

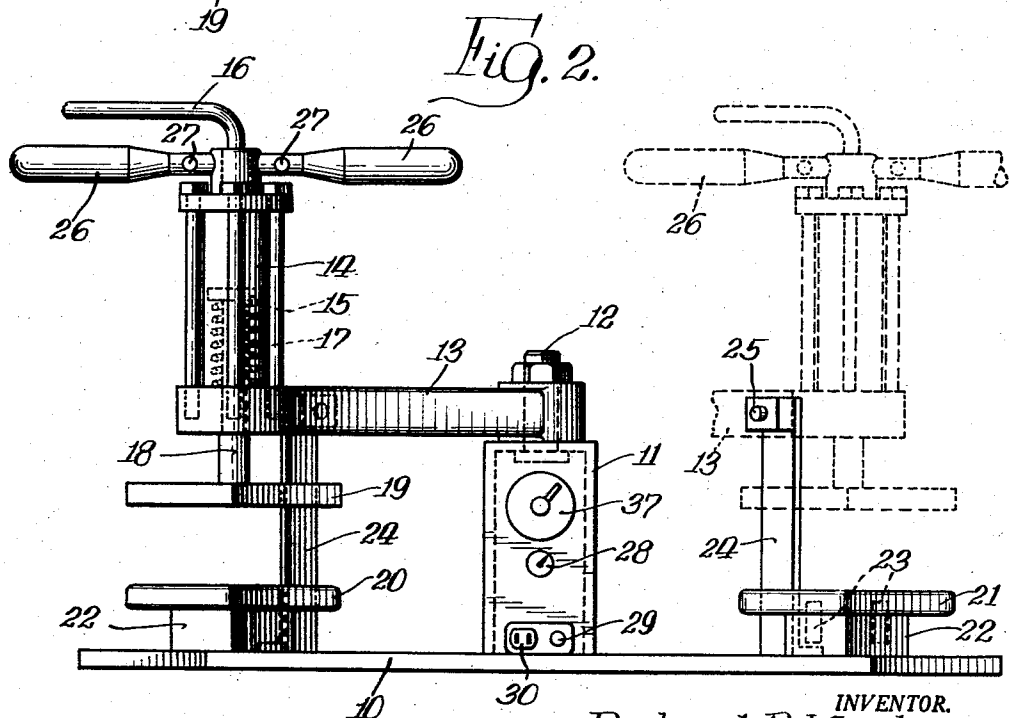
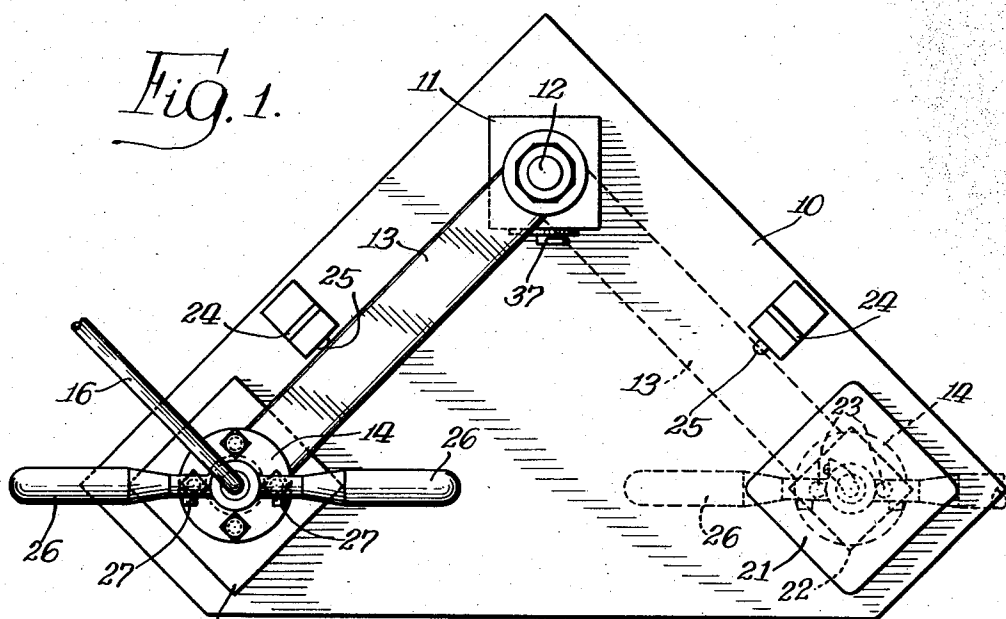
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R. P. MAITZEN
HEATING APPARATUS

2,904,098

Filed March 12, 1956

2 Sheets-Sheet 1



INVENTOR.
Richard P. Maitzen
BY Schneider, Hoffgren,
Brady & Weger
Atty's.

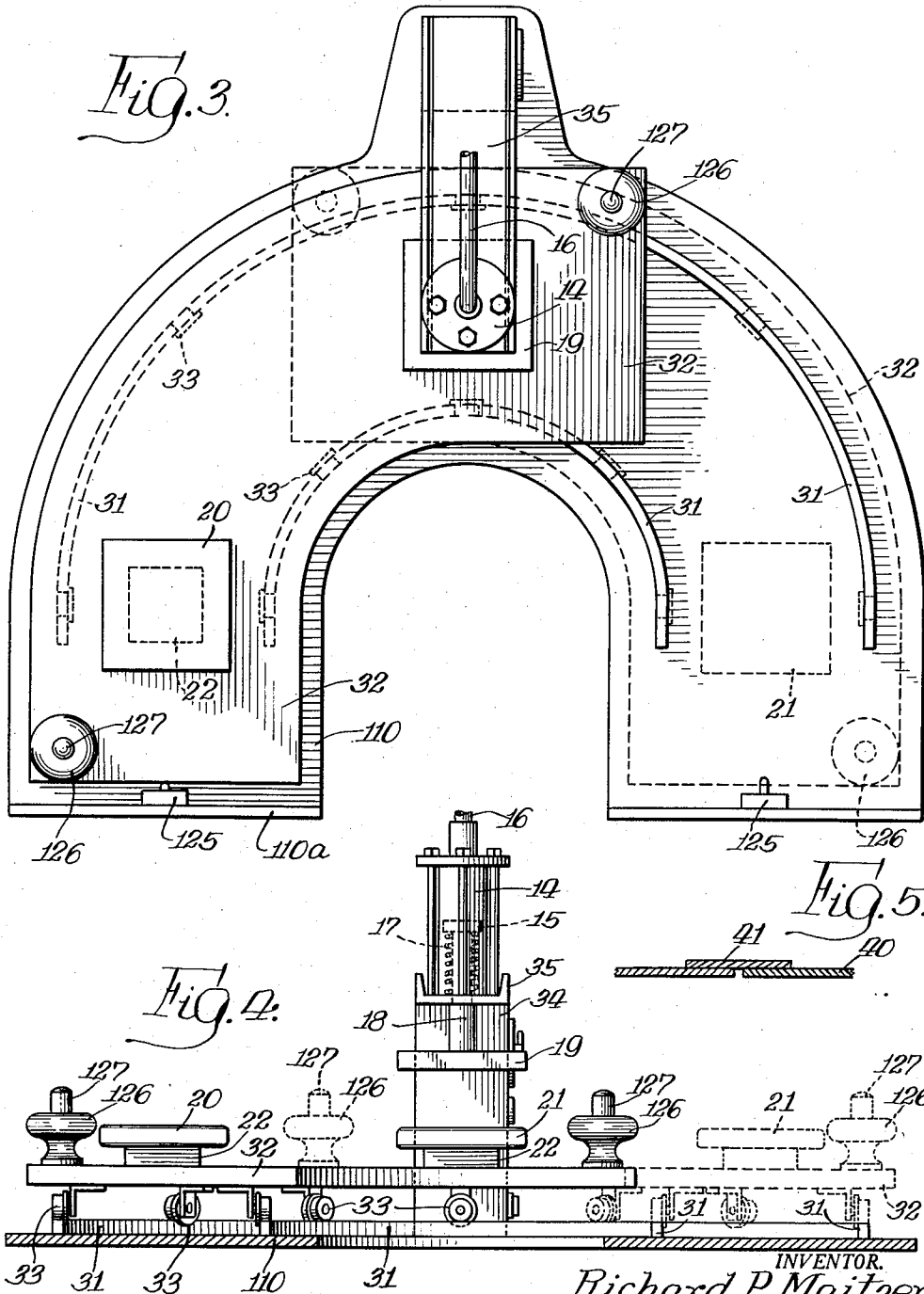
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INVENTOR.
Richard P. Maitzen,
BY Schroeder, Hofgren,
Brady & Wegner, Attys.

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HEATING APPARATUS

Richard P. Maitzen, Arlington Heights, Ill.

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3 Claims. (Cl. 154—1)

This invention relates to heat and pressure applying apparatus that is particularly designed for applying heat attachable patches to fabrics.

Garments and particularly work clothes frequently become torn and require patching in order to again make them serviceable. There are patches available of varying shapes and sizes each carrying a thermosetting or thermoplastic adhesive so that a patch of the size and shape to cover the torn part of the garment can be placed over the tear and heat-sealed into place. One of the features of this invention is to provide a heat and pressure applying apparatus particularly suitable for applying heat attachable patches to fabrics comprising a plurality of fabric supporting members, a heat applying member, and means for moving the fabric supporting members and heat applying member relative to each other to align the heat applying member with one fabric supporting member while leaving another fabric supporting member exposed and means for pressing the heat applying member and the one fabric supporting member relatively together with the fabric therebetween so that one patch can be applied to one section of fabric while another section of fabric is being arranged with a patch for later heat-sealing. Thus the operator in a commercial establishment or the like can do a series of patching operations rapidly and efficiently on a single machine with very little delay.

Other features and advantages of the invention will be apparent from the following description of certain embodiments thereof taken in conjunction with the accompanying drawings. Of the drawings:

Figure 1 is a plan view of one embodiment of the apparatus of this invention;

Figure 2 is a front elevational view of the apparatus of Figure 1;

Figure 3 is a plan view of a second embodiment of this invention;

Figure 4 is a front view of the apparatus of Figure 3; and

Figure 5 is a sectional fragmentary semi-diagrammatic view showing a patch in place spanning a torn place in a fabric.

The heat and pressure applying apparatus of the embodiment of Figures 1 and 2 comprises a generally triangular base 10 provided adjacent to the angular corner thereof with a combined post and housing 11. Pivotaly mounted about a bolt 12 on the top of this housing 11 is a radial arm 13. This arm is reciprocable from one side to the other. Thus as illustrated, the arm 13 is reciprocable from the position shown in solid lines in Figures 1 and 2 to the position shown in broken lines in the same figures and back again.

The outer end of the arm 13 carries a fluid-operated, such as air-operated, cylinder 14 carrying within the cylinder a movable piston 15. A space above the piston 15 is connected to a source of fluid such as air under pressure by means of a fluid line 16. Flow of air through the line 16 into the cylinder 14 and venting of the fluid from the cylinder are controlled by means of a standard

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electrically controlled air supply and vent valve (not shown) electrically operated in the ordinary manner. The piston 15 is urged toward its normal inoperative position by means of a helical spring 17 or similar device.

The piston 15 is mounted on the upper end of a shaft 18 which extends downwardly and carries on its lower end an electrically heated presser plate 19. This presser plate carries an electric resistance heater (not shown) of ordinary and customary construction.

Mounted on the base 10 forwardly of the housing 11, and preferably adjacent to the opposite edges of the base 10, is a pair of fabric supporting members, here illustrated as padded bases 20 and 21, each mounted on a support 22. These padded bases 20 and 21 are interchangeable on their support 22 so that they can be interchanged to correspond to the size and shaped of the tear in the fabric and thus to the patch intended to cover this tear. As illustrated, with the padded base 21 this interchangeable arrangement may be provided by having the bases 20 and 21 carry a plurality of downwardly extending pins 23 adapted to engage corresponding holes in the base support 22.

In order to provide stops to determine the extent of reciprocation of the radial arm 13, there is provided a pair of stop members 24 mounted on the base 10 on opposite sides thereof. Each stop member carries an electrical switch 25 that is adapted to be closed as illustrated on the left side of Figure 1 by contact of the arm 13 with the switch. Each electrical switch 25 is in the circuit to the air valve controlling the flow of air through the line 16 so that it is necessary for the arm 13 to be turned to a position where the presser plate 19 is directly above a base 20 or 21 before the air cylinder 14 and piston 15 arrangement will operate. The electrical circuit is not illustrated here as such a circuit is purely conventional in structures of this type.

Mounted on top of the air cylinder 14 for movement therewith is a pair of outwardly extending handles 26. Mounted adjacent to each handle 26 is a finger-operated switch 27 also in the electrical circuit to the control valve for the air supply through the line 16.

The housing 11 upon which the oscillatable arm 13 is mounted also contains the various indicating and control instruments in addition to the switches 25 and 27. Thus, the housing 11 can contain an adjustable timer 37 of ordinary construction to regulate the period of operation of the air cylinder 14 to determine the time during which the presser plate 19 is held against the fabric during each cycle of operation. The construction and operation of this timer is purely conventional.

In addition, the housing 11 has mounted thereon a temperature gauge 28, which indicates the temperature in the presser plate 19. This gauge is to insure that the temperature is proper so that the patch will be secure. The housing also has mounted thereon a pilot light 29, which indicates when electricity is flowing to the electrically heated presser plate 19. In addition, there is provided an ordinary electric socket 30 for connecting the apparatus to a source of electric current through an ordinary electric lead (not shown).

In using the apparatus of Figures 1 and 2, a torn piece of fabric with a heat attachable patch thereon is arranged, for example, on the base 20 which is of proper shape and size to accommodate the torn piece of the fabric and the patch. The timer 37 is set for the necessary time to secure proper adhesion of the patch. The operator then grasps the two handles 26 and moves the arm 13 to the position shown in the drawings so that the arm bears against and closes the contact 25. The operator, with both hands on the handles 26, then closes the switches 27. These switches are spaced apart a distance so that two-

hand operation is required in order to close these switches. This is a safety measure so that the operator's hand will not be caught by the descending hot presser plate 19. As the switch 25 has been closed by the arm 13, the closing of the two switches 27 causes air under pressure to flow through the air line 16. This air pressure operating against the piston 15 presses the presser plate 19 against the padded base 20 with the fabric therebetween. This pressure is maintained for a period of time corresponding to that set previously by the adjustable timer 37.

During the heating cycle, the operator arranges another fabric with the torn place on the base 21 and places a patch thereon. Then as soon as the heating period ends, the air pressure within the cylinder 14 is released so that the spring 17 returns the piston to its initial position. This release is automatically accomplished by the timer 37 opening the circuit to an electric relay (not shown) of ordinary construction controlling the valve in the air line 16. As pointed out above, this valve and its operation is purely conventional and, thus, is not illustrated here.

After the presser plate 19 has been raised, the operator then again grasps the handles 26 and rotates the arm 13 to the position shown in dotted lines in Figures 1 and 2, where the presser plate 19 is above the second padded base 21 with the fabric and patch thereon. The operator then repeats the procedure here. Then during this heating cycle the operator removes the patch and fabric from the first padded base 20 and arranges another fabric and patch combination on this base ready for operation again here. Thus, a single operator using a single apparatus can apply heat attachable patches quickly and efficiently to a series of torn fabrics as the operator is able to utilize the time spent in heating any patch and fabric combination for arranging a new fabric and patch in position to be itself heated in regular turn.

In the embodiment shown in Figures 3 and 4, the presser plate support remains fixed while the fabric supports are oscillatable. Thus, in this embodiment there is provided a generally U-shaped base 110 provided with an upturned flange 110a at each end thereof and a pair of switches 125 on each flange. Mounted on the base 110 is a pair of arcuate, substantially parallel rails 31. Oscillatably mounted on these rails for movement therealong is an arcuately shaped platform 32 carrying on its bottom surface two sets of aligned wheels 33 adapted to roll on the rails 31. Because of these wheels 33, the platform 32 is reciprocally movable in an arcuate path on the base 110. This base 110 carries a pair of spaced padded bases 20 and 21 mounted on supports 22 which are the same as the bases and supports 20, 21, and 22 in the embodiment shown in Figures 1 and 2.

Mounted at the rear of the platform 110 is a bracket 34 including an overhanging arm 35 extending forwardly above the path of movement of the arcuate platform 32. This arm 35 on its forward end carries an air cylinder 14 containing a vertically reciprocable piston 15 mounted on the downwardly extending shaft 18 carrying on its lower end the electrically heated presser plate 19. The cylinder, piston, shaft, and presser plate of this embodiment are the same as those of the first embodiment.

The oscillatable platform 32 carries a pair of spaced handles 126 for moving the platform on its rails 31. Each handle 126 has associated therewith a switch 127. These switches are similar in construction and operation to the previously described switches 27 in the embodiment of Figures 1 and 2. Thus, the switches 127 must be both closed before the air cylinder 14 can be operated through the air line 16. This is a safety precaution. This embodiment also should include an adjustable timer, a temperature gauge, and pilot light similar to the timer 37,

gauge 28, and light 29 of the first embodiment. In addition, the air supply and the electric circuit will be the same as that previously described.

Again, in the embodiment shown in Figures 3 and 4, a torn fabric with a patch thereacross may be heated on one base 20 or 21 by the air pressed presser plate 19 while another fabric and patch are being arranged on the other padded base. The bases 20 and 21 are selectively arranged beneath the presser plate 19 by the operator's moving the platform 32 on its rails 31 to the proper position. As previously described, when the platform 32 is in proper position, it will close a control switch 125 so that the apparatus can be operated. If one of the control switches 125 is not closed by the platform being in proper position, the apparatus will not operate.

In Figure 5, there is illustrated semidiagrammatically a thermally applied patch spanning a torn place in a fabric. As is shown here, the fabric 40 is arranged with the edges of the torn opening closely adjacent to each other. The patch 41 is positioned against the fabric so as to extend across the torn opening.

Having described my invention as related to the embodiments shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

I claim:

1. Heat and pressure applying apparatus particularly for applying heat attachable patches to fabrics, comprising: a base member; a pair of spaced fabric supporting members of small size relative to the base member operatively supported on but spaced above said base member; a heat applying member operatively supported on the base member normally spaced above but adjacent to the fabric supporting members; means associated with at least one of the heat applying member and fabric supporting members for imparting relative movement to the heat applying member and the pair of spaced fabric supporting members to bring the heat applying member in linear alignment with a selected one of the supporting members, thereby leaving the other fabric supporting member exposed; manually controlled means operatively supported on the base member and operable independently of the moving means for pressing the heat applying member against said one fabric supporting member with the fabric therebetween; and a pair of safety electrical switches separated from each other to require manipulation by both hands of an operator in order to operate said apparatus, said pair of switches being mounted on the movable one of said heat applying member and plurality of fabric supporting members.

2. The apparatus of claim 1 wherein the pair of fabric supporting members are fixed in position and the heat applying member is arcuately movable between positions vertically overlying the supporting member.

3. The apparatus of claim 1 wherein the heat applying member is fixed against substantial lateral movement and the pair of fabric supporting members are arcuately movable between positions wherein each vertically underlies the heat applying member.

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