



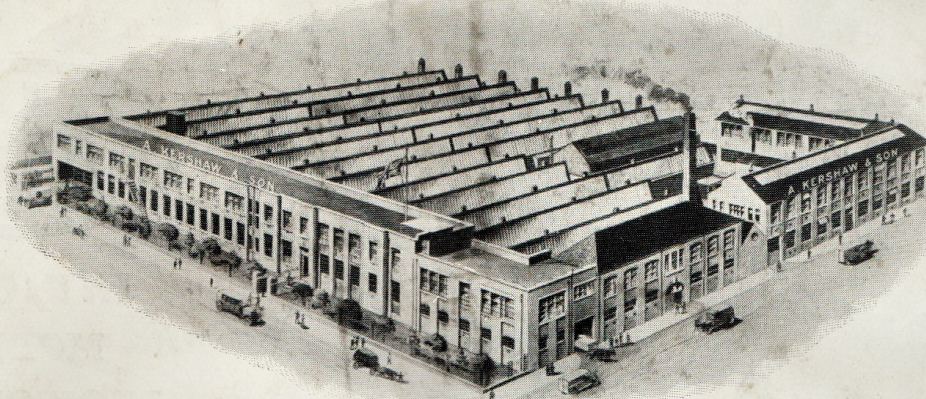
**TALKING  
PICTURE  
EQUIPMENT**

**INVICTA MODEL**









Since the earliest days of the cinematograph, 30 years ago, the engineering works of Messrs. A. Kershaw and Son at Leeds, have been building cinematograph projectors and associated KALEE equipment. These works, illustrated above, have become increasingly specialised, and their product has acquired a higher and higher reputation as the years have gone by, until today the trade mark KALEE is a household word throughout the cinematograph industry, and the works are the largest in the country for the manufacture of this specialised machinery.

The accumulated experience, combined with unique factory resources, ensures high precision and trouble-free apparatus, which is the reason why KALEE projectors are today installed in three out of every four of the cinemas in the British Isles and throughout the Empire.

This is the history of the organisation behind the Talking Picture Equipment described in the following pages.

The KALEE INVICTA SOUND FILM REPRODUCER, while maintaining a high reputation, and incorporating the most up-to-date developments, is produced at a price which places it within the reach of the small cinema, hospital, school, church, or institution.

Only the experience, organisation and factory resources behind KALEE could make such quality available at a moderate price.



LIMITED

INCORPORATING THE BUSINESSES

KERSHAW PROJECTOR CO. & E. A. LANGRISH & CO.

NATIONAL HOUSE

60-66 WARDOUR STREET, LONDON, W.1

Branches

Belfast, Birmingham, Cardiff, Dublin, Glasgow, Leeds, Manchester, Newcastle



**The**  
**KALEE INVICTA**  
**STANDARD OUTFIT**

Illustrated on the opposite page,  
comprises the following

ONE KALEE-INVICTA PICTURE MECHANISM.

TWO STANDARD 2,000 ft. FILM MAGAZINES.

TWO 2,000 ft.  $14\frac{3}{4}$  in. FILM SPOOLS.

ONE SERIES "A" PROJECTION LENS.

ONE HIGH POWER MIRROR ARC LAMP COMPLETE IN  
LAMPHOUSE.

ONE PEDESTAL STAND WITH SOUNDHEAD AND A.C.  
MOTOR.

ONE 200-250 volt HIGH CAPACITY A.C. AMPLIFIER.

ONE MONITOR LOUDSPEAKER CONVENIENTLY  
LOCATED ON THE MAIN AMPLIFIER.

ONE HEAVY DUTY AUDITORIUM LOUDSPEAKER.

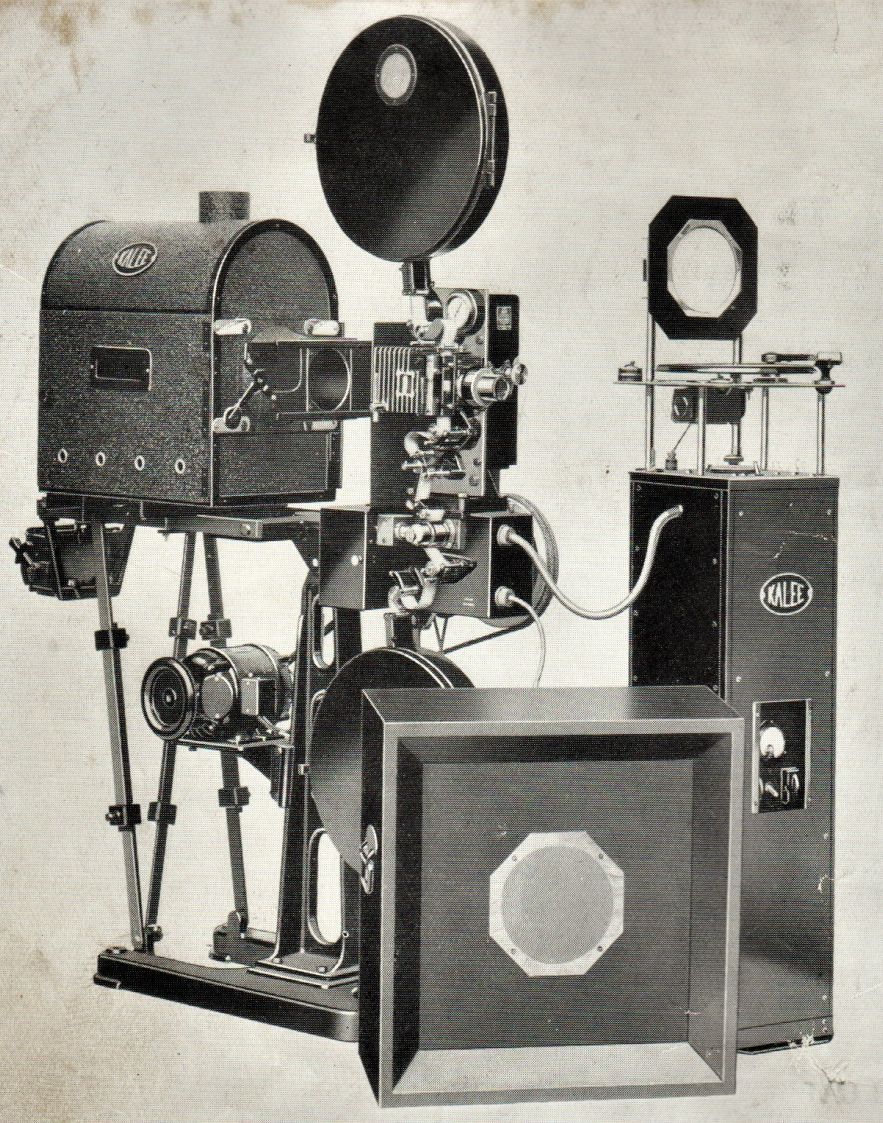
ONE TIN OF KALEE SUPEROIL AND SET OF SPANNERS.

Although this Equipment is designed for operation on any Standard alternating current electrical supply, it may also be used on a direct current circuit by the addition of suitable conversion equipment, details of which will be found on page 20.

The single Projector described in the Standard Equipment will run a twenty-minute programme, after which the normal time taken to re-load the Projector will be less than three minutes, as the operation of this Machine is extremely simple.

The Sound Equipment is designed so that two Projectors may be used with the one Amplifier, and then the continuity of programme will be the same as in any professional Cinematograph Theatre.





**INVICTA  
MODEL  
PROJECTION  
&  
SOUND  
EQUIPMENT**

Fig. 1

This equipment utilises standard 35 m/m films, producing brilliant pictures, and perfectly natural sound, with ample reserves of power.

It is entirely driven from the electric mains, and the operation is so simplified that a skilled cinema operator is not essential.

UTMOST RELIABILITY is assured, on the mechanical side by our very long experience in the manufacture of this type of machine, and on the electrical side by the use of the finest possible components in a manner which ensures an exceptionally large margin of safety.

SUPERB REPRODUCTION of both Picture and Sound is obtained by the use of a special Arc Lamp in conjunction with a drum shutter Picture Projector, and a Soundhead embodying unique features used with a balanced direct coupled Amplifier, giving a very wide range in frequency response. It can show silent as well as sound films.

Models are available for small cinemas  
and for halls of all sizes at prices from

**£270 to £500**

(Including Wiring and Installation)

Attractive Hire Purchase terms shown on Page 18.  
Demonstrations gladly given without obligation.



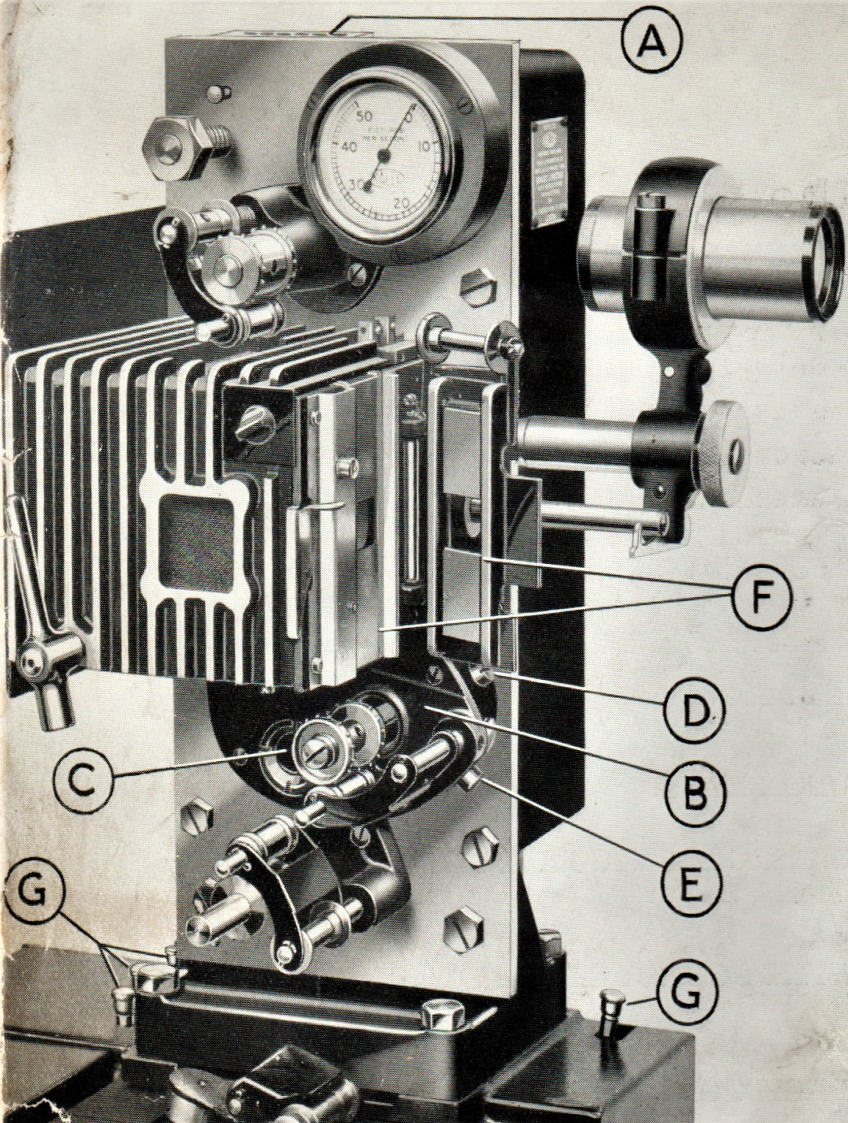


Fig. 2

## The KALEE INVICTA PICTURE PROJECTION MECHANISM

This mechanism embodies the most up-to-date features, and everything has been included to facilitate operation and upkeep, and to ensure a **STEADY, BRILLIANT, FLICKERLESS PICTURE**, with the maximum of **SAFETY**.

Following are some of the more important points contributing to this:—

- (a) The mechanism is of the latest **DRUM-SHUTTER** type, which dissipates the heat before it reaches the gate, and sets up a current of air to cool the film.
- (b) **AUTOMATIC SAFETY SHUTTER** which prevents light and heat reaching the film unless the machine is running at safe speed.
- (c) **LUBRICATION** has been simplified to the last degree (see simple instructions opposite).
- (d) All rollers, sprockets, guides, etc., in contact with the film are cut away at the centre to eliminate film scratch.
- (e) The **PICTURE GATE** is of the well-known **KALEE LONG TYPE**. A flanged guide roller device automatically accommodates itself to any irregularity in the width of the film and ensures a steady picture.
- (f) The **MALTESE CROSS**, which is the heart of the projector, runs entirely enclosed in an oil bath, and is of the extra large type ensuring long life and rock-steady picture.
- (g) The **SWINGING LENS HOLDER** combined with a **SUBSIDIARY FRAMING LAMP** relieves the operator of all difficulty in the correct threading and framing of the film.
- (h) A **MICROMETER FOCUSING DEVICE** is fitted to ensure a sharp picture on the screen, while an **AUTOMATIC MOVITONE MASK** allows of instantaneous change when requiring to show silent films.



## CARE OF THE MECHANISM

### LUBRICATION . . . . USE ONLY KALEE SUPEROIL

Before each performance run a few drops of KALEE SUPEROIL into each of the oiling cups which are grouped at the top of the machine A and into the four oiling cups on the soundhead G (fig. 2). See that the level of oil in the Maltese Cross Chamber B (fig. 2) is maintained at the red mark on the window C (fig. 2). When necessary unscrew top plug D and add oil *while the machine is stationary*.

After every 80 hours' running time, empty the chamber by unscrewing plug E and refill to the mark with fresh oil.

IMPORTANT.—Use only Kalee Superoil as all working parts are manufactured to very fine limits and it is essential that the lubricant be of the correct viscosity.

### CLEANING

After each reel of film has passed through, examine the gate runners and film skates F, and scrape off with a bone or wood scraper any matter adhering to them. NEVER USE A STEEL SCRAPER.

Before each performance clean thoroughly all sprockets, rollers and the gate, carefully removing any traces of oil and film deposited on them.

Failure to keep clean all parts in contact with the film will result in an unsteady picture and distorted sound.

Clean lens with soft silk only, and ensure that it is free from oil.

### TENSION OF TAKE-UP

The film is taken up on to the spool in the bottom spool box by a belt-driven friction device. The tension of this device can be varied by screwing in or out the milled hand-screw on the spindle of the spool box. Screwing clockwise increases the tension, which should be set so that it is just sufficient to take up a full spool of film.

### THE FILM MAGAZINES

These are of steel and fitted with regulation fire traps. They hold 2,000 feet of film on steel spools, and are provided with a window for viewing the progress of the film.

### THE PROJECTION LENS

This is a high quality lens made in our own optical works and giving a sharp, brilliant picture.

The focus supplied depends on the length of the hall and size of picture required.



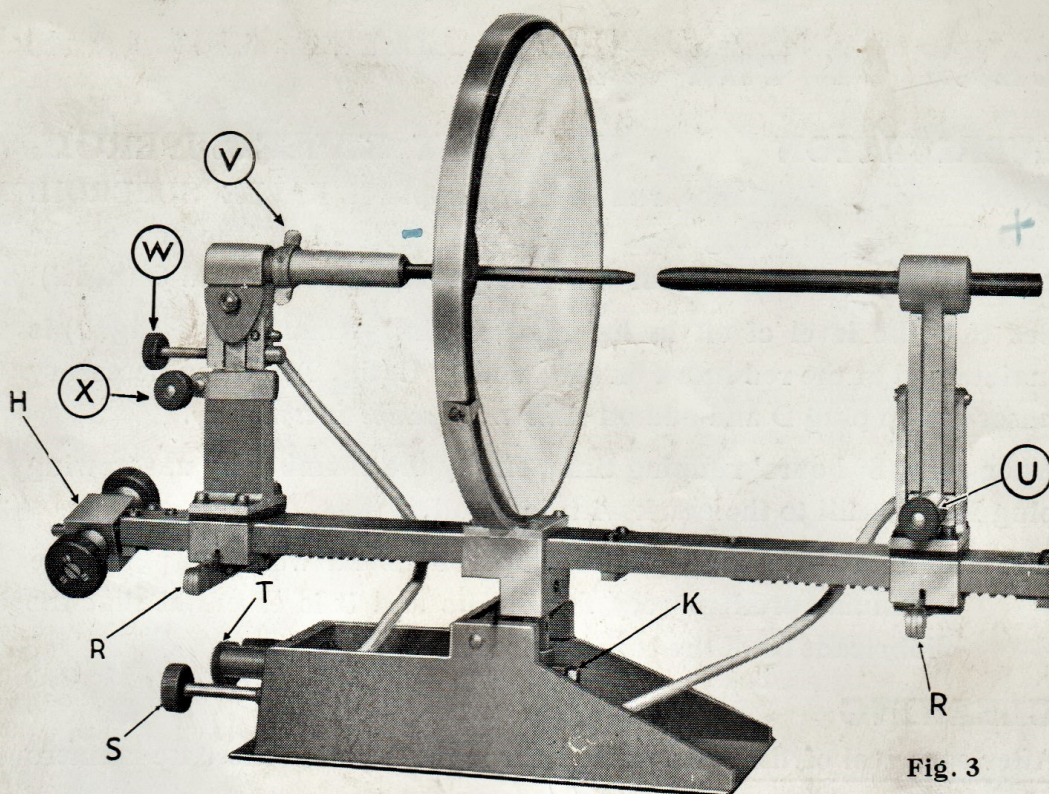


Fig. 3

## The KALEE INVICTA ARC LAMP

This Arc Lamp has been specially designed to secure **MAXIMUM LIGHT ON THE SCREEN**, combined with **ECONOMY** and **SIMPLICITY**. The striking of the arc is **AUTOMATIC**.

- The unusually large mirror (10 inch diameter) of a special curvature, combined with the accurate centering of the positive carbon, ensures that the maximum light given by the arc is utilised to give full brilliance on the screen.
- The special design and long travel of the carbon holders results in a 25% economy in carbons by eliminating "short ends."
- The working parts have been reduced to a minimum, one operating handle only controlling all movements, including the automatic striking of the arc. Operation is thus simplicity itself.

The arc lamp is housed in an all-steel lamphouse of substantial construction allowing easy access to the lamp through wide doors on each side. Each door is made with an inner lining of asbestos which is mounted with a space between it and the door to facilitate the circulation of air and prevent the overheating of the door. Large coloured glass windows are provided for viewing the arc and the light cone is provided with **INSTANTANEOUS LIGHT CUT-OFF**.

## RECOMMENDED CARBON COMBINATIONS

Amps.	Positive	Negative	Arc Volts
15-20	10 m/m	7 m/m	50
20-25	12 m/m	8 m/m	50
25-30	12 m/m	9 m/m	50
30-35	13 m/m	9 m/m	50
35-40	14 m/m	10 m/m	50



## **OPERATION AND CARE OF THE ARC LAMP**

### **TO INSERT THE CARBONS**

Lift the quick release levers R (fig. 3) and slide the carbon holders as far apart as possible. Insert the positive carbon in the front holder and firmly close the jaws by the screw U. Unscrew the wing nut V a few turns, and push the negative carbon through the holder until it extends beyond the mirror, then clamp it by screwing up tightly.

### **TO STRIKE THE ARC WITH THE AUTOMATIC DEVICE**

Turn either of the knobs on handle H in a clockwise direction, thus moving the carbons together until they are separated by about  $\frac{1}{4}$  inch. With the handles W and X bring the negative carbon in line with the positive. Switch on the current at 5/10 amps. Seize the whole of the handle H, draw it sharply back away from the mirror until the carbons meet, and let go.

### **TO FEED UP CARBONS**

Turn either of the knobs on handle H.

### **TO FOCUS THE ARC CRATER**

Rotate the whole of handle H, this will cause both carbons to travel relative to the mirror. Place a piece of tin over the hole at the rear of the shutter housing on the projector. Move the carbons as above until the circle of light on the tin is as small as possible. The arc is then at the focus of the mirror, and should always be kept as nearly as possible in that position. If through uneven burning of the carbons its position changes, it must be corrected by rotating handle H as above.

### **TO SET THE ARC LAMP**

This will normally be set on installation by our engineer, but if for any reason it should move, proceed as follows:—

Set the arc parallel with its base by the tilting knob S. Remove carbons and sight through both carbon holders on to the picture gate. If the gate is not in line adjust the deflecting screw T, and also loosen lock nut K and raise or lower the whole lamp until all three points come into line. Then insert carbons, strike arc and focus for smallest spot as above. Next remove the piece of tin and start the projector without film. The spot of light will now be visible on the picture aperture. Unscrew the locking screw on the lamphouse and slide the whole lamp forward or back until the light spot just covers the picture aperture completely. Lock in this position by the locking screw and it should not require to be touched again, except when a new mirror is fitted.



## **MAINTAINING THE EFFICIENCY OF THE ARC LAMP**

Clean all carbon holders regularly, removing corrosion with emery cloth to ensure good contact with the carbons.

Keep all terminals clean and tightly screwed up.

Clean mirror before each performance.

KEEP CARBONS IN A WARM DRY PLACE, the lamphouse is a good place to store those actually required during a show.

## **ALTERNATIVE INCANDESCENT LAMP**

In place of Arc Lamp, see page 19.

## **THE PEDESTAL STAND**

This is a high quality casting heavily braced by adjustable steel bracing pieces.

It carries the soundhead solidly bolted in front of the trunnion pin, and the Picture Projector Mechanism in turn bolted on top of the soundhead. The lamphouse is carried on steel rails, and the whole may be tilted to any angle required, up to a maximum of 15°.

The A.C. Driving Motor is supported on an adjustable bracket on the body of the stand.

## **THE SOUNDHEAD**

This is the portion of the apparatus which translates the sound image on the film into electrical impulses for reproduction as sound through the Loudspeakers. Upon its precision and reliability depends in large measure the high quality of the sound reproduction obtained by this equipment. It is connected to the Amplifier by special cables.

The mechanically driven Sound Reproducing Unit embodies a special form of transmission, and a film scanning device which is made so that shoes are not required to guide the film at the scanning point. The cylindrical gate construction round which the film passes, forms a housing for the P.E. Cell and at the same time maintains the film in accurate relationship to the Optical System. The shape of the Sound Aperture in the Kalee reproducer prevents the collection of emulsion or dust at this critical point so that excellent reproduction may be obtained with all conditions of Sound Film.



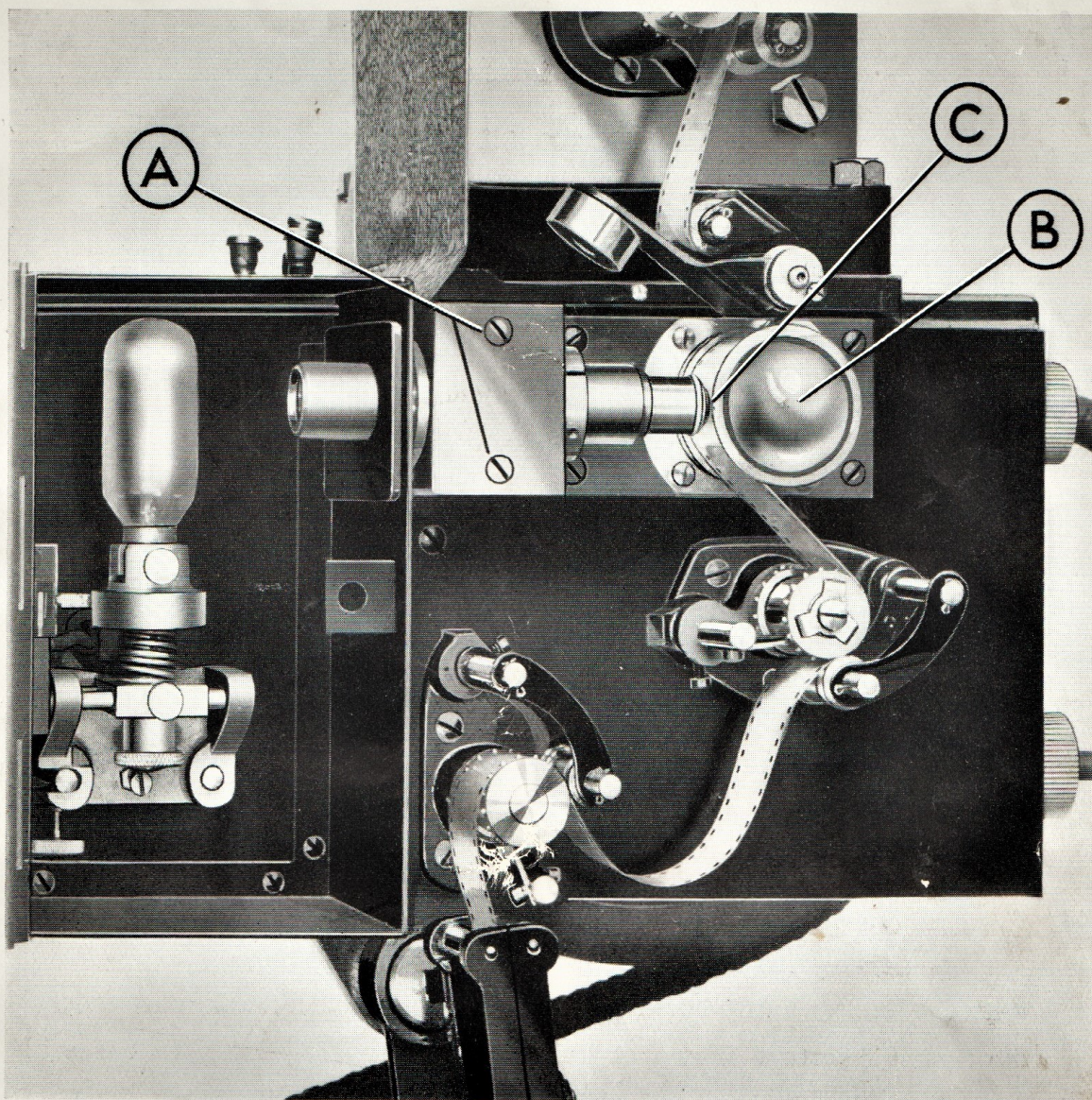


Fig. 4

The absence of pressure shoes simplifies the threading and operation of the soundhead, while materially reducing the wear of the film and all parts with which it comes in contact.

The Optical System is pre-set and locked so that apart from general cleaning to remove dust from the outside lenses it will not need adjustment. When it is necessary to clean the lenses the whole unit may be removed by withdrawing the two screws shown at A in fig. 4. An ingenious saddle device ensures correct replacement of the Optical System without alteration to the critical focussing of the whole assembly. A standard 32 watt Exciter Lamp is used, carried in a pre-set holder designed to facilitate quick replacement and correct setting.



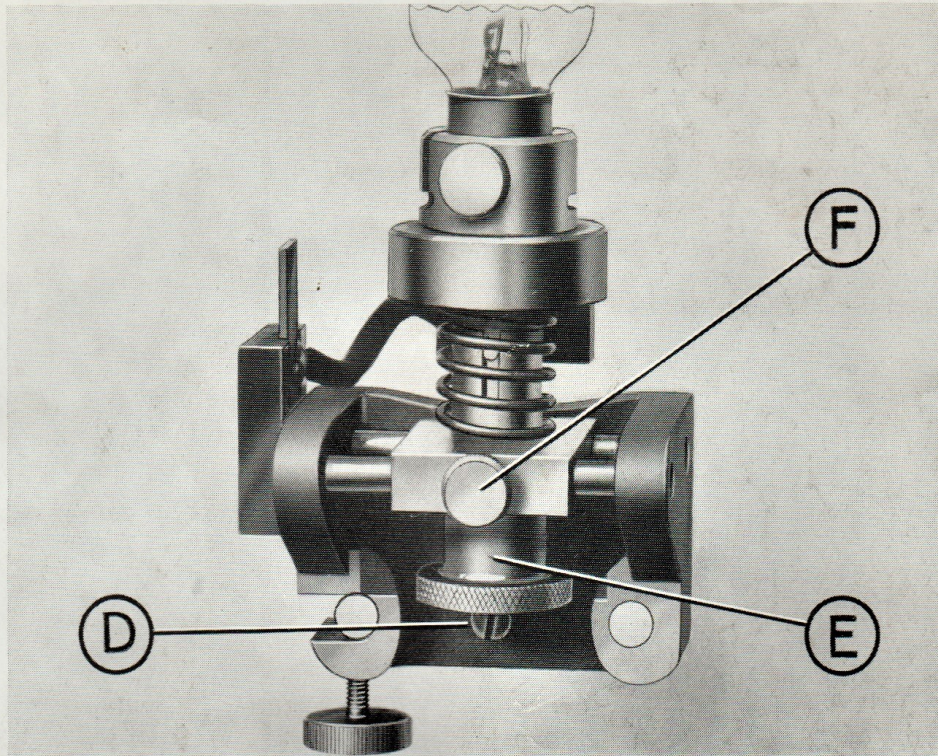
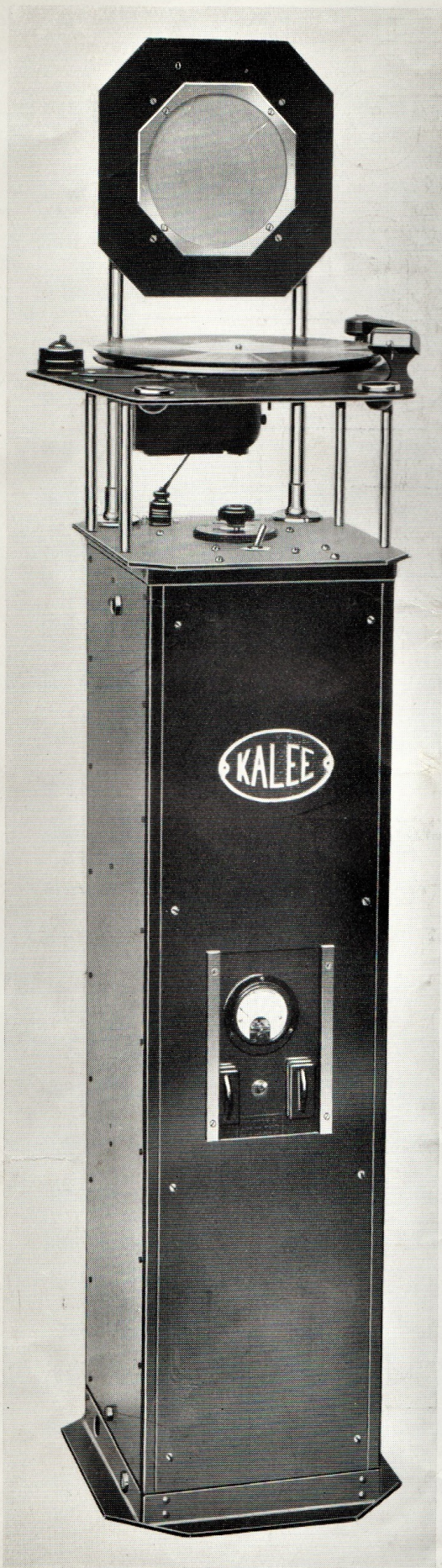


Fig. 5

## SETTING THE EXCITER LAMP

With the Exciter Lamp burning at maximum brilliance, make sure that the Sound Aperture shown at C in fig. 4 is perfectly clean and free from dust. Remove the cell cover from the enclosing cylinder when it will be seen that a circular disc of light is formed on the back wall inside the Photo-electric Cell (B, fig. 4). The formation of this image is controlled by three adjustments provided on the Exciter Lamp Carrier and the correct setting is obtained when the brightest circular image is formed on the wall of the cell. On referring to fig. 5 it will be seen that the screw D, which is provided with a locking nut, controls the lateral adjustment of the lamp, while the knurled nut E is used for vertical movement. The clamping screw F must be slackened when it is necessary to slide the lampholder on the guide rails to alter the horizontal position. Care must be taken to see that the whole width of the sound track is uniformly illuminated and that the image brightness does not appear to vary from the centre to the edges.





## THE AMPLIFIER

The KALEE Amplifier used with this equipment embodies a special patented circuit ensuring the highest quality Sound Reproduction with ample reserves of power, and has been specially designed for maximum reliability.

It has an undistorted output of 12 watts, adequate for any hall when used in conjunction with the highly efficient loudspeakers supplied with this equipment.

The Amplifier is entirely driven from the electric mains, no batteries whatever being required. It automatically supplies exciter lamp current, photo-cell voltage, and field energising current for the Loudspeaker.

Fig. 6



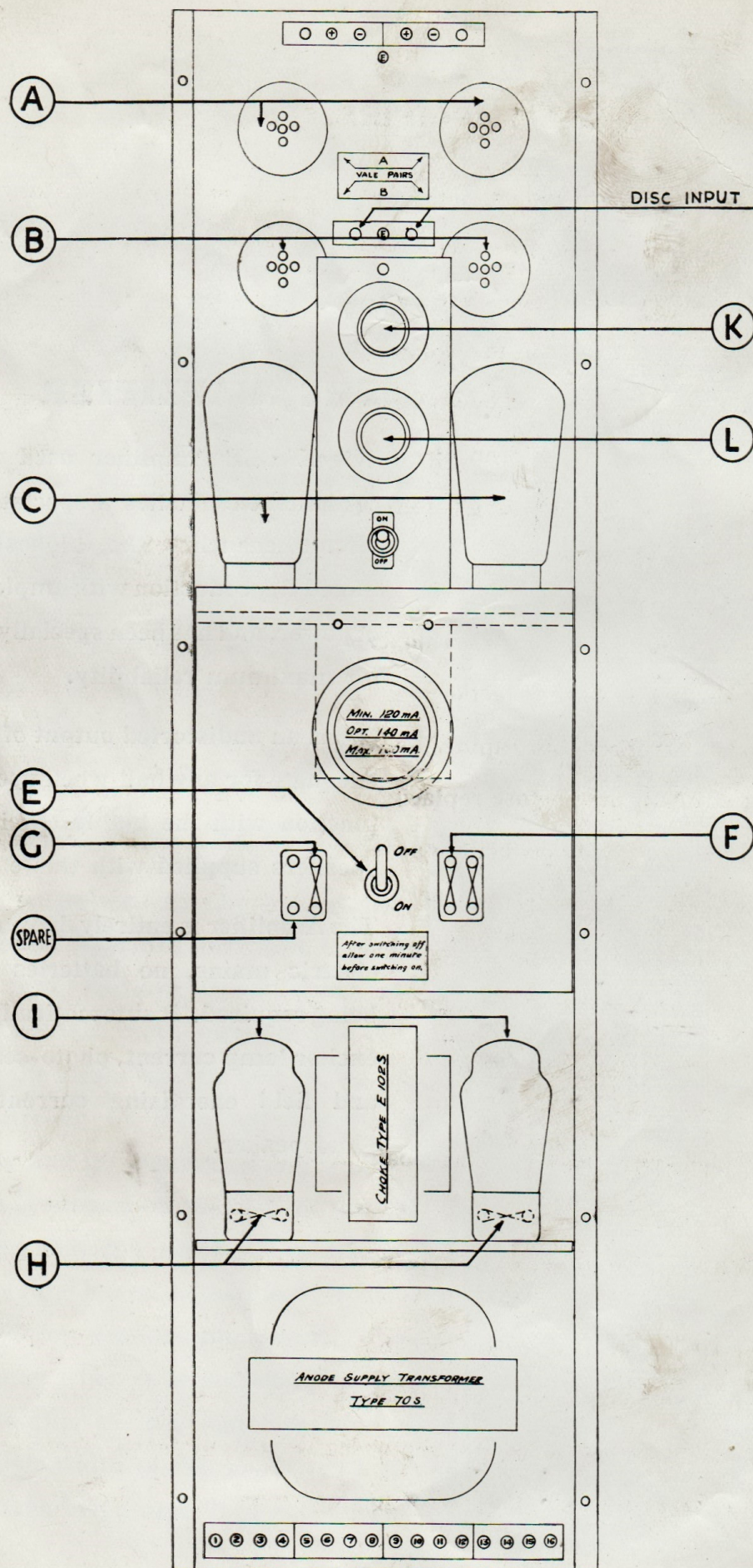


Fig. 7



## OPERATION OF AMPLIFIER

The operating controls for the Amplifier are conveniently located on the flat top so that they are within easy reach of the user (see fig. 8). The main switch and fuses are located on the front panel and control the electrical supply for the whole of the Sound System. The Amplification Equipment is shown clearly in fig. 7. The main double pole switch is shown at E and the 3 ampere fuses at F. These are followed by a 500 ma. high tension fuse at G and two additional high tension fuses at H.

The fuse G is carried with a replacement in the double holder shown in the diagram, so that in the event of a replacement being necessary the user can effect this rapidly by withdrawing the double holder and giving it a half turn before replacing it in the carrier. This will reverse the position of the fuses bringing the new fuse into operation. The two supplementary fuses H and H are in the rectifying valve circuits, being positioned in clips immediately behind the rectifying valves I, so that in the event of a replacement being necessary, it is a simple matter to switch off the electrical supply, withdraw the valve concerned, and insert a new fuse in the clip. The other valves in the Amplifier are positioned with the first stage pair at A and the second stage at B. The two output valves marked C are on a panel immediately below the other valves and above the rectifying valve circuits and supply.

The controls K and L are set by the engineer on installation so that the user will only be concerned with the operation of those on the top panel referred to at the beginning of this section. These are all marked and perform the following functions:



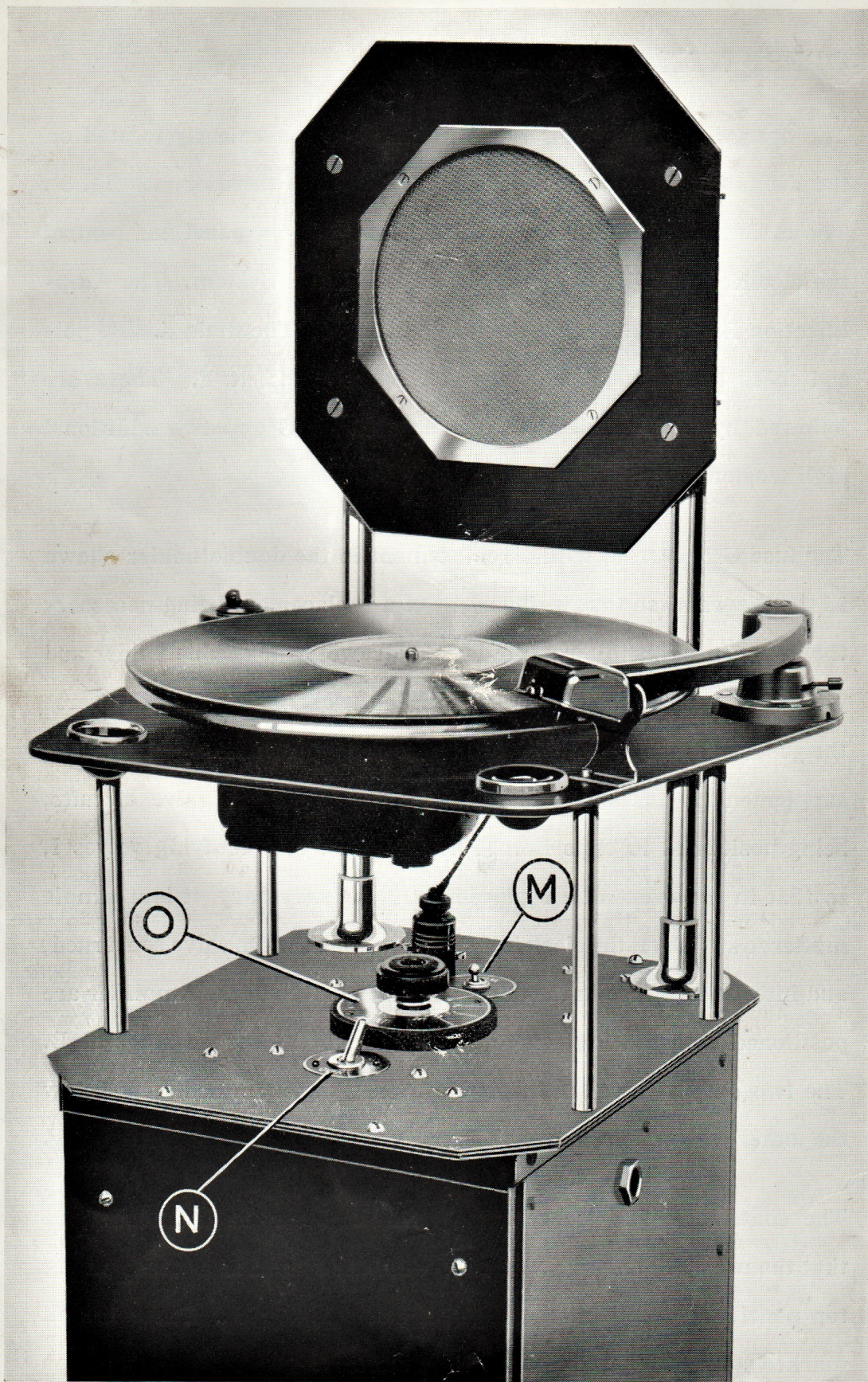


Fig. 8



## **OPERATION OF AMPLIFIER—*contd.***

The back switch M, fig. 8, is only brought into operation when it is desired to use Disc Reproduction in addition to the Sound-on-Film Equipment (see page 19). Particular care must be taken to see that this switch is always set to "Film" when showing a Sound-film Programme. The front switch N is used for changing over from one projector to the other when two machines are installed, or for switching the Exciter Lamp as an additional control to the Fader O which is the main control for volume level. This is conveniently situated at the centre of the top panel, and on installation the Sound Reproducing equipment is set so that normal reproduction will be obtained at a setting of 6.

This will allow for any necessary increase in volume to a maximum at 10. The operation of this control will be readily appreciated after running the equipment for a short time.

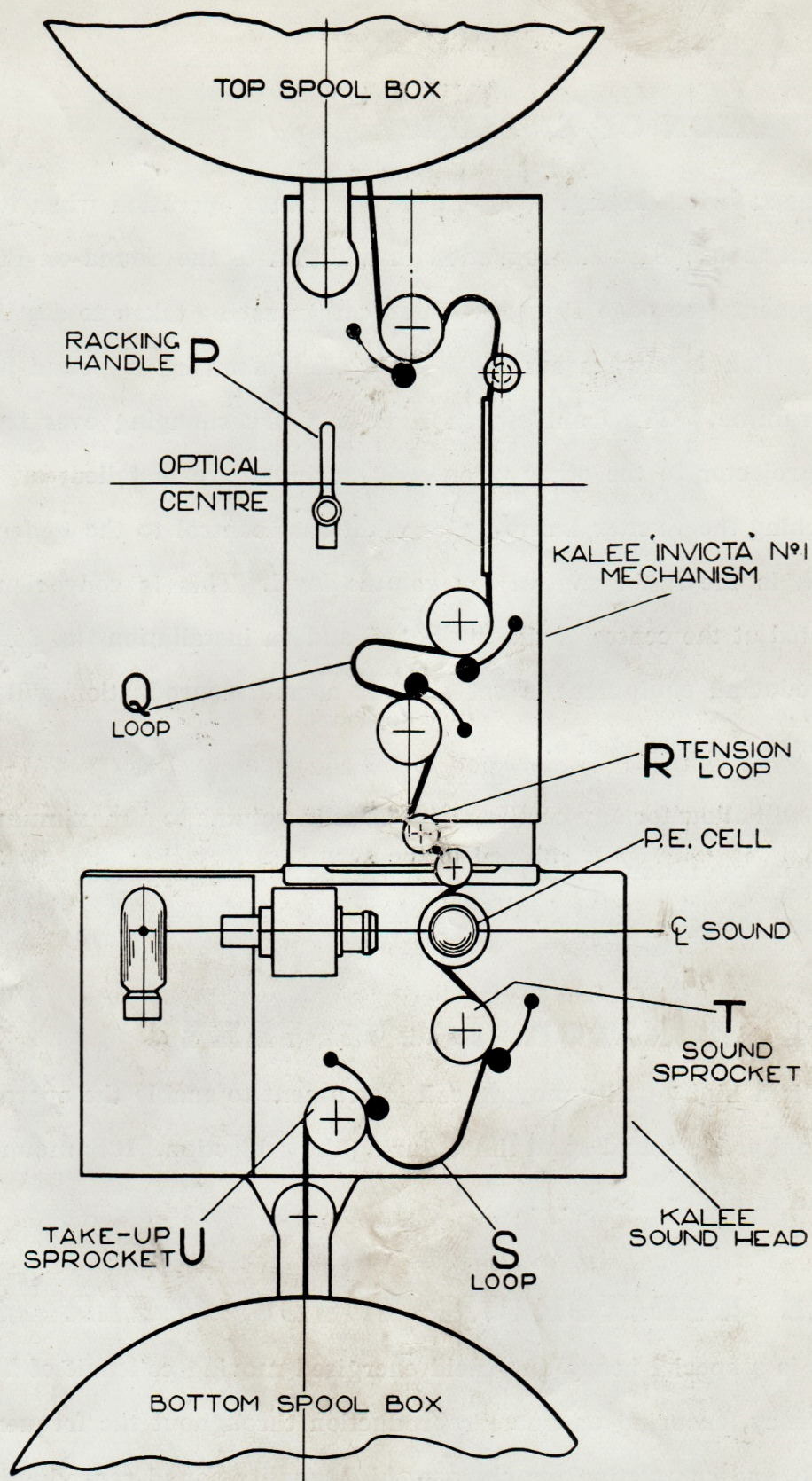
## **THE MONITOR LOUDSPEAKER**

This is a high quality moving coil instrument to enable the operator to monitor his sound at all times during the projection. It is mounted on the amplifier, see fig. 8.

## **THE AUDITORIUM LOUDSPEAKER**

This is a special heavy duty field energised moving coil unit of high efficiency, ensuring adequate reproduction throughout the frequency range, and completing the chain of high quality sound reproduction. It is fitted with either acoustic or directional baffle, or horn, as required by the acoustic condition of the hall.





THREADING OF FILM THROUGH  
KALEE INVICTA No. 1 PROJECTOR & SOUND HEAD

Fig. 9



## OPERATION OF WHOLE EQUIPMENT AND PRESENTATION OF THE FILM

In dealing with the actual projection and presentation of a Sound Film, it must be assumed that the user is familiar with the standard reel of Sound-on-Film in which each reel commences with an operator's lead provided to facilitate the correct synchronising of picture and sound. This lead is also valuable in ensuring the correct framing of the picture, and assisting in making a perfect changeover when two machines are used for a continuous programme. At the commencement of this lead, the picture key will be found in the form of a clear rectangle with the word "START" printed within it. The sound key used for synchronising is in the form of a diamond with a line set horizontally through it. After making sure that the framing lever P is in the mid-position for masking as shown in the fig. 9—the user should load his machine as shown in this figure. The picture key with the word "START" must be set in mask in the picture gate, being equally spaced above and below the point shown as the optical centre in the diagram. The sound synchronising mark is positioned in the sound gate so that the scanning aperture shown as the centre line in the diagram coincides with the horizontal line in the key. Having set the picture and sound keys, it will be found that the loops in the diagram shown as Q and R are correctly set to allow for normal running and the possible racking of the picture. The loop at S may be of any convenient size so long as it ensures that no direct pull will be transmitted to the sound sprocket T from the take-up sprocket U. Check the threading of the machine to see that all sprocket teeth are correctly engaged and the film lying correctly in the picture gate. Turn the machine over by hand using the flywheel on the driving motor and noting that all the parts are working correctly in guiding the film from the top magazine through the projector and on to the take-up spool below.

The whole equipment is now ready for use. The amplifier is switched on, the correct setting of the "Fader" checked with the exciter lamp "off" and the projection arc struck as previously described, or the projection lamp switched on. The machine is started, the cut-off opened, and the exciter lamp switched on as the end of the operator's lead passes through the soundhead.



# KALEE INVICTA SOUND FILM REPRODUCER

## PRICES AND TERMS

All prices include wiring, installation, three days stand-by, and delivery in British Isles (Irish Free State excepted).

			Cash Price	Extended Payment Terms	
				Deposit on Signature of Contract	36 monthly payments of
STANDARD MODEL	..	Single Projector	£270 0 0	£70 0 0	£6 13 4
		Double Projector	£440 0 0	£110 0 0	£11 0 0
MEDIUM MODEL	..	Single Projector	£280 0 0	£70 0 0	£7 0 0
		Double Projector	£450 0 0	£112 10 0	£11 5 0
LARGE MODEL	..	Single Projector	£330 0 0	£82 10 0	£8 5 0
		Double Projector	£500 0 0	£125 0 0	£12 10 0

Cash prices are subject to 2½% discount for payment within 10 days after installation.

Illustrations and specifications are not binding, improvements are made as occasion arises.

Throughout this catalogue prices are subject to change without notice.



## **ALTERNATIVE AND AUXILIARY EQUIPMENT**

The equipment described in the foregoing pages is standard, but certain alternative equipment is available to meet the case of halls where unusual conditions prevail, or where there is some special requirement.

### **INCANDESCENT PROJECTOR LAMP IN PLACE OF ARC LAMP**

Where simplicity of operation is a prime consideration, and the throw from projector to screen is not excessive, the equipment can be supplied with a special high-amperage high-efficiency Incandescent Lamp of 50 amp. 15 volt rating. This lamp is fed by a special transformer giving the highest possible efficiency, and located at the base of the pedestal stand.

EXTRA COST for transformer: £7 15s. 0d.

N.B. No switchboard is required with this lamp, thus saving in both first cost and running costs.

### **REAR PROJECTION**

In cases where it is desired to project from behind the screen, the equipment can be supplied with special rear-projection sound head and picture gate mask.

EXTRA COST: £6 4s. 0d. per projector.

If special type of short focus lens is necessary, prices according to requirements.

### **LANTERN SLIDE ATTACHMENT**

Where it is required to show lantern slides for a few moments (such as advertisements, etc.) an attachment can be supplied on the projector. This consists of a Kerascope attachment to the lamphouse, which diverts the rays from the arc, causing them to pass through a condenser and slide carrier at the side of the projector, and a separate Slide Lens of required focus held in a special adjustable lens carrier which is attached to the side of the picture projector mechanism.

EXTRA COST for slide attachment complete with Lens: £11 0s. 0d.

N.B. This attachment is not recommended where slides are used for Lecturing or any similar purpose requiring them to remain stationary on the screen for more than 20 seconds. In such cases a separate slide lantern should be used.

### **NON-SYNCHRONOUS GRAMOPHONE PLAYING ATTACHMENT**

This attachment can be fitted on top of the amplifier (see page 14) and allows ordinary standard gramophone records to be reproduced through the main auditorium speaker.

The attachment comprises an electrically driven turntable, and high quality pick-up, fitted with volume control and tone control. The motive power is derived from the amplifier to which the attachment is connected by plugs. The amplifier carries a two-position switch (M, fig. 8, page 14) which is turned to the "Disc" position when gramophone reproduction is required.

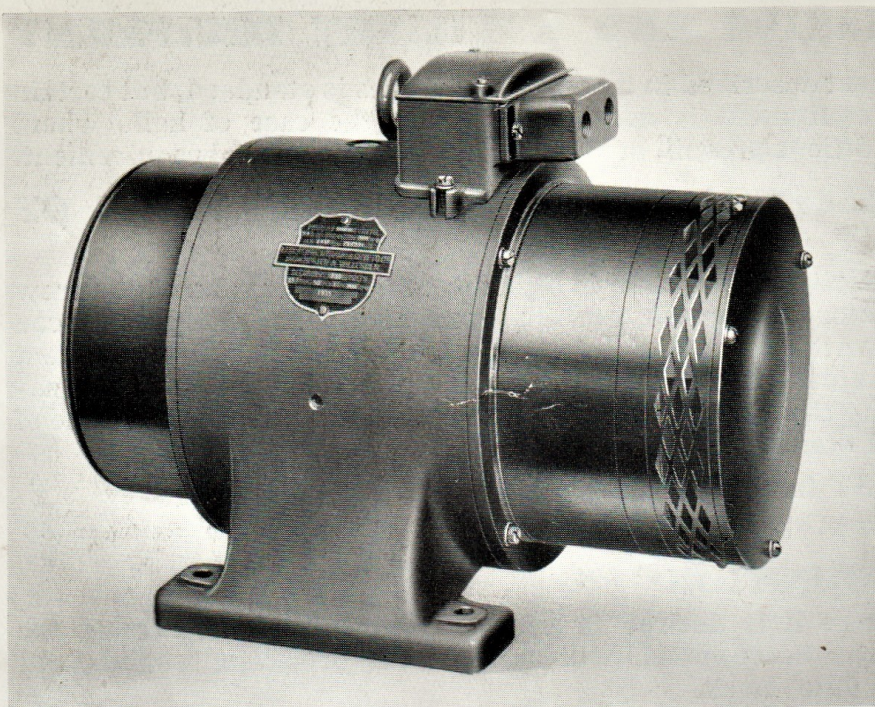
EXTRA COST: £10 10s. 0d.

### **DOUBLE TURNTABLE GRAMOPHONE EQUIPMENT**

Where continuous record playing is required a double turntable gramophone equipment can be supplied. This comprises two turntables and pick-ups as above, with volume and tone controls so arranged that one record can be faded into the next, built in an all-steel playing table of convenient height. This table is placed at any suitable spot in the projection room, and connected to the amplifier by special cables.

EXTRA COST: £22 0s. 0d.





## **CONVERSION EQUIPMENT FOR D.C. SUPPLY**

As the whole of the Sound Film Equipment is designed to work on alternating current, it is necessary to provide conversion equipment in cases where the electric supply is direct current. This equipment consists of a rotary convertor and a static transformer with suitable control gear, which supplies the necessary alternating current.

As shown in the illustration, it is a separate unit and can be located in any convenient spot near the projection room.

PRICE: Single Projector £45; Double Projector £56.

### **OPERATING DATA FOR D.C./A.C. ROTARY CONVERTOR**

The Convertor is wound to suit the local D.C. Mains and supplies Alternating Current at 50 cycles. It is designed to give approximately constant voltage and speed on varying loads. This Alternating Current is transformed to 220 volts by the Static Transformer, which is provided with a selector switch on the primary and three tapings on the secondary.

### **OPERATION**

Start up in the usual manner by the starter switch. The normal speed should be 3,000 r.p.m. when the machine is warm. If necessary, speed can be adjusted by the shunt regulator provided.

When running at normal speed, with the load on and secondary tapping in central position, the output voltage should be 220 volts, if not, adjust by the primary selector switch, and if necessary alter the secondary tapping. Make sure the selector switch arm rests exactly on one contact only.

Never alter the brush position.

Clean Commutator daily with carborundum cloth for the first week or two, until a polished skin is formed, then occasionally if sparking is noticed. A slight occasional application of paraffin wax to the Commutator is helpful.



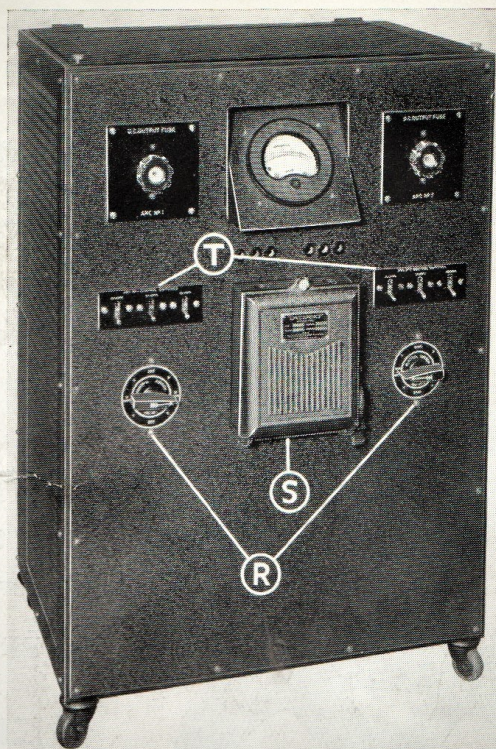
## COMBINED RECTIFIER AND SWITCHBOARD

The Arc Lamp requires Direct Current for its efficient operation. Where the mains supply is alternating current it is therefore necessary to change this into direct current, and this is usually carried out by means of some form of Rectifier. The arc lamp also requires certain switches, fuses, and resistances for controlling it according to varying conditions.

In order to simplify the whole of this necessary equipment, all these functions have been combined in a compact unit, enclosed in a steel cabinet which stands in the operating room.

This combined Rectifier Switchboard Unit is illustrated above, and comprises an Oxide Cathode type Rectifier with the necessary resistances, the front of the cabinet forming the switchboard.

PRICE : Single Projector £60. Double Projector £85.



## OPERATION

All valves and fuses being correctly inserted and connections made to the A.C. mains and the arc lamps:—

- (a) See that the rotary Arc Switches R are both turned to the vertical "off" or "start" position. This is most important.
- (b) Switch on the main Input switch S. Wait 30 seconds for valves to warm up. Do not do this until (a) is correct.
- (c) Turn No. 1 Arc Switch R to the horizontal position "15 amps." Strike the corresponding arc. Never strike on more than 15 amps.
- (d) Get arc burning steadily, then increase amperage by depressing, one at a time, the control switches T, until the required amperage is obtained, as shown on the ammeter.
- (e) When the No. 2 arc is required, proceed as (c) and (d) leaving No. 1 arc burning.
- (f) As soon as machines are changed over, switch off No. 1 arc by lifting each of its control switches T in turn, and finally by switching off its rotary switch R.
- (g) Ensure that no draught or rain can strike the hot valves, as the sudden contraction may cause them to crack.
- (h) Periodically examine all terminals and connections to see they are tight.



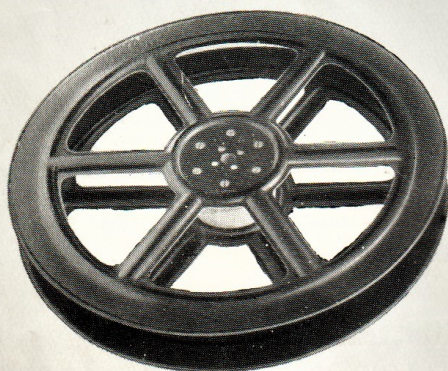
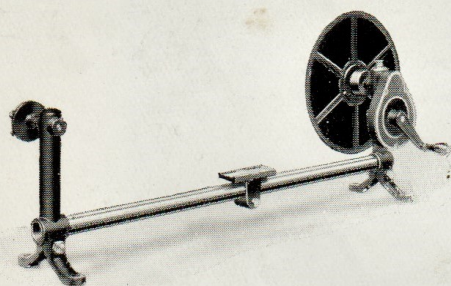
## OPERATING BOX ACCESSORIES

### THE KALEE FILM REWINDER

Of heavy construction, with cast iron standards and totally enclosed machine-cut gears, this rewinder will withstand hard service.

It is fitted with cast iron scraping block, machined to film width to facilitate the scraping and joining of the film, and a steel stripping plate for the final rewinding of films ready for despatch.

PRICE : £3 10s. 0d.

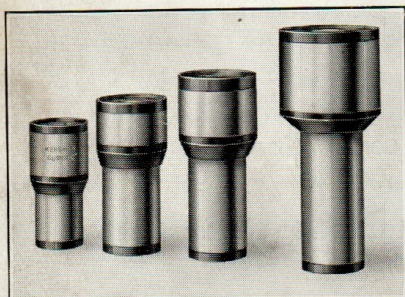


### KALEE FILM SPOOLS

True running, accurately made, and of high class finish, these spools hold 2,000 ft. of film. The cheeks are heavy gauge steel stampings, ribbed for strength and the core is of birch wood.

A steel spring clip grips the film on the core and is extremely simple and easily manipulated.

PRICE : 7/9d. each.



### KALEE EXTRA-LUMINOUS LENSES

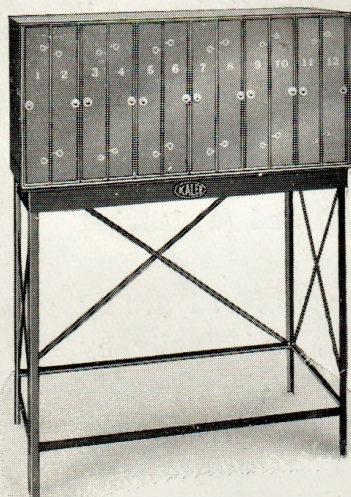
Where additional light and more critical definition are required, these super lenses may, with advantage, be fitted in place of the standard lens.

PRICE : Super "B" type Wide aperture £10 10 0

Super "C" Extra Wide aperture

3 in.—5 $\frac{3}{4}$  in. . . . £16 0 0

6 in.—7 in. . . . £18 0 0



### KALEE FILM STORAGE CABINET

This is necessary to comply with fire regulations. Fireproof steel construction, with regulation self-closing doors, each numbered compartment will hold one 2,000 ft. spool. The stand is of wrought iron rigidly braced.

PRICE : 12 Compartment with stand . . £8 0 0

12 Compartment without stand £6 0 0



# PRICE LIST OF SPARES AND ACCESSORIES

CINEMA SCREENS : Perforated sound, flat white, or beaded.

Quotation according to size, type, and method of fixing required.

Approximate cost . . . . . 1/6-2/6 sq. ft.

SINGLE TURNTABLE GRAMOPHONE ATTACHMENT on  
separate steel table (in place of the attachment to the amplifier,  
page 19) . . . . . £16 0 0

DOUBLE TURNTABLE GRAMOPHONE ATTACHMENT on  
separate steel table . . . . . 22 0 0

DUPLEX AMPLIFYING EQUIPMENT. Extra cost . . . . . 130 0 0

SPARE AMPLIFIER only, with set of valves . . . . . 69 3 0

SPARE AUDITORIUM SPEAKER UNIT . . . . . 18 6 0

SPARE MONITOR SPEAKER . . . . . 2 12 6

PHOTO-CELL . . . . . 4 10 0

EXCITER LAMP . . . . . 5 6

750 watt PROJECTION LAMP. T.Y. 382 . . . . . 2 3 0

SET OF VALVES FOR AMPLIFIER:—

4 Type AC/HL at 13/6 each	}	7 4 0
2 Type PP5/400 at 25/- each		
2 Type MU14 at 20/- each		

SET OF FUSES FOR AMPLIFIER:—	2—3 amps. at 6d. each	}	3 0
	4—500 ma. at 6d. each		

VALVES FOR RECTIFIER SWITCHBOARD UNITS:—

Single phase No. 1759 each	7 16 0
Three phase No. 1788 „	2 8 0
Three phase No. 1738 „	3 0 0

SPARE MIRRORS FOR ARC LAMP . . . . . 3 10 0

CARBONS FOR ARC LAMP:—

SHIP LUXO. Prices per 100 pieces

Positive 10 m/m × 9 in.	29/-	Negative 7 m/m × 9 in.	16/-
„ 12 m/m × 9 in.	40/-	„ 8 m/m × 9 in.	19/-
„ 12 m/m × 9 in.	40/-	„ 9 m/m × 9 in.	24/-
„ 13 m/m × 9 in.	46/-	„ 9 m/m × 9 in.	24/-
„ 14 m/m × 9 in.	52/-	„ 10 m/m × 9 in.	29/-

FILM CEMENT per bottle . . . . . 2 6

FILM MENDER:—KALEE No. 1 . . . . . 1 0 0

„ No. 2 . . . . . 3 15 0

OIL for mechanism (KALEE SUPEROIL) ½ pint tin . . . . . 1 9

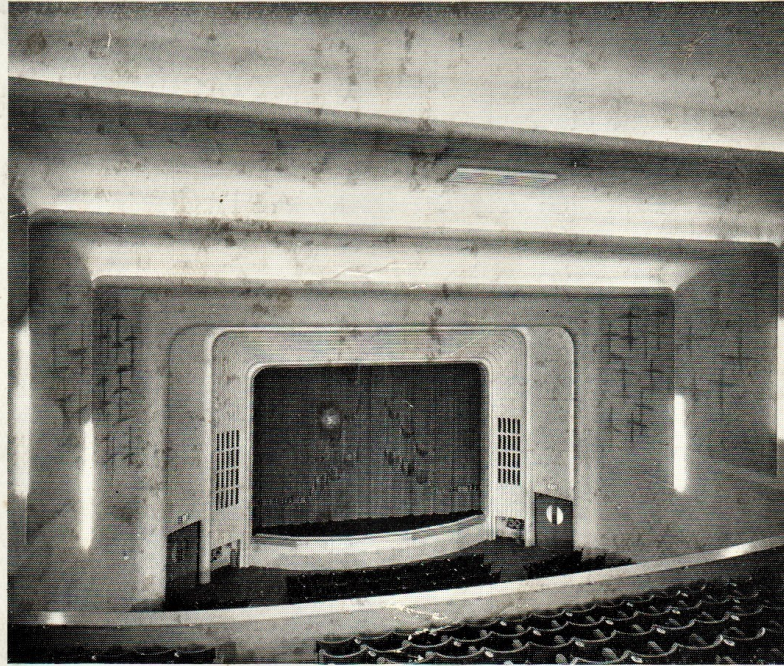
1 pint tin . . . . . 3 0

½ gallon . . . . . 10 0

WRITE FOR DETAILS OF THE KALEE N.P.3 PROJECTOR FOR 16 m/m FILMS



## COMPLETE CINEMA FURNISHING



*Architect: E. NORMAN BAILEY, L.R.I.B.A.*

Being actual manufacturers we are particularly well organised to equip a Cinema completely. Our personnel includes specialists in seating, draperies, carpets, lighting, etc., and their services are at your command. Colour schemes, quotations, etc., gladly submitted free of all cost.

The illustration above is of the Savoy Cinema, Reading, where we supplied and installed complete Kalee Projection Equipment, Seats, Carpets, Stage and Door Curtains, Stage Lighting and Electrical Equipment, Café Furniture and numerous other fittings.



The seats illustrated are two of our most popular models. Both can be modified to suit individual requirements. The Lowestoft model (left) costs from 13/3 according to depth of back and covering materials, and the Sudbury chair (right) from 18/3. Other models are available from 8/6 to 60/-.











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**EVERYTHING FOR THE CINEMA**