May 17, 1927. 1,628,677

J. H. A. MORICHARD

DEVICE FOR GRAPHICALLY INDICATING INFORMATION ON PLANS, MAPS, CHARTS, OR THE LIKE

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Fig. 2.

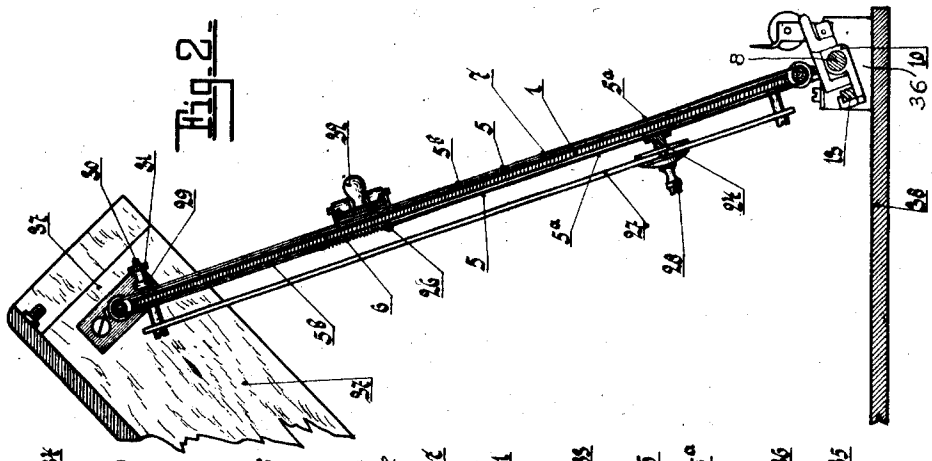
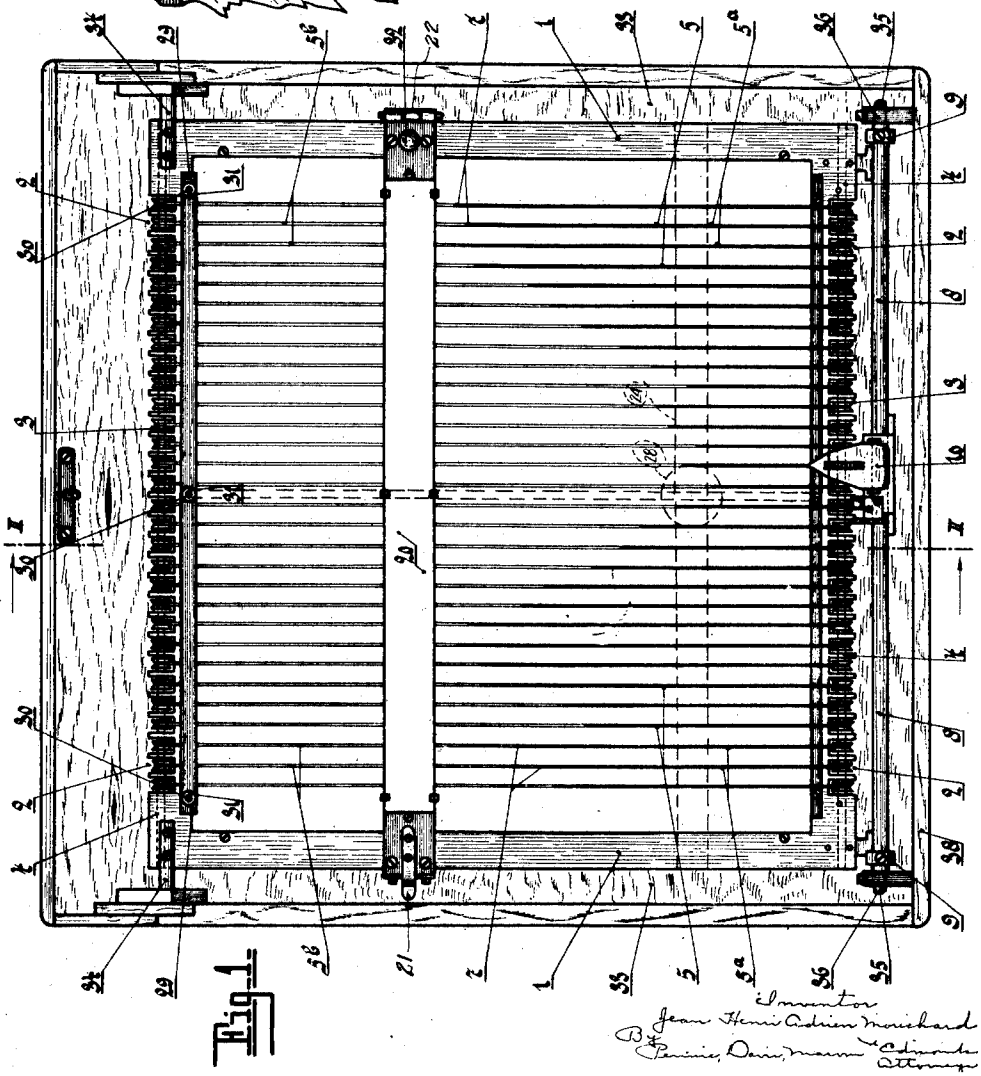


Fig. 1.



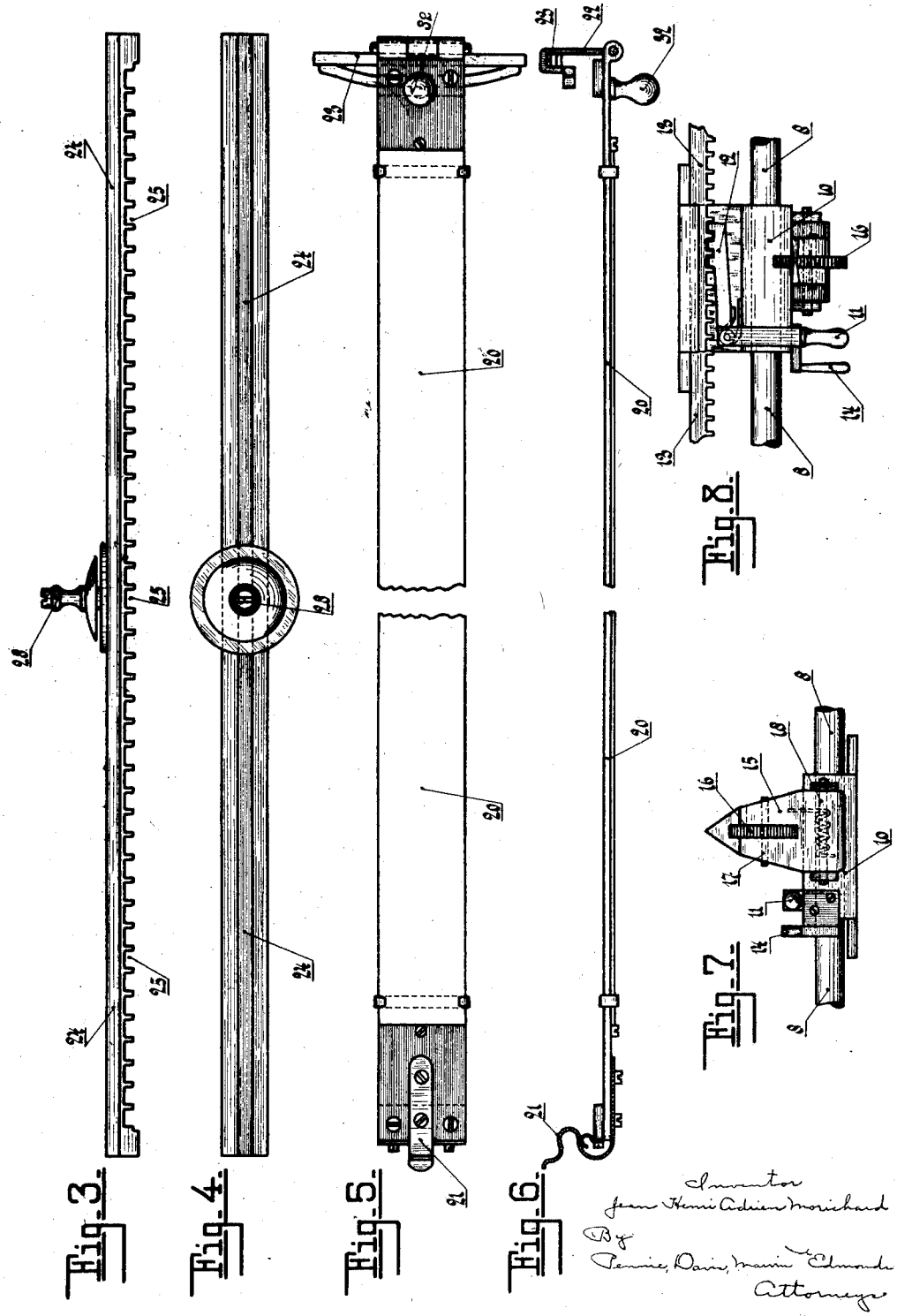
Inventor
Jean Henri Adrien Morichard
By Pennie, Davis, Marvin & Edmonds
Attorneys

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Inventor
Jean Henri Adrien Morichard
By
Fennie, Dain, Marin & Edmonds
Attorneys

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UNITED STATES PATENT OFFICE.

JEAN HENRI ADRIEN MORICHARD, OF AMSTERDAM, NETHERLANDS.

DEVICE FOR GRAPHICALLY INDICATING INFORMATION ON PLANS, MAPS, CHARTS, OR THE LIKE.

Application filed November 4, 1924, Serial No. 747,872, and in the Netherlands May 19, 1923.

The invention relates to improvements in a device for graphically indicating information on plans, maps, charts or the like, which is of universal application, for the purpose of indicating fluctuations of values or other relations.

With this and other objects in view, the invention consists of certain novel features, combinations and arrangements of parts as will be hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the claims hereto appended.

In the drawings:

Fig. 1 is a front view of the device in the using position,

Fig. 2 is a section taken on the line II—II Fig. 1, wherein the box for enclosing the device is only partly indicated,

Fig. 3–8 show several details.

Referring to the drawings: 1 is a plate preferably made of metal e. g. aluminium, adapted to be covered by a plan with horizontal dividing lines (not drawn), the plate being provided at the upper and lower edge with slots 2, in which slots grooved discs 3 are rotatably supported upon shafts 4, 4. These shafts are supported in the plate and the discs 3 at the lower edge are provided with milled edges. The grooved discs 3 at the top and bottom of the plate are arranged two and two in the same plane and over each pair of discs a cord 5 is strained, the ends of which are connected at the backside of the plate by a screw spring 6 (Fig. 2).

These cords consist of two parts 5^a and 5^b of different diameter or color. The connecting point 7 of the two colors at the front side of the plate serve as an indicator and indicates the desired value or the relation between the indicated values. The line connecting the connecting points 7 gives a clear graphical indication or information.

Parallel to the lower edge of the plate 1 a shaft 8 (Figs. 1, 7 and 8) is arranged, supported in bearings 9, 9 of the plate 1 and along which shaft a slide 10 is movable. The slide is provided with a handle 11, by which a pawl 12 can be brought in and out of engagement with a toothed rack 13 arranged behind and parallel to the shaft 8. By pressing the handle 11 towards the piece 14 the pawl 12 turns back and then the slide is allowed to be moved along the shaft 8. The slide is further provided with a spring controlled arm 15 carrying a milled disc 16 supported by a pin 17 the latter being fixed in the arm 15. This arm 15 is hingedly connected to the slide 10 at 18.

By pressing the milled disc 16 inwardly the same engages with the opposite positioned grooved discs 3 and by rotating the disc 16 this disc 3 is also rotated and the connecting point 7 of the corresponding cord is displaced along the plate 1.

Along the plate a ruler 20 is movable (Figs. 1 and 5) by a handle 32; one end of which is provided with a bent spring 21, adapted to grip round the edge of the plate, while the other end of the ruler being provided with a hinged U-shaped lever 22, which presses with a spring 23 against the other edge of the plate and in this manner draws the ruler toward the plate. This ruler is provided in order to enable the different indicated values to be compared with each other or with the names of the relating articles which may be placed the one below the other on one side of the plan.

In order to allow all the cords to be brought back in the starting position, a ruler 24 (Figs. 2, 3 and 4) is provided, having at the side toward the plate a number of grooves 25 equal to the number of cords. The width of these grooves is so chosen that a ball 26 (Fig. 2) on the cord can not pass these grooves and by moving the ruler 24 all cords are brought back to their starting point. This guide piece 24 is guided by a cover plate 27 at the back of the plate 1, having a slot (not shown) in the middle in which slot the handle 28 of the ruler 24 slides.

In order to prevent the cords from being displaced accidentally, an adjustable clamp 29 is provided at the upper edge of the plate 1 (Figs. 1 and 2). Through this ruler three bolts 30 pass, said bolts being provided with nuts 31. By screwing down the nuts 31 this ruler is pressed down upon the cords and locks the same in their adjusted position.

The whole device as above described is surrounded by a wooden box 33 and is hingedly fixed in this box by pins 34, 34. Around these pins the plate 1 can be turned and placed in the position as shown in Fig. 2, the lower edge of the plate being provided with axles 35, 35, engaging in spring-lock bearings 36 of the box.

When not in use the plate is lowered flat

in the box and the same is closed at the sides by the sidewalls 37, which fit closely to the bottom 38.

The operation of the device is substantially as follows: A map, chart, plan, or sheet of coordinate paper is inserted between the cords 5, and the plate 1, in such a manner that one of the axes of the inserted sheet is parallel to the cords, and the other axis is perpendicular thereto. Then, selecting a particular one of the cords 5, the arm or pointer 15 is moved on the shaft 8 until it coincides with one of the discs 3, whereupon the milled disc 16 is revolved until the point of division between the colored and uncolored parts of the cord is opposite the desired coordinate at the side of the map. The necessary number of the remaining cords may be adjusted in a similar manner, until the desired data has been plotted on the cords 5, the ends 7 of the colored portions of the cords, when connected, forming a curve which is a function of the ordinates and the abscissæ at the sides of the map according to a well known theorem of mathematics. It is evident that this procedure can be reversed, as hereinbefore described to plot on the chart points which satisfy a given equation without departing from the spirit of the invention.

I claim:

1. In a device for graphically indicating information on plans, maps, or charts containing a supporting plate with grooved discs at the upper and lower edges, cords guided by said discs, the same being strained by coiled springs at the back side of the plate, an adjusting ball being attached to each cord to cooperate with a toothed guide-piece slidably mounted at the back side of the supporting plate the space between the teeth being so chosen that the said ball cannot pass.

2. A device for graphically indicating information on plans, maps, or charts containing a supporting plate according to claim 1, characterized by an adjustable clamp attached along the upper edge of the plate, provided with setscrews in order to lock the cords in their adjusted position.

3. A device for graphically indicating information according to claim 1, characterized by a slide provided with a pawl mechanism cooperating with a toothed rack parallel to the shaft along which the slide may move, and means to unlock the slide.

In testimony whereof I have signed my name to this specification.

JEAN HENRI ADRIEN MORICHARD.