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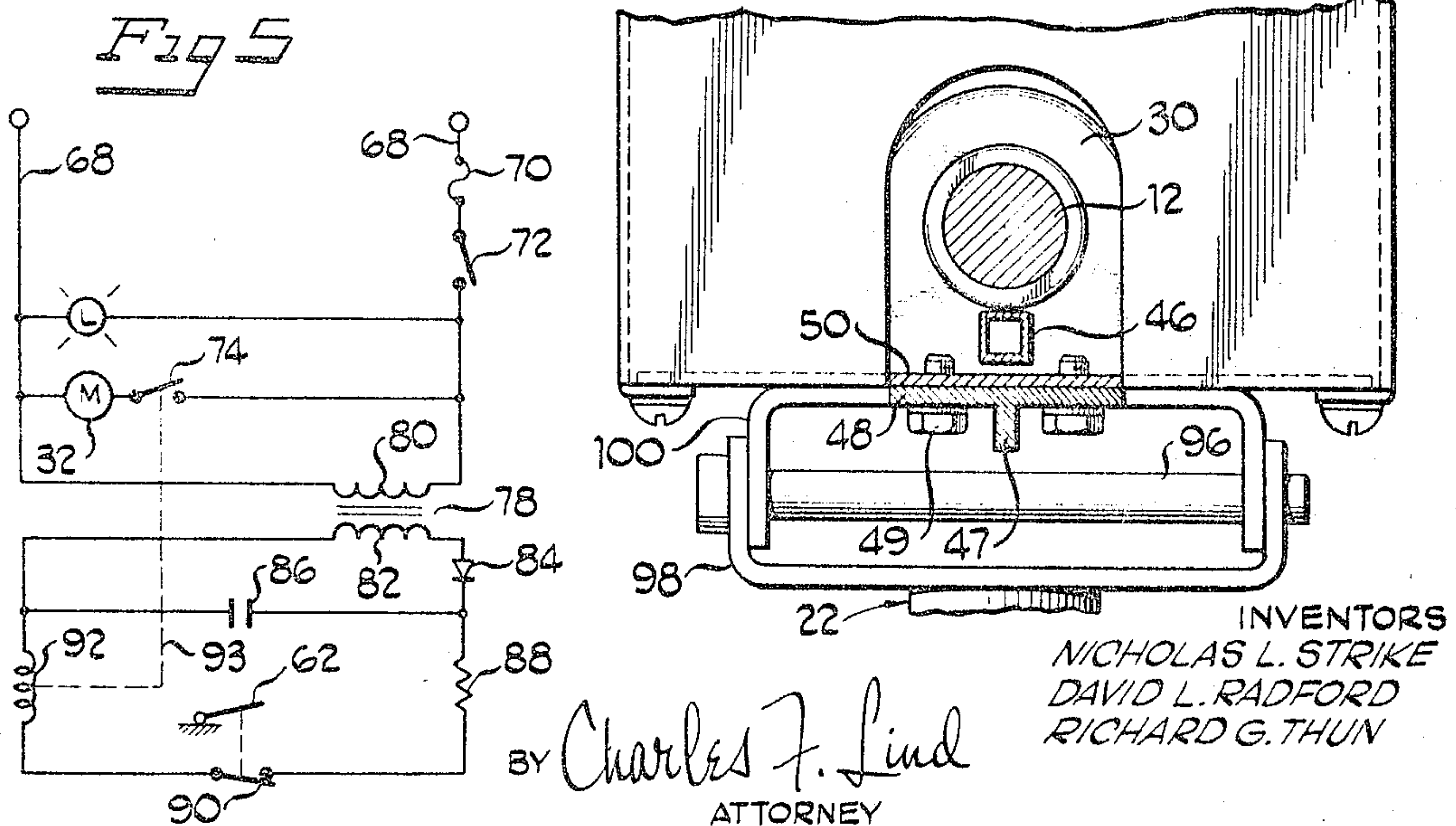
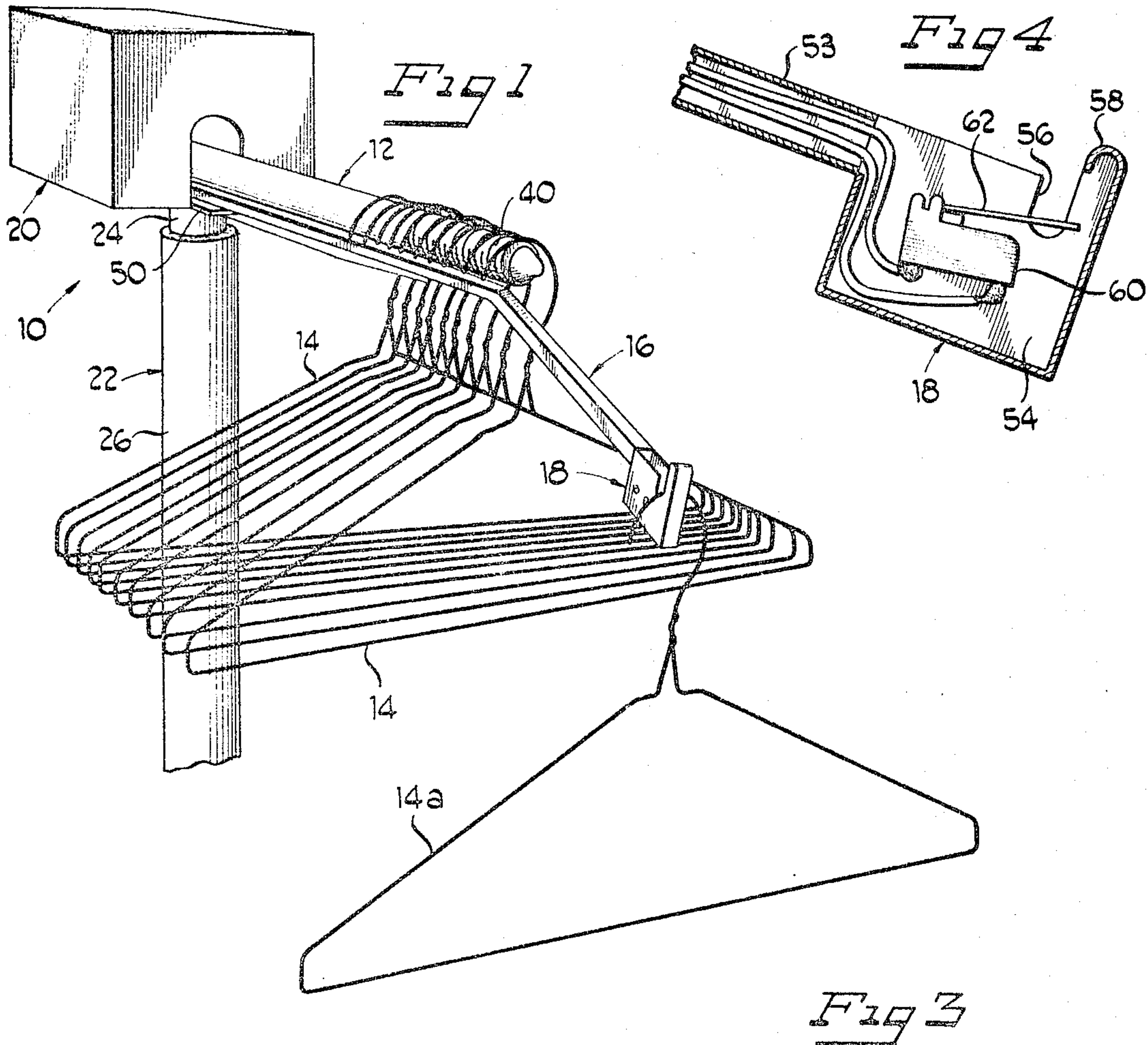
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CLOTHES HANGER DISPENSER

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2 Sheets-Sheet 1



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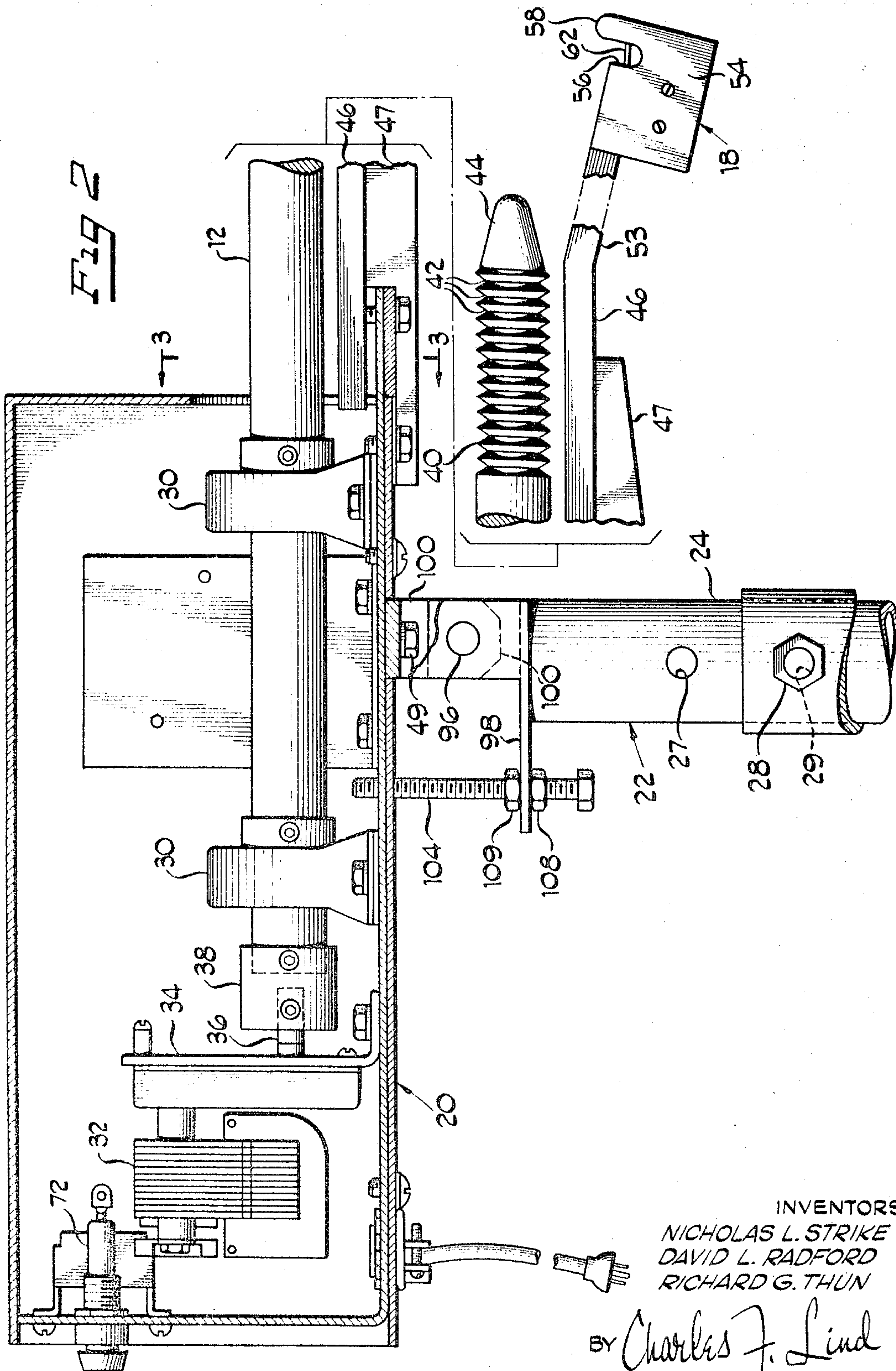
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## CLOTHES HANGER DISPENSER

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2 Claims

### ABSTRACT OF THE DISCLOSURE

Mechanism including a threaded rotatable shaft and a method for dispensing hangers from a general storage area individually as needed to a hanger support station, whereat the presence of a hanger automatically stops the shaft and any subsequent dispensing of hangers to the station and whereat the absence of a hanger automatically rotates the shaft and dispenses a next hanger to the station.

In commercial laundering and dry cleaning and in clothes manufacturing installations, an operator commonly removes a hanger individually as needed from a group stored in a box or on a rack and uses the hanger for hanging up the garment. Because of the rapid pace of work required, the operator frequently attempts to reach for and grip the hanger without looking at it, and consequently many times knocks hangers from the rack or entangles them. Moreover, the operator must reach toward a different location on the hanger rack as the supply varies. This detracts from the overall efficiency of the operation and thus represents an undesirable commercial situation.

This invention relates to a mechanism for and method of automatically dispensing hangers from a storage area individually to a hanger support station so that an operator can consistently remove each hanger from this station without any interference with the other hangers yet in storage.

A primary feature of this invention is a transfer system including a rotatable shaft on which are located helical threads that operate upon the rotation of the shaft to advance hangers engaged therewith in single file axially of the shaft. A hanger catch mechanism underlies the shaft to receive each individual hanger dispensed from the shaft and also provide a convenient hanger support station. A sensing means operates automatically, upon detecting the presence of a hanger at the hanger support station, to stop the rotation of the shaft and thus subsequent dispensing of additional hangers from the shaft and, upon detecting the removal of the hanger from the hanger support station, to rotate the shaft until the next hanger is positioned at the station.

Therefore, a main object of this invention is to provide a mechanism and a method that automatically dispenses a hanger from storage individually, when no other hanger is present at this station, to a hanger support station that is spaced from the remaining hangers suitable for "touch" gripping thereof by an operator and which automatically stops dispensing when a hanger is present at the station.

Another object of this invention is to provide a hanger dispensing mechanism including a rotatable shaft having a helically threaded dispensing end and an underlying sloped support for receiving each hanger individually dispensed from the shaft and serving as the "touch" gripping support station, and further a control which responds automatically to the station having a hanger present thereat to maintain the shaft stationary and prevent dispensing of additional hangers and which responds automatically to

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the station not having a hanger present thereat to rotate the shaft to feed a subsequent hanger to the station.

These and other objects of this invention will be more fully understood and appreciated after reviewing the following specification, including as a part thereof the accompanying drawings, wherein:

FIG. 1 is a perspective view showing the subject hanger dispensing mechanism;

FIG. 2 is a somewhat enlarged sectional view as seen generally from the longitudinal center of the mechanism disclosed in FIG. 1;

FIG. 3 is a sectional view as seen generally from line 3-3 of FIG. 2;

FIG. 4 is a partial sectional view showing the hanger catch assembly in greater detail; and

FIG. 5 is a schematic diagram of a control circuit suitable for preferred automatic operation of the subject mechanism.

The mechanism 10 shown in FIG. 1 includes a storage rod or shaft 12 which is disposed generally horizontally and upon which are hung a plurality of hangers 14, and a stationary support 16 underlying the shaft 12 and extending beyond the end thereof and sloping in a downwardly direction therefrom to a hanger catch 18. The entire shaft 12 and support 16 are mounted on frame 20 which in turn is supported by column 22. The column 22 is adjustable in height and thereby includes an inner tube 24 and an outer sleeve 26 which receives the tube 24 and which is secured thereto by means of a bolt 28 extended through appropriately aligned openings 27 and 29.

Referring to FIG. 2 for a more detailed description of the mechanism, the shaft 12 is supported by spaced support blocks or bearings 30 which are themselves mounted on the frame 20. The shaft 12 therefore is rotatable about its longitudinal axis. A motor 32 is supported by the frame 20 and operates through a gear reduction box 34 connected in adjacent relationship thereto to a drive shaft 36 disposed in axial alignment with the shaft 12. An appropriate flexible coupling 38 is connected between the shafts 12 and 36 to unite them together for similar rotational movement about their longitudinal axis.

The shaft 12 is generally circular, and at least the free end 40 thereof is helically threaded to provide a relieved channel 42 (FIG. 2) that is continuous along the threaded section. The threaded section terminates on a tapered nose 44 at the extreme free end of the rod 12.

It will be understood that the subject mechanism will be located in close proximity to the press used to finish the particular garment. The hangers are stored on the shaft 12, except the one hanger 14a which is to be used next by the operator, and this hanger is hung on the catch 18 and separated from the others. The shaft 12 is tilted to a slightly downward disposition to permit the hangers to slide by gravity toward the threaded end 40 of the rod. When the hangers reach the threaded end of the shaft 40, each is individually received in one channel 42 and is advanced by and upon the rotation of the shaft 40 an incremental distance equal to the pitch of the thread per rotation of the rod. Eventually, the end hanger will be moved completely along the threaded section to be discharged from the shaft onto support 16 and stopped in the catch 18.

The support 16 is stationary and includes a pair of bars 46 and 47 secured together and to the frame 20 in underlying relationship to the shaft 12. The inner end of the bar 47 has a flat plate 48 (FIG. 3) secured thereto which is connected by means of bolts 49 to a narrow elongated neck 50 integral with the frame 20. The free end of the elongated bar 46 is bent downwardly as at 53 in underlying relationship with the end of the shaft 12 so that gravity rapidly advances the hanger discharged from the



shaft and deposited thereon to the catch 18. The catch 18 includes a pair of plates 54 secured to the bent end 53 of the elongated bar 46, the top surfaces of the plates 54 being in general alignment with the bar 46 until receiving notch 56 and enlarged projection 58 and formed thereon. Therefore, the hanger is stopped by the projection 58 and supported within the notch 56, so that the operator can by a reliable automatic "touch" system locate the hanger to be next used.

If the operator were sufficiently fast and could work without interruption, the hanger dispenser could operate continuously to dispense one hanger for each revolution of the shaft 12. However, it has been found desirable to provide for the automatic termination of the dispenser when for any reason the operator chooses not to remove a hanger from the catch 18. To this end, a sensing device in the form of an actuating switch 60 (FIG. 4) is mounted between the catch plates 54 so that its arm 62 is actuated by a hanger in place within the notch 56 on the catch 18. The switch 60 therefore automatically stops or starts the motor 32 and the consequent advance of the hangers on the shaft 12 depending on the presence or absence of a hanger on the catch.

A circuit suitable for accomplishing this operation is shown in FIG. 5 and includes a suitable power source indicated as 68 and a fuse 70 and an on-off switch 72 located in series therewith. The motor 32 is connected across the power source 68 in series with control switch 74. For safety reasons, the line voltage is reduced by a transformer 78 having a primary winding 80 and a low voltage secondary winding 82, which secondary winding is connected in series with an AC silicone rectifier 84. A capacitor 86 is in parallel across the secondary winding 82 and the rectifier 84 to smooth out the AC ripples as is well known in the art. Resistor 88 is located in series with contacts 90 of the sensing switch 60 and with a relay coil 92 operatively connected as at 93 to the control switch 74 of the motor control.

Thus, when the on-off switch 72 of the mechanism is closed, a circuit is completed through the control including the switch contacts 90 to close the motor control switch 74, if the switch contacts 90 are closed, to operate the motor 32. The switch contacts 90 are normally closed, and are opened by the presence of a hanger in the notch 56 of the catch 18. Thus, upon the removal of the hanger from the catch, the switch contacts 90 close to complete the circuit through relay coil 92 to close the control contacts 74 to start the motor and advance the hangers along the shaft 12. As soon as the next hanger slides down the support 16 and is received within the catch 18, the switch contacts 90 are opened and the motor operation is again stopped.

A pivot support is provided for the frame 20 to permit the adjustment in a vertical plane of the angle of inclination of the shaft 12. The frame therefore is supported to pivot about pin 96 which in turn connects together a pair of straddling U-shaped brackets 98 and 100 secured in turn to the column 22 and to the frame 20. The adjustment of the frame can be maintained positive by means of stud 104 threaded into a tap on frame 20 and secured to the bracket 98 within a slotted opening therein by lock nuts 108 and 109. Preferably, the hangers are conveyed

smoothly by gravity along the unthreaded section of the shaft to the threaded section, and are thereafter positively advanced by the helical transferring system to be discharged individually from the free end of the shaft.

While only a single embodiment has been disclosed, it would be readily understood that a similar concept could be applied to advance hangers or any other similar item individually without departing from the true inventive concept of this disclosure. For example, it would be possible to thread the shaft entirely along its length if such were desired. Similarly, it would be possible to provide that the threaded section of the shaft were not of uniform pitch but of a variable pitch. Likewise, it would be possible to support the hangers on a stationary support mechanism 16 and to feed the particular hangers individually along the support in a single file by means of a thread on a separate rotating shaft that does not support the weight of the hangers. Accordingly, it is intended that the scope of the present invention be limited only by the claims hereinafter following.

What is claimed is:

1. A dispensing mechanism for hangers and the like each having a generally inverted U-section, the combination comprising a column, a bracket supported adjacent the upper end of the column, a frame mounted on the bracket to pivot about a generally horizontal axis, a shaft rotatably supported by the frame and projected transversely away from the pivot axis to provide that frame adjustment about the pivot axis adjustably inclines the shaft between a generally horizontal disposition and downwardly sloping disposition from the frame, the shaft remote of the frame being free from vertical interference with adjacent structure to permit the ready deposit thereon from above of a plurality of hangers or the like, a catch supported by the frame and underlying the shaft free end and having a notch spaced substantially from the shaft, means including a helically threaded section provided adjacent the shaft free end, means to rotate the shaft about its longitudinal axis so that the hangers will be successively advanced by the threaded section toward the shaft free end to be discharged therefrom and guided by the catch to the notch, and a control including a switch adjacent the notch and depressed when a hanger is present thereat and released when no hanger is present thereat for operating the shaft rotating means to provide that successive hangers are individually maintained at the notch.

2. A hanger dispensing mechanism according to claim 1, wherein the column includes at least two elongated elements disposed in overlapping relationship, and wherein means releasably engages each element to provide for height adjustment of the column.

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