

Nov. 17, 1931.

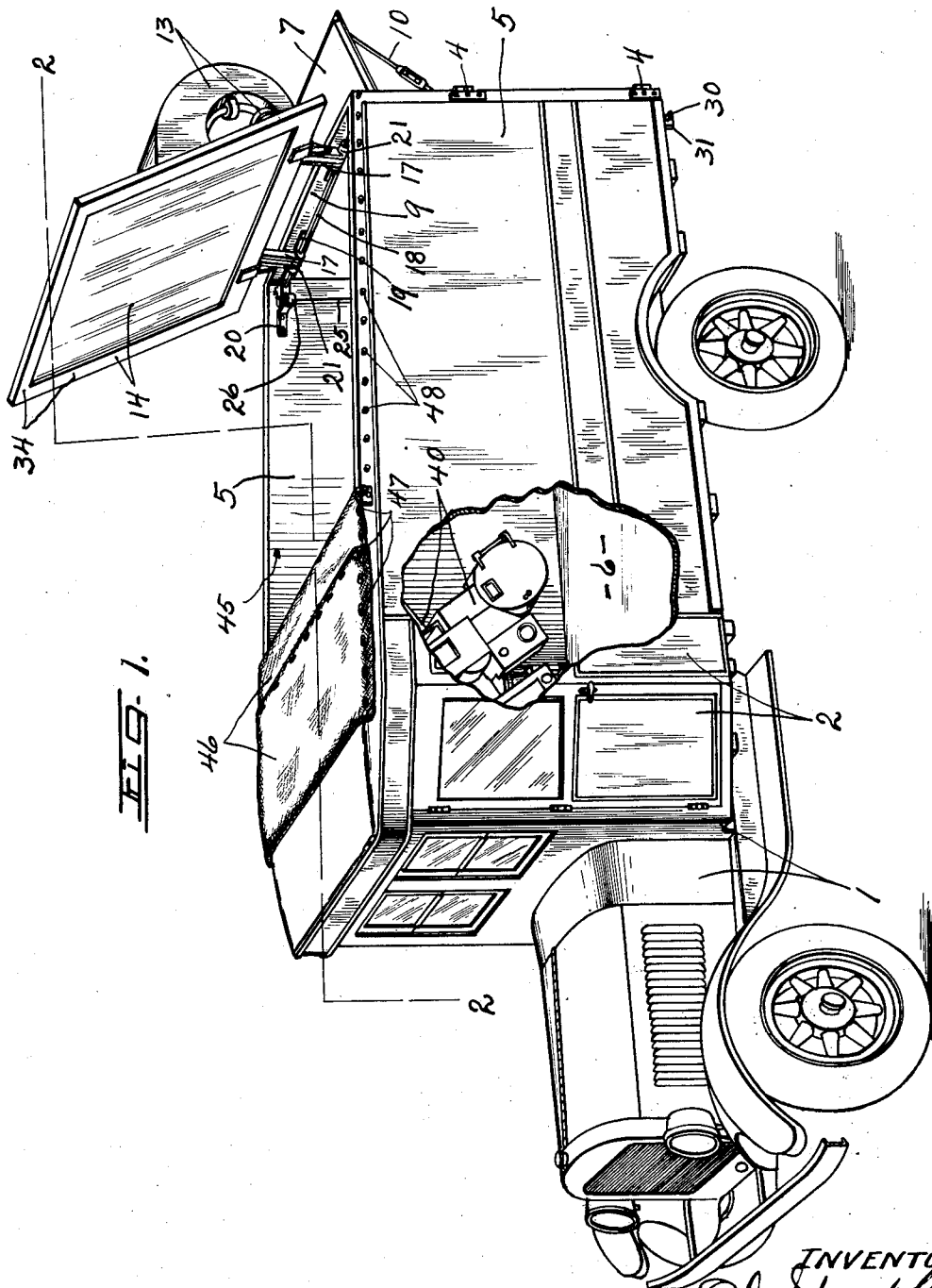
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1,832,821

METHOD AND APPARATUS FOR PRODUCING TALKING MOVING PICTURES

Filed Nov. 1, 1928

4 Sheets-Sheet 1



WITNESS
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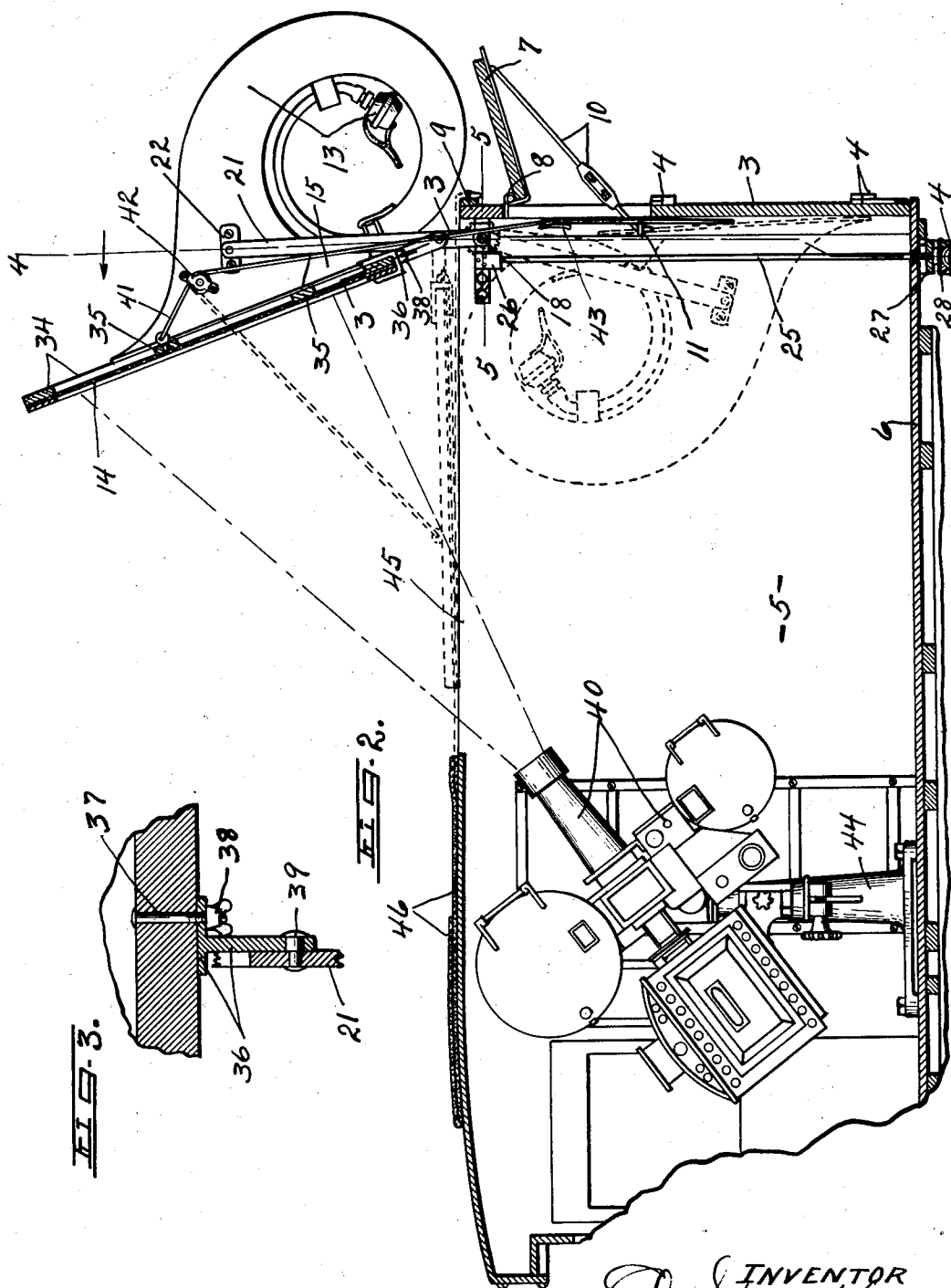
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4 Sheets-Sheet 2



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METHOD AND APPARATUS FOR PRODUCING TALKING MOVING PICTURES

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4 Sheets-Sheet 3

FIG. 4.

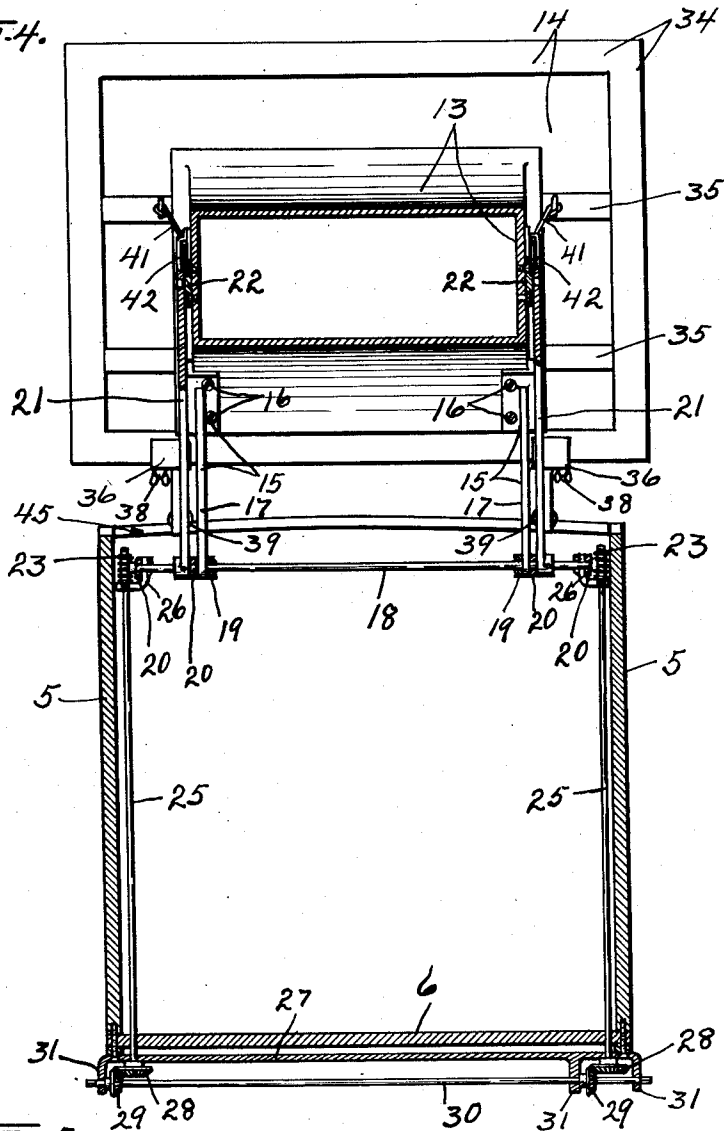
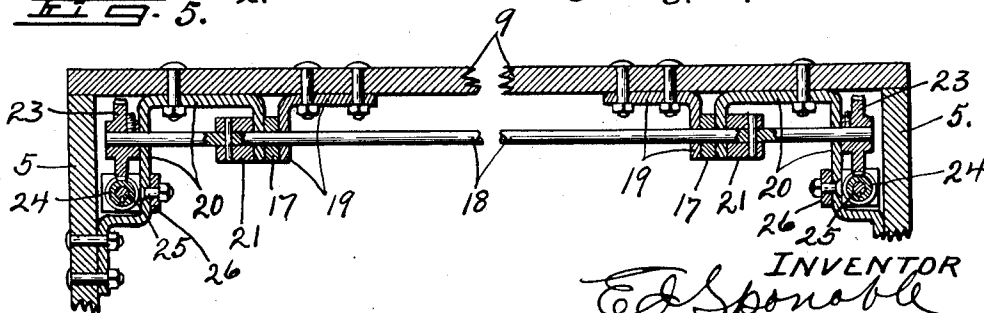


FIG. 5.



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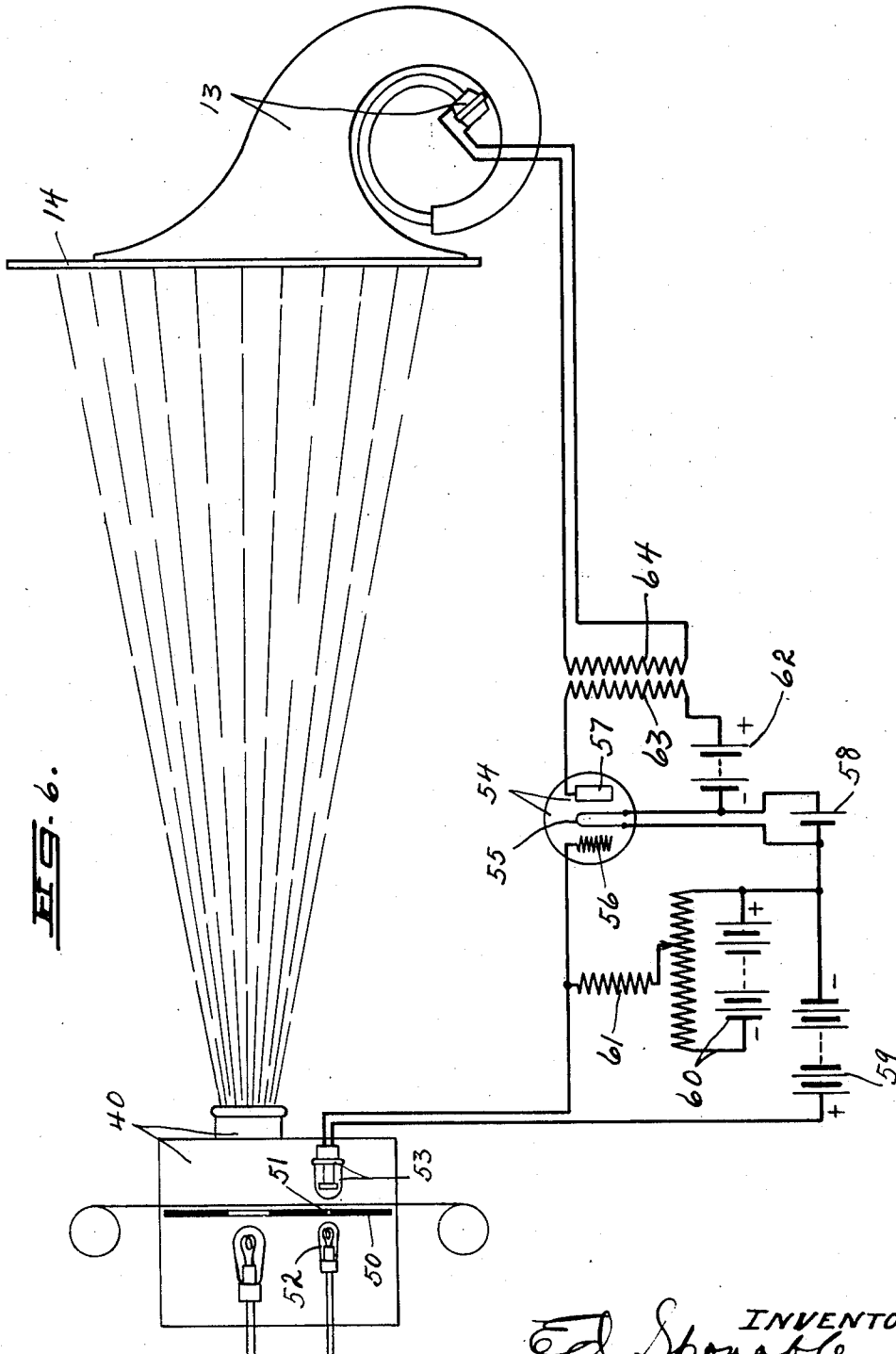
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METHOD AND APPARATUS FOR PRODUCING TALKING MOVING PICTURES

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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METHOD AND APPARATUS FOR PRODUCING TALKING MOVING PICTURES

Application filed November 1, 1928. Serial No. 316,542.

This invention relates to a new and useful method and apparatus for the production of moving pictures and the simultaneous syn-
chronized reproduction of a record corre-
sponding to sound waves, the whole appara-
tus being so constructed and mounted as to
be self-contained and portable as a unit per-
mitting ready transportation from place to
place.

The main object of the invention is to pro-
vide a portable talking moving-picture appa-
ratus whereby the production of the moving
pictures is simultaneous with the reproduc-
tion of sound waves from a photographic rec-
ord of light waves corresponding to sound
waves, and in which the reproduced sound
will actually issue from the picture.

Another object of the invention comprises
a device or vehicle adapted to have mounted
thereon a moving picture projecting machine,
a screen upon which the moving picture is
projected, an apparatus for the reproduction
of sound waves from a photographic record
of light waves corresponding to sound waves,
and a sound translating device in the form
of a loud speaker, together with batteries
and all necessary equipment for the success-
ful reproducing of talking moving pictures,
all of which are capable of being transported
or moved from one locality to another for the
purpose of producing talking moving pic-
tures on the streets of cities or towns or in
any other desired and convenient locality.

A further object is to so construct and po-
sition the screen upon which the moving pic-
ture is projected together with the loud speak-
er cooperating therewith above the vehicle
upon which they are mounted so that the
audience standing upon the ground about the
vehicle may plainly see the pictures and hear
the sounds, and that an operator may be able
to remove said screen and loud speaker from
the operating exposed position and place them
within the body of the vehicle where they may
be protected from the elements when not in
use for the giving of talking moving pictures
or during transportation.

Other objects and advantages relating to
the details of the structure and the form and
relation of the parts thereof will more fully

appear from the following specification,
taken in connection with the accompanying
drawings in which:—

Figure 1 is a perspective view of a vehicle
which has been used in connection with the
reproduction of talking moving pictures and
having a portion of the side broken away to
show a portion of a moving picture projector,
while a moving picture screen together with
a loud speaker is shown in operative position.

Figure 2 is a vertical section taken in the
plane of the line 2—2, Figure 1.

Figure 3 is a detail sectional view taken in
the plane of line 3—3, Figure 2.

Figure 4 is a vertical cross section taken in
the plane of the line 4—4, Figure 2, showing
the means for supporting the loud speaker
and the moving picture screen.

Figure 5 is a horizontal detail section taken
in the plane of the line 5—5, Figure 2.

Figure 6 is a diagrammatic illustration of
an embodiment of this invention.

In order to carry out the object of this in-
vention I prefer to use an automobile truck
—1— having a body —2— mounted on the
chassis thereof. The rear end of the body
—2— may be provided with one or more ver-
tical doors —3— hinged at their side edges
at —4— to the adjacent side walls —5— of
the body —2— and extend vertically from
the floor —6— of the body —2— upwardly
a portion of the distance of the rear open end
of said body while the remainder of the open
portion of the rear end may be closed by a
vertical door —7— which extends across the
entire width of the rear opening and may as
shown be hinged at the upper edge thereof
at —8— to the lower rear edge of the upper
cross piece —9— of the body —2— thereby
permitting the door —7— to be raised to a
substantially vertical position where it may
be supported by, in this instance, adjustable
brace rods —10— having one end secured to
the door —7— while the other end may be
held in any suitable manner as by placing it
in a screw eye —11— secured to the body side
walls —5— thus the door —7— may be used
as a platform for an operator to stand upon
in making any adjustments to the loud speak-
er —13— or the screen —14—.

The sound translating device may consist of, as shown, a loud speaker —13— of any suitable type such as a horn as shown which may have suitable brackets —15— secured at either side and near the forward open end thereof by screws —16—.

The brackets —15— include lateral arms —17— which have their outer ends journaled on a horizontal shaft —18— rotatably mounted in brackets —19— secured to the inner face of the cross piece —9— and brackets —20— secured to the cross piece —9— and side walls —5— of the body —2— as more clearly shown in Fig. 5.

The brackets —15— thereby form a supporting means for the loud speaker —13— while said loud speaker may be raised and lowered to and from its operative position above the truck body —2— by means of arms —21— having one end thereof pivotally connected to brackets —22— secured to the side walls of the loud speaker —13— and the other end of the arms —21— are mounted on and secured to the horizontal rock shaft —18— and actuated thereby.

The outer ends of the horizontal rock shaft —18— terminate near the inner face of the side walls —5— and are provided with worm gears —23— secured thereto which mesh with cooperating worms —24— secured to the upper ends of vertical shafts —25— which are journaled near their upper ends in brackets —26— secured to the brackets —20—, and extend downward through suitable holes in the bottom —6— of the body —2— and through a bracket —27— secured to the underside of the truck body —2— near the rear end thereof. The lower end of the vertical shafts —25— are provided with bevel gears —28— secured thereto and mesh with suitable gears —29— secured to a horizontal shaft —30— journaled in downwardly extending flanges —31— integral with or secured to the bracket —27—.

The opposite ends of the horizontal shaft —30— extend or project a short distance outside of or beyond the irrespctive flanges —31— and may be provided with squared portions adapted to receive a wrench or crank arm, not shown, for the purpose of enabling an operator to rotate said shaft —30— and the gears —29— which in turn transmits motion to the gears —28— and their respective vertical shafts —25— and the worms —24—, worm gears —23— and the rock shaft —18—. This enables the operator to move the loud speaker from the operative position above the truck body —2— to the inoperative position within said body as shown in dotted lines, Figure 2, where it may be protected from the elements during transportation or when not being used as a sound producing device and in like manner to move the loud speaker from its inoperative position when the vehicle body is in its oper-

ative position above the vehicle body as shown in full lines, Figure 2.

The moving picture screen —14— may be mounted upon a rectangular frame —34— having a plurality of, in this instance two, horizontal cross members —35—, the frame —34— being supported when in its operative position immediately in front of the loud speaker —13— by, in this instance two, supporting arms or brackets —36— clamped to the lower portion of the frame —34— near the outer ends thereof by bolts —37— and thumb nuts —38— while the lower end of the brackets —36— are pivotally connected to the loud speaker lifting arms —21— by pivot bolts —39—. It will be noted that the front edge of the horn or loud speaker inclines rearwardly as it extends downwardly so that the picture may be projected upon the screen which covers the opening in a substantially normal position and the picture will be more readily and accurately visible to a person on the ground in front or at the sides of the truck. The screen frame —34— inclined to conform to the inclination of the front edge of the loud speaker may be held in its cooperative position with a suitable moving picture projector —40— in any convenient way as by ropes or cables —41— secured to the upper cross member —35— of the screen —34— and passing over pulleys —42— secured to the upper portion of the loud speaker —13— extend downwardly and fastened in any suitable manner to the inner side of the body —2— as by winding or tying to cleats —43— as indicated in Figure 2. When it is desired to remove the screen —14— for transportation or any other reason it is only necessary to unfasten the cables —41— from the cleats —43— and lower the frame —34— by permitting it to swing downwardly about the pivots —39— until the frame —34— rests upon the top of the body —2— as indicated by the dotted lines, Figure 2, where the cables —41— may be withdrawn from their respective pulley —42— and the thumb nuts —38— removed from their bolts —37— after which the screen frame —34— may be removed and placed within the truck body —2— for protection and convenience of transportation.

The screen —14— may be secured to the frame —34— in any suitable manner and must, in this instance, consist of a material which is substantially impervious to light rays and must have a coefficient of reflection sufficient to enable a picture to be well reproduced thereon and in addition, must have openings or pores of sufficient number and size to permit the passage of sound waves in substantially undampened condition.

These pores or openings may be disposed in the material which has been selected for the screen at varying inclinations to the surface thereof, or other conditions of struc-

ture may assist, not herein possible to describe, but I have found that the material, known as baronet silk, has all of the characteristics required for accomplishing the objects of this invention or some other material having the same characteristics or perhaps improved characteristics may be used.

The motion picture projector —40— may, as shown, be mounted upon a post or pedestal —44— installed within the body 2 and upon the floor thereof near the forward end and is capable of being tilted at such an angle as to project the light rays constituting the picture upon the screen —14— through an opening 45 provided in the roof of the body 2 in the rear portion thereof. The opening —45— may be covered during transportation or when it is otherwise desired to do so in any suitable manner as by a canvas 46 which may be provided with eyelets 47 adapted to fit over buttons 48 positioned along the upper outer edge of the sides 5.

In the diagrammatic view, Figure 6, is illustrated a system of sound reproduction applicable to this invention in which the moving picture projector —40— is provided with a wall —50— having a narrow elongated slot —51— therein, preferably corresponding substantially in area to the slot through which the sound picture was produced. The film is adapted to move past the slot —51— preferably in close relation with the slot, and light rays from a suitable source indicated at —52—, are projected through the slot upon the film, and pass through the sound record upon a light reactive resistance or a photo-electric cell illustrated at —53—.

This photo-electric cell is connected in a circuit including any number of stages of amplification, a single stage being illustrated, although preferably a number of stages are used. This stage of amplification includes an electro-ionic device —54— of the three-electrode type, and including a filament —55—, grid —56— and plate —57—. A suitable means is provided for heating the filament as, for instance, a circuit including battery —58—. The grid —56— and filament —55— are connected in circuit with the photo-electric cell —53—, such circuit including a source of potential, as battery —59—, preferably a potentiometer —60— and a resistance —61— are connected in shunt with said circuit across the filament and the grid, whereby the desired potential may be maintained upon the grid for producing the most effective result.

The filament —55— and plate —57— are connected in circuit with a suitable source of potential as a battery —62— and in this case with the primary —63— of a transformer, the secondary —64— of which is connected in circuit with a sound translating device 13 in the form of a loud speaker disposed directly behind the screen —14—, that

is, upon the opposite side of the screen from the projector 40 altho two or more translating devices 13 may be used and their form may be widely varied.

Instead of the secondary —64— of the transformer, any suitable number of stages of amplifications may be inserted at this point. The screen —14—, as heretofore described, is of special construction adapted to reflect substantially all light rays and permit substantially undampened passage of sound waves in order to carry out a method by which simultaneously with the production of the moving picture the sound waves corresponding to the picture are actually projected through the screen and, therefore, the picture whereby a more natural and effective result is obtained, but obviously other arrangements may be made for the use of any known screen by proper positioning of the parts upon the truck. The amplifying apparatus including batteries, etc. is all positioned within the vehicle body and the apparatus is a self-contained portable unit talking moving picture producing apparatus.

Although I have shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the exact details of construction shown as various changes may readily be made without departing from the spirit of this invention as set forth in the appended claims.

I claim:

1. In an apparatus of the class described, a portable chassis, a substantially enclosed body mounted thereon and having an opening through its top wall, a moving picture projector adapted to project light rays through said opening in said top wall, means for translating a film record of light waves corresponding to sound waves into electrical variations, a loud speaker actuated by said electrical variations to reproduce the original sound waves, a pair of arms connected to the loud speaker, a pivot on the body for said arms, and means for moving said loud speaker about said pivot into and out of the vehicle body, and a screen in the path of the projected light rays.

2. In an apparatus of the class described, a portable chassis, a substantially enclosed body mounted thereon and having an opening through its top wall, a moving picture projector adapted to project light rays through said opening in said top wall, means for translating a film record of light waves corresponding to sound waves into electrical variations, a loud speaker actuated by said electrical variations to reproduce the original sound waves, a pair of arms connected to the loud speaker, a pivot on the body for said arms and means for moving said loud speaker about said pivot into and out of the vehicle body, and a screen covering the open end of

the loud speaker and positioned in the path of the projected light rays.

3. In an apparatus of the class described, a portable chassis, a substantially enclosed body mounted thereon and having an opening through its top wall, a moving picture projector adapted to project light rays through said opening in said top wall, means for translating a film record of light waves corresponding to sound waves into electrical variations, a loud speaker actuated by said electrical variations to reproduce the original sound waves, a pair of arms connected to the loud speaker, a pivot on the body for said arms, and means for moving said loud speaker about said pivot into and out of the vehicle body, a screen, and means for pivotally mounting the screen in the path of the projected light rays.

4. In an apparatus of the class described, a portable chassis, a substantially enclosed body mounted thereon and having an opening through its top wall, a moving picture projector adapted to project light rays through said opening in said top wall, means for translating a film record of light waves corresponding to sound waves into electrical variations, a loud speaker actuated by said electrical variations to reproduce the original sound waves, a pair of arms connected to the loud speaker, a pivot on the body for said arms, means for moving said loud speaker about said pivot into and out of the vehicle body, a screen, means for pivotally mounting the screen in the path of the projected light rays, and additional means for maintaining the screen in position in front of the open end of the loud speaker.

5. In an apparatus of the class described, a portable chassis, a substantially enclosed body mounted thereon and having an opening through its top wall, a moving picture projector adapted to project light rays through said opening in said top wall, means for translating a film record of light waves corresponding to sound waves into electrical variations, a loud speaker actuated by said electrical variations to reproduce the original sound waves, a pivotal support for securing said speaker to said body, and means for moving said loud speaker about said pivot into and out of the vehicle body, and a screen in the path of the projected light rays.

In witness whereof I have hereunto set my hand this 22nd day of October, 1928.

EARL I. SPONABLE.