

# ROBT. W. PAUL,

*Manufacturer of Electrical Instruments and Scientific Apparatus,*  
**NEW SOUTHGATE, LONDON, N.**

TELEGRAMS: "UNIPIVOT, LONDON."

CATALOGUE SECTION

## P1

1907

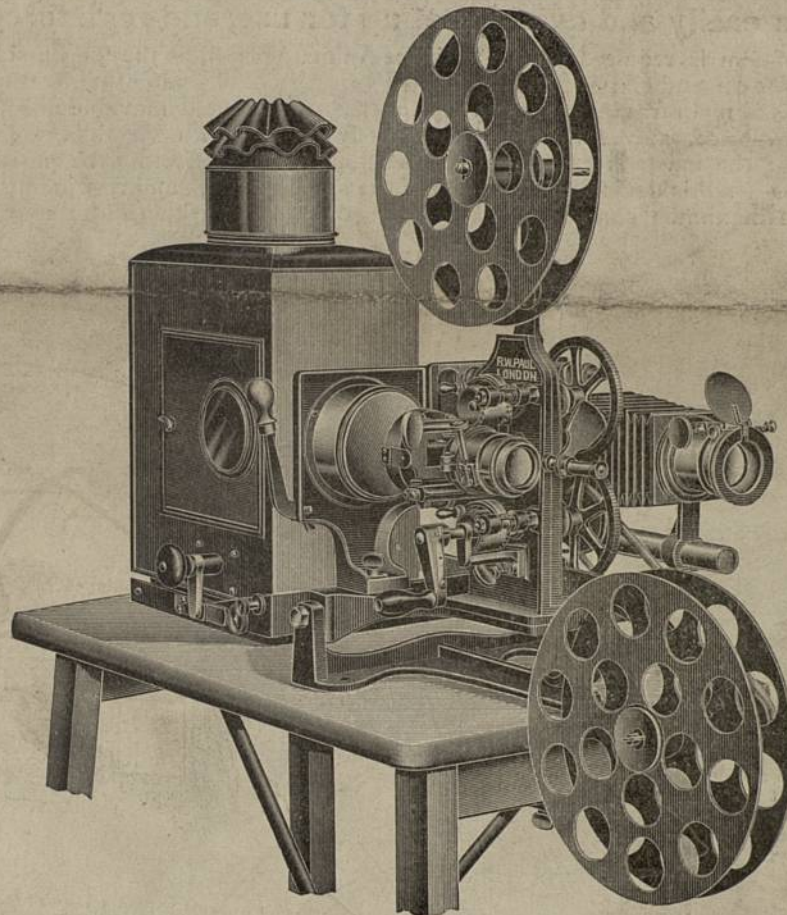
## RELIANCE ANIMATOGRAPH.

*Special Features of the New 1907 Model:—*

Increased strength of intermittently moving parts.

Positively geared film rewinder, obviating the use of spring bands or belts.

Improved spring rollers and gearing throughout.



6835—Animatograph  
and Slide Projector.

*The following well-known features of the RELIANCE ANIMATOGRAPH have been carefully preserved:*

No sudden strain or pull on the film.

Picture surface untouched through its path.

The highest known range of change from picture to picture,  
entirely eliminating all flicker.

Effective safeguard from fire by means of drop shutter.

Strong construction, and accessibility of working parts.

Correct optical system for both Animatograph and Slide Projection.

Ease and quickness of working by a single operator.

*return to.*  
*W. D. Paul*

W. D.  
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# SOME SPECIAL ADVANTAGES

OF

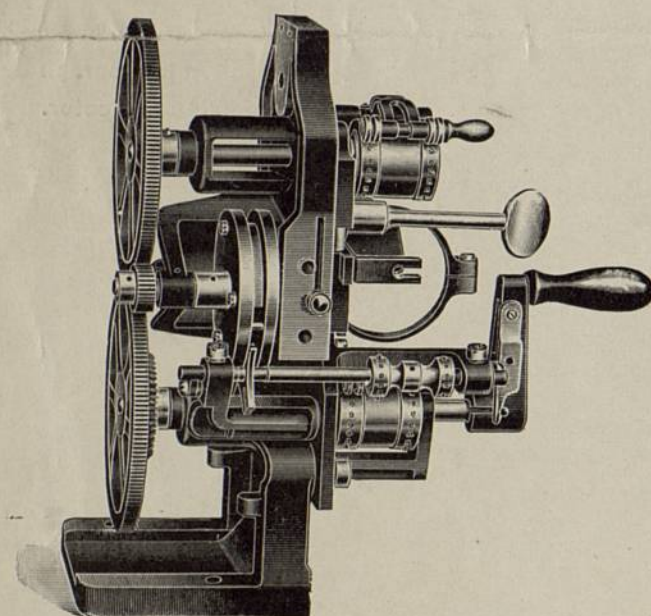
## Paul's Reliance Animatograph.

### 1. The mechanism is designed for durability.

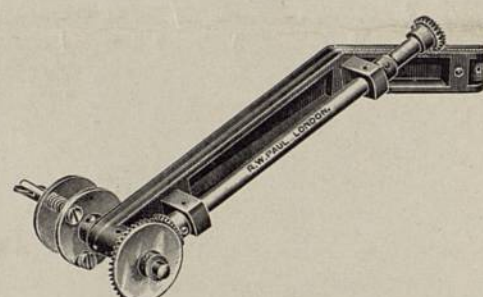
A projector has to move the film intermittently, stopping and starting again, 72,000 times per hour; this necessitates long bearings for the spindles, accurate workmanship, and the best materials. Machines of the clock-maker's style, having the parts built up and enclosed between brass plates, will not stand the severe test of long use. The **Reliance Animatograph** is designed on sound engineering lines, built on a single stiff casting, every part accessible and open to inspection, all wearing parts of tempered steel, the bearings 2 to 4 diameters in length, furnished with efficient oiling arrangements, and, being cast in the frame, not liable to get out of adjustment. Zinc-Aluminium castings, sometimes used for the sake of cheapness, are not used in the Reliance Animatograph; they are brittle, and often break in a vital part. Every machine is tested by continuous running at high speed, with film in place, before leaving the factory, and no expense is spared to ensure lasting accuracy of working. The sprockets are of hard gun-metal, and their teeth carefully shaped and polished. The intermittent movement has been re-designed and improved, and, together with its bearings, is made of steel throughout.

### 2. The machine is easily and quickly set up for use, and registered on the screen.

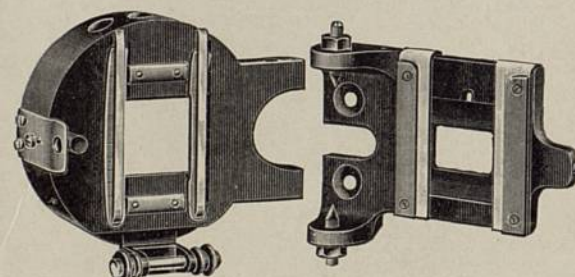
No "threading" of film is required in the Reliance Animatograph, as the "open-side" principle is adopted, so that a film may be put on and registered in twenty seconds. The patent registering device consists of two parallel guides, bolted to the main frame, and carrying the lens-holders and movable mask. A cam, actuated by a conveniently-placed thumb-piece, moves them simultaneously up or down on the guides, so that by a single movement the position of the mask is registered on the film, without affecting the position of the picture on the screen. No other machine has this device. The details of the spool-clutches and re-winding gear have been carefully thought out, to give the maximum convenience and strength, and the whole outfit may be unpacked and set up ready for use in 10 minutes.



Rear View of Animatograph Mechanism (film-gate removed), showing the intermittent motion, and illustrating also the substantial construction of the machine.



6832-Improved Geared Reminder.



Separate View of the Improved Film-gate, showing the substantial steel pads which keep the film in place, without risk of cutting or scratching the surface.

### 3. The mechanism does not strain, wear or mar the films.

Early machines, (and most of those still offered for sale) require a considerable pressure on the film to ensure a reasonably steady picture, because their mechanisms **drive the film down without locking it**, and the pressure is needed to bring the film to rest. The action of the Reliance Animatograph is entirely different; the film is **gradually** brought from rest to quick movement, which as gradually slows down, and the film is then **locked in place**; consequently the pressure on guides need only be sufficient to hold the film in focus. The guides of the Reliance Animatograph are stout polished steel pads (not thin springs which soon wear through and then cut the film); they press on the margins of the film only, and therefore neither strain nor scratch it. Every mechanism is tested by joining together the ends of a 3-foot length of film to form an endless band, which is run through many thousands of times without injury; intending purchasers should see this test made before deciding on a machine.

# PRICES OF ANIMATOGRAPHS

AND

## Complete Outfits for the Projection of Animated Pictures and Slides.

List No.		£	s.	d.
6831	"Reliance" Animatograph Mechanism, 1907 Model, with improved intermittent motion and film gate, lens bracket and masking device actuated by cam, top spool-arm with tension-plate, revolving-shutter, and handle with clutch ... ..	15	0	0
	Weight 17½ lbs. Telegraphic Code-word—Mechanism.			
6832	Improved Gear-driven Re-winder, taking spools of any size to 12-inch, with bevil-gears, and spindle with friction-drive and spool-clutch ... ..	1	10	0
6857	Lens Jacket, with rack and pinion, to carry any of the interchangeable Objectives ... ..	0	10	0
6856	Best Quality Objective, of 3-inch equivalent focus, to fit above. (Any other focus may be substituted without extra charge) ... ..	1	5	0
6841	Two Stamped Steel Spools (11-inch) with film clip, japanned black, at 3s. 6d. each ... ..	0	7	0
6833	Lantern Outfit, with tilting metal stand for the Animatograph and guides for the sliding lantern, Brass Support with socket for Animatograph Condenser, Safety Drop-Shutter, with polished wood handle, Russian Iron Lantern Body, with large sight-hole and dark glass in brass bezel on door. Complete Optical Front for Slide Projection, mounted on solid brass casting, adjustable horizontally for registering the picture on the screen, highly-finished brass slide-stage with condenser socket, sliding objective-mount with flange, bellows extending to take any lens from 6 to 16 inches focus ... ..	5	15	0
6858	One Short-Focus Condenser for the Animatograph ... ..	0	7	6
6859	One Long-Focus Condenser for Optical Front ... ..	0	7	6
6852	One Best Optical Lantern Objective with flap-shutter, 10-inch (or other) focus ... ..	0	15	0
6834	Combined Travelling-Case and Stand, fitted to take all the above apparatus, with two detachable legs, forming a convenient stand for the machine when exhibiting. The Case is of hard wood, strongly metal-bound, and fitted with large handles, and door with two locks. The legs pack into a recess under the case ... ..	2	10	0

6835—THE ABOVE COMPLETE SET FOR PROJECTING SLIDES OR FILMS (except the illuminating apparatus, see below), is supplied at the inclusive price of ... ..

Weight in case, 92 lbs. Telegraphic Code-word—Combination.

Full instructions for use are sent with each machine.

According to the means of illuminating selected, the following additional apparatus will be found necessary:—

### For the OXYHYDROGEN LIME-LIGHT.

6801	One High-Power Locke Jet ... ..	2	5	0
6792	Universal Adjustable Stand ... ..	1	0	0
6821	Twelve feet of Rubber Tubing ... ..	0	6	0
	One Tin of 1¼ inch Lime Cylinders ... ..	0	1	10

6836—Outfit for Lime-light. Total weight 8 lbs. Code-word—Limer. Price ... ..

### For the ELECTRIC ARC-LIGHT.

6781	Arc Lamp, for 10 to 30 amperes... ..	3	12	6
6732	Aluminium-Framed Resistances, 16 to 35 amperes, at 110 volts ... ..	3	0	0
6877	Twenty-four feet of Cable ... ..	0	12	0
	Two Packets of Carbons ... ..	0	3	6

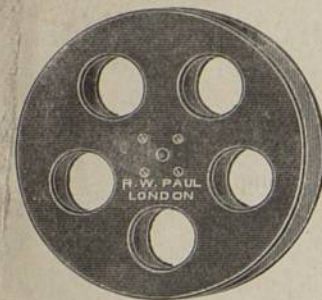
6837—Total weight 50 lbs. Code-word—Elector. Price... ..

6838—Tool Box, containing Film Mender, Cement, Brush, Oil Can, 2 Screw-drivers, Pliers, Spanner, Vaseline, Wash Leather, Spare Screws and 2 Spare Shutters ... ..

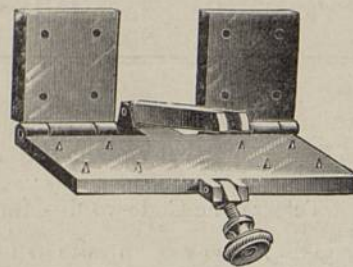
Any required addition may be made to the Set as desired, or any pieces not required will be allowed for at the list prices.



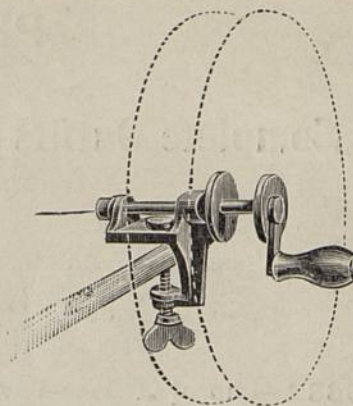
## Accessories for the Animatograph.



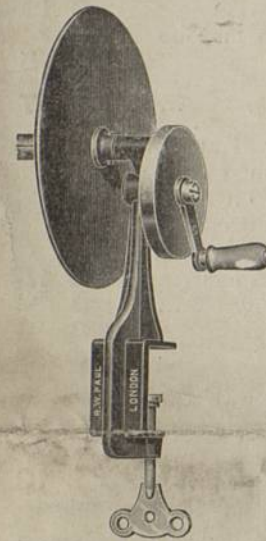
6841



6847



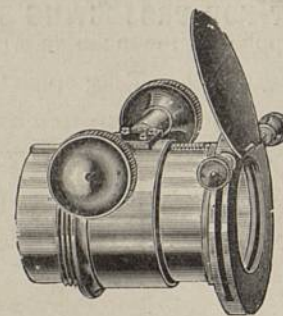
6851



6850



6855-7



6852



6858

<b>6841</b> —Japanned Steel Spool, 11-inch, to take 1,200 feet of film	£	s.	d.
<b>6841a</b> — " " 12 " " 1,500 " "	0	3	6
<b>6842</b> —Japanned Metal Case, with strap and padlock to fit either of above	0	4	0
<b>6847</b> —Film Clamp for repairing films, in gun metal, with three separate sections	0	8	6
<b>6848</b> —Film Cement	0	12	6
<b>6849</b> —Maskelyne's Improved Film Cement	0	0	9
<b>6849</b> —Maskelyne's Improved Film Cement	0	1	0
<b>6850</b> —Improved Film Winder, to clamp to table	0	9	6
<b>6851</b> —Film Spool Re-winder, with Clamp	0	6	6
<b>6852</b> —Lantern Objectives (two inches diameter), best quality, with flap shutter and slot for tinter, fitted with two milled heads to focussing pinion; any focus 6, 8, 10, 12, or 14 inches...	0	15	0
<b>6853</b> —Interchangeable Jacket, to carry any of the Lantern Objectives No. 6854, with flap shutter and double pinion	0	12	0
<b>6854</b> —Objective Lens (two inches diameter) in cylindrical mounts, to fit any of above Jackets, any focus 6, 8, 10, 12, or 14 inches	0	7	0
<i>(Lenses of larger diameter, and of cheaper or superior construction, kept in stock, or obtained to order).</i>			
<b>6855</b> —Animatograph Objective in cylindrical mounts, to fit Interchangeable Jacket, any focus, 2, 2½, 3, 4, or 5 inches	0	15	0
<b>6856</b> —Ditto, of superior construction and definition	1	5	0
<b>6857</b> —Interchangeable Jacket for either of above series (6855-6)	0	10	0
<b>6858</b> —Condenser, Plano Convex, in brass mount, short-focus pattern, for Animatograph, 4 inches diameter	0	7	6
<b>6859</b> — " " " " long-focus " " for Slide Projector, " "	0	7	6
<b>6860</b> —Spare Lens, for Condenser (6858)	0	3	0
<b>6861</b> —Ditto for Condenser (6859)	0	3	0
<b>6862</b> —Condenser, Double Convex, with Meniscus at back, in spring mount, 4 inches	0	13	6

## 4. The machine runs easily, without vibration, or undue noise.

If a machine requires an effort to turn it at the proper speed, when the film is in place, though running easily without the film, then the additional effort means that there is an excessive strain on the film. In the Reliance Animatograph the difference can hardly be detected when the film is in place, and the noise is now so much reduced as to be entirely unobjectionable; no fatigue is experienced in giving a two hour's entertainment, and the new patent intermittent movement works with absolute smoothness.

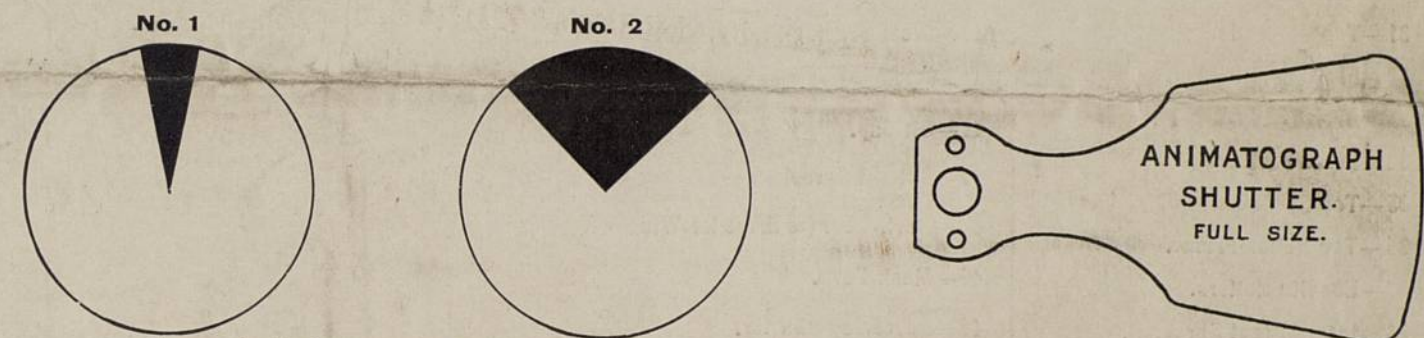
## 5. The film efficiently safeguarded from overheating.

The heat given out by an arc of say 40 to 80 ampères, as sometimes used in large theatres, is considerable; this necessitates a proper mass of metal to intercept and dissipate it, and a means of cutting off the light and heat when the film is stationary. Many automatic devices have been invented to cut off the light when the machine stops, but practical exhibitors have found that all are apt to fail occasionally, and this has sometimes caused serious results. The Animatograph is fitted with a drop-shutter, which cannot be overlooked, stick, or get out of order, and no fire has ever occurred where this is used.

The Film Gate of the Reliance Animatograph is constructed on scientific principles, and consists of a massive casting, deeply ribbed, and hinged behind, but not touching, the film; in the space between an upward draught is created, which keeps the film cool. This important part of the apparatus is patented, and is only found in the Animatograph. If the film were wilfully fired in the gate, the flame could not spread further.

## 6. Almost all of the light from the lantern is utilised on the screen.

The amount of light which must be cut off by the shutter during the movement of the film depends on the rapidity with which this movement is effected. No other machine has yet been produced commercially which cuts off less than one-sixth of the light, but, owing to the **rapid, yet gradual**, movement of the film in the Reliance Animatograph, only **one-sixteenth** part of the light is lost; compare its extremely small shutter with the shutters of other machines, and test the wonderful superiority of the result on the screen, using films of equal density. The maker will be glad to give every facility for comparative tests of this and other features of his machine.



Diagrams showing the comparative sizes of Shutter in the Animatograph (No. 1), and in the best-known other Machines (No. 2).

## 7. The arrangement of the lenses, for films and slides respectively, is optically correct.

In order to project a film and an ordinary lantern slide to give pictures of equal size on the screen, the slide requires an objective of three times the focal length of the film objective. By keeping the lantern fixed and moving only the machine and slide objective, the one condenser will not bring the rays correctly in focus of both objectives, and one or both of the discs **must** be imperfectly illuminated. In the Reliance Animatograph two condensers are used, of different foci to suit the two objectives, and the lantern is made to slide easily and smoothly from one to the other. The perfection of the results of both pictures justifies this important improvement, and no exhibitor who has once used the correct arrangement, which permits of the rigid fixing of the machine, would ever be content with the incorrect and inefficient makeshift of swivelling the machine.

The stiff metal base is fitted with a tilting arrangement, and the slide-projector (which forms a complete high-class lantern for objectives of any focus to 16 inches) may be adjusted sideways, so as to cause the slides to register exactly with the animated picture on the screen; these adjustments, not found in other machines, effect a great saving of time in fitting up, as well as producing a superior effect.

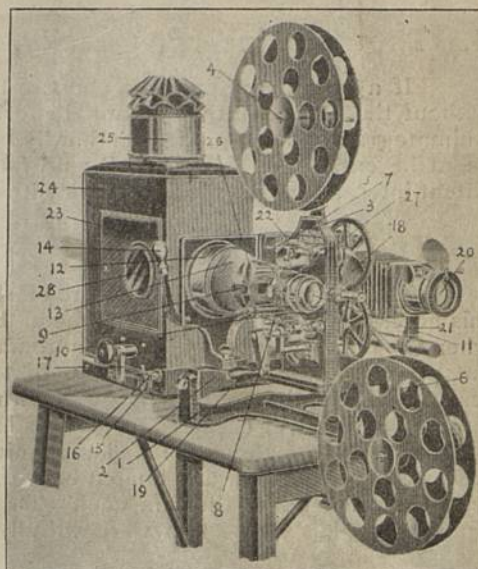
## 8. In case of accidental damage, or fair wear and tear, the parts are easily renewed.

All the parts of the Reliance Animatograph are made in quantities on the interchangeable system, and subjected to strict inspection. Spare parts may be had at any time, and may be easily fitted by an intelligent mechanic, without special tools. The machine, if properly oiled, will run for two year's hard use, when it should be looked over, and any worn parts replaced. The intermittent gear is complete in itself, and fitted to a frame ready to bolt to main casting, so that a spare set may be supplied with a machine if sent to a distant country. The parts are simple, and the working easily and quickly understood, as the whole is open to view when running.



## DETAILS OF THE ANIMATOGRAPH.

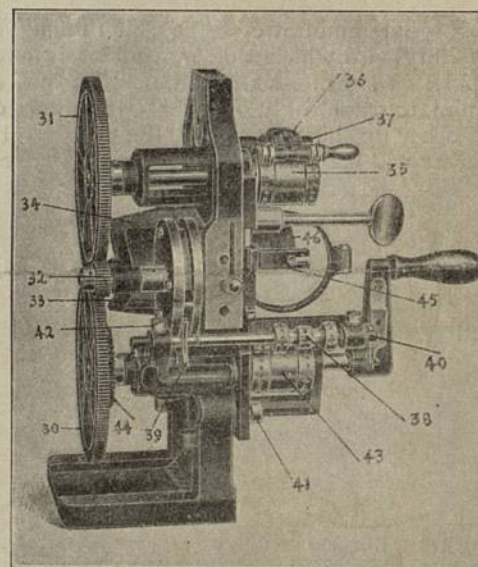
- |  |                                     |
|--|-------------------------------------|
| 1—Metal Base Plate.                      | 15—Lantern Guide (removable).       |
| 2—Tilting Table.                         | 16—Lantern Stop.                    |
| 3—Main Frame.                            | 17—Lantern Clamp.                   |
| 4—Top Spool Clutch.                      | 18—Revolving Shutter.               |
| 5—Top Spool Arm.                         | 19—Crank Handle (removable).        |
| 6—Bottom Spool Arm.                      | 20—Lantern Slide Objective.         |
| 7—Top-Feed Sprocket Roller.              | 21—Lantern Slide Objective Bracket. |
| 8—Bottom do.                             | 22—Lantern Slide Condenser Frame.   |
| 9—Gate Spring-Latch.                     | 23—Lantern Door.                    |
| 10—Intermittent Sprocket Rollers.        | 24—Lantern Body.                    |
| 11—Animatograph Objective.               | 25—Cowl.                            |
| 12—Condenser Frame.                      | 26—Masking Thumb-Piece.             |
| 13—Animatograph Condenser (short focus). | 27—Lens Jacket.                     |
| 14—Drop-Shutter Handle.                  | 28—Sight-Hole Glass.                |



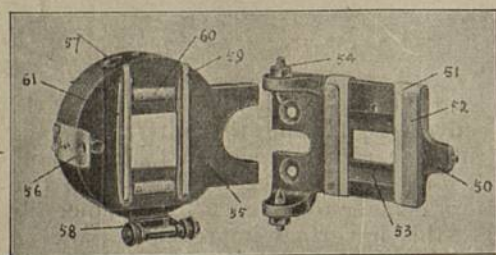
## DETAILS OF IMPROVED MECHANISM.

(Illustrated with the Film-Gate removed).

- |                           |                                     |
|---------------------------|-------------------------------------|
| 30—Bottom Gear Wheel.     | 39—Star-Wheel and Shaft.            |
| 31—Top do.                | 40—Steel Bearing-Sleeve.            |
| 32—Fly-Wheel Pinion.      | 41—Star-Wheel Cock.                 |
| 33—Driving Fly-Wheel.     | 42—Oil Cup.                         |
| 34—Fly-Wheel Cock.        | 43—Bottom Sprocket.                 |
| 35—Top Sprocket.          | 44—Bevil-Gear (to drive Re-Winder). |
| 36—Top Roller Frame.      | 45—Mask Fork.                       |
| 37—Ebonite Rollers.       | 46—Revolving Shutter.               |
| 38—Intermittent Sprocket. |                                     |



## DETAILS OF IMPROVED FILM-GATE.



- |   |                                   |
|---|-----------------------------------|
| 50—Film-Plate (detached from Main Frame). | 56—Gate Latch-Spring.             |
| 51—Steel Film-Strip.                      | 57—Ventilating Holes in Radiator. |
| 52—Side Guide.                            | 58—Spring Gate Rollers.           |
| 53—Sliding Mask.                          | 59—Steel Pressure Pads.           |
| 54—Gate Hinge-Centre.                     | 60—Fire-Preventing Blocks.        |
| 55—Gate-Casting with Radiator.            | 61—Bronze Pressure Springs.       |

## PRICES OF SPARE PARTS OF ANIMATOGRAPH MECHANISM.

If ordering these it is advisable to state the number of the machine, which will be found stamped on the frame, as various alterations and improvements have been made from time to time. When possible, where fitting is required, the complete mechanism should be returned.

List No.

List No.		£	s.	d.
6863	Shutter blade, drilled ready for fixing to boss (No. 46) ... ..	0	0	4
6864	Ditto, with boss and screws complete ... ..	0	4	6
6865	Thumb-screw, $\frac{5}{16}$ inch thread, long or short ... ..	0	0	6
6866	Handle, with spring catch, complete (No. 19) ... ..	0	4	6
6867	Intermittent Sprocket, with spindle and star-wheel, complete (Nos. 38 & 39) ...	1	5	0
6868	Ditto, including cock-piece, with steel bearing-sleeves and oil-cups (Nos. 38 to 41) ...	3	0	0

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