

No. 607,761.

Patented July 19, 1898.

F. H. MORSE.  
EXHIBITOR FOR SERIES PICTURES.

(Application filed May 28, 1897.)

(No Model.)

2 Sheets—Sheet I.

Fig. I.

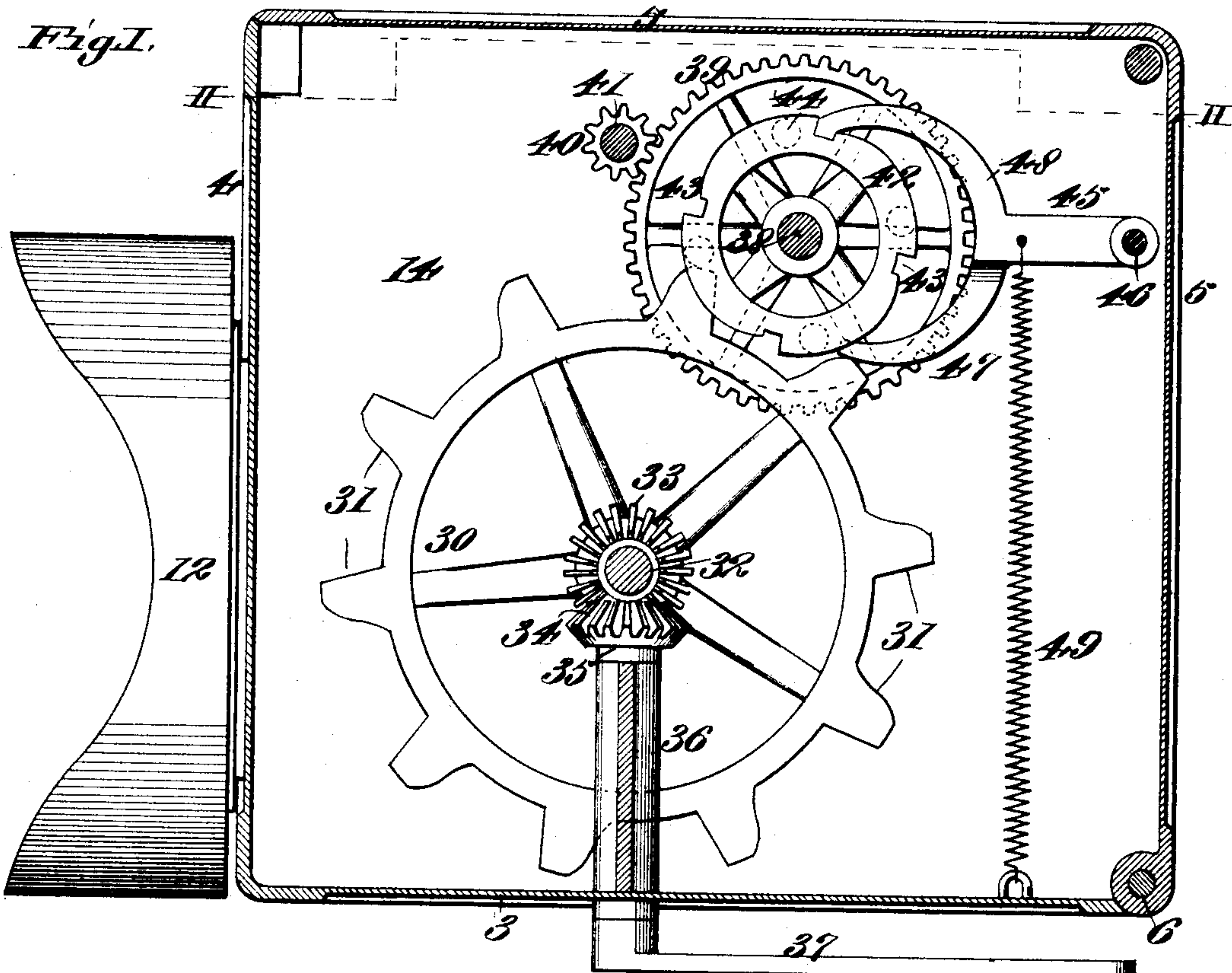
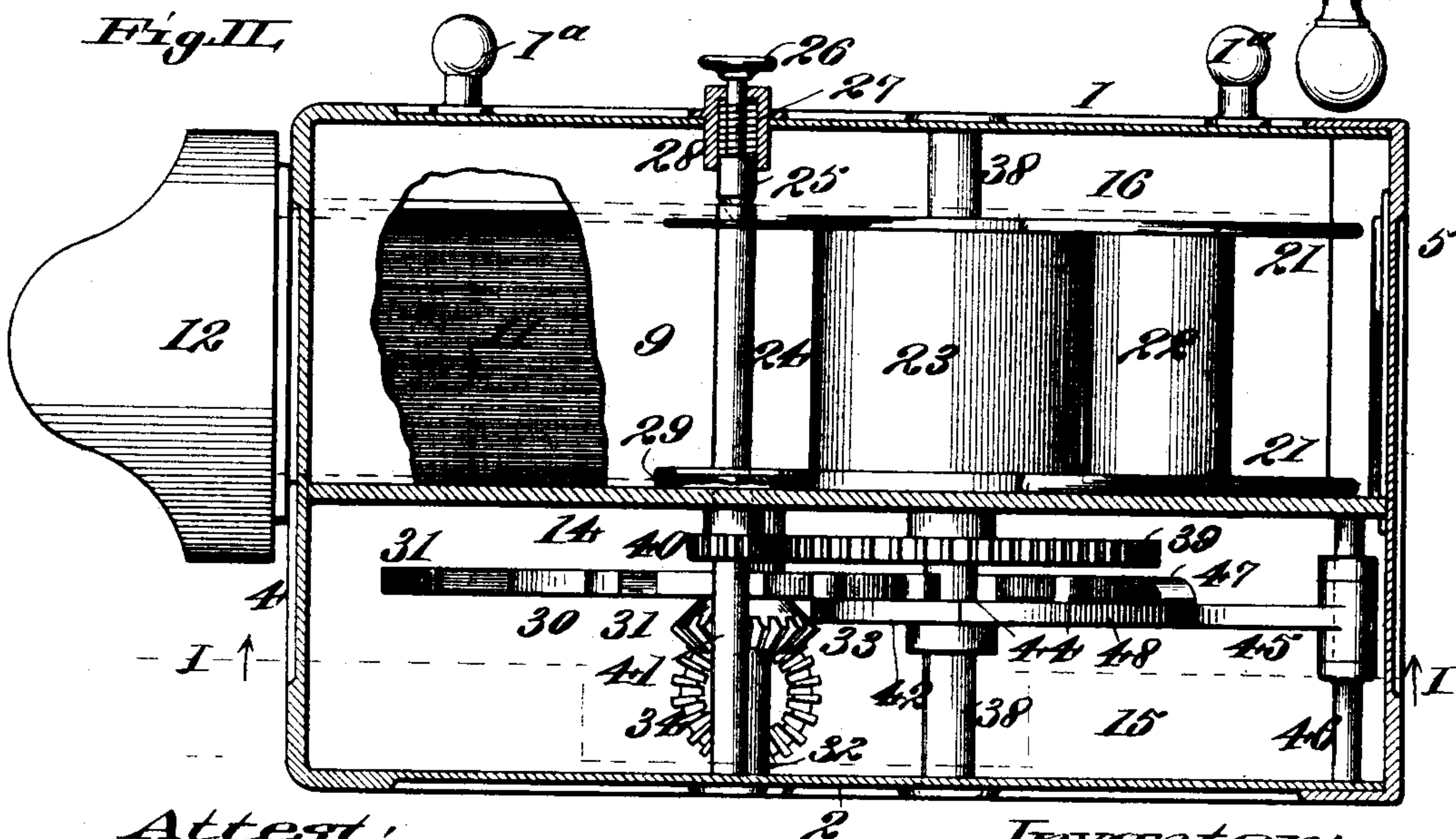


Fig. II.



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2 Sheets—Sheet 2.

Fig. IV.

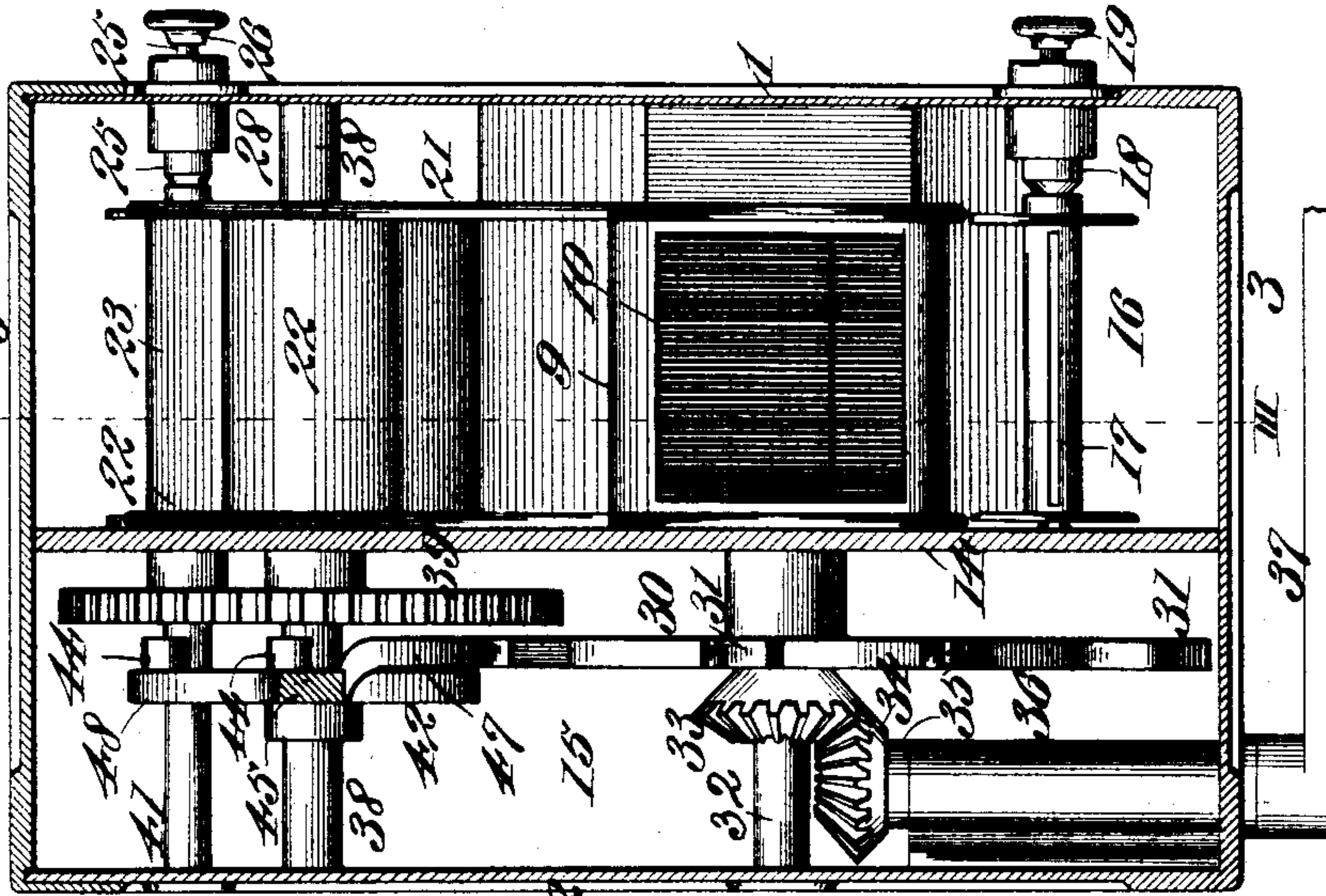
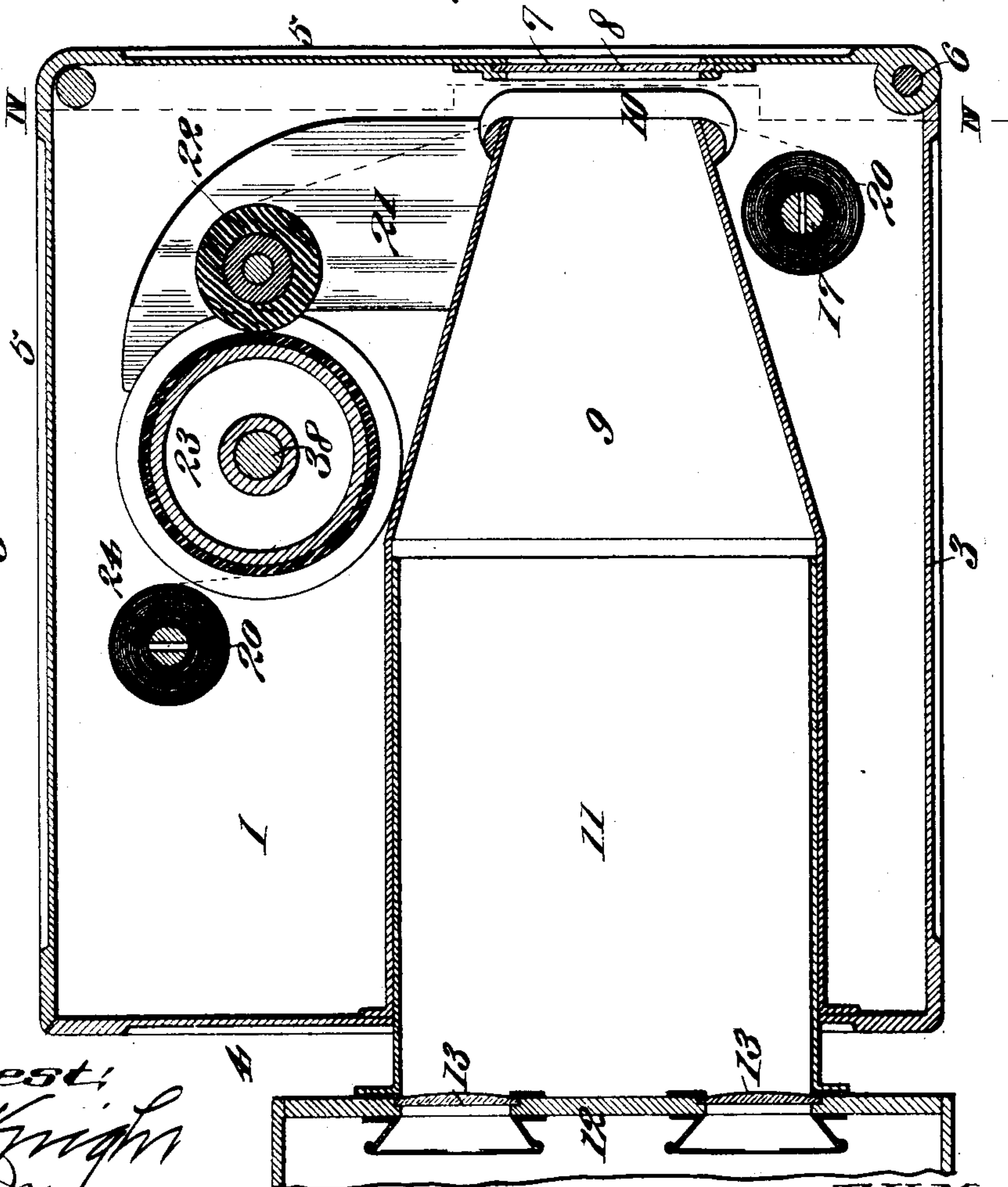


Fig. III.



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# UNITED STATES PATENT OFFICE.

FREDERICK H. MORSE, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO  
JASON C. SOMERVILLE AND WM. F. BELL, OF SAME PLACE.

## EXHIBITOR FOR SERIES PICTURES.

SPECIFICATION forming part of Letters Patent No. 607,761, dated July 19, 1898.

Application filed May 28, 1897. Serial No. 638,537. (No model.)

### *To all whom it may concern:*

Be it known that I, FREDERICK H. MORSE, a citizen of the United States, and a resident of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Exhibitors for Series Pictures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to that class of devices employed in displaying pictures of moving or other objects produced upon a single strip or sheet.

The usual method of producing the pictures designed for display in this device is by the photographic process. The finished photographic strip or sheet, unmounted, is placed in the device and reeled from a delivery-spool to a receiving-spool, in its movement traveling across a sight-opening in line with one or more lenses, through which the observer watches the pictures of the series as the strip or sheet travels across the sight-opening.

My invention consists in features of novelty hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure I illustrates a horizontal section taken on the line I I, Fig. II, and showing the operating mechanism in plan view. Fig. II illustrates a vertical section taken on the line II II, Fig. I, and showing the operating mechanism in side elevation, the device being shown in inverted position. Fig. III illustrates a horizontal section taken on the line III III, Fig. IV. Fig. IV illustrates a vertical section taken on the line IV IV, Fig. III, and showing the parts within the casing in rear elevation, the picture strip or sheet being omitted.

In the drawings, 1 designates the bottom of the casing, provided with feet 1<sup>a</sup>; 2, the top; 3, one of the side walls, and 4 the front wall. The other side wall and the rear wall is formed by a door 5, hinged at 6 to the side wall 3 and closing against the front wall, where it may be secured by a lock or other suitable means of fastening. In the rear-wall portion of the door 5 is a sight-opening 7, closed by a transparent plate or sheet 8, preferably of ground or frosted glass or some such material that

will evenly diffuse the light entering the casing through said plate or sheet.

9 designates a tube extending from the front wall 4 rearwardly and open at its rear end. The rear end of this tube is in line with and in proximity to the sight-opening 7, closed by the transparent plate or sheet 8. The tube 9 is preferably of tapering or funnel shape at the rear portion, and affixed to its rear end is a guide 10, the purpose of which will hereinafter appear.

11 designates a tube that telescopes within the forward end of the tube 9 and is loosely and movably located therein. The outer end of the tube 11 carries a box 12, in which are located lenses 13, or a lens in lieu of the two lenses shown.

14 designates a partition extending horizontally across the interior of the exhibitor and dividing it into two compartments 15 and 16. The tube 9 is located in the compartment 16.

17 designates a spool seated against a bearing-point on the partition 14 at one end and at the opposite end seated against the pointed end of a spring-pin 18, seated in the bottom 1 of the exhibitor and provided, exterior of the casing, with a pull-button 19. The spool 17 is designed to receive a strip or sheet bearing the pictures to be exhibited.

The path of the strip or sheet 20 in its movements in the device is across the rear end of the tube 9, directed in its travel by the guide 10. From the guide 10 the strip or sheet 20 passes between guides 21 and onto an idle-roller 22. This roller 22 is preferably provided with a covering of rubber or other pliable material. The strip 20 passes partly around the roller 22 and between it and a feed-roller 23, preferably provided with a pliable covering similar to that upon the roller 22. From the roller the strip traverses a portion of the feed-roller 23 to a receiving-spool 24.

The spool 24 is seated at its lower end upon the stem of a pin 25, having a button 26 and surrounded by a spring 27 in a barrel 28. The construction of this pin 25 and the surrounding parts is similar to the pin 19 and its surrounding parts. The manner of inserting and securing the spools 17 and 24 permits of their ready insertion or removal when plac-



ing the picture-strip within the exhibitor or removing it therefrom. Each of the spools is preferably provided with a longitudinal slot that permits the attachment of the picture-strip by passing said strip through the slot.

The upper end of the spool 24 is seated in a disk 29, (see Fig. II,) carried by the lower end of the shaft 41, and the spool is driven to wind the strip 20 onto the spool through frictional contact between said disk and spool on the operation of said shaft in the manner hereinafter set forth.

30 designates a driving-wheel provided with teeth 31 at its periphery. This wheel 30 is carried by a shaft 32, journaled in the partition 14 and the top of the casing. The shaft 32 is provided with a miter-pinion 33, the teeth of which mesh with the teeth of a miter-pinion 34 on a shaft 35, mounted in a hanger 36. The outer end of the shaft 35 is provided with a crank 37, through the operation of which the driving-wheel 30 is turned.

38 designates a shaft journaled in the partition 14 and the top and the bottom of the casing. On this shaft is a gear-wheel 39, the teeth of which mesh with the teeth of a pinion 40 on the shaft 41, journaled in the partition 14 and the top of the casing. It is by this shaft 41 that the disk 29 is carried. The shaft 38 extends from top to bottom of the casing and carries the feed-roller 23. The shaft 38 also carries a wheel 42, in the rim of which are notches 43. On one side of the rim of the wheel 42 are studs 44, arranged to be struck by the teeth 31 of the driving-wheel 30 in the travel of said driving-wheel, whereby the shaft 38 is caused to move and carry the parts upon it on each impact of one of said teeth 31 with one of said studs 44.

The photograph strip or sheet being placed in the exhibitor upon the spool 17 and connected to the spool 24, traveling across the rear of the tube 9, over the idler 22 and feed-roller 23, the device is operated in the following manner: The crank 37 being turned imparts movement to the toothed driving-wheel 30 through the medium of the miter-pinions 33 and 34. In the movement of the driving-wheel one of the teeth first strikes the arm 47 of the rocking bar 45, which causes the arm 48 to be retracted from the notch 43 of the wheel 42, with which it was previously in engagement, and before the tooth 31 leaves contact with the arm 47 it strikes one of the studs 44 in inner relation to the end of the bar 47, and this moves the wheel 42 and carries it forward the distance between the studs 44 and also the distance between the notches 43. As soon as the tooth 31 has passed the arm 47 the arm 47 is returned to contact with the rim of the wheel 42 by the spring 49, and said arm 48 travels over the rim until it reaches the succeeding notch 43, which it enters to hold the device from operation until the next tooth 31 reaches the arm 47. Simultaneously with the movement of the wheel 42

the gear-wheel 39 is caused to turn, it being mounted upon the same shaft, and the feed-roller 23, being likewise upon the same shaft, is turned to feed the photograph strip or sheet across the rear of the tube 9. The teeth of the gear-wheel 39, meshing with the teeth of the pinion 40, causes the shaft 41 to be turned, and the shaft 41, carrying the disk 29, winds the strip or sheet to the spool 24 as it is fed through the exhibitor by means of the feed-roller.

There is a peculiar and material advantage in arranging the spool 24 to be turned by friction, as provided for in its engagement against the disk 29, which advantage consists in that the spool 24 will be turned by the shaft 41 when there is any of the strip to be taken up, while when the roll upon the spool becomes larger and a revolution of it would require a great amount of strip to surround the reel the frictional arrangement will allow the spool to slip in its bearing against the disk 29, and the strip or sheet will not be broken, as would result were connection between the shaft 41 and the spool 24 a rigid one.

I claim as my invention—

1. In an exhibitor for series pictures, a feed-roller, a shaft on which said roller is mounted, a notched wheel also mounted on said shaft, studs extending from one side of said wheel, a pivoted bar provided with two arms, means for putting one of said arms into engagement with the notched wheel, and a toothed wheel adapted for engagement with the other arm of the rocking bar and also the studs.

2. In an exhibitor of the character described, the combination with the toothed wheel, of the notched wheel studs projecting from one side of the same, the pivoted rocking bar provided with two arms arranged in different vertical planes adapted respectively for engagement with the notched wheel and the toothed wheel, and means for putting one of said arms into engagement with said notched wheel.

3. In an exhibitor for series pictures of the character described, the combination with the notched wheel, of studs extending laterally from said wheel, a pivoted rocking bar comprising two arms in different vertical planes, one of said arms being adapted to engage the notched wheel, means to engage the other arm and the said studs whereby the notched wheel is released from the first-named arm and rotated, and means for causing the said first-named arm to again engage the notched wheel.

4. In an exhibitor for series pictures, the combination of a casing, provided with an observation-tube open at its inner end, and adapted to have a photograph strip or sheet traverse the inner end of said tube, a feed-roller adapted to convey said strip or sheet, a shaft upon which said feed-roller is mounted, a notched wheel carried by said shaft, a device for engaging said notched wheel, studs carried by said notched wheel, and a toothed



driving-wheel arranged to trip said engaging device from contact with said notched wheel and turn said notched wheel, substantially as described.

- 5 5. In an exhibitor for series pictures, the combination of a casing provided with an observation-tube open at its inner end and adapted to have a photograph strip or sheet traverse the inner end of said tube, a feed-  
10 roller adapted to convey said strip or sheet, a shaft on which said feed-roller is mounted, a notched wheel carried by said shaft, a piv-

oted rocking bar provided with two arms; one of which is adapted to engage said notched wheel, a spring arranged to draw said arm into 15 engagement with said wheel, and a toothed driving-wheel arranged to strike the other arm of said rocking bar and to turn said notched wheel, substantially as described.

FREDERICK H. MORSE.

In presence of—

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E. C. MOORE.