

Oct. 10, 1972

F. A. BROWN III, ET AL

3,697,354

STAY FUSING MACHINE

Filed Dec. 1, 1970

3 Sheets-Sheet 1

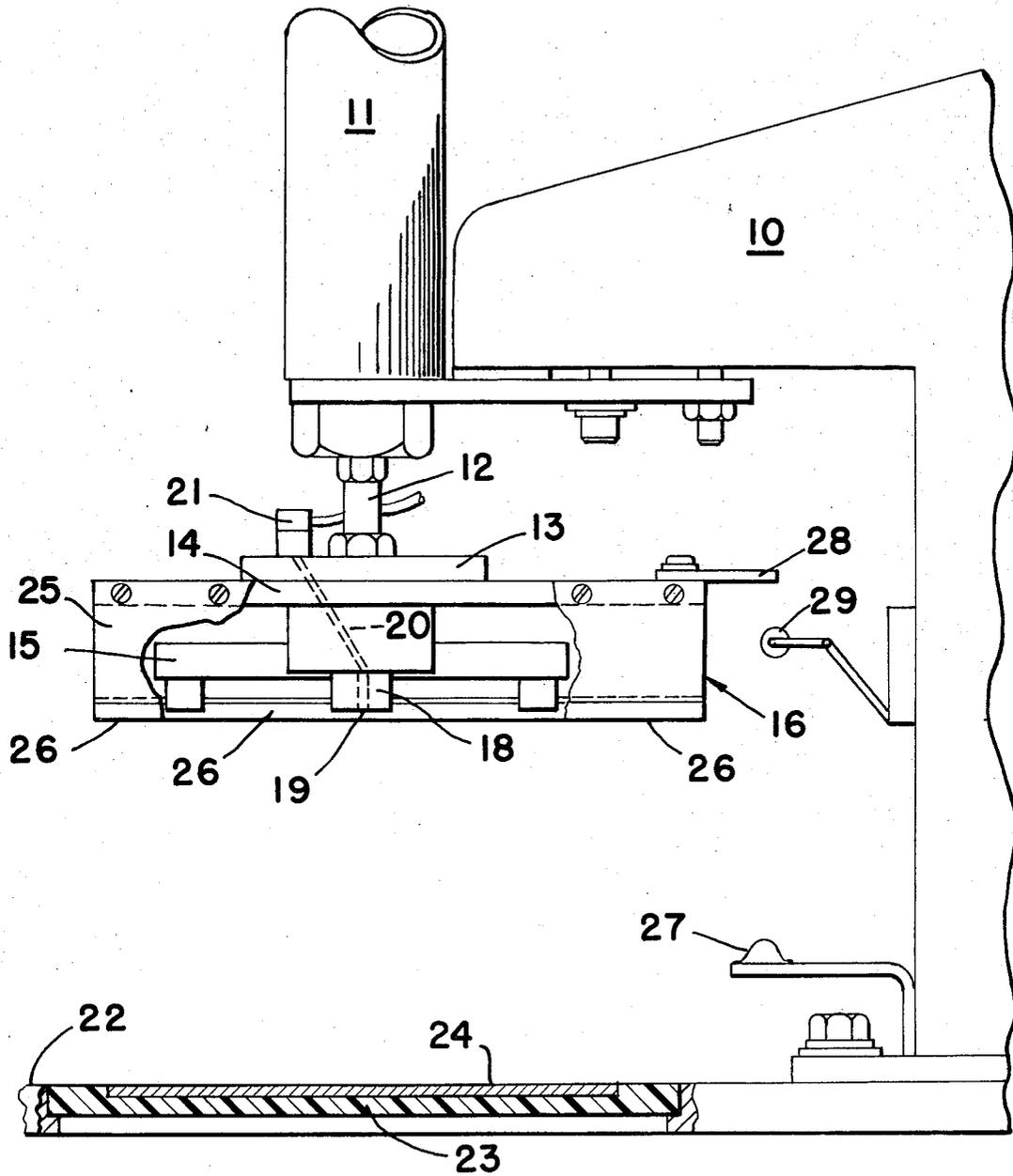


FIG. 1

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3 Sheets-Sheet 2

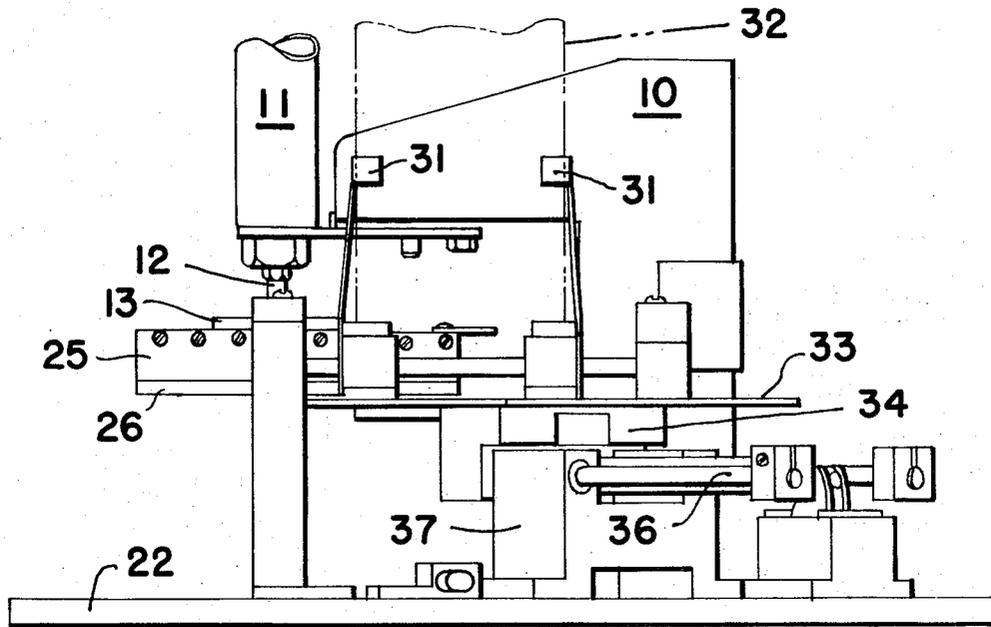


FIG. 3

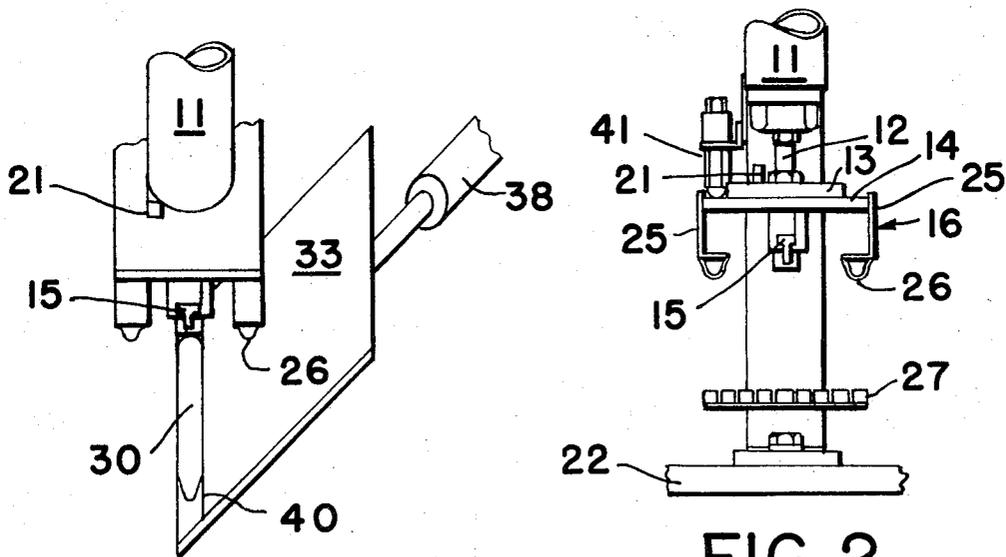
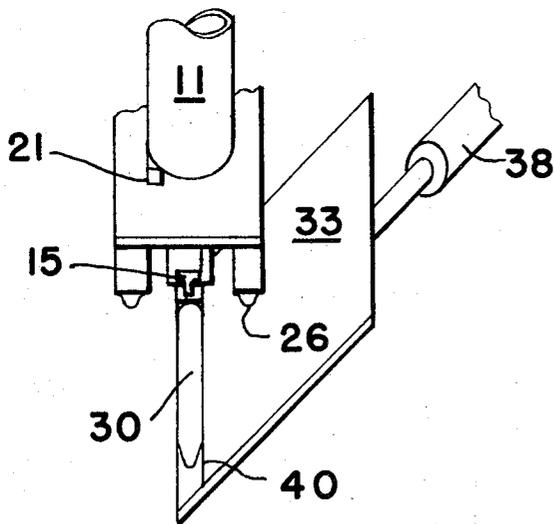


FIG. 2

FIG. 4



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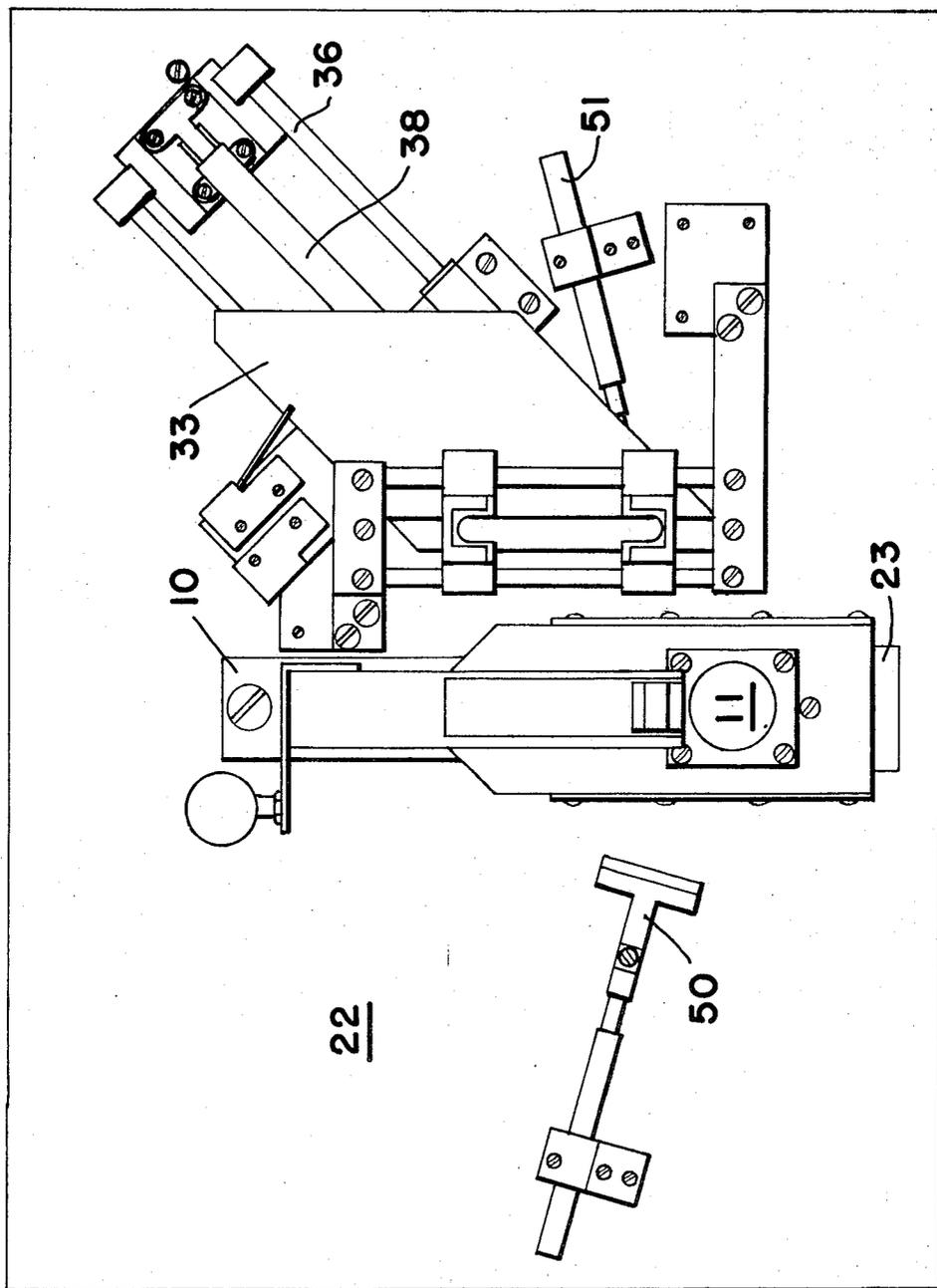


FIG. 5

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3,697,354

STAY FUSING MACHINE

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3 Claims

ABSTRACT OF THE DISCLOSURE

Improved stay fusing machine for attaching stays to collars, the machine including self-shielding features and angled stay feed. The machine is adapted for use with long stays.

BACKGROUND AND SUMMARY

The field of the present invention is fusing apparatus and more particularly apparatus for attaching plastic collar stays to the collar lining piece.

In the heretofore known devices, there were a variety of problems. Particularly troublesome was the RF leakage which required that the machine be used only in a specially shielded room. Prior devices were not readily adaptable to use with the long stays (necessary for the currently popular long-point collars).

U.S. Pats. 3,006,802 and 3,052,271 show the state of the art before the instant invention.

It is an object of the instant invention to provide an improved device for stay fusing.

It is a further object to provide a machine for positioning long stays for attachment to collar pieces by fusing.

In order to achieve the foregoing and other objects and to overcome some of the problems encountered heretofore, the invention, in one embodiment thereof, includes shielding means disposed about the electrodes and a transfer means which feeds the stays obliquely from a stack to the fusing head. The machine is more versatile than prior machines and is adaptable for use with various length stays.

DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the invention, reference should be made to the drawings wherein:

FIG. 1 is a side elevational view of a part of an apparatus constructed according to the instant invention;

FIG. 2 is a frontal view of particular details of the apparatus of FIG. 1;

FIG. 3 is a side view showing the complete apparatus;

FIG. 4 is a detail of the apparatus; and

FIG. 5 is a plan view of the apparatus.

DESCRIPTION OF PREFERRED EMBODIMENTS

FIGS. 1 and 2 show one embodiment of the instant invention. In the figures there is shown a stand 10 holding an air piston 11. The piston rod 12 is threaded into fitting 13 to which is secured a plate 14. The plate carries the upper electrode 15; and the shielding designated generally as 16. A fitting 18 defines a vacuum port 19 which communicates through a channel 20 to a fitting 21 and thence to a suitable vacuum source (not shown). The stand 10 is mounted on a work table 22 in which is embedded a holder 23 of dielectric material (such as Rexolite) for the bottom electrode 24.

Piston 11 may include an adjustable speed control to regulate speed of travel of the rod 12.

The shielding of the electrodes is accomplished by means of a metal curtain 25 attached to plate 14 on two sides and extending generally the length of the electrode. Spring fingers 26 are mounted along the lower edge of curtain 25. These are typically of the type used to make

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electrical contact and are commercially available as Sticky Fingers from Instrument Specialties Co., Inc. The yieldable fingers serve to make contact with the table to ground the curtain during the fusing operation.

It has been determined that the shielding curtain need not extend across the front of the fusing head. However, there is provision for shielding at the rear. Contacts 27 cooperate with overhang 28 to ground the upper assembly along the back edge during the fusing. On the upward travel of the piston 12, the overhang trips wheel mechanism 29 to indicate the position of the upper electrode and to signal the stay feed sequence.

Element 41 is an interlock provided to prevent stay feeding except when the upper electrode is in a fully raised position.

FIGS. 3, 4 and 5 show the relationship of the stay feeding mechanism with the fusing electrodes. The stays 30 are delivered one-by-one to a point below the electrode 15. The upper electrode typically includes two spaced apart fusing heads which are located so as to fuse the stay near either end. It is important that the stay, to be fused, be located properly. Even a relatively small misalignment of the stay may cause improper fusing. The stay to be fed is initially aligned parallel with the upper electrode. The transfer plate 33 which is movable back and forth, toward and away from the electrode, does not disturb the parallel alignment of the stay with respect to the electrode.

Holding clamps grip a box 32 of stays for delivery (the box is shown in phantom lines). The delivery is effected by movement of a flat plate 33 (transfer plate). The plate is attached to a mount 34 which rides on rods 36 journaled in block 37. Air piston 38 causes movement of the plate 33 toward and away from the electrodes. The plate includes a wide depression 40 into which each stay seats prior to movement of the plate. The height of the depression is approximately the thickness of the stay. As the plate is moved, the bottom-most stay is peeled from its stack and moved to a point just under the electrodes, whereupon it is plucked up against fitting 18 by the vacuum being drawn through port 19 (FIG. 1). The vacuum at the fusing head is important to securely position the stay in proper relation to the electrode during the fusing operation.

The plate must be so situated that the stay will just pass under element 26. Too much clearance will prevent the stay from being close enough to the vacuum port on the fusing head for the stay to be operated upon by the vacuum.

As is apparent from the figures, the stay is fed lengthwise at an oblique angle with respect to the fusing head and to the long dimension of the stays. This arrangement makes possible delivery of long thin stays without the stay buckling.

Elements 50 and 51 are work positioners which assure accurate positioning of the cloth during the fusing operation. These are slidably movable to allow positioning of various sized pieces.

Although the present invention has been described with respect to a specific embodiment, it will be appreciated that a variety of changes may be made without departing from the scope of the invention. For example, certain features may be used independently and equivalents may be substituted.

We claim:

1. In a stay fusing machine having an upper electrode and a lower electrode positioned with face portions in opposing relation and vacuum ports in the plane of said upper electrode face and having stay transfer means for delivering stays from a stack to said electrodes; the improvement including electrical shielding means compris-

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ing a plate located above said upper electrode and means disposed about the upper electrode on at least two sides and extending down approximately to the face of the upper electrode and having yieldable conducting means along the bottom-most portion thereof, and wherein said transfer means comprises a plate having a recess to receive the stay from a stack, the plate being movable back and forth obliquely with respect to the long dimension of the stay and so arranged as to deliver a stay to a point beneath said upper electrode and sufficiently close to said upper electrode to be acted upon by the vacuum drawn in said vacuum ports, means for withdrawing the plate and means for thereafter bringing said electrodes together for fusing a stay to a workpiece positioned between said electrode opposed faces.

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15

4

2. The machine of claim 1 wherein an interlock is provided to prevent stay feeding during travel of the upper electrode.

3. The machine of claim 1 including positioning means for locating a workpiece in proper relation to said electrodes for stay fusing.

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DOUGLAS J. DRUMMOND, Primary Examiner

U.S. Cl. X.R.

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