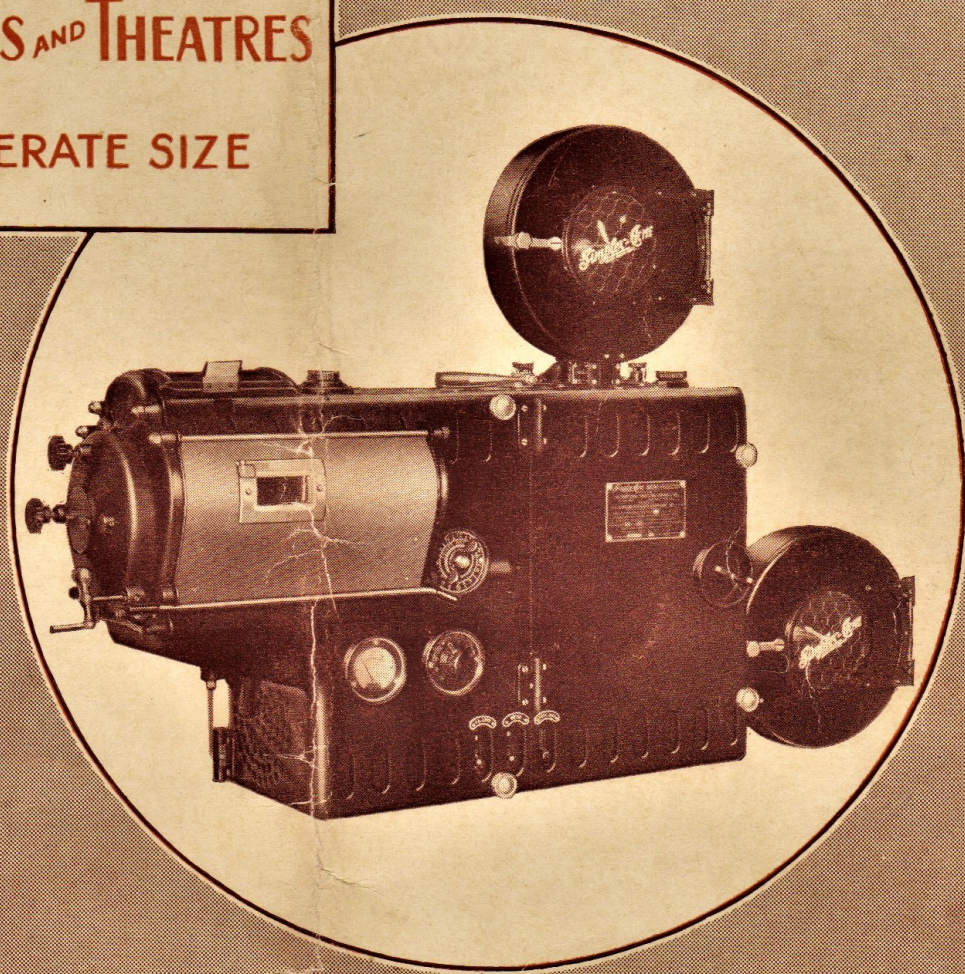
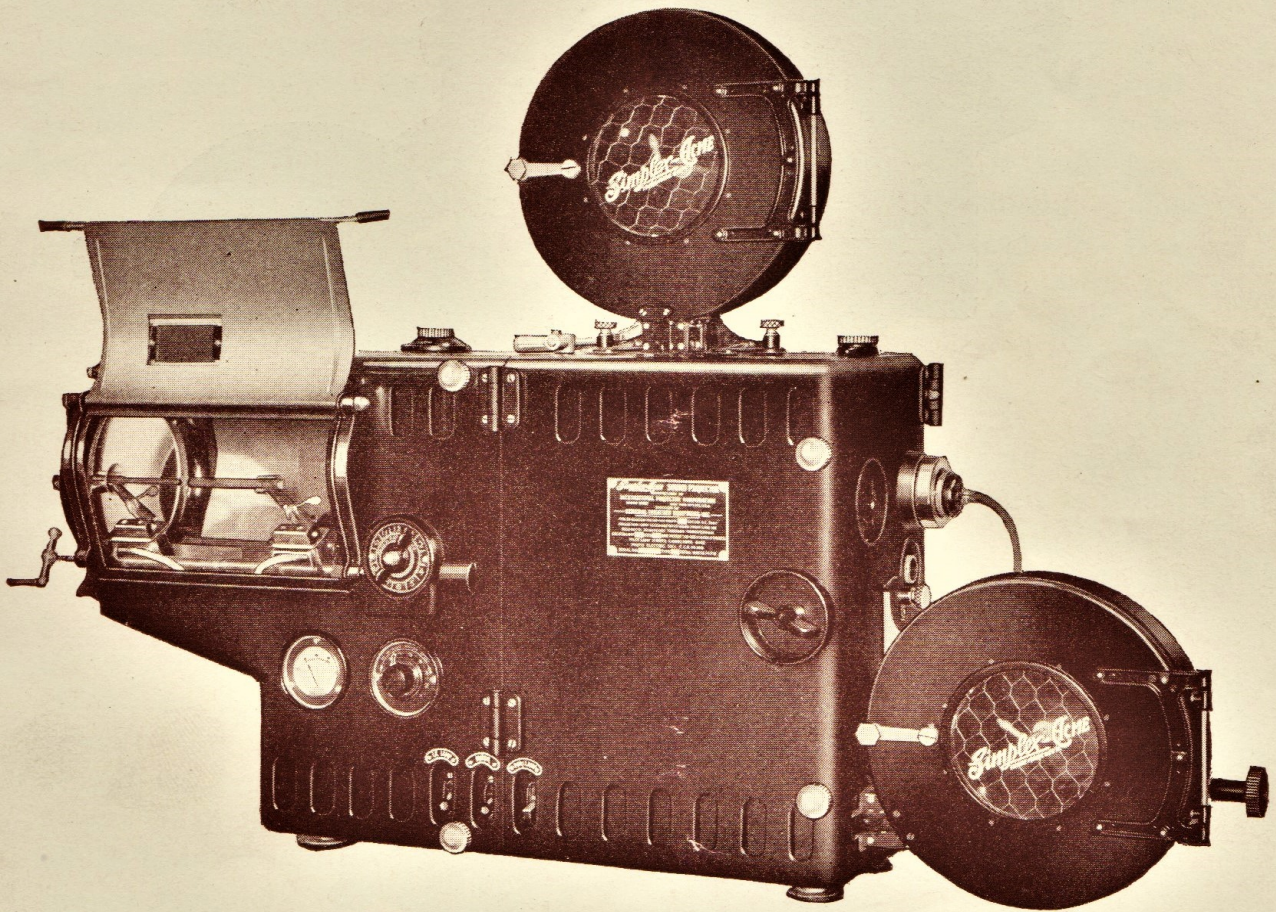


Simplex-Acme
SOUND PROJECTOR
for
AUDITORIUMS AND THEATRES
OF MODERATE SIZE



INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET
NEW YORK, N.Y. U.S.A.

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Simplex-Acme Projector with Lamphouse Door Open

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Simpler-Acme SOUND PROJECTOR



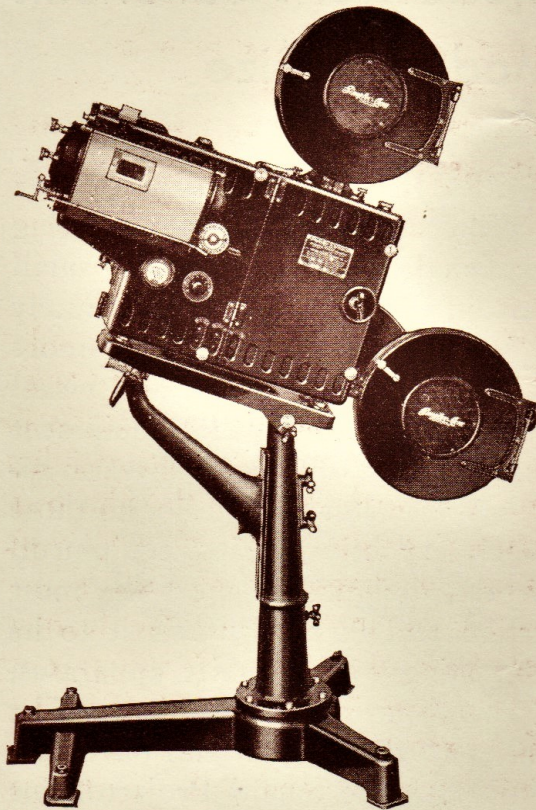
Projector with Door Open Showing Mechanism

Simplex-Acme Sound Projector for Auditoriums and Theatres of Moderate Size

THE SIMPLEX-ACME SOUND PROJECTOR, consisting of a complete standard motion picture projector and sound reproducing equipment, gives unsurpassed professional results in large and small auditoriums and is particularly adapted to the requirements of moderately sized theatres. In all buildings accommodating audiences of 2,000—more or less—the Simplex-Acme furnishes the highest type of sound and visual projection and in certain particulars it is superior to any other equipment made by this Company or any other manufacturer of motion picture apparatus. Simplex-Acme produces results that are actually superior to those obtained with much of the best and extremely expensive theatre equipment. It is the first unit of its kind which has been designed to meet the most exacting requirements of sound reproduction and in no sense is it to be confused with that type of equipment consisting of makeshift apparatus, assembled from silent equipment with sound attachment added. The reasons for these claims will be hereafter set forth in detail and offer convincing evidence of the superiority of Simplex-Acme Sound Projector for sound and visual projection.

Record and Reputation

As the largest and oldest manufacturers in the world of standard professional equipment, we offer Simplex-Acme for sound as well as visual projection with a full realization that we must maintain the prestige which we have held for nearly thirty years, a period which practically covers the entire commercial history of the motion picture industry. The extensive use of Simplex Projectors has been due to basic mechanical superiority, exceptional manufacturing facilities and a thorough understanding of the requirements of this country and every part of the world. With such a record and reputation we, therefore, ask you to have full faith in the statement that we have never heretofore manufactured and marketed any product which has met with such immediate and widespread approval. It has been the unchanging policy of this Company to manufacture motion picture projectors which are durable and reliable and give a maximum of light in the picture with the greatest simplicity in operation. Various improvements have been made and labor saving devices have been developed which give the projectionist more time and more opportunity to control the presentation of the picture and to that extent are a distinct step in the direction of better projection. These are the reasons why Simplex Projector is known throughout the world as the "International Projector."



Projector Tilted

BASIC IDEA

The basic idea in the design and manufacture of Simplex-Acme was to secure compactness and at the same time retain all the notable qualities of Simplex professional projectors used in the largest theatres of the leading cities throughout the world. In seeking compactness, however, we have also developed a unique and remarkable simplicity which has enabled us to secure a maximum of efficiency and dependability. We, therefore, offer Simplex-Acme Sound Projector with the complete confidence that it will meet every requirement of owners and managers of moderately sized theatres and auditoriums. The Simplex-Acme for the first time relieves owners of the necessity of paying a tremendous price for standard professional apparatus and thus frees them

of the handicap created in using inferior equipment. Although the Simplex-Acme is reasonably priced it is sold with the absolute guarantee that it will give the finest professional projection and within certain reasonable limitations is unsurpassed by any apparatus regardless of price.

PROJECTOR

Film Operating Parts

The film operating parts are shown on page 6 and this illustration also shows the film in place for operation, the feed sprocket, the intermittent sprocket, the sound gate feed sprocket, the constant speed sprocket and the take-up or hold-back sprocket. Pad rollers maintain the film on the two feed sprockets and the hold-back sprocket. Tension shoes are shown for the sound tension roller, the constant speed sprocket and also for maintaining the film on the intermittent sprocket.

Pad Roller and Tension Shoe Arms

All pad roller and tension shoe arms are self-locking in the open or closed positions and cannot be opened by bad patches or other accidents. Due to the positive stops provided, which maintain the rollers in the same

fixed position at all times, there is no danger of the distance between roller and sprocket decreasing and tending to damage the film. The motion picture projection gate may be opened or closed by turning a knob to the right or left and in either position the gate is securely locked and cannot be accidentally opened.

Film Trap and Gate

While all parts manufactured by this Company are carefully made, every part of the gate coming in contact with the film is made from specially selected steel, hardened and ground in our own plant. Parts made in this way are more durable, decrease wear on the film, increase dependability and assure smooth and noiseless operation. The care given to the film trap and gate is characteristic of all manufacturing processes of Simplex-Acme as wear on any part creates a chain of wear, increases cost of repairs and replacements and develops unsteadiness—always an objectionable feature in the showing of motion pictures. Every part of the film in the gate is supported from the intermittent sprocket to a point above the aperture and the film trap is supplied with lateral guides which prevent side motion or sway. The film trap is an integral part of the lens mount and this secures proper alignment of these two units under all conditions. A tension spring attached to the lens mount guide rods prevents the lens creeping out of adjustment and also avoids the possibility of the picture getting out of focus.

Vertical Sliding Type Double Aperture

A double aperture of the vertical sliding type is provided and by turning a knob either the silent film projection aperture or the sound film projection aperture is brought into place and locked in position. A pilot light gives illumination for properly placing the picture in frame when threading.

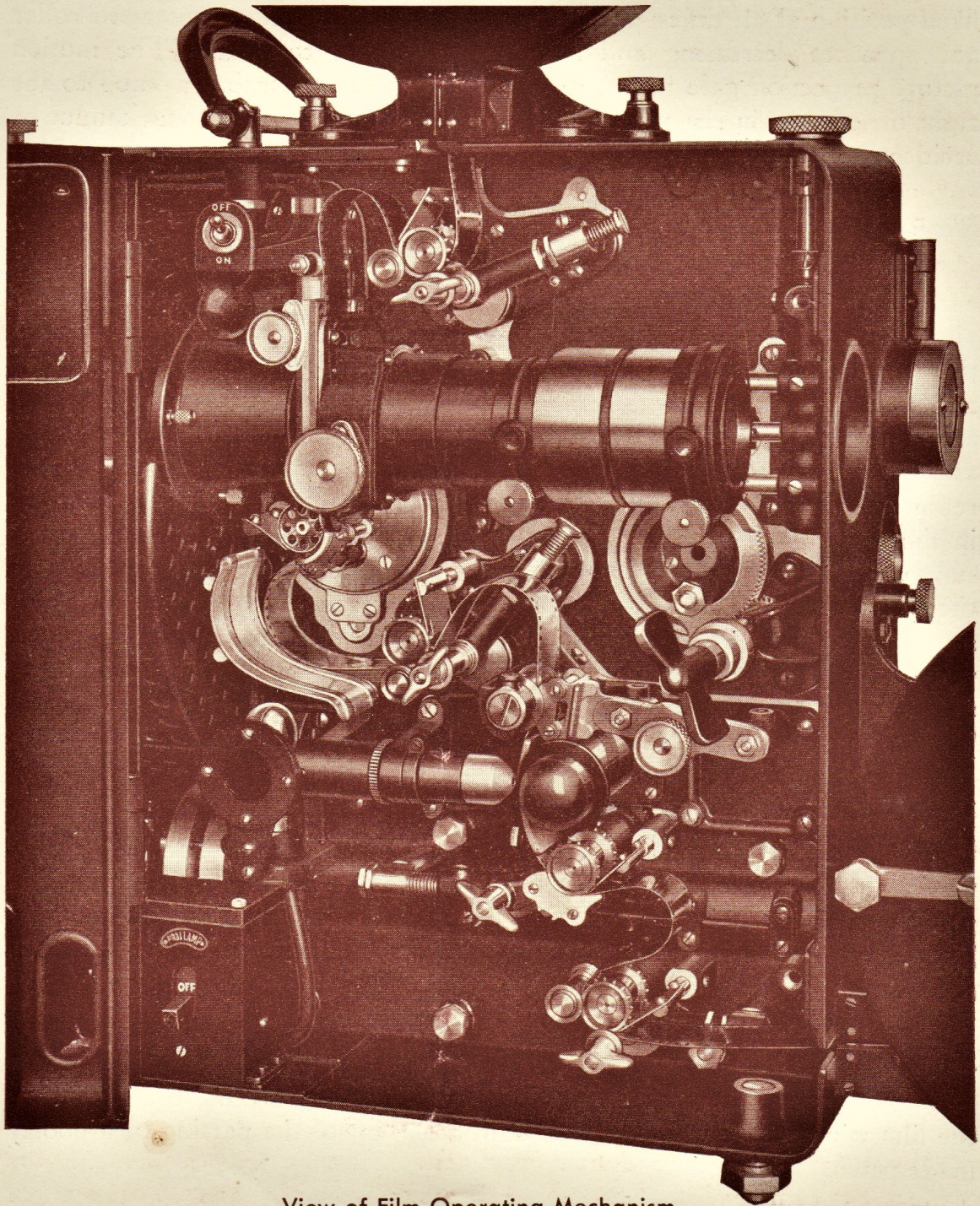
Stripper Plates

Stripper plates are provided for all sprockets and these prevent the film winding around the sprocket in the event of the parting of a poorly made patch.

Framing Handle

A framing handle controls the rotation of the intermittent sprocket for framing the projected picture either before or during operation, and the knob projecting from the front of the take-up magazine will be found very convenient to turn over the mechanism and facilitate threading in frame.

Simplex-Acme SOUND PROJECTOR



View of Film Operating Mechanism

Operating Mechanism

The operating mechanism is entirely enclosed on the non-operating side of the projector—the opening of two doors exposes to view the mechanical operating parts of the equipment. It will be noted that the equipment is direct connected to the motor and no belts of any kind are used.

Entirely Gear Driven—No Belts Used

As Simplex-Acme is entirely gear driven, eliminating all belts and chains, the possibility of slippage is avoided and assists in maintaining a constant speed. While the use of belts and chains may be unavoidable under certain conditions, it is obvious that they are not always absolutely reliable in the transmission of power, are subject to considerable strain and wear, which entails repair and replacement, and are never quite so satisfactory as the gear driven mechanism. The complete elimination of belts and chains in the Simplex-Acme is an additional evidence of simplicity and assurance of dependability.

Mechanical Filter

A mechanical filter is placed between the motor and the mechanism so that vibrations or other impulses from the motor cannot be transmitted to the mechanism proper. The driving shaft then continues straight through the lower part of the projector and is gear-connected to the constant speed sprocket shaft, the vertical driving shaft—which drives the balance of the projector—and take-up magazine.

Motor

The Simplex-Acme is driven by a motor built into the equipment and made to our own specifications. We believe it is the only motor that has a hardened and ground shaft and will wear three to five times as long as the ordinary motor with a soft shaft. The flexible coupling on the driving side of the motor takes up the sudden shock of starting, which serves to iron out the impulses from the line frequencies. In effect it is a mechanical filter to give a more even flow of power.

Intermittent Movement and Shutter Synchronizing Device

The intermittent movement and shutter synchronizing device are mounted in one common carriage and this system is fundamentally new in design. The improved design enables us to harden and grind both star and cam and is similar to that in our latest standard professional projector used in deluxe theatres throughout the world. There is but one pair of gears between the cam shaft and shutter shaft and this notable feature eliminates back lash which in turn avoids travel ghost in the picture. As the intermittent sprocket rotates on its own center the distance between the sprocket and the aperture remains fixed at all times, regardless of the changing position of the framing device. Therefore, only enough pressure on the film is required to hold it against the runners on the film trap and thus "over-shooting" is prevented. A light but steady pressure exerted on the film

Simplex-Acme SOUND PROJECTOR

in the gate and at the intermittent and sound sprockets prevents damage to the sprocket holes and greatly extends the life of the film. It is obvious that a heavy pressure greatly increases strain on the intermittent sprocket and it is equally evident that a light steady pressure, lessens the strain which, of course, decreases wear and increases steadiness.

Lubrication System

An advanced, scientific lubrication system has been adopted for the Simplex-Acme, which assures positive oiling of all rotating parts. The oil is not fed directly to the shaft of the rotating part, but by manifolds leading to a porous type bronze compo bearing which absorbs the oil precisely as required. This avoids the possibility of over-oiling and eliminates the danger of having bearings bind through imperfect lubrication or neglect. A very high grade lubricant should be used such as that regularly supplied for Simplex Projectors.

Revolving Cut-off Shutter

The revolving cut-off shutter, which is entirely enclosed, has been placed between the arc and the aperture as in our finest, modern, professional equipment. The advantages of the rear shutter—largely developed through the efforts of this Company—are now fully recognized as it is well known that placing of the shutter in this position immediately reduces the heat upon the film fifty per cent. This, of course, results in greatly improved projection, increases the life of the film and to a considerable extent reduces repair and replacement of projector parts. The improved shutter developed for the Simplex-Acme performs a double function as no fire shutter in the generally accepted term forms part of this equipment. While the projector is idle the revolving shutter is entirely enclosed for 360°, but when the shutter reaches a predetermined speed, two blades of the revolving shutter fly open behind the two fixed blades. The shutter then becomes—in effect—the usual cut-off shutter with two 90° blades, but the blades close again when the speed falls below 45 RPM, making a thoroughly dependable and effective fire shutter. Also attached to the shutter shaft is a fan for forcing a cool draught of air over the entire rear section of the equipment containing the lamphouse. A dowser knob permits readily cutting off light from the screen when this becomes necessary.

Take-up Mechanism

The take-up mechanism which is also entirely gear driven, enclosed in a dust proof, protective case, is readily adjustable. The lower magazine and take-up can be removed from the projector by simply loosening three attaching screws. Two dowel pins and a spring behind the connecting

Simplex-Acme SOUND PROJECTOR

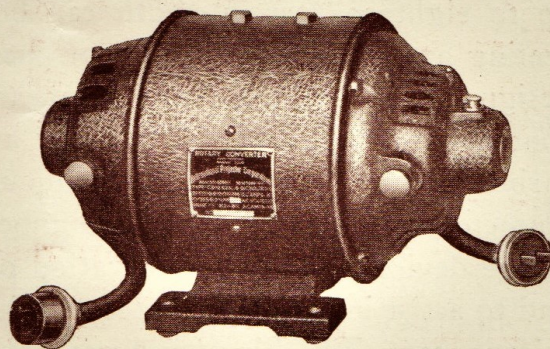
clutch permit replacing the lower magazine and take-up assembly without the slightest difficulty. The attachment cannot get out of alignment and the meshing of the clutch is so positive it is practically automatic. The upper magazine may be quickly and easily attached by means of two attaching screws, making the replacement extremely simple and always absolutely accurate.

Input and Output Receptacles

The input and output receptacles carry the current from and to the equipment during operation. The 110 volt input from the line feeds the motor through the motor switch and is wired in parallel with two plugs. One of these plugs is used to feed the amplifier 110 volt A. C., and the other for an extension lamp or any other device requiring 110 volt A. C. The equipment is entirely A. C. operated, no batteries of any kind being employed in any circuit. There is a tremendous reduction in the number of electrical connections and a corresponding absence of the difficulties which frequently occur in battery operated equipments. Battery repair, maintenance and replacements are entirely dispensed with and, therefore, there is complete freedom from the extra care and uncertainty which comes through the use of batteries. Where direct current is the only source of power available small rotary converters having a capacity of .5KVA per projector are supplied to furnish alternating current for the operation of the projector motor, exciter lamp, and amplifiers.

Entire Absence of Speed Indicators and Meters

Simplex-Acme has been designed to maintain practical operating speed on all voltages between 105 and 120 A. C. and a notable feature of the equipment is the entire absence of speed indicators and meters except for the arc amperage. This is further evidence of the engineering skill and extensive practical experience which have been combined in the design and construction of Simplex-Acme. The elimination of speed indicators and meters makes Simplex-Acme almost automatic, largely obviating the need for adjustments and avoiding uncertainties created through dependence upon delicate controls and regulating mechanisms. Speed indicators and meters are unquestionably essential under certain conditions but users of Simplex-Acme will be able to note many distinct benefits derived from fixed control and regulation.



Rotary Converter

Simplex-Acme SOUND PROJECTOR

Separate Assemblies

The entire projector is built up of separate assemblies, any one of which may be removed at will without unduly disturbing any of the other parts. Any current carrying part may be readily removed by disconnecting the wiring at its particular terminal on the panel board.

The centralization of electrical connections is a definite improvement and has advantages which can be best understood by demonstration and conclusively proved by actual use.

Stand

The stand, specially designed for Simplex-Acme, is a five point pedestal and again emphasizes the constant endeavor to secure every essential requirement without sacrificing simplicity or efficiency. There is a complete freedom from exposed belts and rotating parts. The improved pedestal is adjustable to 10° up, and to 26° down, and more accurate adjustments can be quickly and easily obtained by means of a unique cam and a convenient handle or lever. The importance of this method of making fine adjustments without the least delay can hardly be over-emphasized.

• •

LAMP and LAMPHOUSE

The remarkable success of the reflector type arc lamp in thousands of theatres has led to its adoption for the Simplex-Acme sound projector and this equipment can be depended upon to give thoroughly professional, dependable and economical results, which have exceeded even our own expectations. The Simplex-Acme Projector with reflector arc lamp will project a picture of a size and brilliancy comparable with any standard projector equipped with a reflector arc lamp. A thoroughly satisfactory screen image up to eighteen feet in width can be secured in moderately sized houses seating approximately 2,000 patrons. The arc lamp is part of the basic design of the Simplex-Acme Projector and is provided with all necessary controls and adjustments, such as: automatic arc control, which feeds the carbons automatically and continuously as the carbons are consumed; an ammeter for determining the number of amperes at the arc; and an arc image device to permit observation of the arc in its relation to the mirror, and to assist in making necessary adjustments for regulating the arc length, mirror, etc. The Simplex-Acme arc lamp operates at from 10 to 25 am-

Simplex-Acme SOUND PROJECTOR

peres and uses standard projector carbons (positive 10 mm. and negative 7 mm.) which are purchased in 8 inch lengths and can be cut into 4 inch lengths by means of a scoring device found on the rear of the lamp. These 4 inch lengths are mounted directly in the lamphouse and will burn continuously for approximately one hour to one hour and a half, depending upon the current consumed.

Screen Illumination

The lamp will give a brilliancy of screen illumination comparable to that of standard theatre equipment at equal current. To avoid the possibility of trimming improperly, the lamp has been designed to take carbons 4 inches long, when clamped at their extreme end. This arrangement eliminates any necessity for adjustment of the carbon holders during the burning period. In trimming the lamp, the spring clutch is released, the carbon is placed against a stop at the back of the holder, and the clutch is then allowed to engage the carbon. By confining the length to 4 inches, a perfect alignment of positive and negative carbons is assured without any necessity of adjustment. The superiority of the direct current reflector arc is due basically to the interception of a large angle of radiated light from the crater to the positive carbon and the reflection of this light in a converging beam on the film aperture, without the use of condensers.

A Compact Unit

The lamp and lamphouse is a compact unit only 18 inches long, 12 inches high and 10 inches wide, but well proportioned and of exceptional power. Simplicity of operation and reliable performance have been brought about by practical elimination of hand control of the arc. This is accomplished by means of a fully enclosed control motor, which is mounted as an integral part of the lamphouse, and which automatically feeds the carbons at exactly the same rate they are consumed; the proper length of the arc is thus maintained throughout the entire burning of the carbons. The parts of the interior mechanism are few in number as well as simple and sturdy in construction.

Automatic Arc Control

The automatic arc control system operates upon the principle that certain electrical characteristics of an arc are changed as the carbons are consumed. Use is made of these changes to directly control the speed and direction of rotation of a differentially compounded motor. The operation of the arc control is entirely automatic and continuous. Once the arc has been struck and the carbons separated to the proper arc length, the control motor rotates slowly and continuously, feeding the carbons towards each other at

Simpler-Acme SOUND PROJECTOR



Arc Rheostat

a rate that exactly equals their consumption. A uniform arc gap is thus maintained without manual control.

Arc Imager

An arc imager is mounted on the door of the lamphouse adjacent to the window. The imager projects an image of the arc and the incandescent carbon tips on to a small screen secured to the top of the projector above the lamphouse door. While the lamp is in operation the lines on the imager screen indicate the proper position of the positive crater in its relation to the focus of the reflector, as well

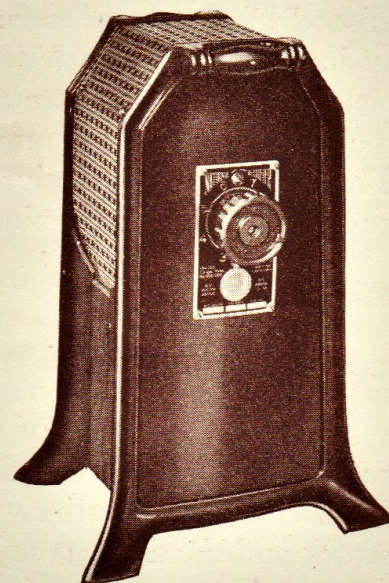
as the correct position of the negative carbon in relation to the positive. The position of the positive crater to the exact focus of the mirror may be adjusted by turning a focusing knob which is located to the right of the lamphouse.

Striking the Arc

"Striking the arc" is accomplished by simply turning the bell crank at the rear of the lamphouse, which further permits the manual adjustment of the arc length, i.e., adjustment of the negative carbon in relation to the positive. Once this relationship has been set, the carbons seldom require further manual adjustment. The automatic control, under normal conditions, will maintain the proper arc length and position of the positive crater for the entire burning period of one complete trim.

Elliptical Mirror

The optical system comprises an elliptical mirror 6-5/8 inches in diameter, having a working distance of 4 inches from the arc crater to the vertex of the mirror and 19 inches from the mirror to the film aperture. The mirror is adjusted for horizontal and vertical alignment of the spot at the film aperture by means of two knurled knobs projecting from the back of the lamphouse.



Arc Rectifier

Arc Rectifier

The arc lamp must necessarily be supplied with direct current and when available the only additional equipment that is necessary is an adjustable rheostat used to regulate the current to the desired number of amperes. Where only alternating current is available we recommend the use of the National Rectifier (Tungar Type) as a most economical and satisfactory means of converting the alternating current of the line to direct current, suitable for the operation of the arc. These rectifiers weigh only 56 pounds net and are provided with polarized plug-in receptacles.

SOUND EQUIPMENT

The sound reproducing equipment has received thorough consideration and by careful selection and exacting tests the apparatus supplied by us will be found to meet all the requirements of the special field for which it has been developed. The sound reproducing unit, which is an integral part of the Simplex-Acme, has been correctly placed and this entirely eliminates any need for changes. The attempt to make adjustments by those who are not expert in this work often results in serious mistakes. Placing the sound reproducing units of Simplex-Acme in the fixed, correct position, makes adjustment entirely unnecessary and avoids all possibility of error.

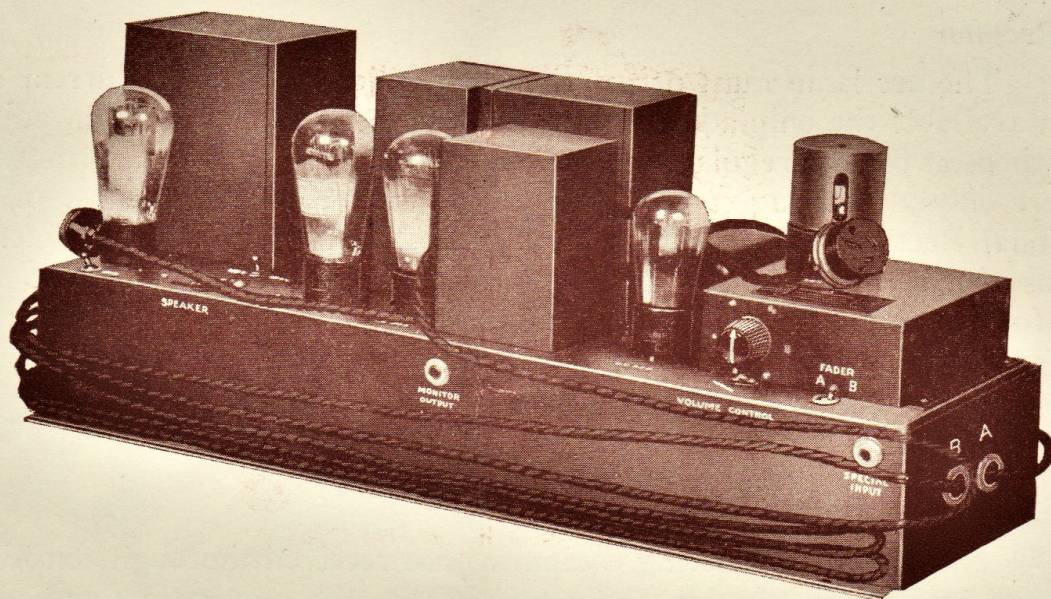
Exciter Lamp

The exciter lamp bracket is rugged and the optical system sturdy and rigidly mounted. The conventional sound "gate" with the usual tension springs, pads, etc., has been entirely eliminated and in its place has been provided an accurately machined, curved plate, above which is attached a guide roller and tension shoe or pad. This design not only keeps the film in a perfect optical plane with relation to the sound reproducing optical system, but in addition entirely prevents the gathering of emulsion and dirt at this most critical point. Excellent sound reproduction is, therefore, assured at all times. The film is laterally guided by the edge on which the sound track appears so that there is no weaving of the film in passing through the reproducing light beam.

Photoelectric Cell

The photoelectric cell is mounted directly behind the sound aperture plate and, due to an entire absence of lenses between the plate and the photoelectric cell, a maximum of light is passed through to the cell. A shield completely envelopes the cell except for a small window to allow the passage of light from the optical system and, should it become neces-

Simplex-Acme SOUND PROJECTOR



Voltage Amplifier

sary to quickly replace the photoelectric cell, this shield may be immediately removed and the cell instantly replaced.

Amplifiers

The amplifier consists of two stages of voltage amplification followed by adequate power amplification.

The tubes required are as follows:

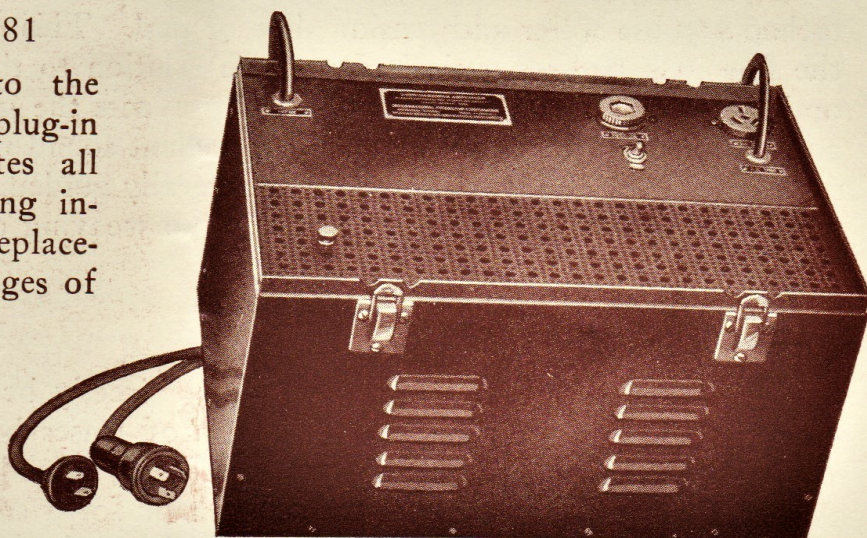
1—UY 224
1—UY 227

1—UX 280
2—UX 245

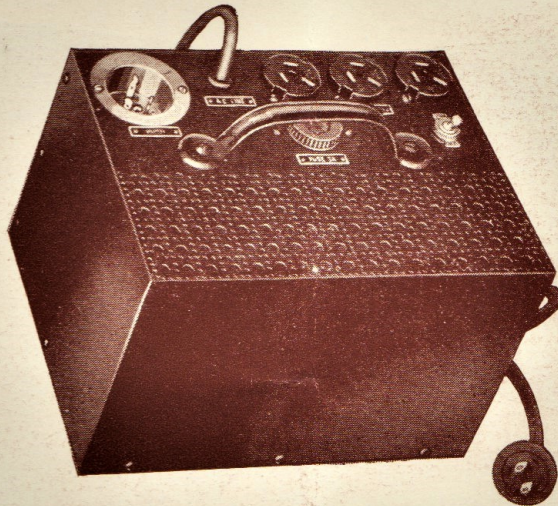
3A power amplifier consists of a stage of UX 250 and push pull. Tubes used are:

2—250 2—281

All connections to the amplifiers are of the plug-in type, which eliminates all difficulty when making installations and replacements. The advantages of the plug-in system as with other of the many improvements on the Simplex-Acme can be best realized through actual use of the equipment.



Power Amplifier



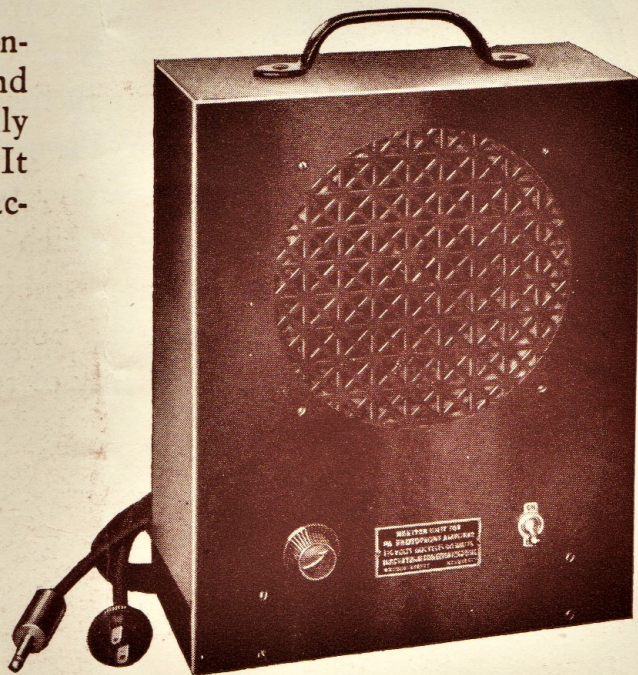
Multiple Speaker Rectifying Unit

Multiple Speaker Rectifying Unit

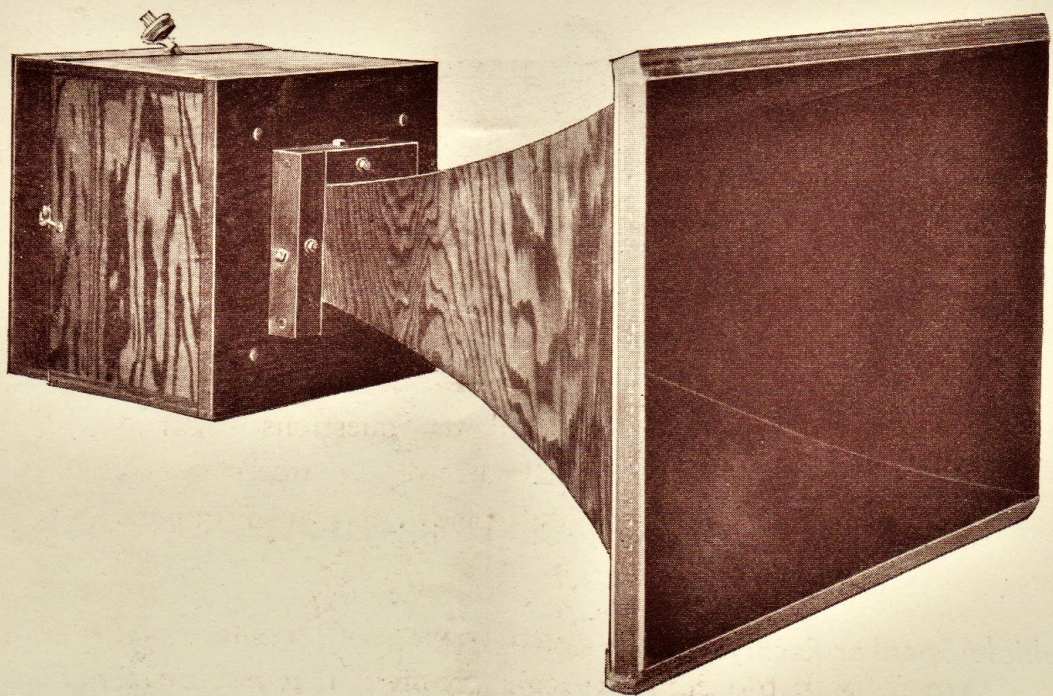
When two or three speakers are required, the rectifier for speaker field excitation will be found very convenient as all connections can be made by simply plugging in speaker cords. This avoids the necessity of making internal changes of wiring in speaker or other sound apparatus. Plug-in connections are extremely flexible and permit making changes with absolutely no delay.

Monitor Speaker

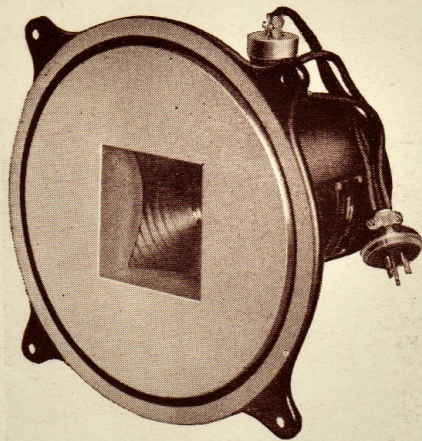
The monitor speaker is self-contained with its own amplifier and volume control and was specially designed for the Simplex-Acme. It will be found thoroughly satisfactory in every particular.



Monitor Unit



Directional Baffle for Speaker



Speaker Unit

Loud Speakers

The directional type baffle with speaker unit is an outstanding advance in design and construction of sound reproducing equipment for theatres and auditoriums. It will be necessary to know the special conditions under which the equipment is to be used, but one or more units will be found to give adequate volume and thoroughly satisfactory quality of sound.

THE details given in this booklet are intended to answer all ordinary questions regarding Simplex-Acme Sound Projector and accessories, but for additional information we ask you to communicate directly with us.

To assist you in getting the best possible results with the Simplex-Acme Sound Projector it is important that we should be thoroughly informed regarding your special requirements. We, therefore, ask you to be kind enough to advise us as to the seating capacity of your theatre and approximate cubic contents, the size picture you are showing, the distance from the projector to the screen and the electric current available. This information will enable our Engineering Department to properly understand your technical problems and permit us to render the fullest possible service.

INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK

