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MEANS FOR SUPPLYING LIQUID TO FASTENING-INSERTING MACHINES

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Fig.1.

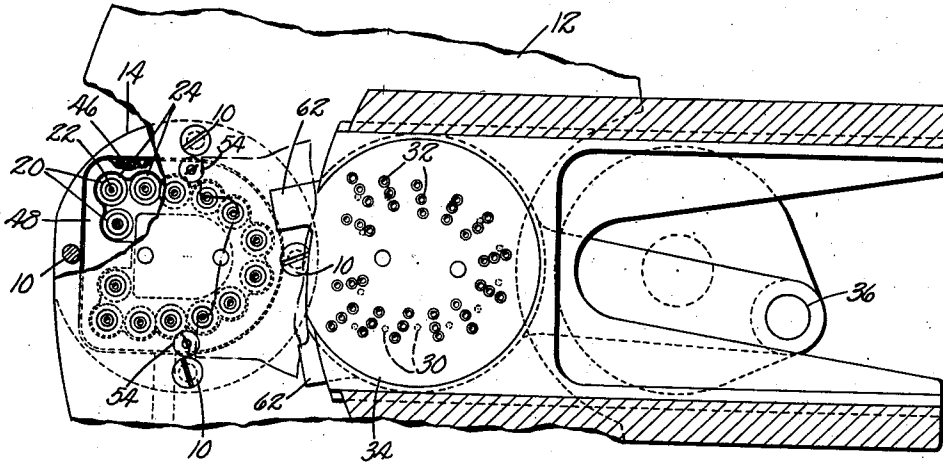
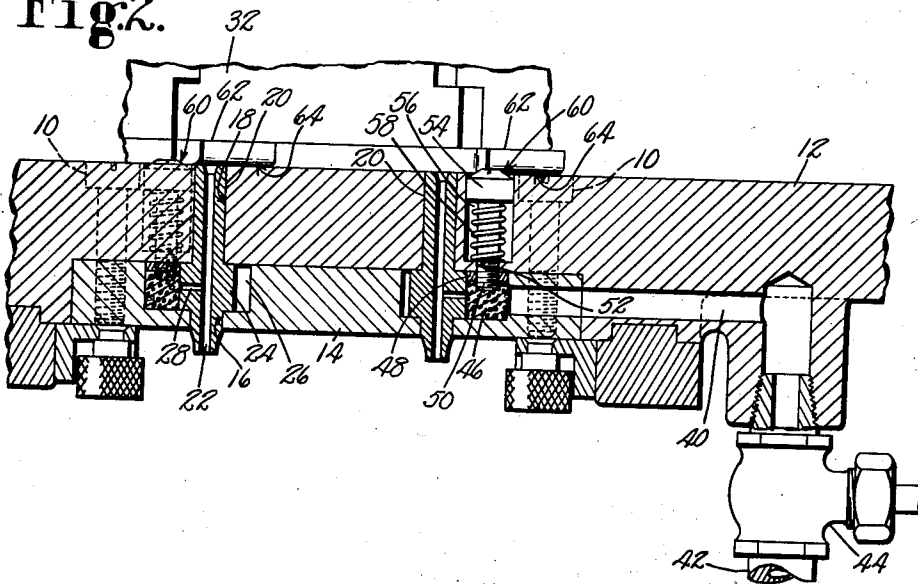


Fig.2.



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MEANS FOR SUPPLYING LIQUID TO FASTENING-INSERTING MACHINES

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Application May 24, 1939, Serial No. 275,432

12 Claims. (Cl. 1—32)

Our invention relates to machines for inserting fastenings and in which it is desired to apply to the fastenings a liquid prior to their insertion. It is of especial utility in connection with such machines as that disclosed in the application for Letters Patent filed in the United States Patent Office on July 19, 1938, in the name of Fred N. LaChapelle and bearing the Serial Number 220,064. This apparatus is designed for the attachment of heels or heel-portions to shoes by fastenings severed from strings of adhesively coated fibrous material. When this material is moistened, a lubricating effect is obtained facilitating the insertion of the fastenings, and said fastenings may be caused to swell somewhat and the adhesiveness of their coating increased, so they are given added holding power in the work.

An object of the invention is to apply the liquid to the fastenings in a manner which will cause them to receive uniformly, only such a quantity as to give the above-indicated results, with freedom from an excess supply which would be likely to produce a drip interfering with the proper operation of the machine. In the attainment of this object, there is combined with an inserting die provided with tubes about which there is a space, and in which are fastening-receiving passages and an opening in each tube connecting its passage to the space, means for supplying liquid to the space, absorbent material, such as a body of sponge, in the space, and means for compressing the absorbent material. This compression may be effected by a plate or other member movable in the space to a variable extent. In the material, the greater portion of the liquid in the die-space may be retained normally, and the degree of its compression may be such that only the amount of liquid necessary for the proper moistening of the fastenings will be expelled through the tube-openings into the receiving passages. To cause the delivery of liquid to the passages, whether or not there is absorbent material in the die-space, the movement of the delivering member is best controlled by the movement of a member which transfers fastenings to the die. Preferably, the plate or member, which is movable in the die-space to force liquid therefrom through the tube-openings, is held normally raised by a spring and has a projection with which the loading or transferring mechanism contacts. The movement of the member and the amount of compression of the absorbent material, if this be present in the die-space, may be altered by varying the extension of the projection from the die.

In an application filed in the United States Patent Office on May 24, 1939, in the name of Arthur Matheson and bearing the Serial No. 275,433, is described and claimed certain subject-matter disclosed herein.

The accompanying drawing presents an illustrative embodiment of the invention—

Fig. 1 being a top plan view of such a die, with its loading mechanism, as that of the previously mentioned application; while

Fig. 2 is a partial enlarged transverse section therethrough.

Secured by screws 10 in a recess at the underside of a horizontal supporting plate 12 is a die-block 14. Through passages 16 in the die and passages 18 in the plate extend tubes 20 provided with axial fastening-receiving passages 22. Enlargements 24 of the tubes are situated in a generally horseshoe-shaped space 26 in the die, the passages 22 being joined to the outer portion of the space by openings 28 in the enlargements. Fastening material, which may be in the form of strings of twisted paper or the like, sized with a stiffening, water-soluble adhesive substance, is fed through openings 30 in the plate 12 into registering openings 32 in a block 34 of loading mechanism. By a connection 36, this block is oscillated and reciprocated to sever discrete fastenings from the strings and transfer them in the block 34 into registration with the die-passages 22. The die-passages and the block-passages are arranged in accordance with some inserting design. The usual drivers (not illustrated) will first be reciprocated, before the transfer of the fastenings, to prick openings in the work clamped against the lower extremities of the tubes 20. Thereafter, the loader-passages 32 are moved into alinement with the die-passages 22, and a second reciprocation of the drivers forces the fastenings from the loader-block-passages through the die-passages and into the work.

To moisten the fastenings as they pass through the passages 22, there is supplied to the die-space 26 the water or other liquid to be employed. Through the plate 12 and the die is a passage 40 leading into the space 26, with which passage is connected a pipe 42, the flow through which may be regulated by a valve 44. To this pipe the water is supplied, as from a tank or by a pump. A considerable portion of the space 26, shown in Fig. 1 as at the outside of the tubes 20, is occupied by a body 46 of absorbent material. We have found that a suitable material, as to the amount of water which it will hold and its durability, is sponge of the cellulose or other artificial type.

Above the upper surface of the sponge is a plate 48, into the opposite sides of which are threaded screws 50, 50 furnishing projections which pass vertically through openings 52. In the plate 12, surrounding the screws between their heads 54 and the bottoms of passages 56, are helical springs 58, 58, by which the plate 48 is held normally raised to free the sponge 48 from compression. An inclined surface 60 about the top of each of the screw-heads 54 lies somewhat above the upper face of the plate 12. From the forward extremity of the loading mechanism are projections 62, 62, at the outer ends of which are outwardly and upwardly inclined surfaces 64. These surfaces, as the loader-block approaches its fastening-delivering position, will contact with the surfaces 60 of the screw-heads.

Considering the delivery of water to the tube-passages 22, and assuming that the work, as a rubber heel or lift to be attached to a shoe, is held against the lower ends of the tubes 20, and that the drivers have made their pricking stroke, the loader-block 32 is actuated by its connection 36. As the loader-passages 32 approach registration with the die-passages 22, the loader-surfaces 64 engage the screw-surfaces 60, forcing down the plate 48 against the force of the springs 58. The die-space 26 contains water delivered through the pipe 42 and passages 40, a considerable portion of this water being absorbed and held by the sponge 46, without normal tendency to be discharged through the openings 28. The free water in the die-space preferably rises only to the level of the openings 28. But, as the plate descends, it compresses the sponge, forcing the water therefrom through the openings into the tube-passages 22, it being retained by the closure of the lower extremities of the passages by the work. The drivers descend through the block-passages 32 and the die-passages 22, forcing the severed fastenings out of the block through the die into the work. In their travel through the passages 22, the fastenings take up the water therein to furnish the desired lubricating and retaining effect. By adjustment of the screws 50, the height of the surfaces 60 may be varied and, therefore, the extent of depression of the plate 48. Thus, the amount of water expressed from the sponge and delivered to the tube-passages may be governed, and control may also be exercised through the quantity supplied to the passage 40. This will ensure against such an excess in the delivery that there will be a drip from the die-tubes after the removal of the work. Because of the equal compression of the sponge by the plate in close proximity to the openings of all the tubes, the amount of water flowing through said openings will be uniform for the entire series.

Having described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the space, absorbent material in the space, and means for compressing the absorbent material.
2. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the

space, absorbent material in the space, and a member movable in the space for compressing the absorbent material.

3. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the space, absorbent material in the space, a member movable in the space for compressing the absorbent material, and means arranged to vary the extent of movement of the member.

4. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the space, a body of sponge contained in the space, and means for compressing the sponge.

5. In a fastening-inserting machine, inserting mechanism having a die provided with fastening-receiving passages, means for delivering a liquid to the passages, a member movable to transfer fastenings to the die, and means made effective in the movement of the transferring member for controlling the delivery of liquid.

6. In a fastening-inserting machine, inserting mechanism having a die provided with fastening-receiving passages, a member movable to deliver liquid to the passages, a member movable to transfer fastenings to the die, and means for controlling the movement of the delivering member by the movement of the transferring member.

7. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the space, a member movable in the space to force liquid through the tube-openings, and loading mechanism transferring fastenings to the passages and controlling the movement of the member.

8. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the space, absorbent material in the space, a plate contacting with the absorbent material and having a projection extending from the die, and loading mechanism movable into engagement with the projection.

9. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to the space, absorbent material in the space, a plate contacting with the absorbent material and having a projection extending from the die, loading mechanism movable into engagement with the projection, and means arranged to vary the extension of the projection from the die.

10. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its passage to the space, means for supplying a liquid to

the space, absorbent material in the space, a plate above the absorbent material, a spring by which the plate is normally raised, and means for depressing the plate.

- 5 11. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its pas-
10 sage to the space, means for supplying a liquid to the space, absorbent material in the space, a plate above the absorbent material and having a projection extending above the die, a spring surrounding the projection and by which the plate is
15 normally raised, and loading mechanism movable into engagement with the projection.

12. In a fastening-inserting machine, inserting mechanism having a die provided with tubes in which are fastening-receiving passages, there being a space in the die surrounding the tubes and an opening in each tube connecting its pas-
5 sage to the space, means for supplying a liquid to the space, absorbent material in the space, a plate above the absorbent material, a screw threaded into the plate and extending above the die, means
10 holding the plate normally raised, and loading mechanism movable into engagement with the screw.

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