

F. McMILLAN.

FILM REELING MECHANISM.

APPLICATION FILED JULY 13, 1918. RENEWED MAY 14, 1919.

1,326,410.

Patented Dec. 30, 1919.

3 SHEETS—SHEET 1.

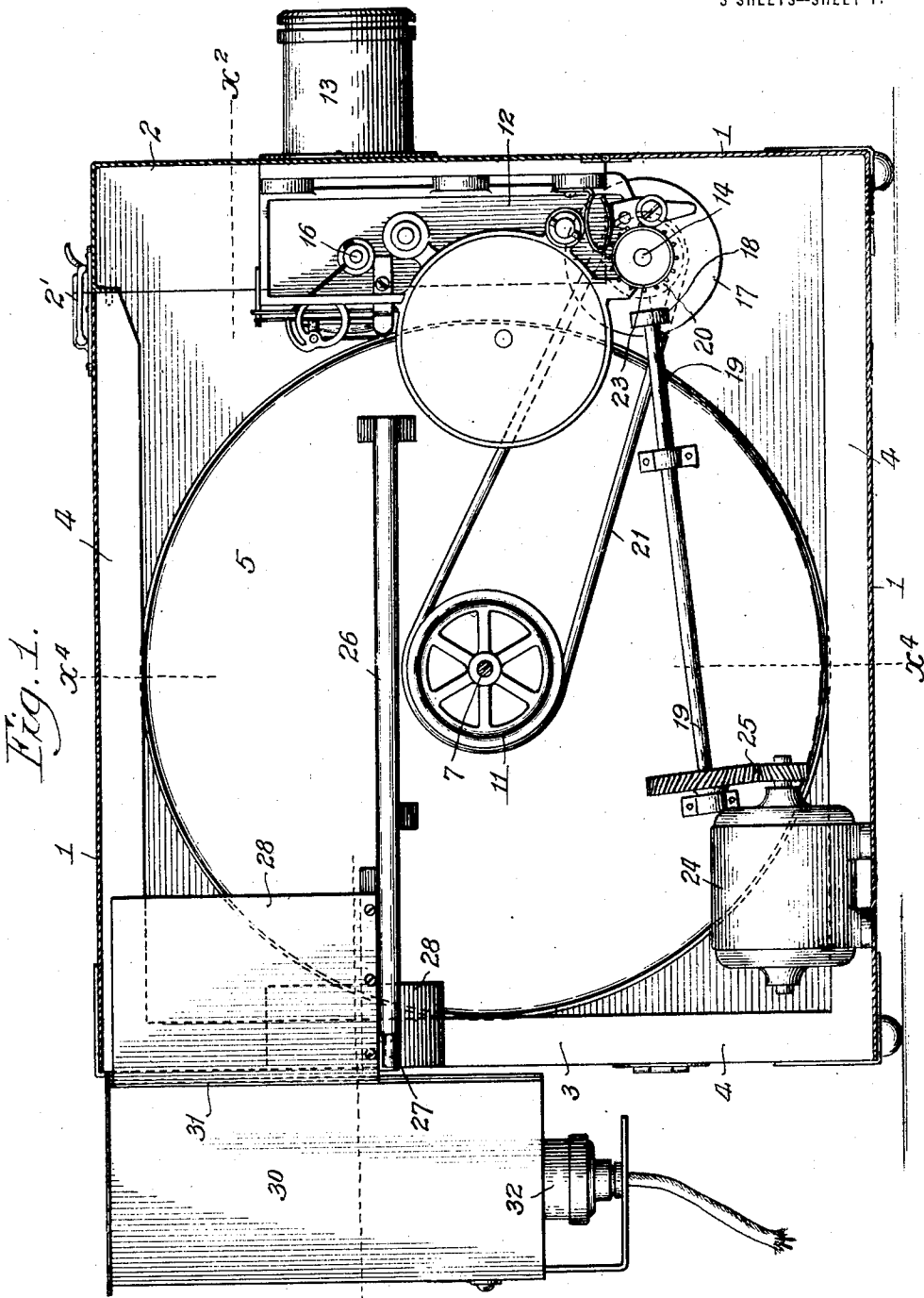


Fig. 1.
x⁴

Witness:
John Enders

Inventor
Frank McMillan
by Robert Burns
Atty.

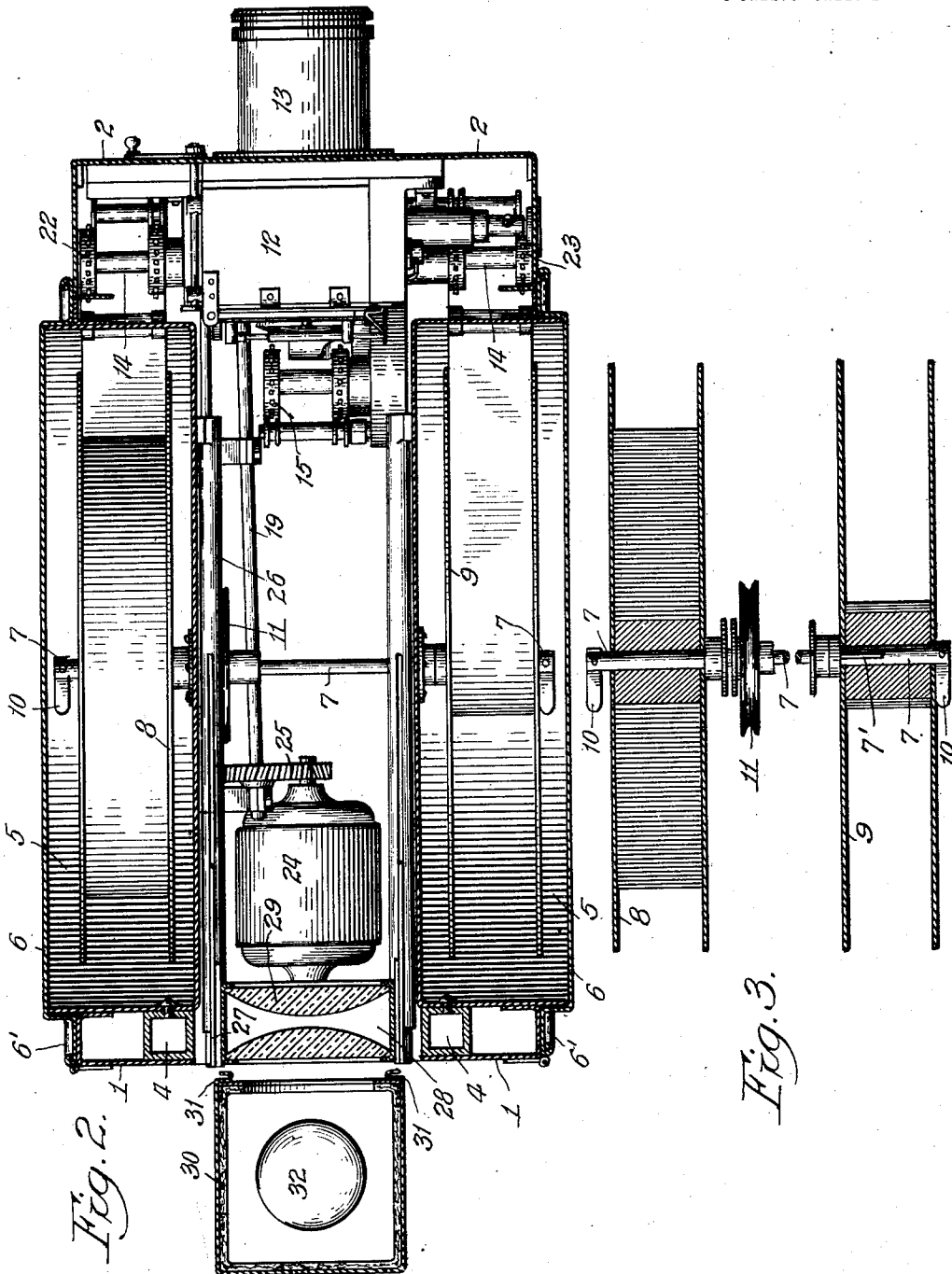
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Witness:
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Frank M. Millan,
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Att'y

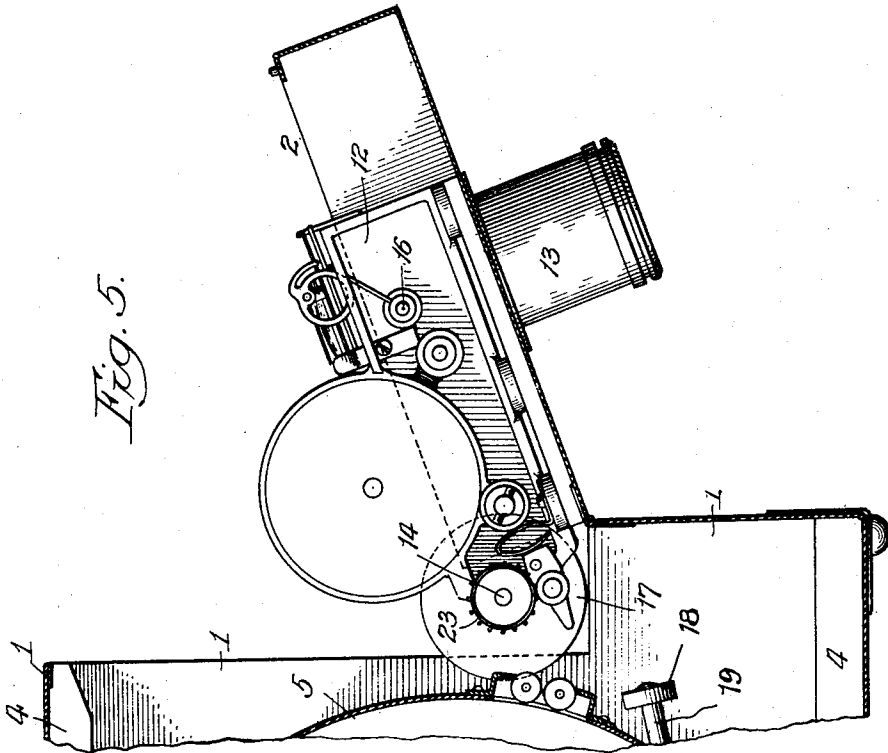
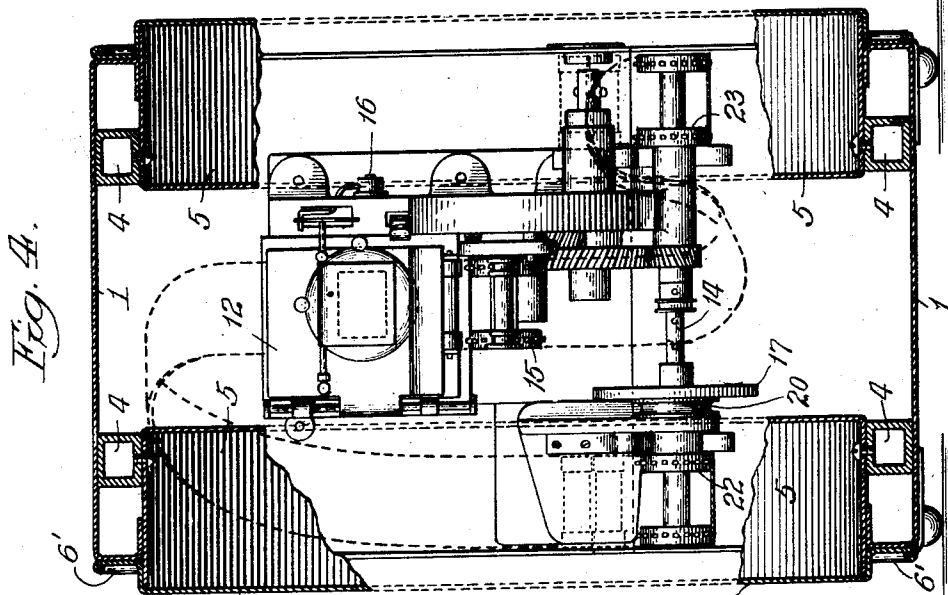
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3 SHEETS—SHEET 3.



Witness:
John Enders

Inventor
Frank McMillan,
by Robert Burns, Atty.

UNITED STATES PATENT OFFICE.

FRANK McMILLAN, OF GLENELLYN, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NATIONAL DROP HEAD PROJECTOR COMPANY, OF FOND DU LAC, WISCONSIN, A CORPORATION OF WISCONSIN.

FILM-REELING MECHANISM.

1,326,410.

Specification of Letters Patent.

Patented Dec. 30, 1919.

Application filed July 13, 1918, Serial No. 244,790. Renewed May 14, 1919. Serial No. 297,160.

To all whom it may concern:

Be it known that I, FRANK McMILLAN, a citizen of the United States of America, and a resident of Glenellyn, in the county of Dupage, State of Illinois, have invented certain new and useful Improvements in Film-Reeling Mechanisms, of which the following is a specification.

This invention relates to motion picture machine of the portable type, and has for its objects:

To provide a simple and efficient structural formation and association of the film reel magazines and film operating mechanism of a motion picture machine adapted to afford a compact structure in which ready and convenient access is had to the parts in effecting the various manual operations required preliminary to, and subsequent to an operation of the machine in effecting a motion picture exhibition.

To provide a structural formation and association of parts, in which the film operating mechanism is automatically disengaged from the motor or driving mechanism, on an opening of the machine to permit the required manual manipulation of the picture film, and which operating mechanism is returned to operative engagement with a closure of the machine parts, all as will hereinafter more fully appear.

In the accompanying drawings:—

Figure 1 is a side elevation, with the inclosing casing and other parts in section, illustrating the general arrangement of parts in the present improvement.

Fig. 2 is a horizontal sectional view on line X²—X², Fig. 1.

Fig. 3 is a detail axial section of the film supply and film take-up reels of the present structure.

Fig. 4 is a transverse sectional elevation, on line X⁴—X⁴, Fig. 1, with the middle portions of the magazines and accessories removed to show the film feeding mechanism in front of said magazines.

Fig. 5 is a detail longitudinal sectional elevation of the front portion of the machine, illustrating the open condition of the same for convenient access to the picture film and film feeding mechanism.

Like reference numerals indicate like parts in the several views.

Referring to the drawings, 1 designates

the main inclosing casing of the machine preferably of the rectangular shell form shown, and having a portion of its front wall formed as a separate part or section 2 and movable in relation to the main portion of the casing. In the preferred construction the movable section 2 constitutes the greater part of the front portion of the casing 1 and is hinged at its lower end to the casing 1 as shown, and in the present improvement said movable section 2 forms the supporting means for the film feeding mechanism of the machine, so that when said movable section is opened on its hinged connection, the film feeding mechanism will move therewith into a fully exposed condition convenient of access in the usual manual manipulations of the picture film required previous to, during and subsequent to a display of the pictures of the film.

In addition to the above described construction, the rear wall of the main casing 1 is formed with a central vertical opening or passage 3 adapted to receive the adjustable illuminating means hereinafter described.

2' designates a latch mechanism for holding the movable section 2 aforesaid in a closed and operative position.

4, 4 designate counterpart skeleton bracing frames, of structural metal, secured in a longitudinal direction and in transversely spaced relation in the interior of the main casing 1 and at equal distances from the longitudinal center of the same. The bracing frames 4, 4 are preferably of the rectangular yoke shape shown, and are adapted to provide the required stability and strength to support the various parts and mechanisms of the machine in proper operative relation, as well as to effectively brace the walls of the main casing 1 and permit the use of thin and light plate material in the formation of such walls.

The above described construction of the main casing 1 and bracing frames 4, 4 is described and claimed in a companion application for Letters Patent Serial No. 244,707, and no claim is herein made to the same, other than their coacting combinations with the film feeding and film reeling mechanisms of the machine.

5, 5 designate counterpart reel casings, preferably of the open ended cup form

shown, with their inner, fixed ends or heads arranged in transversely spaced relation in the main casing 1, and with the separating space corresponding with the transverse width of the aforesaid vertical rear opening or passage 3 of the main casing to provide a central chamber or passage in the machine for the passage of the light beams from the rearwardly arranged source of illumination, as well as a containing space for the inner portion of the film feeding mechanism and for the motor mechanism and lamp house containing said source of illumination. In the present construction the inner portions of the magazines 5, 5 are arranged within the respective bracing frames 4, 4 aforesaid, and are secured thereto by rivets or like fastening means, while their open outer portions have bearings in flanged orifices in the side walls of the main casing 1 and project outwardly therefrom to receive hinged doors, now to be described.

6, 6 designate individual doors of a shallow cup form, hinged to the side walls of the main casing 1 and fitting over the outwardly projecting end portions of the magazines 5, 5. Said cup shaped doors are provided with beaded marginal flanges or rims 6' adapted to bear against the side walls of the main casing, as shown, to provide a substantial and durable construction of parts.

7 designates the carrying shaft of the film reels of the machine, arranged transversely and having journal bearings in the respective inner walls or heads of the magazines 5, 5 as shown more particularly in Figs. 2, 3 and 4. One end of the shaft 7 extends centrally into the interior of the magazine 5 to the left in Fig. 4, and forms a support for the film supply reel 8 of the machine, and as usual in the present type of machines the supply reel 8 turns loosely on said shaft end and owing to the fact that the film on said reel unwinds in a direction opposite to the rotation of the shaft 7, the frictional contact between the shaft 7 and reel 8 tends to maintain the picture film on said reel in a properly wound condition during an unreeling operation of the same. The other end of the shaft 7 extends centrally into the interior of the magazine 5 to the right in Fig. 4, and forms a driving support for the film take-up reel 9 of the machine, and to this end is provided with a non-circular formation, such as a spline 7' adapted to engage a like formation in the central bore of the hub of the reel 9.

10 designates latch bars hinged to the respective ends of the reel carrying shaft 7 and adapted to hold the film reels in proper position upon said shaft, and at the same time permit a ready application and removal of the reels as required.

11 designates a pulley mounted on a cen-

tral portion of the reel carrying shaft 7 and having operative connection with the film feeding mechanism of the machine.

12 designates the supporting frame of the film feeding and guiding mechanism of the machine, and which in the present improvement is secured to and movable with the hinged section 2 of the main casing 1 heretofore described.

13 designates the objective of the motion picture mechanism, also mounted on the hinged section 2 of the main casing 1, in proper operative relation to the film feeding and guiding means and associated light controlling means usual to the present class of apparatus.

14 designates the primary shaft of the film feeding mechanism, journaled transversely in the supporting frame 12 aforesaid, and having the usual intermittent and continuous gearing connections with the intermittent film feeding sprocket drum 15 and carrying shaft 16 of the light controlling shutter of the machine. The primary shaft 14 is provided with a friction or like driven wheel 17 adapted for operative engagement with a similar driving wheel 18 carried on the forward end of a shaft 19 arranged longitudinally in the heretofore described central space of the machine.

20 designates a pulley mounted on the primary shaft 14 and having an endless belt connection 21 with the pulley 11 of the reel carrying shaft 7 aforesaid, to impart rotation thereto.

22, 23, designate the film supply and film take-up sprocket drums of the machine fixed on the respective ends of the primary shaft 14, in line with the supply and take-up film reels 8 and 9 when arranged in proper position in the respective magazines 5, 5.

24, designates an electric or like motor by which the machine is driven, arranged in the rear and lower portion of the central space of the machine above described, and having a gearing connection 25 with the rear end of the longitudinally arranged shaft 19 aforesaid. With the arrangement of parts and mechanisms so far described, as the hinged section 2 of the main casing 1 is lowered to an open position, it carries with it the film feeding mechanism and accessories to a position in which the same, as well as the entry and exit openings of the reel magazines 5, 5 are readily accessible for the usual changes and manipulations of the picture film in changing or replacing the same. And the inoperativeness of the film feeding mechanism and accessories is assured, in that the friction wheel 17 is moved wholly out of engagement with the motor 24 and intermediate driving parts, during the lowered condition of the hinged section 2 of the main casing and the mechanisms carried thereon as above set forth.

26 designates a pair of guide ways, preferably of the tubular type shown, and secured in transversely spaced relation and in a longitudinal direction to the inner fixed walls of the magazines 5, 5 aforesaid.

27 designates sliding bars or rods moving in the aforesaid slideways 26 and carrying on their rear ends an inclosing casing 28 containing the condenser lens of the light system of the machine, and the longitudinal adjustment so provided permits of the ordinary focusing adjustment on said condenser lens, and for a movement of the casing 27 wholly within the main casing 1 when it is desired to fold the machine compactly together after use.

29 designates a pair of condenser lenses of the usual type mounted in the casing 28 aforesaid, with their optical center in line with the optical center of the motion picture objectives 13 aforesaid.

30 designates a lamp house or casing preferably of a rectangular form shown, and which in the structure shown is secured to the rear end of the condenser containing casing 28 to bring the lamp 32, or other suitable source of illumination contained in the lamp house in proper relation with the light path of the machine.

The detail construction and arrangement of the condenser lens casing and lamp house and the adjustments of the same are described and claimed in a companion application for Letters Patent, Serial No. 244,708, and no claim is made in the present case.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, and a pair of film reel magazines associated with said housing, substantially as set forth.

2. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, and a pair of film reel magazines secured in transverse spaced relation to the main portion of said housing, substantially as set forth.

3. In a motion picture machine, the combination of an inclosing housing having a drop front portion hinged at its lower end to the main portion of the housing, a film feeding mechanism carried by said drop front portion of the housing, and a pair of film reel magazines associated with said housing, substantially as set forth.

4. In a motion picture machine, the combination of an inclosing housing having a drop front portion hinged at its lower end to the main portion of the housing, a film feeding mechanism carried by said drop front portion of the housing, and a pair of film reel magazines secured in transverse spaced relation to the main portion of said housing, substantially as set forth.

5. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, and a pair of film reel magazines associated with said housing, said magazines have a cup form with the closed end heads arranged in spaced relation and with their open ends closed by removable doors, substantially as set forth.

6. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, and a pair of film reel magazines secured in transverse spaced relation to said main portion of the housing, a transverse shaft common to both magazines and adapted to support the film reels, and operative connections between said shaft and the film feeding mechanism, substantially as set forth.

7. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, and a pair of film reel magazines secured in transverse spaced relation to said main portion of the housing, a motor arranged in said housing, a driving shaft associated with said motor and carrying a driving wheel, and a driven wheel carried by the film feeding mechanism and adapted to have operative engagement with said driving wheel when the film feeding mechanism is in its operative position, substantially as set forth.

8. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, and a pair of film reel magazines secured in transverse spaced relation to said main portion of the housing, a motor arranged in said housing, a longitudinal shaft associated with said motor and carrying a driving wheel at its forward end, and a driven wheel carried by the film feeding mechanism and adapted

to have operative engagement with said driving wheel when the film feeding mechanism is in its operative position, substantially as set forth.

5 9. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried
10 by said movable front portion of the housing, and a pair of film reel magazines secured in transverse spaced relation to said main portion of the housing, a transverse shaft common to both magazines and adapted to support the film reels, operative connections between said shaft and the film feeding mechanism, a motor arranged in said housing, a driving shaft associated with said motor and carrying a driving wheel, and a driven
20 wheel carried by the film feeding mechanism and adapted for operative engagement with the driving wheel when the film feeding mechanism is in its operative position, substantially as set forth.

25 10. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by
30 said movable front portion of the housing, a pair of film reel magazines of a cup form arranged in spaced relation to each other in said housing and with their open ends extending outside the side walls of said housing, and removable doors associated with
35 said open ends of the magazines, substantially as set forth.

11. In a motion picture machine, the combination of an inclosing housing having an
40 upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, a pair of film reel magazines of a cup
45 form arranged in spaced relation to each other in said housing and with their open ends extending outside the side walls of said housing, and removable doors of a shallow cup form associated with said open ends of
50 the magazines, substantially as set forth.

12. In a motion picture machine, the combination of an inclosing housing having an upper front portion made separate and movable in relation to the main portion of the

housing, a film feeding mechanism carried
55 by said movable front portion of the housing, a pair of film reel magazines of a cup form arranged in spaced relation to each other in said housing and with their open ends extending outside the side walls of said
60 housing, and removable doors of a shallow cup form and having marginal stiffening rims associated with said open ends of the magazines, substantially as set forth.

13. In a motion picture machine, the combination of an inclosing housing having an
65 upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing,
70 a pair of film reel magazines of a cup form arranged in spaced relation to each other in said housing and with their open ends extending outside the side walls of said housing, and doors pivotally associated with said
75 open ends of the magazines, substantially as set forth.

14. In a motion picture machine, the combination of an inclosing housing having an
80 upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, a pair of film reel magazines of a cup form arranged in spaced relation to each other in
85 said housing and with their open ends extending outside the side walls of said housing, and doors of a shallow cup form pivotally associated with said open ends of the magazines, substantially as set forth.
90

15. In a motion picture machine, the combination of an inclosing housing having an
95 upper front portion made separate and movable in relation to the main portion of the housing, a film feeding mechanism carried by said movable front portion of the housing, a pair of film reel magazines of a cup form arranged in spaced relation to each other in
100 said housing and with their open ends extending outside the side walls of said housing, and doors of a shallow cup form and having marginal stiffening rims associated with said open ends of the magazines, substantially as set forth.

Signed at Santa Cruz, Cal. this 3d day
of June 1918. 105

FRANK McMILLAN.