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54 **A garment counter.**

57 A device for counting garment hangers on a rail has a body with a roller for rolling along the rail. A detector is mounted in the body for detecting garment hangers as the device is moved along the rail. A counter is coupled to the detector for displaying a count of the number of hangers passed as the device is moved along the rail. The roller has an engaging portion of resiliently compressible material for yieldingly engaging with hangers on the rail.

**EP 0 332 349 A2**

## Garment Counter

### Field of the Invention

The present invention relates to a device for counting garments on garment hangers on a rail.

### Background to the Invention

In clothes shops it is common to hang garments on a rail, on hangers which each have a hook portion which hooks over the rail. These garments have to be counted and this is a very tedious operation still carried out manually. An interruption part way through a count will usually require a complete recount to take place. The existing counting procedures are thus both labour intensive and liable to be inaccurate, making the whole procedure very expensive.

It is known from GB-A-2171794 (Taylor) to have a counting device which is intended to roll along the top of a rail carrying garment hangers, to detect the interruption of a beam between a light source and a photo detector by successive hangers, and to establish a count of these. However, the Taylor design is not practical because Taylor urges the use of a small roller which if used would simply push the hangers along the rail, and would not roll over them. Furthermore the small roller would tend to slide sideways off the rail.

### Summary of the Invention

It is an object of the invention to provide an improved counter for counting garment hangers on a rail, and thereby garments on these hangers.

According to one aspect the invention provides a device for counting garment hangers on a rail comprising a body having a roller for rolling along the rail the roller having an engaging portion of resiliently compressible material for yieldingly engaging with hangers on the rail, a detector mounted in the body for detecting garment hangers as the device is moved along and a counter coupled to the detector for displaying a count of the number of hangers passed as the device is moved along the rail.

Other features and advantages of the invention will be apparent from the following description, and reference to the accompanying drawings.

### Brief Description of the Drawings

Figure 1 is a cross-sectional side view through an embodiment of the invention in use;

Figure 2 is a perspective view of an embodiment of the invention;

Figure 3 is a schematic diagram of an electronic circuit used in the embodiment of the invention.

Figure 4 is a more detailed diagram of the circuit of Figure 3;

Figure 5 is a side view of a second embodiment of the invention; and

Figure 6 A, B, and C, are scrap views showing operation of the second embodiment.

### Description of Preferred Embodiment

Referring first to Figures 1 and 2, a device for counting garment hangers on a rail generally comprises a body portion (1) from one side of which projects a handle (2) and from the other side of which extends an arched portion (3). A soft roller (4) of foam rubber or like material is rotatably mounted at the top of the arch (3), while an infra-red emitter LED (5) is located at the bottom of the arch (3) on one side and an infra-red detector (6) is positioned opposite the LED emitter (5) on the other side. The infra-red emitter (5) and detector (6) are coupled by wiring (not shown) to an electronic circuit (7) in the body (1), on which electronic circuit is mounted an LED display (8). Within the body (1) and the handle (2) are held batteries (9) for providing electrical supply to the electronic circuit (7), and provision is made for the batteries (9) to be of a rechargeable type, to be recharged through a connector (10) in the base of the handle (2). An on/off switch (11) for the electronic circuit (7) is mounted below the display (8) in the body (1), as are push buttons (74, 75) associated with the electronic circuit (7), which will now be described in more detail.

Referring to Figure 3, the electronic circuit (7) consists of a pulse shaper (71) with its output connected to a pulse counter (72). One of the push buttons on the body (1) is connected to the pulse shaper (71) to enable operation of the pulse shaper and thus becomes count enable button (74) and the other of the push buttons on the body (1) is connected to the pulse counter (72) for resetting the counter and thus becomes a reset button (75). The pulse shaper (71) receives an input from the infra-red detector (6) and the pulse counter (72) provides an output to the LED display (8). All parts of the circuit (7), and the infrared emitter (5), detector (6) and LED display (8) are provided with elec-

trical power as necessary from the batteries (9).

A general description of the operation of the device will now be given, followed by a more detailed explanation for the operation of the electronic circuit (7) and associated parts of the device.

The garment counter is positioned with the arch (3) over a rail R on which are hung a number of garment hangers H each carrying a garment. The roller (4) rests on the rail R, and as the device is moved along the rail the roller (4) will roll over the hangers H on the rail. The infra-red emitter (5) provides to the infra-red detector (6) a beam of infra-red light, the path of which is interrupted by each hanger H which the device passes. Each time the light path is interrupted by a hanger H a signal is received by the circuit (7) and a count of the number of interruptions is displayed on the LED counter display (8). The counter display will correspond to the number of hangers, and hence garments on the rail R.

The operation of the circuit (7) and associated parts of the device will now be described in more detail. Normally, the infra-red beam from emitter (5) produces a constant level output on the infra-red sensor (6), in these circumstances the pulse shaper (71) provides no output, and will continue to provide no output until the count enable button (74) is depressed. Once the count enable button is depressed any interruption or variation in the signal from the emitter (5) to the sensor (6) will cause a pulse to be provided to the pulse shaper (71). As will be apparent, upon passage of a hanger at least a limitation in the signal from the emitter (5) and possibly the elimination of that signal. In either case of course a pulse is provided to the pulse shaper (71) and the shaper (71) will form that pulse into a suitable form for pulse counter (72). Each time the pulse counter (72) receives a pulse from the pulse shaper (71), the count stored in the counter (72) will be incremented and the current count will be provided to the LED display (8). The pulse counter (72) can be reset by operation of the reset button (75).

Modifications which can be made to the described embodiment will be apparent, for example the LED display could be replaced by a liquid crystal display, which would consume a lower current. Other modifications which could be made to the electronic circuit, and that circuit could be powered through a transformer connected to a mains supply, instead of the batteries shown.

Referring to Figure 4 which shows a detailed diagram of the circuit Figure 3 where parts corresponding to those of Figures 1, 2 and 3, have like numerals, the main circuit (7) has four single digit LEDs (8) each connected to receive respectively the output of one stage of counter (72) which is made up of four 4033BE counter chips (72a, b, c,

and d) cascaded in series. The input to the first counter chip (72a) is from the output of pulse shaper (71), a 40106BE pulse shaper chip, via one side of dual pole slide switch (79). The pulse shaper (71) receives as input the output of photo transistor (6) which responds to infra-red light emitting diode (5). The count button (74) is also arranged to connect through its second pole the LEDS (8) to ground. The reset button (75) is arranged to connect the pins (16) of counters (72a, b, c, and d) to the positive side of the supply temporarily to reset the counters.

Figure 5 shows a second embodiment of the invention in which parts corresponding to the first embodiment having like numerals. In particular, the general structure of counter including body portion (1) with handle (2) and arched portion (3) is the same as first embodiment, and the arrangement of the infra-red emitter and detector (5, 6) and the form of associated circuitry (Figures 3 and 4) are the same as the first embodiment. The major difference between the first and second embodiment lies in the form and construction of the roller (40) rotatably mounted within the top of the arch to run along the top of a rail supporting hangers. The roller (40) has to pass over the hooks of the hangers without moving them along or the counter is liable to miscount the hangers, while at the same time keeping a reasonable track along the rail.

To overcome these problems the roller of the second embodiment has, in common with the first embodiment as shown in Figure 5 and 6a a central deeply concave part (41) of soft, foam rubber and additionally encasing circular end walls 42, 43, of hard rubber or resilient plastic material.

In use, the general function of the counting mechanism is as for the first embodiment, and as the counter is moved along a rail the modified roller (40) works as follows. As shown in Figures 6B and C, which are a schematic views of the central engaging portion (41) of roller (40) on a rail R, as the soft foam rubber of the central part (41) of the roller approaches and engages a hook H of a hanger, the foam rubber distorts to accommodate the hook, and at the same time grips the hook. The level of the counter thus remains substantially the same. Meanwhile side-to-side or yawing movement of the counter is limited by means of the hard rubber end walls 42, 43, as shown in Figure 6a. The soft rubber central part (41) will resiliently compress as the counter moves to one side (Figure 6a), and the hard rubber end wall (42), will also be slightly resiliently deformed. The resilience of the materials will tend to urge the counter back towards a central track.

**Claims**

1. A device for counting garment hangers on a rail comprising a body having a roller for rolling along the rail the roller having an engaging portion of resiliently compressible material for yieldingly engaging with hangers on the rail, a detector mounted in the body for detecting garment hangers as the device is moved along and a counter coupled to the detector for displaying a count of the number of hangers passed as the device is moved along the rail.

2. A device as claimed in claim 1, wherein the engaging portion of resiliently compressible material of the roller is held between end walls of relatively hard resilient material.

3. A device as claimed in claim 1, wherein the detector includes an infra-red light source and light sensor.

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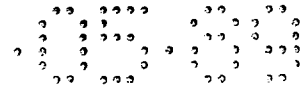
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Nouveau dispositif  
Nouvellement déposé

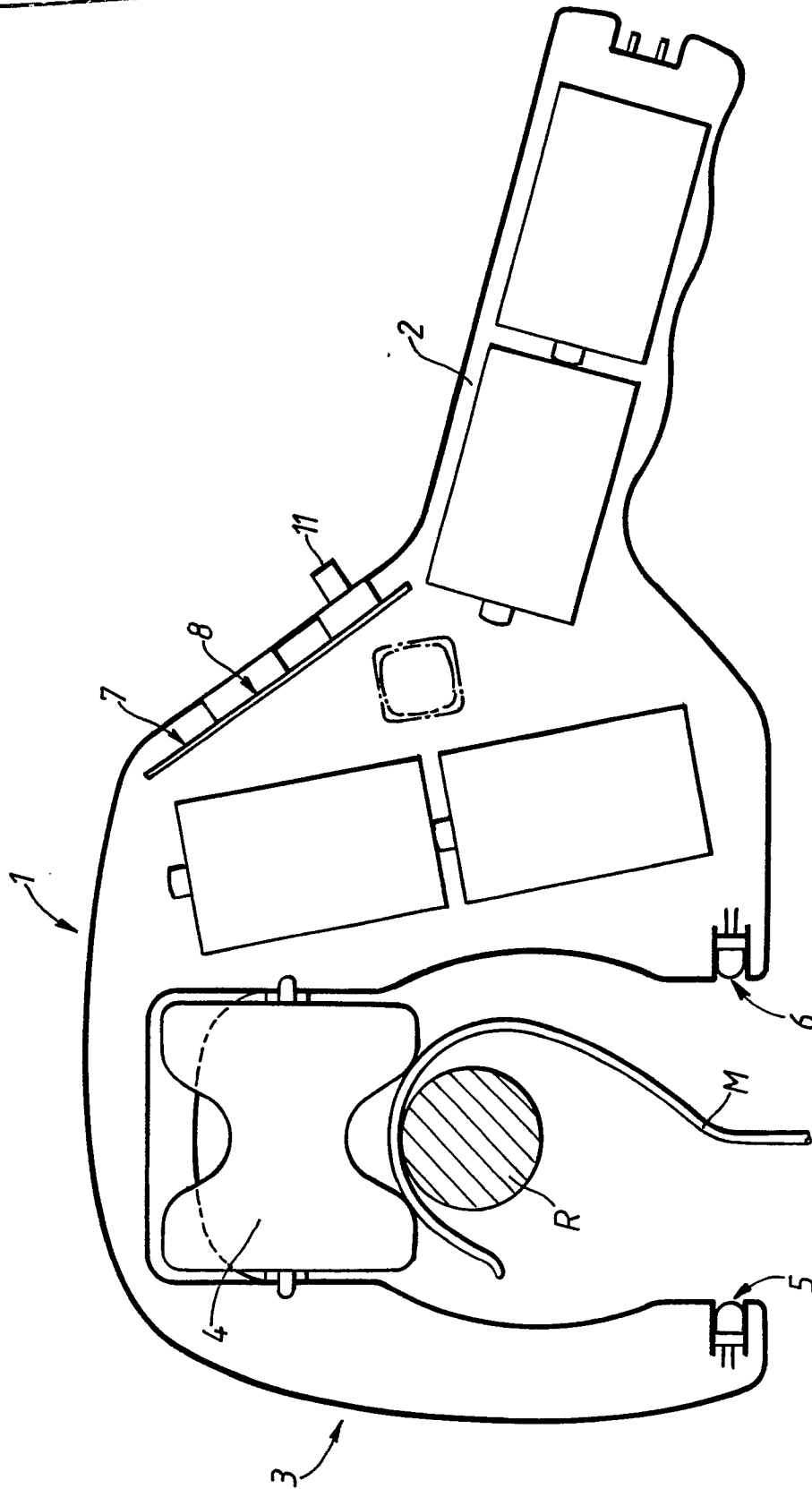
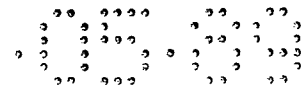


Fig. 1.



Nouveau modèle  
Nouvellement déposé

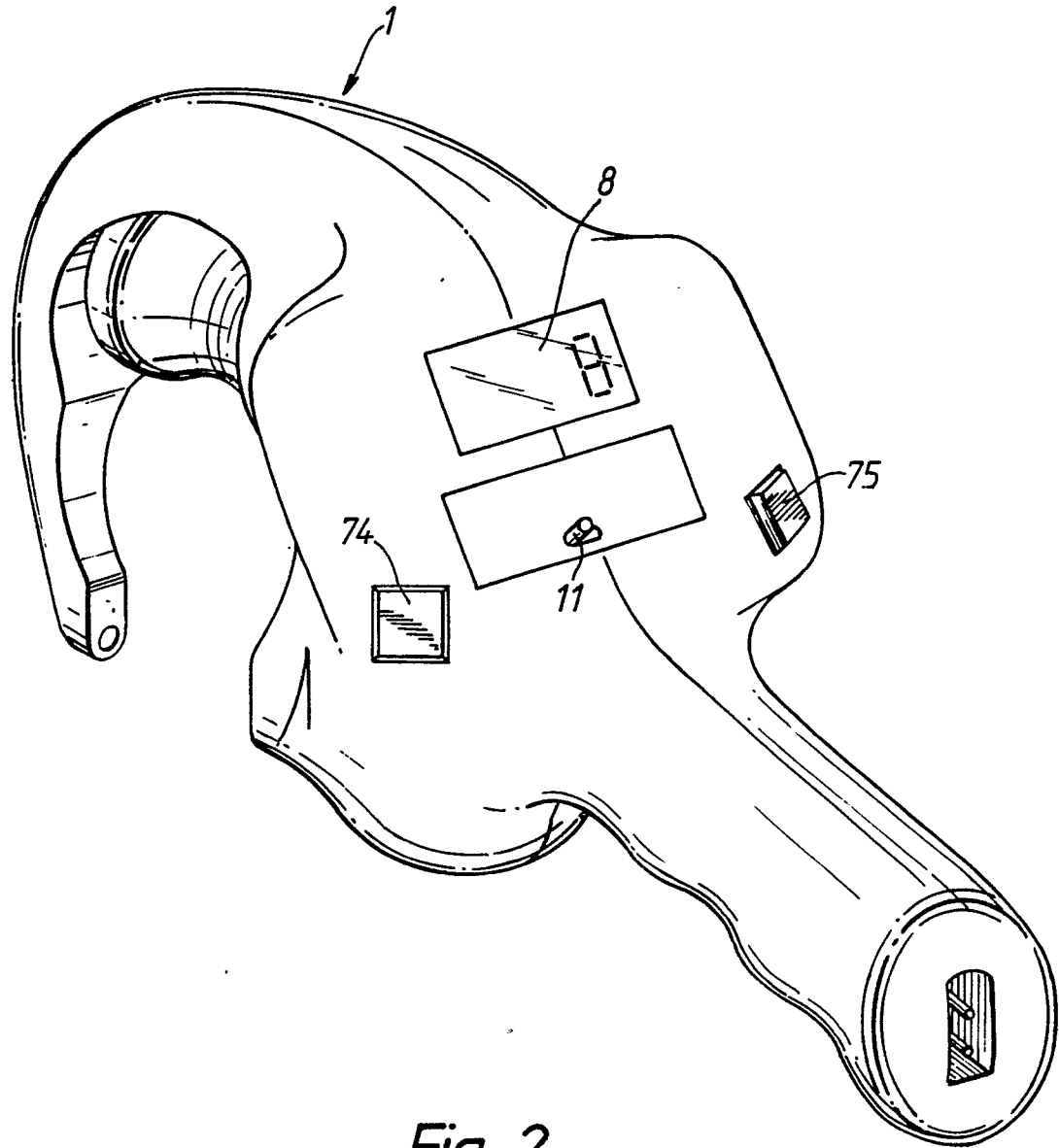


Fig. 2.

Nouveau brevet  
Nouvellement déposé

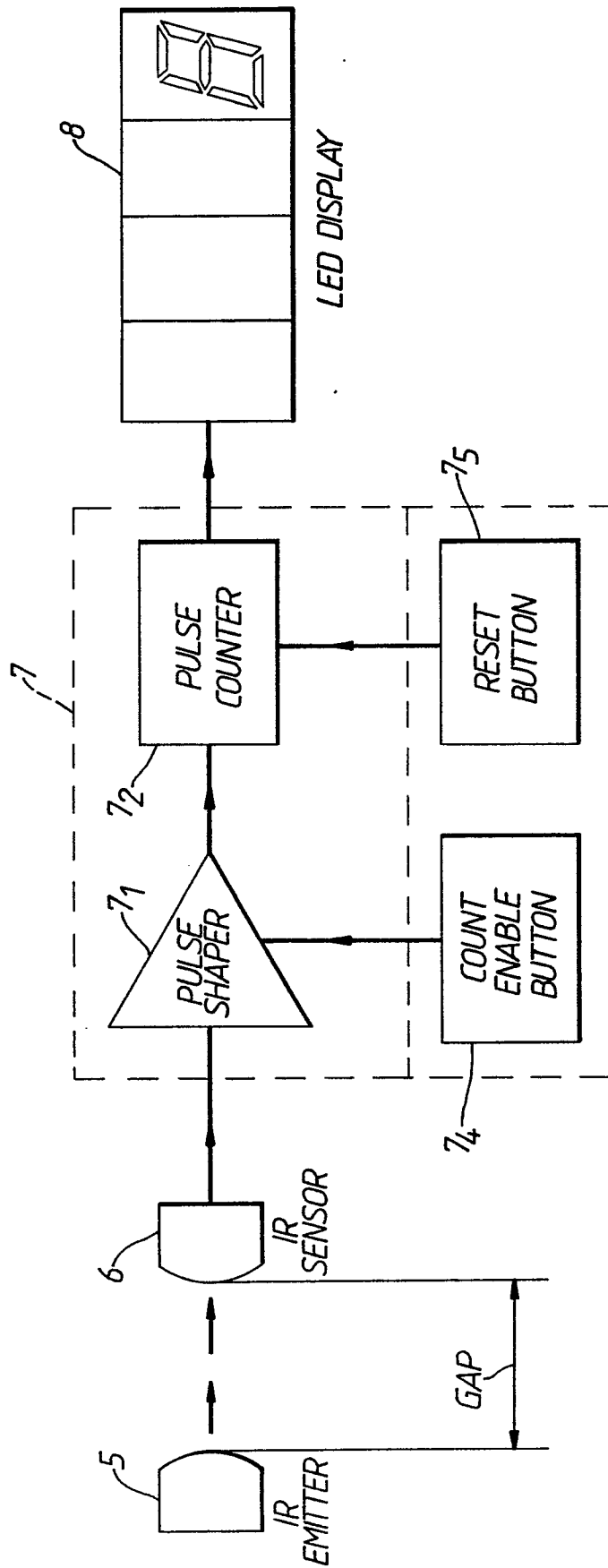


Fig. 3.

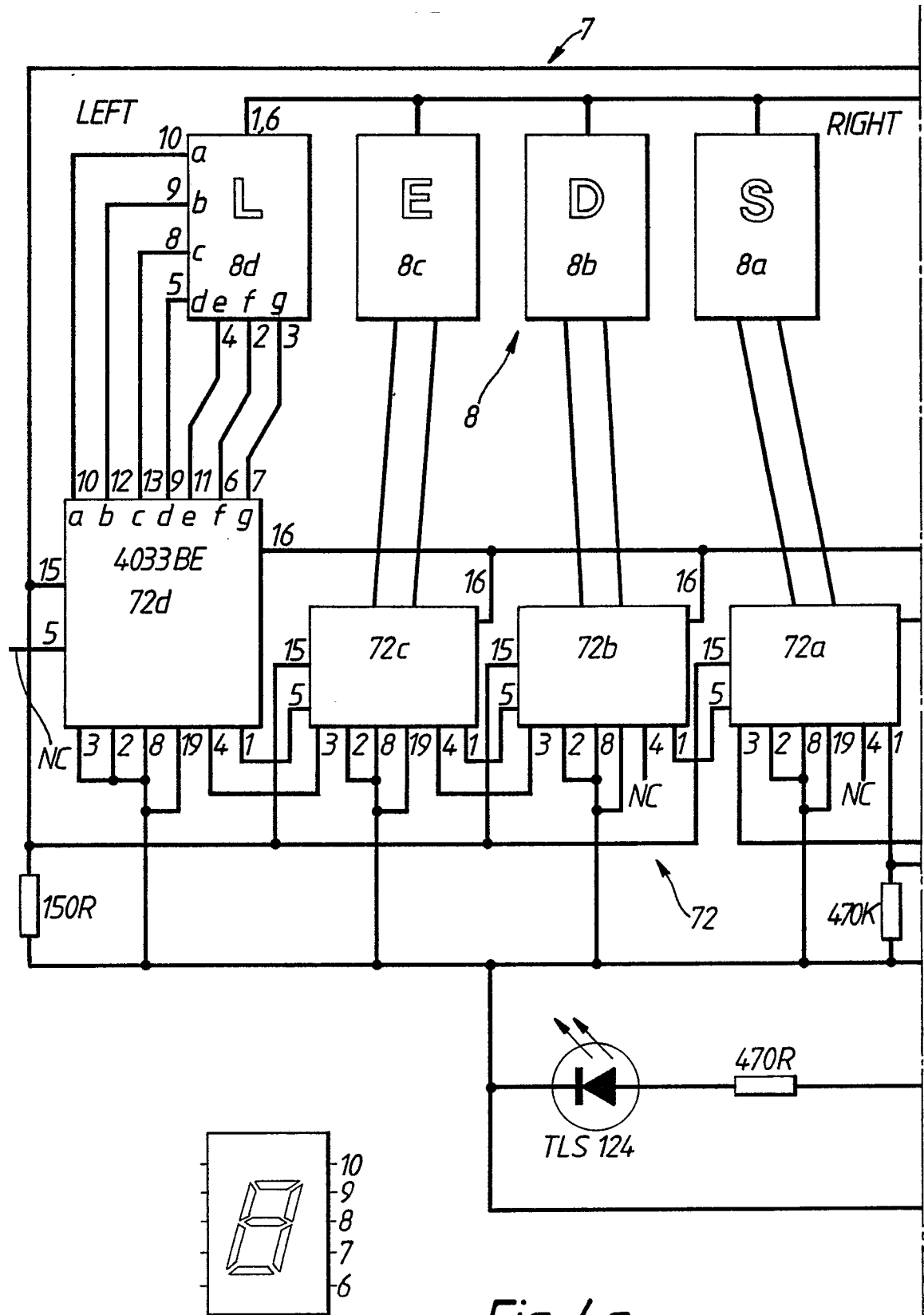
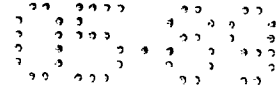


Fig. 4a.



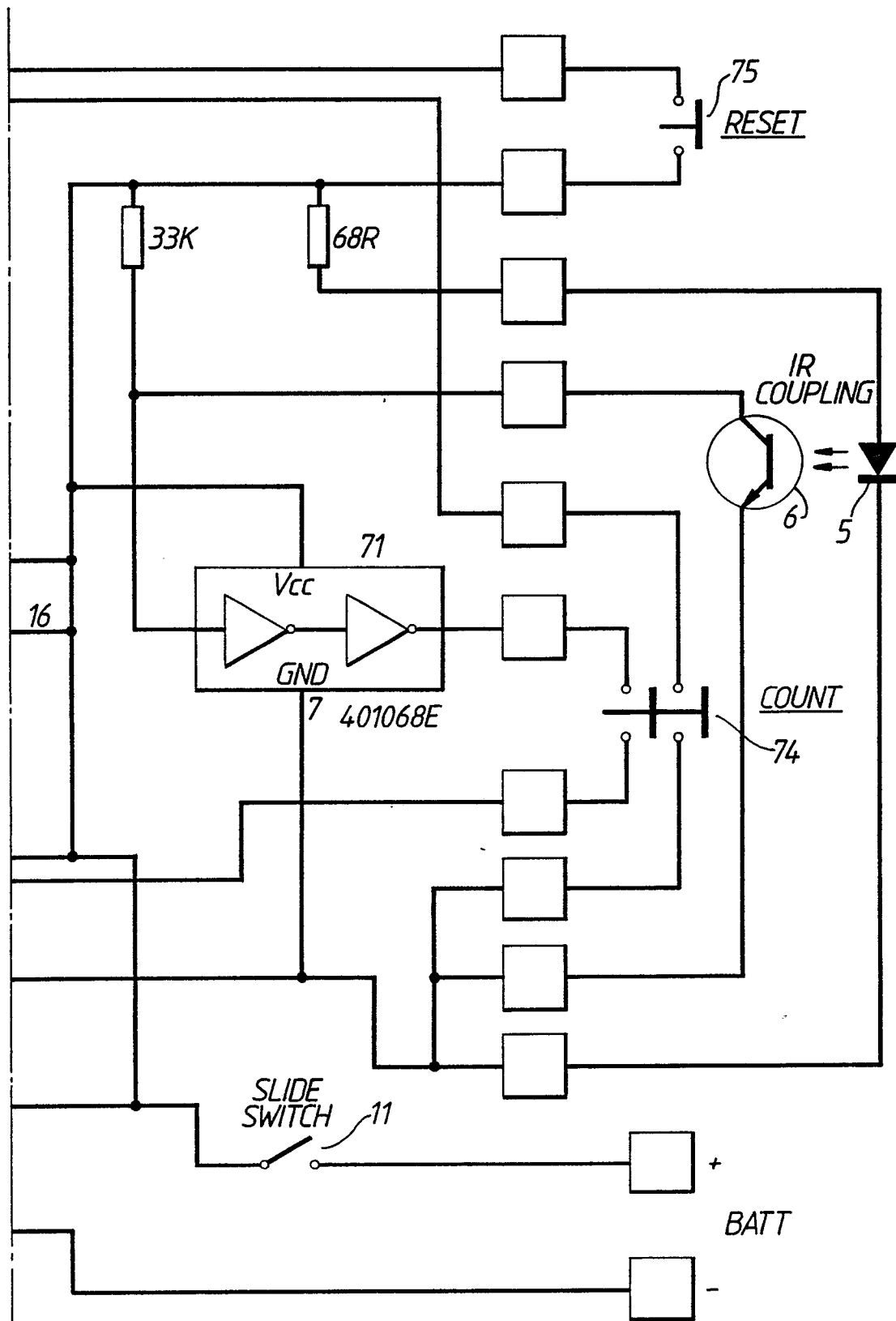
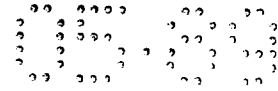
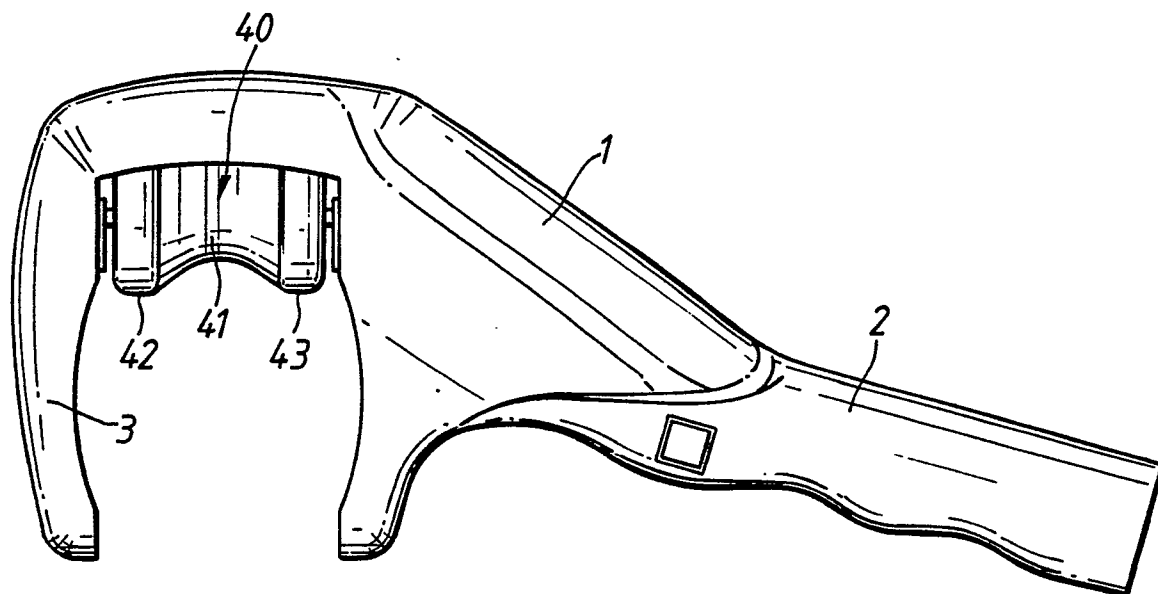
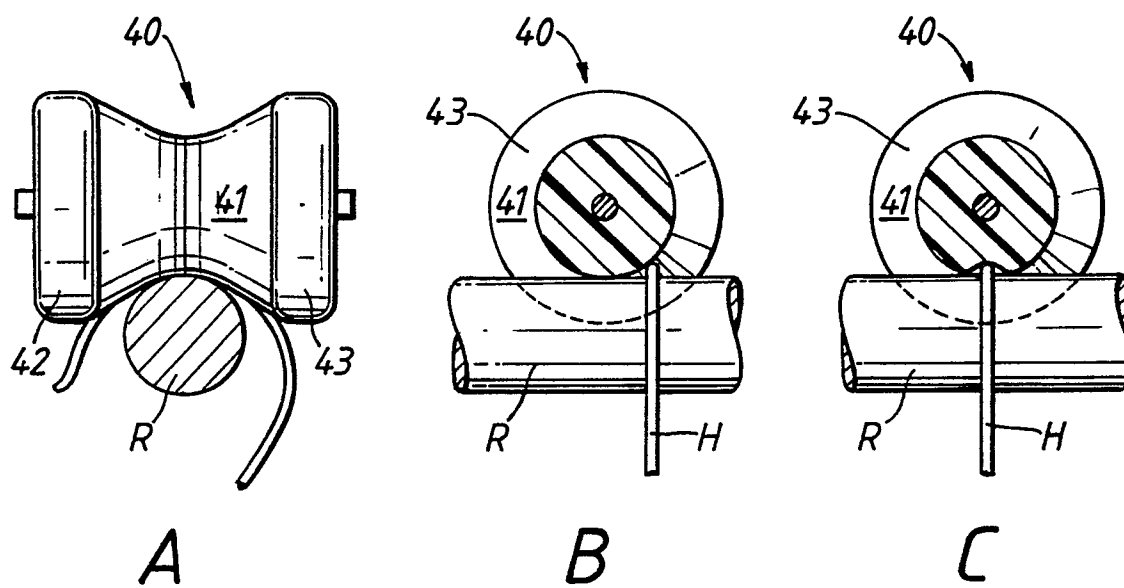


Fig. 4b.



*Fig. 5.*



*Fig. 6.*