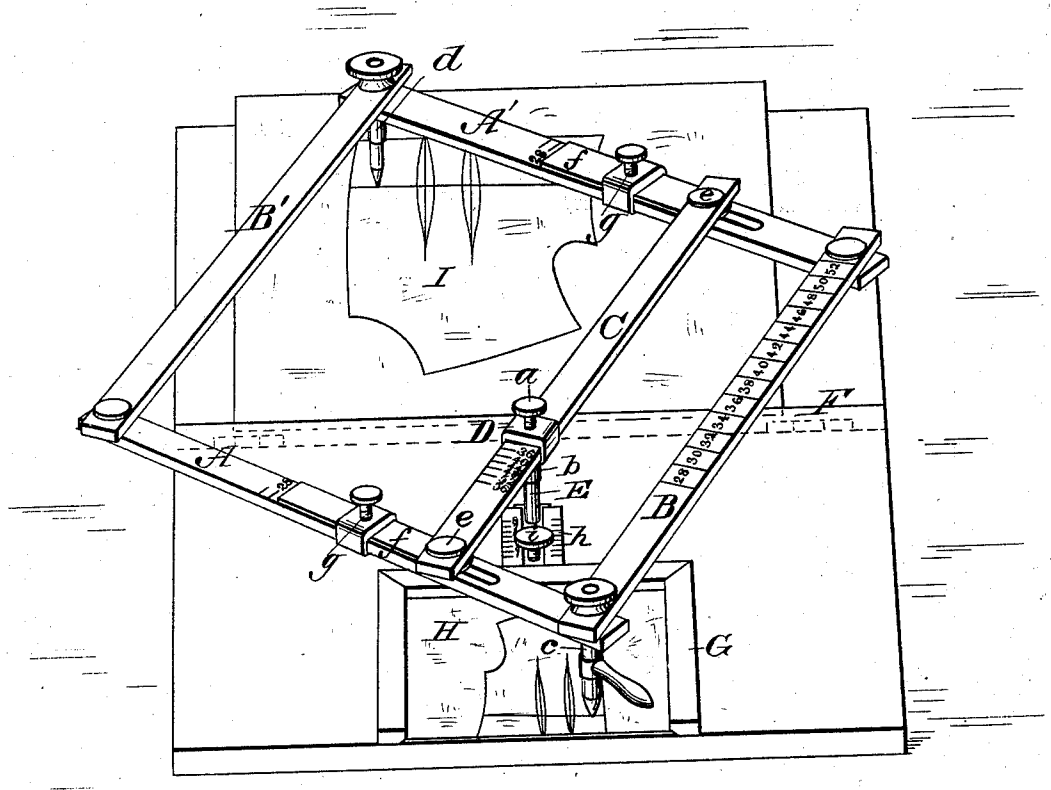
J. J. F. SCHNOOR.

Pantograph.

No. 222,798. Patented Dec. 23, 1879.



Witnesses:

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UNITED STATES PATENT OFFICE

JOHN J. F. SCHNOOR, OF DAVENPORT, IOWA.

IMPROVEMENT IN PANTOGRAPHS.

Specification forming part of Letters Patent No. **222,798**, dated December 23, 1879; application filed June 7, 1879.

To all whom it may concern:

Be it known that I, JOHN J. F. SCHNOOR, of Davenport, in the county of Scott and State of Iowa, have invented certain Improvements in Pantographs, of which the following is a specification.

My invention relates to pantographs; and it consists in a peculiar arrangement of the levers and adjusting devices and a series of scales by which to regulate and adjust the latter, as hereinafter fully explained, the device being especially intended for the use of tailors and dress-makers.

The accompanying drawing represents a perspective view of my improved pantograph, which, as shown, consists primarily of four straight bars, A A′ B B′, of equal length, and jointed to each other at their extremities in such manner that the opposite bars shall be at all times parallel to each other, and a similar bar, C, extending from the bar A to the bar A′, and pivoted or jointed to the same at its ends by means of adjustable pivots, as hereinafter explained. The cross-bar C is furnished with a sliding block, D, held at any desired point upon the bar by a clamping-screw, *a*, and provided on its under side with a socket-piece or cap, *b*, which fits upon the upper end of a vertical post, E, and thus supports the entire device, while at the same time permitting the latter to be swung about the post in any direction. The pivot *c*, at the junction of the bars A and B, is provided with a socket or holder to receive a tracing-point, and the pivot *d*, at the meeting-point of the bars A′ B′, is furnished with a similar socket to receive a pencil, as shown.

In operation, it is essential that the pivots *c* and *d* and the post E should at all times be exactly in line. When so arranged it will be seen that a movement of the tracing-point in any direction will cause a similar movement of the pencil in the reverse direction, they being upon opposite sides of the center of motion and connected through the series of levers, as above described. It therefore follows that if the tracing-point be carried over a chart or pattern the pencil will be caused to describe the pattern upon the paper or other material placed beneath the same. If the pencil and the tracing-point be equally distant from the post E or center of motion, the copy will, of course be the same as the pattern or chart traced in size; but if the distance of the pencil from the post be greater than the distance of the tracing-point therefrom, the copy made will be larger than the original, and by properly adjusting the relative distances of the point and pencil from the post the ratio of increase may be accurately determined.

In order that the above-mentioned adjustments may be conveniently and accurately made, the bars A and A′ are slotted, and the pivots *e*, by which the bar C is connected thereto, are passed through said slots, as shown. Both of said pivots are attached to thin metallic plates or strips *f*, which lie upon the top of the bars, and each of which passes under a clamping-screw, *g*, by which it may be secured at any desired point. The bars A, A′, and C are each furnished with a graduated scale, as shown, each precisely like the others, by which the pivots *e e* and the block D, on which is formed the pivotal cap or socket, may be adjusted, the several points being brought to a given number on the several bars.

For convenience, I prefer to secure the post E upon a bed or platform, F, composed of two leaves or sections hinged together at one side, and adapted to fold together into a small space, and to serve the purpose of protecting work placed between them. Upon the board or platform F, at one side, is secured a frame or holder, G, for the pattern or chart H to be copied, the paper or material, I, to be marked upon being placed upon the other leaf or section, with its edge held in the joint of the two leaves, as represented. The patterns, being made of a specified size, are placed in the frame or holder, as shown. The pivots *e e* and block D are then adjusted to the number on their respective bars corresponding with a certain one of the several measurements taken for the garment to be drawn. This measurement fixes the ratio of enlargement, the scales being carefully proportioned for this purpose.

In order that the length of a pattern in one direction may be increased to a greater extent than in the other, the post E is secured to the board or bed F in such manner that it may be moved to or from the pattern, being secured upon a plate which is mounted in a guide, *h*,

provided with a clamping-screw, *i*, to se-
it at any point of the scale with which the
e is furnished. Having made the lines in
lirection of the pencil and post or tracing-
t, the post E being moved a short distance
ard or away from the pattern will cause
pencil to be thrown considerably farther
as the tracing-point is again taken over
line of the pattern which it is desired to
w farther out on the copy. This distance
be multiplied over and above the distance
post is moved just in proportion to the
tive distances of the pencil and the trac-
point from the post.
nder the above construction, which is very
ng and simple, the device may be set to
duce a pattern of any desired dimensions
simply adjusting its movable pivots to the
nber corresponding to the particular meas-
ment which governs its regulation.
t is apparent that the operation of the ap-
atus may be reversed, and the device em-
yed for reducing instead of enlarging pat-
ns.
Having thus described my invention, what
laim is—

1. In a pantograph, the combination of four bars pivoted to each other in a quadrangular form, so that bars on opposite sides shall remain at all times parallel with each other, a tracing-point located at one of the pivotal points, a pencil located at the opposite pivotal point, a cross-bar connecting two opposite sides, and a pivotal support for said cross-bar, substantially as shown.

2. In combination with the bars A, A′, B, and B′, the cross-bar C, adjustably mounted upon a pivotal support and connected with the bars A A′ by adjustable pivots, as shown.

3. In a pantograph, the combination of bars A, A′, and C, furnished with corresponding graduations, bars B B′, a pivotal support for the bar C, in relation to which the bar can be adjusted, and adjustable pivotal connections between the bar C and the bars A and A′, as shown.

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Witnesses:
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