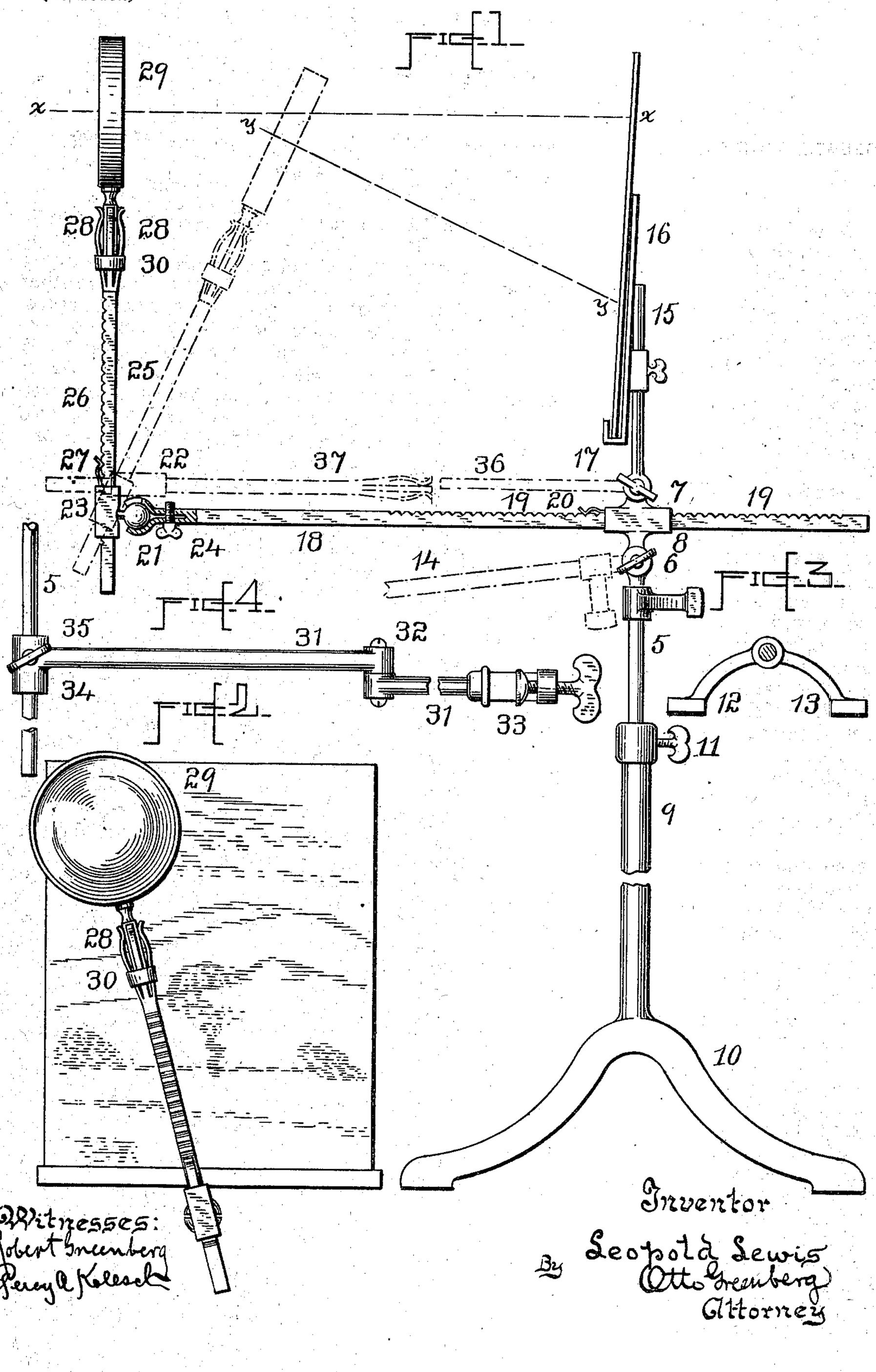
No. 709,415. Patented Sept. 16, 1902.

L. LEWIS.

GRAPHOSCOPE.

(Application filed June 6, 1902.)

(No Model.)



Witnesses:
Robert Greenberg
Percy L. Kolesch

Inventor
Leopold Lewis
By Otto Greenberg
Attorney

UNITED STATES PATENT OFFICE.

LEOPOLD LEWIS, OF NEW YORK, N. Y.

GRAPHOSCOPE.

SPECIFICATION forming part of Letters Patent No. 709,415, dated September 16, 1902.

Application filed June 6, 1902. Serial No. 110,532. (No model.)

To all whom it may concern:

Be it known that I, LEOPOLD LEWIS, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Graphoscopes, of which the following is a specification.

This invention relates to graphoscopes, and has particular reference to the manner of viewing pictures and to the adjustments therefor.

The invention is chiefly useful for artists in copying pictures.

The objects of the invention are, first, to provide means whereby a perfect and direct view may be had of any particular portion of the picture that it is desired to inspect; secondly, to provide means for supporting the graphoscope on the ground, a table, or for attachment to an easel, and, thirdly, to so construct the parts for focusing that there will be no obstructions at the lens, though the focusing is accomplished by moving the lens back and forth.

Other objects and their advantages will hereinafter appear and the novel features thereof will be specifically defined by the claims.

The accompanying drawings, which form a part of this specification, illustrate a graphoscope forming the subject of my invention.

Figure 1 is a side elevation of the graphoscope; Fig. 2, a front elevation of the lens, its holder, and the picture to be viewed. Fig. 3 is a detail of the legs of the graphoscope when used on a table, and Fig. 4 shows a bracket used when the graphoscope is to be attached to an easel.

The graphoscope proper is supported on a rod 5 and is adjustably secured thereto by a joint consisting of a disk 6, forming the end of the said rod 5, and a similar disk depending from the socket 7, clamped together by the thumb-screw 8. The rod 5 is adjustably secured in a tubular post 9 of a stand 10 by a set-screw 11. A casting having two arms 12 and 13 is soldered to the rod 5, as shown in Figs. 1 and 3. When it is desired to place the graphoscope on a table, the rod 5 is removed from the stand 10 and turned to the position indicated by the broken lines at 14 in Fig. 1. Thus a stand is formed having three legs, the free end of the rod 5 serving as one leg and the arms 12 and 13 as the other two. A post 15, carrying any suitable picture-rack, as at 16, is mounted to turn on the thumb-screw 17, carried by the socket 7. A bar-frame or base 18, upon which the working parts of the lens are mounted, is constructed to slide in the socket 7 and is provided with notches 19 along the upper edge for engagement with a spring 20, secured to the socket 7, thereby securing the slide-bar or frame 18 against accidental sliding. One end of the slide-bar or frame 18 is provided with a split spherical socket 21, which, together with a ball 22, carried by a socket 23, forms a universal joint, made tight or loose by the thumb-screw 24.

Sliding in the socket 23 is a bar 25, held against accidental sliding by notches 26 and a spring 27, similar to that explained above. The upper end of the slide-bar 25 is provided with four spring-fingers 28, arranged to form a socket for the handle of the magnifying or minifying lens 29. It is obvious that the size of the socket and the pressure of the spring-fingers 28 on the handle of the lens can be regulated by a ring 30, constructed to slide up and down on the fingers 28.

Fig. 4 illustrates still another form of support for the graphoscope, consisting of a bracket made up of a number of bars 31, revolubly attached to each other, as at 32, provided at one end with a clamp 33 for attachment to an easel or other convenient object and at the other end with a collar or socket 34, through which the rod 5 may pass and be clamped by the set-screw 35. This form of support will be found convenient when copying for a large reproduction, as here the heights and places necessary to locate the graphoscope are not accessible with the previously-described stands or those now on the market.

The slide-bar or frame 18 may be tilted should the position of the user make it more convenient.

The graphoscope forming the subject of this invention is constructed to collapse for convenience in transportation to within a

very small space. The post 15 can be turned down to a position such as at 36, together with the picture-rack, if desired. The slide-bar 25 can be turned down to the position 37, and the slide-bar or frame 18, and with it the socket 7, can be turned down about the thumb-screw 8 to take a vertical position along the side of the stand-post 9.

In graphoscopes heretofore used only the immediate portion of the picture opposite the center of the lens, or, in other words, the portion impinged upon by the principal axis $x\,x$ of the lens, appeared clear, the rest of the picture appearing blurred and disproportionate. This disfiguration seems solely to be the result of the spherical and chromatic aberration. I overcome this difficulty by constructing my graphoscope so that the principal axis of the lens can be adjusted to impinge on any part of the picture it is desired to inspect. There are two ways to do this in my invention, one by moving the lens up and down and right and left, Fig. 2, in a plane paralleled to the picture, thereby covering all points on the picture, and the other way by merely tilting and turning the lens, and thereby directing the principal axis to any point of the picture desired, as at $y\,y$.

A casting having the two legs 12 and 13 above mentioned may be soldered to the socket 7 instead of to the rod 5 and still have the same functions, or two such castings may be soldered near each end of the slide-bar or supporting-frame 18, dispensing with the use of the rod 5 as a stand when the graphoscope is to be set on a table.

It is obvious that various different joints differently located may be used to carry out the object of this invention, the illustrations showing only one of these ways which are here claimed.

I do not claim, broadly, a graphoscope wherein the relative positions of the lens and picture-holder can be changed, but

What I do claim is—

1. In a graphoscope, the combination of a picture-rack 16, a lens 29, a frame 18, a socket 7, a rod 5, and a stand 10 with a lens-holder 25, mounted on a universal joint, substantially as described.

2. In a graphoscope, the combination of a picture-rack 16, a lens 29, a lens-holder 25, a frame 18, a rod 5, and a stand 10; with a support 31 for the graphoscope having a clamp 33, for attachment to an easel or the like, and independent of the said stand 10, legs 12 and 13 and a rack 31 having a clamp 33, substantially as described.

3. In a graphoscope the combination of a lens, a picture-rack, a frame, and means for focusing; together with means for bringing the center of the said lens opposite any part of the picture to be viewed, substantially as described.

4. In a graphoscope, the combination of a lens, a picture-rack, a frame, and means for focusing; together with means for moving the principal axis of the lens to impinge on any point of the picture to be viewed, substantially as described.

5. In a graphoscope the combination of a lens, a picture-rack, a frame, means for focusing; together with a universal joint for changing the relative positions of the said lens and said picture-rack, substantially as described.

6. In a graphoscope the combination of a lens, a picture-holder, a frame, and means for focusing; together with means for adjusting the relative lateral and vertical positions of the said lens and the said picture-holder, substantially as described.

7. In a graphoscope the combination of a lens, a picture-holder, a frame, and means for focusing; together with means for bringing the principal axis of said lens into any plane passing through the picture and the center of the said lens, substantially as described.

Signed at New York, in the county of New York and State of New York, this 31st day of May, A. D. 1902.

LEOPOLD LEWIS.

Witnesses:
KATHARINE MACMAHON,
CLARENCE M. LEWIS.