

(No Model.)

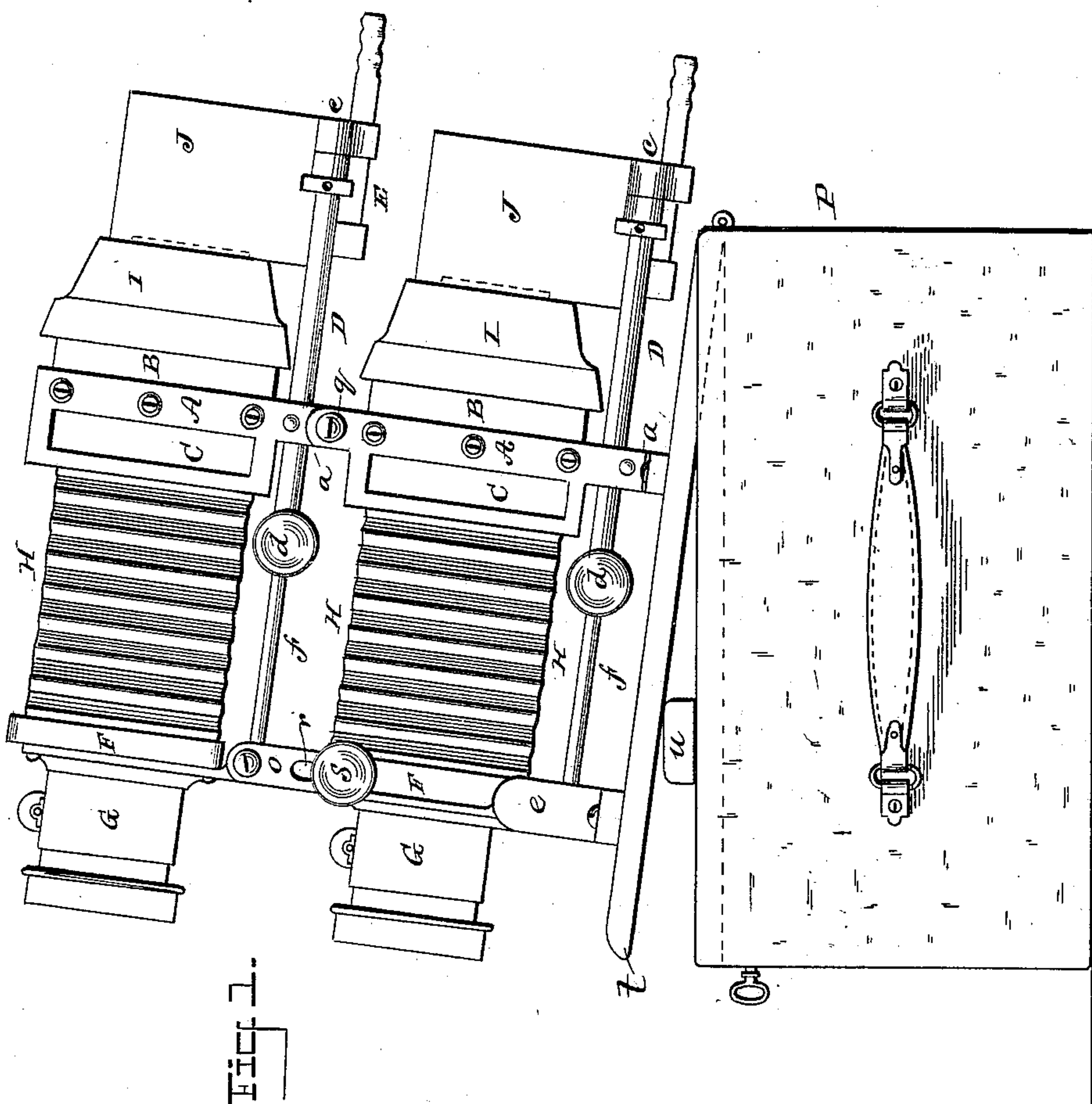
6 Sheets—Sheet 1.

W. H. RIDDING.

MAGIC LANTERN.

No. 373,607.

Patented Nov. 22, 1887.



WITNESSES:

D. D. Mott
C. Sedgwick

INVENTOR:

W. H. Ridding
BY *Munn & Co.*
ATTORNEYS.

(No Model.)

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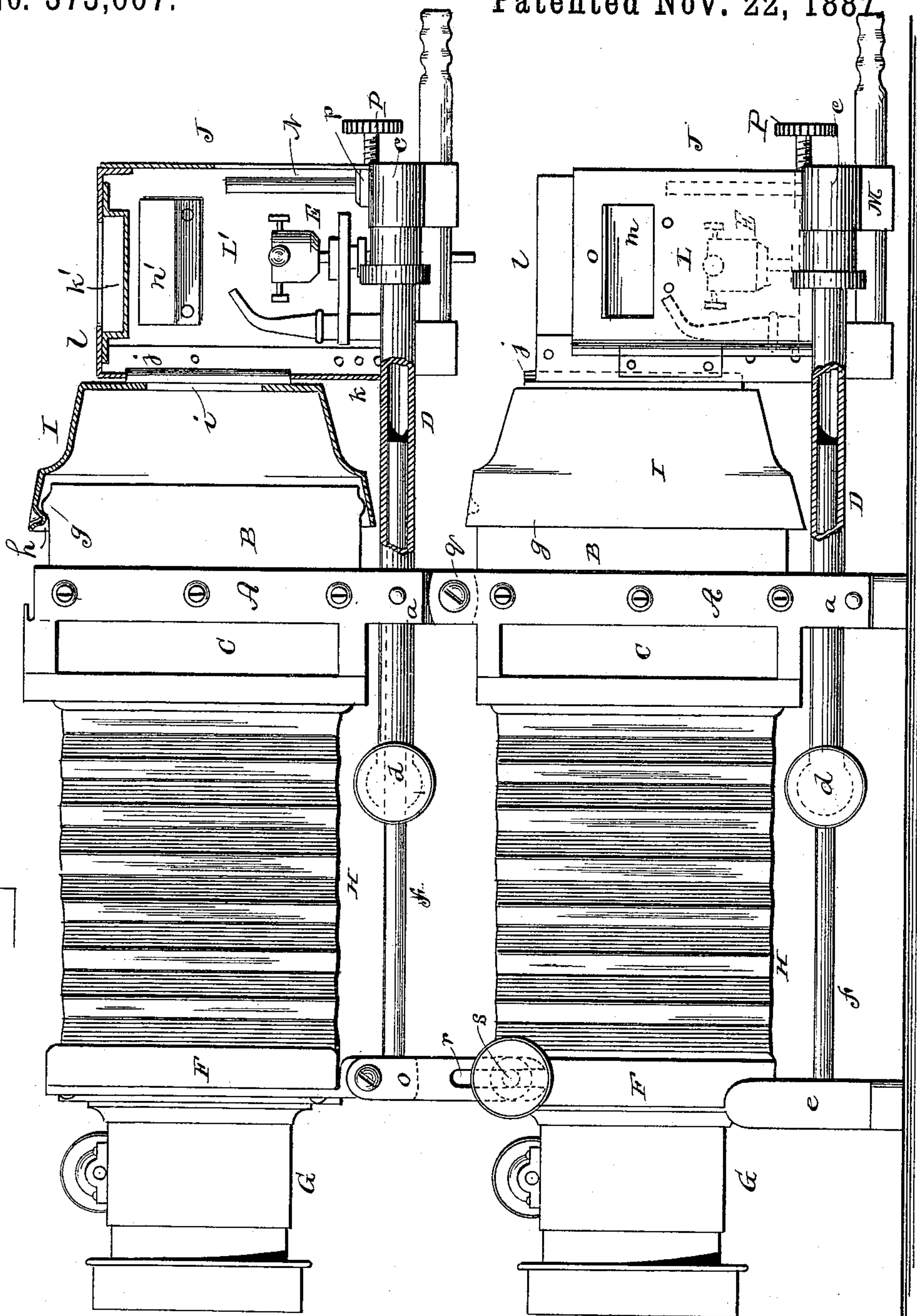
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Fig. 2.



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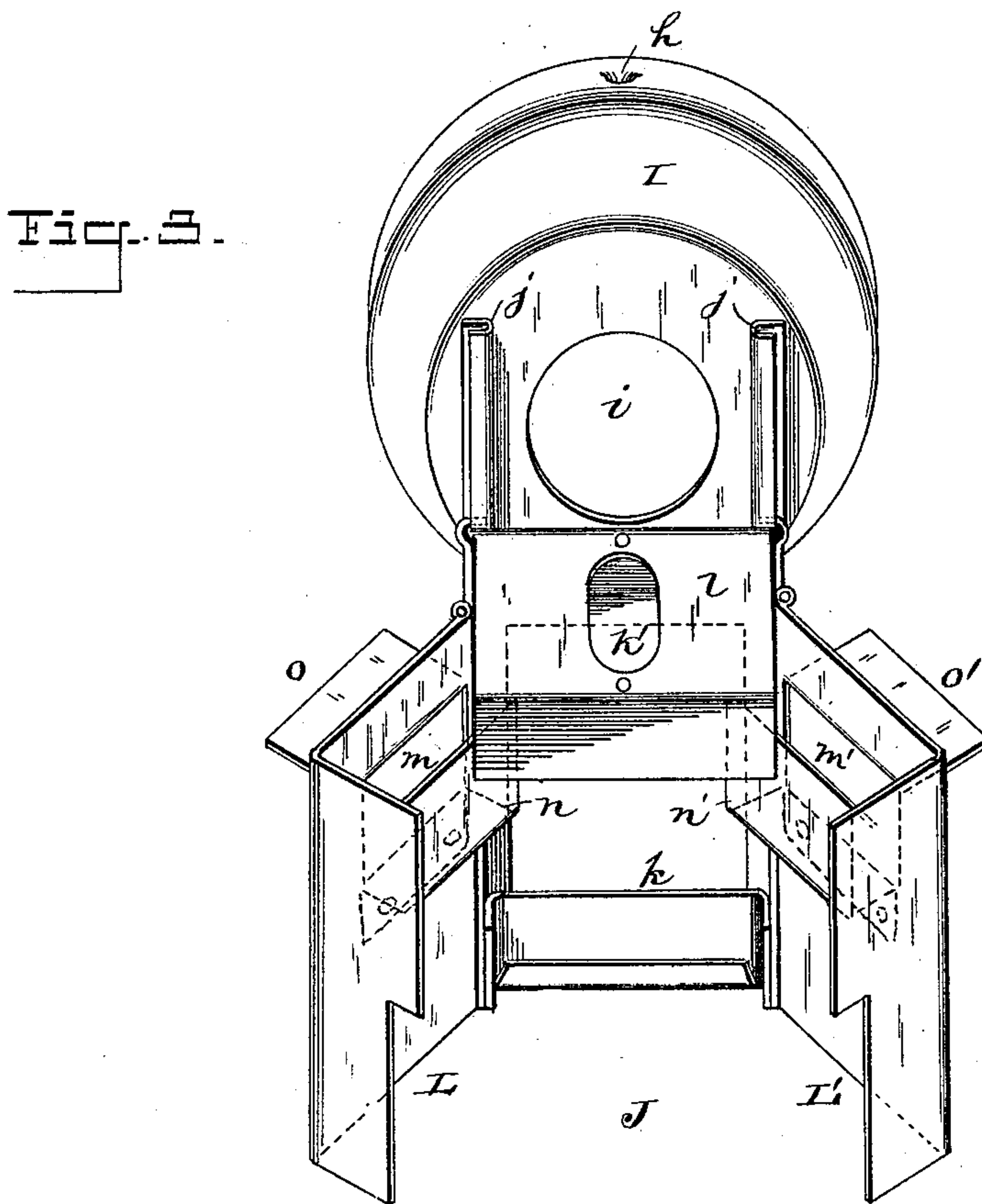
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D. D. Morr
C. Bedgwick

INVENTOR:

W. H. Ridding

BY

Munn & Co

ATTORNEYS.

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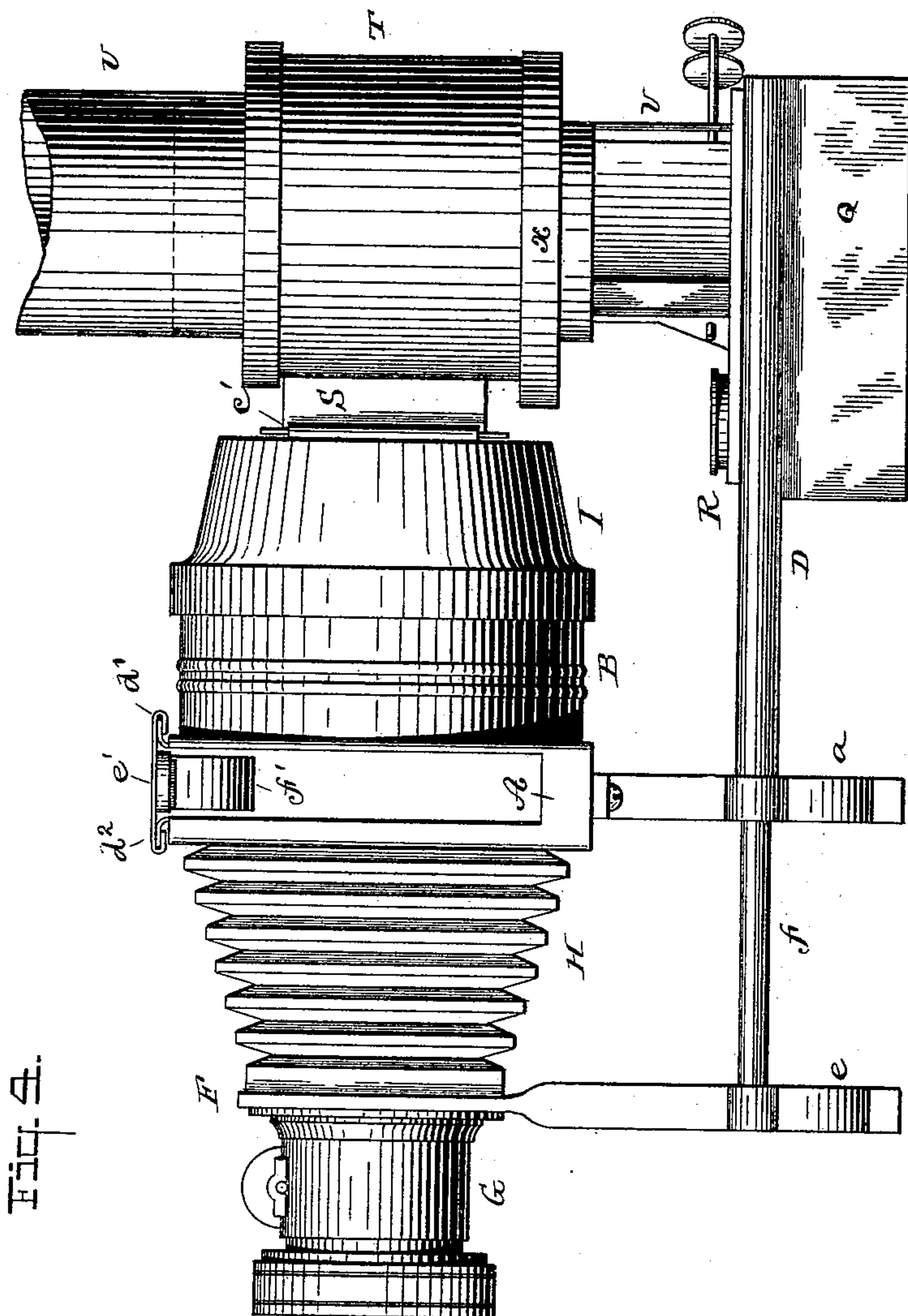
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WITNESSES:

D. C. Reusch.

D. W. Mott

INVENTOR:

W. H. Ridding

BY

Munn & Co.

ATTORNEYS.

(No Model.)

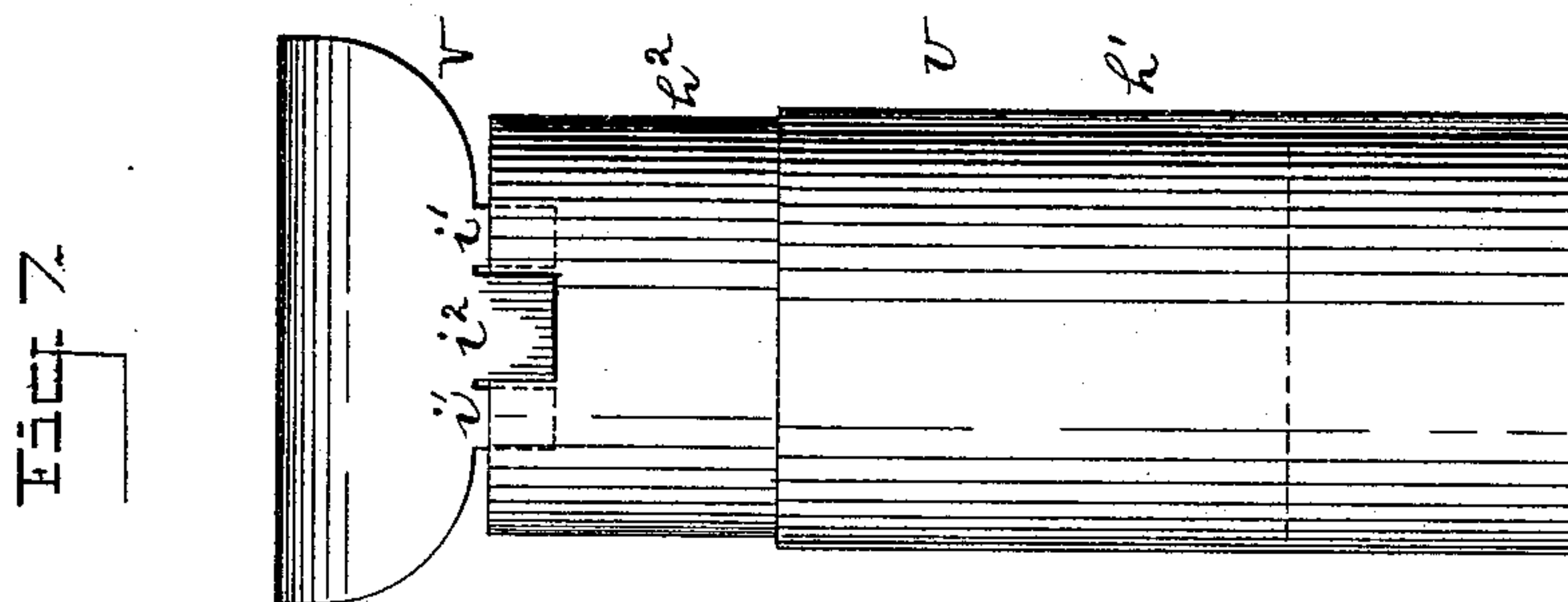
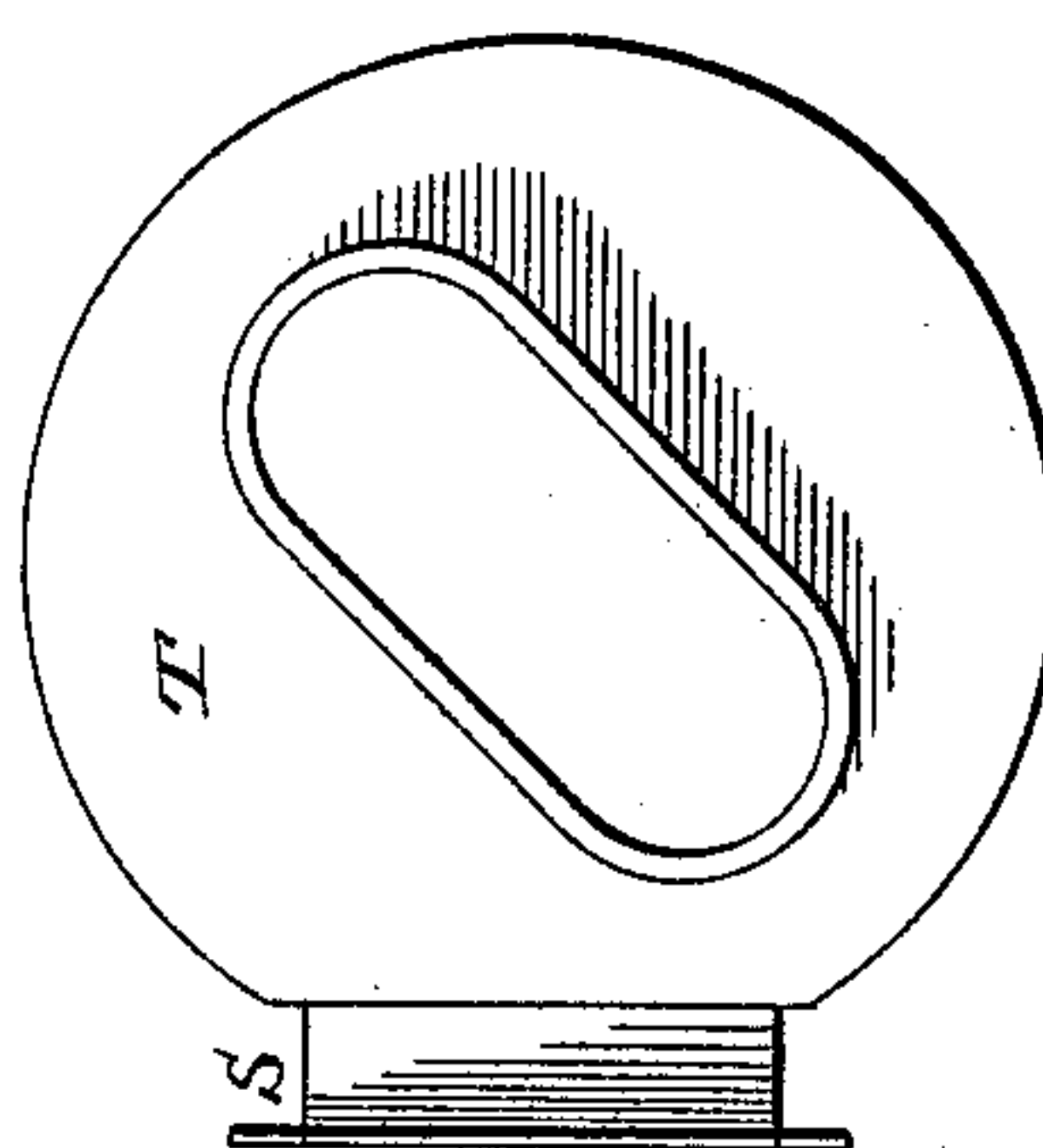
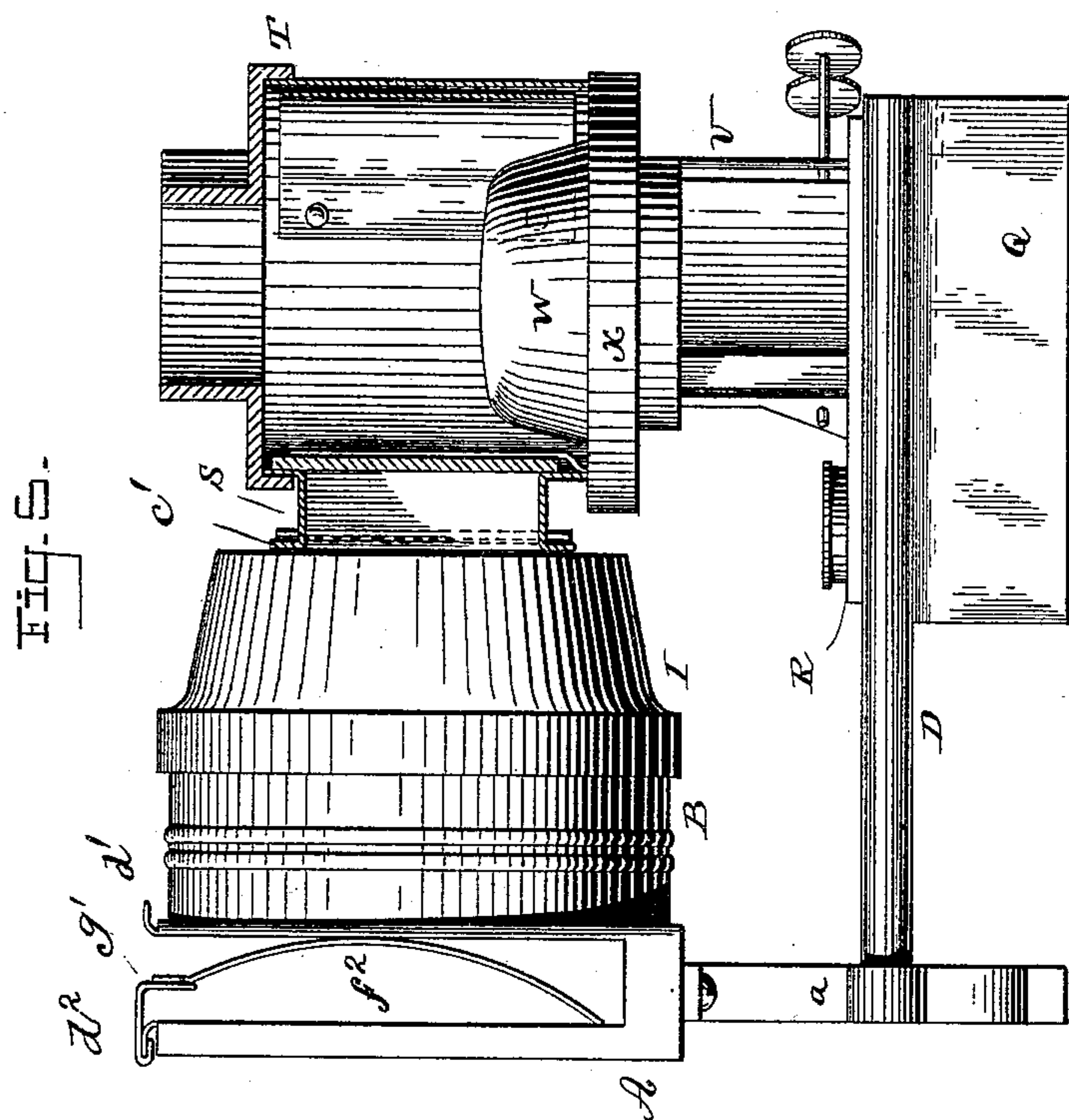
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WITNESSES:

J. C. Reusch.

D. D. Mott

INVENTOR:

W. H. Riddings
Munn Co

BY

ATTORNEYS.

(No Model.)

6 Sheets—Sheet 6.

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Fig. 1.

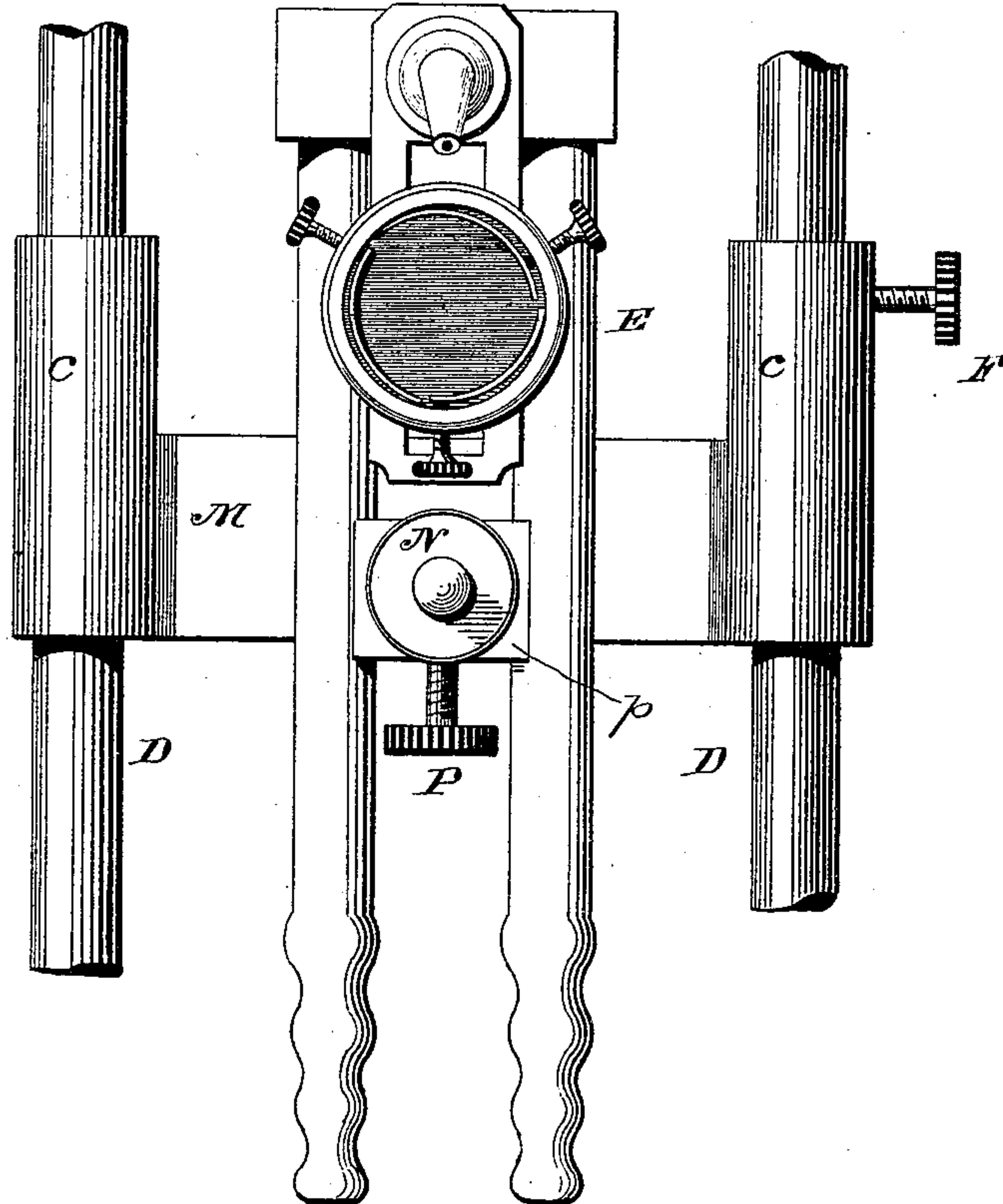
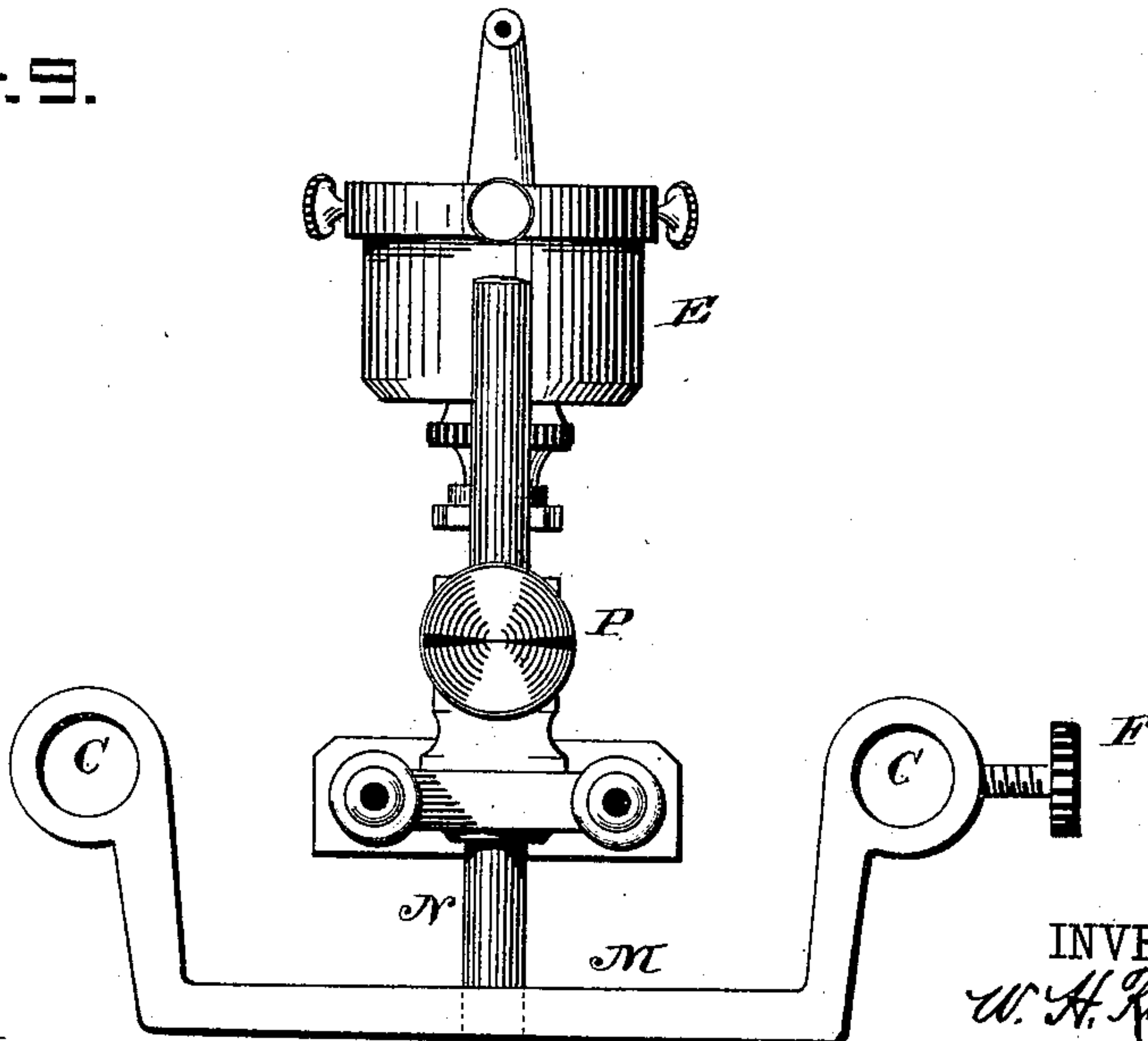


Fig. 2.



WITNESSES:

O. D. Mott
G. Sedgwick

INVENTOR:

W. H. Ridding
BY *Munn & Co.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM H. RIDDING, OF BROOKLYN, ASSIGNOR TO THOMAS H. McALLISTER, OF NEW YORK, N. Y.

MAGIC LANTERN.

SPECIFICATION forming part of Letters Patent No. 373,607, dated November 22, 1887.

Application filed June 4, 1887. Serial No. 240,261. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RIDDING, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Magic Lantern, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation of my improved lantern, together with its adjustable support. Fig. 2 is a side elevation, partly in section. Fig. 3 is a detail perspective view of the condenser-cap and the burner-case. Fig. 4 is a side elevation of my improvement as applied to oil-lanterns. Fig. 5 is a partial side elevation showing the lamp-chimney and its connections in vertical section. Fig. 6 is a plan view of the base of the lamp-chimney. Fig. 7 shows a telescopic chimney with a removable cowl. Fig. 8 is a plan view of the burner and its support, and Fig. 9 is a rear elevation of the same.

Similar letters of reference indicate corresponding parts in all the figures.

The object of my invention is to improve the construction of the magic lantern, so as to render it capable of being packed in a very small space; also, to provide a construction which will admit of reducing the size of the light-chamber, and, further, to provide means for adjusting the lanterns where they are used in pairs, so as to cause their images to register on the screen.

My invention consists in an extensible frame provided with a condenser-holder and slide-holder, and having an objective holder connected with the slide-holder by a bellows, to permit of contracting the frame of the lantern into a small space.

It also consists in the combination, with the condenser-holder, of a centrally-apertured cap adapted to fit over the condenser-holder and to receive the casing inclosing the source of light.

It also further consists in an interchangeable slide-holder to adapt the lantern for producing photographic enlargements and to the use of lantern-slides.

My improved lantern is adapted for use in connection with any suitable source of light.

In the present case I have shown it as applied to the oxyhydrogen light and the oil-lamp.

I will first describe my improvement as applied to a double lantern or stereopticon, and afterward to a single lantern.

The rear frame, A, of the lower lantern is provided with legs *a* and has a circular aperture for receiving the condenser-holder B. It is also provided with a transverse opening, C, for receiving ordinary slide-carriers or slides provided with thick mountings. In the legs *a* are secured tubes D, which extend rearwardly for receiving the sleeves *c* of the oxyhydrogen-burner E, and extend forward a short distance beyond the opening C, and are provided with clamping-screws *d*.

The front frame, F, of the lower lantern is provided with a threaded front plate for receiving the objective G, and is furnished with legs *e*, to which are secured rods *f*, which extend regularly into the tubes D. The rear frame, A, and front frame, F, are connected by a bellows, H, which prevents the escape of light, at the same time permitting of the free extension or contraction of the lantern.

The condenser-holder B is provided with a bead, *g*, for receiving the conical cap I, which fits over the condenser-holder and serves to prevent the escape of light between the burner and the condenser, the cap being provided with a projection, *h*, extending inwardly and adapted to engage the bead. The conical cap I is made in two diameters, and its rear end is provided with a circular aperture, *i*, to allow the light to pass from the source of light to and through the condenser. To the rear face of the cap are secured small channel-bars *j*, with their channels extending outwardly in opposite directions. To the channel-bars are fitted the inwardly-bent edges of the corner-pieces of the front frame, *k*, of the burner-casing J. The burner-casing J has a top, *l*, permanently fixed to the frame *k* and provided with a deflector, *k'*, which prevents the escape of light, but permits of the escape of heated air and the products of combustion. To the side of the frame *k* are hinged the side pieces, L L', of the casing J, the said side pieces consisting of two plates of sheet metal bent inwardly toward each other at their rear

ends and arranged to close against the edges of the top *l* and to overlap each other at the rear of the casing to prevent the escape of light into the room.

5 In the side pieces, *L L'*, near their upper ends, are formed openings *m m'*, which are screened by offset plates *n n'*, secured to the side pieces below the said openings *m m'*, and the part of the metal removed to form the
10 openings *m m'* is bent upward, forming light-screens *o o'*, which still further assist in confining the light in the casing *J*.

To the sleeves *c*, fitted to the tubes *D*, is secured a cross-bar, *M*, in which is inserted a
15 rod, *N*, which extends vertically and is designed to receive the sleeve *p* of the ordinary oxyhydrogen-burner, *E*, the said burner being adjustable up and down and laterally upon the rod in the usual way.

20 As the upper lantern of the stereopticon is in all respects like the lower one, with the exception of the pivotal connection of the legs *a* with the ears *q*, projecting from the rear frame, *A*, of the lower lantern, and of the omission of the legs *e* from the front frame, *F*, it
25 will be unnecessary to describe the upper lantern in detail.

To the front frame, *F*, of the upper lantern are pivotally secured bars *O*, provided with
30 slots *r*, the said bars extending downward from opposite sides of the frame *F* and embracing the milled screws *s*, by which the bars are clamped against the sides of the frame *F* of the lower lantern. By means of this construction
35 the upper lantern may be tilted on the pivotal connection between its legs *a* and the ears *q* of the lower lantern, and it may be clamped at any desired elevation by means of the milled screws *s*.

40 The box *P*, which is designed for the double purpose of containing the instrument when not in use and as an adjustable support for the instrument while in use, is provided with a hinged lid, *t*, between which and the upper
45 edges of the box is placed a bar, *u*, which is moved toward the hinges of the lid when it is desired to increase the elevation of the lantern and is moved in the opposite direction when it is desired to depress the lantern, the
50 lantern being secured to the top of the box by screws to prevent it from moving on its support. When it is desired to depress the lantern more than is possible when it is arranged in the position shown in Fig. 1, the
55 lantern is reversed on the lid *t*.

When my improvement is applied to a lantern employing oil as an illuminant, a lamp-holder, *Q*, consisting of a rectangular box, is
60 secured between rearwardly-projecting ends of the tubes *D*, and to this holder is fitted the lamp-reservoir *R*, provided with wick-tubes *v*, surmounted by the cone *w* and chimney-support *x*. The condenser-holder *B* is provided with a conical cap, *I*, (as in the case before described,) and the rear of the cap is furnished with channel-bars *c'* for receiving the
65 front *S* of the lamp-chimney *T*. The top of

the rear frame, *A*, is provided with lateral flanges *d' d''*, to which is fitted a plate, *e'*, having its edges bent over or returned upon themselves, forming channels for receiving the said
70 flanges, and to the plate *e'* is secured one end of a bowed spring, *f'*, for pressing upon the slide-carriers and holding them in place in the frame *A*.

When it is desired to use the lantern for
75 photographic enlargements, I provide an angled plate, *g'*, which is bent over or returned upon itself, forming a channel for receiving the flange *d''*, the said flange being provided with
80 two downwardly-projecting bowed springs, *f''*, which serve to press the photographic negative or positive against the side of the frame adjoining the condenser.

The chimney *U* (which is shown in Fig. 7)
85 is oblong in section and is formed of two sections, *h' h''*, one being adapted to slide into the other. To the outer end of the inner section is fitted a removable cowl, *V*, formed of an oval plate provided on diametrically-opposite edges
90 with three ears, *i' i' i''*, the ears *i'* being adapted to enter into the end of the chimney, while the ears *i''* reach a short distance over the outside of the chimney. The elasticity of the ears causes them to clamp the walls of the chimney
95 with sufficient pressure to hold the cowl in the position of use.

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

1. In a magic lantern, the combination of two similar lantern-frames connected together pivotally one above the other and a clamp arranged to hold the upper lantern-frame at any angle of inclination, substantially as specified.
105

2. In a magic lantern, a lantern-frame formed of a rear part arranged to hold the condenser in the position of use and to hold and guide the lantern-slide, and a front part
110 arranged to hold the lantern objective, an adjustable telescopic connection between the front and rear frame, and a bellows attached to the front and rear frames and forming an adjustable light-tight chamber, substantially
115 as specified.

3. In a magic lantern, the combination, with the cylindrical condenser-casing, of a conical centrally-apertured cap adapted to fit over the condenser-casing, and a casing adapted to contain the source of light and adjustably connected with the said conical cap, substantially
120 as specified.

4. A casing for containing the source of light of a magic lantern, the same consisting
125 of the frame *k*, provided with the apertured top *l* and the apertured angled side plates, *L L'*, hinged to the frame *k* and provided with the screens *n n' o o'*, substantially as specified.

5. In a magic lantern, the combination of
130 two rear lantern-frames, *A*, provided with the tubes *D* and connected together pivotally by the screws *q*, two front frames, *F*, provided with a rod entering the tubes *D*, the slotted

bars O, pivoted to the upper frames F, and the clamping-screws s, entering the lower frames F and adapted to clamp the slotted bars O, substantially as specified.

5 6. The combination, with the condenser-case B, provided with the bead *g*, of the conical centrally-apertured cap I, provided with the projection *h*, adapted to engage the said bead *g*, the said cap I being interposed be-
10 tween the burner and condenser to prevent the escape of light, substantially as specified.

7. The combination, with the cylindrical

condenser-case B, provided with the bead *g*, extending around its periphery, of the conical centrally-apertured light-confining cap I, pro- 15
vided with an internal projection, *h*, for engaging the said bead *g* and retaining the cap on the condenser-case, substantially as specified.

WILLIAM H. RIDDING.

Witnesses:

EDWD. M. CLARK,
EDGAR TATE.