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M. GLASSBERG ET AL

2,227,254

MARKING DRILL

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2 Sheets-Sheet 2

Fig. 2.

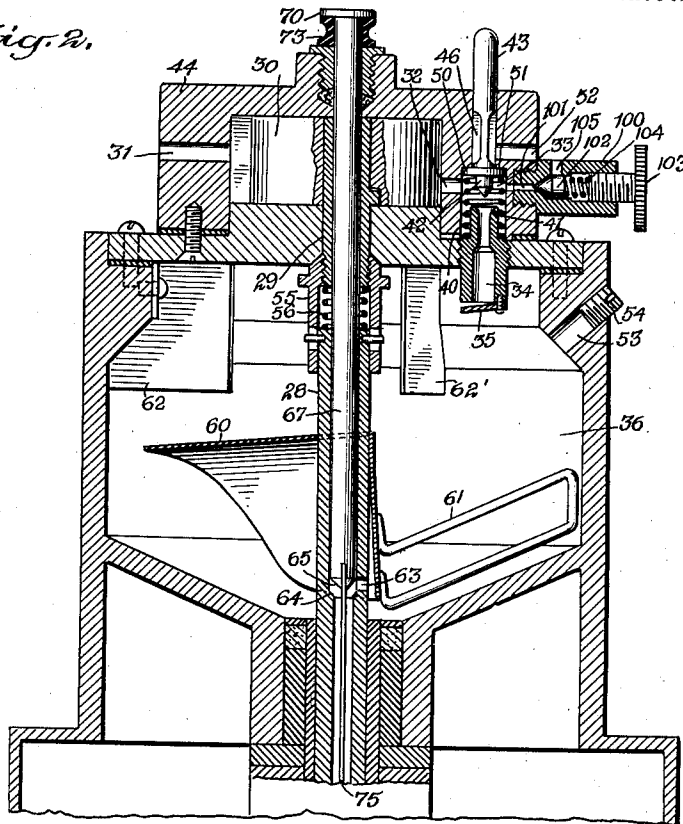


Fig. 3.

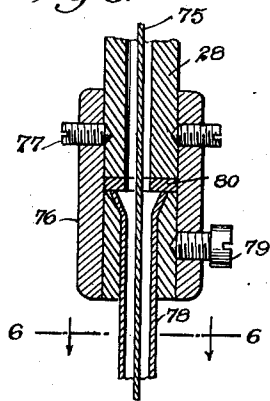


Fig. 4. Fig. 5.

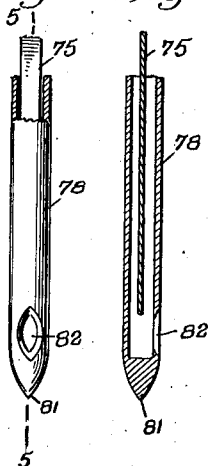


Fig. 7.

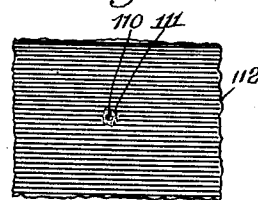


Fig. 6.



WITNESSES

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MARKING DRILL

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19 Claims. (Cl. 101—26)

This invention relates to drills, and more particularly to the type of drills which is used in marking fabric by placing a small hole therein, in the manufacture of clothing and similar articles.

Cloth is laid in many layers, one on top of the other, and in one cutting the manufacturer cuts a number of identical sections. It is necessary to mark these sections in order to conform them to the pattern and to indicate where certain tailoring details, such as pockets, buttons, button holes or ornaments are to be placed. This marking has been done by placing a thread through the pile of the material at the desired spot. This method has its obvious disadvantages and limitations. Marking has also been done by drills which used a wet needle and which would leave a slight stain at the spot where the button or other ornament was to be placed. This method is objectionable in view of the stain left on the cloth which in many fabrics can not be easily removed.

An object of this invention is to provide a drill which will perform the functions indicated by leaving a small powder mark around the hole which it places in the fabric.

A further object is to provide a drill which will be accurate in its operation and which will drill a hole absolutely perpendicular to the table.

A further object is to provide a drill which may use powder or chalk and which will not clog or easily get out of order.

The drill provided is further desirable in that it is mobile, may be easily handled by the operator and the depth of its stroke can be definitely ascertained in advance so that the drill will operate through all of the layers of cloth but will not contact the table upon which the cloth is resting.

With these and other objects in view as will become apparent as this description proceeds, reference is had to the accompanying drawings in which—

Fig. 1 is a side view partly in cross section of a drill embodying our invention;

Fig. 2 is a detailed view in cross section showing a hollow chamber;

Fig. 3 is a detailed view of the needle and the method of fastening it to the shaft;

Fig. 4 is a detailed view of the end of the needle;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a cross sectional view taken on the line 5—6 of Fig. 3; and

Fig. 7 is a section of a piece of cloth showing the manner in which the drill marks the cloth.

We provide a drill 10 mounted on a base 11 and provided with two standards 12 and 13. A cross bar 14 is adjustably mounted on the standards 12 and 13. Slidably mounted on the standards 12 and 13 is a carriage 15 provided with handles 16 and 17. A suitable catch 18 is mounted on the standard 12 with a release lever 19 on the handle 16. It will be seen that the catch 18 holds the carriage in a fixed position and that by pressing the release lever 19, the carriage 15 may be released to slide downwardly on the standards 12 and 13. An adjustable stop 20 is mounted on the standards 12 with a screw 21 adapted to tighten or loosen the stop 20. The standard 12 may be graduated as by the markings 22 so that the operator may place the stop at a predetermined position to limit the movement of the carriage 15 downwardly on the standards 12 and 13.

Mounted in the carriage 15 is a motor 25 having the usual coil 26 and armature 27. The armature 27 is attached to a hollow shaft 28. The upper end of the shaft 28 is coupled to a shaft 29 of a conventional compressor 30 with an air intake 31 and an air outlet 32. The compressor 30 is motivated by the shaft 29 and sucks in air through the air intake 31 and forces it out through the air outlet 32, into a valve chamber 33 and through the passage 34 and through a flap valve 35 into a powder chamber 36. In the valve chamber 33 is mounted a coil spring 40 which is seated around the valve seat 41 and presses upwardly against the valve 42. The valve 42 is mounted on a stem or rod 43 which extends through the top 44 of the carriage 15. When the carriage is moved upwardly into a resting position, valve stem 43 contacts a spring 45 mounted on the arm 14 and pushes the valve 42 into the valve seat 41. The valve stem is cut away at 46 to allow the passage of air therearound and upon the closing of the valve 42 the valve 50 is moved away from the valve seat 51 to allow the air to pass around the valve stem 43 and through the outlet 52.

The powder chamber 36 is provided with an opening 53 and a closure 54 to permit the insertion of powder into the chamber. This powder may consist of chalk or any suitable marking material. The hollow shaft 28 extends through the chamber 36 where it is connected to the compressor shaft 29 by the coupling 55. A spring 56 insures the smooth operation of the motor shaft. Mounted on the motor shaft is a scoop 60 and also mounted on the shaft 28 or on the scoop 60 is an

agitator 61. At the top of the powder chamber are a plurality of baffles 62 and 62'. Toward the bottom of the chamber 36 near the lower part of the scoop 60 is an opening 63 into the hollow shaft 28. Immediately below the opening is a valve seat 64 adapted to cooperate with the bottom 65 of the rod 67 running through the upper part of the hollow shaft 28 and the hollow compressor shaft 29.

When the carriage 15 is in an inactive position and upwardly on the standards 12 and 13 the top 70 of the shaft 67 rests against the spring 72 mounted on the arm 14. Around the shaft 67 and below the top is a rubber or resilient washer 73 which will tend to force the top 70 and the rod 67 upwardly but which when compressed will allow the rod 67 to move downwardly to close the opening 63 and to seat the end 65 thereof in the valve seat 64. It will be seen that the rod 67 while moving upwardly and downwardly to close the opening 63 does not revolve with the shafts 28 and 29 but remains stationary. Mounted in the end 65 of the rod 67 is a steel ribbon 75 which extends downwardly through the hollow shaft 28 and below said shaft. On the lower end of the shaft 28 there is adjustably fastened a coupling 76 fastened to the shaft by means of set screws 77 and holding a hollow needle 78 by means of a set screw 79. A washer 80 may be placed between the end of the shaft 28 and the needle 78 to insure close contact. The hollow needle 78 is pointed at its lower end 81 and is provided with an opening 82 adjacent thereto. Extending across the base 11 is a guiding bar 90 which has an opening in the center thereof provided with a collar 91 to guide and support the needle 78. The collar 91 supports a guide or housing 93 extending below the bar 90 and provided with a lining 94 to prevent leakage of marking material through the opening 82 in the needle when the machine is not in use. The base 11 is further provided with a large opening 92 to allow the passage of the needle therethrough.

A switch 95 is mounted on the handle 16 with a switch handle 96 conveniently located for operation by the thumb. An adjustable relief valve 100 is also provided adjacent the valve chamber 33 to permit the escape of air through said valve 100 should the compressor build up too much pressure. An opening 101 connects with the valve chamber 33 and the spring pressed valve 102. A thumb screw 103 is provided to adjust the tension on the spring 104. It will be seen that when such excess compression is built up by the compressor 30 the air will enter the passage 101, force back the valve 102 and escape through opening 105.

In operation, the powder chamber 36 is filled with marking material through the opening 53. The motor is started by closing the switch 95. The base 11 is placed upon the material to be marked, the release lever 19 pressed and the carriage 15 allowed to move downwardly on the uprights 12 and 13. The agitator 61 sets up a centrifugal action in the powder chamber 36, causing the marking material to be mixed thoroughly with the air now passing through the flap valve 35 into the chamber. This causes the marking material to be thrown against the baffles 62 and 62' and to fall into the path of the scoop 60 which directs the flow of powder downward and into the opening 63, into the hollow motor shaft 28, and down through the hollow needle 78 out through the opening 82 onto the cloth. This will leave a

small hole 110 surrounded by the powder mark 111 on each layer of cloth 112.

It will be appreciated that the ribbon 75 will prevent any clogging of the needle 78 and that the air passing through the needle will assure the passage of a sufficient amount of marking material to clearly mark the cloth.

It will also be appreciated that by use of the stop 20 the downward motion of the carriage and the needle will be stopped at any predetermined point. Should the air pressure build up within the chamber 36 to too great a point the flap valve 35 will close and thus prevent powder from working back into the compressor 30. When the machine is again raised into resting position the action of the springs 45 and 72 will stop further air from entering into the powder chamber 36 and allow the air to escape through the opening 52. The action of the spring 72 on the top 70 of the rod 67 will depress the washer 73 and push the rod downwardly so that the end 65 thereof engages the valve seat 64 to prevent further powder or making material from going into the rotating shaft 28. At the same time the end of the needle 81 will move into the housing 93 and the opening 82 in the needle will be covered by the housing 93 so that flow of marking material from the needle will be stopped.

We claim:

1. In a device of the character described, a base, uprights on said base, a cross bar at the upper end of said uprights, a carriage slidably mounted on said uprights, a motor in said carriage, a hollow shaft in said motor communicating at its lower end with a hollow needle, a powder chamber above said motor, an opening in said hollow shaft communicating with said powder chamber, and means cooperating with said cross bar to close said opening when said carriage is slid upwardly on said uprights and to open said opening when said carriage is moved downwardly on said uprights.

2. In a device for marking cloth with powder, a motor, a hollow shaft in said motor, a chamber for the reception of marking powder, an opening in said hollow shaft communicating with said chamber, an agitator in said chamber to aerate said powder, a compressor operated by said shaft and communicating with said powder chamber, and a hollow needle communicating with the lower end of said hollow shaft whereby marking powder may be forced by the air from said compressor out of the chamber into the hollow shaft and through the needle to mark the cloth pierced by said needle.

3. In a device of the character described, a motor, a hollow shaft in said motor, a hollow needle at the lower end of said shaft adapted to rotate with said shaft, and a stationary member extending through said shaft and into said needle.

4. A marking drill comprising a base, uprights on said base, a bar connecting the top of said uprights, a carriage slidably mounted on said uprights and including a motor driven drill, a powder chamber and a compressor, a passage between said compressor and said powder chamber and a valve controlling said passage, means cooperating with said cross bar for closing said valve when the carriage is in an upward position and for opening said valve when the carriage is slid downwardly on said uprights, and means to establish communication between said chamber and drill.

5. A marking drill comprising a motor, a drill connected thereto to be driven thereby, a hollow

shaft in said motor, a powder chamber, an opening from said powder chamber into said hollow shaft, a compressor, a passage from said compressor into said powder chamber, means for simultaneously closing said passage from said powder chamber into said hollow shaft and from said compressor into said powder chamber, and means to establish communication between said hollow shaft and said drill.

6. In a device of the character described, a base, uprights on said base, a carriage slidably mounted on said uprights and a motor in said carriage, a hollow shaft on said motor, a hollow needle on said shaft, an opening in the lower end of said needle, a cross bar extending above said base, a housing in said cross bar adapted to guide said needle and to close the opening therein when the carriage is in an upward position.

7. In a device of the character described, a hollow needle, means for rotating said needle, a ribbon member in said needle, and means for holding said ribbon member stationary while the needle is rotated, whereby said ribbon member will prevent the clogging of material passing through said needle.

8. In a marking drill, a hollow needle, means for rotating said needle, a powder chamber, a channel connecting said powder chamber to said needle, a member in said needle, means for holding said member stationary when said needle is rotated, and additional means to move said member to close said channel.

9. In a powder drill, a motor, a hollow shaft in said motor, a chamber for the reception of marking powder, an opening in said hollow shaft communicating with said chamber, a hollow needle communicating with the lower end of said shaft, means for forcing powder from the chamber through said hollow needle, a stationary member mounted in said shaft and said needle, and means for moving said stationary member to close said opening.

10. In a powder drill, a hollow needle, a powder chamber, means for rotating said needle and forcing powder from said powder chamber through said needle, said means comprising a compressor, a rotating scoop, an agitator on said scoop, and baffles adapted to drop powder aerated by said agitator into said scoop.

11. In a marking drill, a hollow needle, a powder chamber, means for forcing powder from said powder chamber through said hollow needle and for rotating said needle, and a member mounted in said needle to prevent the clogging thereof.

12. In a powder marking drill, a hollow drill, means for passing powder through said drill, a member in said drill, and means for rotating said drill and said member relative to each other, whereby said member prevents the clogging of said powder in said drill.

13. A marking drill comprising a hollow needle, a support therefor, means to movably mount and

guide said hollow needle in said support with respect to work to be drilled and marked, means to supply a marking powder to the interior of said needle, and to force such powder through the needle, means to aerate the powder as it is being supplied, means to actuate said needle, and means to discharge powder from the needle during action thereof.

14. In a device for marking cloth with powder, a motor, a hollow shaft in said motor, a hollow drill on the lower end of said shaft, a powder chamber communicating with said shaft, means for aerating the powder in said powder chamber, and means for forcing powder into said hollow shaft through said drill to mark the cloth pierced by said drill.

15. In a drill for marking cloth with powder, a hollow rotating shaft, a hollow needle on one end of said shaft, a chamber containing marking powder surrounding said shaft, an opening in said shaft communicating with said powder chamber, a scoop on said shaft adjacent said opening, an agitator on said scoop, baffles situated above said scoop whereby powder thrown by said agitator will contact said baffles and drop into said scoop through said opening and into said hollow shaft and needle.

16. In a device for marking cloth with powder, a rotating hollow shaft, a hollow drill on one end of said shaft, a chamber containing marking powder surrounding said hollow shaft, an opening in said hollow shaft communicating with said chamber, means for aerating said powder in said chamber, and additional means for forcing said powder from said chamber through said hollow shaft and drill.

17. A drill for marking cloth with powder comprising a hollow needle, a support therefor, means to movably mount and guide said hollow needle with respect to the cloth to be marked, means to actuate said needle and means to aerate marking powder and supply it to the interior of said needle and to discharge said powder from said needle during the actuation thereof.

18. In a cloth marking drill for drilling and marking a cloth lay, the combination of means to drill an opening in the lay, means to supply a marking powder to the perimeter of the drill opening in the lay under pressure, and means to maintain said powder in an aerated and disbursed condition.

19. In a device for marking cloth with powder, a hollow needle, means for rotating said needle, a chamber containing marking powder, communicating means between said chamber and said needle, means for keeping said marking powder in an agitated condition, and additional means for forcing said powder from said chamber through said needle.

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