(No Model.) 2 Sheets—Sheet 1.

L. H. COHEN.

GRAPHOSCOPE.

No. 592,693. Patented Oct. 26, 1897.

Fig 1

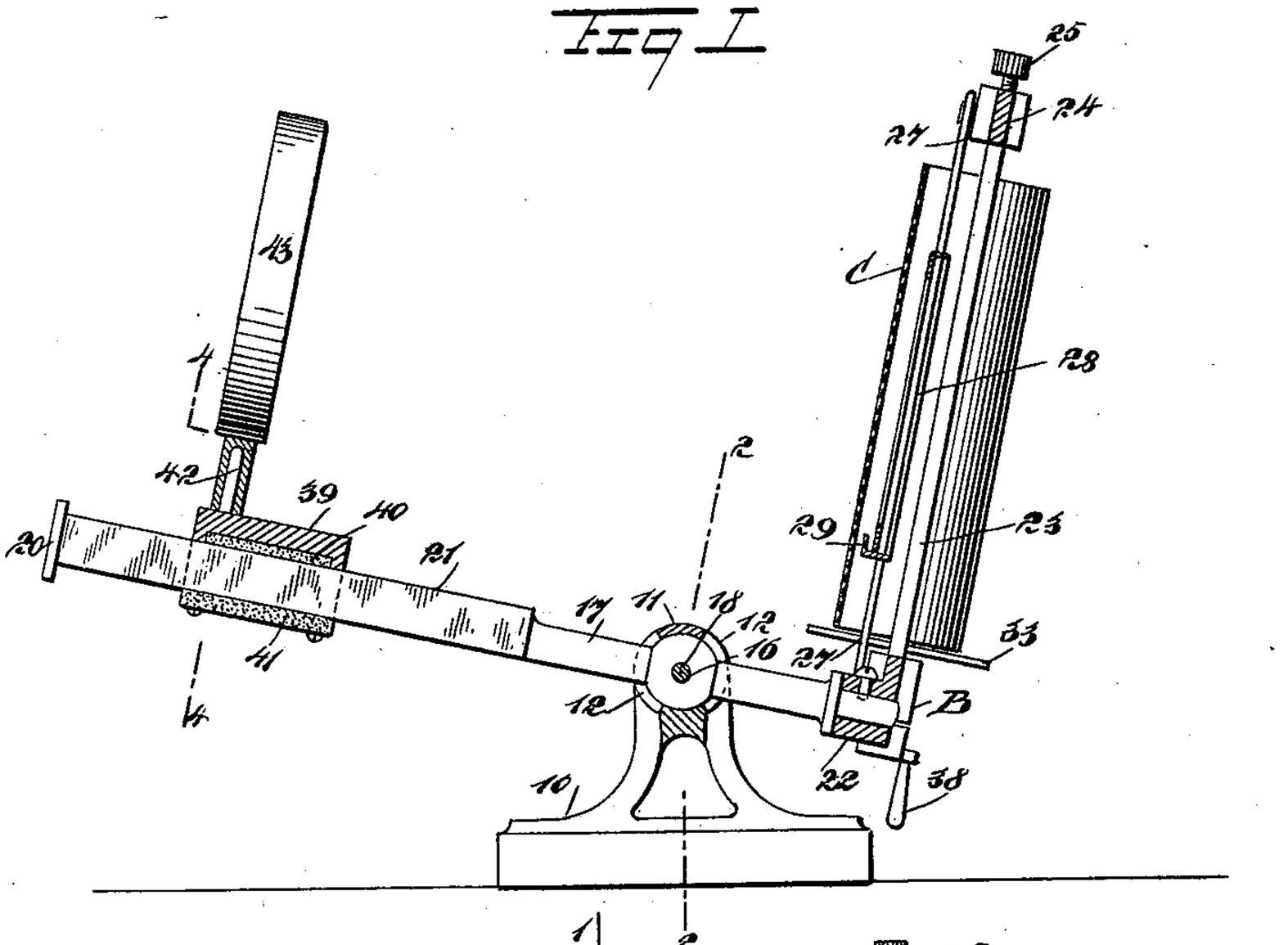


Fig 2

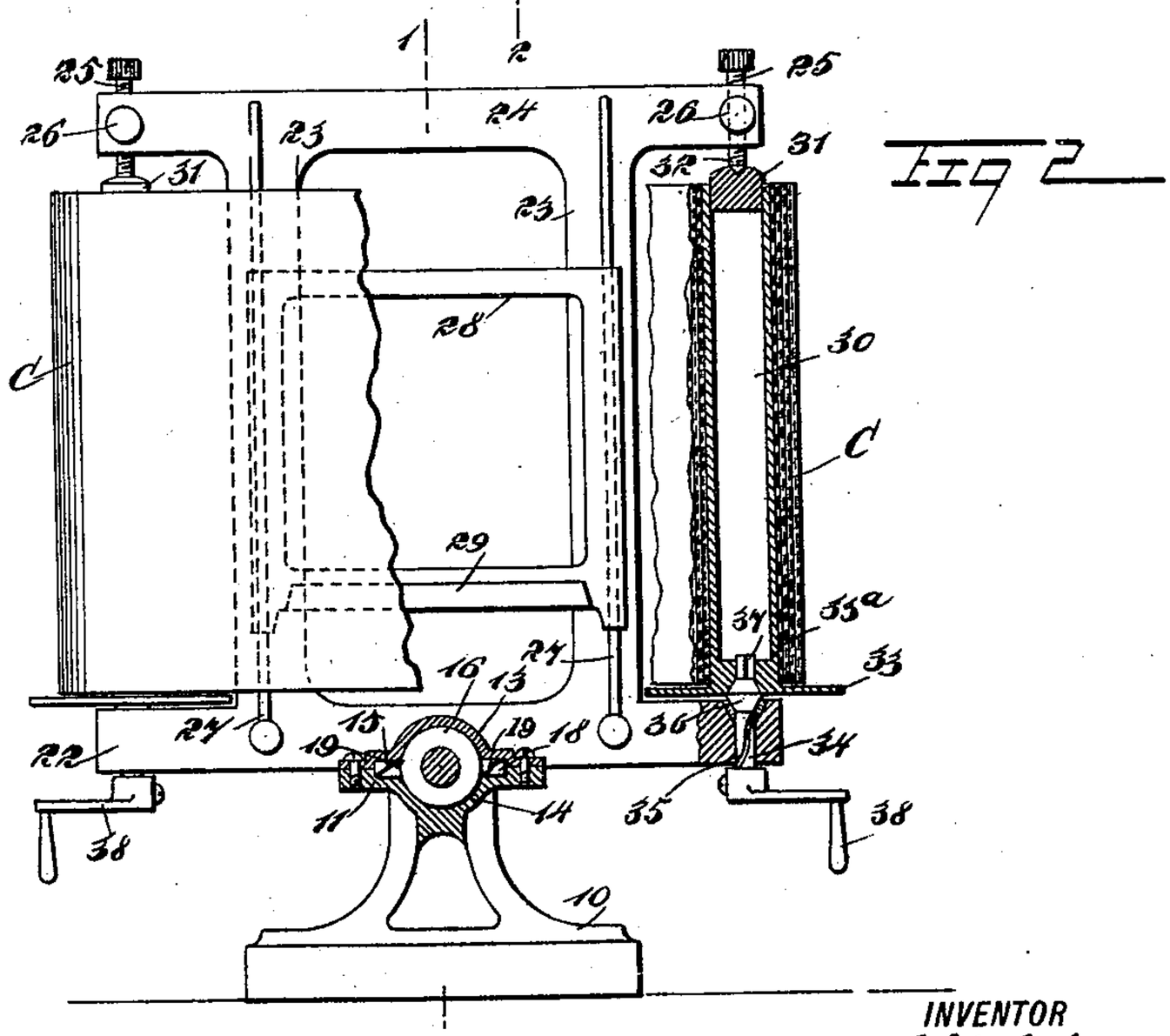
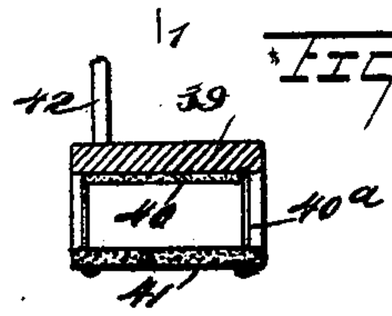


Fig 3



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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig 4

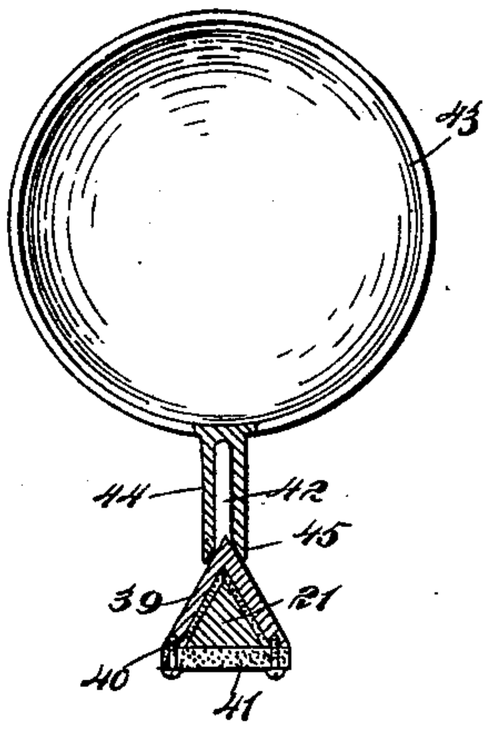


Fig 5

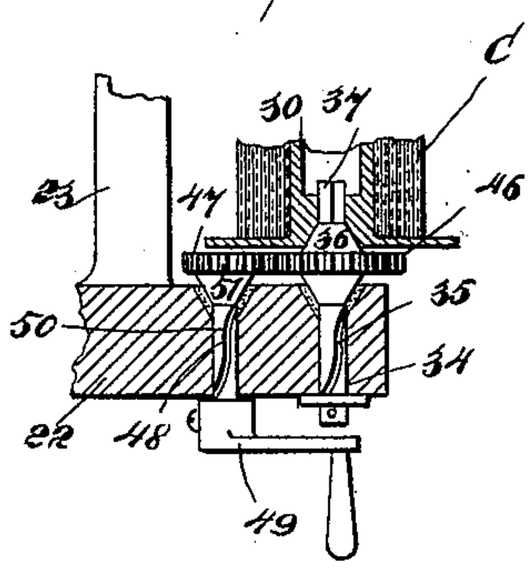


Fig 6

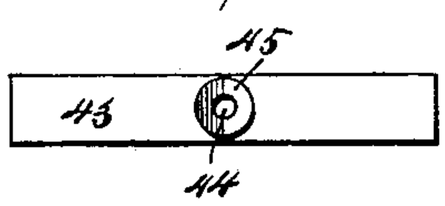
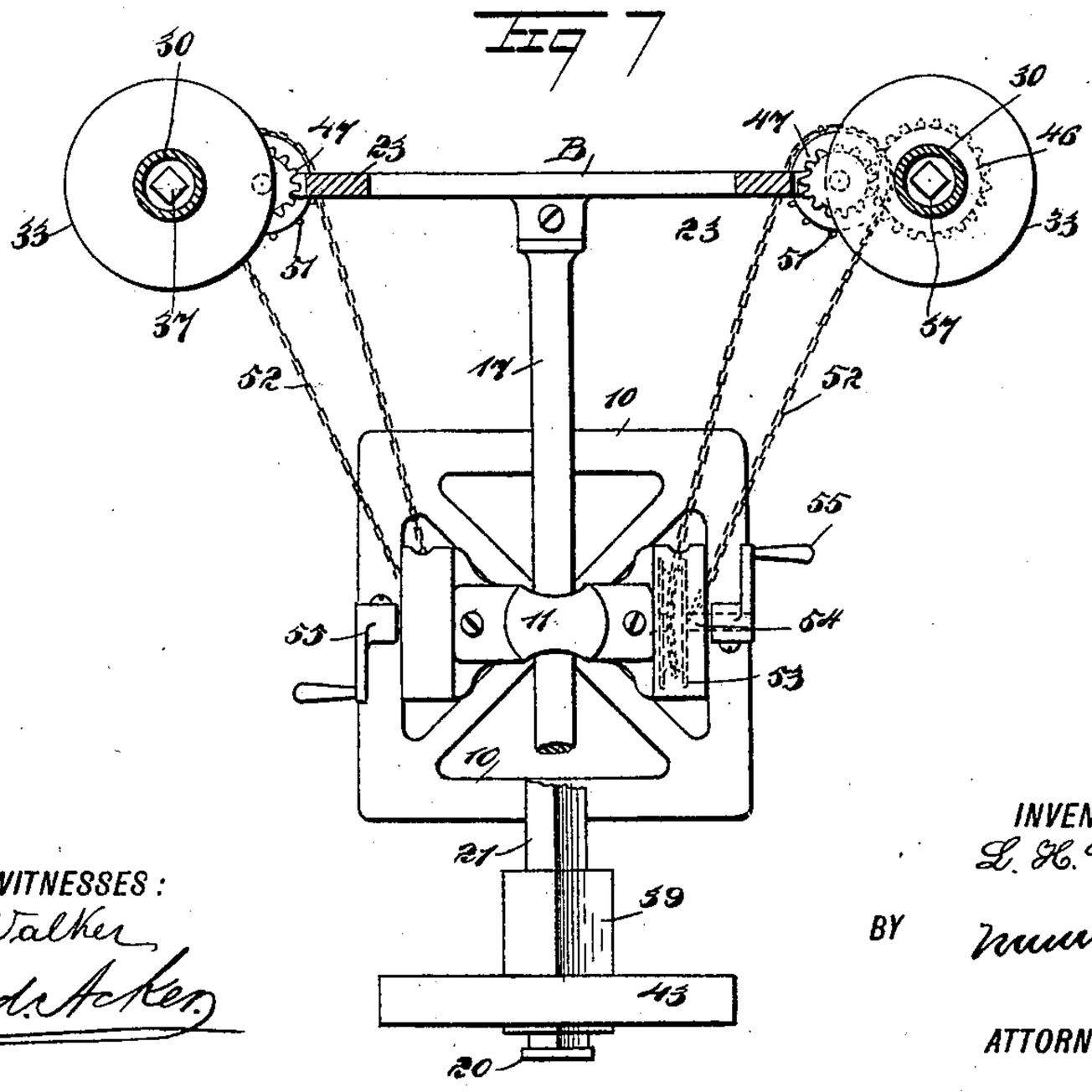


Fig 7



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UNITED STATES PATENT OFFICE.

LAURANCE H. COHEN, OF NEW YORK, N. Y.

GRAPHOSCOPE.

SPECIFICATION forming part of Letters Patent No. 592,693, dated October 26, 1897.

Application filed January 25, 1897. Serial No. 620,641. (No model.)

To all whom it may concern:

Be it known that I, LAURANCE H. COHEN, of New York city, in the county and State of New York, have invented a new and useful Improvement in Graphoscopes, of which the following is a full, clear, and exact description.

My invention relates to an improvement in graphoscopes; and the object of the invention is to so construct the graphoscope that the pictures may be viewed either when arranged in panoramic form or singly.

A further object of the invention is to provide a means for quickly and conveniently placing rollers in position in the graphoscope, the said rollers having attached thereto the ends of the tape, sheet, or belt upon which the pictures are secured when in panoramic arrangement.

A further object of the invention is to provide a novel means for turning either of the rollers, so that the pictures may be wound readily from the right-hand to the left-hand roller and back, each roller having an independent rotating device.

Another object of the invention is to so construct the rollers that they will afford ample support for the lower edges of the belt or apron of pictures, and whereby the rollers will turn true and easily in their bearings.

Another object of the invention is to provide such a connection between the rollers and the rotating devices that the rollers will have no projections from their ends, enabling them to be readily stored away without injury to an adjacent roller or object.

Another object of the invention is to so mount a lens on the frame of the graphoscope that said lens may be quickly and easily adjusted toward and from a picture, and whereby the lens will remain firmly in the position to which it is adjusted, the said lens being capable of being entirely removed from the frame when desired.

A further object of the invention is to construct the graphoscope in an exceedingly simple, durable, and economic manner.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical section through the graphoscope, the section being taken substantially on the line 1 1 of Fig. 2. Fig. 2 is a transverse section taken substantially on the line 2 2 of Fig. 1, a portion of the belt of pictures being broken away at the frame of the graphoscope, one of the rollers being also shown in section, illustrating the manner in which it is held in the frame. Fig. 3 is a longitudinal section through the sleeve by which the lens is carried. Fig. 4 is a section taken substantially on the line 4 4 of Fig. 1. Fig. 5 is an enlarged sectional view through that portion of the frame at which the lower end of a roller is supported, illustrating said roller in vertical section and also illustrating a modified form of rotating device for the roller. Fig. 6 is a bottom plan view of the lens; and Fig. 7 is a plan view, partly in section, of the graphoscope, illustrating another arrangement of the propelling devices for the rollers.

The base 10 for the frame B of the graphoscope has a box 11 formed at the top thereof. This box is provided with a vertical slot 12 in its front and at the back, as shown particularly in Fig. 1. The top or cover 13 of the box is removable. A spherical chamber 14 is formed in the central portion of the box, while at each side a horizontal chamber 15 is made, preferably of cylindrical shape. The spherical chamber 14 of the box receives a spherical enlargement 16 on a bar 17, which is connected with the central portion of the frame B at its base. At each side of the spherical enlargement 16 of the bar 17 an arm or spindle 18 is formed, round in cross-section, the arms being held to turn in the horizontal chambers 15 of the bearings. Each arm 18 is preferably provided with spiral grooves 19, adapted to carry a lubricant. The bar 17, connected with the frame B, has a head 20 formed at its forward end, and between the spherical enlargement of the bar and its head said bar is given a triangular shape in cross-section, as shown at 21 in Figs. 1 and 4.

The frame B consists of a base-bar 22, to which the pivoted bar 17 is attached, and also uprights 23, which extend from the base-bar

and connect with the top bar 24. The uprights are located between the ends of the top and bottom bars of the frame. At the end portions of the top bar 24 pivot screws or pins 25 are located, extending below said top bar, and set-screws 26 are passed through the top bar to engagement with the pivot pins or screws, holding the latter in the position to which they are adjusted. Rods 27 are secured to the frame B at its front, one opposite each upright 23 of the frame. These rods are held out from the frame and extend upward a predetermined distance. The rods 27 serve as guides for an auxiliary sliding frame 28, provided at the bottom with a shelf 29, upon which a picture may rest, supported by said auxiliary frame.

Two rollers 30 are used in connection with the graphoscope. These rollers are usually made hollow in order that they may be light. The top of each roller is closed by a plug 31, having a depression 32 in its upper surface. Each roller 30 is also provided at its bottom, which is closed, with a flange 33, usually of disk form, and in the bottom of each roller an opening 33^a is made, polygonal at its upper portion and conical or flaring at its lower portion, as shown in Figs. 2 and 5.

At each end of the bottom bar 22 of the frame B a spindle 34 is held to turn, each spindle being usually provided with a spiral groove 35, adapted to contain a lubricant. The upper end 37 of each spindle is polygonal, or shaped to enter the polygonal portion of the bottom opening 33 in a roller. Below the polygonal portion 37 of each spindle 34 the spindle is enlarged and is made to taper from the center of the enlargement in direction of the ends of the same, forming thereby two conical surfaces, the bases of which connect. The upper conical surface of the enlargement 36 of the spindle engages with the wall of the conical lower portion of the opening 33^a in the roller 30. The lower conical portion of the enlargement of each spindle is held to turn in the flaring or tapering upper portion of the opening in which the spindle revolves.

In order that there shall be little friction at the conical portion of the spindles 34 revolving in the frame, the upper tapering portion of the openings in which the spindles revolve is provided with a lining of a smooth material, which may be hard wood, especially if the frame is made of aluminium. A crank 38 is attached to the lower end of each spindle 34.

A sleeve 39 is held to slide on the tapering or triangular portion 21 of the pivoted bar 17. The upper portion of this sleeve is usually made of metal, and the inner face of the sleeve is provided with a lining 40 of wood or other material, which will admit of the sleeve being slid on the pivoted bar 17 with the least possible friction and the least possible damage to the bar if made of a soft material. The lining 40, as shown especially in Fig. 3, is placed in recesses made in the sides of the sleeve, which recesses do not extend out to the ends of the sleeve, so that the lining will not have end movement. The bottom 41 of the sleeve is preferably made of the same material as the lining, since it will engage directly with the bottom of the pivoted bar 17.

A pin 42 is secured upon the front end portion of the sleeve at its apex. The sleeve is adapted to carry a lens 43, the handle 44 whereof is made tubular to receive the pin 42. In order that the handle shall engage with the upper tapering portion of the sleeve and center and steady the lens, the lower end of the said handle is made V-shaped, or is provided with a V-shaped recess, as shown in Figs. 4 and 6.

A tape, band, or belt C, upon which the pictures to be displayed are mounted, is secured at its ends to the rollers 30, and when the graphoscope is to be used to display pictures in panoramic arrangement the rollers are made to receive at their lower ends the squared portions 37 of the spindles 34 and their upper conical portions, the pivot-pins 25 being screwed or carried downward to enter the depressions in the top portions of the rollers, serving as center-pins and tension devices, after which the set or binding screws 26 are carried to a firm engagement with the pivot pins or screws, preventing them from shifting from their adjusted position, also securing a uniform tension.

In Fig. 5 I have illustrated another manner in which the rollers and the pictures carried thereby may be revolved. This difference consists in securing upon the spindles 34 at the center of their tapering portions a gear 46, which meshes with a pinion 47, and each pinion 47 is attached to a spindle 48, provided with a crank-arm 49 at its lower end. The upper portions of the spindles 48 are somewhat conical and revolve in correspondingly-formed seats, the seats usually consisting of a hard wood, as heretofore stated. Each auxiliary spindle 48 is provided with a groove 50 to receive a lubricating material.

In Fig. 7 I have shown a further modification of the mechanism for giving motion to the rollers. This modification is particularly adapted for application to graphoscopes in which large pictures are to be exhibited. In such a graphoscope it would be inconvenient to reach the back frame in order to revolve the rollers. Therefore the revolving or rotating mechanism is located at the sides of the base 10, where it can be more conveniently manipulated. The spindles carrying the rollers are operated by gearing, as shown in Fig. 5, but instead of the cranks 49 at the end of the auxiliary spindles 48 a sprocket-wheel 51 is secured to each auxiliary spindle, and these sprocket-wheels are connected by chains 52 with wheels or pulleys 53, located on shafts 54, held to revolve at the sides of the base, each shaft 54 being provided with a crank 55

in order that the shafts may be conveniently rotated. The bar 17 is properly an arm or projection from the frame and will hereinafter be so denominated.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a graphoscope or the like, a frame, rollers journaled therein and adapted to receive the pictures to be displayed, means for revolving the rollers, a vertically-slidable auxiliary frame arranged between the rollers, and a lens arranged in front of the frame with a light-admitting clearance between them so that light will fall upon that side of the pictures which faces toward the lens, substantially as described.

2. In a graphoscope, or an instrument of like character, a frame, a base, an arm connected with the frame and with the base, the forward portion of the arm being of triangular formation in cross-section, a sleeve of corresponding cross-sectional shape held to slide upon the triangular portion of said arm, and a lens carried by said sleeve, said lens being provided with a shank shaped at its lower end to receive the apex of said sleeve, whereby the lens is centered with respect to the frame, substantially as shown and described.

3. In a graphoscope or an instrument of like character, a supporting-frame for pictures, a base, an extension from said frame being pivoted on the base, a sleeve of triangular shape mounted to slide on the extension from the frame, a pin extending from the contracted portion of the sleeve, a lens, and a hollow shank for the lens, receiving the said pin, the lower portion of the shank being provided with an angular groove so shaped that the wall of the groove will engage with the inclined surfaces at the tapering side portions of the sleeve, substantially as and for the purpose specified.

4. In a graphoscope or an instrument of like character, a support, a sleeve mounted to slide upon said support, having a tapering upper face and an extension from its upper face, a lens, and a tubular shank connected with said lens, adapted to receive the extension from the sleeve, the lower portion of the lens-shank being shaped to engage with the side surfaces of the sleeve, as and for the purpose specified.

5. In a graphoscope or an instrument of like character, a frame, rollers mounted to revolve in said frame, adapted for attachment to the ends of a belt of pictures, each roller being provided in its bottom with an opening polygonal at its inner end and conical at its outer end, spindles held to revolve in the frame, having their upper ends correspondingly shaped to the opening in the bottom of the rollers, and means for turning the said spindles, as and for the purpose specified.

6. In a graphoscope, or an instrument of like character, a roller adapted to receive pictures and provided with a flange at its bottom, and an opening in its bottom portion, said opening being polygonal at its inner end and conical at its outer end, as and for the purpose specified.

7. In a graphoscope or an instrument of like character, a frame, a spindle held to turn in the frame having a polygonal upper end and an enlarged section below the polygonal portion, tapering from the center in direction of the ends and a pivot-point above said spindle, and a roller engaged by the upper portion of the spindle and the aforesaid pivot-point, as and for the purpose specified.

8. In a graphoscope, or an instrument of like character, a frame, a spindle held to turn in the frame, having a polygonal upper end and an enlarged section below the polygonal portion, tapering from the center in direction of the ends, and a pivot-point above the said spindle, and a roller having a depression at its upper end adapted to receive the said pivot-point, the lower end of the roller being provided with an opening polygonal at its upper portion and conical at its lower portion, as and for the purpose specified.

LAURANCE H. COHEN.

Witnesses:
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JNO. M. RITTER.