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2,453,646

TOY, DISPLAY DEVICE, AND THE LIKE

Filed April 9, 1946

2 Sheets-Sheet 1

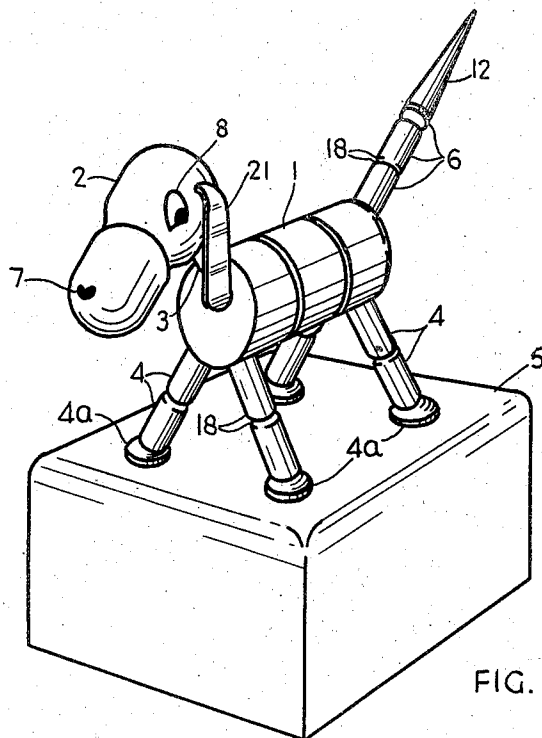


FIG. 1

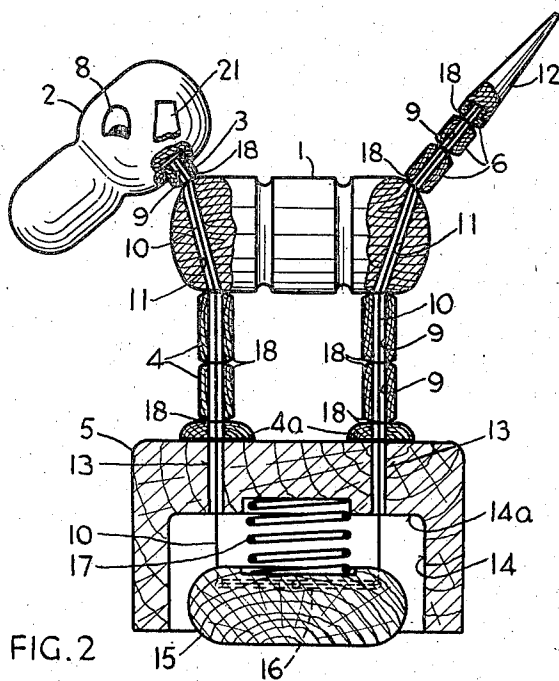


FIG. 2

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2 Sheets-Sheet 2

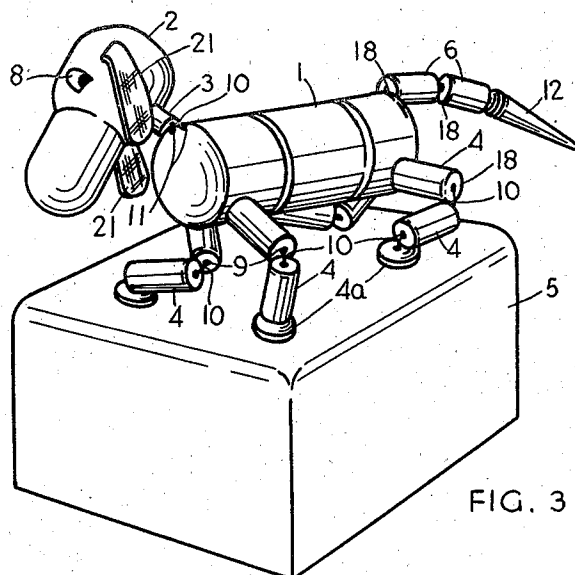


FIG. 3

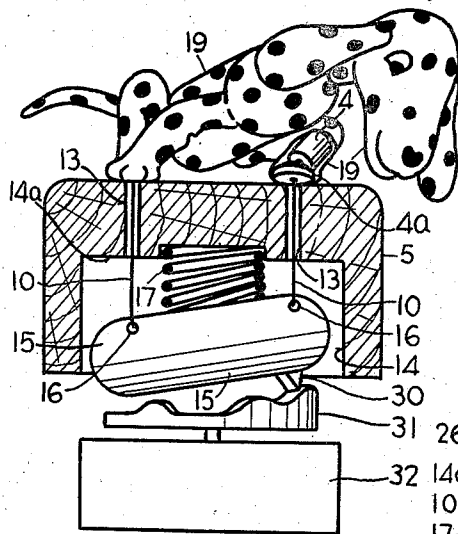


FIG. 4

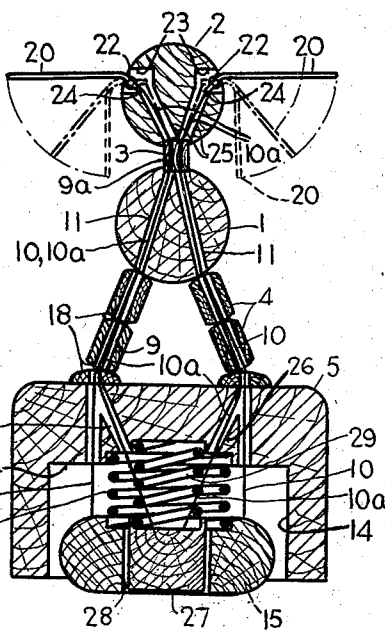


FIG. 5

George M. Tomlin  
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## UNITED STATES PATENT OFFICE

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## TOY, DISPLAY DEVICE, AND THE LIKE

George M. Tomlin, Flixton, near Manchester, and  
Harry Burrows, Manchester, EnglandApplication April 9, 1946, Serial No. 660,674  
In Great Britain December 4, 1945

1 Claim. (Cl. 46—161)

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This invention relates to toys, display devices and the like, and has for its object to provide improved devices capable of providing considerable amusement or of attracting attention in an effective manner.

According to the invention a toy, display device or the like comprises a plurality of relatively movable parts connected together by a relatively inextensible flexible element, and means whereby the tension in the flexible element may be varied to cause movement of the parts relative to each other.

The flexible element is preferably the sole means of connection for the parts and may be a cord, thread, chain or the like having no inherent rigidity.

With advantage, the means for varying the tension in the flexible element comprises two relatively movable members, one of which supports the parts of the device and the other of which is connected to the flexible element. Conveniently, the relatively movable members are normally held, as by spring means, in an initial position in which the flexible element is subjected to considerable tension.

It is preferred to construct the relatively movable parts of the device proper with bores or passages through which the flexible element is threaded and the contacting ends of the parts may be rounded to facilitate their relative movement.

The nature of the invention will be readily understood from the following description of a toy animal constructed in accordance therewith, given as an example only, reference being had to the accompanying drawings, wherein:

Fig. 1 is a perspective view of the toy animal in its normal posture,

Fig. 2 is a sectional side elevation thereof,

Fig. 3 is a perspective view of the toy animal in one of the variety of postures which it may be caused to assume,

Fig. 4 is a sectional front elevation showing the toy animal in another posture and illustrating some additional features of the invention, and

Fig. 5 is a sectional end elevation also illustrating another additional feature.

Similar parts are indicated by like reference numerals in all the figures.

In the example chosen, the animal is a dog and accordingly comprises a body part 1, a head part 2, a neck part 3 connecting the head and body parts, four legs each composed of a plurality of leg parts 4, 4a and adapted to support the body part 1 on a base member 5, and a tail composed

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of a plurality of tail parts 6. The body and head parts 1 and 2 are formed (see the head part 2 in Figs. 1 to 3) and decorated more nearly to represent the actual thing, for example, by painting a nose 7 and eyes 8 thereon, while the neck, leg and tail parts are much thinner cylindrical elements each formed with an axial bore 9 (Fig. 2).

A thread or thin cord 10 (Fig. 2) is passed through the bores 9 of the parts 4, 4a of each leg and then through bores 11 (see Figs. 2 and 5) formed in the body part 1. The two threads 10 from the forelegs issuing from the body part 1 in an upward and forward direction are threaded through the neck part 3 and there secured together and the two threads 10 from the hind legs issuing from the body part 1 in an upward and rearward direction are threaded through the tail parts 6 and there secured together. The head part 2 is secured on the neck part 3 (as shown) in such a way that the ends of the corresponding threads or cords 10 are hidden and prevented from returning through the neck part, and a pointed tailpiece 12 is preferably secured on the endmost tail part 6, which may be very short as indicated in Fig. 2, in order to hide the ends of the other threads or cords 10 and likewise prevent them from returning through the tail parts. The respective pairs of cords may be knotted together in a knot too large to pass through the bores 9 or may be stuck by glue employed to secure the parts 2 and 12 on the respective parts 3 and 6. Any other means of retaining the ends of the cords 10 may, however, be employed.

The lowermost parts 4a of the legs may each be both of larger diameter and shorter axial length than the remaining leg parts 4, as shown, to represent paws, and the fore end lengths of the threads or cords 10 each pass through an aperture 13 in the base member 5 to extend into a circular recess 14 formed from its lower side. Within this recess 14 is located a freely movable circular disc 15, to the periphery of which are attached the ends of the threads or cords 10 at substantially equi-angular spacings. As shown in Figs. 2 and 4, the two thread or cord ends for each side of the animal may be part of the same length of thread or cord which is passed through one of two parallel horizontally arranged bores 16 formed in the disc 15 one at each side of the center thereof. Between the end wall 14a of the recess 14 and the disc 15 there is provided a helical spring 17 which tends to force the disc out of the recess and thereby tensions the threads or cords 10.

When the threads or cords 10 are thus ten-

sioned, the leg parts 4, 4a are held rigid to support the body part 1 and the neck and head parts 3, 2 and the tail parts 6, 12 are erected at an angle to the body part, as shown in Figs. 1 and 2. Should the tension in one or more of the threads or cords 10 be lessened, by pressing the disc 15 into the recess 14 at the appropriate part or parts of its periphery, the corresponding connected parts of the toy animal will sag or droop under the action of their own weight. Consequently, the toy may be caused to execute many amusing contortions, or to assume different poses, by varying the position of the disc 15. Two examples of different postures are shown in Figs. 3 and 4.

The ends of the neck, leg and tail parts which abut each other, or other parts, are preferably rounded to a substantially part-spherical shape (as has been shown at 18 in the figures) because this facilitates the movement of the parts relative to each other.

Variations in the tension in the threads 10 may alternatively be produced by movements of a slidable member and the arrangement may also be such that the threads or cords are initially untensioned but are tensioned by manipulation of a disc or the like. Again, as illustrated in Fig. 4 the various parts of the toy animal itself may be enclosed in a fairly loose flexible covering 19 of fabric or the like so that the parts themselves are not visible.

The invention is not limited to toy animals. Various figures may be produced utilising the features indicated above and in some cases additional threads or cords may be provided to control the movements of parts which are carried on other parts already controlled by their own threads or cords, a separate disc or the like being provided for the additional threads or cords, if required.

An example of this additional feature is shown in Fig. 5, where the head part 2 is provided with independently movable rigid ears 20 as distinct from adhesively attached flexible ears 21 which are shown on the head part 2 in Figs. 1 to 3. Each ear 20 is pivoted at 22 within a lateral recess 23 formed in the head part 2 and has a short inwardly projecting arm 24 to which is attached a thread or cord 10a. Downwardly and inwardly inclined bores 25 extend through the head part 2 from the recesses 23 to the seating for the neck part 3 and each is traversed by one of the threads or cords 10a. These then pass through bores 9a in the neck part 3 with the respective cords 10 to continue with the latter through the bores 11 and 9 in the body part 1 and leg parts 4, 4a, respectively. The cords 10a are, however, led through separate inwardly and downwardly inclined bores 26 in the base 5 to pass down within the spring 17 and be attached to a disc 27 at diametrically opposite points. The disc 27 is disposed, with considerable play, within an axial bore 28 formed in the disc 15 and is pressed outwards of the recess 14 in the base 5, by a separate spring 29, to maintain the cords 10a normally in tension so that the ears 20 are held in the raised position shown in full lines in Fig. 5.

Should the disc 27 be pressed inwards of the recess 14, the ears 20 may be caused to droop to

a greater or lesser degree (see dotted and chain-dotted positions in Fig. 5, for example). Also, by tilting the disc 27 one ear 20 may be lowered more than the other and, if the disc 15 be simultaneously operated, the animal may additionally be caused to carry out other movements of its body and head.

When employed as display devices, the figures or the like according to the invention may be fitted with mechanical means for causing variations in the tension in the threads or cords. For example, as shown in Fig. 4, the disc 15 may be formed or provided near its periphery and on its underside with a nib 30 arranged to bear on a face cam 31 having irregular rises and troughs which is slowly rotated by any suitable motor 32. More than one nib or projection may be provided on the disc and there may be two or more cams each co-operating with a separate nib. The nibs may then be located at different distances from the edge of the disc 15.

It is to be understood that features from two or more of the constructions described may be combined as desired. For example, the additional threads or cords 10a operated by the disc 27 may control the movements of parts each composed of a plurality of cylindrical sections connected by the threads or cords 10a themselves.

What we claim is:

30 A device of the character described, comprising a plurality of relatively movable parts formed with bores or passages, at least one relatively inextensible flexible element threaded through the said bores or passages to connect the parts together in abutting relation and in a predetermined sequence, means attaching one end of the flexible element to the one endmost part in the sequence, a support abutting against the other endmost part in the sequence, a member movable in relation to the support and having the other end of the flexible element attached thereto, resilient means interposed between the support and the movable member initially to subject the flexible element to tension, a further part mounted on one of the first mentioned relatively movable parts to be movable in relation to the said part but not connected thereto by the flexible element, means operatively connecting the said further part to one end of a second relatively inextensible flexible element, a second member movable in relation to both the first member and the support and having the other end of the second flexible element attached thereto, and further resilient means interposed between the support and the second member initially to tension the second flexible element.

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