F. A. BRACKETT.

SEWING AND CEMENTING MACHINE.

APPLICATION FILED OCT. 22, 1915.

1,278,099.

Patented Sept. 10, 1918.

2 SHEETS—SHEET 1.

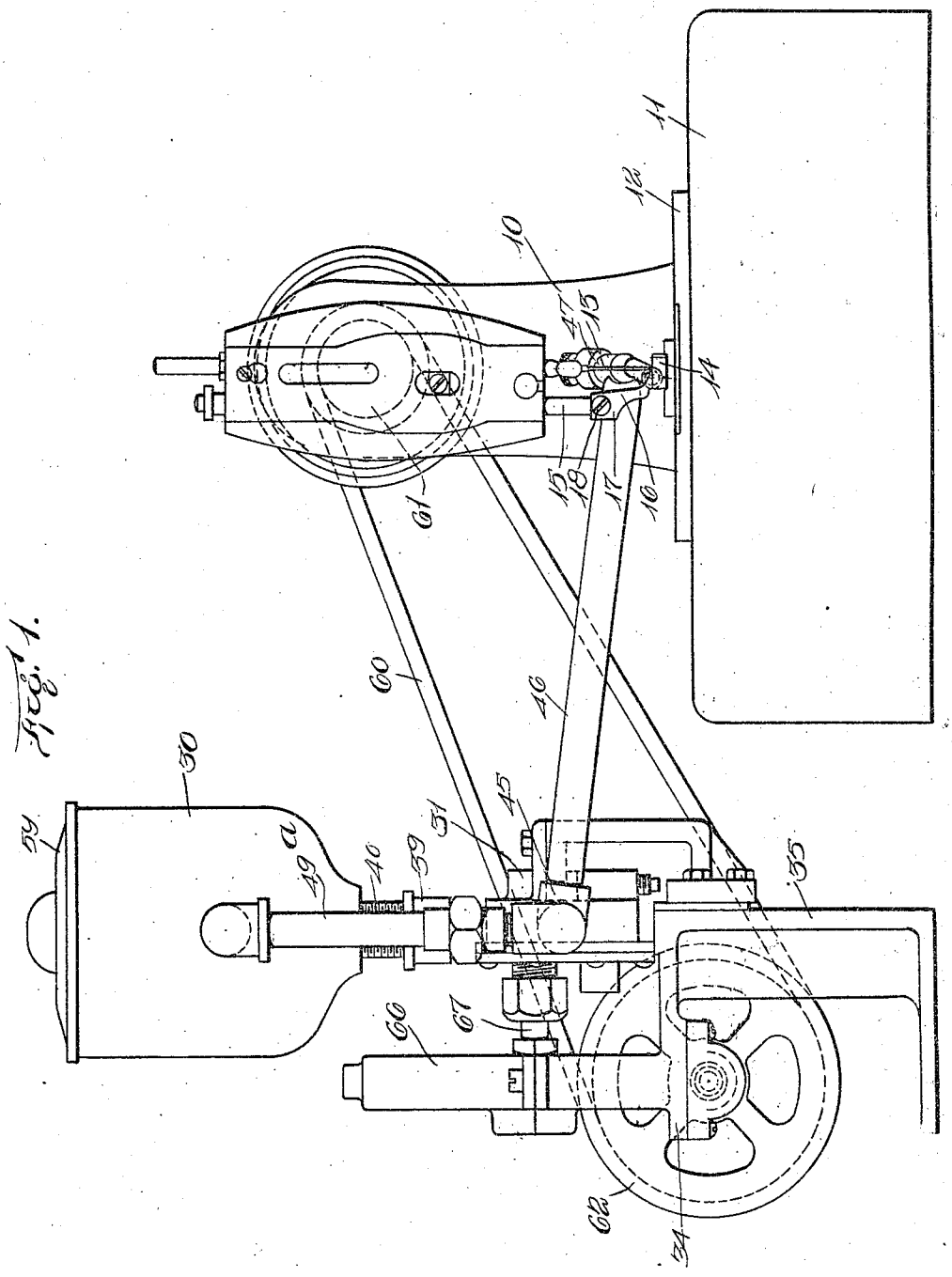


Fig. 1.

Witnesses:

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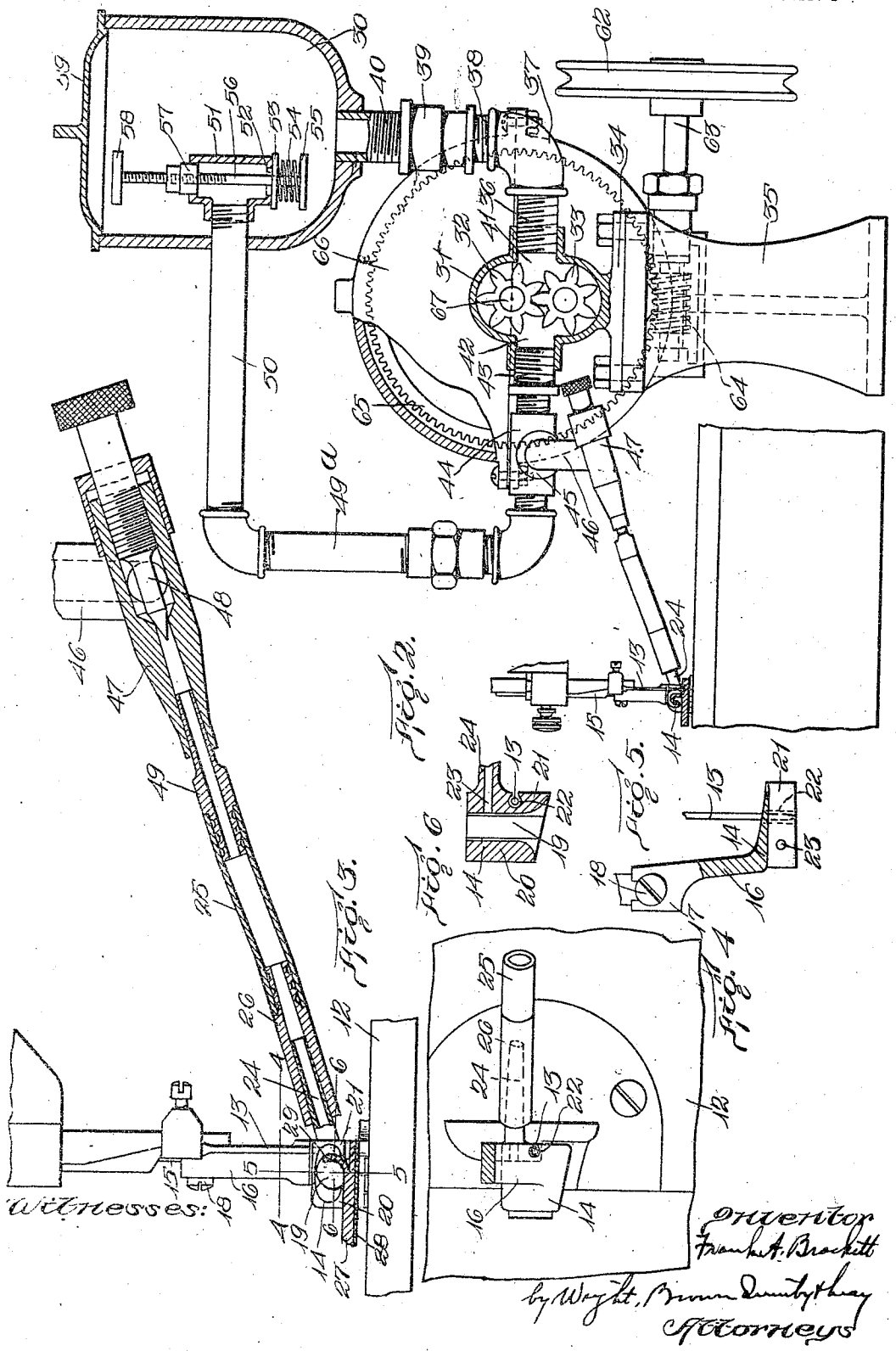
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Witnesses:

Inventor
Frank A. Brackett
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UNITED STATES PATENT OFFICE.

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SEWING AND CEMENTING MACHINE.

1,278,099. Specification of Letters Patent. Patented Sept. 10, 1918.

Application filed October 22, 1915. Serial No. 57,312.

To all whom it may concern:

Be it known that I, FRANK A. BRACKETT, a citizen of the United States, and resident of Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Sewing and Cementing Machines, of which the following is a specification.

The present invention relates to a machine for simultaneously setting stitches in and applying adhesive to the work. The particular embodiment of the invention here illustrated is designed for stitching together the parts which form a composite inner sole, placing the stitches in the channel formed in one of the parts of such inner sole, and for simultaneously delivering cement or other fluid adhesive in the channel, to the end, that, when the seam has been completed, the channel flap may be laid over the seam and secured against the body of the sole without the necessity of a subsequent cementing or pasting operation. In carrying my invention into effect I have provided in connection with a sewing machine, which may be any standard or other machine, a presser foot which is specially constructed so as to provide a part adapted to enter the channel of an inner sole, or other sole, between the body of the sole and the channel flap, which presser foot is provided with a channel or passage, or equivalent delivering means, adapted to deposit adhesive such as cement, paste, or anything suitable for the purpose in the channel. In connection with the machine constructed as above indicated, I have provided a container for the adhesive and an improved means for conducting a continuous supply of adhesive in any desired quantity and at any desired pressure from such container to the delivering point of the presser foot.

Although I have stated that the particular embodiment of the invention here illustrated is applied to a machine for operating upon inner soles, it is to be understood that I do not limit the invention to this particular use alone. In the drawings,—

Figure 1 is a front elevation of a sewing machine provided with a presser foot adapted to serve the purposes of the present invention and combined with means for supplying adhesive thereto.

Fig. 2 is an elevation as seen from the right of Fig. 1 of the adhesive container and supply means, partly broken away and in section, and a portion of the sewing machine.

Fig. 3 is a detail view partly in section of the needle and presser foot of the sewing machine with the means for conducting adhesive thereto.

Fig. 4 is a plan view of so much of the parts shown in Fig. 3 as lie below the line 4—4 of Fig. 3.

Fig. 5 is a detail section on line 5—5 of Fig. 3.

Fig. 6 is a detail section on line 6—6 of Fig. 3.

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

The sewing machine is represented as a whole at 10, and is shown as being mounted on a table or other support 11, and as having a base plate 12, a needle 13 and a presser foot 14 attached to a vertically movable presser bar 15. The invention does not necessarily involve any modification in the structural or operating parts of the sewing machine, except of the presser foot, wherefore the essentials of the invention may be applied to any sewing machine whether the same is a known or standard type or is of any other character. Without intending to limit the invention in any way, I may state that the machine chosen for the present illustration of my invention is a standard Singer machine. Such machine has the usual feed mechanism, which is concealed by the base plate 12 and table 11, the usual mechanism for reciprocating the needle and the usual spring for depressing the presser foot and lifter bar for raising the presser foot, these parts being not shown here, because, as they may be of any standard character, a detailed description of the same is unnecessary to enable others skilled in the art to construct and use my invention.

The presser foot is shown in detail in Figs. 3, 4, 5 and 6. It is constructed with a shank 16 having an enlarged socket 17 to receive the presser bar, in which the latter is secured by a set screw 18. That part of the presser foot which engages the work is formed with a channel or guideway 19 open in its under side and extending in the direction of feed of the work through the entire extent of the foot, and with lips

or webs 20 and 21 flanking such channel. In the lip 21, is formed a passageway 22 adapted to admit the needle and a passage 23 extending laterally through it and opening into the channel or guideway 19. Extending from the outer side of the lip 21 is a nipple 24 having a bore communicating with the passage 23 and formed to make a coupling with a conduit or conducting tube 25 through which the adhesive is supplied. As shown in Fig. 3 the tube 25 is a flexible tube, preferably of rubber, in one end of which is contained a coupling sleeve 26 which is adapted to slip over and make tight contact with the nipple 24. Conveniently the exterior of the nipple and the bore of the coupling sleeve are complementally tapered to insure tight connection and prevent leakage.

A machine having a presser foot constructed as above described is adapted to stitch together two layers of material, such as a layer of leather and a layer of textile fabric assembled as an inner sole, as shown in Fig. 3. The leather layer or body is represented at 27 and the fabric layer as 28. It is intended that the stitches shall be set in a channel in the leather body and that the adhesive be placed in such channel. The presser foot is therefore constructed, as above described, to hold back the channel flap 29 of the inner sole body, the guideway 19 of the presser foot being formed to receive the channel flap and the lip 21 of the presser foot to enter the channel of the inner sole body, pressing down on the body and holding the flap back out of the way. The lip 21 may therefore be considered as a portion of a presser foot which is constructed to enter the channel of a channeled sole, between the body of such sole and the turned back lip, and also as a means for holding the lip out of the way of the needle. It is also a guide for placing the seam, performing this function by coöperation with the channel flap 29. The passage 23 may be considered as a nozzle for delivering the adhesive.

The means for containing a supply of the adhesive and supplying the same to the delivering nozzle consists of a tank 30 and a pump 31. The latter is shown as a gear pump having a casing within which are contained rotatably on parallel axes two intermeshing gear shaped pistons 32 and 33. The pump casing has a base 34 which is mounted on a standard or bracket 35, shown here as at one side of the table on which the sewing machine is mounted. It may be otherwise mounted, if desired, and the pump may be secured upon part of the sewing machine. The supply tank 30 is supported by the pump and above the same by means of pipes and fittings 36, 37, 38, 39 and 40 which together form at the same time a continuous conduit leading from the bottom of the tank to the intake 41 of the pump, and a supporting bracket for the tank. In the outlet 42 of the pump is mounted a coupling 43 with which is connected a pipe fitting 44, having a lateral branch 45. A pipe 46 leads from the branch 45 to a needle valve casing 47 in which is mounted a needle valve 48. The conducting pipe 25 previously mentioned is attached to the outlet of the needle valve casing by a coupling 49. The construction and mode of operation of the needle valve are clearly shown in Fig. 3, from which it will be evident that the rate of supply of the adhesive is capable of easy and exact regulation by adjustment of the valve.

The third branch of the coupling 44 provides a by-pass, in connection with pipes and fittings 49^a, 50 leading into the side of the tank 30. The capacity of the pump is designed to be greater than necessary to supply the maximum requirements of the machine, and the surplus is returned to the tank through the by-pass. A pressure regulating valve is applied to the outlet of the by-pass in the tank. Such regulating valve is shown in Fig. 2 and comprises a casing 51 screwed upon the end of the pipe 50 and having an outlet 52, across the outer side of which is placed a valve 53. This valve is normally held against the lip of the outlet by a spring 54 which is compressed between the valve and an abutment 55 on the end of a stem 56 which passes through the casing 51 and is threaded through a plug 57 secured to the upper end of the casing. A head or handle 58 provides a means by which the stem may be turned by hand so as to increase or diminish the pressure applied to the valve 53 by the spring 54. The cover 59 of the tank may be removed to give access to this handle, which is preferably located in an easily accessible position above the adhesive in the tank. As the adhesive can only escape from the by-pass by displacing the valve 53 against the pressure of spring 54, it is evident that adjustment of such spring serves to regulate the pressure under which the adhesive is contained in the pipe system, and thereby the pressure tending to force the adhesive past the needle valve and to the delivery point.

The pump is driven in synchronism with the sewing machine by a belt 60 which passes over a pulley 61 on the main shaft of the sewing machine and over a driven pulley 62 mounted in a bearing on the standard of the adhesive container. Pulley 62 drives a shaft 63 carrying a worm 64 which drives a gear wheel 65 contained in a case 66 and secured to a shaft 67 on which the gear-shaped piston 32 of the pump is secured.

In operation the parts to be stitched to-

gether, that is the body 27 and the layer 28, are laid on the work support of the machine under the presser foot with the channel flap 29 of the body curled up in the passageway 19 of the presser foot. Upon starting the machine the feeder advances the work and the driving mechanism reciprocates the needle in the usual or any other desired manner. The passage or nozzle 23 for the adhesive is beyond the needle in the feeding direction so that the adhesive is not applied to the work until after the stitches have been formed. The nozzle portion of the presser foot deposits a strip of adhesive upon the inner surface of the channel flap in a position adapted to secure the flap to the body when the flap is turned down after the stitched sole has been taken from the machine. The adjustment of the pressure regulating valve and of the needle valve above described is made in accordance with the rate of feeding of the work and the character of the adhesive, to cause just so much adhesive to be supplied as will be sufficiently coat the channel flap without excess.

I have not intended the foregoing description of the character of work performed to be a limitation of the invention. It is within my contemplation to apply the invention to a machine, for example, which is adapted to stitch outer soles upon shoes, as well as to a machine for stitching flat sheets together, and also to modify the form of the presser foot, if necessary, for other kinds of work.

Wherever in this specification and in the following claims I have used the term "cement" I have had in mind the broadest meaning of this word, as including any sort of adhesive and not any of the restricted meanings which such word may have in certain arts. Any adhesive whatever adapted to be applied in the manner herein described is within the term "cement" as here used.

What I claim and desire to secure by Letters Patent is:

1. In a sewing machine, a presser foot having a passage for a needle, and having a second passage approximately in line with, and in rear of, the first passage in the feeding direction, adapted to admit fluid adhesive, and means for conducting adhesive to said second passage.

2. In a sewing machine, a needle, a presser foot having a passageway to receive said needle and being constructed to enter the channel of a channeled shoe sole, said foot having a surface arranged to hold back the flap of such channel when the needle is in position to stitch through the lip part of the sole, and having also a second passage opening in said surface, and means for delivering fluid adhesive to said second passage.

3. In a sewing machine, a presser adapted to hold the work in operative relation to the needle of the machine, and having a surface located to hold the channel flap of a channeled shoe sole away from the needle, said foot being constructed with a passage arranged to deliver fluid adhesive into such channel in rear of the needle, and means for constantly supplying adhesive to said passage.

4. In a sewing machine, a presser foot having a guideway adapted to receive the channel flap of a shoe sole and having a lip at one side of such guideway adapted to enter the channel between such lip and the body of the sole, said lip having a passage opening at the surface thereof which lies adjacent to a portion of the sole, and means for supplying adhesive to such passage.

5. In a sewing machine the combination with a needle, of a guide member adapted to enter the channel of a channeled sole, being formed and arranged to hold back the flap of such channel, and having a nozzle portion delivering against such flap, and means for conducting adhesive through such nozzle portion, whereby to coat adhesively the channel flap of the sole at the same time that stitches are being formed in the sole.

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

FRANK A. BRACKETT.

Witnesses:

P. O. MACBRIDE,

H. R. PERRY.