No. 733,796. PATENTED JULY 14, 1903.

E. BARTHÉLEMY.

EXHIBITING APPARATUS.

APPLICATION FILED MAR. 31, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

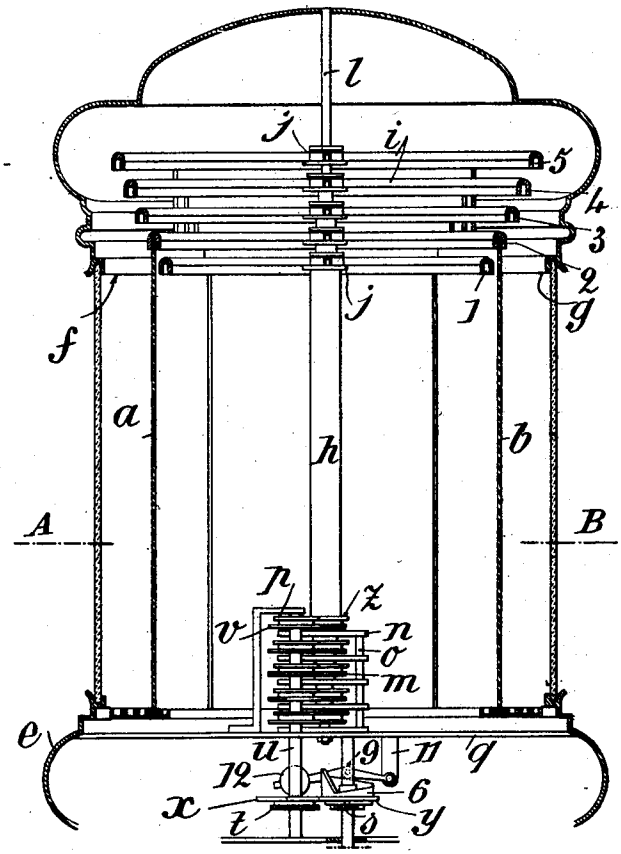
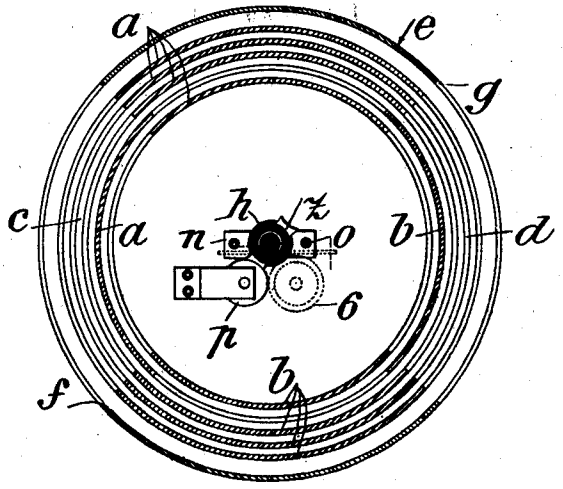


FIG. 2.



WITNESSES :

W. M. Avery

E. E. Ellis

INVENTOR

Eugène Barthélemy

BY

Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 2 SHEETS—SHEET 2.

FIG. 3.

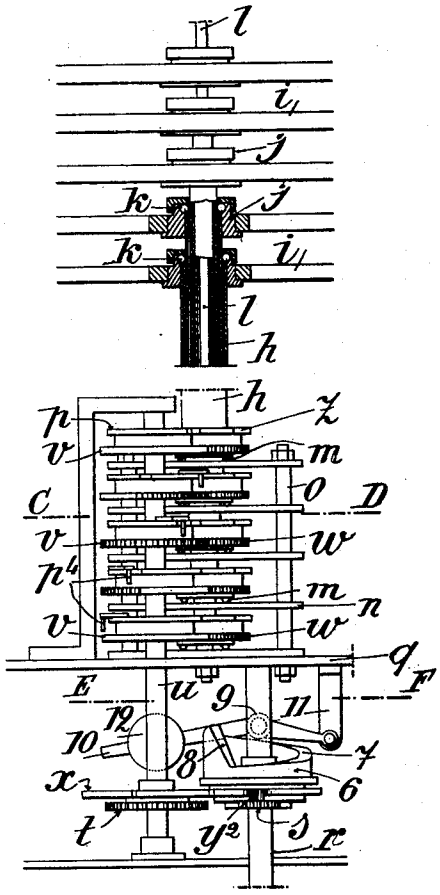


FIG. 4.

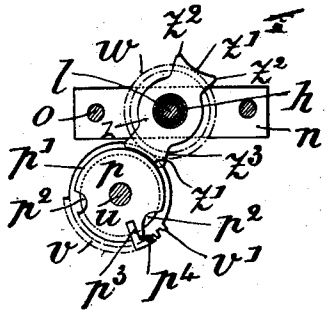
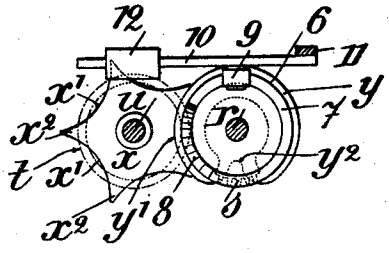


FIG. 5.



WITNESSES:

W. M. Avery

E. E. Ellis

INVENTOR

Eugène Barthélemy

BY Munn & Co

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 733,796. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

EUGÈNE BARTHÉLEMY, OF PARIS, FRANCE.

EXHIBITING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 733,796, dated July 14, 1903.

Application filed March 31, 1903. Serial No. 150,401. (No model.)

To all whom it may concern:

Be it known that I, EUGÈNE BARTHÉLEMY, engineer, a citizen of the Republic of France, residing at 34 Rue Caitbout, Paris, France, have invented certain new and useful Improvements in Exhibiting Apparatus, of which the following is a specification.

This invention relates to an exhibiting apparatus with revolving screens for publicity and other purposes and in which several vertical drums located one within another carry transparent screens at suitable points of their periphery with empty spaces between them, which drums can be revolved independently one of another in such a manner that the several screens come and present themselves successively and one by one in a determined direction.

This invention relates particularly to a mechanism for producing the successive movement of the several screens in a perfectly safe manner, thus preventing the order of their succession and the full accomplishment of their movements until they come, respectively, into their positions of rest from being interfered with save in case of stoppage of the main motor.

This invention consists in the combination and arrangement of parts, as hereinafter described in reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the lantern of the light. Fig. 2 is a sectional plan on the line A B of Fig. 1. Fig. 3 is a partial vertical section on a greater scale. Figs. 4 and 5 are sectional plans on the lines C D and E F, respectively, of Fig. 3.

The apparatus shown in the drawings comprises five distinct concentric drums 1 2 3 4 5, each of which is provided with two screens *a* and *b*, located diametrically opposite each other, each screen being developed to the extent of a quarter of a circle and the two screens being separated from each other by empty spaces *c* and *d*. The said drums are located within a lantern *e*, having two opposite windows *f* and *g*, and are intended to be operated in such an intermittent manner that the ten screens *a* and *b* come and present themselves behind the windows *f* and *g* and remain there for a certain time, since each screen thus disclosed is afterward moved to the extent of a quarter of a revolution at the same time as the next screen, so that there is no interruption in the succession of the screens. Each drum is supported by a vertical shaft *h*, to which it is connected by arms or spiders *i* and a hub *j* at the upper part. The shafts *h* are formed by hollow tubes concentrically guided one within another by ball-crowns *k*, and the central tube is itself guided on a shaft *l*, fixed to the main frame. Each of the said hollow shafts is supported from below by the medium of a ball-crown *m* on a cross-piece *n*. The five cross-pieces *n* are carried by uprights *o*, fixed to the frame *q* of the lantern. Motion is transmitted to the shafts *h* of the drums from a main driving-shaft *r*, which is actuated in a continuous manner from a hydraulic, electric, or other motor. For that purpose a toothed segment *s* is fixed to the shaft *r* and meshes at each revolution with a wheel *t*, having teeth on the whole of its periphery and fixed to an idle shaft *u*. The proportions of the segment *s* and of the wheel *t* are so determined that each wheel is turned forward one-fifth of a revolution for each revolution of the shaft *r*.

On the shaft *u* are fixed five segments *v*, each having teeth on two-fifths of the circumference and each being in advance on the other for one-fifth of the circumference only. The said toothed segments mesh at each revolution, respectively, with five wheels *w*, having teeth on the whole of their periphery and fixed, respectively, to five shafts *h*. It will be understood that there are always two segments only in mesh with the wheels *w*. The proportions of the segments *v* and of the wheels *w* are such that at each revolution of a segment *v* the corresponding wheel *w* is turned one-half a revolution. Each segment on the shaft *u* being actuated by fifths of revolutions, it follows that during three successive movements the segment does not actuate the corresponding wheel, whereas during the two other movements the segment causes the wheel to turn two quarters of a revolution successively.

Assuming that at a certain time the drums are directed as shown in Fig. 2, four of the same present the empty spaces *c* and *d* be-

hind the windows *f* and *g*, and one drum only—No. 2, for instance—presents screens *a* and *b* behind the windows. The drums 1 to 5 remain motionless in that position so long as the empty part of the driving-segment *s* is passing before the wheel *t*. When the segment *s* moves the wheel *t* one-fifth of a revolution, all the segments *v* on the shaft *u* turn one-fifth of a revolution, and among the said segments the two which mesh at the time with wheels *t* cause the latter to turn one-quarter of a revolution in thus moving forward the two corresponding drums 2 and 3 one-quarter of a revolution, so that the screens of drum 2 disappear and those of drum 3 appear at the windows. When the driving-shaft will have accomplished another revolution, the shaft *u* will again be actuated one-fifth of a revolution and two segments *v* will cause the wheels of drums 3 and 4 to turn one-fourth of a revolution, and so on, so that there is never more than one screen disclosed behind each window *f* or *g* and that there is never any interruption in the succession of the screens.

To insure the operation of the above-described parts in an absolutely kinematical manner, the segments *s* and *v* and the wheels *t* and *w* are provided with devices having cams, which completely stop the wheels *v* and *t* and the connected parts during the whole of the periods when the said wheels are not actuated by the teeth of the segments. For that purpose the wheel *t* is provided with a cam *x*, having at its periphery five concave recesses *x'*, adapted to receive the circular part *y'* of a cam *y*, fixed to the segment *s*, and five points or teeth x^2, intended to engage in a notch y^2 of the cam *y*. When the segment *s* begins to act on the toothed wheel *t*, the notch y^2 engages at the same time one of the points x^2, and thus allows the wheel *t* to turn one-fifth of a revolution, so that at the time the segment ceases to act on the wheel the circular part *y'* is engaged in a corresponding recess *x'* and prevents the wheel *t*, as well as all the connected parts, from being moved until it is again actuated by the segment *s*. On the other hand, each wheel *w* carries a cam *z*, having two concave recesses *z'* in its periphery, adapted to receive the circular part *p'* of a cam *p*, fixed to the corresponding segment *v*, and four points z^2, intended to engage in notches p^2 of the cam *z*. When the segment *v* begins to act on the wheel *w*, a notch p^2 engages at the same time one of the points z^2 and allows the cam *z* to turn with the wheel *w* one-quarter of a revolution at first. At the end of this quarter of a revolution the wheel *w* is again in mesh with the segment *v* and is thus rendered motionless. When the segment *v* turns another fifth of a revolution, the cam *z* is able to turn with the wheel *w* another quarter of a revolution, and during this movement one of the points z^2 engages a corresponding notch p^2 until the recess *z'* of the cam *z* comes onto the circular part *p'* of the cam *p*, thus rendering motionless the cam *z*, together with the wheel *w* and the corresponding drum, until it is again actuated by the segment *v*.

In order to prevent wear of the first impinging tooth *v'* of the segment *v* or of the wheel *w* on account of the impingement at the start, one can fix to the cam *p* an arm p^3, provided with a pin p^4, adapted to meet the edge z^3 of the cam *z*. The impingement at the start is thus absorbed by the pin p^4 and the edge z^3 immediately before the wheel *w* is moved forward by the tooth *v'* of the segment.

It is generally advantageous to render the duration of the periods of stoppage of the drum's stoppage which corresponds to the passage of the empty part of the segment *s* before the wheel *t* as long as possible relatively to the duration of the periods of movement corresponding to the meshing of the segment *s* with the wheel *t*. The result is that the resisting work is accumulated at spaced intervals and that the main motor must be fairly powerful to accomplish this work during a short lapse of time. However, a much less powerful motor may be used by having recourse to a spring or weighted accumulator of energy, which absorbs the work of the motor during the greater part of the time and restores it at the time the motor acts on the mechanism which operates the screens. For instance, there may be fixed on the cam *x* a cylindrical ring 6, the upper edge of which is cut on a slightly-inclined plane 7 and on a strongly-inclined plane 8, and on the said ring rests a roller 9, mounted on a lever 10, fulcrumed on a fixed support 11 and carrying a balance-weight 12. So long as the segment *s* turns empty the inclined plane 7 moves forward on the roller and raises the balance-weight, and at the time the segment *s* is going to act on the wheel *t* the inclined plane 8 presents itself under the roller 9, and the balance-weight then acts to cause the cam to turn in thus helping the action of the motor.

The number of drums and screens may be varied, as well as the relative position of the screens and windows, without changing the general arrangement of the above-described mechanism.

I claim—

1. An exhibiting apparatus having several revolving screens comprising concentric hollow shafts to carry the screens, toothed wheels on the said shafts, an idle shaft, segments on the said shaft and having teeth in different directions, a toothed wheel on the said idle shaft, a driving-shaft, and a segment on the driving-shaft.

2. An exhibiting apparatus having several revolving screens comprising concentric hollow shafts to carry the screens, toothed wheels on the said shafts, an idle shaft, segments on the said shaft and having teeth in different directions, cams on the said toothed wheels having concave recesses on their peripheries, cams on the segments having circular parts adapted to engage in the said concave recesses,

a toothed wheel on the idle shaft, a driving-shaft, a segment on the driving-shaft, a cam on the last toothed wheel having concave recesses on its periphery, and a cam on the last segment having a circular part adapted to engage in the said concave recesses, all operating substantially as specified.

3. A light having several revolving screens comprising concentric hollow shafts to carry the screens, toothed wheels on the said shafts, an idle shaft, segments on the said shaft and having teeth in different directions, a toothed wheel on the said idle shaft, a driving-shaft, a segment on the driving-shaft, a ring on the said segment, having inclined planes in inverse directions, and a rocking lever having a balance-weight, acting on the said inclined planes.

4. An exhibiting apparatus, comprising a casing having windows therein, a plurality of screens rotatable within the casing and having hollow shafts, toothed wheels on the shafts, an idle shaft, segments on this shaft, having teeth disposed in different directions, cams on said wheels, having concave recesses on their peripheries, cams on the segments, having parts adapted to engage in said recesses, a toothed wheel on the idle shaft, and a driving-shaft having a segment thereon.

5. An exhibiting apparatus, comprising a circular casing having windows at opposite sides thereof, a plurality of rotatable screens concentric with said casing and with each other, concentric hollow shafts carrying the screens, and means for operating each of said screens intermittently for a part revolution only, said means including an idle shaft, segments thereon having teeth disposed in different directions, a toothed wheel also on said idle shaft, a driving-shaft, and a segment on this shaft.

6. An exhibiting apparatus, comprising a casing having windows therein, a plurality of concentric screens rotatable within the casing, and a series of devices for intermittently actuating the screens successively for a part revolution thereof, said devices comprising an idle shaft with a toothed wheel thereon, and also provided with segments having reversely-disposed teeth, and a driving-shaft having a toothed segment thereon.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

EUGÈNE BARTHÉLEMY.

Witnesses:

EDMOND BLÉTRY,

AUGUSTUS E. INGRAM.