United States Patent [19]

Paterson

[11] **3,713,642**

[45] **Jan. 30, 1973**

[54] MANUALLY CONTROLLED CLOTH LAYING MACHINE CARRIAGE

[75] Inventor: **Stephen Paterson,** Forest Hills Gardens, N.Y.

[73] Assignee: **Cutting Room Appliances,** New York, N.Y.

[22] Filed: **Dec. 2, 1970**

[21] Appl. No.: **94,494**

[52] **U.S. Cl.** **270/31**

[51] **Int. Cl.** **B65h 29/46**

[58] **Field of Search** ..270/31, 30; 104/152; 105/26.1; 180/19 H

[56] **References Cited**

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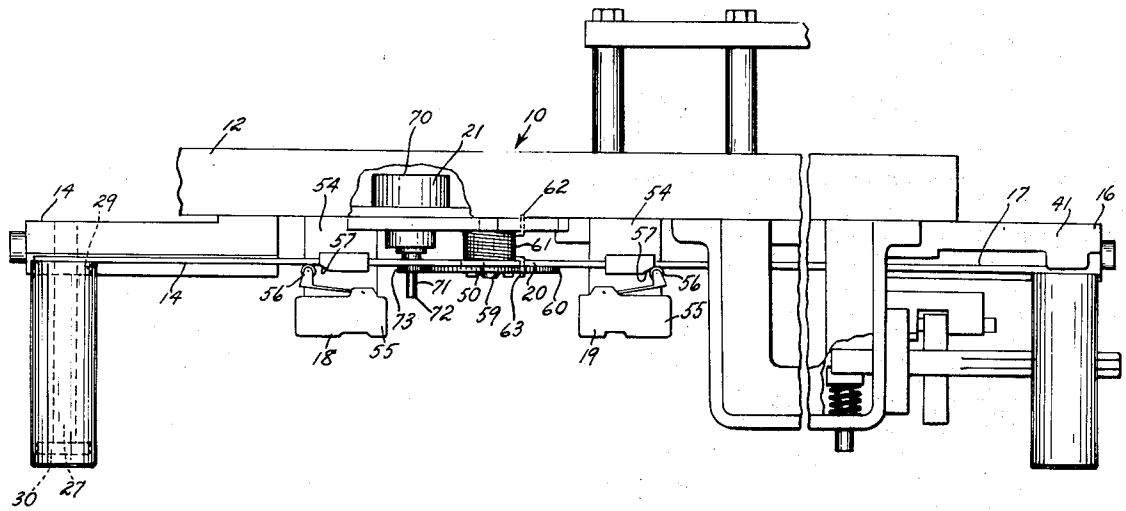
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Primary Examiner—Robert W. Michell
Assistant Examiner—L. R. Oremland
Attorney—Charles E. Temko

[57] **ABSTRACT**

A manually controlled electric motor powered cloth laying carriage having control stations at each longitudinal end thereof, each station including a rotatably mounted grip having an eccentric portion interconnected to an elongated link, the opposite ends of said links being connected to eccentrically disposed parts of a large gear. The gear is mounted on a shaft carried by the carriage, resilient means associated with the gear returning the links to predetermined position in the absence of manually imparted torque applied to either grip. A rotary potentiometer is mechanically connected to said gear by a pinion on the shaft of the potentiometer to determine the amount of current flowing to the drive motor as a function of rotation of either grip. Each link carries switch actuating means individually cooperating with one of a pair of switches which close, depending upon which grip is rotated. The switches may be connected in parallel to be used in conjunction with separate direction-indicating switches, or in such manner as to reverse the polarity of current flowing through the motor, in addition to supplying current to the potentiometer.

3 Claims, 4 Drawing Figures



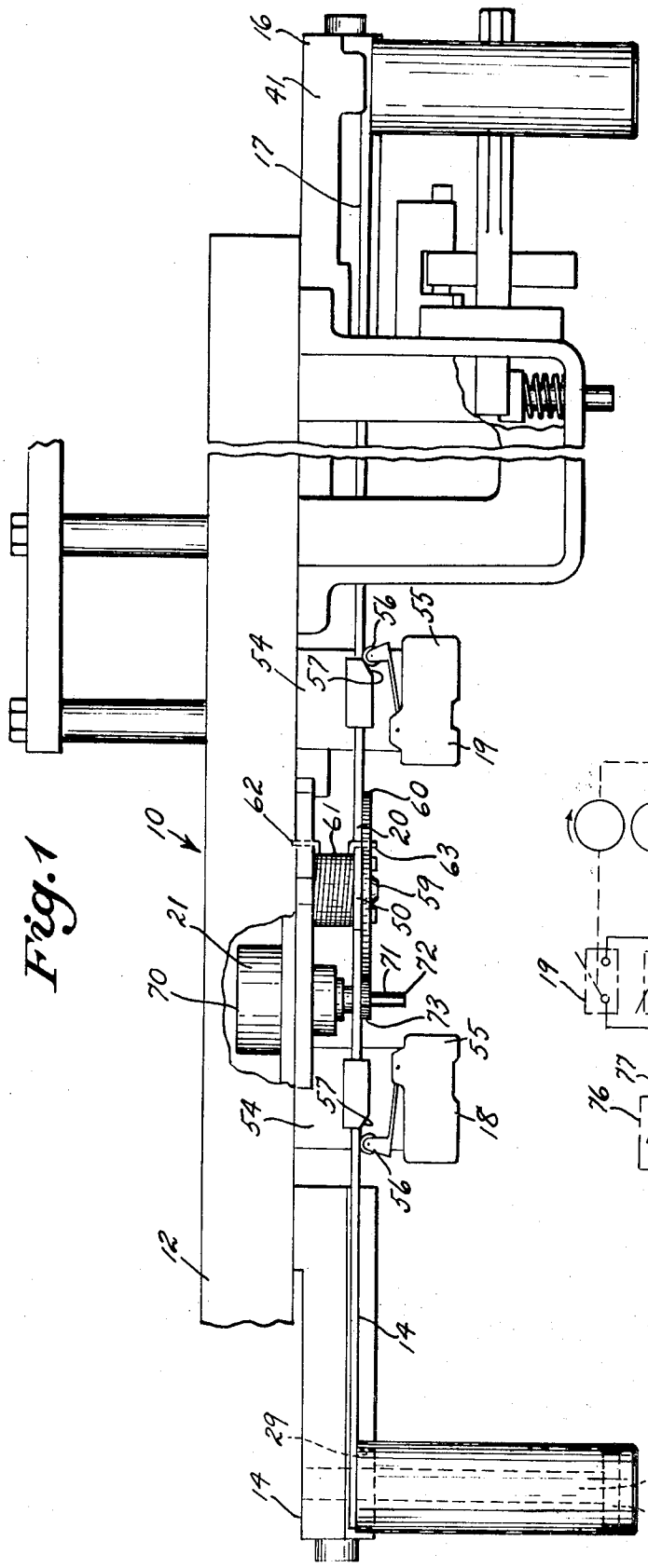


Fig. 1

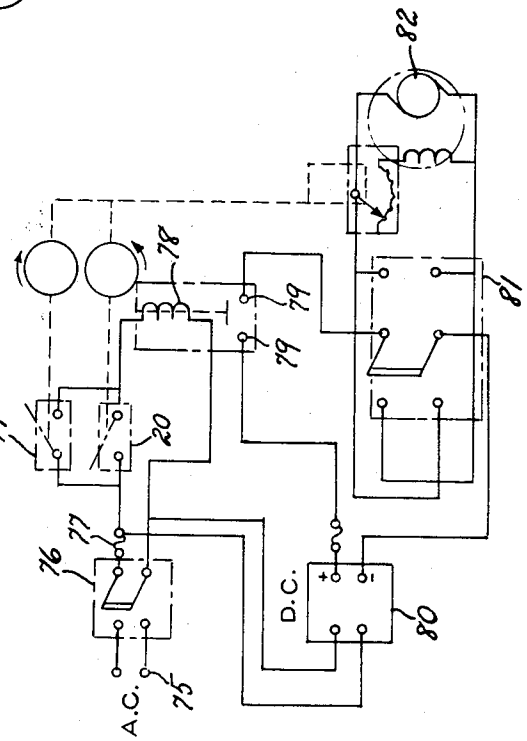


Fig. 3

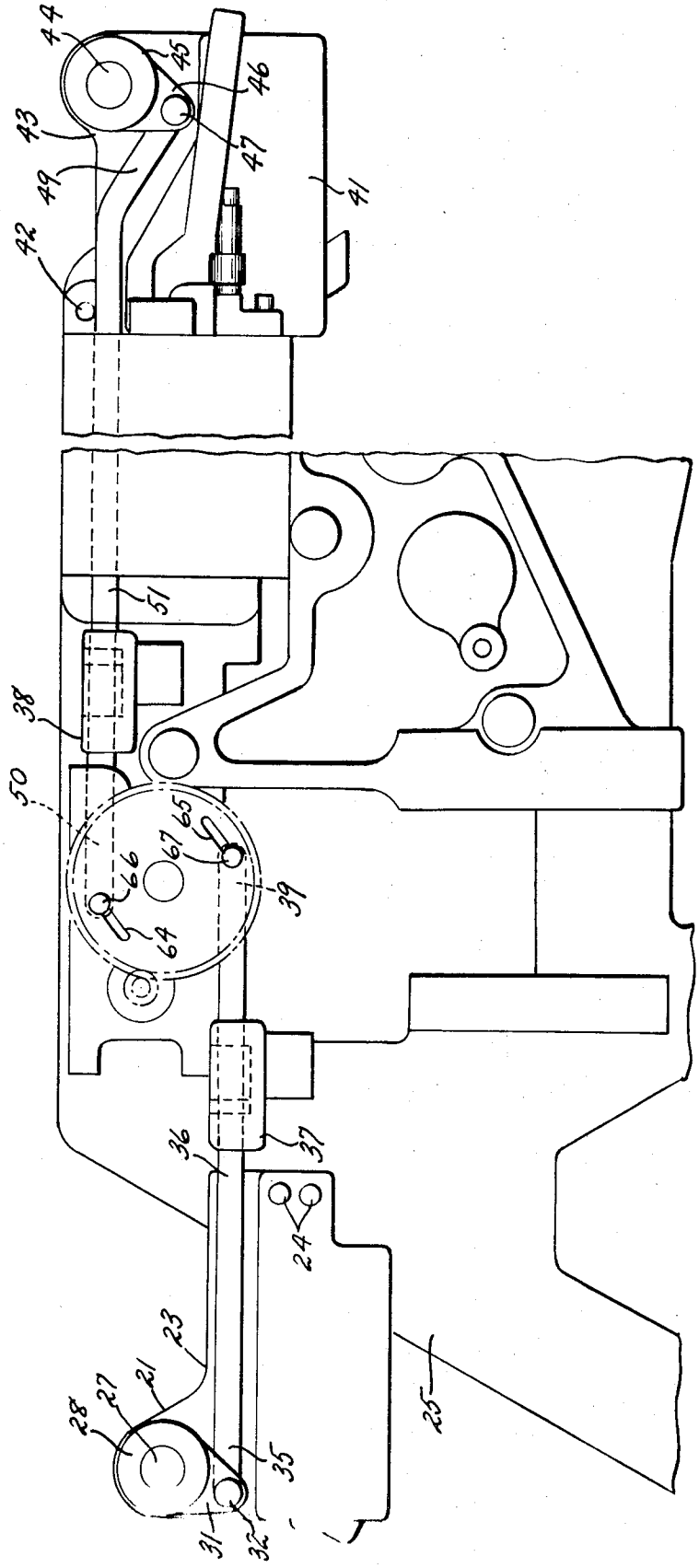
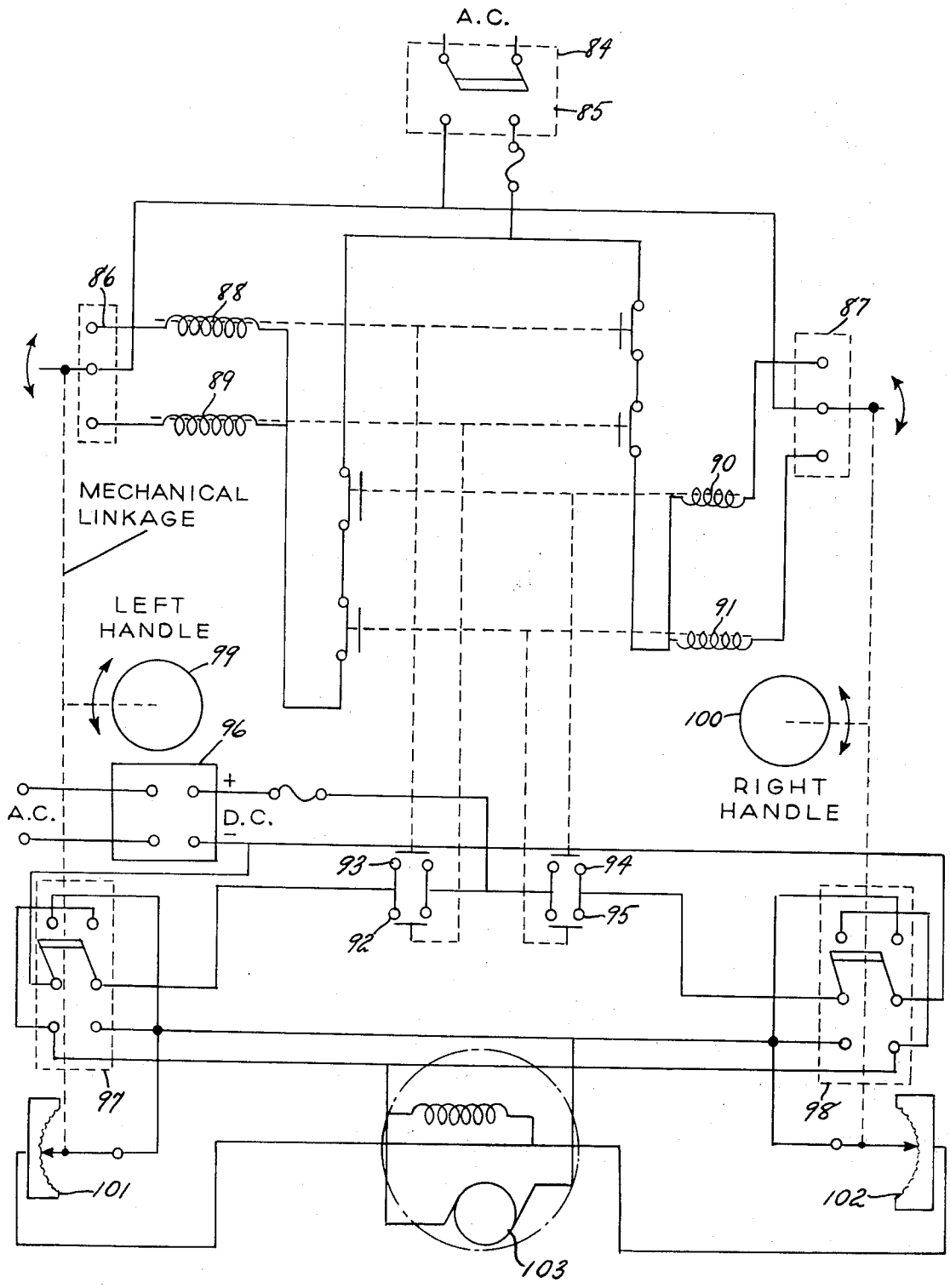

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Fig. 2

Fig.4


A.C.
84
85
86
88
87
89
90
MECHANICAL
LINKAGE
LEFT
HANDLE
91
99
96
100
RIGHT
HANDLE
A.C.
D.C.
+
−
93
94
92
95
97
98
101
102
103

MANUALLY CONTROLLED CLOTH LAYING MACHINE CARRIAGE

This invention relates generally to the field of manually controlled cloth laying machine carriages, of the type disclosed in U.S. Pat. No. 3,450,720, granted Nov. 17, 1970, said application being assigned to the same assignee as the instant application.

In the above mentioned application, there are provided two control stations at either longitudinal end of the carriage, so that the carriage may be "walked" by an operator along the length of a cloth laying table, with the speed and direction thereof constantly under the control of the operator, with the possibility of stopping the carriage almost instantaneously, upon the discovery of a flaw in the web of cloth being layed, or for any other reason. The structure disclosed in this application includes a grip having an associated trigger, squeezing in the trigger resulting in the transmission of motion through linkage means to a rheostat or potentiometer, to vary the effective voltage transmitted to the motor driving the carriage. Separate switch means is provided adjacent the manual grip for reversing the direction of movement of the carriage, the switches being interconnected to relays which reverse the direction of current through the field magnets of the motor.

While this construction has been quite useful, one difficulty encountered is the fact that the trigger, being pivoted at one end, and connected to linkage means at another, functions in effect as a third class lever, in which the end of the link travels a greater distance than the point at which manual pressure is applied. Thus, the application of very small amounts of power is difficult to control, and care must be exercised not to cause the carriage to overshoot when only small increments of movement are required.

It is therefore among the principal objects of the present invention to provide improved structure of the class described, in which manual control of displacement of the carriage is facilitated.

Another object of the invention lies in the provision of improved carriage control means in which motion is transmitted to a controlling potentiometer by the twisting of a manually engageable grip, whereby force exerted against resilient means is exerted from the wrist of the hand of the user, rather than the fingers; thus materially reducing the amount of effort required, and preventing fatigue of the hand of the user.

Yet another object of the invention lies in the provision of improved control means of the class described, which can be readily incorporated into existing cloth laying carriage structures, with a minimum of modification.

A further object of the invention lies in the provision of improved carriage control means, in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

A feature of one of the disclosed embodiments lies in the provision of means whereby direction of movement, as well as speed of the carriage may be controlled by the angular direction in which the manually engageable grip is rotated.

These objects and feature, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIG. **1** is a fragmentary top plan view of a portion of a cloth laying machine carriage embodying the invention.

FIG. **2** is a fragmentary side elevational view thereof.

FIG. **3** is an electrical schematic wiring diagram.

FIG. **4** is an electrical schematic wiring diagram showing an alternate form of interconnection of the component parts.

In accordance with the invention, the device, generally indicated by reference character, **10** may be of a type as disclosed in the above mentioned application, Ser. No. 753,389, in which a carriage element **11** includes a pair of side frames, one of which is indicated by reference character **12**. The frames are interconnected by means, not shown, and are carried by wheeled driving means, as is well known in the art.

Located at each end of one of the side frames **12** is a first operating station **14** having first elongated link means **15**, and a second operating station **16** having corresponding elongated link means **17**. The link means **15** cooperates with first and second switch means **18** and **19**, respectively. Link interconnecting means **20** is interconnected to both link means **15–17**, and drives a potentiometer means **21**.

The first station **14** includes a supporting frame element **23** secured by bolt means **24** to a vertical portion **25** of the frame **12**. An upper flange **26** supports a horizontally disposed spindle **27** which mounts a rotateable hand grip **28** on bearings **29** and **30**. An eccentric portion **31** of the grip extends radially from the principal axis thereof, and supports a pintle **32**.

The first link means **15** includes an outer end **35** interconnected with the pintle **32** and a medially disposed portion **36** mounting a switch operating actuator **37**.

The second operating station **16** is generally similar, including a supporting frame element **41**, secured by bolt means **42** to the frame **12**, an upper flange **43** mounting a spindle **44**, and a rotatable grip **45**, the eccentric portion **46** of which mounts a pintle **47**.

The second elongated link means **17** includes a first end **49** engaging the pintle **47**, and a second end **50** interconnected with the means **20**, as is the second end **39** of the first link means **15**. The medial portion **51** is somewhat longer than the corresponding portion **36**, since it is most convenient to position the means **18–21**, inclusive, adjacent the first operating station **14**, as a matter of design. It mounts actuator **38**.

The switch means **18–19** are similar, each being positioned by a supporting bracket **54** supporting a main body or casing **55**. Pivotally mounted followers **56** are positioned to selectively contact the cam faces **57** of the actuators **37** and **38**. It will be observed that movement of the first link means **15** in a leftward direction closes the switch **18**, while movement in a rightward direction closes the switch **19**.

The link interconnecting means **20** includes a stub shaft **59** mounting a relatively large radius gear **60**. A torsion spring **61** surrounds the shaft **59**, a first leg **62** thereof being interconnected to the frame **12**, and a second leg **63** to the gear **60**. Slotted opening **64** and **65** are penetrated by the screw or nut means **66** and **67** to

interconnect the inner ends of the link means **15** and **17**, respectively.

The potentiometer means **21** may be of a well known type, including a casing **70** fixed to the frame **12**, and having an axially positioned shaft **71**, the outer end **72** of which mounts a pinion **73** engaging the gear **60**.

Referring to FIG. **3**, there is illustrated an electrical schematic wiring diagram, wherein an AC input **75** powers a main switch **76** which may include a fuse **77**. The switches **19** and **20** are wired in parallel with respect to a relay **78**, the contacts **79** of which interconnect a dc supply **80** with a reversing switch **81** which is separately manually operated by the user. Depending upon the direction indicated by the switch **81**, direct current flows through the field of the motor **82** in the proper direction for the desired movement. This construction is desirable where accidental reversing of the motor while it is in motion would create undue stresses within the device, and this problem is avoided by requiring the operator to release the grip before operating the reversing switch at either of the stations in use.

Where maximum attainable carriage speeds are relatively low, and rapid and convenient reversal of the carriage is relatively important, the device may be wired as indicated in FIG. **4**, and alternate construction. An AC input **84** powers a main switch **85**, which when closed, powers first and second switches **86** and **87**. The switches **86** and **87** selectively interconnect relays **88**, **89**, **90** and **91** to switches **92**, **93**, **94** and **95**, whereby current from a dc supply **96** may flow to a pair of double pole, double throw switches **97** and **98**. These switches, as well as the switches **86** and **87** are mechanically interconnected to the manually engageable grips **99** and **100**, as are the dual potentiometers **101** and **102**, which supply varied current in the proper direction to the field of the motor **103**.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

1. In a manually controlled electrically powered cloth laying carriage having first and second control stations at either longitudinal ends thereof, each station selectively controlling the direction and speed of movement of said carriage, the improvement comprising: each of said first and second stations having a twist grip means having a principal axis and being adapted for rotation about its own axis, said grip means having an eccentric portion thereon, first and second elongated link means interconnected to said eccentric portions at one end thereof, a gear carried by said carriage, the inner ends of said link means being interconnected to opposed portions of said gear; a torsion spring means operating on said gear, and tending to return said link means to predetermined position in the absence of manually exerted torque upon either of said grip means, and potentiometer means carried by said carriage having a shaft driven by said gear; at least one of said link means having switch actuating means thereon, and a pair of switches carried by said carriage and positioned to be selectively contacted by movement of said link means in a given direction, each of said switches being electrically connected to a relay means powering said potentiometer.

2. Structure in accordance with claim **1**, said pair of switches being electrically connected in parallel, and a separate reversing switch located on said carriage for determining the direction of movement of said carriage upon the closing of one of said pair of switches.

3. Structure in accordance with claim **1**, including a separate reversing switch mechanically connected to each of said grip means, and electrically connected to individual potentiometers, one for each direction of movement.

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