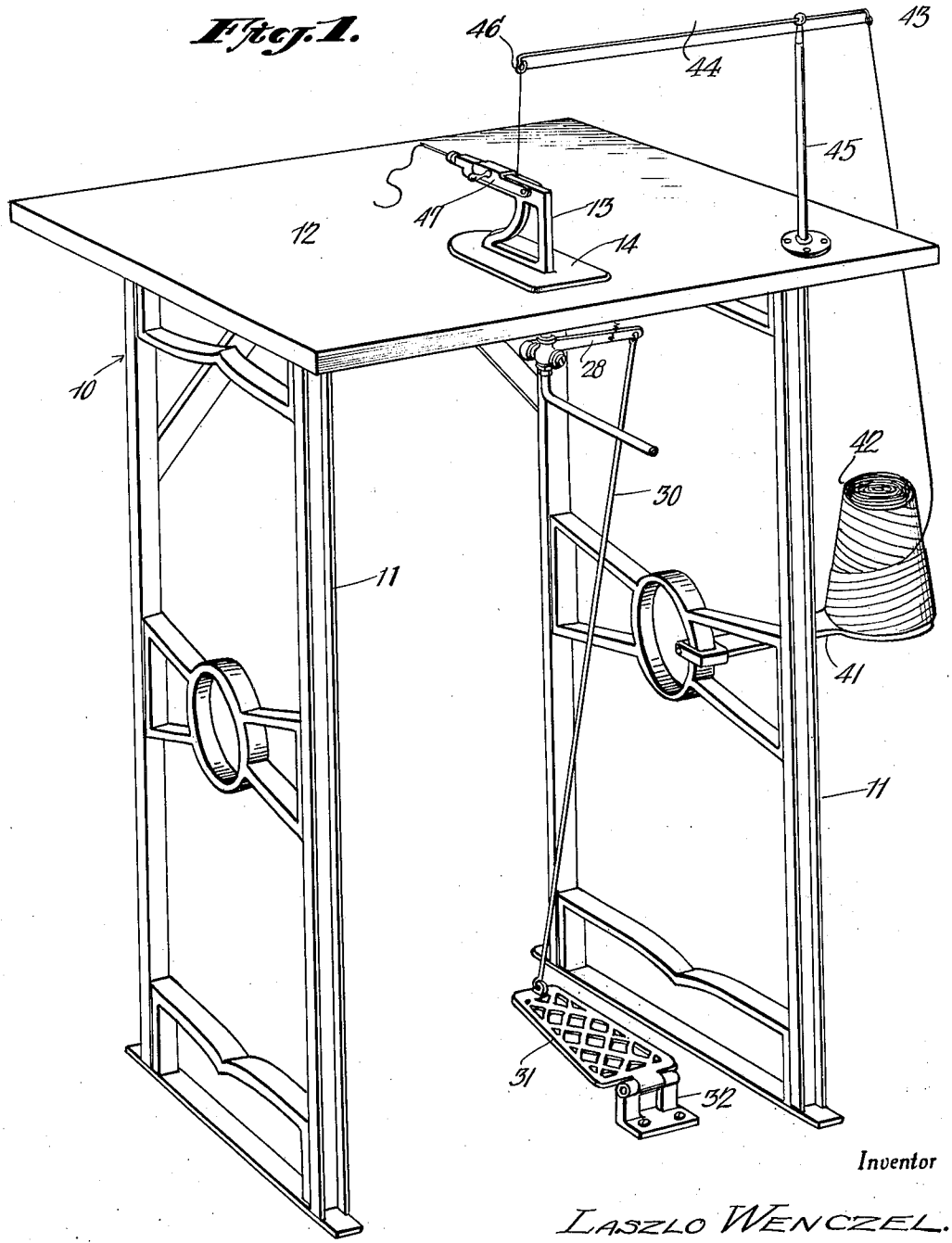
July 25, 1933. L. WENCZEL 1,919,674

PNEUMATIC PUFFING MACHINE

Filed Jan. 21, 1931 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

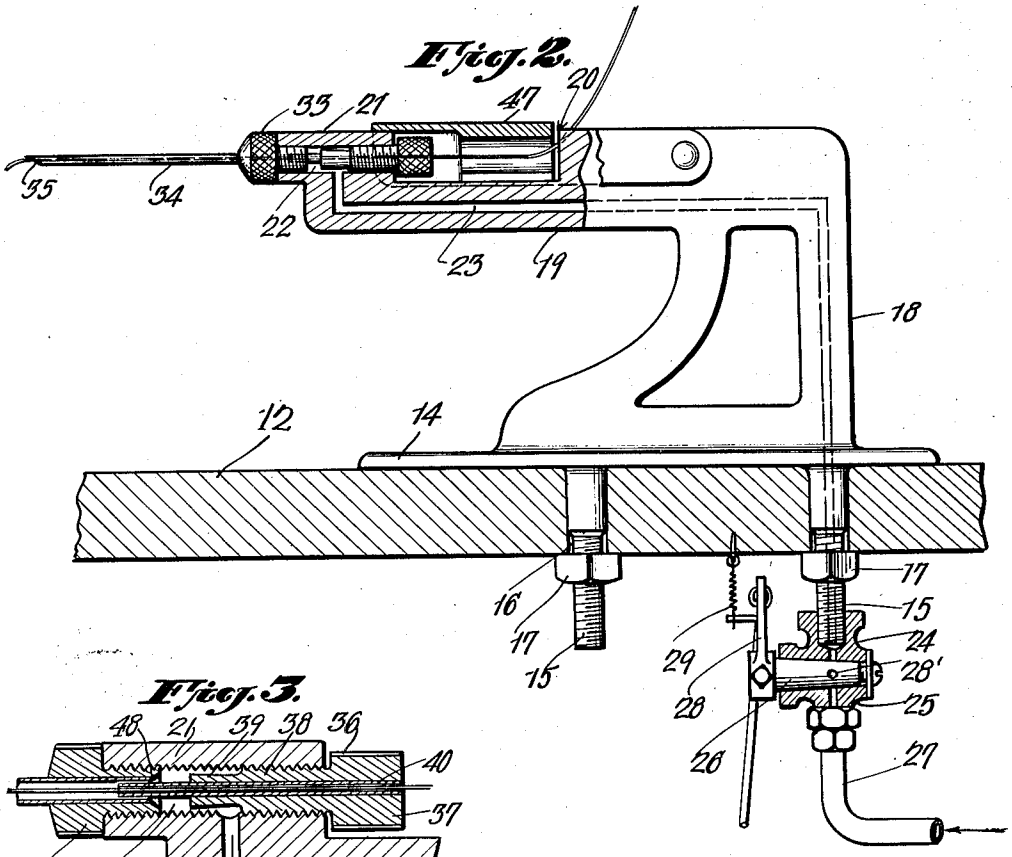


Fig. 3.

Fig. 4.

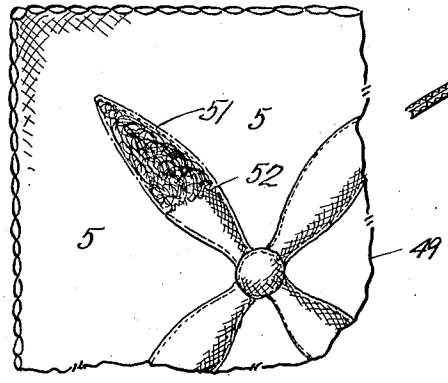
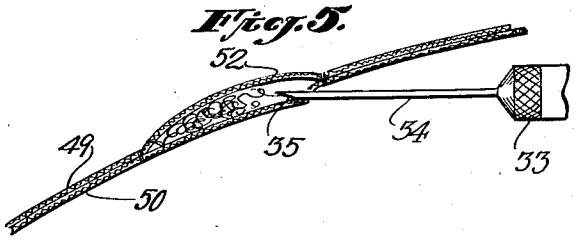


Fig. 5.



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UNITED STATES PATENT OFFICE

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PNEUMATIC PUFFING MACHINE

Application filed January 21, 1931. Serial No. 510,224.

The primary object of the invention resides in a machine in which the thread or yarn is blown or shot into pockets formed in the fabric to stuff the same to impart a raised or embossed design thereto.

Another object of the invention is to provide a pneumatic puffing machine for producing embroidery in which the supply of cotton thread or yarn fed by the machine is in view of the operator at all times to enable the operator to detect and undo any knots or entanglements in the cotton thread or yarn before the same reach the machine, which if passed to the feeding means would interfere with the operation thereof and require the stopping of the machine and the breaking of the material and rethreading the machine.

A further object is the provision of a pneumatic machine in which the cotton thread passes through an injector tube through which a column of air is blown to cause the free and automatic shooting of the thread therethrough.

A further object is to provide a pneumatic machine in which the flow of air through the injector tube is manually controlled by an operator to regulate the discharge of the thread therefrom.

With these and other objects in view, the invention resides in the certain novel construction, combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claims, and are illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of my improved pneumatic puffing machine.

Figure 2 is an enlarged detail side elevational view of the thread feeding mechanism of the machine with parts shown in section.

Figure 3 is an enlarged vertical sectional view of the air regulating valve.

Figure 4 is a fragmentary plan view of a portion of a piece of embroidery formed by the machine.

Figure 5 is an enlarged sectional view through one of the pockets, but showing the manner in which the piercing injector tube is introduced into a pocket being stuffed.

Referring to the drawings by reference characters, the numeral 10 designates my improved pneumatic puffing machine in its entirety which includes spaced leg frames 11—11 which support at their top a table or platform 12. Suitably mounted upon the flat top 12 is a needle support 13 which includes a flat base plate 14 having threaded studs 15 depending therefrom, and which studs pass through openings 16 in the table top and receive clamping nuts 17 which are screwed against the under side of the table top to securely hold the needle support in a rigid position.

Rising from the base plate 14 is a bracket 18 which includes a horizontally disposed arm 19 which is notched as at 20 adjacent its outer end so as to provide a bearing 21 which is formed with an internally threaded bore 22 for a purpose to be presently explained. Leading from the threaded bore 22 and extending horizontally through the arm 19 and thence downwardly through the bracket 18 and opening through the lower end of one of the threaded studs 15 is an air duct or passage 23. Threaded to the stud 15 through which the air passage extends is a control valve 24 which includes a casing 25 in which a valve plug 26 is turnably mounted. One side of the valve is connected with the passage 23 through the stud 15 while the opposite side of the valve is connected to an air supply pipe 27. The tapered valve plug 26 is provided with a passage 28′ so as to establish and disestablish communication between the air supply pipe 27 and the air duct 23. One end of the valve plug 26 has an arm 28 fixedly connected thereto and which arm tends to move upwardly by reason of the spring 29 which has one end connected to the arm and the other end fixed to the under side of the table top 12. The tendency of the spring 29 is to turn the valve plug 26 to an "off" position to disestablish communication between the air supply pipe 27 and the air duct 23.

Connected to the outer end of the arm 28 is one end of a connecting rod 30, and which

rod extends downward and is operatively connected to a foot pedal 31 which is pivoted or hinged to a floor plate 32 which is screwed or bolted to the floor to prevent creeping of the same. From the description of the control valve and its related parts it will be seen that depression of the foot pedal 31 against the action of the spring 29 will cause the downward movement of the arm 28 which will in turn cause the passage 28' in the valve plug 26 to establish communication between the air supply pipe 27 and the air duct 23. Upon release of the foot pedal, the spring 29 will automatically return the valve plug 26 to an "off" position thereby shutting off the supply of air pressure to the duct 23.

Threaded into the outer end of the bearing 21 is an injector tube holder 33 having a bore extending centrally therethrough in which the inner end of a tubular piercing and injector member 34 is fixedly secured. The outer end of the piercing member 34 is cut at an angle as at 35 to provide an effective point for a purpose to be presently explained. Threaded into the inner end of the threaded bore 22 of the bearing 21 is a regulating valve member 36 which includes an outer manipulating head 37, a threaded shank 38 which coacts with the threads in the bore 22 and a reduced portion 39. The regulating valve 36 is provided with an axial bore therethrough in which one end of a tube 40 is rigidly held, while the opposite end of the tube extends beyond the portion 39 of the valve member, and the extending end of the tube is of a diameter less than the interior diameter of the injector tube 34. The extending end of the tube 40 telescopes the inner end of the injector tube 34 so as to obstruct the mouth of the injector tube and prevent the flow of air from the air duct 23 from entering the extending end of the tube 40. However, by turning the valve member 36 the extending end of the tube 40 may be adjusted relative to the mouth of the injector tube to regulate the passage of air therethrough, and thus control the speed at which the thread or yarn is fed through the injector tube and which operation will now be explained.

Mounted upon one of the leg frames 11 and extending outwardly therefrom is a bracket arm 41 which supports a spool of cotton thread or yarn 42, the windings of the spool being brought upwardly through a guide eye 43 provided on one end of a flexible guide rod 44 which is held in an elevated position above the plane of the needle by a vertically disposed post or standard 45, which in turn is mounted upon the table top 12. The thread or yarn after passing through the eye 43 is brought the length of the rod 44 and passed through an eye 46 on the opposite end of the guide rod and which eye 46 is disposed substantially above the horizontal bracket arm 19, as best seen in Figure 1 of the drawings. The thread is brought down from the eye 46 and threaded through the tube 40 from whence it passes through the injector tube 34 and out of the sharpened end thereof. For guiding the thread into the machine and for protecting the regulating valve member 36 against accidental turning, I pivotally mount a guard and guide member 47 upon the horizontal arm 19 and which member overlies the manipulating end 37 of the valve member 36 and is received in the notched portion 20 of the bracket arm 19. In order to effect an adjustment of the regulating valve member 36, the guard 47 may be swung upwardly as will be readily understood and the reduced end 39 adjusted relative to the entrance of the duct 23 into the bore 22 to regulate the flow of air to the injector tube 34.

Assume that the parts are as shown in the several figures of the drawings, and it is desired to feed the thread or yarn 42 from the outer end of the injector tube 34. It is understood that the thread or yarn is threaded into the machine as shown and previously described, and by pressing downward upon the pedal 31, the control valve 24 is turned on which permits air under pressure to pass through the air duct 23 and thence into the bore 22 from where it passes on through the injector tube 34. The air in its passage through the injector tube serves to suspend the thread therein and the force shoots the thread outwardly and consequently imparts a pull on the thread wound on the spool. By this manner the thread is automatically fed to the injector tube and the column of air introduced thereinto serves to blow the thread outwardly beyond the pointed end of the injector tube. By releasing the foot pedal, the valve 24 of course returns to a closed position by reason of the spring 39, thus shutting off the air through the duct 23 and injector tube. It might be mentioned that the inwardly tapered extension 39 on the valve member 36 overlies the entrance of the duct 23 into the bore 22 and serves to provide a restricted passage through which the air must pass before reaching the inner end of the bore of the injector tube. The inner end of the injector tube holder 33 is provided with a beveled seat 48 with which the portion 39 coacts for regulating the restricted passage between the air duct 23 and the mouth of the tubular casing in the use of the machine, two layers of fabric material 49 and 50 are placed one against the other and the desired designs are formed by stitching 51 which stitching in turn forms enclosed pockets 52. Assuming that the material 49 is the upper side of the work to be embroidered, while the material 50 is the underside, it will be apparent that by bringing the work into con-

tact with the pointed end of the injector tube 34 with the underside of the work in engagment with the injector tube, the pocket will be pierced as best seen in Figure 5 of the drawings. When the pocket is punctured in this manner and the air pressure turned on to blow the thread through the sharpened end of the injector tube, the said thread will be received in the pocket and will serve to stuff the same and impart the raised or embossed appearance to the pocket formed by the stitching. The air is left on until the pocket is completely filled, after which the work is moved away from the sharpened end of the injector tube and the thread cut. The holes left by the piercing injector tubes are so small that it is practically invisible after the injector tube has been withdrawn.

From the foregoing description, it will be seen that I have provided a simple and effective pneumatic puffing machine for the making of embroidery which eliminates the necessity of manually inserting stuffing into the pockets to be stuffed. Much time and energy on the part of an operator is saved by the use of the herein described machine.

Furthermore, the operator is enabled at all times to view the thread as it passes from the spool to the machine in order to detect any knots or entanglements which might interfere with the free feeding of the thread through the piercing injector tube.

While I have shown and described what I deem to be the most desirable embodiment of my invention, I wish it to be understood that various changes in construction may be resorted to if desired, and I do not limit myself to the exact structural details herein set forth, nor to anything less than the whole of my invention, limited only by the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a puffing machine, a tubular injector member through which thread is adapted to be threaded, and means to which one end of said tubular injector member is connected for supplying air under pressure to said tubular injector member.

2. In a puffing machine, a tubular injector member through which thread is adapted to be threaded, and means to which one end of said tubular injector member is connected for supplying air under pressure to said tubular injector member, and valve means for regulating the flow of air to said tubular injector member.

3. A pneumatic puffing machine comprising a support, a tubular injector member rigidly supported upon said support, a compressed air supply duct leading to said tubular injector member, and manually controlled valve means for regulating the flow of compressed air through said air supply duct.

4. A pneumatic puffing machine comprising a support, a tubular injector member rigidly supported upon said support, a compressed air supply duct leading to said tubular injector member, and manually controlled valve means for regulating the flow of compressed air through said air supply duct, and thread guide means on said support adapted to lead thread to said tubular injector member.

5. A pneumatic puffing machine comprising a table, a support fixedly mounted upon the top of said table, a tubular injector member held by said support and extending therefrom, a compressed air duct leading to the inner end of said tubular injector member, and a manually operated air valve in said air duct for controlling the flow of compressed air therethrough.

6. A pneumatic puffing machine comprising a table, a support fixedly mounted upon the top of said table, a tubular injector member held by said support and extending therefrom, a compressed air duct leading to the inner end of said tubular injector member, and a manually operated air valve in said air duct for controlling the flow of compressed air therethrough, and a regulating valve for controlling the flow of air from said air duct to the tubular injector member

7. In a pneumatic puffing machine, a support, a tubular piercing member having its inner end fixedly mounted in said support, a tubular adjustable thread guide in axial alinement with said tubular piercing member for telescoping the inner end thereof, and means for introducing compressed air into said tubular piercing member through the inner end thereof.

LASZLO WENCZEL.