their path pass successively under the lower open ends of tubes 23. The inner diameter of these latter is such as to permit these plugs to enter and pass only in an upright position, and such passage is accelerated by a push-rod 25, loaded with a weight 26. By reason of this arrangement as to location of sockets and tubes the former will receive plugs whenever they pass through under the open ends of the tubes. Weights 26, together with the resistance of springs 21, are so adjusted that a socket receives, however, only one plug at a time, which, thinner end foremost, sinks in flush with the face of the cylinder, thereby closing the socket against the plugs above. The progressive rotation of the cylinder carries the one plug so received immediately beyond the confines of the tube, the lower edge of which holds it in place against the outwardly-directed action of springs 21. Beyond that all the

plugs are held by a shell 27, closely fitted against the face of cylinder 16, covering about half thereof, its lower part being much decreased in thickness and running out into a thin edge 28, which permits extension of said shell as far down as possible without interfering with the movement of the leather, but sufficiently close thereto to prevent premature escape of the plugs. For such purposes this lower part of shell 27 is preferably made of a piece of sheet metal, as shown. Beyond this lower edge 28 the plugs will be expelled by the expansive action of springs 21 as soon as they arrive thereat, and they will be received by the previously-imparted perforations of a leather blank expected to be in the right position at the time and the perforations of which are properly located by reason of the location with reference to each other of punches 13 and sockets 19 on their respective cylinders, as explained. Shell 27 may be supported in any suitable way, the only condition to be considered being that it always remains in the same position with reference to the cylinder in case this latter is adjusted and for which purpose this shell is preferably connected at its ends to bearings 17, which support cylinder 16. The lower ends of tubes 23 come down close to the surface of cylinder 16, so that between sockets the face of the latter keeps said tubes closed and prevents escape of plugs. The distance between the punching device and the filling device forms also a factor in the location and adjustment of positions of these devices and their parts for the purpose of their proper co-action and for which purpose the former device is carried in a frame 29, movably supported and provided with screws 31 for adjusting its position.

It is not expected that the action of springs 21 is sufficient to put the plugs completely and firmly in position, they being merely started and placed in the previously-punched holes—some more, others less deep. The final equalizing of these irregular positions is done by a pressure device consisting of pressure-rolls 32, between which the blanks pass, cylinder 16 and roller 18 of the filling device acting as a feeding device thereto. These pressure-rolls force the plugs firmly home into the punched holes and level all irregularities. The pressure is obtained by a weight 33, suspended on a lever 34 and acting on the box of the upper adjustably-supported roller.

The rotation of the rolls and cylinders may be accomplished in any suitable way; but owing to the accuracy of position and precision of movement required as between cylinder 10 and cylinder 16, which depend on each other, it is preferable to use gear connection, and the transmission of the motions should be such that the motion of one cylinder depends directly on the motion of the other. For such purpose the shaft of cylinder 16 is driven by a pulley 35 and carries on its other end a gear-wheel 36, which by means of a transmitting-

idler 37 rotates a gear-wheel 38 on the shaft of cylinder 10, thereby operating this latter and rendering the operation of the two directly dependent on each other. A set of transmitting-idlers 39 and 40 operates, by means of a gear-wheel 41, roller 18 below cylinder 16. Gear-wheel 41, by means of a transmitting-idler 42, rotates a gear-wheel 43 for the purpose of operating roller 11 below cylinder 10. A gear-wheel 44 on the other end of the shaft of roller 18 operates, by means of an idler 45, the lower pressure-roll. The bearings of all the transmitting-idlers are carried by pivotally-supported links, whereby the former are enabled to adjust themselves to any changes in position of the adjustably-supported cylinders and rollers. 46 are hand-wheels used for adjusting the boxes of the cylinders. The punch-carrying cylinder is preferably surrounded by a protecting-mantle 47.

Having described my invention, I claim as new—

1. In a machine for providing leather soles with plugs, the combination of a punching device, a filling device and an equalizing device and feed-rolls for moving the leather blanks from one device to the other and through the machine.

2. In a machine for providing leather soles with plugs, the combination of a rotary punching device, a rotary filling device and a set of pressure-rolls, feed-rolls, operating in conjunction with the two devices first mentioned for moving the blanks through the machine and means to rotate the operating parts.

3. In a machine for providing leather soles with plugs, the combination of a punching device, consisting of a cylinder provided with punches and of a feed-roller operating in conjunction therewith, a filling device consisting of a cylinder provided on its face with plug-receiving sockets and of a feed-roller operating in conjunction therewith, an equalizing device consisting of a set of pressure-rolls, means to rotate the operating parts of these devices in such a manner that one constitutes the feeding device to the other, means to supply plugs to the cylinder of the filling device and means to eject them in such a manner that they enter the previously-punched holes of the passing blank.

4. A rotary punching device for perforating leather blanks, consisting of a cylinder provided with punches which project from its face on which they are arranged in groups consisting of two sets of parallel rows crossing each other, one set of these rows being

disposed at right angles to the axis of rotation, the other set oblique thereto, a feed-roller operating in conjunction with the cylinder and means to rotate the two at equal circumferential velocity.

5. A filling device for the purpose of inserting plugs into holes previously punched into leather blanks, consisting of a rotary cylinder having sockets in its face which carry these plugs, means to supply them to these sockets, springs seated in the bottom of these sockets to eject the plugs therefrom and feed-rollers for supplying the leather blanks to this filling device.

6. A filling device for the purpose of inserting plugs into holes previously punched into leather blanks, consisting of a rotary cylinder, having in its face sockets adapted to receive plugs, ejector-springs contained in these sockets, tubes supplying plugs to these latter and a shell for holding the sockets closed between the points where they receive the plugs and where they are expelled.

7. A device for the purpose of placing plugs into holes previously punched into leather blanks, consisting of a rotary cylinder having sockets in its face which carry these plugs, means to supply them to these sockets, means to eject them therefrom, a feed-roller operating in conjunction therewith and an equalizing device for driving the plugs fully home and consisting of pressure-rollers between which the leather blanks pass, being supplied thereto by the cylinder mentioned above and by the feed-roller operating in conjunction therewith.

8. A device for punching holes into leather blanks and for filling them with plugs, consisting of a cylinder, having punches projecting from its face, a feed-roller operating in conjunction therewith, a filling device consisting of a cylinder, having its face provided with plug-receiving sockets, which correspond as to position and location with the punches on the punching-cylinder, the diameters of the cylinders being also alike and means to rotate the punching-cylinder and the feed-roller operating in conjunction therewith in such a manner that they serve as a feed device which supplies the blanks to the filling device.

In testimony whereof I hereunto set my hand in presence of two witnesses.

ANTON GROESCHEL.

Witnesses:

BERNARD WREDE,
OTTO CREUTZ.