

A. KERSHAW & SON, Ltd.,

SCIENTIFIC INSTRUMENT MAKERS, :: :: ::

CINEMATOGRAPH & ELECTRICAL ENGINEERS.

76, Woodhouse Lane, LEEDS.

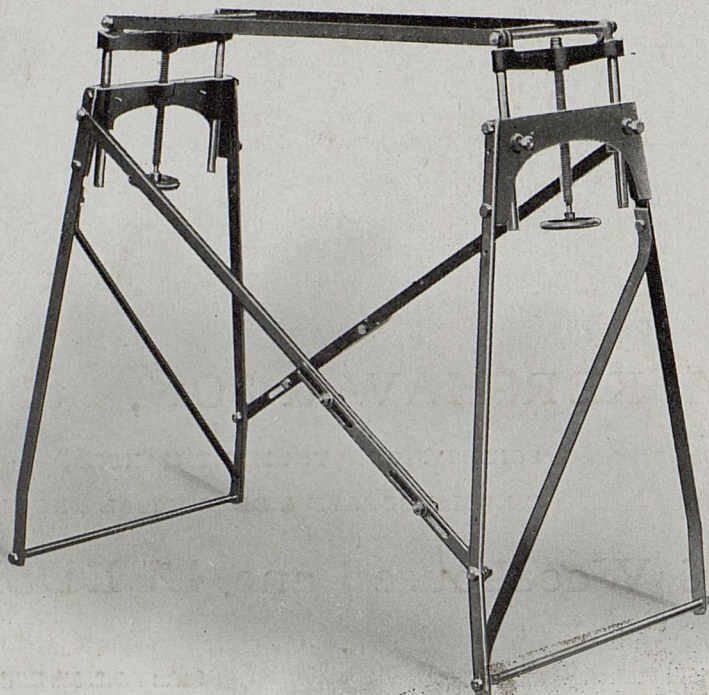
'Phone: 1233 Central.

Code: A.B.C. 5th Edition.

Telegraphic Address: "SCIENCE, LEEDS."

Regd. Trade Mark: "KALEE."

Type A. Adjustable Iron Stand.



This Stand is of substantial construction and is mainly made of wrought iron.

It can be adjusted to any angle and be firmly secured by the adjustable struts.

A Hand Wheel is provided at each end for tilting, raising, or lowering the top. This is actuated by double threaded steel screws of large diameter. Two steel Guide Rods are provided at each end, and set screws are provided to lock these securely and so prevent rocking on the screw. The whole Stand is finished black stove enamelled.

Weight complete, as illustrated, 81 lbs.

PRICE: **£2 7s. 6d.**

W.D.
8°
244
BR



Type B.R.A. and B.R.B.

The Frames of Type B.R.A. and B.R.B. are slightly different in form and less in size than the Frame of Type B.R.C., the quality and materials used are, however, the same.

TYPE.	SUPPLY VOLTS.	AMPERES.	SIZE IN INCHES.	PRICE.		
				£	s.	d.
B.R.A.	120/230	27-50	11 × 15 × 18	5	0	0
B.R.B.	120/250	15-40	do.	4	15	0
B.R.C.	120/250	25-60	12 × 19 × 25	6	6	0

Portable Resistance Frames for other voltages and currents quoted for on application. When enquiring or ordering state **voltage**, **minimum** and **maximum** current required.

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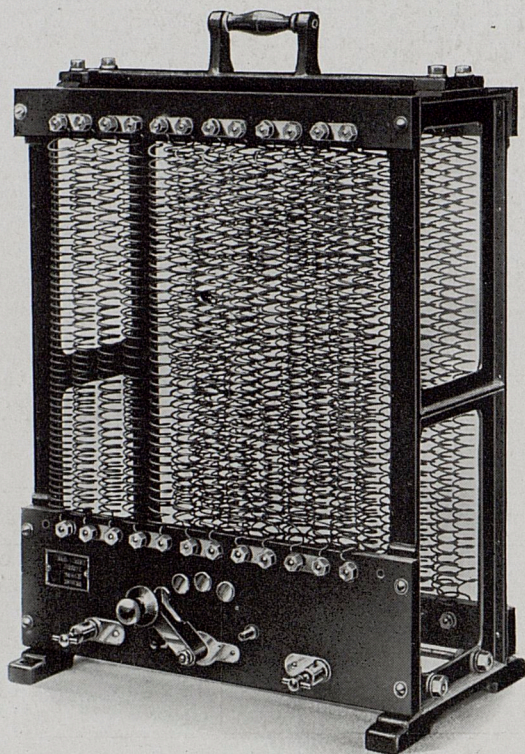
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Type B.R.

Arc Lamp Resistance Frames.

PORTABLE OR FLOOR TYPE.



Type B.R.C.

Substantially built of Cast Iron Frames, bolted together and stove enamelled.

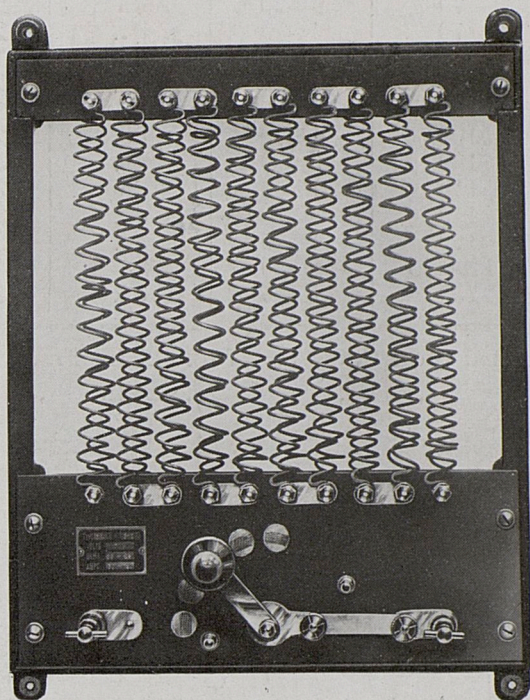
Slates specially selected, Connections, Studs, Terminals, and Switch of Gunmetal. Switch Contact is Brush form of laminated phosphor Bronze, "off" position and Fuse are also provided.

Coils are of high resistance Alloy, three Terminals are provided so that they can be used on two voltages.

These Frames are also being used (especially the Type B.R.C.) as Emergency Resistance Frames, so that should anything go wrong with Motor or Generator they can be connected up to supply mains until repairs are effected. The supply mains voltage is generally high and necessitates two of these Frames being used in series.

Type C.R.

Arc Lamp Resistance Frame (Wall Type).



These Resistance Frames are substantially built for hard work.

The Frame is of cast iron, stove enamelled, Slates are specially selected, Coils are of high resistance alloy, Terminals, Studs, and Switch-arm are of gunmetal, Brush Contact of laminated phosphor bronze, "off" position is provided, also Fuse.

Perforated Steel Covers can be supplied to meet regulations, but if not necessary we do not recommend fitting them, as they tend to prevent free ventilation.

The following are types we are constantly supplying, but we shall be pleased to quote for or supply Frames for any voltage and amperage.

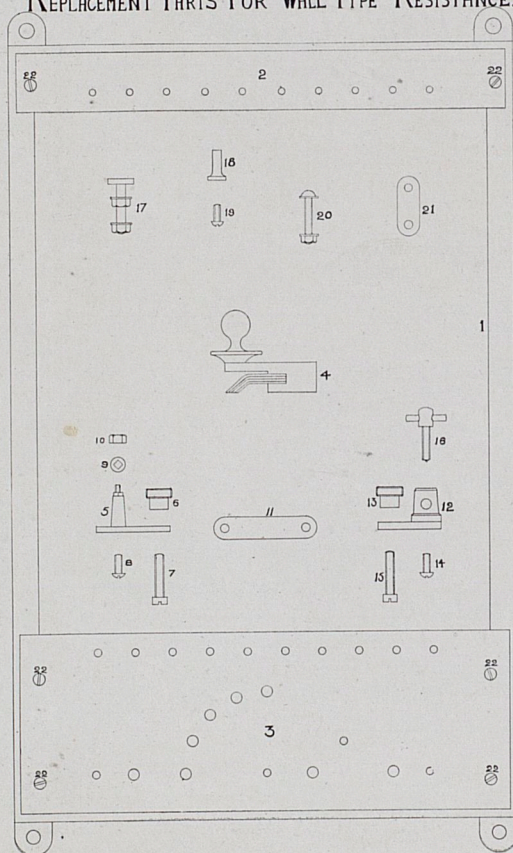
When enquiring or ordering special sizes, please state **voltage** and **minimum** and **maximum** amperage required.

TYPE.	SUPPLY VOLTS.	AMPERES.	SIZE OF FRAME. Ins.	PRICE.		
				£	s.	d.
C.R.U.	60	20-50	17 × 20	2	5	0
C.R.N.	60	20-70	do.	2	10	0
C.R.H.	65	10-40	do.	2	6	0
C.R.B.	65	15-70	do.	2	7	0
C.R.C.	65	15-100	do.	2	9	0
C.R.Z.	70	10-20	do.	2	1	0
C.R.P.	70	15-50	do.	2	2	0
C.R.M.	70	30-80	do.	2	12	0
C.R.I.	70	30-90	do.	2	19	0
C.R.R.	100	10-25	do.	2	5	0
C.R.D.	100	15-70	do.	2	16	0
C.R.L.	100	30-80	do.	3	4	0
C.R.V.	110	15-50	do.	2	13	0
C.R.S.	110	30-100	do.	3	5	0
C.R.A.	120	10-25	do.	2	8	0
C.R.G.	120/250	25-50	20 × 24	4	0	0
C.R.F.	250	10-25	do.	3	10	0

Perforated Steel Cover for 17 in. × 20 in. Frame **6/-**

„ „ „ 20 in. × 24 in. „ **8/-**

REPLACEMENT PARTS FOR WALL TYPE RESISTANCE.



REPLACEMENT PARTS FOR C.R. TYPE RESISTANCE FRAMES.

No.					s.	d.
1	Iron Frame (a) 17 in. × 20 in.	...	...	4	8	each.
1	„ „ (b) 20 in. × 24 in.	...	...	5	8	„
2	Top Slate for (a) ...	...	...	1	8	„
2	„ „ „ (b) ...	...	...	2	0	„
3	Bottom Slate for (a) ...	...	...	3	4	„
3	„ „ „ (b) ...	...	...	4	0	„
4	Switch Arm ...	...	...	5	4	„
5	„ „ Base ...	...	...	2	8	„
6	Fuse Clamp Nut ...	...	...	0	4	„
7	„ „ Screw ...	...	...	0	3	„
8	Switch Arm Base Screw ...	...	...	0	1½	„
9	Washer for Switch Arm Base ...	...	...	0	1½	„
10	Nut „ „ „ „ ...	...	...	0	1½	„
11	Connection Plate, Stud to Terminal ...	...	...	0	3	„
12	Terminal Base ...	...	...	1	8	„
13	Fuse Clamp Nut ...	...	...	0	4	„
14	Terminal Screw ...	...	...	0	1½	„
15	Fuse Clamp Screw ...	...	...	0	3	„
16	Terminal Tommy Screw ...	...	...	0	4	„
17	Stud, Nuts, and Washers ...	...	...	1	2	„
18	Stop Pin ...	...	...	0	3	„
19	„ „ Screw ..	...	...	0	1½	„
20	Coil Screw, Nut, and Washer	0	3	„
21	Coil Connection Plates	0	2	„
22	Slate Fixing Screw	0	1½	„

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Type E.R.G.
Arc Lamp Resistance Frame & Control Board

65/70 VOLTS, 20-100 AMPERES. (Parallel Winding).

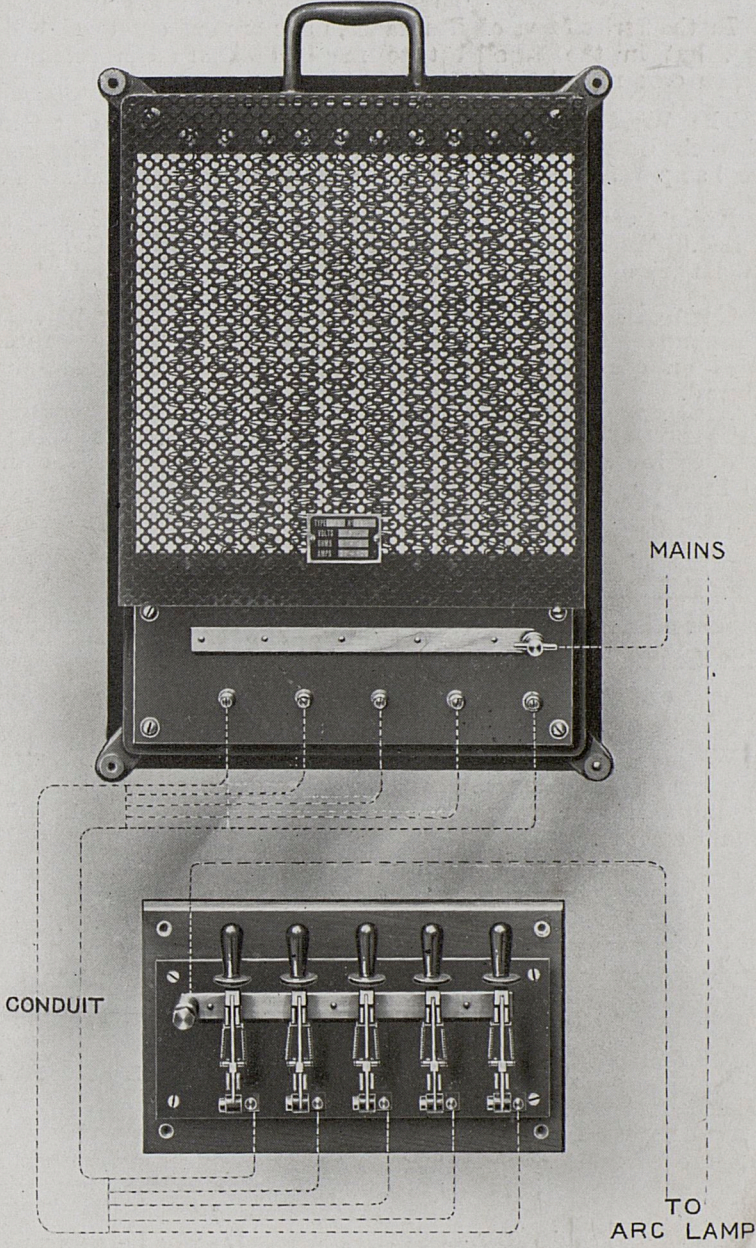


Illustration shows Type E.R.G. parallel connecting form of Resistance and Control Board. This method of connecting enables the Resistance to be placed in any position or room, the Control Board only being fixed in the Projecting Room. By leaving the Resistance Frame away from the Projecting Room it reduces risk of fire and also adds to the comfort of the operator by not helping to overheat the room.

In the Series form of Resistance, Coils are cut out to give larger current, but in the Parallel type more Coils are connected up at maximum current, all the Coils being in use. -

The Windings are in 5 Units controlled by a 5 point Control Board, each Unit carrying the minimum current, so that the current to Arc Lamp varies as to the number of Switches in circuit.

Resistance, Frame is of cast iron, 22in. x 16in., stove enamelled. Slates are specially selected, carrying Terminal Connections, etc. Coils are of special high resistance alloy, in 5 Units.

Control Board, consists of five quick break, single pole, knife Switches, made of hard drawn copper and phosphor bronze connectors. Mounted on enamelled slate base, which is fixed to a polished teak base board.

Connections can be made either with a multiple cable or five separate cables carried through steel conduit tubing, as shown by dotted lines on illustration.

Type E.R.G. 65/70 Volts, 20-100

Amperes Resistance Frame and 5

Point Control Board as illustrated,

£4 7s. 0d.

We shall be pleased to quote for Parallel Wound Frames for any Voltage or Amperage. When enquiring or ordering state **Voltage** and **maximum** current, the minimum current is one fifth of the maximum current.

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Type A.L.

80 Ampere Cinematograph Arc. Lamp.

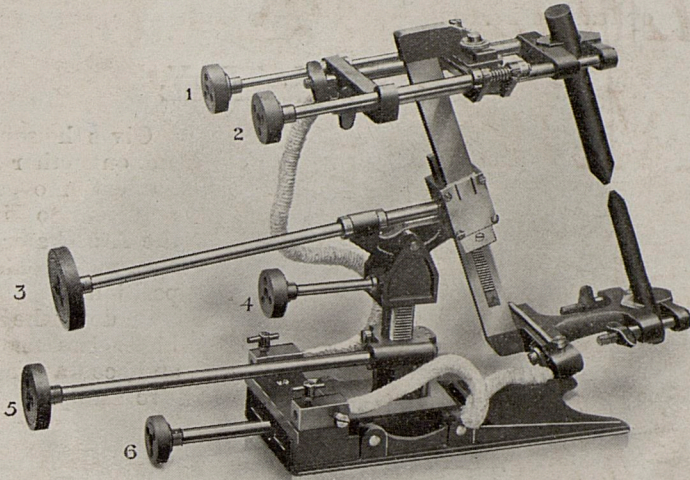


FIG. 1.

Design. The outcome of experience gained in the manufacture of large quantities of Cinematograph Arc Lamps. Massive and built to stand the hard wear and tear of a continuous show, styled as an 80 Ampere Arc Lamp but stronger than most so-called 100 Ampere Arc Lamps.

Materials used in construction are specially selected. Pinions, Worms, Racks, etc., are cut from solid Steel. Main Body, Pillar, and Quadrant are of finest Gunmetal. Base is of Cast Iron and so also are the Carbon Holders, and for the latter this material has proved itself to withstand the heat best of all materials. Terminals are heavy Brass mounted on hard vulcanized fibre. Carbon Holder Leads are flexible Copper double Asbestos covered. Knurled Handles are also made from vulcanized fibre. Castings are stove enamelled, other parts are finished bright and lacquered.

Movements (Numbers as Fig. 1).

1. Backwards and forwards movement of the top or positive Carbon to throw the Arc Crater forward.
2. Lateral movement to positive Carbon to bring the Arc Crater central.
3. Feeding of both Carbons simultaneously, movement is quick.
4. Tilting movement to give more or less angle to Carbons.

5. Vertical centering movement, without side play, which is maintained by the Guide being carried away from the Pillar, Guide is formed by a steel pin in Pillar sliding between two fixed steel pins in Main Body.
6. Lateral movement worked by rack and pinion, moves the whole Lamp to bring the Arc Crater horizontally into the optical centre.

MECHANICAL TRAY.

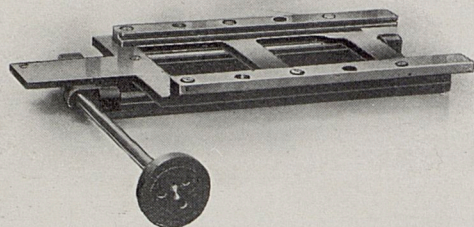


FIG. 2

TERMINAL BLOCK.

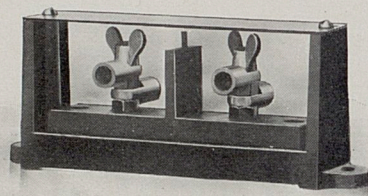


FIG. 3.

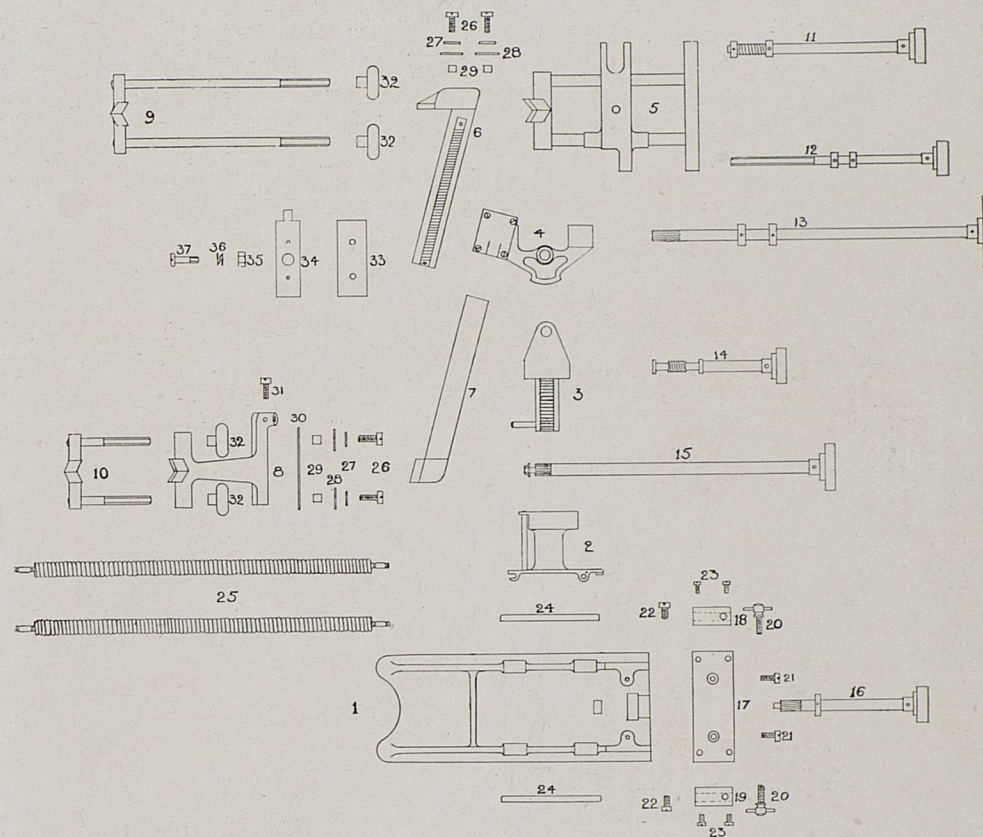
Gives the seventh and only other mechanical movement required to bring the Arc Crater into the most efficient position.

Made of the same high class material and accuracy as the Arc Lamp.

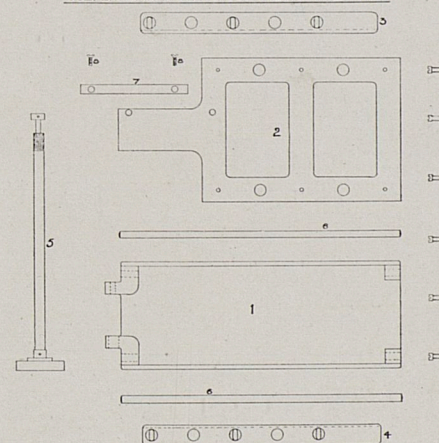
To fix to back of Projector Stand, asbestos covered flexible copper leads are sweated to one pair of thimbles, and the main leads sweated to the other pair of leads. It is often found a desirable accessory as it prevents having to attach long and heavy mains direct to the Arc Lamp terminals.

	£	s.	d.	
Type A.L. 80 Ampere Arc Lamp (Fig. 1)	6	0	0	each.
Mechanical Tray - - - - - (Fig. 2)	1	2	6	„
Terminal Block - - - - - (Fig. 3)	10	0	„	
80 Ampere Flexible Copper Leads, Asbestos covered, 3 feet long	10	0	pair.	
120 Ampere Flexible Copper Leads, Asbestos covered, 3 feet long	18	0	„	

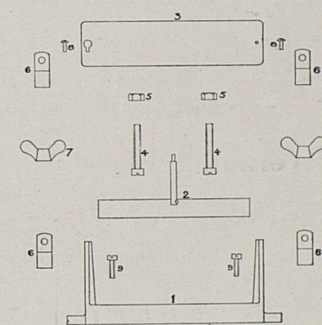
REPLACEMENT PARTS FOR ARC LAMP A.L.



REPLACEMENT PARTS FOR MECHANICAL TRAY



REPLACEMENT PARTS FOR TERMINAL BLOCK.



REPLACEMENT PARTS FOR ARC LAMP, TYPE A.L.

No.	s.	d.	No.	s.	d.
1 Base	4	6 each	20 Terminal Tommy Screw	0	3 each
2 Main Body	15	0 "	21 Fibre Fixing Screw ...	0	3 pair
3 Pillar	9	0 "	22 Terminal Lead Fixing		
4 Quadrant	11	3 "	Screw	0	3 "
5 Back Top Carbon			23 Terminal Fixing Screw	0	3 "
Holder	1	1 0 "	24 Runners for Base ...	0	6 "
6 Top Carbon Holder			25 Copper asbestos covered		
Rack	6	0 "	Leads	3	9 "
7 Bottom " " "	5	3 "	26 Screws to fix No. 5 to No.		
8 Bottom Back Carbon			6, and No. 7 to No. 8	0	3 "
Holder	3	0 "	27 Washers (Brass) ...	0	1 1/2 "
9 Front Top Carbon			28 " (Mica) ...	0	4 1/2 "
Holder	2	0 "	29 Fireproof Insulators	0	6 "
10 Front Bottom Carbon			30 Mica Sheet for Bottom		
Holder	1	6 "	Carbon Holder ...	0	6 each
11 Lateral movement Worm			31 Lead Fixing Screw ...	0	1 1/2 "
(top carbon)	3	9 "	32 Carbon Fixing Wing		
12 Backwards and forwards			Nuts	0	9 pair
movement Screw ...	3	0 "	33 Mica Sheet for Top		
13 Feeding Pinion ...	6	0 "	Carbon Holder ...	0	6 each
14 Quadrant Worm ...	5	3 "	34 Worm Segment (lateral		
15 Vertical Centering Pinion	5	3 "	movement Top Carbon)	4	6 "
16 Horizontal " " "	4	6 "	35 Nut	0	3 "
17 Terminal Block Fibre...	1	2 "	36 Spring Washer ...	0	3 "
18 Terminal Body (right			37 Stud	0	6 "
facing back of lamp)	0	10 "			
19 Terminal Body (left					
facing back of lamp)	0	10 "			



REPLACEMENT PARTS FOR MECHANICAL TRAY.

No.	s.	d.	No.	s.	d.
1 Bottom Tray Casting ...	6	0 each	6 Slide Rods... ..	0	9 pair
2 Top " " "	6	0 "	7 Cut Steel Rack ...	0	9 each
3 Left Steel Runner ...	1	6 "	8 Rack Screws	0	3 pair
4 Right " " "	1	6 "	9 Runner Screws ...	0	3 "
5 Pinion	5	3 "			

REPLACEMENT PARTS FOR TERMINAL BLOCK.

No.	s.	d.	No.	s.	d.
1 Body Casting	2	3 each	6 Connection Thimbles ...	1	6 pair
2 Fibre Block	2	3 "	7 " Wing Nuts ...	0	9 "
3 Cover Plate	0	9 "	8 Cover Plate Screws ...	0	3 "
4 Connection Screws ...	0	9 pair	9 Fibre Block Fixing		
5 " Nuts	0	3 "	Screws	0	3 "

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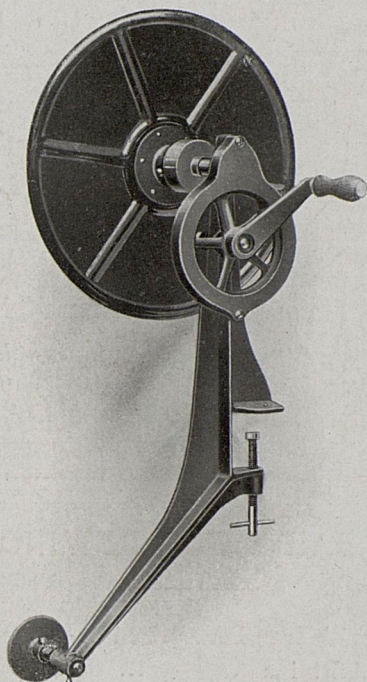
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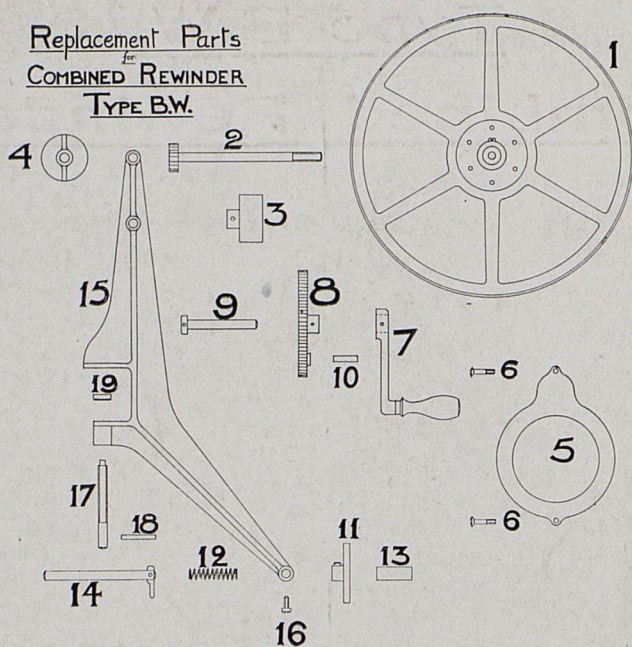
Type B.W. Combined Rewinder.



This Rewinder is constructed of the same high class materials as Type C.W., most of the parts being exactly the same. Instead of the loose and geared Head being separately fixed on to an iron base, they are combined together into one casting, and a Tommy Screw Clamp to fix it to a Bench is provided.

Type B.W. Combined Rewinder **£1 4s. 0d.**
complete as illustrated . . .

Replacement Parts
for
COMBINED REWINDER
TYPE B.W.

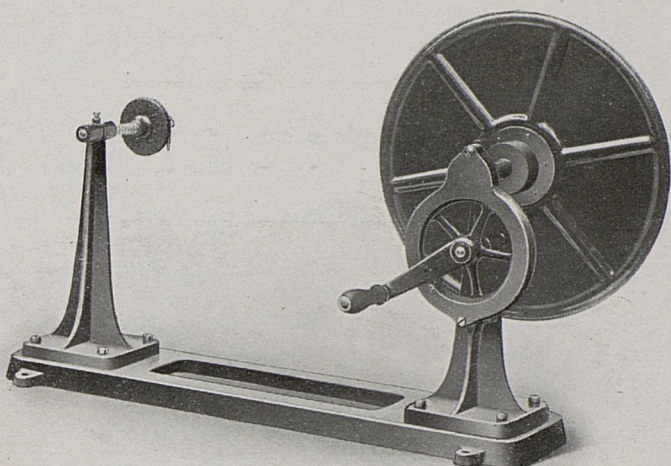


REPLACEMENT PARTS FOR REWINDER TYPE B.W.

No.		s.	d.
1	12 in. Steel Disc with Iron Boss and sliding Brass Centre	2	8 each.
2	Steel Spindle and Pinion	1	8 "
3	Cast Iron Collar	0	10 "
4	Wing Nut	0	5 "
5	Gear Guard	1	0 "
6	" " Screws	0	2 "
7	Malleable Iron Handle Casting with hardwood Handle	2	8 "
8	Main Gear Wheel	4	8 "
9	" " " Spindle	0	8 "
10	Handle Casting Rivet	0	1½ "
11	Iron Boss for loose end	0	8 "
12	Spring " " "	0	1½ "
13	Tube " " "	0	1½ "
14	Spindle & Click " "	0	11 "
15	Combined Main Casting	4	8 "
16	Fixing Screw for No. 14	0	2 "
17	Tommy Screw Body	0	4 "
18	" " Pin	0	1½ "
19	" " Washer	0	3 "

Type C.W.

Rewinder on Iron Base.



Designed to withstand the hard wear and rough usage which is required of a Rewinder.

The Material used in its construction are of the best quality, the base and standards are of cast iron accurately machined and bored.

Gears are of gunmetal machine cut and covered by a suitable guard.

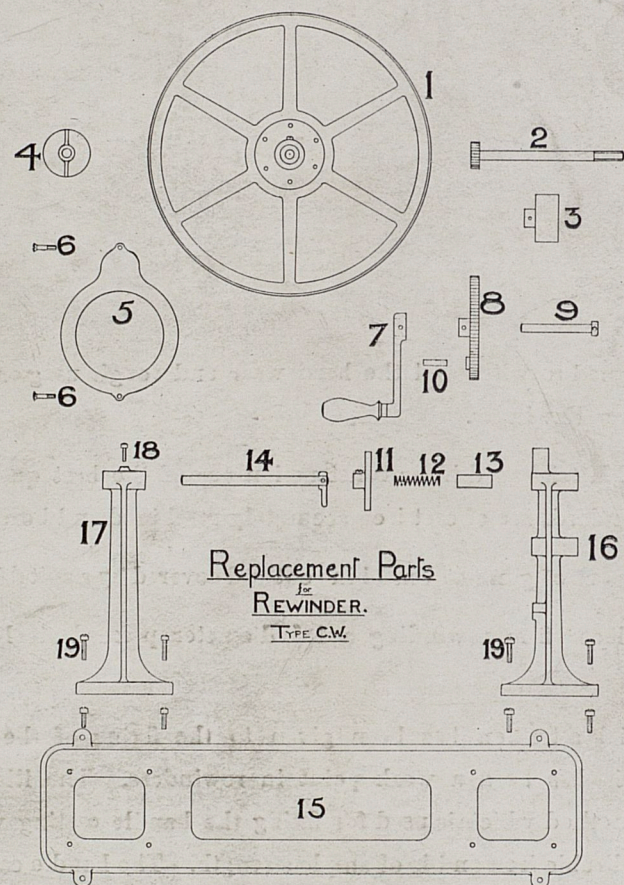
For loose film rewinding a 12" diameter pressed steel plate is provided.

Special attention has been given to the fixing of the handle, hitherto this has been a weak point in rewinders. The illustration shows the method which is used for fixing the handle casting which is made of malleable iron and is of ample strength. The handle casting fits

on the boss of main gear wheel, and they are together fixed to the steel spindle by a taper pin. Another fixing is provided by means of a rivet which passes through the handle casting and one of the arms of main gear wheel near the periphery, thus doubly fixing the handle casting.

The castings are finished in stored black enamel, and machined parts are bright.

**Type C.W. Rewinder Complete on
Iron base as illustrated. £1 8s. 0d.**



REPLACEMENT PARTS FOR REWINDER TYPE C.W.

No.		s.	d.
1	12 in. Steel Disc with iron boss and Sliding Brass Centre	2	8 each.
2	Steel Spindle and Pinion for geared head	1	8 ..
3	Cast Iron Collar	0	10 ..
4	Wing Nut	0	5 ..
5	Gear Guard	1	0 ..
6	" " Screws	0	2 ..
7	Malleable Iron Handle Casting with Hardwood Handle	2	8 ..
8	Main Gear Wheel	4	8 ..
9	" " " Spindle	0	8 ..
10	Handle Casting Rivet	0	1½ ..
11	Iron Boss for loose head	0	8 ..
12	Spring " " "	0	1½ ..
13	Tube " " "	0	1½ ..
14	Spindle & Click "	0	11 ..
15	Base Casting	3	4 ..
16	Geared Head Casting	3	4 ..
17	Loose " "	2	4 ..
18	Fixing Screw for No. 14	0	2 ..
19	Screws for fixing Nos. 16 & 17 to No. 15	0	2 ..

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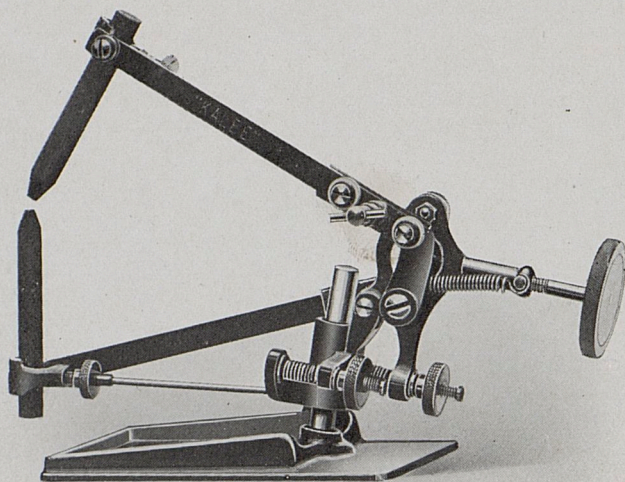
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SCISSORS TYPE ARC LAMP.

(Mechanical Centering Model.)



This Lamp is constructed of the same high-class materials and finish as the plain model, except that mechanical movements are provided for centering the Arc Crater horizontally and vertically.

SCISSORS TYPE ARC LAMP :: :: £1 12s. 0d.
(Mechanical Centering Model)

Suitable for Currents up to 20 Amperes.

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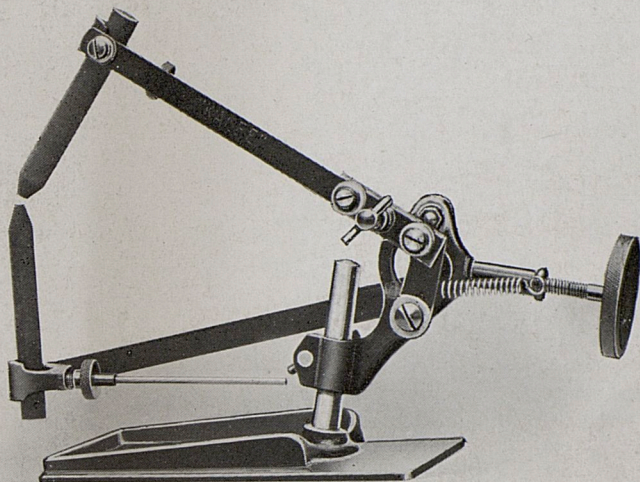
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SCISSORS TYPE ARC LAMP

(PLAIN MODEL).



In this type the Carbons are fed on the scissors principle by means of the Hard Fibre Head shown at the back of the Lamp. The manner in which the Carbon Holder Arms are swung, practically eliminates the receding of the Crater from the Condenser as the Carbons burn away. Scissors Arc Lamps swung in the ordinary way have this defect, and as the Carbons burn away the Lamp has to be continually pushed into the Lantern body.

With the exception of the Base, which is iron stove enamelled, the whole of the Lamp is of Gunmetal, bright lacquered, and optically blacked.

The Base Pillar is of large diameter on which the Lamp is clamped, and it can be raised, lowered, or moved horizontally to enable the Crater to be located in the best position.

SCISSORS TYPE ARC LAMP (plain Model) £1 5s. 0d.
Suitable for currents up to 20 Amperes.

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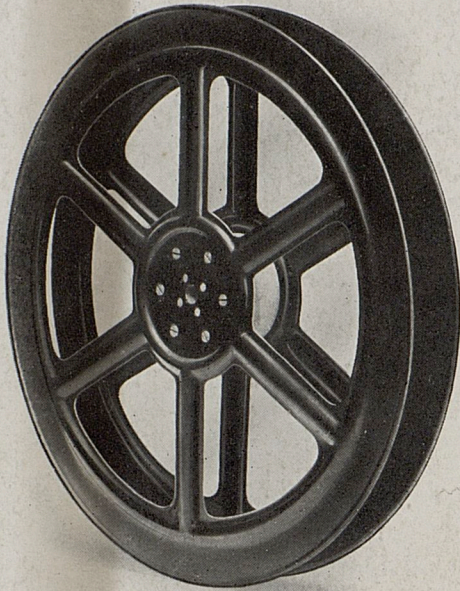
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SPOOLS.



The Spool sides are made from steel stampings in cold rolled steel and are of strong gauge material, black enamelled.

The centre piece is of birch to which each side is securely fixed by six steel wood screws, this is also reinforced in the centre by a brass tube spun over at each end. This tube also forms a bearing for the Spool to revolve on when in use.

The film is gripped to the wood core by means of a spring clip made in steel, hardened and tempered.

These Spools are all made to fit on $\frac{3}{8}$ in. spindles, but are made in three different diameters.

12 in. dia.

3/-

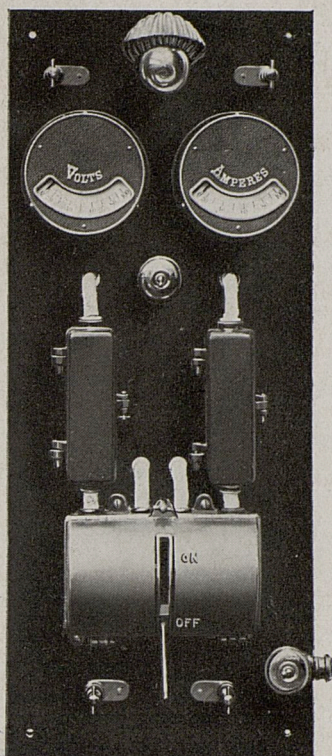
12 $\frac{3}{4}$ in. dia.

3/4

13 $\frac{3}{4}$ in. dia.

4/- each.

Switchboards.



The panel is of specially selected slate, black enamelled. The Voltmeter and Ammeter are of first-class manufacture, a pair of Iron Clad Fuses and a D.P. Iron Clad Quick Break Switch are provided. Also Pilot Light with Switch and Shade, Combined Switch and Plug for Projector Motor, Terminals for Mains and Terminals for Arc Lamp.

The whole is wired up with substantial Cables, the ends which are visible through the board being wrapped with Asbestos.

50 Amp. Size; Voltmeter reads 10-100;
Ammeter 10-80; Slate Panel, 36in. \times 15in.

PRICE:
£9 0s. 0d.

100 Amp. Size; Voltmeter reads 10-100;
Ammeter 10-100; Slate Panel 42in. \times 18in.

PRICE:
£10 0s. 0d.

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