

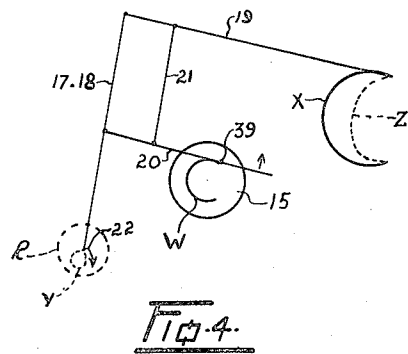
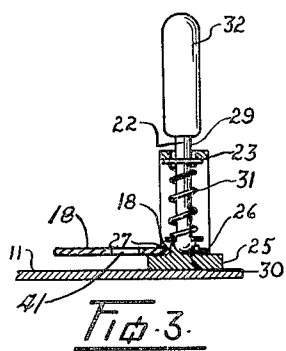
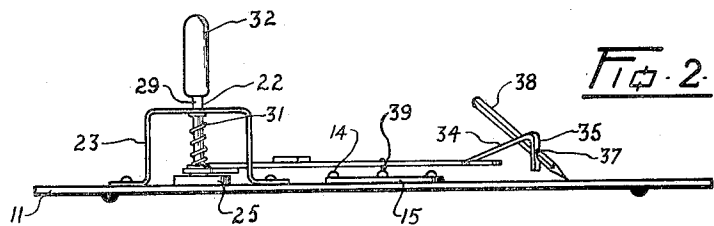
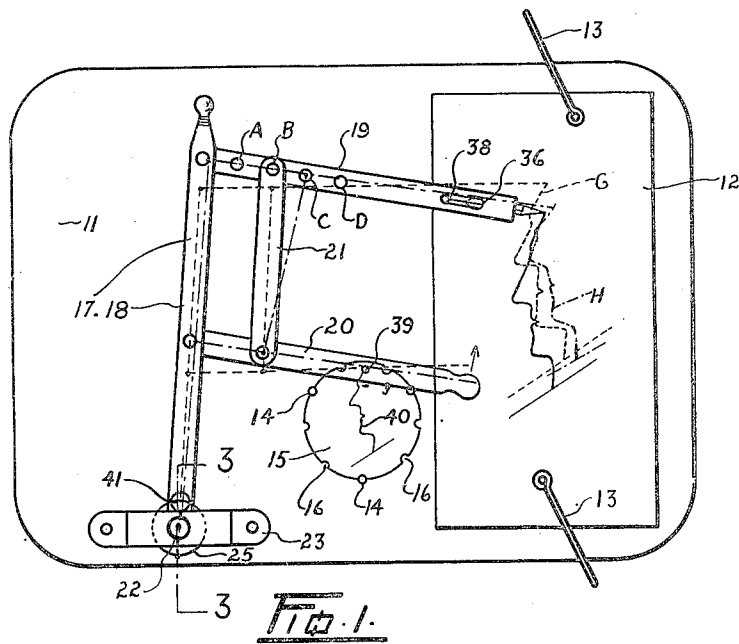
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2,497,013

PANTOGRAPH

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## UNITED STATES PATENT OFFICE

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## PANTOGRAPH

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2 Claims. (Cl. 33—25)

1

My invention relates to improvements in pantographs. The objects of the invention are to provide a pantograph capable of use as an amusement device upon which records incised to a pattern may be held and used to produce exact replicas or deviations therefrom, according to the desire or skill of the user, and to provide a novel means for securing a pencil to the inscribing arm, and for selectively moving the main pivot of the pantograph.

Referring to the drawings:

Figure 1 is a plan view of the invention.

Figure 2 is a front elevational view.

Figure 3 is an enlarged sectional view of the main pivot taken on the line 3—3 of Figure 1.

Figure 4 is a diagrammatic view showing the effect obtained by moving the main pivot simultaneously with a predetermined movement of the stylus.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 11 indicates a plane table or board on which a sheet of paper 12 may be secured by clips 13 for the purpose of having a desired illustration drawn thereon. The paper is adapted to occupy the right end of the board.

Adjacent the centre of the board 11 a plurality of equally spaced pins 14 are disposed around a circle in which a record 15 is adapted to be held against rotational movement in any set position. In order to provide for selectively placing the record as to position, the edge of said record is provided with a plurality of peripheral notches 16, any of which may be engaged by the pins 14.

The numeral 17 indicates generally a pantograph consisting of a main arm 18 fulcrumed adjacent its lower end from the board 11 as shown in Figure 1, to which is pivotally attached a tracing arm 19 and a stylus arm 20, which latter is preferably made of transparent material. The arms 19 and 20 are pivotally connected together by a stay 21. The main arm 18 is provided with a main pivot 22 which is universally mounted between a bridge piece 23 and the board 11 and consists of the following parts: A disk 25 having a central recess 26 in its upper face surrounded by an annular rim 27, upon which rim the end of the arm 18 is journaled. A stem 29 extends freely and loosely through the bridge piece 23 and is fitted at its lower end with a ball 30 which is seated in the recess 26 and is held in position by a spring 31 interposed between the arm 18 and said bridge piece. The stem 29 is fitted above the bridge piece with a handle 32

2

by which the disk 25 may be moved in any direction within a predetermined area surrounding the centre of said bridge piece. See dotted line circle R in Figure 4.

The arm 19 is provided with pivot pin openings A, B, C and D, so that the arm 21 may be connected at its upper end to the arm 19 at different positions, as may be desired. The free end of the tracing arm 19 is provided with an upward bend 34 and a downward bend 35 at its outer end, the portion 34 having an aperture 36, and the portion 35 having an aperture 37, through which apertures a pencil or pen 38 is adapted to be carried. The rear edge portions of the aperture 36 engage the sides of the pencil and hold it securely against turning or sliding movement. The arm 20 is provided intermediate its length with a stylus 39, which is adapted to be moved along the incised lines 40 of the record 15 in tracing a drawing upon the paper 12.

The pantograph is in principle the same as the conventional pantograph and consequently no description of its use is believed to be necessary, except that with the arms 18, 19, 20 and 21 set as shown in Figure 1 in full line, the profile of the lines 40 of the record 15 will be enlarged by the pencil 38 as shown in full line on the paper 12. If the arm 18 is lowered for the main pivot to be set in vertical position in the aperture 41, the profile traced would be as shown in dotted line as at G, whereas if instead the arm 21 was connected to the arm 19 at the aperture C, the profile traced would be as shown in chain dotted line H. If it is desired to change the contour of any of the features in the profile incised on the record, it may be done in a variety of ways and degrees by manipulating the handle 32 at the upper end of the stem 29 in the direction desired simultaneously with moving the stylus along the feature line upon the record. As an example, see Figure 4, assuming the record to be the outline of a letter C drawn with a compass as at W, if the main pivot 22 were left in its proper position with the stem 29 vertical, the reproduction would be as in solid line as at X, or a simple enlargement in scale, but if the main pivot was rocked to move the disk 25 about the circular path Y by rocking the stem 29, the line drawn would be elliptical as shown at Z in the figure.

Obviously an appropriate movement of the main pivot made simultaneously with the stylus movement on any feature of a profile or other record will effect changes in the finished drawing and that any number of drawings may be made

3

from any one record, each drawing differing from the last, but all having characteristics more or less common to all of them.

It will also be apparent that much skill may be exercised in reproducing from a record and that very interesting results may be obtained.

What I claim as my invention is:

1. A pantograph comprising a main arm provided with a main pivot adjacent one end, a tracing arm and a stylus carrying arm pivotally connected to said main arm, a member bridging the main pivot, a stem universally connected with the member and exerting a downward pressure on the main pivot to normally hold it stationary upon a draughting surface, and means for manually moving the main pivot laterally within an area below the bridging member.

2. A pantograph comprising a main arm provided with a main pivot adjacent one end, a tracing arm and a stylus carrying arm pivotally connected to said main arm, a member bridging

4

the main pivot, a stem universally connected with the member and with the main pivot and said stem having a handle to facilitate moving the main pivot laterally within a given area below the bridging member.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number    | Name        | Date          |
|-----------|-------------|---------------|
| 1,056,353 | Moore ----- | Mar. 18, 1913 |
| 2,021,809 | Plese ----- | Nov. 19, 1935 |
| 2,143,426 | Wride ----- | Jan. 10, 1939 |

FOREIGN PATENTS

| Number | Country             | Date |
|--------|---------------------|------|
| 2,932  | Great Britain ----- | 1889 |