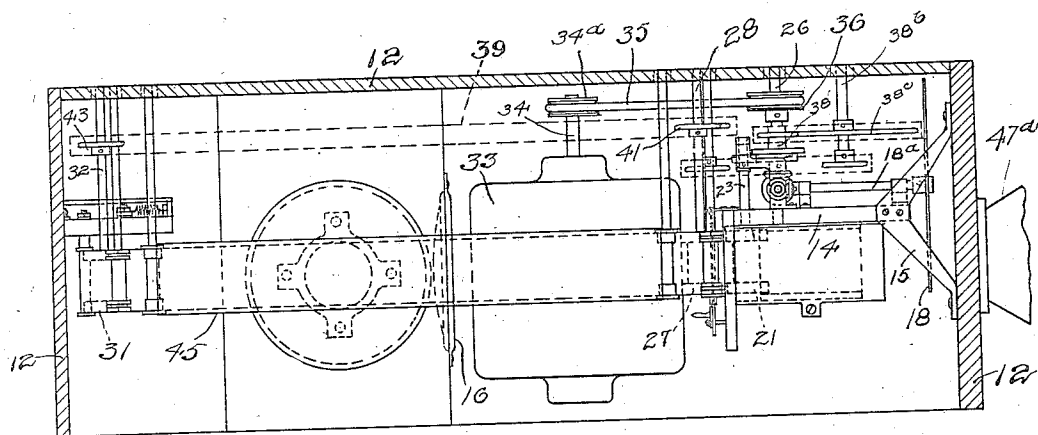
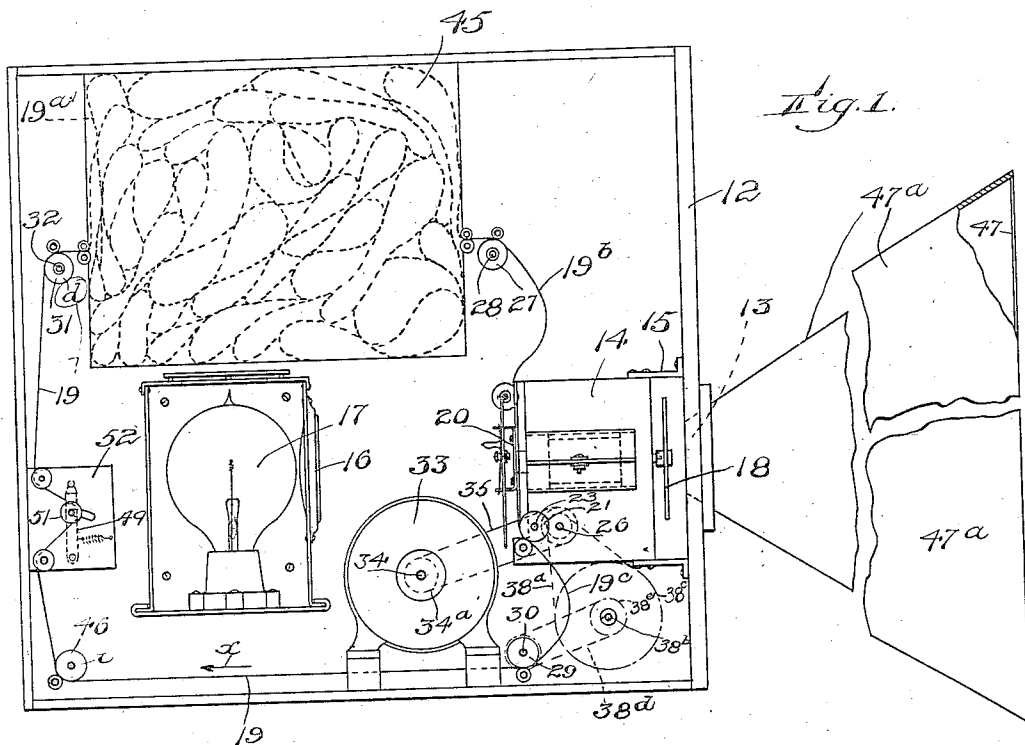


C. S. WEBSTER.
 AUTOMATIC MOTION PICTURE ADVERTISING APPARATUS.
 APPLICATION FILED OCT. 1, 1917.

Patented Oct. 22, 1918.
 3 SHEETS—SHEET 1.

1,282,154.



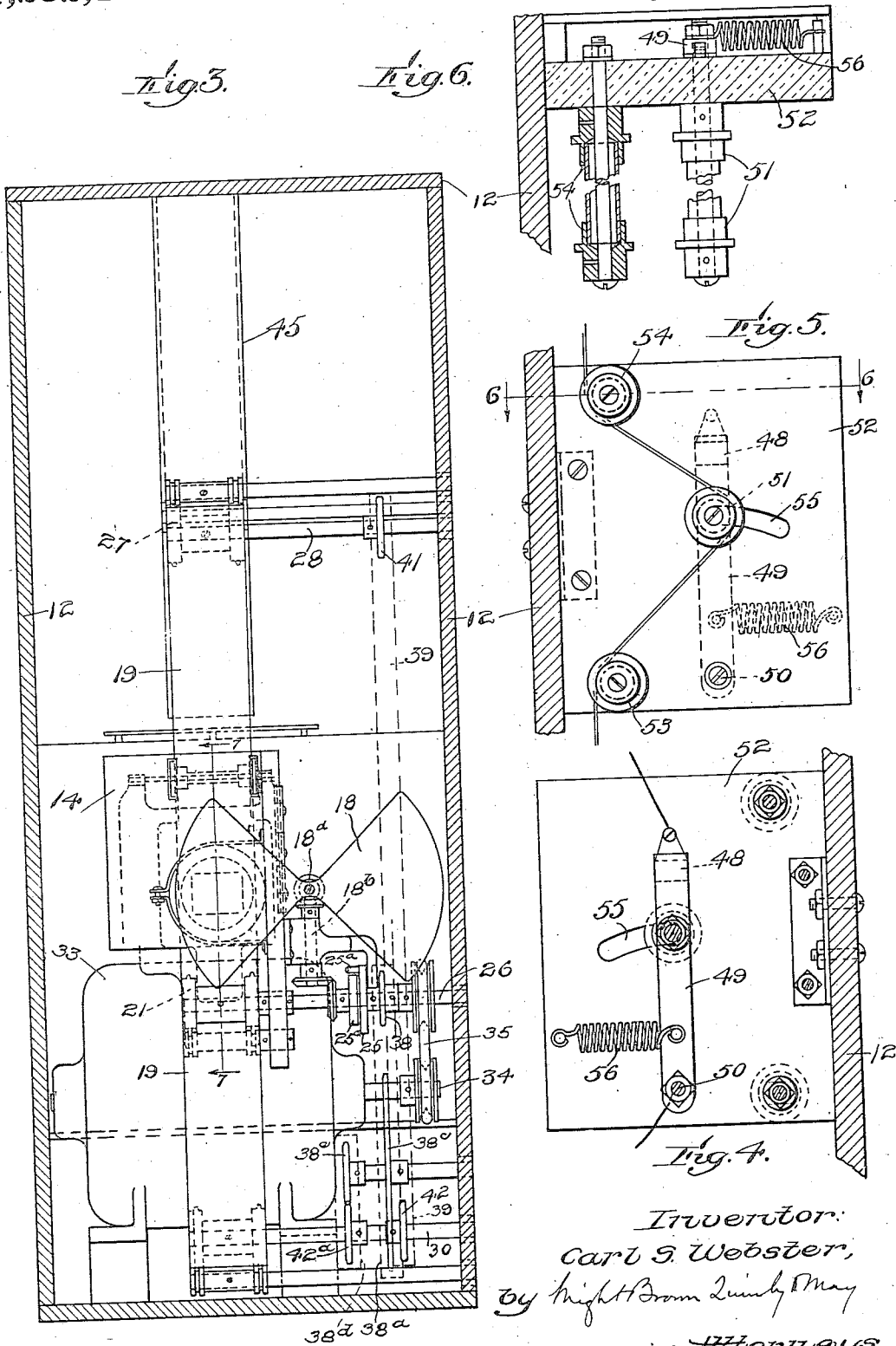
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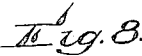
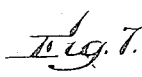
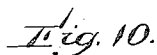
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1,282,154.

3 SHEETS—SHEET 3.



Inwitness:
Carl S. Webster;
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UNITED STATES PATENT OFFICE.

CARL S. WEBSTER, OF HAVERHILL, MASSACHUSETTS.

AUTOMATIC MOTION-PICTURE ADVERTISING APPARATUS.

1,282,154.

Specification of Letters Patent.

Patented Oct. 22, 1918.

Application filed October 1, 1917. Serial No. 194,130.

To all whom it may concern:

Be it known that I, CARL S. WEBSTER, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Automatic Motion-Picture Advertising Apparatus, of which the following is a specification.

This invention has for its object to provide an automatic apparatus adapted to project motion pictures without requiring the services of an attendant, the invention being chiefly intended for advertising purposes and the apparatus in which it is embodied being adapted to be placed in a display space at the inner side of a show window and to operate continuously without attention.

The invention is embodied in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification,

Figure 1 is a side elevation of an apparatus embodying the invention, one side of the casing being removed.

Fig. 2 is a top plan view of the same, the top of the casing being removed.

Fig. 3 is a front end elevation, the front of the casing being removed.

Figs. 4 and 5 are elevations illustrating the switch hereinafter referred to and its support.

Fig. 6 is a section on line 6—6 of Fig. 5 and plan view of the parts below said line.

Fig. 7 is a fragmentary sectional view taken on the line 7—7 of Fig. 3.

Fig. 8 represents in separate views the members of the couple which intermittently rotates one of the pairs of feed rolls hereinafter described.

Fig. 9 is a fragmentary view illustrating the relative arrangement of and means for driving the feed rolls.

Fig. 10 is a fragmentary view showing the lens and a portion of the lamp represented by Fig. 1.

Fig. 11 is a diagram of the electrical connection.

The same reference characters indicate the same parts in all the figures.

12 represents a casing having an opening at 13 through which pictures are projected. A moving picture machine head indicated as a whole by 14, is supported by brackets within the casing opposite the opening

13, said head including a suitable casing with front and back openings, and a rotary shutter 18. A machine head of any suitable construction may be employed, the shaft 18^a of the shutter being driven by any suitable means, and preferably as hereinafter described. A condensing lens 16 preferably of the Corning type is supported in the casing in position to project rays from an incandescent lamp 17 through the head 14 and opening 13. The lamp 17 is preferably of the cylindrical or helical filament type.

19 represents a motion picture film which is preferably of considerable length say fifty feet, and is joined together at its ends to form an endless band. The corrugated side of the condensing lens 16 faces the head 14. By so arranging the focal distance of the lens from the head that the rays are condensed or concentrated on the endless film 19, hereinafter described, in a spot of such area as to produce a sufficiently intense light, without liability of an igniting action, such as that of a burning glass, the employment of reflecting means and cooling means, for the purpose of preventing liability of ignition, is unnecessary. The employment of the lens 16 arranged to concentrate a spot of sufficiently intense, but non-igniting light, directly on the film, enables an automatic motion-picture machine to be left unattended indefinitely, without danger of igniting the film in case of protracted stoppage of the motion thereof. Said lens, therefore, contributes materially to the safety of an automatic motion-picture machine, which may not be under constant supervision. A portion of the endless film 19 is moved intermittently across the opening 14^a in the inner end of the head 14, and is held flat against said end by suitable yielding pressure plates 20 bearing on opposite edge portions of the film at opposite sides of the opening 14^a, one of said plates being shown by Fig. 7. The said film portion is moved intermittently by intermittently driven feed rolls 21 each provided with radial spurs 22, Fig. 7, entering orifices in the edge portions of the film. Said rolls are attached to a shaft 23 which is journaled in bearings on the head 14 and is provided with a member 24, Fig. 8, of an intermittently operating driving couple the other member 25 of which is attached to a continuously driven shaft 26. The said members constitute a well known mechani-

cal movement so constructed and arranged that a complete rotation of the shaft 26 causes a partial rotation (one quarter in this case) of the shaft 23 and rolls 21. A pin 25, forming a part of the member 25 and located opposite an opening between the ends of an arcuate flange 25^b enters radial slots 24^a in the member 24 and causes the described intermittent rotation of the rolls 21, and a step by step movement of the film across the opening 14^a.

The intermittently driven rolls 21 constitute one of a series of pairs of positively driven feed rolls, each having spurs engaging the orifices in the film the other rolls of the series being continuously driven. As here shown the continuously driven rolls include a pair of rolls 27 on a shaft 28 journaled in bearings above the head 14, a pair of rolls 29 on a shaft 30 journaled in bearings below the head, and a pair of rolls 31 on a shaft 32 journaled in bearings in the upper portion of the casing 12 and near the end opposite that to which the head 14 is attached.

The continuously driven rolls 27 and 31 are located in the upper portion of the casing 12, at opposite ends of the film box, and above the motion-picture machine head 14. The continuously driven feed rolls 29 are located in the lower portion of the casing and below the head 14. For the purpose of conveniently distinguishing the continuously driven rolls 29 from the other continuously driven feed rolls 28 and 31, I call the rolls 29 the offset feed rolls, because they are offset from the plane in which the rolls 28 and 31 are located.

The rolls 21, 27, 29 and 31 and the shutter 18 are driven by an electric motor 33 the shaft 34 of which has a pulley 34^a connected by a belt 35 with a pulley 36 on the shaft 26. To the shaft 26 is attached a sprocket wheel 38 (Fig. 9) connected by a sprocket chain 38^a with a sprocket wheel 38^c on a shaft 38^b having a wheel 38^c connected by a sprocket chain 38^d with a sprocket wheel 42^a on shaft 30.

A sprocket chain 39, Figs. 2 and 9, engages the wheel 42 and similar wheels 41 and 43 attached respectively to the shafts 28 and 32, as shown by Fig. 9. The shaft 18^a of the shutter 18 may be rotated by suitable driving connections between it and the shaft 26, said connections as here shown including a bevel gear on the shutter shaft and an intermediate shaft 18^b, Fig. 3, having bevel gears meshing with the shutter shaft gear and with a bevel gear on the shaft 26.

An elongated portion 19^a of the endless film 19 is accumulated in a compact space and preferably in a film box 45 secured in the casing 12 between the shafts 28 and 32; the film being accumulated in loose folds in said box. A shorter portion 19^b is main-

tained in a loose bight between the rolls 27 and the head 14 and another shorter portion 19^c is maintained in a loose bight between the head 14 and the rolls 29, as shown by Fig. 1. The direction of movement of the film is indicated by the arrow *x*, Fig. 1. The film passes from the lower or offset feed rolls 29 to a pair of idle rolls 46 and from the latter to the inserting feed rolls 31, which force the film into the box 45. The film is drawn continuously from the box 45 by the withdrawing rolls 27, moved step by step across the head 14 by the intermittently operating intermediate rolls 21, and continuously returned to the box 45 by the rolls 29 which I call the offset rolls, and by the inserting rolls 31. The intermediate intermittently driven feed rolls 21 should be so driven relatively to the continuously driven feed rolls that four partial rotations of the rolls 21 will advance the film the same distance as a complete rotation of each of the other feed rolls. The apparatus therefore acts continuously and automatically so long as the motor operates. The pictures may be projected on a screen 47 supported by a flaring hood 47^a attached to the casing 12 or they may be projected on an independent surface. To break the electric circuit and thus stop the motor and extinguish the lamp in case of breakage of the film, I provide a switch which includes a fixed contact member 48 shown diagrammatically by Fig. 11 and a movable contact member 49 formed, as best shown by Figs. 1, 4, and 5, as a lever pivoted at 50 to a support 52 within the casing and provided with an idle film-guiding roll 51. The support 52 is provided with idle film-guiding rolls 53 54 the relative arrangement of said rolls being such that a portion of the film is deflected between the rolls 53 54 by the roll 51, the shaft of said roll being held by the film against one end of a curved slot 55 in the support 52. A spring 56 exerts a pull on the lever 49 tending to separate it from the member 48 and thus break the circuit. This will happen if the film breaks, and the broken portion passes the rolls 29.

The sprocket chain 39 which imparts motion from the motor-driven shaft 30, to the shaft 32, adjacent to the film inlet, necessarily has an elongated stretch between the sprocket wheels on said shafts, and is, therefore, liable to have more or less lateral play or backlash, and impart an irregular or spasmodic rotation to the shaft 32, causing the toothed feed rolls 31 thereon to exert an uneven pull on the portion of the film passing from the shaft 30 to the shaft 32. This uneven pull would be liable to cause abrupt variations of tension and breaking strains on the film, in the absence of means for maintaining a constant yielding tension on said film portion.

Owing to the brittle nature of the film, a slack portion thereof is liable to be broken, when the slack of said portion is suddenly taken up, by a spasmodic or irregular rotation of the feed rolls 31.

The spring 56 and lever 49 provide yielding tensioning means, adapted to prevent liability of breakage of the above-mentioned portion of the film, under the conditions above mentioned.

A spasmodic rotation of the rolls 27 which withdraw the film from the box 45, is not objectionable, because the portion of the film moved by said rolls is in a loose condition.

It will now be seen that the lever 49 and spring 56, not only break the electric circuit in the event of breakage of the film, but also maintain a yielding tension on the film and reduce liability of breakage of the latter.

The electrical connections may be as indicated by the diagram, Fig. 11, G indicating a source of electrical energy and H a manually operated switch. I prefer to employ a Corning lens having a focus of two and one half by five inches, and a one hundred Watt Edison Mazda lamp. The lens and lamp cooperate in projecting concentrated and sufficiently powerful light rays without liability of igniting the film in case the latter is held stationary for an unusual period.

I have found that by the continuous rotation of the inserting feed rolls 31 and the continuous rotation of the withdrawing feed rolls 27, I am enabled to cause the loose folds of the film to pass through the box 45 without liability of clogging; the action being more satisfactory than would be the case if the inserting feed rolls 31 were driven intermittently. The continuously rotating inserting feed rolls 31 and the continuously rotating offset feed rolls 29 enable the circuit-breaking switch to be successfully used in the manner described, it being obvious that if the inserting rolls were rotated intermittently, the tension of the stretch of film between the rolls 29 and 31 would so vary that the switch would be useless.

The apparatus is preferably proportioned

to stand in a display space at the inner side of a show window, although it may be otherwise located, for example in suitable proximity to an advertising surface such as a building wall or a bill board.

I claim:

In an automatic motion-picture apparatus in combination, a motion-picture machine head, an endless motion-picture film, a film box formed to loosely store an elongated portion of the film, and having a film inlet and a film outlet, continuously driven inserting feed rolls arranged to feed the film into the box inlet, continuously driven withdrawing feed rolls arranged to draw the film from the box outlet at a point over the head, continuously driven offset feed rolls at the under side of the head, intermittently driven intermediate feed rolls located between the withdrawing and offset rolls and adapted to move the film advanced by the withdrawing rolls step-by-step across the head, each of said feed rolls being positively engaged with the film, an electric motor, driving connections between said motor and the shaft of the offset rolls, driving connections between the shaft of the offset rolls and the shafts of the inserting and withdrawing feed rolls, including an elongated sprocket chain, an incandescent lamp in circuit with the motor, a circuit-closing and breaking switch interposed between the offset feed rolls and the inserting feed rolls and including a fixed member and a movable member, formed as a lever, normally held by the positively controlled portion of the film between the said rolls in circuit-closing position, and a spring acting on said lever and adapted, in case of breakage of the film, to move said lever to circuit-breaking position, said lever and spring maintaining a constant yielding tension on the film, and thereby preventing such abrupt variations of tension and breaking strains on the film as may be caused by play or backlash of the sprocket chain.

In testimony whereof I have affixed my signature.

CARL S. WEBSTER.