

May 9, 1933.

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1,907,752

INCLOSING CASING FOR OPERATING MECHANISM OF PROJECTION MACHINES

Filed April 22, 1929

5 Sheets-Sheet 1

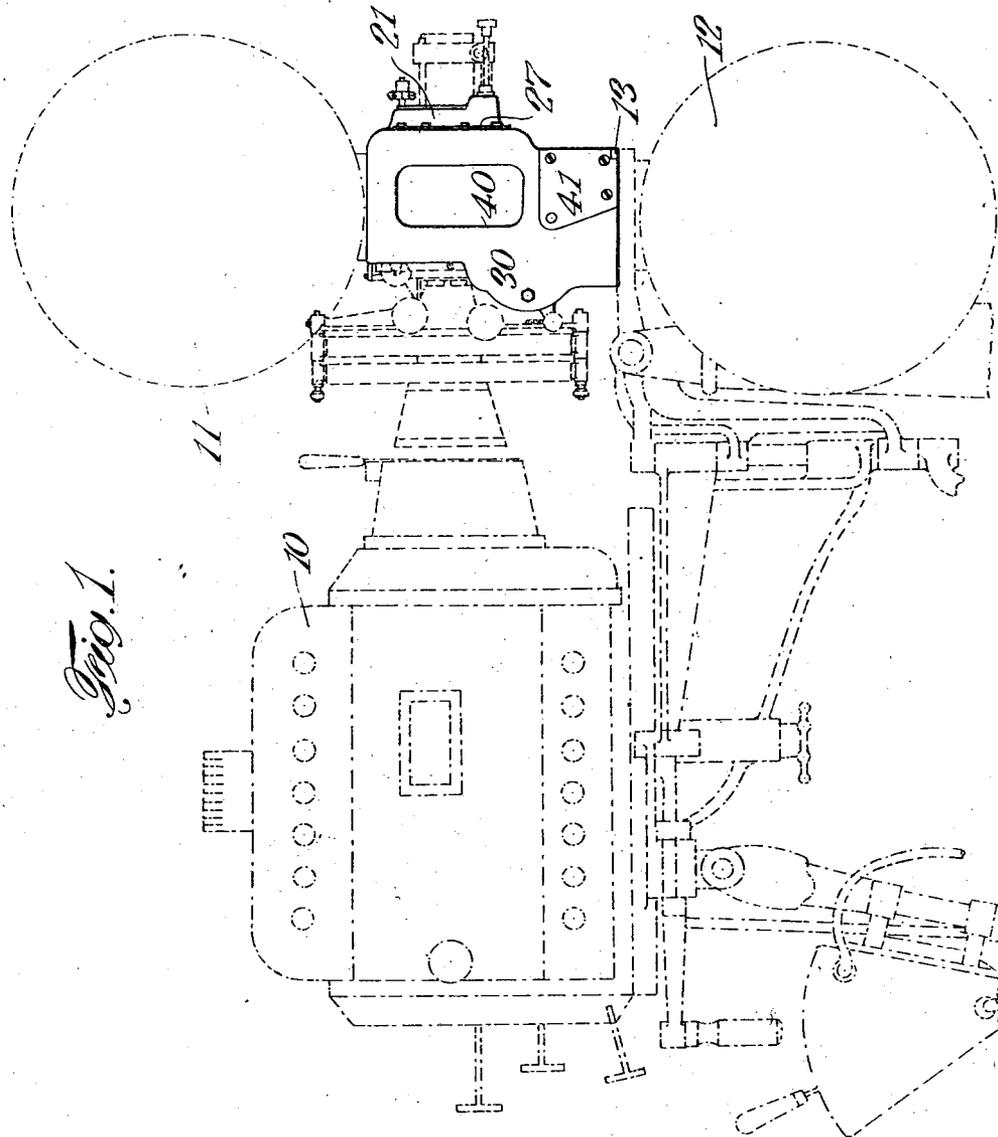


Fig. 1.

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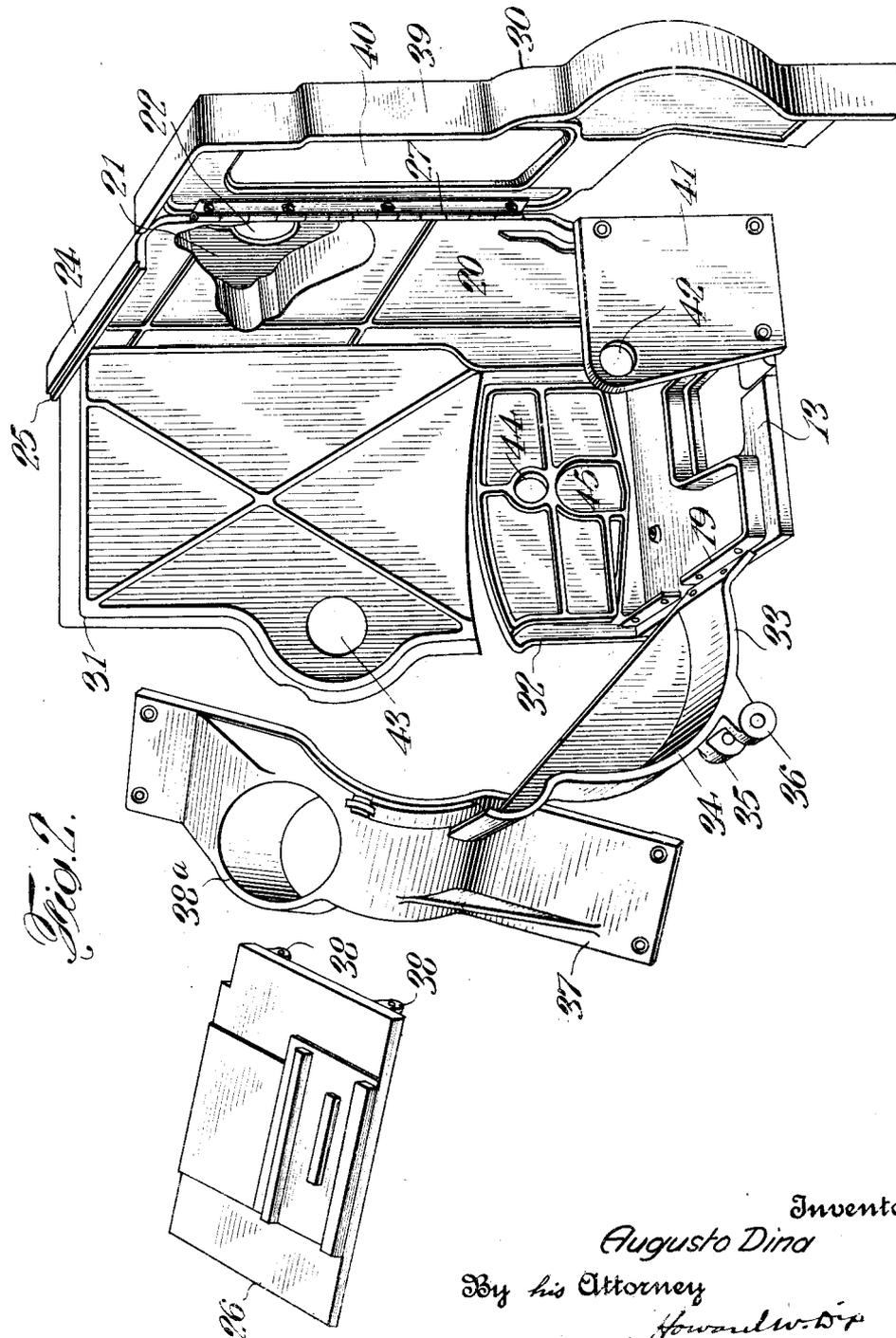
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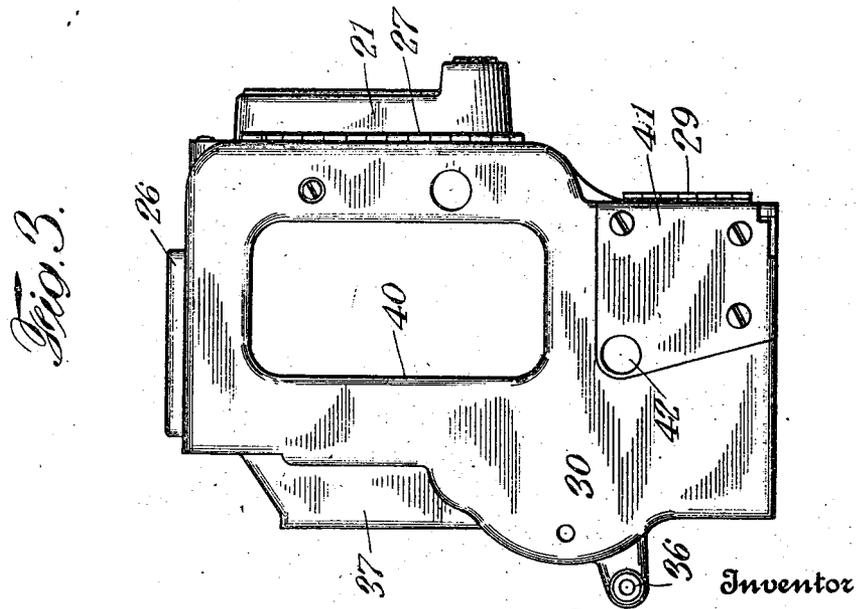
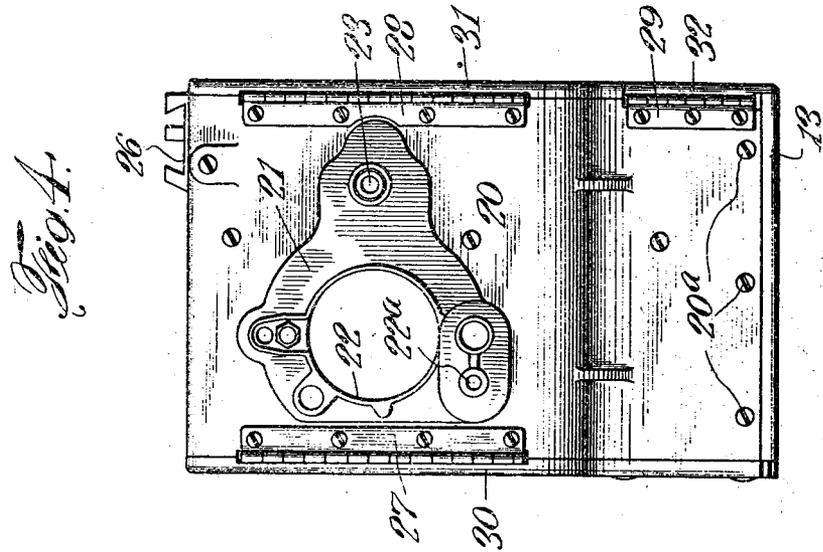
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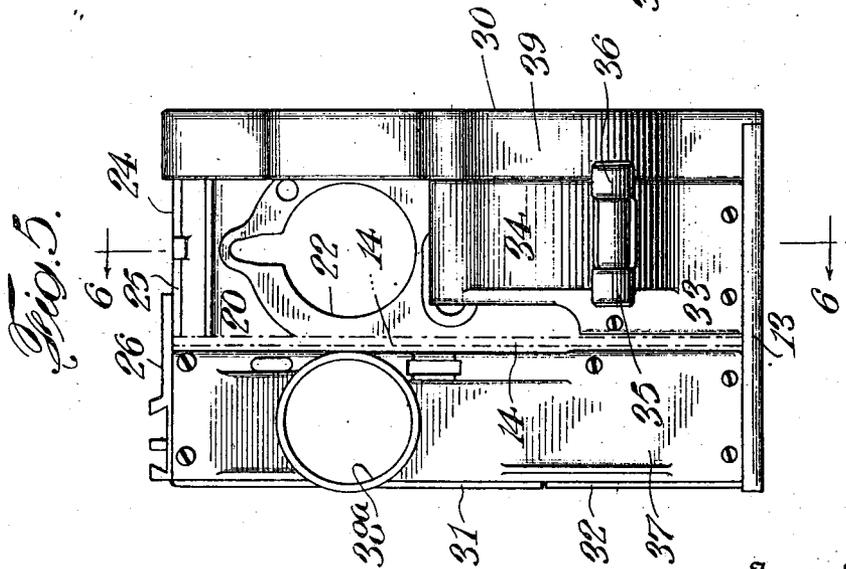
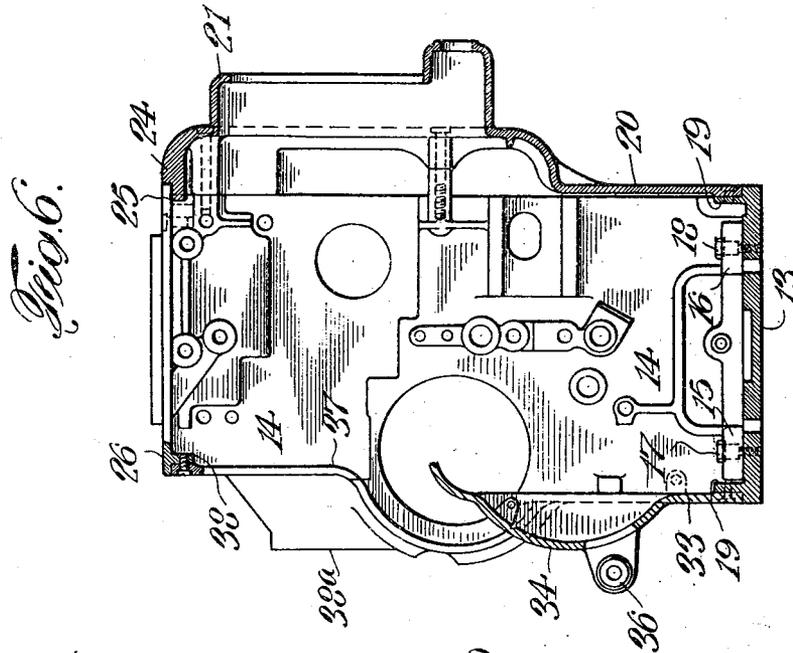
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INCLOSING CASING FOR OPERATING MECHANISM OF PROJECTION MACHINES

Filed April 22, 1929

5 Sheets-Sheet 4



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INCLOSING CASING FOR OPERATING MECHANISM OF PROJECTION MACHINES

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5 Sheets-Sheet 5

Fig. 8

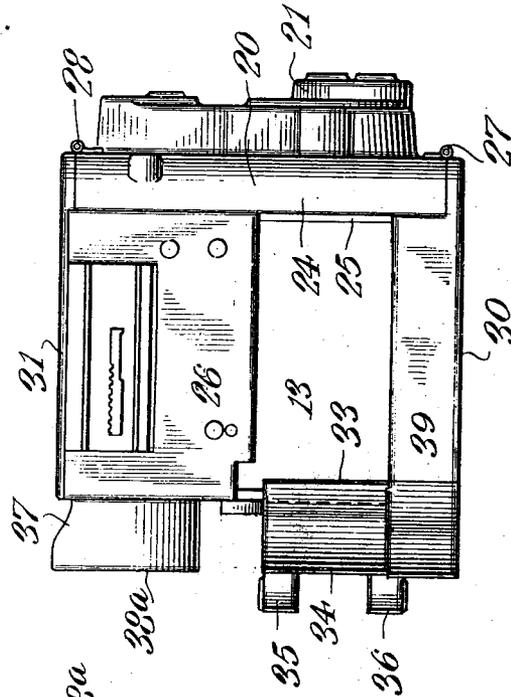
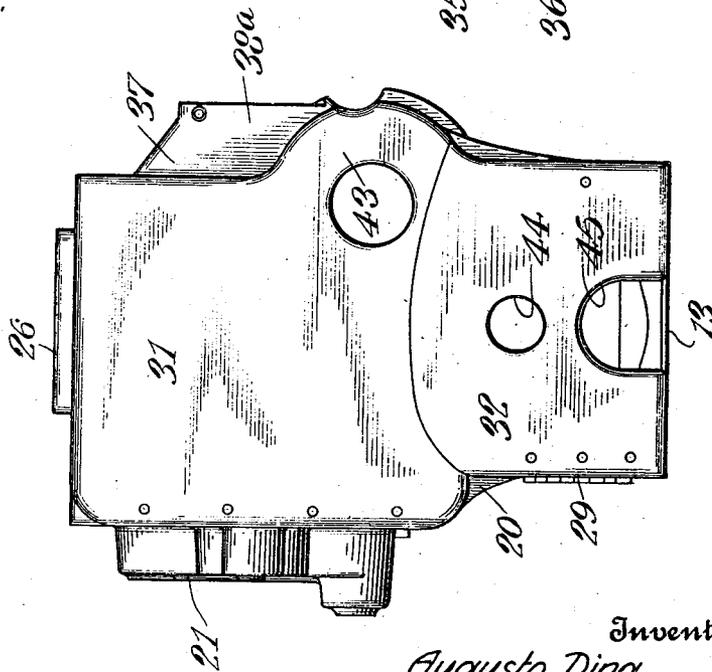


Fig. 7



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UNITED STATES PATENT OFFICE

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INCLOSING CASING FOR OPERATING MECHANISM OF PROJECTION MACHINES

Application filed April 22, 1929. Serial No. 356,973.

This invention relates to projectors and has particular reference to projection machines used in motion picture work, and is especially concerned with new and useful improvements in the casings on and around the projection head of such machines and within which the film, and the operating apparatus associated therewith, are substantially completely housed to prevent access of dirt, dust, air drafts, and to eliminate fire hazards by preventing flames from spreading should the film within the head catch fire.

One of the objects of the invention is to provide a substantially complete and fire-proof enclosure or casing for the operating parts of the projection head of the machine, within which casing practically all the mechanism associated with the moving film is disposed.

A further object is to provide such a casing as will permit quick and easy access at all times to the moving parts and to the film without in the slightest manner interrupting such operation.

A still further object is to provide an inclosure or surrounding envelope for the operating parts which may be quickly and easily removed from the head, and from around the mechanism, without disturbing the integrity of the assemblage of mechanism and its functional relations.

Further and more specific objects, features, and advantages will more clearly appear from the detailed description given below taken in connection with the accompanying drawings which form part of the specification, which illustrate one embodiment of the invention, and in which,

Fig. 1 is a side elevation of a projection machine with most of the machine in dotted lines, but with the inclosing casing for the mechanism of the machine shown in full lines;

Fig. 2 is a perspective view of the novel casing, showing the various parts wholly or partly separated, for clarity and to more clearly show their relation to each other;

Fig. 3 is a side elevation of the casing, looking from the right side;

Fig. 4 is a front elevation of the casing;

Fig. 5 is a rear elevation of the casing;

Fig. 6 is a longitudinal vertical section, taken on the line 6—6 of Fig. 5;

Fig. 7 is a side elevation of the casing, looking from the left side; and,

Fig. 8 is a top plan view of the casing.

The present preferred form of the invention is shown in the drawings as applied to a modern projection machine having a lamp house 10, a projection head, and upper and lower film magazines 11 and 12, all of which are carried by a suitable base. The magazines 11 and 12, the film actuating mechanism, and the lens supporting and actuating mechanism all form part of the projection head. The base preferably supports a vertical partition on which practically all the operative mechanism is supported. Surrounding the operating mechanism, and in accordance with this invention, there is formed a complete and novel surrounding casing which envelopes the mechanism not only on the sides but also across the top. This casing is so made, however, that it may be opened in several places to reach the mechanism. The base of the film magazine 11 or fire-box, forms part of the closure across the top of the head.

The projection machine head provides the base plate 13 of such construction that it may be mounted on the supporting standard of the machine. This base plate 13 acts as a support for a central, vertical, longitudinal partition or wall 14, at the bottom of which, and on both sides thereof, are legs such as 15 and 16 (Fig. 6), fastened to the base plate 13 by means of screws 17 and 18. Adjacent its edges, the base plate 13 is provided with short up-standing flanges, such as 19, provided with holes therein, by which certain parts of the casing or inclosure may be fastened. The central vertical partition 14 is thus practically permanently fastened to the base plate and forms therewith a substantially integral unit, which is seldom taken apart, and from which practically all of the operating mechanism, normally mounted within the projection head, is supported. This construction affords a strong rigid frame from which these parts may be supported so that a minimum of vibration is

transmitted. Since the parts are supported solely and entirely from the base and the vertical partition, the surrounding casing is readily applied and removed a will without
 5 in the least disturbing the integrity of operation of the mechanical assemblage.

The enclosing casing, as shown, preferably comprises a front plate 20 which at the bottom thereof is fastened, as by screws 20a to the flange 19 on the base plate 13. It is provided with a projecting boss, such as 21, in which is disposed an aperture 22 for the lens unit, and aperture 22a for the lens focusing shaft, and an aperture 23 for the shutter shaft. At its top, the front plate 20 is usually turned backward to form the flange 24, which is provided with a shoulder 25 to support an end of a top plate 26. The front plate also supports hinged members 27, 28, and 29, to which are attached lateral doors 30, 31, and 32. It is obvious that by removing the screws 20a, the front plate 20 and the lateral doors above mentioned, may be removed as one unit from around the mechanism and without disturbing the mechanism to any appreciable extent. This removal will expose the mechanism supported on the front and two sides of the partition and will give ready access in case of need for adjustment and repair.
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Referring again to Fig. 2, it will be observed that the back of the casing is formed of at least two plates which are readily removable. One of these plates is the right-hand rear plate 33 which is screwed at its bottom edge to the flange 19 on the base plate 13. The plate 33 extends upwardly about half way to the top of the casing and has a bulged portion 34 to accommodate the lower loop of the film. It also has two journal members 35 and 36, which act as supports for the shaft connected to the mechanism whereby the shutter of the projector is independently adjusted. At its top, the right-rear plate 33 bears against the usual film aperture plate (not shown), which in the usual practice, is bolted to the side of the vertical partition 14. Thus, between the right-rear plate 33 and the film aperture plate above mentioned, the right rear portion of the casing is accounted for. The left rear portion of the casing is provided for in the form of a left-rear plate 37 which at its bottom is screwed to the flange 19 and at its top is screwed to dependent bosses 38 on the top plate 26 (see Fig. 6). This left-rear plate 37 is provided with a large aperture 38a which receives a journal member to support the shutter shaft and associated apparatus.
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There is more clearly shown in Figs. 2 and 3, the right-hand door 30, previously referred to, which is supported on the hinge member 27. This door 30 is provided with an inwardly extending flange 39 the inner edge of which abuts the right hand edge of

the plate 33 and the corresponding edge of the film aperture plate, above mentioned. It is disposed on the side of the machine usually occupied by the operator, and has a large glass enclosed aperture 40 through which the operator may observe the movement of the parts within disposed on that side of the machine. The film, the lens mounts, and associated mechanism is seen from this side of the machine. It is also through this side of the machine that the film is usually threaded and the door 30 is therefore the one which is most often opened.
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From a consideration, particularly of Fig. 2, it will be observed that the lower right hand corner of the right-hand side of the casing is not a part of the lateral pivoted door 30, but is bolted solidly to the base plate 13 through the flange 19. This small corner plate 41 covers apparatus which does not need frequent inspection and is therefore covered by this fixed plate, which, however, may be readily removed by unscrewing the bottom bolts, as is true with the other plates and parts of this complete casing. The plate 41 has an aperture 42 therein through which extends the shaft for manual operation of the machine by a hand crank when desired. It is obvious that when frequent inspection and adjustments of the film are desired it would be inadvisable to remove this shaft or hand crank and therefore they project through a hole in a plate which is not pivoted but which may be easily removed when desired.
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Referring particularly to Figs. 2, 6, and 8, reference is now made to the top of the casing, and it is to be observed that the top of the casing does not tie up with the vertical partition 14, and that it is connected only to the other parts of the casing, mainly the front and the rear plates thereof. The top of the casing is formed and comprises two plates one of which, 26, is shown in Fig. 2, and the other of which is of usual construction and will be only briefly referred to herein. The top plate 26 is provided with spaced grooves on its upper face which receives a certain stationary lens adjustment device, not shown. As shown in Fig. 6, the top plate 26 at its front edge rests on the shoulder 25 on top of the flange 24 of the front plate 20, and at its rear end is provided with dependent bosses 38 which receive screws from the top of the left hand rear plate 37. Thus the front plate 20, the top plate 26, and the left hand rear plate 37 are held securely together to form a firm unit entirely independent of the vertical mechanism-supporting partition 14. As viewed in Fig. 8, the plate 26 occupies the top half of the casing opposite to the side on which the operator ordinarily stands. The other half of the top is shown open in Fig. 8 and is ordinarily occupied by the fire-prevention box disposed
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beneath the top film magazine and rests at one end on the flange 24 above mentioned, and is bolted to the top of the film aperture plate at the other end. This box contains the usual rolls between which the film travels and which so engage it as to effectively snuff out any flame which may form inside of the casing and prevent it from getting to the magazines. The upper magazine is supported from a standard, the base of which is suitably fastened to the plate 26 along side of the grooves seen in Fig. 8.

The left hand lateral plates 31 and 32 are shown in Fig. 7, and are supported from the hinge members 28 and 29 above mentioned. They completely close this side of the projection head and are separate merely because the mechanism at the upper part of the machine on this side is more likely to require access thereto than the mechanism on the lower portion thereof. Consequently, the upper plate 31 is readily opened on its hinge to permit access to the gears therewithin and to the support for the shutter and the shutter casing, whereas the lower plate 32, altho it may be opened, and is hinged, will not often be opened. Thus complete but separate access can be had to the mechanism within the casing on this side of the machine, and this may be readily accomplished merely by opening hinged doors. These two doors are preferably pivoted to the front plate 20 and, as said before, can be removed therewith as a unit. Access may be had to certain gears through openings 43, 44, and 42 for the purpose of adjustment and oiling when desired, without even opening the doors, and while the mechanism is in full operation.

In considering this invention as a whole and when assembled on the base plate 13, it will be apparent that the front plate 20 and the two rear plates 33 and 37 are fastened at their bottom edges to the flange 19 on the base plate 13. The front plate acts as a support for the three lateral doors 30, 31, and 32, and they are removable with this front plate 20. The top of the front plate 20 is engaged by the forward edge of the top plate 26, the rear edge of which is fastened to the top of the rear plate 37. The remaining opening in the top of the casing is closed by the disposition therein of the fire-prevention box beneath the upper magazine, which box rests on the flange 25 at one end, and is fastened to the upper edge of the film aperture plate at the other end. This leaves only one other opening at the rear of the casing and that is occupied by the film aperture plate which is bolted to the side of the partition 14 in the usual manner.

The casing as a whole is rigid and compact, and unusually tightly and completely incloses the mechanism within the head from access of strong drafts and from dust and dirt. Furthermore, and particularly im-

portant, it is not in any manner connected to or dependent upon the vertical partition 14 for support, deriving the same from the base plate 13 and from the various units which go to form the casing itself. It is quite clearly apparent that the removal of the casing is a very simple matter to achieve. The first step would be to remove the top plates, after which the front plate 20 and the side plates 30, 31, and 32 may be removed as one unit, and then the two rear plates 33 and 37 may be taken off. Since these plates are only fastened to each other and to the base plate 13, it is obvious that the mechanism as a whole, within the head and supported on the partition 14, need not be disturbed except those few parts which project of necessity through and beyond the casing. These projections are invariably shafts for which apertures are provided in the casing and which have on their ends knobs which can be easily removed to permit the casing to be slipped off without much disturbance of the operating parts. When the casing is thus removed, it is apparent that the mechanism, within the head and supported on the base plate 13 and the partition 14, is entirely in view and accessible from all sides and from the top as well, and thus can be cleaned and repaired and taken down with the utmost ease and dispatch. As far as the operation of the mechanism is concerned, the casing may be left off entirely, and this is the strongest proof of the independence of the casing from the mechanism for which it acts merely as a housing. The various groups of operating mechanisms within the casing are accessible separately because the side doors of the casing are, in certain instances, so disposed and related that only the part of the mechanism which it is desired to inspect may be exposed and the others left covered. This is an advantage since the smallest possible part of the mechanism is open to access from the dirt and dust and drafts at any one time.

While the invention has been described in detail and with respect to a preferred form thereof, it is to be understood that it is not to be limited to such details or form since many changes and modifications may be made and the invention embodied in other forms without departing from the spirit and scope of the invention in its broader aspects. Hence it is desired to cover all modifications and forms coming within the language or scope of any one or more of the appended claims.

What I claim, is,

1. In a projection machine, a projection head comprising a base, mechanism supported from the base, a sectional casing enveloping the mechanism on all sides and the top thereof, said casing comprising a front wall fastened to the base, a plurality of side walls

pivoted to and supported from the front wall, a plurality of rear walls fastened to the base, and a top member fastened to the front and rear walls and forming a unit separate from the mechanism enclosed.

5 2. In a projection machine, a projection head comprising a base, mechanism supported from the base, a sectional casing enveloping the mechanism on all sides and the top thereof, said casing comprising a front wall fastened to the base, a plurality of side walls pivoted to and supported from the front wall, a plurality of rear walls fastened to the base, and a top member fastened to the front and rear walls and forming a unit separate from the mechanism inclosed, the wall at one side being formed of at least two pivoted members separately movable to expose separate parts of the mechanism.

10 3. In a projection machine, a projection head comprising a base, a vertical partition wall mounted thereon and carrying the mechanism, and having a film aperture plate at the rear thereof, a casing surrounding the mechanism on all sides and the top, said casing comprising a front wall fastened to the base, a side wall pivoted to and supported from the front wall and inclosing at least a substantial portion of one side of the head, a pair of side walls pivoted to the front wall and separately inclosing their respective portions of the mechanism on the other side of the casing, a rear plate fastened to the base plate and covering one side of the rear of the casing from the top to the bottom, another rear plate fastened to the base and extending therefrom to the lower end of the film aperture plate, and a top member resting on and fastened to the tops of the front and rear walls.

15 4. In a projection machine, a projection head comprising a base, a vertical partition wall mounted thereon and carrying the mechanism, a casing surrounding the mechanism on all sides and the top, said casing comprising a front wall fastened to the base, a side wall pivoted to the front wall and substantially inclosing one side of the head, and a plurality of pivoted side walls on the other side of the head and pivoted to and supported from the front wall.

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