

June 21, 1966

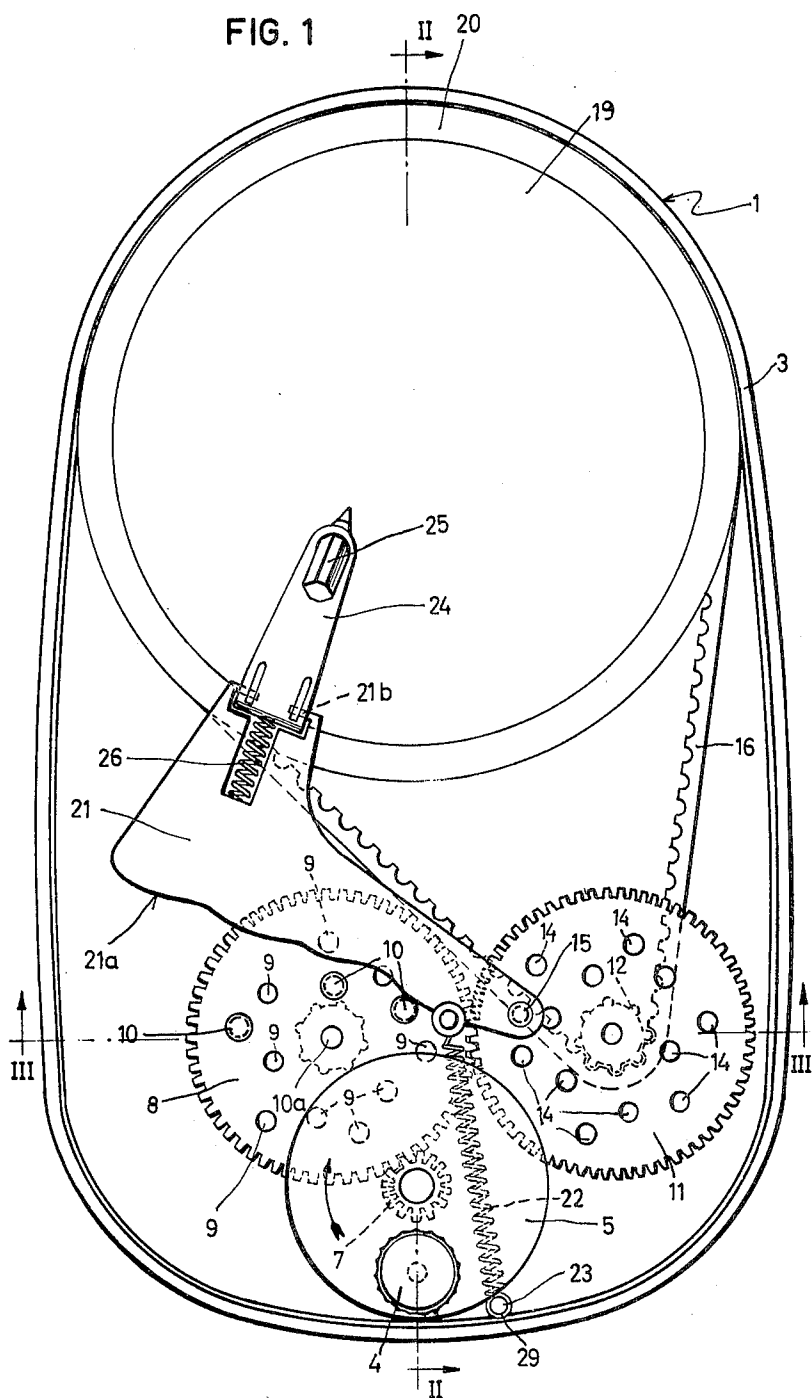
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3,256,606

DIDACTIC DRAWING APPARATUS

Filed May 26, 1964

2 Sheets-Sheet 1



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DIDACTIC DRAWING APPARATUS

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2 Sheets-Sheet 2

FIG. 2

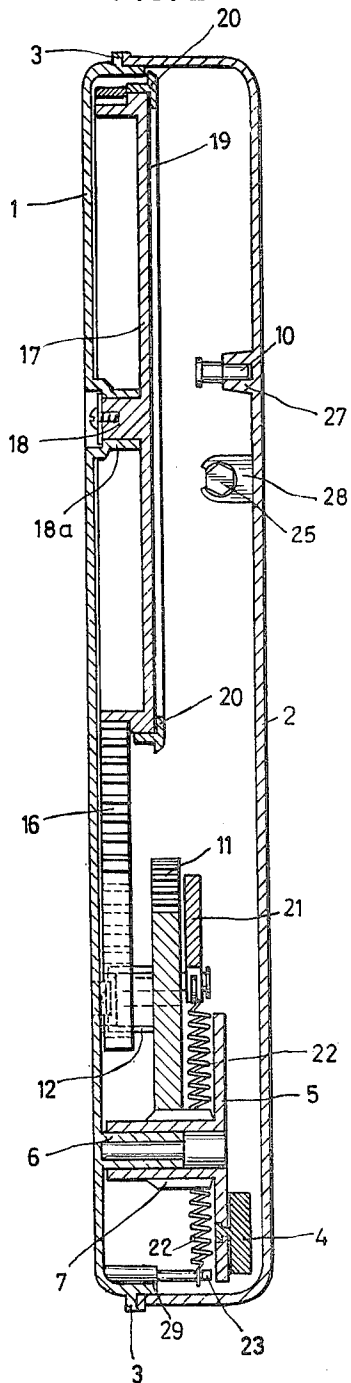
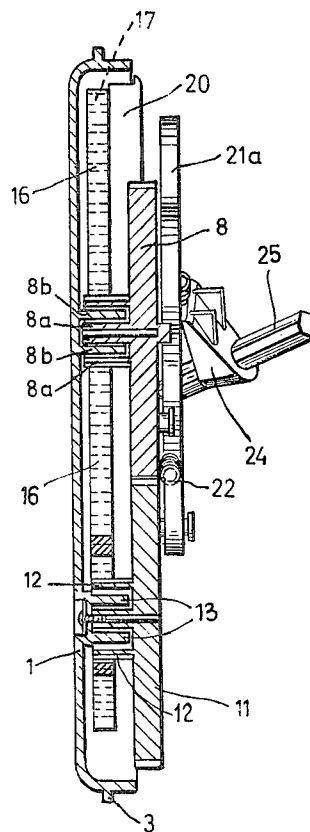


FIG. 3



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DIDACTIC DRAWING APPARATUS

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Filed May 26, 1964, Ser. No. 370,170

Claims priority, application Spain, June 1, 1963, 288,663
3 Claims. (Cl. 33—27)

The present invention relates to a didactic drawing apparatus.

To make drawings on the basis of intersecting curves in order to obtain figures of a more or less imaginative character is a primary school exercise in many countries, said figures being colored by the child using his own imagination. This kind of drawing is also used as an entertainment in order to obtain decorative motifs.

In order to make such drawings compasses are usually employed, which must be put in a number of different positions, thus making the operation long and somewhat monotonous if the final closing of the figure is not soon attained. On the other hand, in view of the multiplicity of drawing operations which are made with the compasses, mistakes occur very easily and the drawing then loses precision or is not closed exactly.

In order to overcome the above difficulties an apparatus has been designed which replaces the compasses and performs the drawing operations with the necessary precision, making it possible to draw all kinds of complex lines which become closed after one or more turns. Furthermore, such an apparatus acts with great speed, if so desired, and requires a very slight manual driving effort. Another advantage consists in the possibility of obtaining several types of drawings, in an unforeseen way, which come out at random, according to the way in which the guiding means of the drawing elements are set. Thus it is not always necessary to use imagination.

The apparatus according to the invention is essentially characterised by the fact that it comprises a rotating platform adapted to receive a sheet of drawing paper; an angular arm hinged by one of its ends to a hinge pivot, said angular arm being provided with a shaped side and with drawing means arranged at the end opposite to said hinge pivot, said drawing means being placed on said platform in the operative position; guiding means for said shaped side of the angular arm; resilient means adapted to urge said shaped side against said guiding means; means for varying the relative position of said guiding means and the hinge pivot of the angular arm; and means for simultaneously imparting a rotating movement to said platform and putting in operation said means for varying the relative position of said guiding means and said hinge pivot of the angular arm.

The means for varying the relative position of the guiding means and the hinge pivot of the hinged arm can be any suitable means, but they preferably comprise at least a plate having on its surface one or several recesses adapted to receive either one or several guiding studs, or the hinge pivot of the angular arm.

According to one preferred embodiment of the invention, two recessed toothed plates are provided, which mesh with a gear transmission adapted to drive said rotating platform.

The drawing means are preferably set in an oscillating support which is hinged to the angular arm and is maintained in two stable positions, an operative position and an inoperative position, by resilient means. Said drawing means can be a pencil, a ball point pen or the like.

The sheet of paper is preferably a replaceable circular sheet placed on said platform and maintained in position by means of a peripheral ring adjusted on the said platform.

In order to facilitate the understanding of the invention, an embodiment thereof will now be described, for

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illustrative purposes only and without limiting the scope of the invention. In the drawings:

FIGURE 1 is a plan view from above of an apparatus according to a preferred embodiment of the invention, without the cover.

FIGURE 2 is a longitudinal section of the apparatus of FIG. 1 along line II—II, with the cover.

FIGURE 3 is a cross-section along line III—III of FIG. 1.

The apparatus is contained in a box 1, having a cover 2 which abuts on a peripheral projection 3 thereof. The mechanism of the apparatus comprises an actuating button 4 connected to a disc 5 which turns around a fixed tubular shaft 6 and is integral with a concentric pinion 7.

The pinion 7 meshes with the peripheral teeth of a first toothed plate 8, which is mounted by its cylindrical extensions 8a on a fixed tubular shaft 8b, and is provided in its upper surface with a plurality of holes or recesses 9 at a different radial distance from the geometrical center thereof. Stud 10 can be inserted in any of said recesses 9. The toothed plate 8 has in its center an integral stud 10a. In its turn, said toothed plate 8 meshes with a second toothed plate 11 having an integral concentric pinion 12, mounted on a tubular fixed shaft 13. Said second toothed plate 11 is provided with a plurality of holes or recesses 14, which can receive a pivot 15.

The pinion 12 is connected, by means of a toothed belt 16, to a toothed rotating platform 17 which turns on a shaft 18 freely received in a socket 18a. A circular sheet of drawing paper 19 is placed on said platform 17 and is maintained thereon by means of a peripheral ring 20.

An angular arm 21 is hinged by one end to the hinge pivot 15 of the toothed plate 11. Resilient means 22 urge said angular arm 21 horizontally against the studs 10 on the plate 8, said studs acting as guiding means for a shaped side 21a of the angular arm; said resilient means are fixed to a pin 23, which can be separated from its seat 29 at will.

The other end 21b of the angular arm 21 carries a hinged oscillating support 24 adapted to receive the drawing means, for instance a ball point pen 25. Resilient means 26 are adapted to maintain the support 24 in either of two positions: a lowered operative position or a raised inoperative position. The angular arm 21 has a shaped side 21a, which can be undulate, curved, zig-zag or even flat. The apparatus can have several interchangeable angular arms or can have an arm having a replaceable shaped side zone.

The cover 2 has, in its lower surface, a holding means 28 to receive the drawing means 25 and several sockets 27 adapted to receive studs 10, when the apparatus is in an inoperative position.

The apparatus is operated as follows: button 4 is manually moved in the direction of the arrow (FIG. 1) and makes disc 5 turn, and pinion 7 therewith. The rotating movement is transmitted to intermeshing toothed plate 8, which transmits it to the second toothed plate 11, which through pinion 12 and toothed belt 16, transmits said rotating movement to toothed platform 17. Pivot 15 imparts a rotating movement to angular arm 21, while guiding studs 10, which can vary in number, impart lateral displacements to said angular arm 21 through shaped side 21a. The drawing means 25, which is then in an operative position, follows on the paper the component of the two movements and draws on the paper 19 a continuous line which, after one or several turns of the platform 17, becomes closed.

Different lines can be drawn on paper 19 by varying the position of studs 10 on recesses 9 of plate 8 and by varying the position of the hinge pivot 15 on recesses 14 of toothed plate 11, or by varying both. One or several different lines can be drawn on sheet 19 in order to obtain

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varied fancy drawings, which can be colored afterwards by the child. From one line to another line drawn on the same sheet the color of the pencil or pen can be changed thus adding to the variety of the drawings.

It is understood that the apparatus can be made of any suitable material such as wood, metal or plastic material, this last being, however, the preferred material for the manufacturing thereof.

On the other hand, a more simple line, but also interesting to the purpose for which the apparatus has been designed, would be obtained by replacing toothed plate 8 by a single stud and transmitting the rotating movement from pinion 7 directly to toothed plate 11; or by replacing toothed plate 11 by a stationary hinge pivot 15 and then transmitting the rotating movement from 8a to the toothed platform 17 by means of the same toothed belt 16. As long as the rotating movement imparted manually to button 4 is transmitted to platform 17 and the relative position of hinge pin 15 and at least one guiding stud 10 varies with such movement, the apparatus will function efficiently.

What is claimed is:

1. A didactic drawing apparatus, comprising in combination: a rotating platform adapted to receive a sheet of drawing paper; an angular arm having opposite ends, pivot means supporting said angular arm at one of the ends thereof for pivotal movement, said angular arm being provided with a shaped side and including drawing means at the other of the ends of the arm having an operative position in which the drawing means is placed on said platform; guiding means for engaging said shaped side of the angular arm to influence the travel of said arm; resilient means for urging said shaped side against said guiding means; means for varying the relative position of said guiding means and said pivot means; and means for simultaneously imparting a rotating movement to said platform and operating said means for varying the relative position of said guiding means and said pivot means, said guiding means comprising at least one guiding stud, said means for varying the relative position of the guiding means and the pivot means comprising a first toothed plate having eccentric recesses adapted to receive said guiding studs, and a second toothed plate, adapted to mesh with said first toothed plate and provided with eccentric recesses adapted to receive said pivot means, said means for simultaneously imparting a rotating movement to said platform and operating said means for varying the relative position

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of said guiding means and said pivot means comprising a gear transmission with manual actuating means, said first and second toothed plates being part of said gear transmission.

2. Apparatus as claimed in claim 1 comprising a plate integral with a concentric pinion, said manual actuating means being supported in the latter plate, said pinion meshing with said first toothed plate, said second toothed plate being integral with a second concentric pinion, a toothed ring in said rotating platform, and a toothed belt connecting said toothed ring and the second toothed plate in driving relation.

3. A didactic drawing apparatus, comprising in combination: a rotating platform adapted to receive a sheet of drawing paper; an angular arm having opposite ends, pivot means supporting said angular arm at one of the ends thereof for pivotal movement, said angular arm being provided with a shaped side and including drawing means at the other of the ends of the arm having an operative position in which the drawing means is placed on said platform; guiding means for engaging said shaped side of the angular arm to influence the travel of said arm; resilient means for urging said shaped side against said guiding means; means for varying the relative position of said guiding means and said pivot means; means for simultaneously imparting a rotating movement to said platform and operating said means for varying the relative position of said guiding means and said pivot means, a hinged support on said angular arm supporting said drawing means, and resilient means engaging the hinged support to maintain the same in one of two extreme positions which are respectively an operative position and an inoperative position.

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