

**IMPERIAL
SOUND EQUIPMENT
AND PARTS**

IMPERIAL SOUND SYSTEM

ST. BARNABAS ROAD, LEICESTER

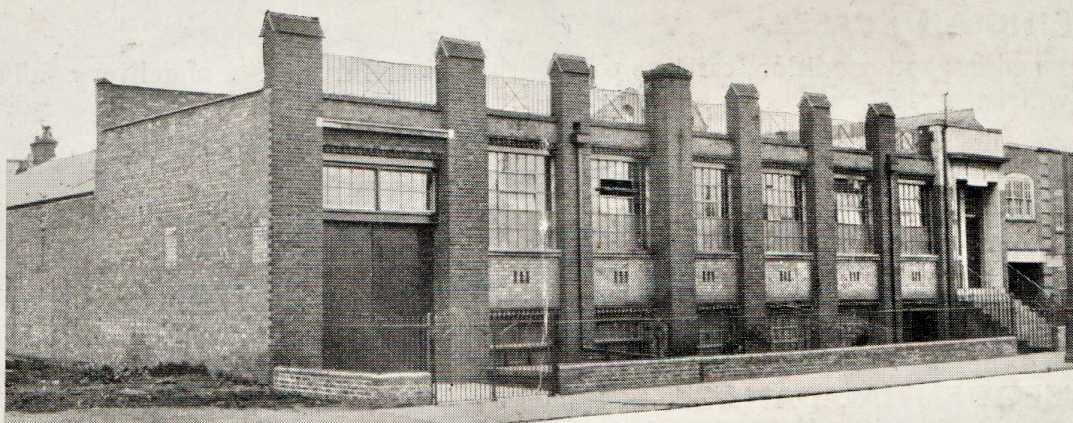
Telephone - 27396

ENG.

ALL PREVIOUS LISTS CANCELLED WITH THIS ISSUE.



IMPERIAL SOUND EQUIPMENT AND PARTS

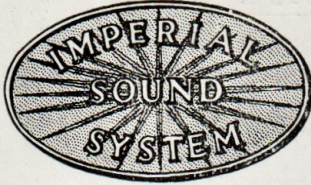


VIEW OF IMPERIAL SOUND SYSTEM WORKS

Manufacturers of Complete
TALKING PICTURE APPARATUS
throughout, from the Raw Material
to the Finished Sound Installations

IMPERIAL SOUND SYSTEM
ST. BARNABAS' ROAD
LEICESTER, Eng.

Telephone 27396



TERMS & CONDITIONS OF SALE

NEW ACCOUNTS.

Satisfactory references or cash with order.

EXPORT.

20% of total payment when goods are ordered, balance C.O.D., through bankers, or on sight draft. All prices are quoted F.O.B. Packing extra.

BREAKAGES OF GOODS OR LOST IN TRANSIT.

All goods are carefully packed and sent carriage paid, by goods. Goods sent passenger (if so ordered) will be charged for. No claim can be considered by us for damage, breakage, loss or delay in transit. Goods should be signed for after examination or signed for "unexamined," so that purchaser can institute the necessary claim on carriers within three days from receipt of goods.

PACKING AND CASES.

If returned in good condition, carriage paid, within 14 days from date of delivery, full allowance will be made.

TIMES OF DELIVERY.

These are subject to the usual Strikes, Lockouts and Accident clauses, and non-delivery of suppliers' materials.

When ordering equipment, state Mains voltage, frequency and phase of the supply on which it is to operate. Also any other particulars likely to be of assistance to avoid delay.

CONSEQUENTIAL DAMAGE.

We cannot be held responsible for any consequential damage said to arise from use of any of our apparatus.

ILLUSTRATIONS.

Show generally the appearance of the respective articles, but must not be taken as binding, as alterations and improvements are constantly being made.

GUARANTEE.

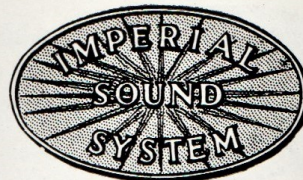
We guarantee to replace or repair free of charge, all goods of our manufacture found to be faulty in workmanship or material, for one year from date of despatch (misuse and fair wear and tear excluded) on condition that the defective apparatus is returned to our works, carriage paid, for inspection. We do not bind ourselves to repair or replace any defective part which we consider is not warranted.

We do not hold ourselves responsible for any repairs made, or attempted, without our sanction. Our decision is final.

ACCOUNTS.

Accounts are payable monthly, subject to a cash discount of $2\frac{1}{2}\%$ if paid during the month following delivery. A discount of $3\frac{3}{4}\%$ may be deducted when sending cash with order.

IMPERIAL

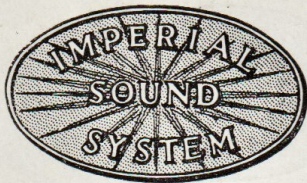


TALKING PICTURE APPARATUS

THE sole purpose in producing the whole of our equipment ourselves is to make it as self contained as possible for the following reasons. Perfect sound and projection at an advantageous price without fear of competition. This can only be achieved by producing all parts ourselves, thereby cutting out miscellaneous profits. Progress in design can only be achieved by this method of production, due to the complications of distinct branches of industry, *i.e.*, the Engineering, Electrical, and the comparatively new Radio Trade.

After carefully perusing the following pages we feel confident that you will agree with us that distinct progress has been made in design, quality of reproduction, saving of valuable space, elimination of unnecessary parts and complications, saving of time on installing, and selling at a reasonable price.

BRITISH THROUGHOUT



IMPERIAL

COMPLETE SOUND PROJECTOR

Silent Pictures are now a thing of the past, so there is no justification in the continued manufacture of Silent Projectors. Sacrifices in the design of these have to be made in order that different Soundheads can be adapted and similarly the manufacturers of Soundheads alone have to make sacrifices in order that these may be adaptable to existing Projectors. Sacrifices of this nature lead both to inefficiency and greater cost, and it has been left to us to be the first firm, not only to manufacture the Projector and Soundhead complete in one mechanism, but to manufacture the whole equipment completely throughout at our Works. The result is perfect sound and projection at an economical price.

The Projector and Soundhead are built as a whole with separate gear box mechanism, which, running completely in oil, gives long life and smooth and silent running. The whole mechanism is original in design, numerous improvements being incorporated, which tend to place it far ahead of any competitor on the market at the present time.

The Projector occupies very little floor space, and being mechanically compact, facilitates threading up and the removal of worn-out parts. Once installed it should last a life-time, with very few renewals being required, as only the best raw material obtainable is used and the most skilled workmanship allowed in its manufacture.

This Sound Projector is years ahead in design to other existing projectors, and is undoubtedly the finest obtainable.

SPECIFICATION :

Soundhead and Projector combined in one unit.

Rear Shutter.—50% less heat on the film and condenser ; shaped as a fan to draw heat from the lamphouse and several other advantages that are self-apparent.

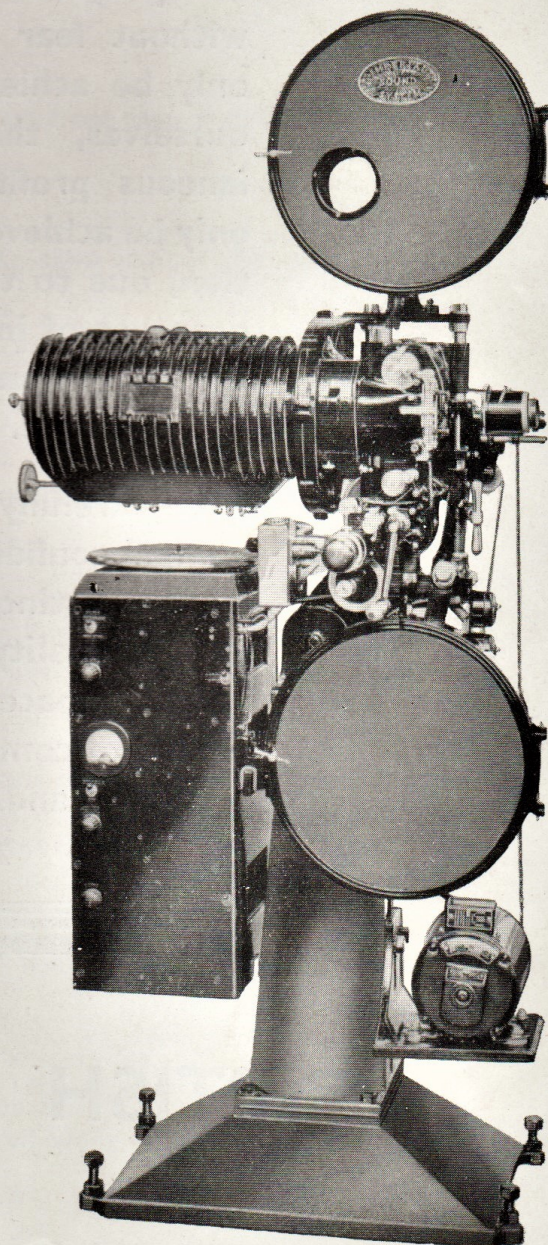
Safety Shutter that cannot fail to operate when projector is stationary, working on a governor principle, it relies for its action on the speed of the projector.

All Main Bearings and Gears are run in an oil bath, having an inspection window, shows at a glance the oil level.

The Maltese Cross is of special steel, turned and cut from the bar, after which it is finished to a fine degree of accuracy by a special process. Self-locking sprockets skids when on the off position. Fixed optical centre.

Adjustable tension on aperture film skates.

Positive drive with adjustable clutch action for bottom pool box drive.



Imperial Standard Sound Projector Equipment.

All wearing parts being standardized, are easily interchangeable.

Driven Soundhead with sound sprocket balanced by a heavy fly-wheel and isolated by a spring filter from the main gearing, eliminates all trace of ripple. Small friction flywheel to eliminate sprocket teeth ripple.

Sound Track, adjustable when running.

Exciter Lamp, easily accessible and adjustable.

Optical Unit made to our design after costly experimental work for quality in reproduction. All castings are stove-enamelled. Exposed metal parts chromium-plated or oxidised finished and will retain a new appearance for years.

Lantern House is of cast aluminium and ribbed to dispel the heat. Hinged doors with ruby windows on both sides for viewing carbons.

Mirror Arc mechanism is of our own special design, with only one knob control for carbons, each can be adjusted separately or together. 25% more light from the same current consumption is obtained by burning the carbons at an angle, by this means the whole of the positive light crater is focussed on the mirror. The Mirror Holder is provided with two small knobs for tilting and side movements.

The Pedestal Stand is of cast-iron with corner adjustments for placing on uneven floors. An adjustable screw knob is provided on the stand for lining the projector mechanism with the screen. Cast aluminium spool boxes and spring hinged fire traps.

The Motor is adjustable for tension of the endless Flat belt by means of the movable motor bracket, also pulley device, keeping the belt tension when racking. Hanging on the back of the pedestal stand is the all-mains amplifier, having the following specification :

The Amplifier case is built of cast aluminium trays and sheets, approx. 3/16ths" in thickness, assembled and bolted together in unit form and are easily dismantled if required.

The standard and portable types are identical in circuit arrangements and parts, all parts are worked at 50% below rated value. Transformers, chokes, etc., are manufactured throughout at our works in order to comply to our usual standards of material and workmanship.

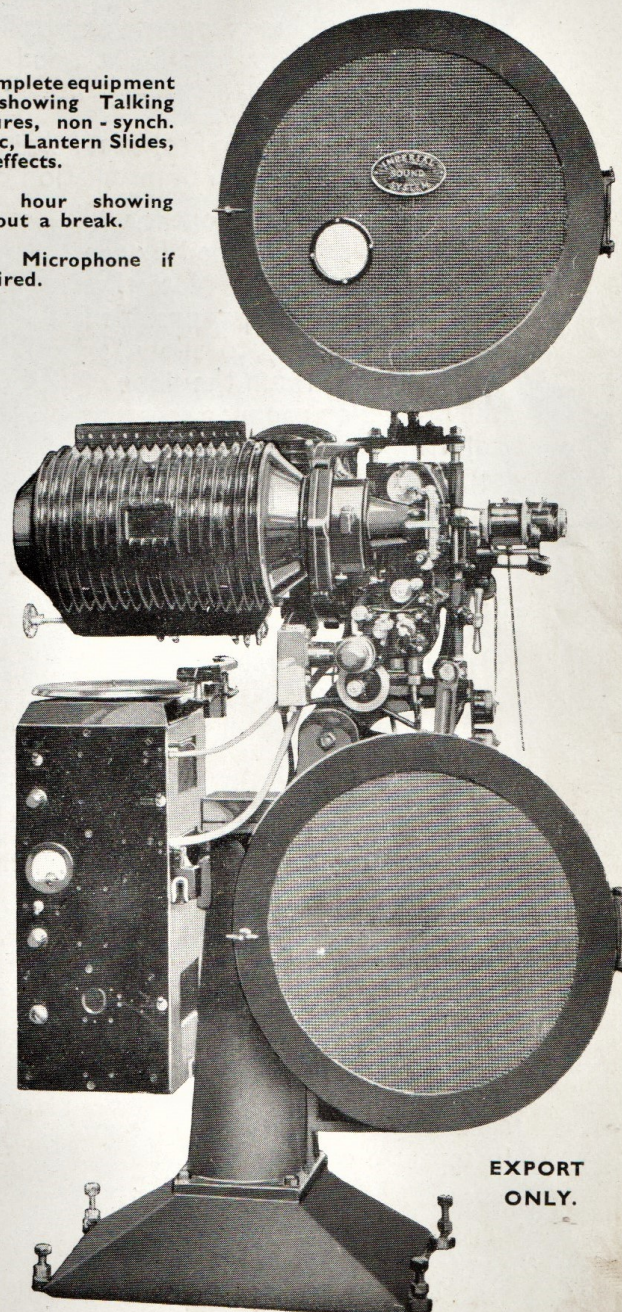
All important resistances are wire wound and easily changed. All valves are de-coupled to stop self-oscillation and no expense has been spared to ensure reliability, as we realise that should any faults develop when in use, great financial loss to the cinema may result, in addition to loss of prestige. Like all Imperial products, these are dependable on all occasions, and providing a spare valve is kept at hand, no other precautions should be necessary.

The Amplifier is absolutely complete for sound on film reproducing, and contains the head amplifier, H.T. voltage for Photo Cell excitation, sensitivity matching arrangements for two photo cells, exciter lamp supply, (15 amps. at 10 volts), 4 stages, separate valve H.T. rectifier for first 3 stages, 2 valve H.T. rectifier for output valves, H.T.

A complete equipment for showing Talking Pictures, non - synch. music, Lantern Slides, and effects.

One hour showing without a break.

Also Microphone if required.



EXPORT ONLY.

Imperial Sound Projector with 24" Spool Boxes, 8" Mirror Arc and Lamp house, also 1,000 watt Lantern house for showing slides and effects.

rectifier for loud speaker field. Complete with high class milliammeter, wire wound Monitor and Main Volume controls, switches, etc. Non sync., complete with electric motor and pick-up, change-over switch, etc., the whole making a compact arrangement for incidental music when required. This amplifier can also be used for relaying or for public address work without any additions beyond a microphone and transformer.

The Imperial Amplifier can be classed as a universal amplifier suitable for all needs and conditions which no other make can offer. Approx. speech output 12 watts.

Imperial Cinema Loud-Speakers

are built to conform to the following specification :—

Finest possible reproduction. Sensitivity.

Capable of handling large inputs. 25 Speech Watts if necessary.

Rigid suspension and improved centring of Speech Coil.

All parts standardised and easily inter-changeable in case of mishap.

14" Cone, 12 Ohms impedance, Speech Coil. Supplied with a 220 volt field coil.

Approx. 20 watts consumption.

Specially treated for changing climatic conditions.

Standardised with one impedance speech coil only to save mistakes and complications. Variations for different output valves are provided for in the primary of the speech coil transformer.

Having a good base response and brilliancy in tones leaves nothing to be desired. Without any possible doubt the finest Loud Speaker on the market irrespective of price.

INSTALLATION.

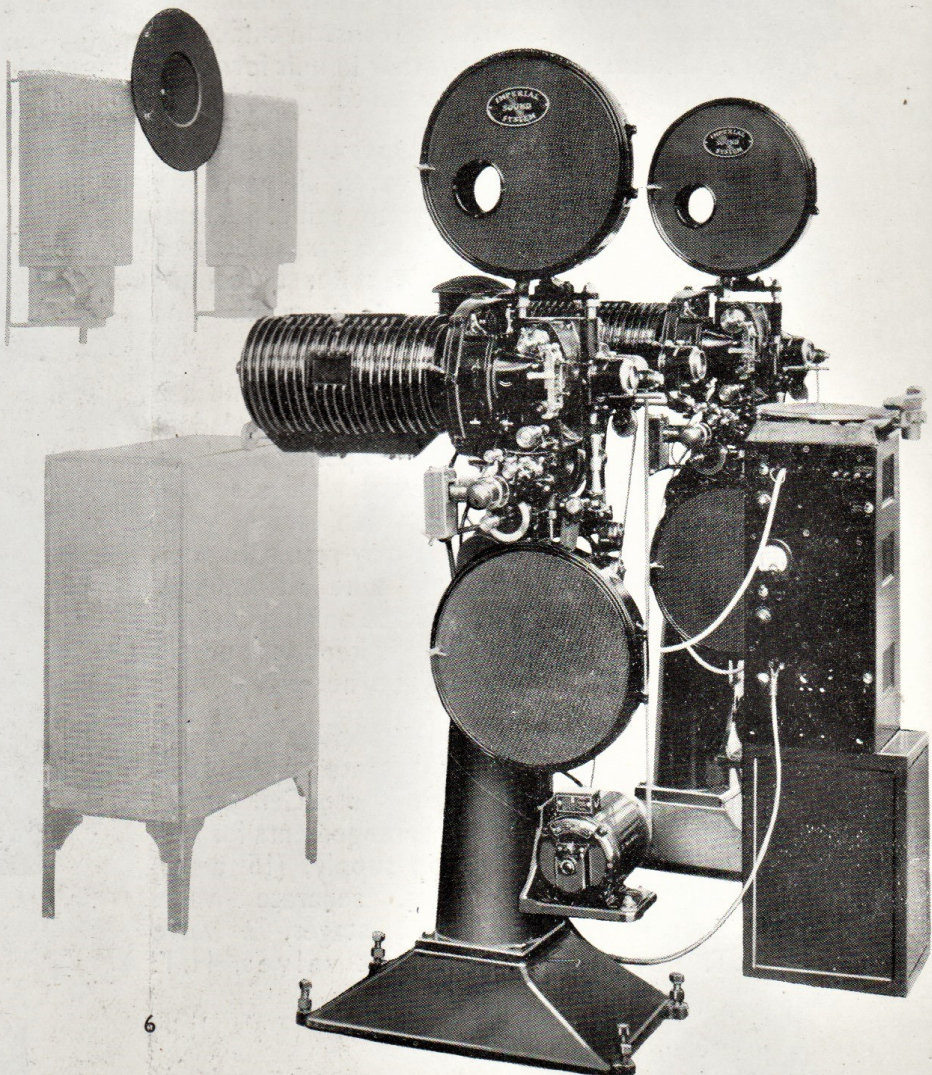
The Imperial Sound Projector, being constructed as a completely self-contained unit, involves the minimum of installation costs and labour.

The assembly of the outfit will be completely explained by the various illustrations. Note that the levelling screws provided are intended only to allow for any irregularities in the floor of the projection room ; a separate adjusting screw is provided for setting projection rake.

The electrical connections required are as follows :

- (1) Arc Supply-preferably D.C.
- (2) Motor Supply and
- (3) Amplifier Supply, 100-110v. 200-240 volts 50 cycles A.C. (or otherwise if specially ordered).
- (4) Speech Lines.
- (5) Speaker Field Lines.
- (6) Earthing Wire to Projector Stand.

In accordance with Home Office requirements, all cables must be enclosed in screwed conduits, except, of course, earthing wire, for which bare copper wire is used. The speech lines and speaker field lines must be run in separate conduits.



A complete Imperial Sound Projector installation with Slide Lantern and Record Cabinet.

BRISTLES WITH GOOD POINTS:

Compact Gear Assembly running in an oil bath.

Governor Safety Shutter.

Quick opening and compact assembly of Gate Parts.

Compact and easily removed Condenser Holder.

Rear Shutter.

Dissolving Light Cut-off.

Compact Lamp-House and new design of Mirror Arc Mechanism with only one knob control for Carbons.

Coarse and Fine Focusing adjustment with adjustable bracket for focusing picture out of centre, also swinging lens out of action.

Fixed Optical Centre.

PROJECTOR MECHANISM

Intermittent Motion :

Adjustment between Maltese Cross and locking cam is effected by a partial rotation of the eccentric cross bearing. Loosen locking screws and adjust until no play can be felt between cross and cam, but not so tightly that cam shaft runs tight, or that motion becomes noisy. See that screws are firmly tightened after adjustment.

To remove intermittent sprocket, remove screws in sprocket boss, loosen clamping screw and remove sprocket bearing. Take great care in fitting fresh sprocket not to bend maltese cross shaft.

To change Maltese cross, remove sprocket as above, remove pulley and drain oil from upper oil-bath by means of screw underneath driving shaft. Remove six screws holding shaft bearing, when the whole of the intermittent motion may be withdrawn. When refitting see that rear shutter nearly covers the light aperture when the cross is just commencing to turn.

Positive drive with clutch for take-up spool.

Driven Soundhead.

Easily Removed Exciter Lamp.

No Sound Gate Aperture to be obscured.

Easily adjusted for tracking.

Self-locking Sprocket Skids.

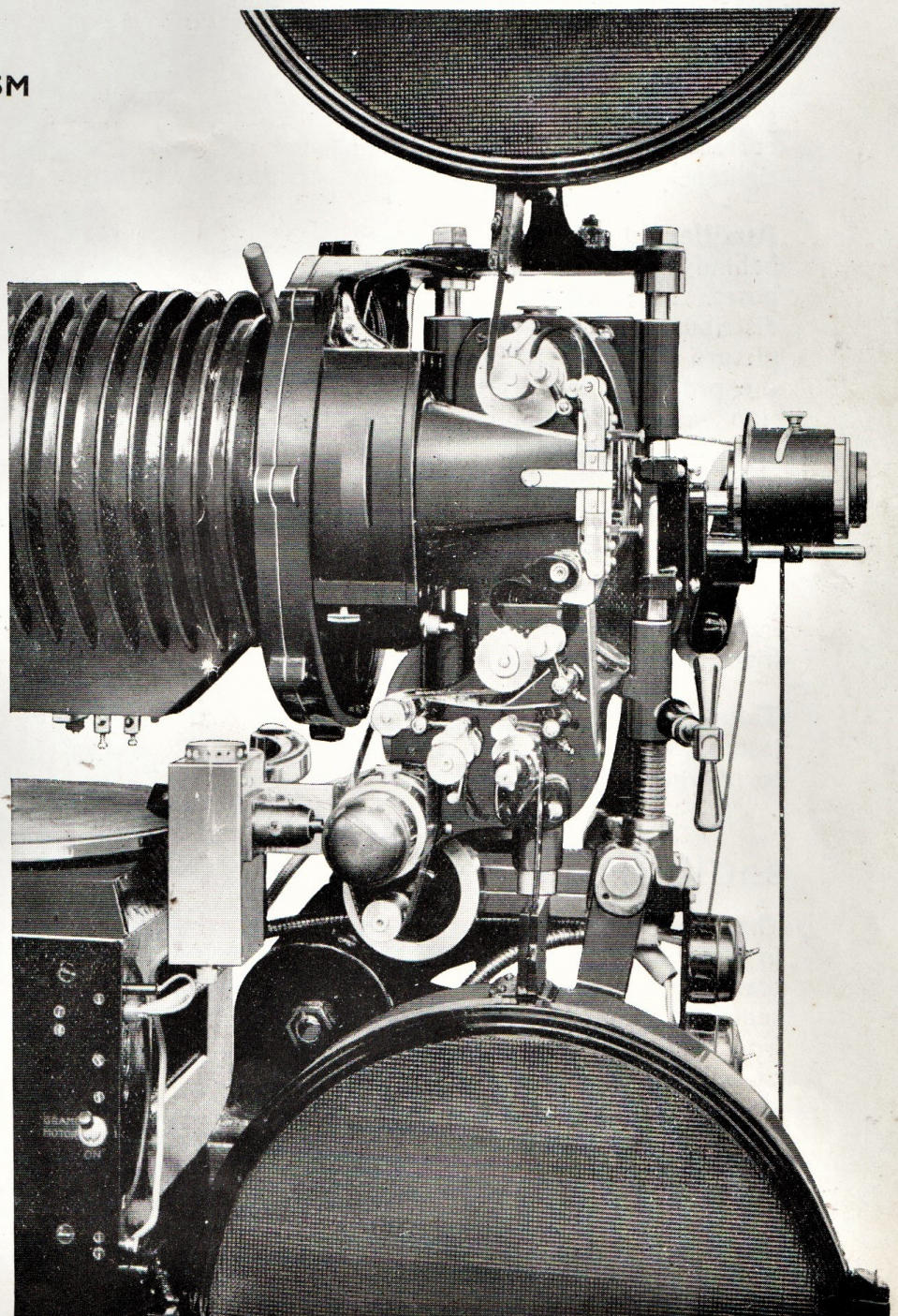
Perfect mechanical arrangement.

First-Class Optical System.

Perfect Reproduction.

Special Fly-wheel to eliminate teeth ripple of Sound Sprocket.

Large flywheel filtered to eliminate gear ripple incorporating 3 screw adjustment to stop bouncing.



Shutter Phasing : Open both sides of lamp-house. Through hole in front face of lamp-house observe two screws on shutter flange ; loosen these (taking care not to remove them altogether) and adjust shutter. To eliminate top ghost, advance shutter, for bottom ghost retard it. After adjusting, see that screws are perfectly tight.

Gate : Tension should be adjusted by the two screws provided, to the minimum necessary to keep picture steady. To remove gate skates, loosen small locking screws, when pins securing skates can be withdrawn. Observe that skates do not develop sharp edges, or an irregular surface. Clean gate after every reel, when running new or dirty stock.

Sprocket Rollers and Shoes must be adjusted so as not to bear upon sprockets. Small screws and lock-nuts are provided for this adjustment. Rollers must always turn freely or they will develop flats. Be sure that sprocket shoes do not wear sharp edges.

Lens Mount : Normally supplied for both small ($1\frac{1}{16}$ -in. dia.) and wide ($2\frac{1}{16}$ -in. dia.) aperture lenses.

To focus lens, adjust mount approximately by sliding sleeve on spindle and tighten screw. Set to correct focus by knurled knob, and tighten.

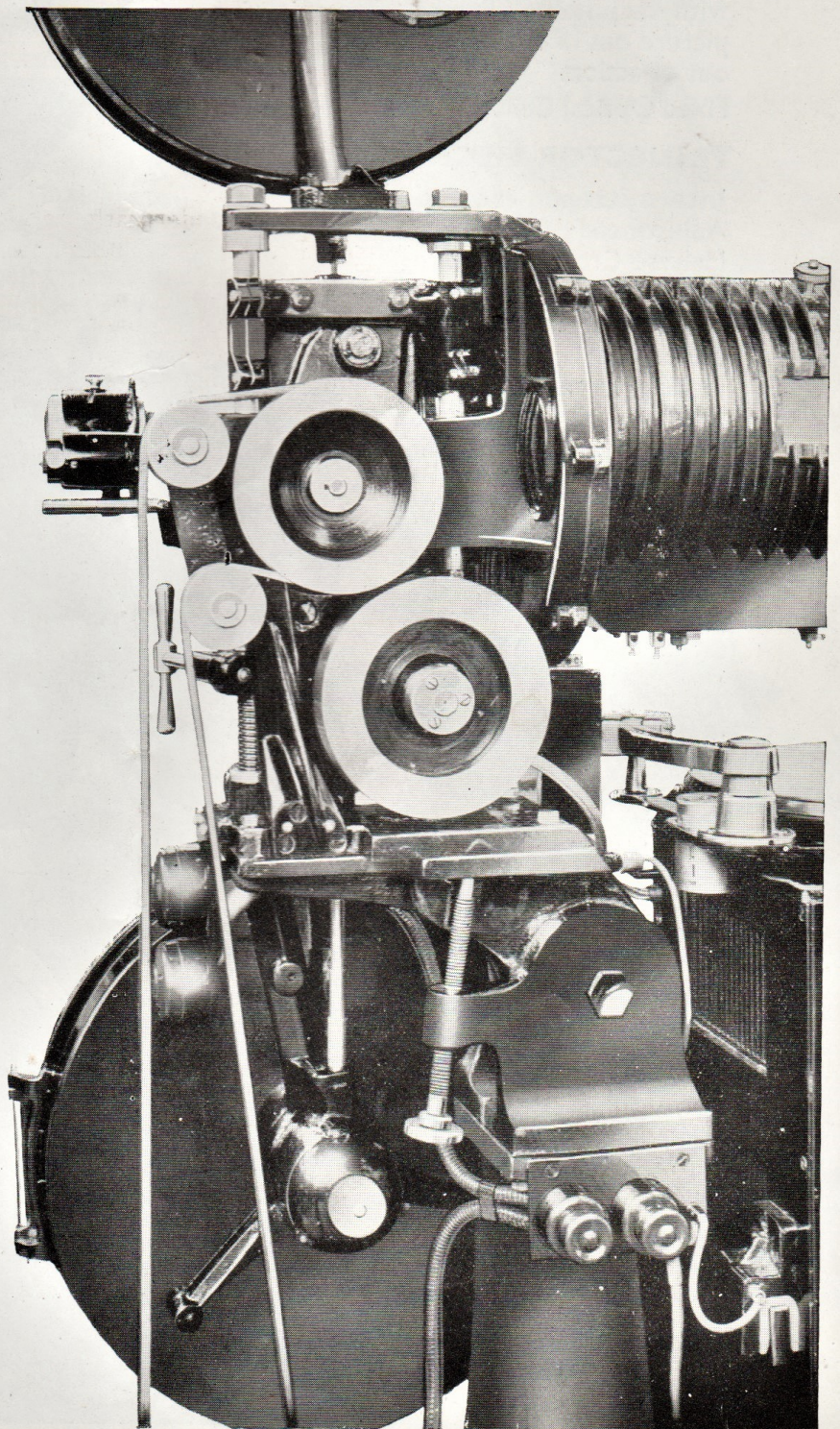
Auxiliary Lens. The condenser behind the gate serves four purposes. It ensures a more even distribution of light over the picture and gives greater depth to the projected image ; in conjunction with the rear shutter it materially reduces gate heat ; it also prevents the draught set up by the shutter blades from carrying dirt and dust to the film.

To remove the glass, withdraw frame and remove four screws in front face.

Take-up Friction should be adjusted to the minimum necessary to re-wind a full reel of film.

SOUND HEAD.

The photo-electric cell is carried in the drum around which the film passes. To withdraw the cell, remove cover, disconnect lead from terminal, when the cell may be pulled out. Note that special low-capacity screened cable only must be used between photo-cell and amplifier.



The film may be adjusted for side registration by loosening locking screw ; if in course of time, the film track on one side of this drum should wear, the drum may be turned round so providing a new surface.

Exciting Lamp : A 10v. 10a. lamp is normally supplied. If no A.C. ripple is noticed, a smaller lamp may be used. Adapters can be supplied to suit 50 watt or 75 watt lamps.

To remove exciting lamp, loosen thumbscrew on holder and unscrew lamp ; see that lamp is replaced with filament square. Vertical adjustment of lamp is effected by means of screw provided.

Focussing of slit upon film is effected by loosening screw at top of optical unit, and moving large front screw. Adjustment can be checked by placing a few inches of undeveloped film around drum and exposing it to the light for 15 seconds or so ; it is not necessary to use virgin stock, as a yellowish piece off the end of a reel will show the image quite clearly.

Smoothing Device : The sound sprocket and flywheel are driven through a spring buffer—see that this is always working freely, and that the flywheel if turned slightly will move back without bouncing, this is adjustable by means of the three screws on outside of flywheel boss.

LUBRICATION :

Use only special projector oil. For first month, drain and re-fill oil-baths weekly, afterwards every month or two. Keep level of oil in both oil-baths to centre of inspection windows.

To drain upper oil-bath remove screw underneath belt-driven pulley ; to drain lower oil-bath remove screw right underneath casting. In both cases see that packing washer is sound before replacing.

The following points should be oiled once a month : sprocket rollers (ensure that oil does not reach film). Oil daily : jockey rollers, automatic light cut-off, front end bearing of Maltese cross shaft, small soundhead flywheel shaft and bottom take-up sprocket shaft.

STANDARD SOUND PROJECTOR.

DIMENSIONS, WEIGHTS & EXPORT PARTICULARS.

Height over Spool Boxes 5' 10".

Height centre of Lens, 3' 11½"

Breadth over Lamp-House, 2' 8". Depth 1' 1½". Depth over Amplifier, 1' 3½".

WEIGHTS.

	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	
Stand with Motor Bracket	1	3	16				
Motor		1	12				
Projector		3	6	3	1	25	
Top Spool Box			11				
Bottom Spool Box			18				
Lantern House with Mec.			18				
Amplifier over Controls ...				3		11	Sizes : 13×13×28"
Speaker without Horn ...				1		17	18×18×12"
Monitor Speaker over Baffle						6	15×5½"

Total Weight of Complete Equipment

4 3 3

Shipping.

No. of Cases.

Dimensions.

Gross Weights.

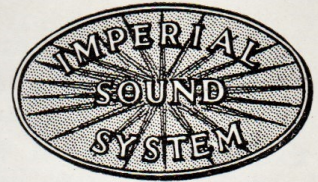
1
1
1

19"×20"×21"
31"×22"×21"
44"×27"×32"

1 cwt. 1 qr.
3 cwts.
3 cwts.

3

Total for Export 7 cwts. 1 qr.



IMPERIAL COMPLETE TALKING PICTURE EQUIPMENT

**WITH MIRROR ARC D.C. SUPPLY DIRECT OFF SINGLE
PHASE A.C. MAINS**

This Rectifier has been designed to supply the requirements in instances where projectors are in intermittent operation, such as in a small theatre where one show only per evening is given, or in schools and colleges where the total continuous running time is limited to say four hours.

The essentialities of the design were to produce an equipment as light and compact as possible, at the same time including the necessary switch and control gear, so that its operation and attachment was of the simplest.

Thus automatic regulation, by an enclosed resistance, controlled by a special switch giving positions for striking and running the arc, has been devised, making arc-current control fool-proof, whilst further protection is given by a Magnetic Overload Protector in the Mains circuit.

The illustration shows a rectifier connected to the Imperial projector, and being an accurately made precision instrument it offers the finest possible results at a very competitive price.

It should be noticed that the rectifier is built on castors, whilst the portability of the rectifier is provided by chromium-plated handles, fitted at the back and front of the plant.

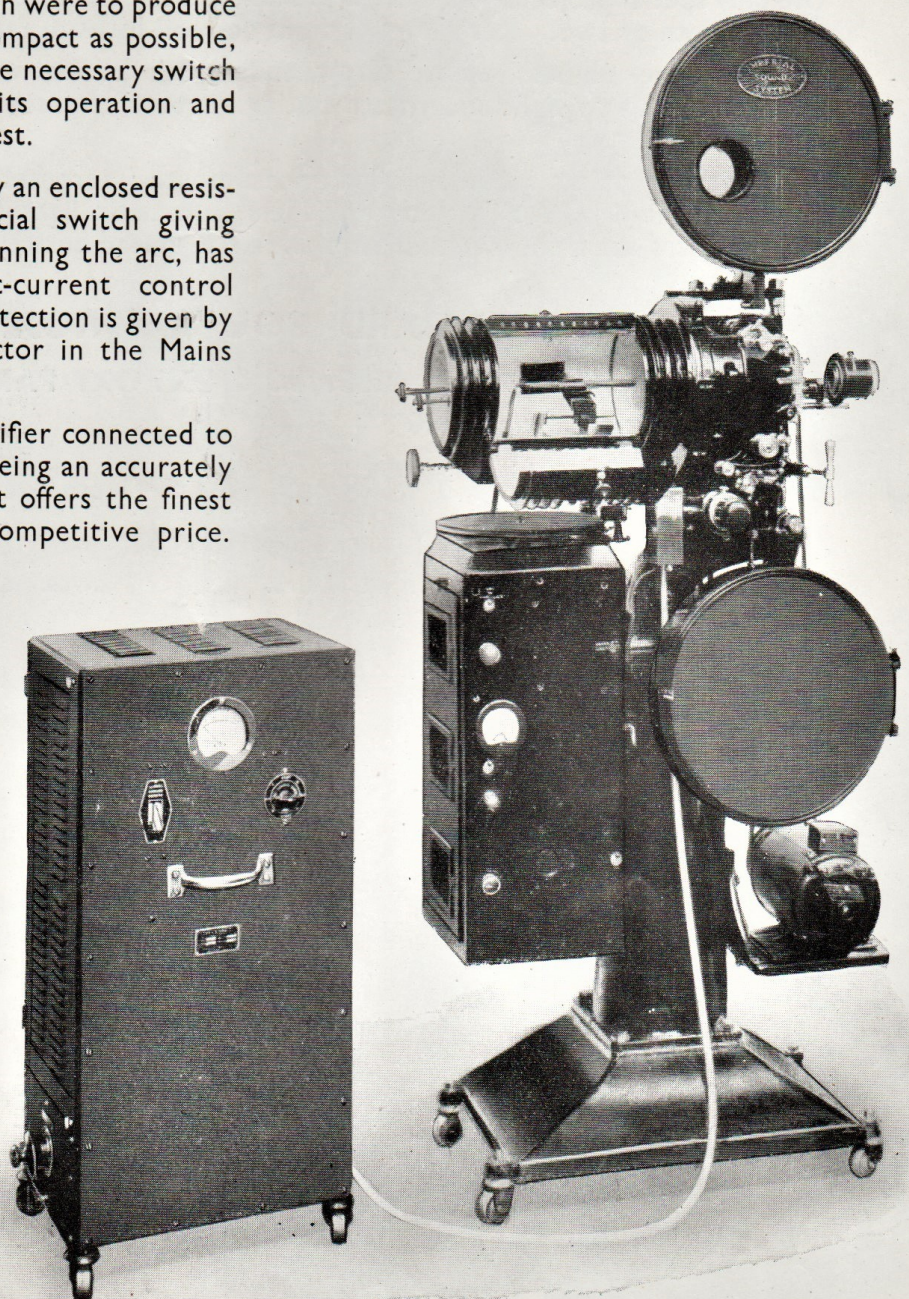
Input :

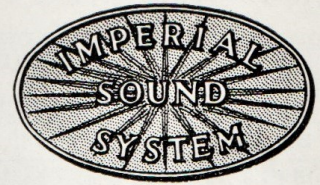
Single Phase A.C.
40/100 cycles.

Output :

(Smoothed D.C.) :
70 volts 18 amperes
4 hour rating.

70 volts 25 amperes
2 hour rating.





IMPERIAL

COMPLETE PORTABLE TALKING PICTURE EQUIPMENT

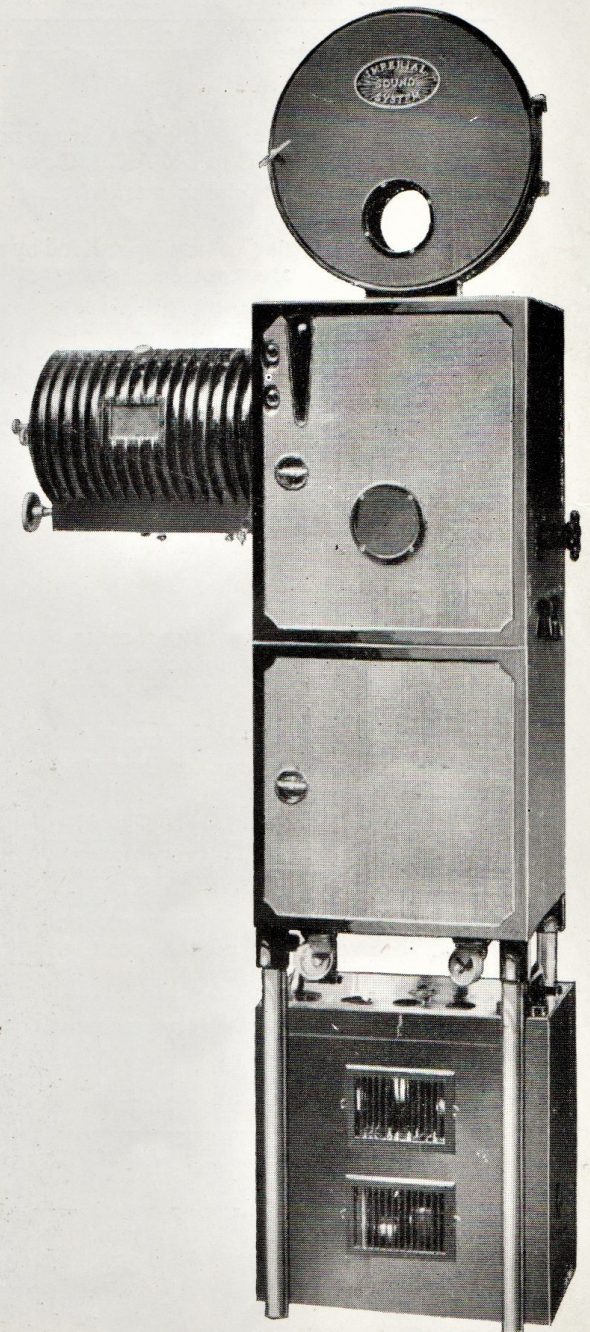
A complete Portable Talking Picture Outfit suitable for Touring Cinemas, Concert Halls, Advertising Purposes, Canteens, Lecture Rooms, Educational Purposes, Ships, Clubs, Stores, Hotels, etc., or a 1,000 Seater Cinema, if necessary.

IMPERIAL PORTABLE EQUIPMENT IS
SIMPLE TO INSTALL, DISMANTLE AND
TRANSPORT.

A complete professional outfit consisting of a standard sound projector, 2000 ft. spool boxes, mirror arc, lamphouse and mechanism, amplifier (12 watts speech output) large cinema speaker and carrying cases.

Only requires connecting to A.C. mains and a suitable D.C. supply for arc lamp to show professional talking picture.

Can also be supplied with a 1,000 watt cold light instead of arc lamp, the whole equipment can then be run entirely off A.C. mains. (We do not advise their arrangement where the throw is over 70 ft. with a picture size of approximately 10 ft.).



Imperial Portable Sound
Projector Equipment.

PROJECTION CHART FOR 35 m.m. STANDARD FILM.

LANTERN LENSES.

Screen dis. in ft.	FOCUS OF LENS IN INCHES.									
	2	2½	3	3½	4	4½	4¾	5	5½	6
10	4.8	3.9	3.2	2.8	2.4	2.1	2.0	1.11	1.8	1.7
15	7.0	5.8	4.8	4.0	3.6	3.2	3.0	2.10	2.7	2.4
20	9.5	7.6	6.3	5.4	4.8	4.2	4.0	3.9	3.5	3.2
25	11.9	9.5	7.10	6.8	5.10	5.3	4.11	4.8	4.3	3.11
30	14.0	11.3	9.5	8.0	7.0	6.3	5.11	5.8	5.1	4.8
35	16.5	13.2	10.11	9.5	8.2	7.4	6.11	6.7	6.0	5.5
40	18.9	15.0	12.6	10.9	9.5	8.4	7.11	7.6	6.10	6.3
45	21.1	16.11	14.0	12.1	10.7	9.5	8.11	8.5	7.8	7.0
50	23.5	18.9	15.8	13.5	11.9	10.5	9.10	9.5	8.6	7.10
60	28.2	22.6	18.9	16.0	14.0	12.6	11.10	11.3	10.3	9.5
70	32.10	26.3	21.11	18.9	16.5	14.7	13.10	13.2	11.11	10.11
80	37.6	30.0	25.0	21.4	18.9	16.8	15.9	15.0	13.8	12.6
90	42.2	33.9	28.2	24.1	21.1	18.9	17.9	16.11	15.4	14.1
100	46.11	37.6	31.3	26.9	23.5	20.10	19.9	18.9	17.0	15.8

Screen dis. in ft.	FOCUS OF LENS IN INCHES.									
	6	8	10	12	14	16	18	20	22	24
10	5.0	3.9	3.0	2.6	2.2	1.10	1.8	1.6	1.4	1.3
15	7.6	5.8	4.6	3.9	3.3	2.10	2.6	2.3	1.11	1.10
20	10.0	7.6	6.0	5.0	4.3	3.9	3.4	3.0	2.9	2.6
25	12.6	9.4	7.6	6.3	5.4	4.8	4.2	3.9	3.5	3.2
30	15.0	11.3	9.0	7.6	6.5	5.7	5.0	4.6	4.0	3.9
35	17.6	13.1	10.6	8.9	7.6	6.6	5.10	5.3	4.9	4.4
40	20.0	15.0	12.0	10.0	8.6	7.6	6.8	6.0	5.10	5.0
45	22.6	16.10	13.6	11.3	9.8	8.5	7.6	6.9	6.1	5.7
50	25.0	18.9	15.0	12.6	10.9	9.5	8.4	7.6	6.10	6.3
60	30.0	22.6	18.0	15.0	12.11	11.3	10.0	9.0	8.1	7.6
70	35.0	26.3	21.0	17.6	15.1	13.1	11.8	10.6	9.6	8.9
80	40.0	30.0	24.0	20.0	17.3	15.0	13.4	12.0	11.10	10.0
90	45.0	33.9	27.0	22.6	19.5	16.01	15.0	13.6	12.2	11.3
100	50.0	37.6	30.0	25.0	21.7	18.9	16.8	15.0	13.7	12.6

AMPLIFIER.

Unless otherwise ordered, the amplifier is supplied with transformer tapings to permit of running on any voltage from 100 to 110 and 200 to 240 A.C., 50 cycles. Where direct current only is available, a small convertor is needed. All connections are taken to marked plugs. Provision is made for supplying the photo-cell exciting voltage and speaker fields.

The photo-cell exciting voltage is provided by resistance and condenser units at extreme right of top shelf of amplifier.

Two connections are provided, giving respectively 95 and 100 volts; the purpose of this arrangement is to enable photo-cells of different characteristics to be balanced. If either of the two cells shows a lower emission than the other, it should be connected to the nearer condenser. A further adjustment may be obtained by replacing the 80,000-100,000 resistance units; the higher the resistance, the higher will be the exciting voltage.

MIRROR ARC.

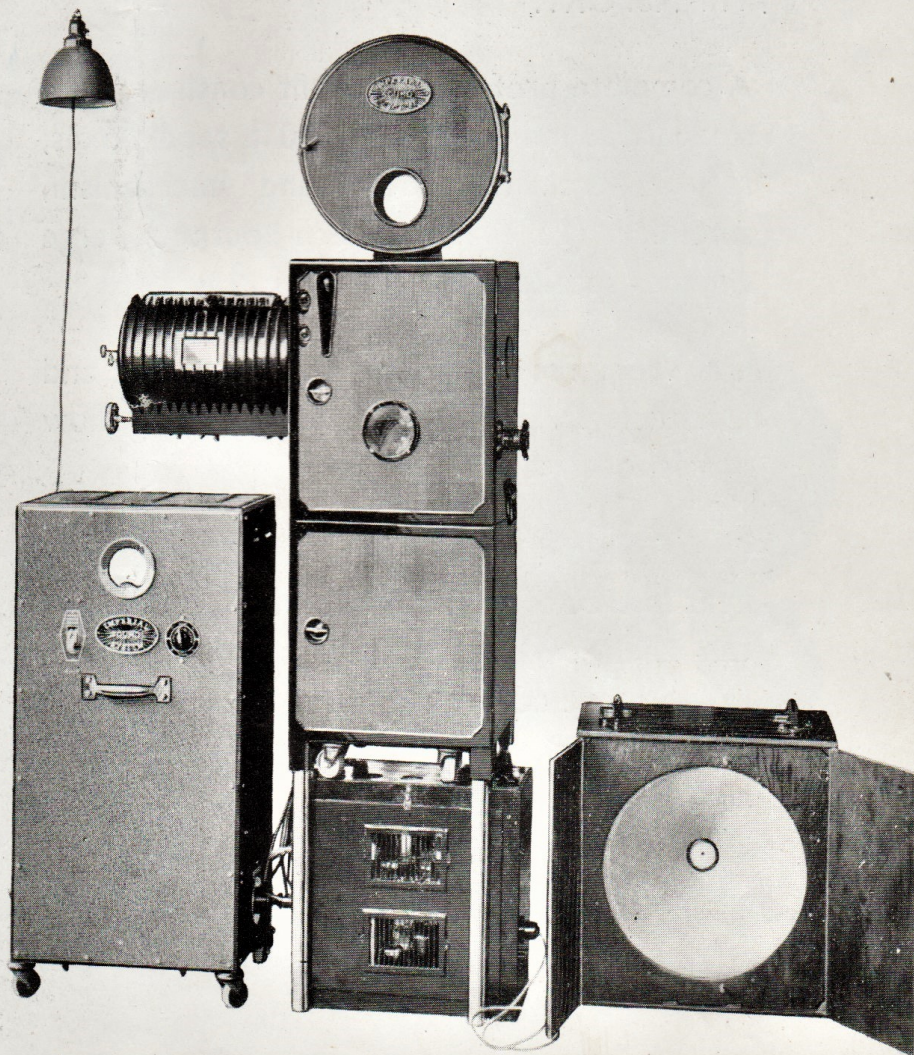
Feeding knob has three positions, central one to move both carbons, backwards to move negative only, forward to adjust positive.

Carbon clamps can be adjusted for different sizes of carbons by loosening nuts behind jaws.

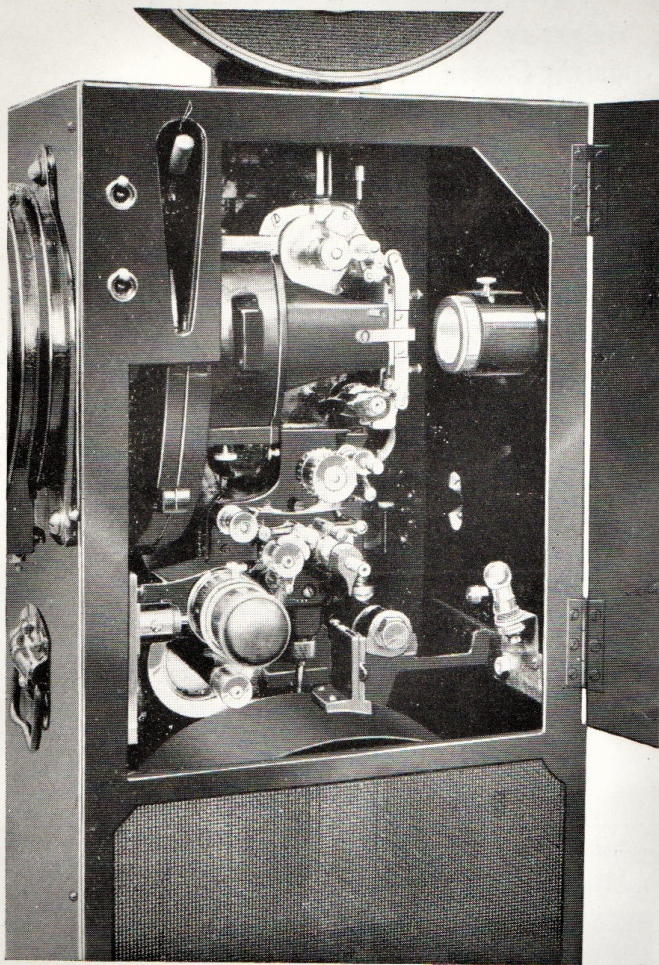
The mirror is adjustable for focus, and also for vertical alignment, the latter being secured by the bolt behind negative feeding arm. It is found that the best efficiency is obtained when mirror is set slightly below centre of the positive carbon.

The following table shows the correct combinations of low-intensity carbons for various currents:

Current in amps.	Positive	Negative
7/10	8 mm.	6 mm.
10/15	9 mm.	7 mm.
12/18	10 mm.	8 mm.
15/20	11 mm.	8 mm.
20/25	12 mm.	9 mm.
25/30	13 mm.	10 mm.
30/35	14 mm.	11 mm.
35/40	15 mm.	12 mm.



Portable Sound Projector ready for operation.
For particulars of Rectifier see Standard Equipment.



Close up front view.

SPECIAL FEATURES :

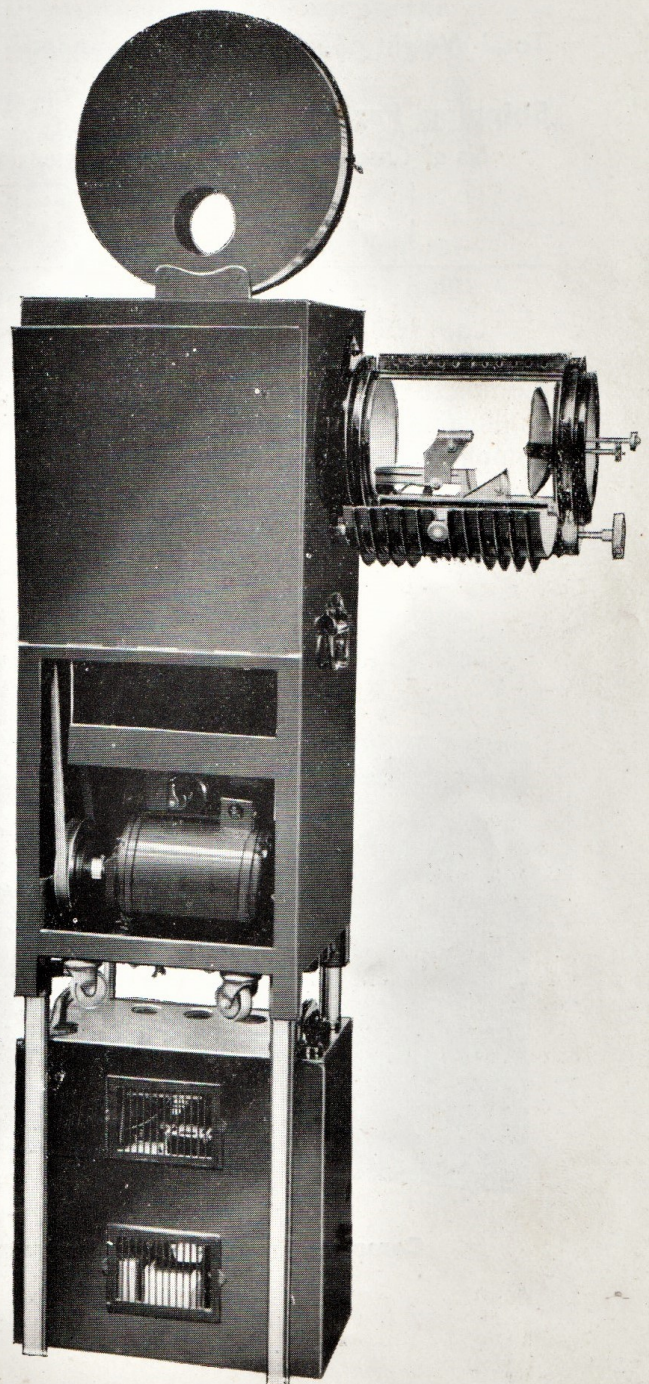
Main plugs and motor fuses are incorporated, also a special device which, in case of fire, automatically seals the top spool box, preventing consequential damage.

Complete with collapsible stand which telescopes into case when being transported. Ball bearing castors are provided for easy removal.

A standard sound projector in a steel enclosed case, suitable for easy transportation or can be supplied with a permanent cast iron base, making a neat arrangement for the permanent cinema, etc.

Can be supplied with a standard cinema amplifier, if preferred.

Note easy assembly of parts : motor take-up, clutch, also spares compartment. All controls, door catches, etc., are flush with case to avoid possible damage.



Back view.

PORTABLE PROJECTOR. Dimensions, Weights and Export Particulars.

Height 2' 11"

Height overall (Top Spool Box) 5' 7"

Breadth 1' 3"

Breadth over Lamp-House 2' 5"

Height on Stand 4' 4"

Height Centre of Lense 3' 9½"

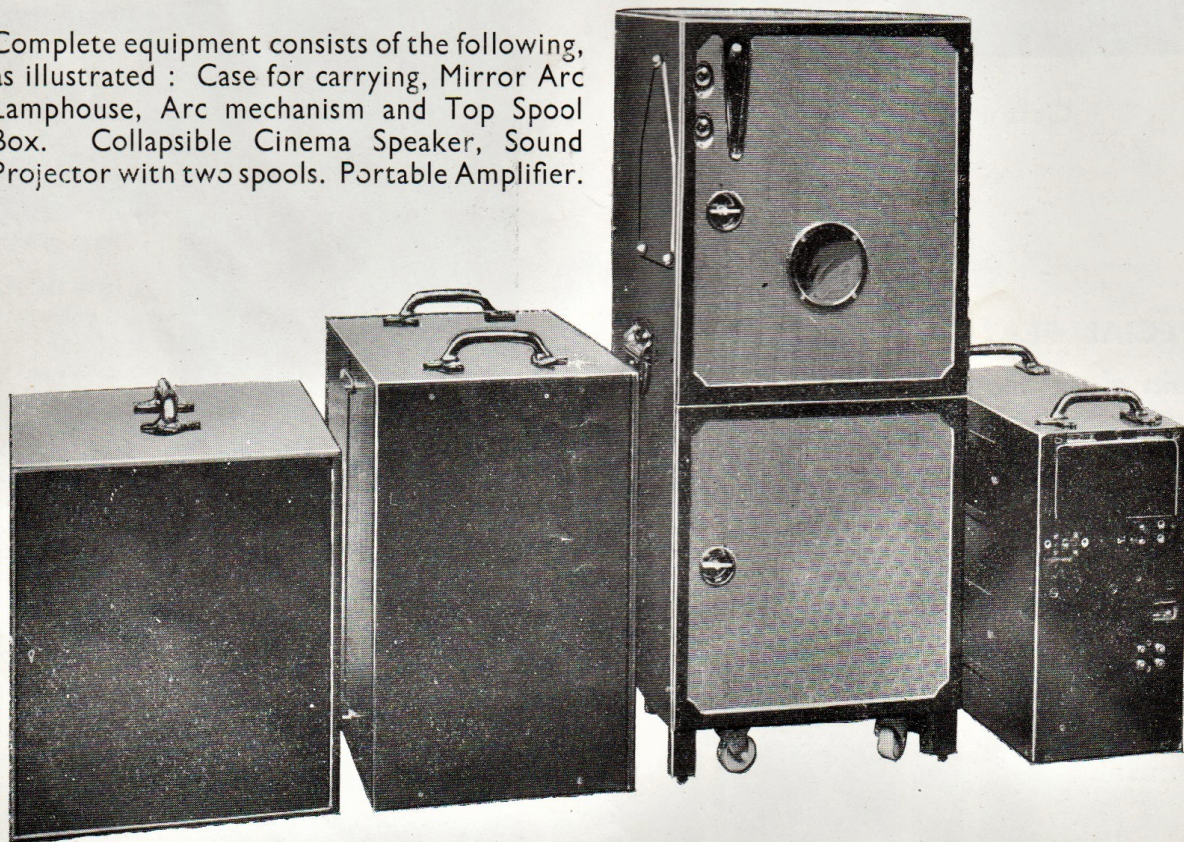
Depth 1' 1"

WEIGHT				TOTAL WEIGHTS			
				cwts.	qrs.	lbs.	
				cwts.	qrs.	lbs.	
Case ...	...	...	1 0 0	2	0	18
Motor ...	...	...	1 12			
Projector ...	...	...	3 6			
Top Spool Box	...	...	9	1	10	Sizes : 17×16×15" 18× 9×18" 20×20×13"
Lantern House	...	...	17			
Carrying Case ...	...	...	12			
Amplifier, Overall	...	...	...	2	24	
Loudspeaker in Case	...	...	...	2	4	
Total Weight of a Complete Equipment ...				3	3		0

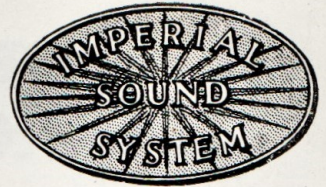
Shipping Particulars :

No of Cases.	Dimensions.	Gross Weight approx.
1	41"×22"×18"	2 cwts. 3 qrs. 10 lbs.
1	42"×24"×26"	2 cwts. 2 qrs. 4 lbs.
2	Totals for Export	5 cwts. 1 qr. 14 lbs.

Complete equipment consists of the following, as illustrated : Case for carrying, Mirror Arc Lamphouse, Arc mechanism and Top Spool Box. Collapsible Cinema Speaker, Sound Projector with two spools. Portable Amplifier.



Complete Portable Sound Projector Equipment packed ready for transport.



INSTRUCTIONS ON INSTALLING IMPERIAL SOUND PROJECTOR EQUIPMENT

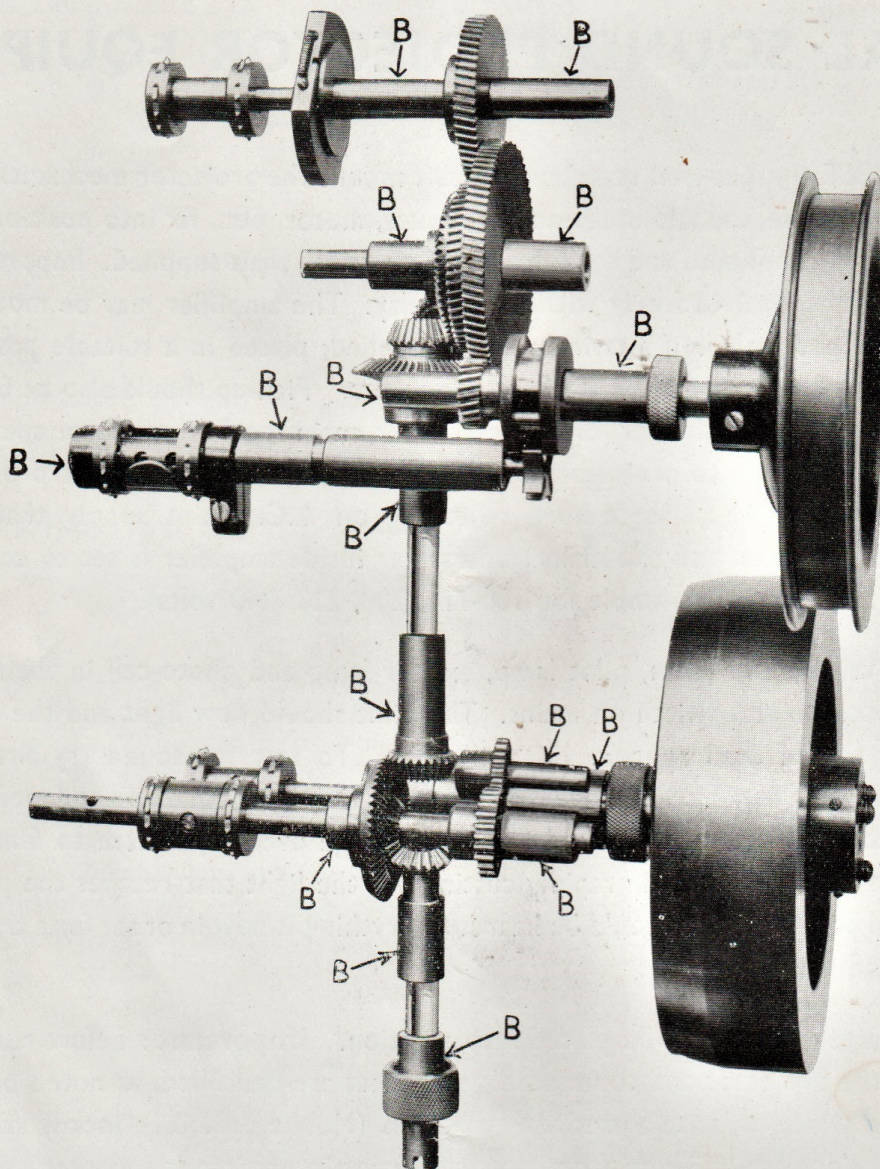
ASSEMBLE the pedestal stand and on this mount the projector mechanism and Lamp house, top and bottom spool boxes, motor, etc., fix into position the exciter lamphouse and small fly wheel on roller shaft supplied. Important : note that this revolves freely without end play. The amplifier may be mounted on back of pedestal or if a twin outfit is supplied, placed in a suitable position preferably between and in front of the projectors. Pick-up should also be fitted. Connect exciter lamp holder, photo-cell holder, main speaker, monotor speaker, mains supply, cables to projector, amplifier, and the whole equipment properly earthed. Important : see before switching on A.C. mains supply that the motor on projector also the main transformer inside amplifier is set to correct voltage (amplifier is adjustable for 100-110, 200, 220, 240 volts).

Place all valves, fuse bulbs, pilot lamp, exciter lamp and photo-cell in their respective position and switch on mains. The pilot should now light and the milli-ammeter should read approx. 130 milliamps. To test for sound try first on non-sync., see that the top change over switch, speaker switch, main and monotor volume controls are on. If found in order change over top switch to film and switch on exciter lamp. By rapidly cutting out the light that reaches the photo cell a loud popping noise should be heard. Everything is now in order for a try-out with sound on film.

The projector must next be placed into position. **Important :** before running see that the projector and soundhead gear boxes are half filled, as noted by the inspection windows, with a medium grade oil (Mobile B.B. Oil), jockey rollers, automatic light cut-off drum (top sprocket) front intermittent sprocket bearing and bottom take-up bearing (handle shaft).

See that the arc lamp mechanism is in order, mirror fitted, correct size carbons in position and connections are made to a suitable D.C. supply and through a suitable resistance. The film is now threaded as illustrated on page 7 (leaving approx. the same loops) everything is now ready for showing sound films. Switch on motor, open light cut-off and switch on exciter lamp. The volume should now be adjusted suitable for the acoustics of the Hall and noted for reference when showing sound films to an audience. Tone should be varied according to the number of patrons in the Hall. Crispness in speech is most appreciated and considering that this generally occupies 90% of the programme the tone control should be set in this position.

GEAR ARRANGEMENT OF THE IMPERIAL SOUND PROJECTOR

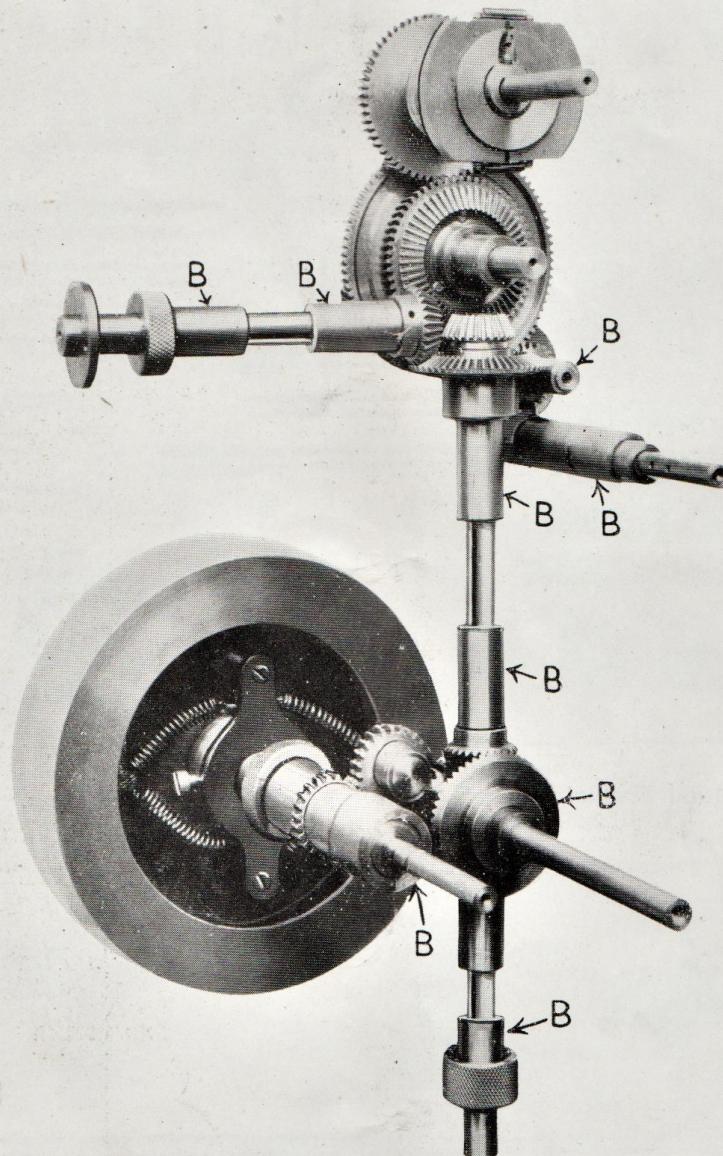


B. Denotes Phosphor Bronze Bearings.

All bearings are turned dead to size from the best quality phosphor-bronze, which are easily renewed in case of wear and are adjustable for gear meshing. All gears are manufactured from high grade steel and phosphor-bronze arranged alternately. Oil retaining grooves are on all shafts and outside bearings have adjustable oil retaining rings. Compactness, short distance between bearings, best quality material and the whole assembly running in oil gives an indefinite life.

The Maltese cross is turned from bar out of a special cast steel and cut to a very high degree of accuracy by a special process. The advantages of a small cross are :—less weight, longer life and a quicker picture movement which gives more light on the screen. Striker cam is glass hard and ground dead true to shaft. The maltese cross is easily removable and adjustable should ever occasion arise.

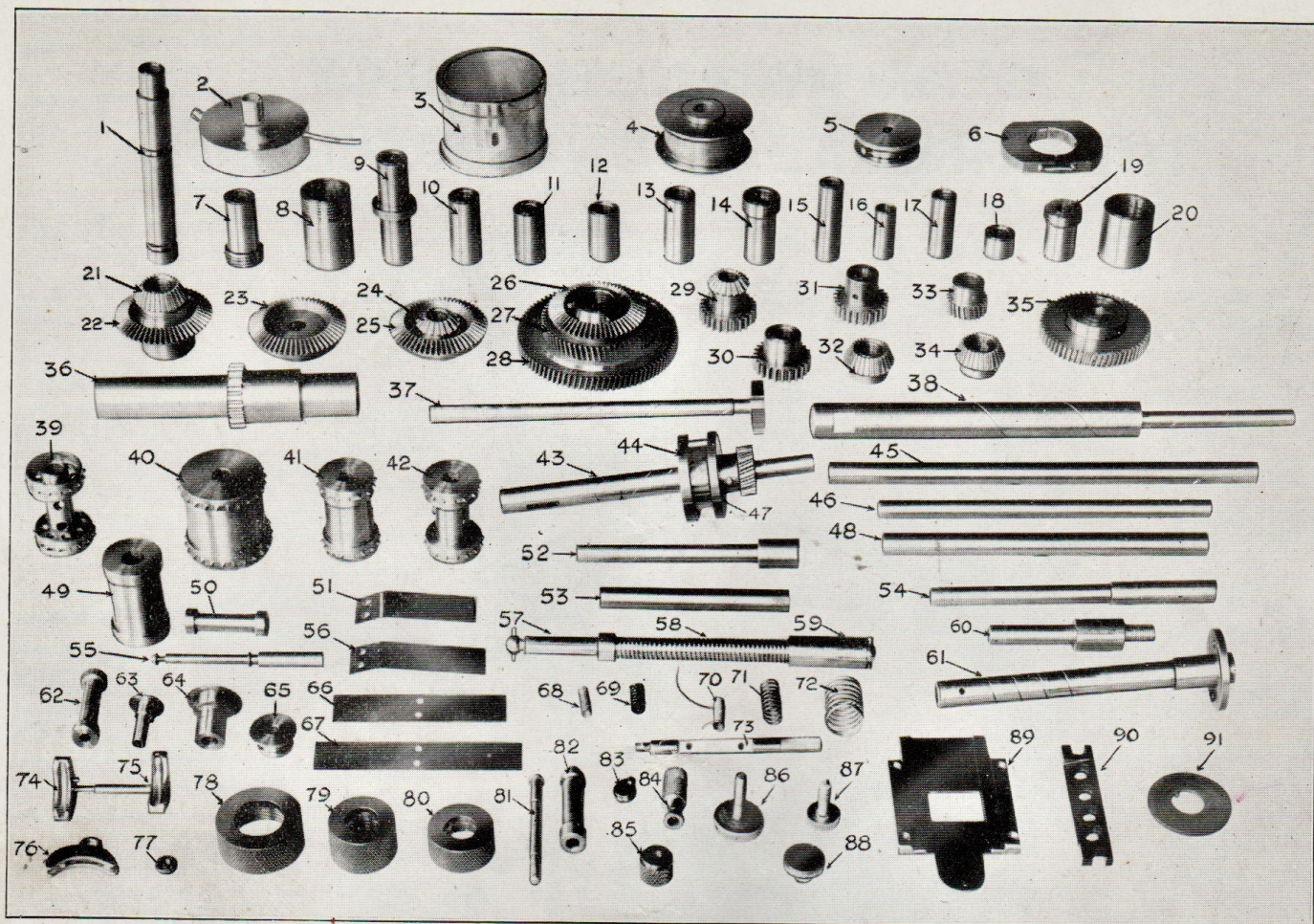
GEAR ARRANGEMENT OF THE IMPERIAL SOUND PROJECTOR



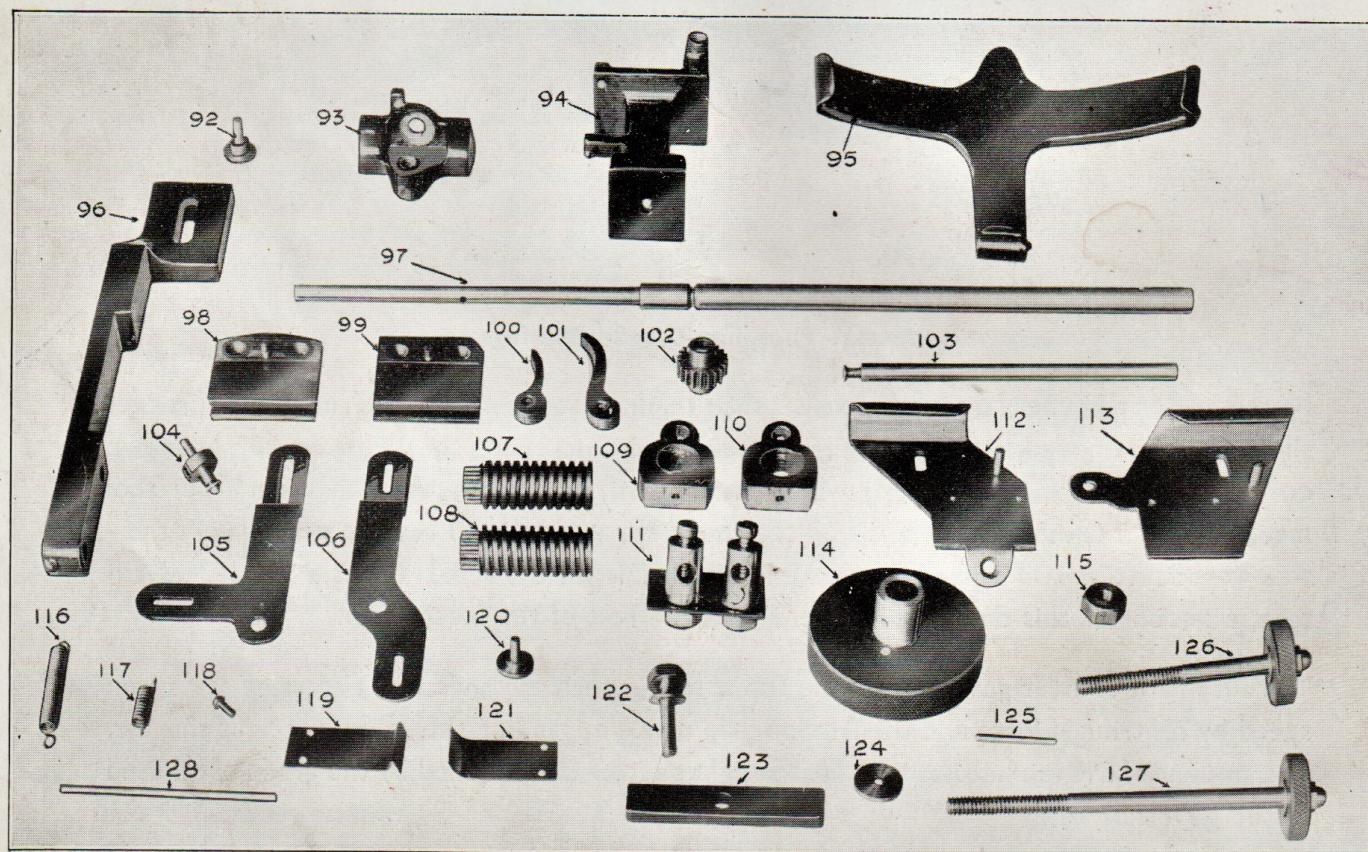
B. denotes Phosphor Bronze Bearings.

NOTE :—Spring buffer on sound sprocket shaft to eliminate gear ripple. The sound sprocket shaft is easily removed by taking off film sprocket and unscrewing cheese head screw as shown on boss (between buffer springs) when shaft and fly-wheel can be withdrawn from the mechanism. It is most important that the sound sprocket should revolve dead true, otherwise reproduction will suffer. The ease in which this shaft is removable is a decided advantage, especially as this does not interfere with the rest of the mechanism.

The automatic shutter governor on the top sprocket shaft expands when rotating at a given speed by centrifugal force and the friction grip of the expanding shoes lifts the light shutter. The amount of friction necessary to lift the light shutter is controlled by the grade of oil used in the governor case.



Sound Projector Spare Parts. See separate list for prices.



Mirror Arc Spare Parts. See separate list for prices.

IMPERIAL SOUND PROJECTOR SPARE PARTS.

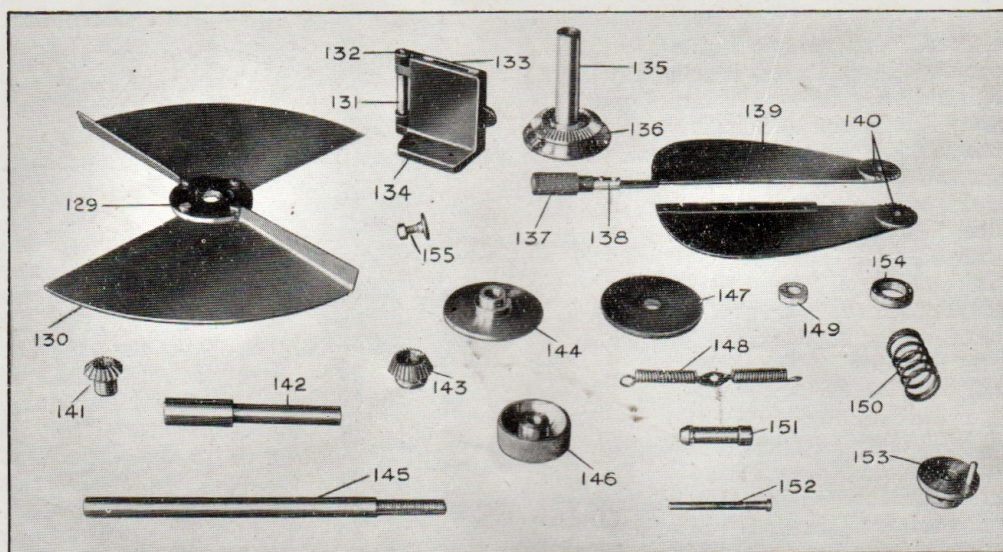
See separate list for prices.

No.	Description.	No.	Description.
1	Maltese Cross Eccentric Bearing.	58	Spring for connecting Spindle of Bottom Spool Box.
2	Automatic Light Cut-off Bearing Case.	59	Collar for connecting Spindle of Bottom Spool Box.
3	Adjustable Film Runner for soundhead.	60	Spindle for Idler Sprocket.
4	Jockey Roller for Flat Belt Drive.	61	Flicker Spindle.
5	Automatic Light Cut-off Shoes Holder.	62	Bottom Roller of Gate.
6	Automatic Light Cut-off Shoes complete with Springs.	63	Half Roller for Top of Gate.
7	Outer Bush for Striker Spindle.	64	Half Roller for Film Tension of Photo Cell Tube.
8	Outer Bush for Sound Shaft.	65	Grooved Roller for Roller Brackets.
9	Bush for Nos. 26, 27 and 28.	66	Short Spring for Skid Bracket of Sprockets.
10	Bush for Centre Drive.	67	Long Spring for Skid Bracket of Sprockets.
11	Inner Bush for Bottom Spool Box Drive.	68	Spring for Half Roller at Top of Gate.
12	Outer Bush for 26, 27 and 28.	69	Spring for Skid Tension of Gate.
13	Inner Bush for Flicker Spindle.	70	Spring for Intermittent Shoe Bracket.
14	Outer Bush for Flicker Spindle.	71	Spring for Half Roller of P.E.C. Tube.
15	Inner Bush for Top Sprocket Spindle.	72	Spring for Idler Sprocket.
16	Inner Bush for Striker Shaft.	73	Spindle for Safety Shutter.
17	Outer Bush for Top Sprocket Spindle.	74	Skid for Intermittent Sprocket.
18	Inner Bush for Take-up Sprocket Shaft.	75	Skid and Spindle for Intermittent Sprocket.
19	Outer Bush for Bottom Spool Box Drive.	76	Soundhead Sprocket Skid.
20	Inner Bush for Sound Shaft.	77	Knurled Nut for Spring Tension of Gate Skids.
21	Gear for Top of Centre Drive to Soundhead.	78	Gland Nut for Sound Shaft.
22	Gear for Driving Flicker Spindle.	79	Gland Nut for Striker Shaft and Bottom Spool Box Drive.
23	Gear for driving Soundhead, exposed take-up clutch type ; also for 24" spool box type.	80	Gland Nut for Flicker Spindle.
24	Gear for driving Bottom Spool Box Drive, enclosed clutch type.	81	Spindle for Fire Trap Roller.
25	Gear for driving Soundhead, enclosed clutch type.	82	Fire Trap Roller.
26	Compound Gear for Top Gear Box.	83	Adjusting Screw for Lens of Exciter Box.
27	Compound Gear for Top Gear Box.	84	Knurled Knob for Roller.
28	Compound Gear for Top Gear Box.	85	Knurled Knob for Adjusting Exciter Lamp.
29	Compound Gear for Soundhead, exposed clutch type, also for 24" spool box type.	86	Locking Screw for Light Condenser.
30	Driving Gear for Take-up Shaft, enclosed clutch type.	87	Locking Screw for Lens Carrier.
31	Idler Gear for Soundhead.	88	Knurled Knob for Lens Adjustment.
32	Gear for Flicker Spindle.	89	Aperture Skid (Silent, square frame, new frame size).
33	Striker Gear.	90	Gate Skid.
34	Centre Gear for driving Soundhead, from Projector.	91	Tension Washer for Idler Sprocket.
35	Gear for Top Sprocket Spindle.	92	Screw for Swivel Bracket of Mirror.
36	Sleeve Gear for Sound Shaft.	93	Swivel Bracket.
37	Maltese Cross.	94	Mirror Pedestal.
38	Sound Shaft.	95	Mirror Holder.
39	Intermittent Sprocket.	96	Adjusting Arm for Mirror.
40	Idler Sprocket.	97	Spindle for Operating Carbons.
41	Take-up Sprocket.	98	Slide for Vertical Carbon Holder.
42	Sound Shaft Sprocket.	99	Slide for Horizontal Carbon Holder.
43	Striker Shaft.	100	Locking Lever for Vertical Carbon.
44	Washer for Striker Shaft, pair with striker pin.	101	Locking Lever for Horizontal Carbon.
45	Take-up Shaft.	102	Gear for operating Carbons.
46	Top Sprocket Spindle.	103	Spindle for operating Worms.
47	Striker Shaft, complete with Washers, Pin and Gear.	104	Stud for Locking Lever.
48	Spindle for Centre Drive.	105	Operating Lever for Vertical Carbon Slide.
49	Roller under Photo Cell Tube.	106	Operating Lever for Horizontal Carbon Slide.
50	Idler Roller for Top of Gate.	107	Left Hand Operating Worm.
51	Tension Spring for Roller Bracket.	108	Right Hand Operating Worm.
52	Bottom Spool Box Drive Spindle.	109	Left Hand Traversing Worm Slide.
53	Spindle for Compound Gear.	110	Right Hand Traversing Worm Slide.
54	Spindle for Roller under Photo Cell Tube.	111	Terminal Block.
55	Spindle for Idler Roller at Top of Gate.	112	Positive Carbon Holder.
56	Tension Spring for Roller Bracket.	113	Negative Carbon Holder.
57	Connecting Spindle for Bottom Spool Box.	114	Fibre Handle for Operating Carbons.
		115	Terminal Nut for Carbon Holder.
		116	Tilting Spring of Mirror.
		117	Swivelling Spring of Mirror.
		118	Screw for Tilting Spring.

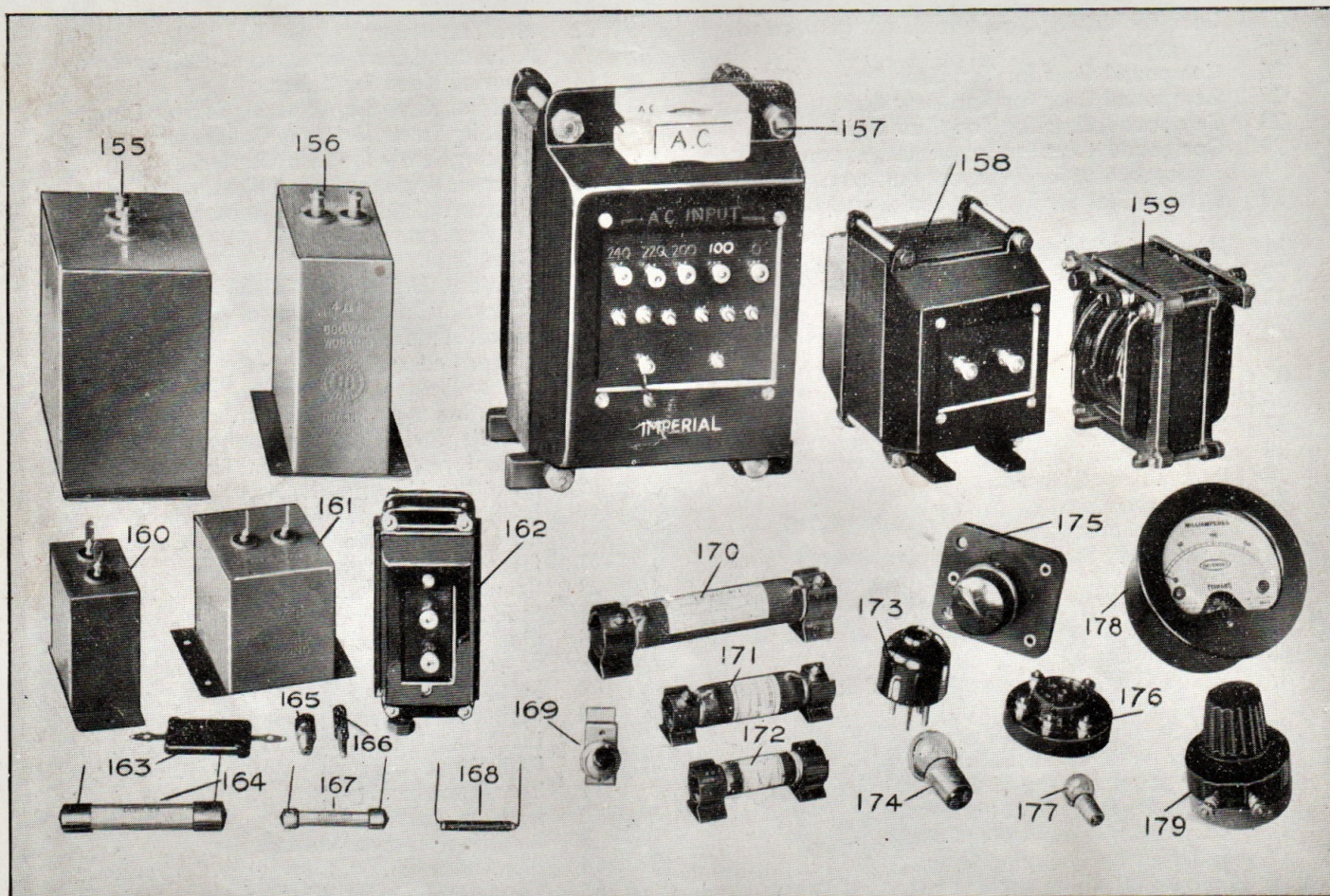
IMPERIAL SOUND PROJECTOR SPARE PARTS.

Specify number when ordering.

Parts not listed can be supplied if a description is supplied when ordering.



Sound Projector Spare Parts. See separate list for prices.



Amplifier Spare Parts. See separate list for prices.

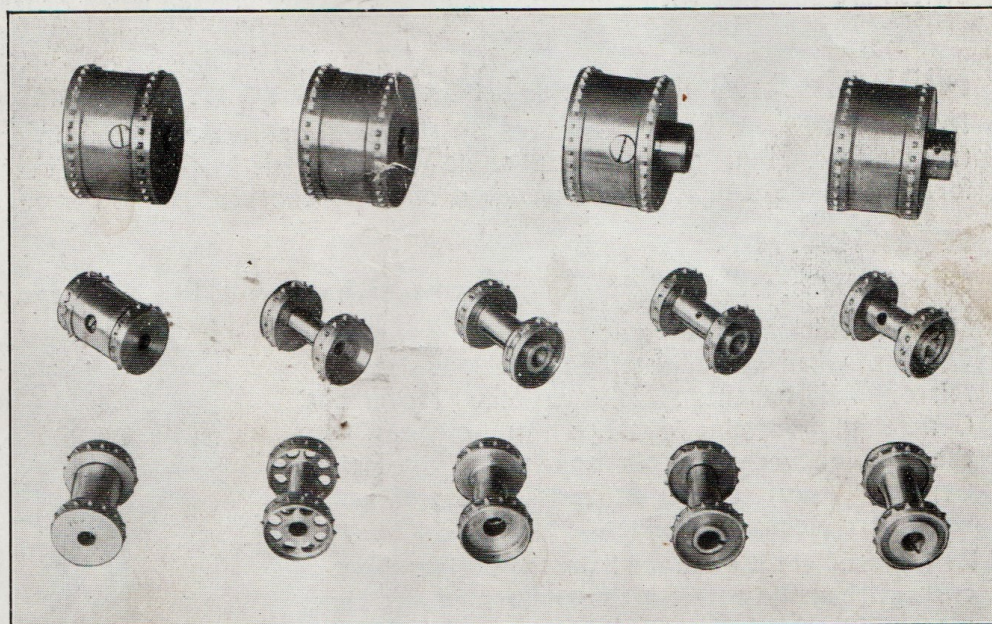
IMPERIAL SOUND PROJECTOR SPARE PARTS.

See separate list for prices.

No.	Description.	No.	Description.
119	Spring for Operating Spindle.	150	Spring for Clutch Tension of Bottom Spool Box Drive.
120	Operating Lever Pin.	151	Fire Trap Roller.
121	Spring for Operating Spindle.	152	Spindle for Fire Trap Roller.
122	Locking Screw for Mirror Pedestal.	153	Driving Collar for Bottom Spool.
123	Plate for Holding Mirror Arc Mechanism.	154	Collar for Bottom Spool Box Bearing.
124	Distance Washer for Locking Lever.	155	Screw and Nut for Light Cut-Off Blades.
125	Taper Pin for Operating Gear.	155	6M.F.D. Condenser, 500 A.C. Working.
126	Swivelling Screw.	156	4M.F.D. Condenser, 500 A.C. Working.
127	Tilting Screw.	157	A.C. Mains Transformer.
128	Inch Pins for Swivel Block of Mirror.	158	L.F. Choke.
129	Fan Washer.	159	Intervalve Transformer.
130	Fan.	160	2.M.F.D. Condenser, 250 A.C. Working.
131	Spring for Fire Trap Hinge.	161	4.M.F.D. Condenser, 250 A.C. Working.
132	Pin for Fire Trap Hinge.	162	L.F. Choke.
133	Half Fire Trap.	163	.01.M.F.D. Condenser.
134	Half Fire Trap.	164	"Dubilier" 3-watt Resistance.
135	Bearing of Bottom Spool Box Spindle.	165	Banana Socket.
136	Clutch Gear of Bottom Spool Box Drive.	166	Banana Plug.
137	Fibre Handle for Light Cut-Off.	167	"Dubilier" 1-watt Resistance.
138	Stud for Fibre Handle of Light Cut-Off.	168	Grid Leak.
139	Blades of Light Cut-Off.	169	Switch.
140	Operating Gears of Light Cut-Off.	170	"Zenite" Resistance, 6,000 ohms.
141	Bottom Spool Box Driving Gear (in Sound-head).	171	"Zenite" Resistance.
142	Slotted Spindle for Bottom Spool Box Drive.	172	"Zenite" Resistance.
143	Gear for Bottom Spool Box Drive.	173	Cable Plug (Loudspeaker).
144	Clutch Washer for Bottom Spool Box Drive.	174	Pilot Lamp.
145	Bottom Spool Box Spindle.	175	Tone Control.
146	Adjusting Nut for Bottom Spool Box Spindle.	176	Valve Holder.
147	Clutch Leather.	177	Fuse.
148	Springs for Fly Wheel Filter.	178	Milliamp. Meter.
149	Felt Packing Washer.	179	Volume Control.

Save approximately 50% on your Sprocket replacements.

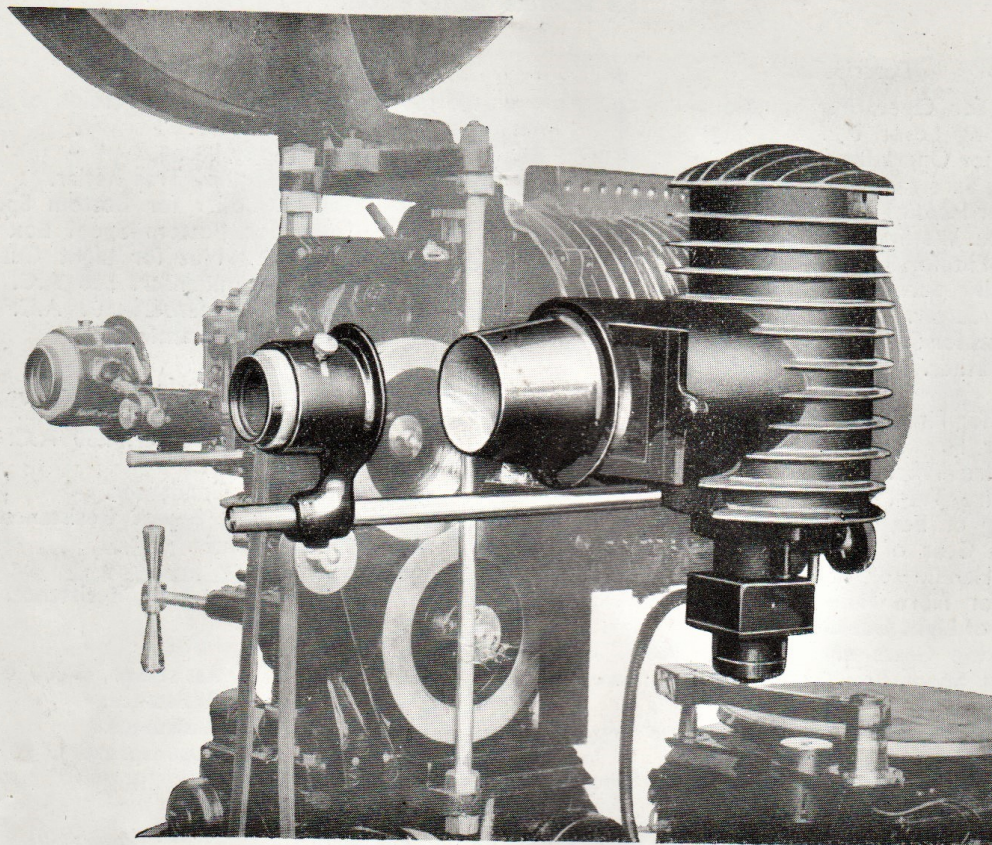
Guaranteed accurate to fine limits, cannot be bettered commercially for accuracy or finish.



Various types of Sprockets manufactured at our works and supplied to fit any make or type of Projector.

IMPERIAL PARTS

for SLIDES or as a PROJECTION LANTERN illustrated ; fitted to an Imperial Sound Projector.



Supplied with 1,000 watt Projection Lamp, can be easily adapted to existing Imperial Projector, either for Slides (supplied with Slide Carrier, Front Cowl, Lens Holder, Light Cut-Off and extension rod) or if ordered without, for adapting to standard or portable Imperial Projectors for use as a Projection Lantern. Condenser, Mirror, Lamp Holder, Lamp and Switch are supplied with Lantern. Important : state voltage when ordering. Lens extra.

MIRROR ARC MECHANISMS FOR FITTING TO OTHER MAKES OF PROJECTORS.

Imperial Mirror Arc Mechanisms are simple in operation, unique in design, compact and trouble-free. Built of the best possible raw materials by highly skilled engineers and conforming to the usual Imperial standard of 'only the best is good enough.'

SPECIFICATION :

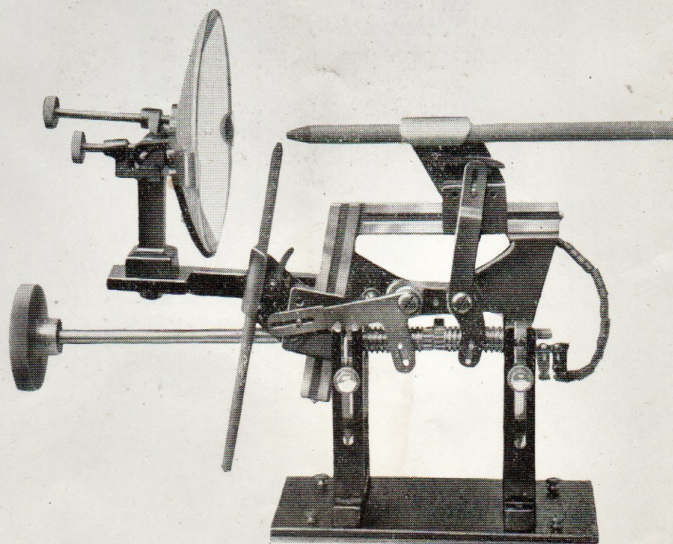
One Knob Control for Carbon Movements, each controlled independently or together.

Simple, efficient and quick locking device for Carbons, which are adjustable for various sizes.

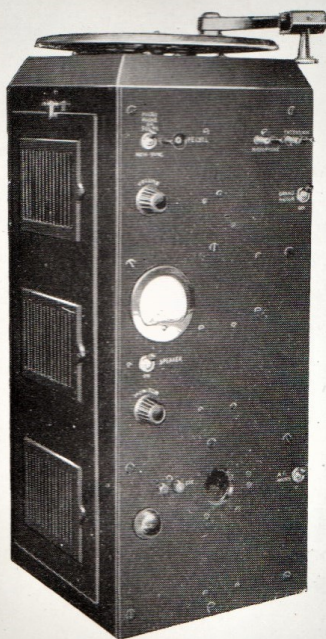
Mirror Adjustments : Tilting, Side Movement, Centreing, Focussing distance from carbons, also the whole mechanism is adjustable for Height Centre. Adjustable to fit various sizes of Lamp-house Arc Mechanism Slides.

25% more light is obtained from the same amount of current than the out-of-date parallel feed Arc Lamp mechanism, this is due to the intense white light of the positive carbon crater not being interrupted by the negative carbon, also no light is lost as in the case with a mirror having a centre hole.

Supplied in two sizes, for 5½" or 8" Mirrors.



IMPERIAL AMPLIFIERS.



**STANDARD CINEMA
AMPLIFIER.**

SPECIFICATION :

All amplifier cases are built of cast aluminium trays and sheets, approx. 3/16ths" in thickness assembled and bolted together in unit form and are easily dismantled if required.

The standard and portable types are identical in circuit arrangements and parts, all parts are worked at 50% below rated value. Transformers, chokes, etc., are manufactured throughout at our works in order to comply to our usual standards of material and workmanship.

All important resistances are wire wound and easily changed. All valves are decoupled to stop self-oscillation and no expense has been spared to ensure reliability, as we realise that should any faults develop when in use, great financial loss to the cinema may result, in addition to loss of prestige.

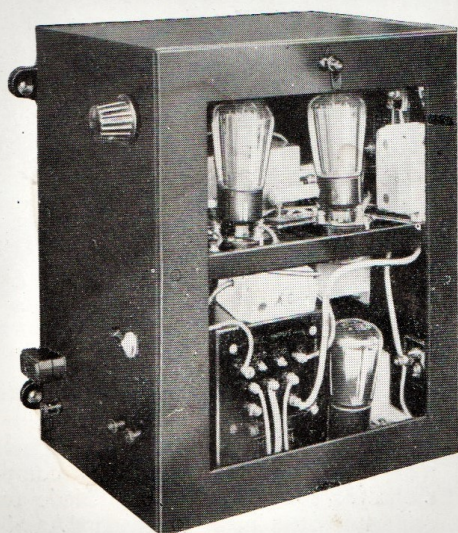
Like all Imperial products, these are dependable on all occasions, and providing a spare valve is kept at hand, no other precautions should be necessary.



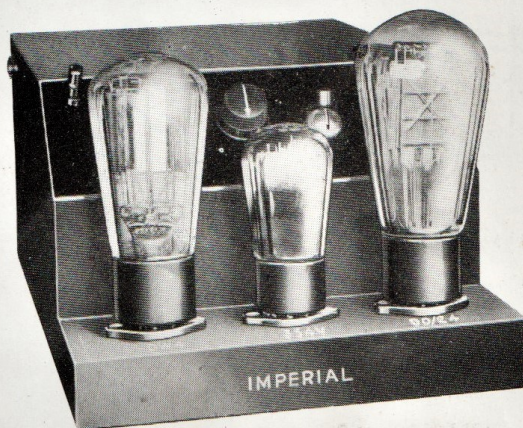
**PORTABLE CINEMA
AMPLIFIER.**

The Imperial amplifier can be classed as a universal amplifier suitable for all needs and conditions which no other make can offer. Sturdily built by a firm whose whole business has been built on sound principles.

The Amplifier is absolutely complete for sound on film reproducing, and contains the head amplifier, H.T. voltage for Photo Cell excitation, sensitivity matching arrangements for two photo cells, exciter lamp supply, (15 amps. at 10 volts), 4 stages, separate valve H.T. rectifier for first 3 stages, 2 valve H.T. rectifier for output valves, H.T. rectifier for loud speaker field. Complete with high-class milliammeter, wire wound monitor and main volume controls, switches, etc. Non sync. can be supplied with standard amplifier, complete with electric motor and pick-up, change over switch, etc., the whole making a compact arrangement for incidental music when required. This amplifier can also be used for relaying or for public address work without any additions beyond a microphone and transformer.



**2 STAGE SOUNDHEAD
AMPLIFIER.**



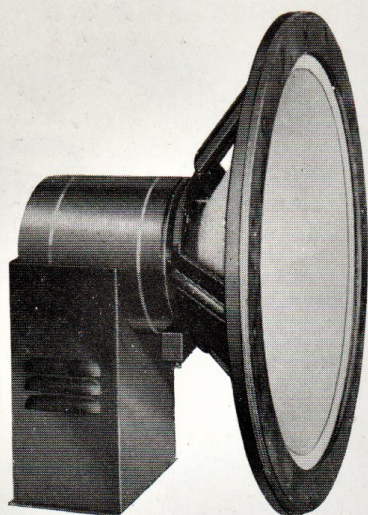
DISC AMPLIFIER.

Ideal for incidental music in Cafes, Hotels, Cinema Lounges, or any place where a large volume is not required.

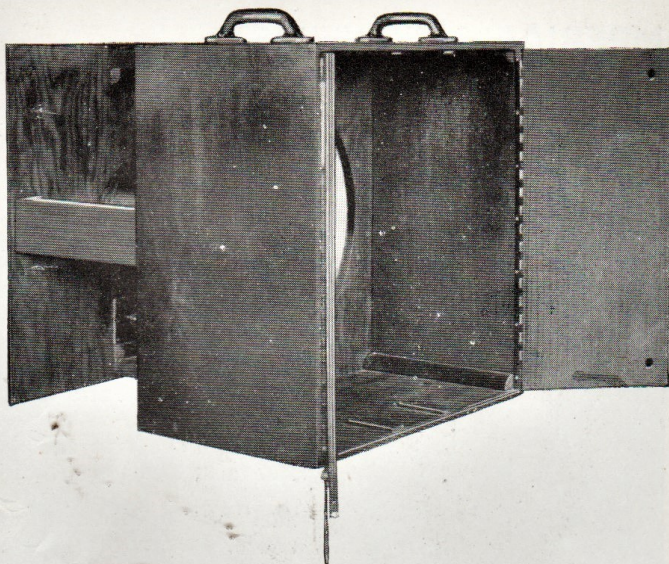
6 watts undistorted speech output.

2 stage Head Amplifiers, complete with valves ready for use. Complete with valve rectifier for feeding valves and photo cell excitation voltage with pure H.T. Separate voltage adjustment for each photo cell is provided also 15 amps. at 10 volts exciter lamp supply. All components are worked at 50% under-rate values, and conform to the Mains Amplifier principles in every detail, and can be depended upon in all cases for first-class results and reliability.

IMPERIAL PARTS.



CINEMA SPEAKER.



PORTABLE COLLAPSIBLE CASE SPEAKER.

Imperial Cinema Loud Speakers are built to conform to the following specification :—

Finest possible reproduction. Sensitivity. Capable of handling large inputs. 25 speech watts, if necessary.

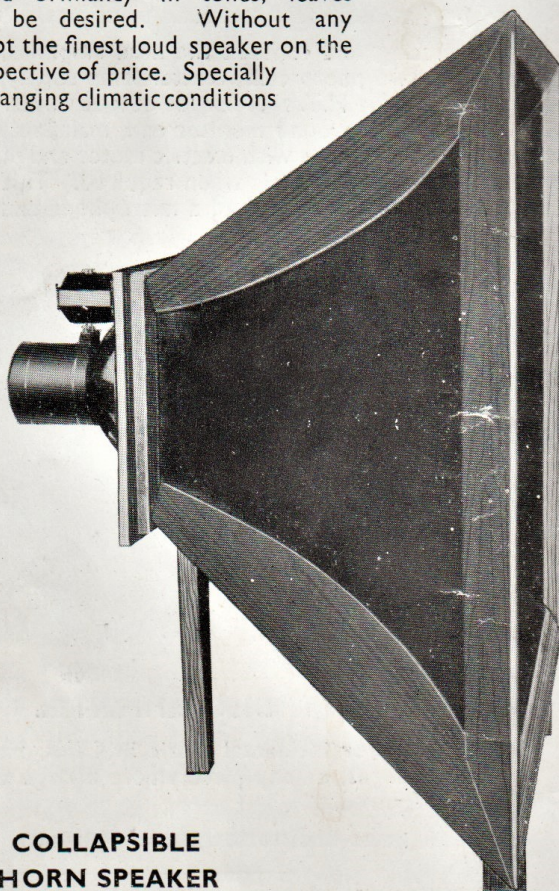
Rigid suspension and improved centreing of speech coil.

All parts standardised and easily interchangeable in case of mishap.

14" cone, 12 ohms impedance speech coil. Supplied with a 220 volt field coil only. With or without A.C. to D.C. rectifier. Illustration shown is with rectifier which is not necessary if the Imperial Amplifier is used.

Approx. 20 watts field current consumption.

Standardised with one impedance speech coil only to save mistakes and complications. Variations for different output valves are provided for in the primary of the speech coil transformer, if ordered. Having a good base response and brilliancy in tones, leaves nothing to be desired. Without any possible doubt the finest loud speaker on the market irrespective of price. Specially treated for changing climatic conditions



**COLLAPSIBLE
HORN SPEAKER**



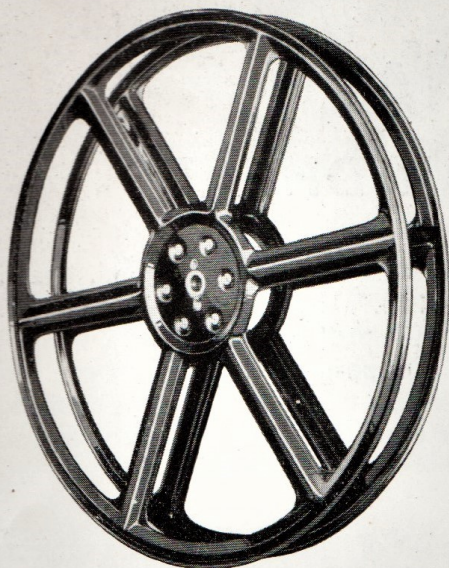
RECORD CABINET.

12" records can be stored in four compartments provided, also separate compartment for spare valves, etc. Made to fit underneath the Imperial Standard Amplifier making an ideal and compact assembly.

Depth of Horn :—2 ft. 4 in. Overall depth of Horn and Speaker :—3 ft. 3½ in. Speaker Mouth :—4 ft. Overall height of Speaker including Legs :—4 ft. 5 in.

These speakers are made of best quality ply wood and hardwood frame and are made as four separate sides, with back portion for quickly bolting together when being installed. We strongly recommend the use of these horns in preference to a flat baffle, as 25% increased volume results, together with better quality and more even distribution of sound.

IMPERIAL PARTS.

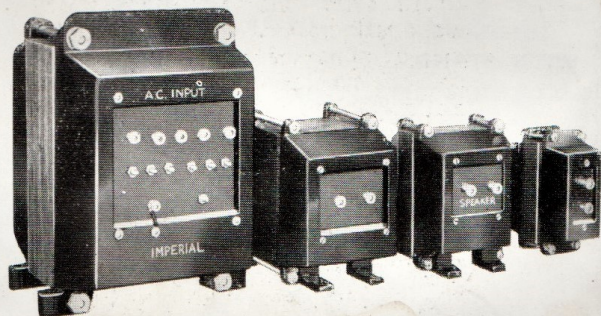


SPOOLS.

Best quality japanned, with rolled edge, stamped out of sheet metal, with wood core and brass centre.

Size : $13\frac{1}{2}$ -in. diam.

$22\frac{1}{2}$ -in. diam.—Special type and size for export only.



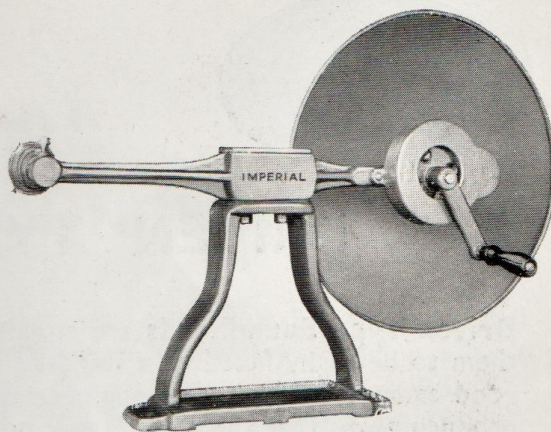
TRANSFORMERS.

Imperial Transformer are built of the best quality material throughout, and will give double the rated output constantly without over-heating.

Reliability is the chief factor and not the price.

Core sizes in all transformers and chokes are well above saturation point, and only the best of insulated stampings are allowed in their manufacture.

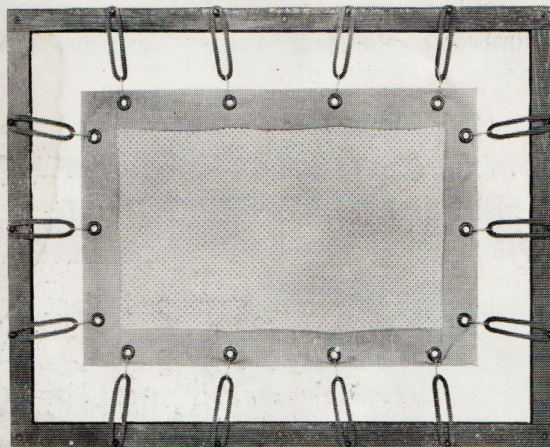
Any size transformers can be supplied ; prices on application.



RE-WINDER.

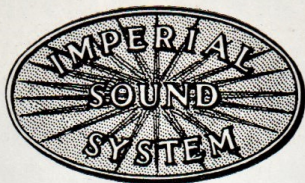
Re-winder complete with Stripper Disc, Wing Nuts, Joining Table, etc.

Smooth running, strong in construction, compact and easily fitted.



SOUND SCREEN.

These Sound Screens can be supplied to any dimensions and are complete with rubber suspension rings for taking up slackness due to varying atmospheric conditions. These screens are seamless, which obviates the seam marking which is noticeable on screens that are joined, after having been in use some time. The holes are woven into the screen when it is being manufactured and are not punched in afterwards, which only weakens the screen on account of the threads being cut. These screens have a long life, and are easily renovated when occasion arises. When ordering, state inside measurement of frame on which the screen is to be placed.



IMPERIAL

DRIVEN TYPE SOUNDHEADS

Driven Type Soundheads are supplied on a specially designed pedestal stand, enabling them to be easily fitted to a standard projector mechanism. The Imperial Soundhead is a good example of high-class engineering. One of the main problems of sound on film reproducing was that the sound track on the film should run perfectly in track by the slit of light, also at a dead constant speed. The chief cause of ripple or slight variations of speed is due to minute imperfections in all types of gears, it has been therefore necessary to devise some means to overcome this trouble.

It was essential that the sprocket pulling the film by the slit of light should not be subject to these minute mechanical vibrations. A suitable sized fly-wheel is fitted to the sound sprocket and isolated by means of a spring filter device from the rest of the mechanism. The film, after leaving the bottom sprocket of the projector mechanism, is allowed a small loop of film before entering the sound gate which is pulled through evenly by the sound sprocket, another loop of film is then allowed before engaging with the next sprocket of the soundhead, which is directly geared with the projector mechanism, the function of which is to protect the sound sprocket from variations of speeds due to uneven take-up of the bottom spool. This simple explanation shows how important the mechanical arrangement must be to give perfect reproduction.

SPECIFICATION OF THE IMPERIAL DRIVEN SOUND- HEAD.

Soundhead driven by gears and silent chain.

Quick detachable sound gates (for cleaning purposes).

Self-locking roller brackets.

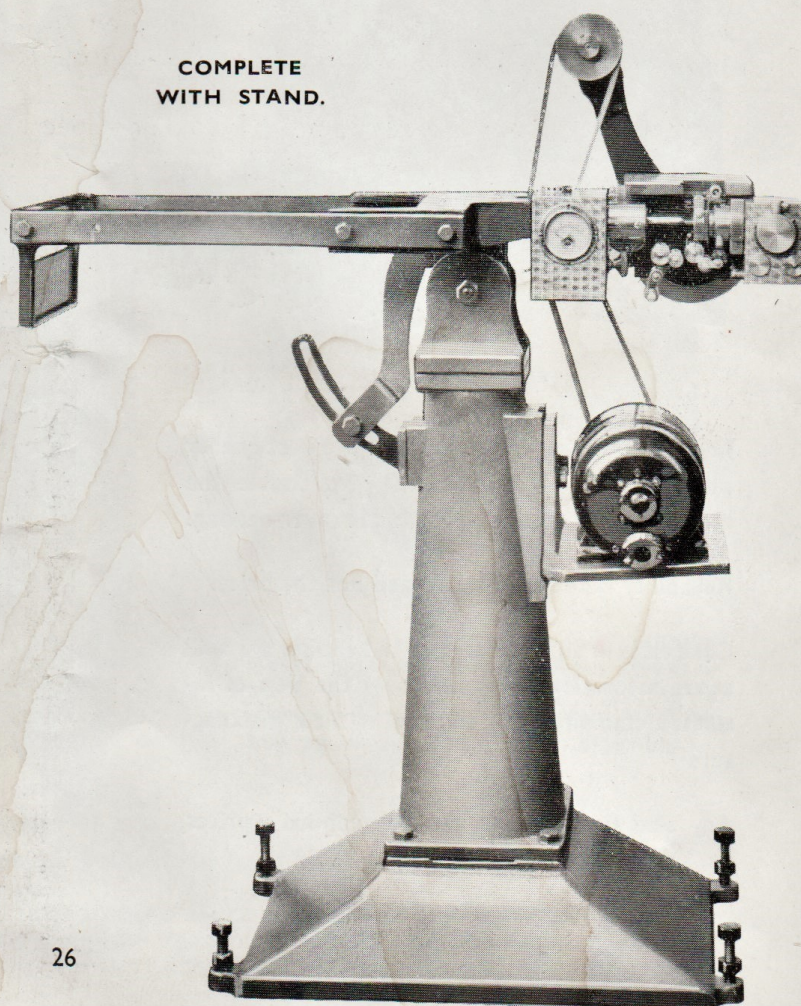
Ease in adjustment of Exciter Lamp and replacements.

Double sprocket with filter and fly-wheel (eliminating any trace of irregularity of drive or flutter).

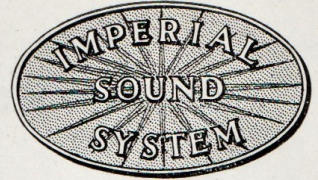
Optical Unit by Messrs. Taylor, Taylor & Hobson, Ltd. (world-renowned for highest quality lenses, etc.).

All gears running in an oil bath, and a masterpiece of engineering precision throughout. A highly finished product.

COMPLETE
WITH STAND.



Imperial Driven Soundhead.



IMPERIAL

FILM DRIVEN SOUNDHEAD

The Imperial Film Driven Soundhead differs from any other soundhead of the so-called "Pull Thro' Type." The film is the means of supplying the motive power for driving a large sprocket which is in two halves to allow the optical slit of light to penetrate the sound track and so registers the light impulses on the photo cell ; this cell is placed inside a phosphor-bronze bearing on which the sprocket revolves. A fly-wheel is attached to one side of the split sprocket, the momentum of which effectually smooths out the minute impulse which occurs through the take-up sprocket of the projector not running evenly.

This mechanical ripple is not always due to defects in the projector mechanism, but is bound to occur owing to slight binding or freedom of the gear teeth when engaging. No strain is placed on the film when running as approximately 30 teeth are always in engagement, which prevents stretching of the sprocket holes, and also prevents side play, which is a serious factor against good reproduction. It is only due to the care in design and workmanship of the Imperial Film Driven Soundhead that it is recognised as the only worth-while substitute for a positively driven soundhead.

The Exciter Lamp Holder is of special design to withstand the heat, and also, is made to fit the standard new G.E.C. 100 watt screw lamp.

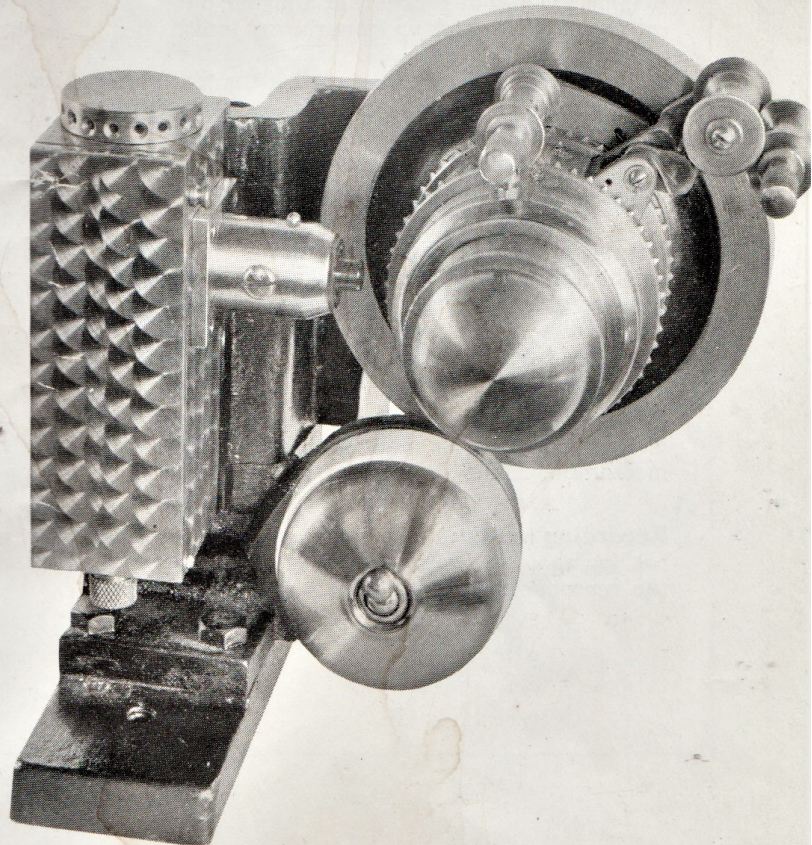
Almost all types of projectors can be adapted, including Pathe & Powers, for which a special reverse arrangement for attaching to the projector can be supplied.

Photo Cells and Exciter Lamps are sold at a special price if supplied with the Soundhead.

Used in numerous super cinemas at Home and abroad because of the quality of reproduction, perfection in design and workmanship.

90% of soundheads now being manufactured by us are for replacements on unsatisfactory equipments. For further proof, visit our works and see these in production, or ask any exhibitors who have had these in use over a period.

We would strongly advise those interested in buying soundheads to study the causes of good or bad reproduction from this source, or consult an unbiased expert on sound film reproduction. There is no doubt the verdict will be for Imperial.



SOME NOTES ON REPRODUCTION TROUBLES.

Imperial Sound Equipment is constructed throughout in the Company's factory, from the finest of materials, and embodies the most up-to-date mechanical construction and amplifier circuits. No trouble is to be expected from any part of it.

These notes are, however, intended for the guidance of the projectionist, in the unlikely event of failure of any of the components. Particularly if trouble arises during the performance, a methodical search for the cause of it is essential, which is rendered possible only by intimate knowledge of the installation.

Total loss of sound : Change over to stand-by amplifier (if provided). If still no sound, test second projector—if sound is present, change over, so allowing a few minutes to trace the fault, which in this case must lie between sound-head and change-over switch.

If the fault is located in the amplifier, it can often be traced to a particular valve by flicking each valve with the finger, starting at the output valves, and with fader up, when sound will be heard until the faulty stage is reached. The milliammeter provided is fitted with an internal fuse—try short-circuiting terminals.

If no sound is obtained from either amplifier or either projector, the fault is in the mains supply or in speaker lines. If sound is heard in monitor but not in hall speakers, it may be due to fault in speaker field supply.

Low sound : The most difficult trouble to trace. If at all possible, continue the show at a higher fader setting, and search for trouble afterwards. It is possible for a failure in practically any part of the circuit to cause this trouble. Test first all switch contacts, resistance units, smoothing condensers, and H.T. supplies.

Loss of treble frequencies of "boominess" : Check focus of optical unit, Check valve coupling resistances and condensers. See that aperture in photo-cell housing is not clogged. Dirty or oily film may cause this trouble.

Superimposed hums : The most frequent cause of hum is mains pick-up. This may be due to defective earths (especially on projector motors) or to light from an ordinary lamp run on A.C. reaching the photo cell. A loose mains transformer or choke is another possible cause.

A similar hum, but probably at a higher pitch, may be caused by light from the arc being reflected upon the photo-cell, or by direct pick-up from the arc leads.

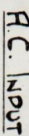
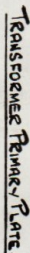
A distinctive note may be caused if the film perforations or mask lines are allowed to interrupt the light beam to the photo-cell. In either case, adjust sound track.

The typical sound of the projector mechanism may be heard in the speakers. This is due to play in the exciting lamp, optical system, or photo-cell, to a faulty connection here, or less probably to a microphonic valve in the amplifier.

Parasitic noises : A loud crackling noise may indicate a bad connection or faulty switch contact. Motor-boating (oscillation, ranging in character from frequent popping sounds to a low howl) is due either to faulty earth or to condenser or resistance breakdown. A loud hissing sound will be due to a faulty photo-cell. A high-pitched howl may be due to excess voltage on the photo-cell. Various types of sounds may be caused by outside pick-up, although this should not occur, as every part of the circuit is well screened.

Flutter : This is the term given to pitch variations due to varying speed. The cause may be mains voltage or periodicity fluctuations, or more probably is mechanical—a badly joined driving belt, lack of lubrication in the projector mechanism, or too tightly set Maltese cross.

Recording faults : In spite of the perfection which film recording has reached to-day, there is still much poor recording about. If reproduction is satisfactory except on one particular film or one particular reel, quite obviously the reproduction must not be blamed.



1. PER VOLTAGE MAY BE RANGED HERE
TO RAISE VOLTAGE INCREASE THIS RESISTANCE
TO DROP " DECREASE "
HT. = HIGH TEST CONDENSER.
LT. = LOW " "
DO = DOUBLE WATT RESISTANCE
D₃ " 3 " "
ZO = CENTRE TYPE ZO
ZI = " " ZI.

NOTE: RE: D

80,000 OHMS	Minimum.
100,000 "	Maximum

NOTE: RE "PEC" & "PEC"
THESE ARE APPROX 5 YRS APART. BOTH CELLS MAY BE
CONNECTED TO EITHER LINE OR EITHER LINE TO EITHER
CELL FOR GREATEST SENSITIVITY.

TRANSFORMER SECONDARY PLATE

IMPERIAL SOUND SYSTEM

LEICESTER

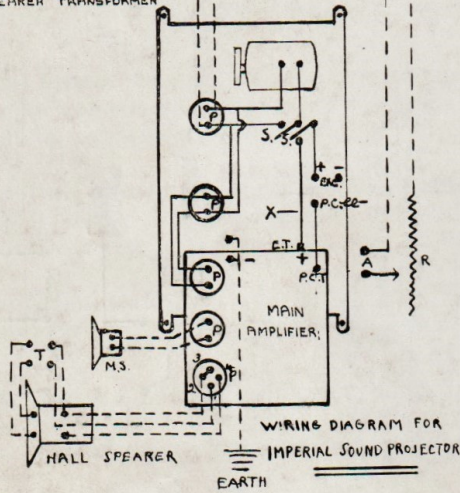
Circuit diagram of Imperial Cinema Type all mains Amplifier.

A.C. 40/60 CYCLE SUPPLY.

A.C. MAINS
SUPPLY

D.C. SUPPLY
for ARC LAMP

----- INSTALLATION WIRING
M.S. MONOTOR SPEAKER
S.S. SWITCHES
P.C. and P.C.T. PHOTO CELL TERMINALS
EXC. and ET. EXCITER TERMINALS
P. MOVABLE PLUGS
X. SINGLE WIRE TO FRAMING LIGHT
R. ARC RESISTANCES
A. ARC TERMINALS
T. SPEAKER TRANSFORMER



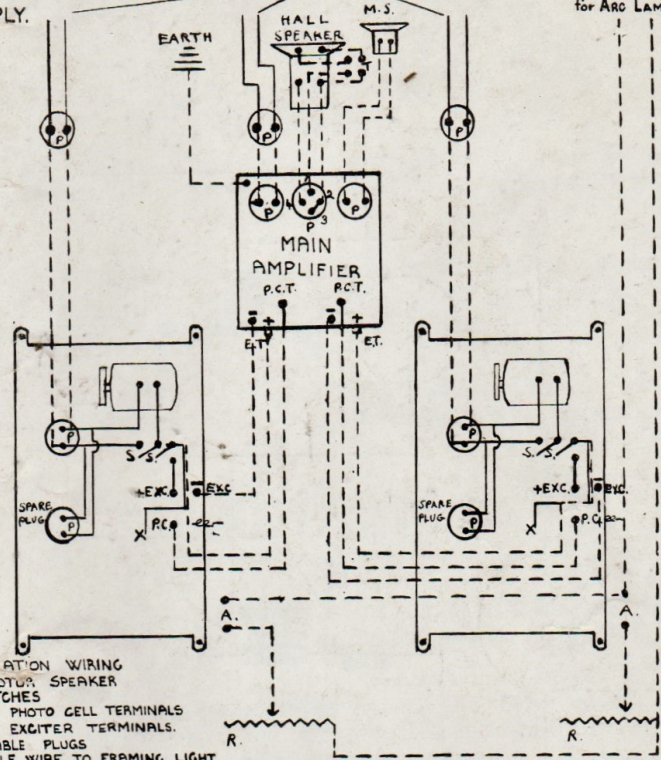
WIRING DIAGRAM FOR
IMPERIAL SOUND PROJECTOR

A.C. 40/60 CYCLE SUPPLY.

A.C. MAINS

D.C. SUPPLY
for ARC LAMPS

----- INSTALLATION WIRING
M.S. MONOTOR SPEAKER
S.S. SWITCHES
P.C. and P.C.T. PHOTO CELL TERMINALS
EX. and ET. EXCITER TERMINALS
P. MOVABLE PLUGS
X. SINGLE WIRE TO FRAMING LIGHT
R. ARC RESISTANCES
A. " TERMINALS
T. SPEAKER TRANSFORMER



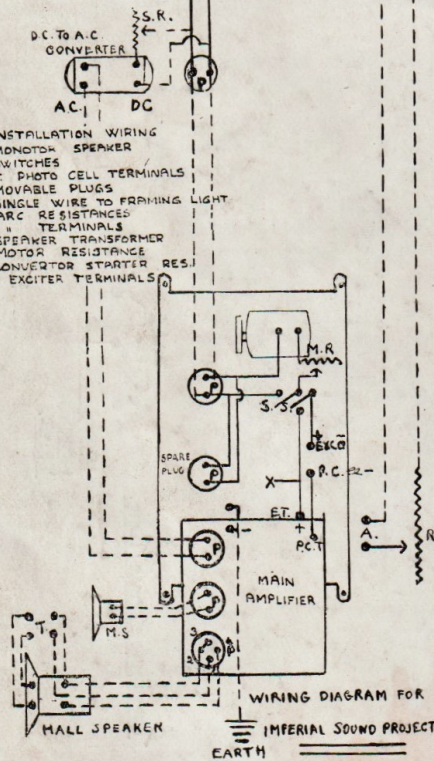
WIRING DIAGRAM FOR TWO
IMPERIAL SOUND PROJECTORS

D.C. SUPPLY.

D.C. MAINS

D.C. SUPPLY
for ARC LAMP.

----- INSTALLATION WIRING
M.S. MONOTOR SPEAKER
S.S. SWITCHES
P.C. and P.C.T. PHOTO CELL TERMINALS
P. MOVABLE PLUGS
X. SINGLE WIRE TO FRAMING LIGHT
R. ARC RESISTANCES
A. " TERMINALS
T. SPEAKER TRANSFORMER
M.R. PROJECTOR MOTOR RESISTANCE
S.R. CONVERTOR STARTER RESISTANCE
EXC. and ET. EXCITER TERMINALS



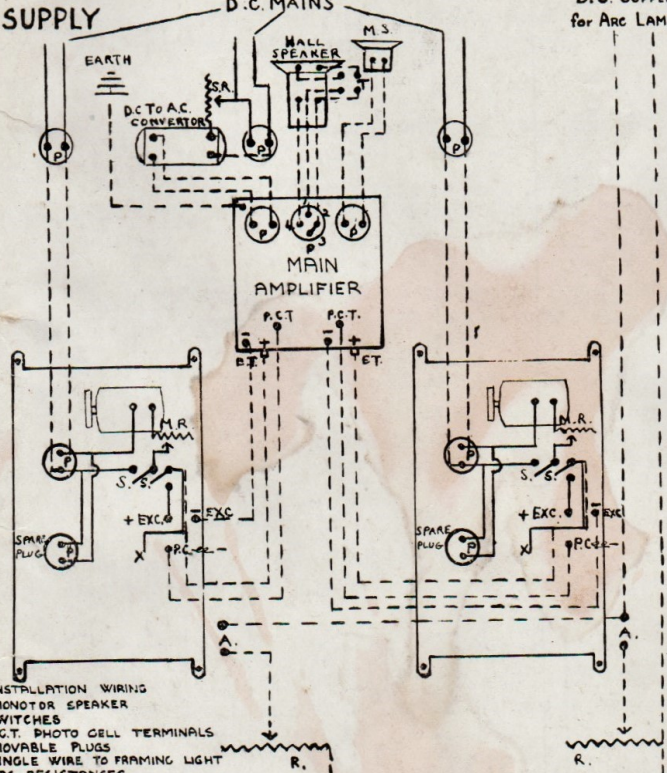
WIRING DIAGRAM FOR
IMPERIAL SOUND PROJECTOR

D.C. SUPPLY

D.C. MAINS

D.C. SUPPLY
for ARC LAMPS

----- INSTALLATION WIRING
M.S. MONOTOR SPEAKER
S.S. SWITCHES
P.C. and P.C.T. PHOTO CELL TERMINALS
P. MOVABLE PLUGS
X. SINGLE WIRE TO FRAMING LIGHT
R. ARC RESISTANCES
A. " TERMINALS
T. SPEAKER TRANSFORMER
M.R. PROJECTOR MOTOR RESISTANCE
S.R. CONVERTOR STARTER RESISTANCE
EXC. and ET. EXCITER TERMINALS



WIRING DIAGRAM FOR TWO
IMPERIAL SOUND PROJECTORS

Wiring Circuits and Particulars for Installing Projectors.

