Nov. 1, 1938. W. G. WOLKAN 2,135,228

METHOD AND APPARATUS FOR MARKING FABRICS

Filed Oct. 31, 1936 3 Sheets-Sheet 1

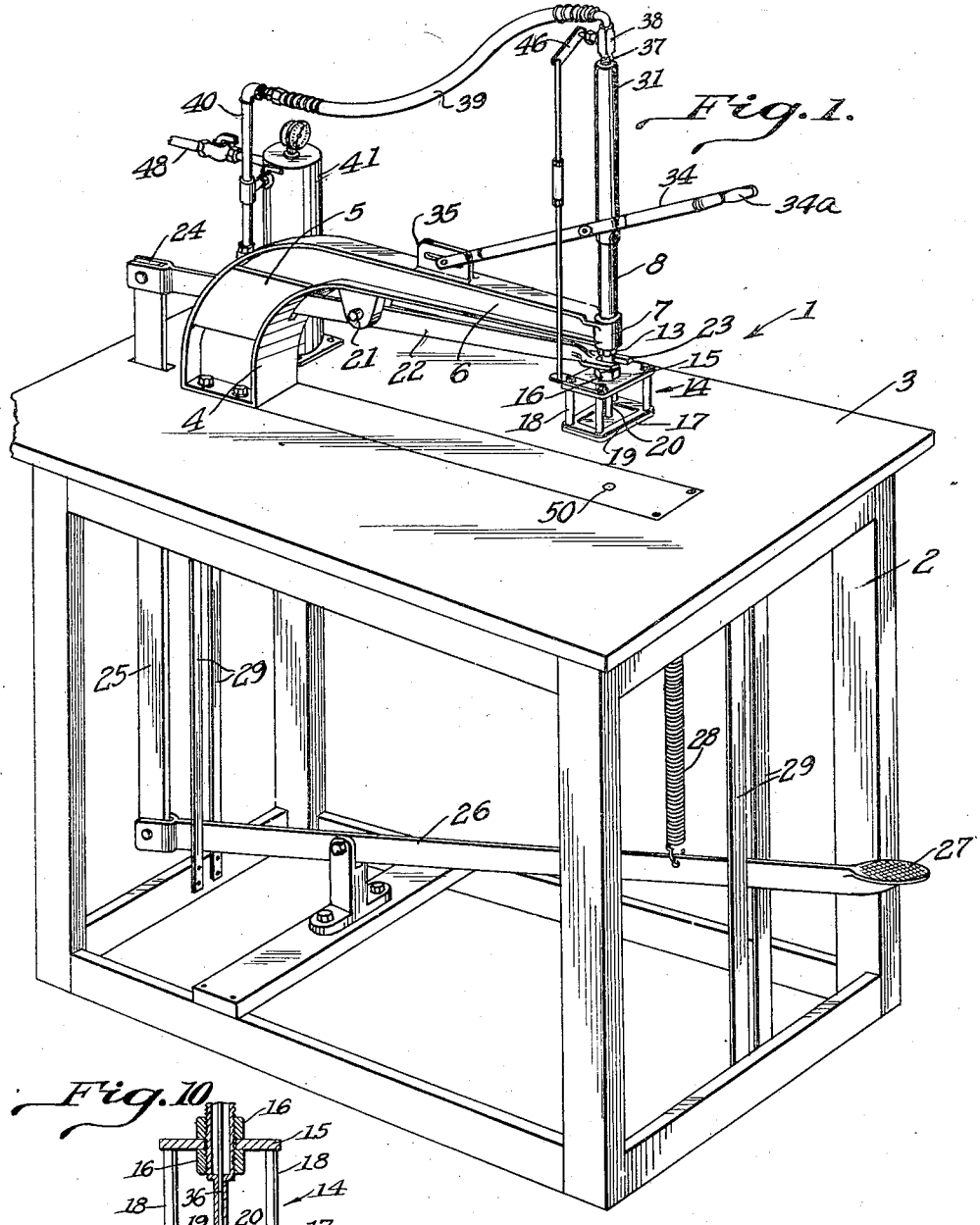


Fig. 1.

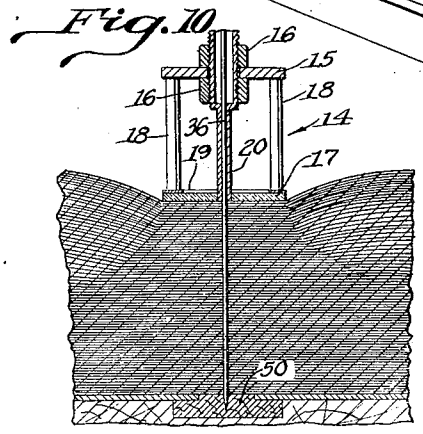


Fig. 10

Inventor
Walter G. Wolkan

By W. J. McDowell

Attorney

Nov. 1, 1938. W. G. WOLKAN 2,135,228

METHOD AND APPARATUS FOR MARKING FABRICS

Filed Oct. 31, 1936 3 Sheets-Sheet 2

Fig. 2.

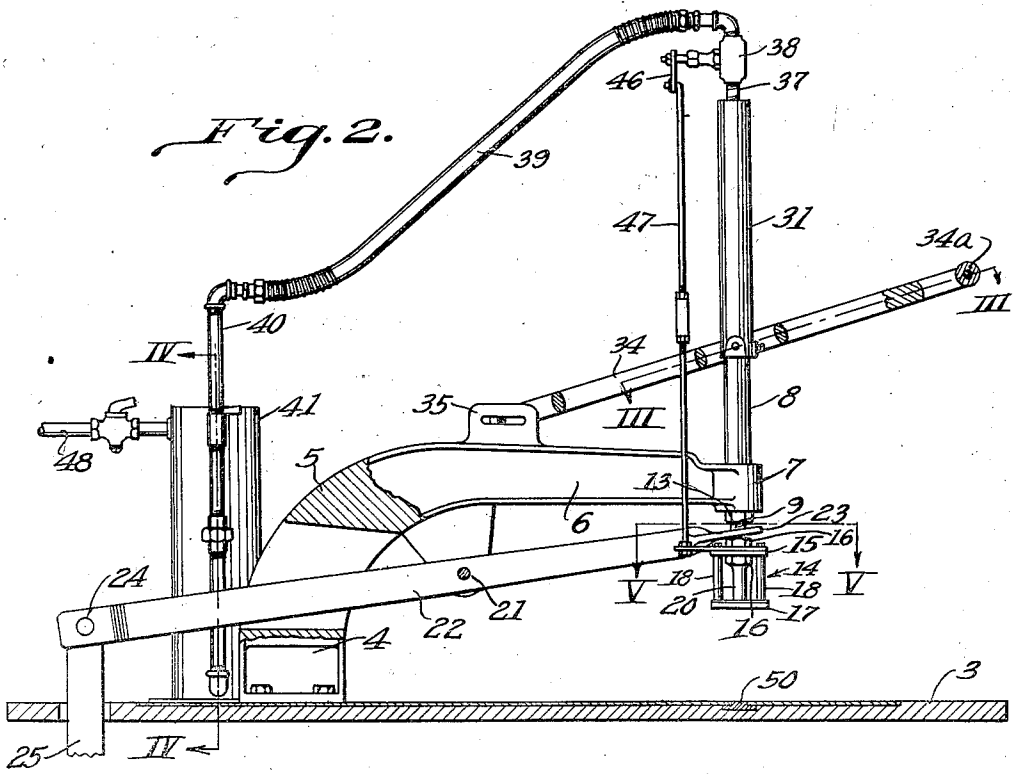


Fig. 3.

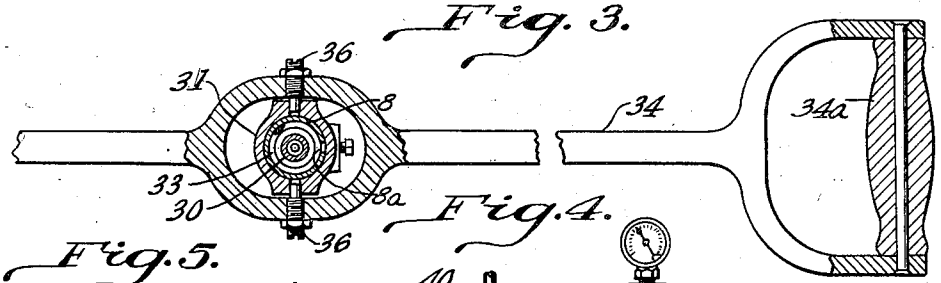


Fig. 4.

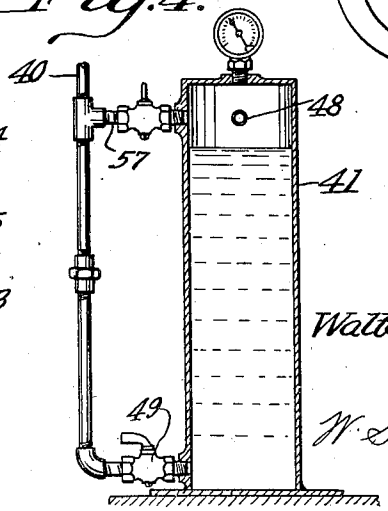
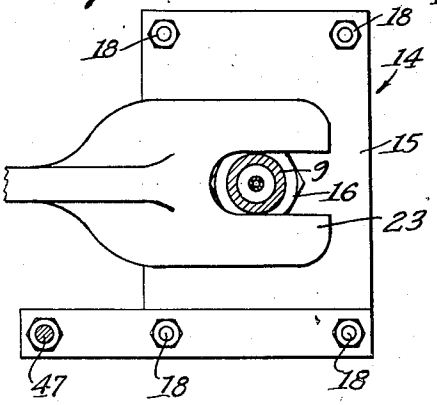


Fig. 5.



Inventor
Walter G. Wolkan

W. J. McDowell
Attorney

Nov. 1, 1938. W. G. WOLKAN 2,135,228

METHOD AND APPARATUS FOR MARKING FABRICS

Filed Oct. 31, 1936 3 Sheets-Sheet 3

Fig. 6.

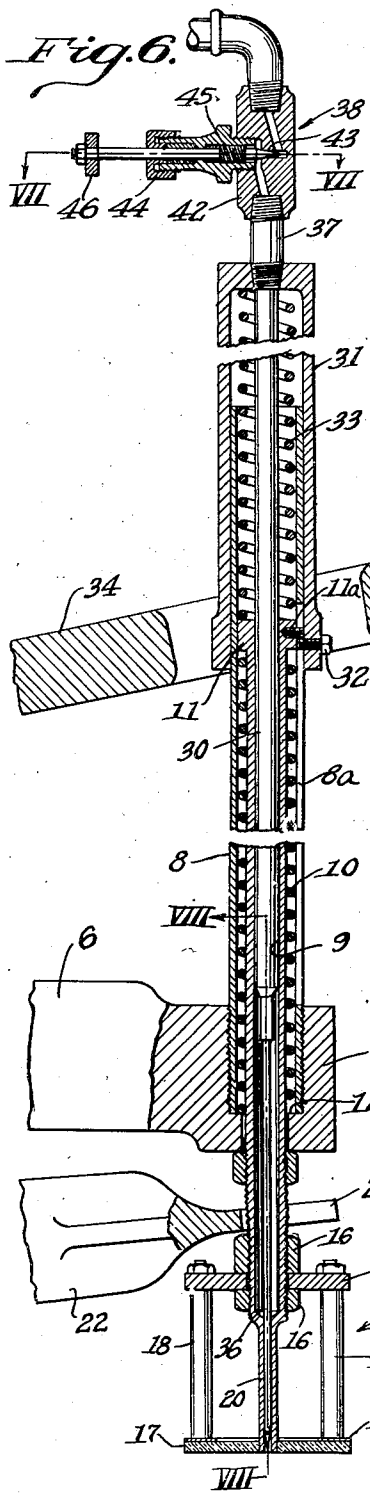


Fig. 7.

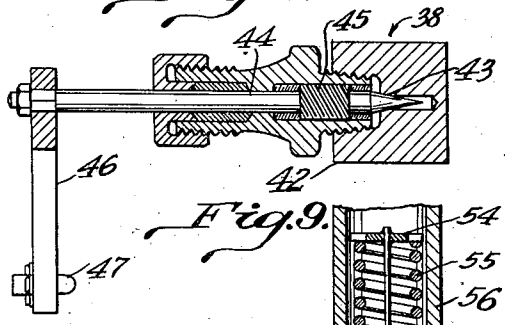


Fig. 9.

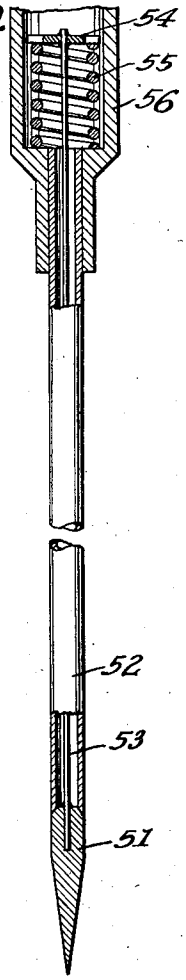
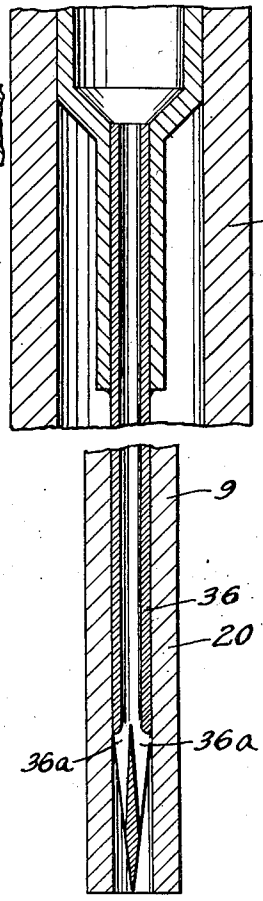


Fig. 8.



Inventor
Walter G. Wolkan

By W. J. McPowell

Attorney

Patented Nov. 1, 1938

2,135,228

UNITED STATES PATENT OFFICE

2,135,228

METHOD AND APPARATUS FOR MARKING FABRICS

Walter G. Wolkan, Cincinnati, Ohio

Application October 31, 1936, Serial No. 108,632

12 Claims. (Cl. 33—17)

This invention relates generally to marking devices used by clothing and other industries employing fabrics.

In its more particular aspects, the invention is concerned with devices used to transfer certain types of markings from a pattern to each of a plurality of sheets of fabric arranged in superposed order.

The machines of the type specified now in general use employ a needle which penetrates the plurality of layers and leaves a thread extending through the layers where the mark is desired to be located. This type of machine is objectionable inasmuch as the services of a plurality of operators are required to sever the marking thread between each layer or sheet of fabric and special care must be exercised to prevent the withdrawal of the threads both before and after they are cut. Also the thread extends through the material and after it is severed, only the end of the thread is viewable which renders the mark particularly difficult to discern.

The primary object of the present invention resides in the provision of a marking machine which will avoid the objections set forth above and at the same time produce a much superior mark in a quick and easier manner.

A second object of the invention rests in the construction of a marking machine which will make use of a thick, creamy fluid as a marking medium, the fluid being adapted to dry after a comparatively short time to leave a deposit in the goods which deposit is readily and completely removable by brushing or by washing the fabric in a suitable solvent.

A further object of the invention resides in the employment of a hollow needle which penetrates the layers of fabric and through which the marking fluid is forced under pressure, the fluid flowing out of the needle, preferably as it is withdrawn, and into the opening made by the spreading of the threads of the fabric during the insertion operation of the needle.

A still further object resides in the provision of a clamping head which is employed to exert compressing forces to the layers of fabric around the location where the mark is to be made, the clamping force being applied prior to the insertion of the marking needle to prevent the marking fluid from flowing out of the needle during insertion and from being absorbed by the fabric in the vicinity of the opening formed by the needle.

With these and other objects in view which will appear as the description proceeds, the invention consists in the novel features of construction and arrangement of parts as pointed out in the following description which is to be taken in connection with the accompanying drawings illustrating one embodiment of this invention.

In the drawings:

Fig. 1 is a perspective view of a marking device constructed in accordance with the present invention;

Fig. 2 is a vertical longitudinal sectional view taken through the upper portion of the machine and showing certain portions thereof in side elevation;

Fig. 3 is a detail horizontal sectional view, the plane of the section being indicated by the line III—III of Fig. 2;

Fig. 4 is a detail vertical sectional view on the line IV—IV of Fig. 2 and shows a tank employed for the storage of marking fluid in section;

Fig. 5 is another horizontal section taken on the plane indicated by the line V—V of Fig. 2;

Fig. 6 is a vertical sectional view on an enlarged scale of the clamping head and needle supporting mechanism;

Fig. 7 is a detail horizontal sectional view taken through a valve used to automatically control the flow of fluid to the needle, the plane of the section being indicated by the line VII—VII of Fig. 6;

Fig. 8 is a vertical section on an enlarged scale of the needle and its guiding mechanism on the plane indicated by the line VIII—VIII of Fig. 6;

Fig. 9 is a vertical longitudinal sectional view of a modified type of needle;

Fig. 10 is a vertical sectional view showing the clamping head in operative position on a pile of fabric and the needle in its inserted position.

Referring more particularly to the drawings, the completed marking device is designated generally by the numeral 1. A supporting frame 2 constructed of wood or other suitable material is provided and at its upper end carries a flat table 3 for the reception of the pile of fabric to be operated upon. Secured to the table near the rear portion thereof is a metallic bracket member 4 which arises from the table and is curved as at 5 to provide a horizontally extending portion 6. At its outer end, the portion 6 is formed to include a boss 7, the latter being perforated vertically and having rigidly secured thereto and extending upwardly therefrom a tubular spring housing 8.

Slidably positioned in the housing 8 is a tubu-

lar guide member 9 which is held in an elevated position by a spring 10 positioned between an annular enlargement 11 provided at the upper end of the member 9 and a shoulder 12 formed internally of the boss 7. A set screw 11a is inserted into the edge of the enlargement 11 and the outer end projects into a slot 8a formed in the housing 8 to prevent the member 9 from rotating.

The guide member 9 is threaded adjacent its lower end and a nut 13 is provided below the boss 7 to limit the extent of upward movement of the guide. Supported by the member 9 at its lower end is the material clamping head 14 which includes an upper plate 15 secured to the member 9 by the lock nuts 16, and a lower plate 17, preferably constructed of glass, which is secured in spaced relation to the upper plate by the corner bolts 18. A sheet metal frame 19 may be employed to reenforce the glass plate 17 to prevent premature breakage thereof. Below the threaded portion of the guide member, the same is reduced as at 20 and extends through an opening provided in the lower plate to the lower surface thereof.

To move the clamping head 14 downward to a clamping position, the bracket member 4 pivotally carries as at 21, a lever member 22 which is forked at its forward end 23 to receive the member 9 between the upper lock nut 16 and the nut 13. The rear end of the lever 22 is bifurcated as at 24 to pivotally connect with a tie bar 25 which extends vertically and connects at its lower end with an operating lever 26. The lever 26 is fulcrumed intermediate its ends to the frame member and at its outer end is provided with a foot engaging pedal 27. A tension spring 28 connected with the lever and the frame serves to hold the lever in an elevated position at its forward end. When the operator of the machine depresses the pedal 27, the rear end of the lever 22 is raised which results in lowering the forward end. Since the fork engages the clamping head 14, corresponding movement is transmitted thereto and any material which is positioned on the table below the head is clamped between these two members.

Vertically extending strips 29 are positioned on either side of the lever 26 at both ends to preclude undesired lateral movement on the part of this lever.

Arranged for sliding movement in the guide member 9 is a hollow, needle carrying rod 30 which is connected at its upper end to an upper housing member 31. The latter member is positioned for sliding movement on the outside of the lower housing 8 and has a set screw 32 threaded through the lower end of the side wall into the slot 8a below the set screw 11a. This arrangement of set screws keeps the members 9, 30 and 31 from turning relative to one another. The screw 32 being positioned below the screw 11a causes the upper housing and the mechanism connected therewith to move downward in unison with the clamping head 14 when it is lowered.

Provided within the upper housing 31 and surrounding the upper portion of the hollow rod 30 is a compression type of coil spring 33. This spring extends between the top of the guide member 7 and the under side of the top wall of the housing 31 and is employed to permit additional downward movement on the part of the housing 31 and the needle carrying rod 30 after the clamping head reaches its clamping position.

A hand operated lever 34 is fulcrumed at its rear end to an upstanding lug 35 provided on the horizontal portion of the bracket 4. Intermediate its ends, the lever is slotted to receive the housing 31 and pivot studs 36 threaded into the sides of the lever project into openings formed in the housing 31 to pivotally lock these two members together for vertical movement. The outer end of the lever 34 is provided with a hand grip 34a which when grasped and forced down by the operator, results in lowering the housing 31 and the needle carrying rod 30 against the action of the spring 33.

A tubular marking needle 36 is secured in fluid-tight relationship in the lower end of the hollow rod 30. This needle extends downwardly into the reduced lower end of the member 9 which closely conforms in internal diameter to the external diameter of the needle and is reenforced and guided thereby.

Dual fluid outlets 36a are formed in the lower portion of the needle adjacent the point. Any desired number of these openings may be employed, two being shown for purposes of illustration only. Connected to the upper end of the rod 30 by a nipple 37 is an automatically actuated, needle type control valve 38, the inlet side of the valve being connected by a section of flexible hose or tubing 39 with a pipe 40 leading from a fluid storage drum 41. The valve 38 includes a body 42 in which is formed a seat 43 adapted to be engaged by the inner tapered end of a valve stem 44 for the regulated passage of fluid from the inlet to the outlet sides of the valve. Multiple lead threads 45 are provided on the stem and cooperate with similar threads formed in the body of the valve to move the inner end of the stem toward and away from the seat when the stem is turned. To provide for the automatic actuation of the valve, the outer end of the stem has keyed thereto a laterally projecting arm 46 which is connected to the clamping or presser head by a rod 47. It will thus be seen that after the head 14 is moved to a clamping position, continued downward movement on the part of the housing 31 and the valve 38 will result in turning the valve stem axially, thereby moving the inner tapered end away from the seat and providing for fluid flow through the valve to the hollow rod 30 and the needle 36. A quick flow of the fluid is desirable, therefore, a valved pipe line 48 communicating with the storage drum above the level of the fluid contained therein is connected with a suitable source (not shown) of compressed air. The outlet pipe 40 for the fluid under pressure is also provided with a control valve 49 to positively shut off the flow of fluid to the tubing 39 when desired.

The operation of the marking machine is as follows:

First, a group of superposed layers of fabric is positioned on the table below the clamping head 14. The foot pedal is then pressed down which operation will lower the head 14 into clamping engagement with the fabric. Next the hand grip 34a is grasped and downward pressure applied thereto. This results in moving the housing 31 and the mechanism carried thereby, including the needle, downward, causing the needle to completely pierce each layer of the fabric until it assumes the position shown in Fig. 10. The downward movement of the valve 38, after the clamping head comes to rest as previously described, results in opening the valve and permitting fluid under pressure to flow to the needle. After the needle

completely penetrates the fabric pile, the point is embedded in a leather or other suitable composition insert 50 provided in connection with the table. This prevents fluid flow from the needle while in this position. As the needle is withdrawn from the fabric, the marking fluid will be forced under pressure through the openings in the point to completely fill the openings in the fabric caused by the penetration of the needle. The final stage of the operation of removing the needle from the fabric results in closing the valve to discontinue fluid flow to the needle and the clamping head may then be raised by releasing the foot pedal.

In the modified type of needle shown in Fig. 9, the point member 51 is made separate from the tubular shank 52. A wire 53 secured at its lower end to the point member 51 extends upwardly through the shank and has its upper end secured to the center of a disk 54. A coil spring 55 is arranged between the under side of the disk and an internal shoulder formed in the needle supporting member 56 to exert an upward pull on the member 51. The upper edge of the point member 51 is so formed as to provide a fluid-tight seal with the lower edge of the shank. It will be seen that as this needle is being inserted into the fabric, the member 51 is held against the shank, preventing fluid flow through the joint between these members. When the direction of movement is reversed to withdraw the needle, the friction between the fabric and the lower end of the needle causes a slight separation between the shank and point member to permit fluid to flow through this joint into the opening left in the fabric. When the grip on the point diminishes, the spring will move the point member into engagement with the shank once more and fluid flow will stop.

The fluid used with this machine is composed preferably of an evaporable fluid to which has been added a powdered chalk-like material. Other suitable ingredients may be added to cause a more perfect suspension of the chalk-like material in the liquid so that when the fluid is placed in the openings formed by the needle, the liquid will evaporate after a short period of time, leaving a deposit which may readily be seen. After the mark has served its purpose, the same may easily be removed by brushing or washing the goods in a suitable solvent.

After the machine has been in use and it is desired to discontinue such use, provision is made to clean the hose and needle by applying air pressure thereto. To accomplish this, a second valved pipe line 57 connects the fluid storage reservoir above the liquid level with the outlet pipe 40 in advance of the valve 49. When it is desired to clean out the needle, the valve 49 is closed and the valved line 56 opened, the machine is then operated to open the automatic valve. This will permit compressed air to blow through the hose line and needle, thoroughly cleansing the same of all traces of the marking fluid.

In the event agitation of the fluid in the reservoir is desired, the air under pressure may be introduced into the reservoir at a point near the bottom thereof. The air would then rise to the top of the fluid causing agitation thereof.

It is to be understood that while the needle and clamping head have been illustrated as moving downward to engage the fabric, other directions of movement could equally well be used without loss of the operating principles set forth above. Also the mechanical construction of the various parts of the mechanism could be altered without departing from the spirit and scope of the invention as set forth in the following claims.

What is claimed is:

1. A fabric marking machine comprising a support, a clamping head mounted for movement relative to said support, a hollow needle provided in connection with said clamping head, said needle being movable relative to said head, means for moving said head, means for moving said needle, and valve controlled means for introducing fluid under pressure to said needle.

2. A fabric marking machine comprising a support, a clamping head, means for moving said head toward said support, a hollow needle movable through said clamping head, means for moving said needle, and automatically controlled means for introducing fluid under pressure to said needle.

3. A fabric marking machine comprising a table, a clamping head supported for vertical movement above said table, foot operated means for moving said clamping head, a hollow needle supported for vertical movement through said clamping head, hand operated means for moving said needle, and means for introducing fluid under pressure to said needle.

4. A machine of the character described comprising a table, a spring elevated clamping head positioned for vertical movement above said table, means for moving said head against the action of said spring, a spring elevated needle support positioned for vertical movement above said clamping head, a hollow needle provided at the lower end of said needle support, said needle being movable through said clamping head, means for moving said needle support against the action of its spring, and means for introducing fluid under pressure to said needle.

5. A fabric marking machine comprising a support for the fabric to be marked, a head for clamping said fabric against said support, a hollow needle movable relative to said head and support to penetrate said fabric, and means for introducing fluid under pressure to said needle.

6. A mechanism of the character described comprising a table, a bracket mounted on said table, a clamping head resiliently carried by said bracket in spaced relation from said table, foot operated means for moving said head toward said table, a hollow needle resiliently supported by said bracket, means for moving said needle relative to said head, a valved line connecting said needle with a source of marking fluid, and means positioned between the valve in said line and said head whereby relative movement between said needle and said head will operate said valve to control fluid flow to said needle.

7. A mechanism of the character described comprising a table, a bracket mounted on said table, a clamping head mounted for vertical sliding movement on said bracket, a manually operated lever for moving said clamping head, a hollow needle mounted for vertical sliding movement on said bracket independently of said head, means for moving said needle, valve means connected with said needle, a pipe line connecting the inlet of said valve with a source of fluid under pressure, and means extending between said valve and said clamping head whereby relative movement between said needle and said clamping had will actuate said valve.

8. The method of marking a group of superposed layers of fabric which comprises placing the fabric on a support, clamping a localized area of the fabric against the support, piercing the

localized area with a sharp pointed instrument to form an opening therein, and filling the opening with a fluid-like marking medium.

9. The method of marking a plurality of superposed layers of fabric which comprises placing the fabric on a support, holding a localized area of the fabric against the support with sufficient force to compress the layers, forming an aligned opening through each of the layers, and filling said aligned openings with a cream-like marking fluid.

10. A fabric marking machine comprising a support for the fabric to be marked, a head for clamping said fabric against said support, a hollow needle movable relative to said head and support to penetrate said fabric, a source of supply of marking fluid connected with said needle, means for introducing compressed air to said fluid supply source to cause fluid flow to said needle, and valve means disposed between said fluid supply source and said needle to control fluid flow to the latter.

11. A fabric marking machine comprising a member, a clamping head movable toward and away from said member to apply holding pressure to the fabric to be marked, a hollow needle movable relative to said head and member, a source of supply of marking fluid communicating with said needle, means for applying compressed air to said marking fluid to force it to said needle, valve means disposed between said fluid supply source and said needle to control fluid flow to the latter, said valve means being automatically operated by relative movement between said needle and said head.

12. A fabric marking machine comprising a frame, a table mounted on said frame to support the fabric to be marked, clamping head mechanism movably mounted in spaced relation from said table, a hollow needle supporting member movably carried by said clamping head, lever mechanism provided in connection with said frame, said lever mechanism being connected with said head and serving to move said head and needle support toward and away from said table, a second lever mechanism connected with said needle supporting member for moving said member relative to said head, a source of marking fluid under pressure communicating with said needle, and valve means disposed between said fluid source and said needle, said valve means being operated by movement of said second lever mechanism.

WALTER G. WOLKAN.