G. C. BEIDLER.

PHOTOGRAPHING AND DEVELOPING APPARATUS.

APPLICATION FILED JULY 19, 1915.

1,377,454. **Patented May 10, 1921.**

6 SHEETS—SHEET 1.

Fig. 1.

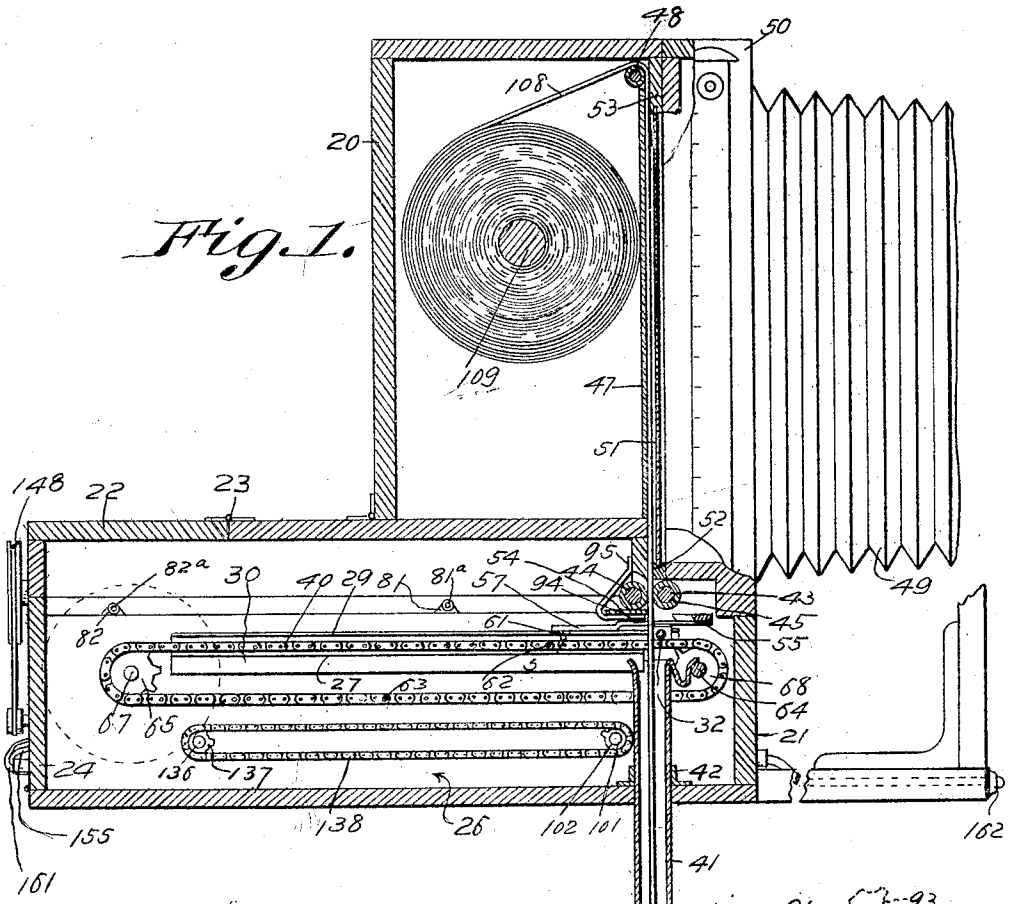
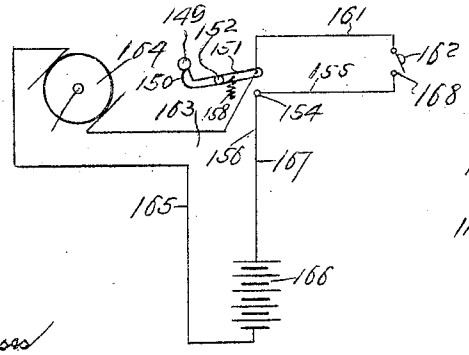


Fig. 1a.



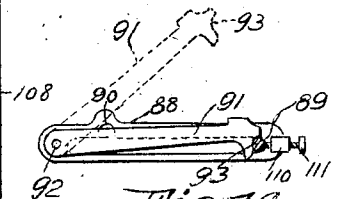
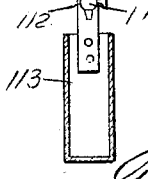


Fig. 1b.



Witnesses

M. A. Pfeifer

L. E. Barkley.

Inventor

George C. Beidler

By Frank A. Ackerman

Attorney.

G. C. BEIDLER.

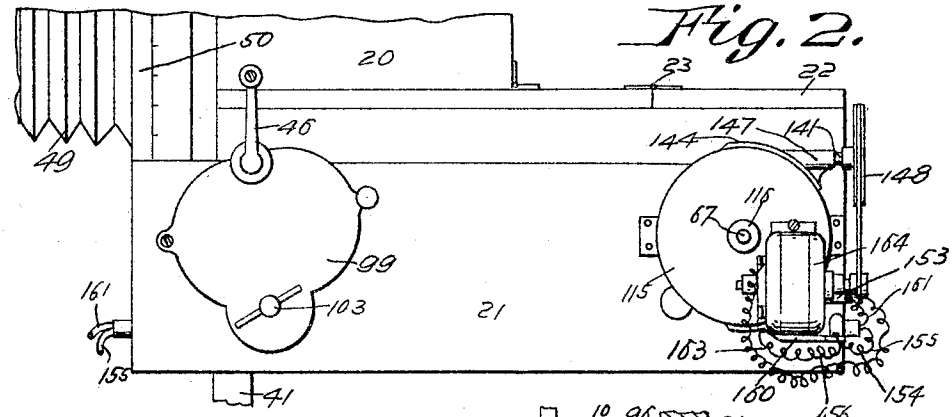
PHOTOGRAPHING AND DEVELOPING APPARATUS.

APPLICATION FILED JULY 19, 1915.

1,377,454. **Patented May 10, 1921.**

6 SHEETS—SHEET 2.

Fig. 2.



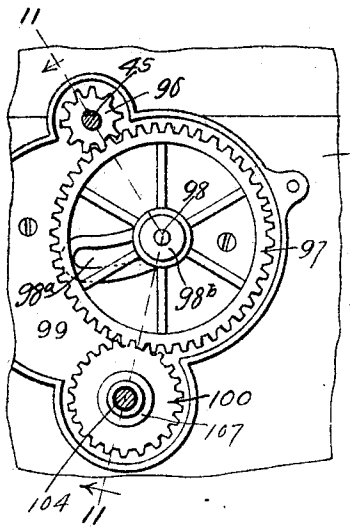


Fig. 10.

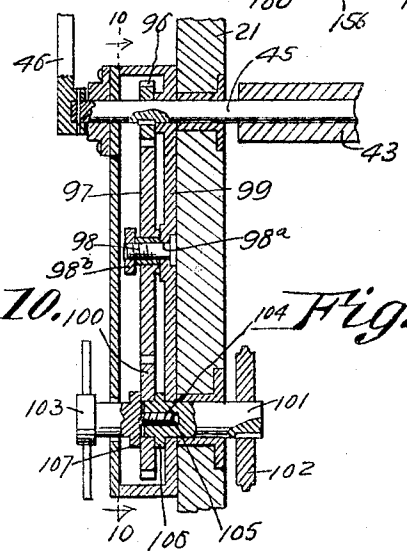


Fig. 11.

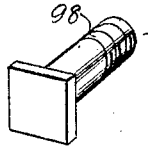


Fig. 13.

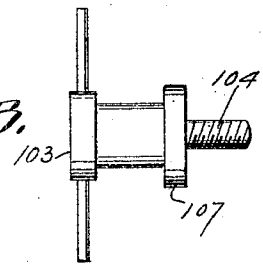


Fig. 12.

Witnesses

M. I. Pfeifer

L. E. Barkley.

Inventor

George C Beidler

By Francis A. Appleman

Attorney.

G. C. BEIDLER.

PHOTOGRAPHING AND DEVELOPING APPARATUS.

APPLICATION FILED JULY 19, 1915.

1,377,454. **Patented May 10, 1921.**

6 SHEETS—SHEET 3.

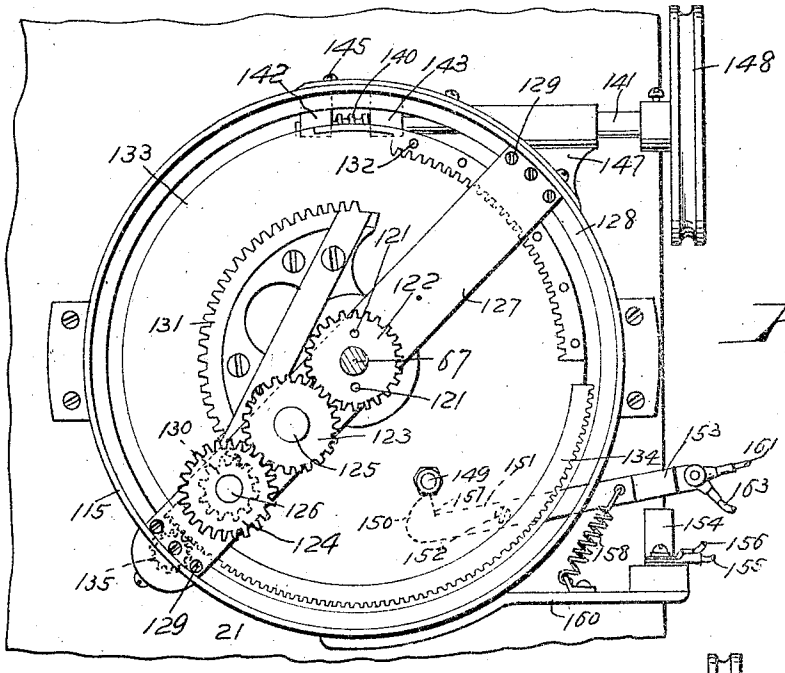


Fig. 3.

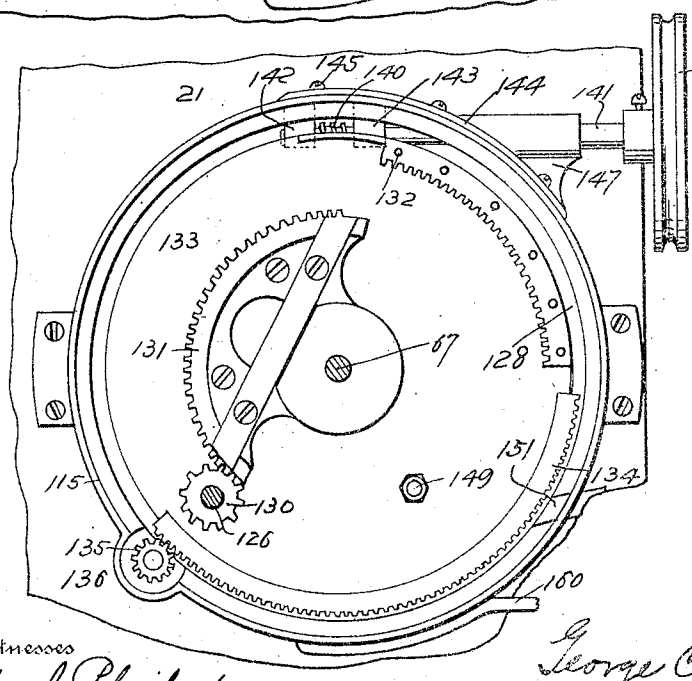


Fig. 4.

Witnesses
M. I. Pfeifer.
L. E. Barkley.

Inventor
George C. Beidler
By Frank A. Appleman,
Attorney.

G. C. BEIDLER.

PHOTOGRAPHING AND DEVELOPING APPARATUS.

APPLICATION FILED JULY 19, 1915.

1,377,454. **Patented May 10, 1921.**

6 SHEETS—SHEET 4.

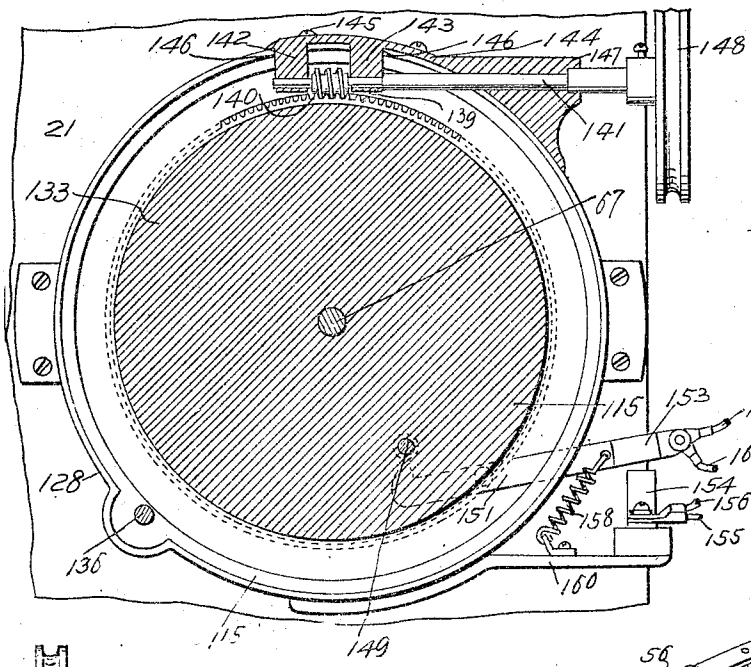


Fig. 5.

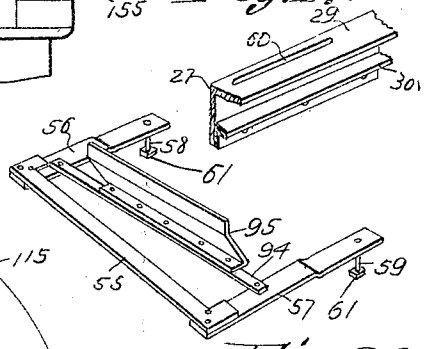


Fig. 17.

Fig. 24.

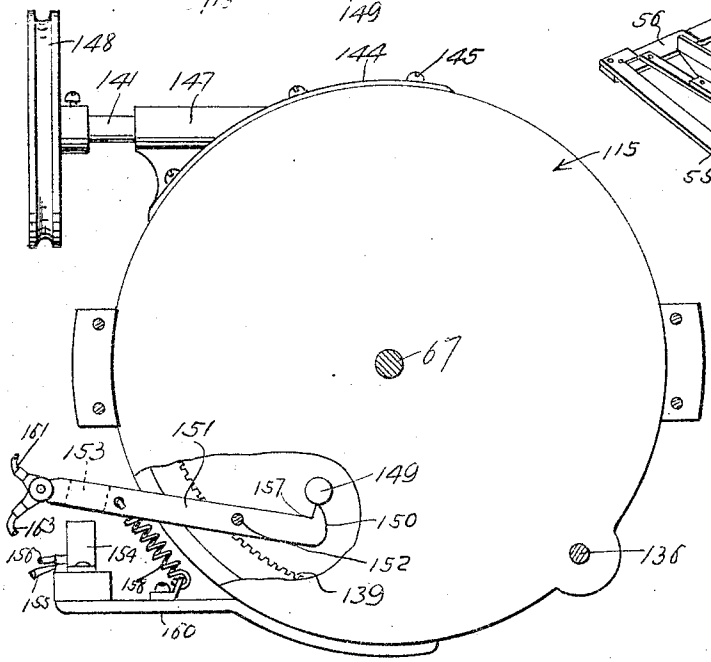


Fig. 6.

Witnesses
W. S. Pfaffer.
L. C. Barkley.

Inventor
George C. Beidler
By Frank S. Appleman
Attorney.

G. C. BEIDLER.

PHOTOGRAPHING AND DEVELOPING APPARATUS.

APPLICATION FILED JULY 19, 1915.

1,377,454. **Patented May 10, 1921.**

6 SHEETS—SHEET 5.

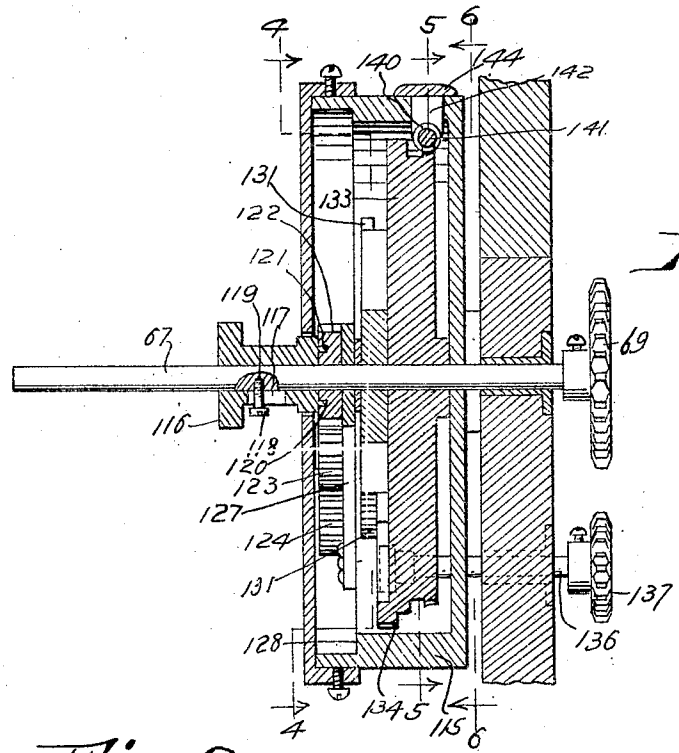
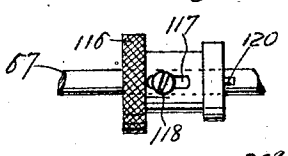


Fig. 7.

Fig. 9.



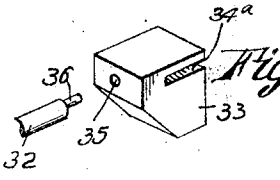


Fig. 15.

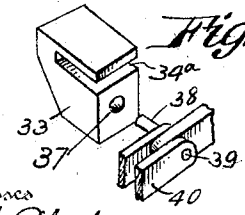


Fig. 16.

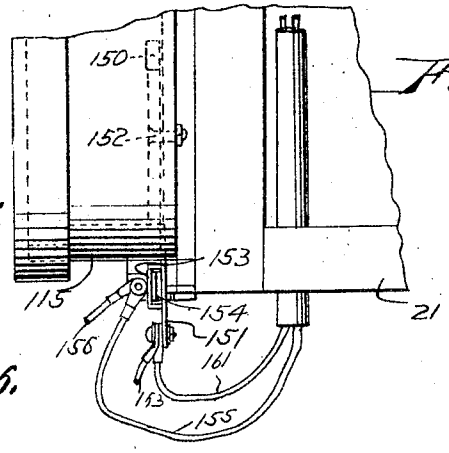


Fig. 8.

Witnesses
M. I. Pfeifer
L. E. Berkley

Inventor
George C. Beidler
By Francis Appleman,
Attorney.

G. C. BEIDLER.

PHOTOGRAPHING AND DEVELOPING APPARATUS.

APPLICATION FILED JULY 19, 1915.

1,377,454. Patented May 10, 1921.

6 SHEETS--SHEET 6.

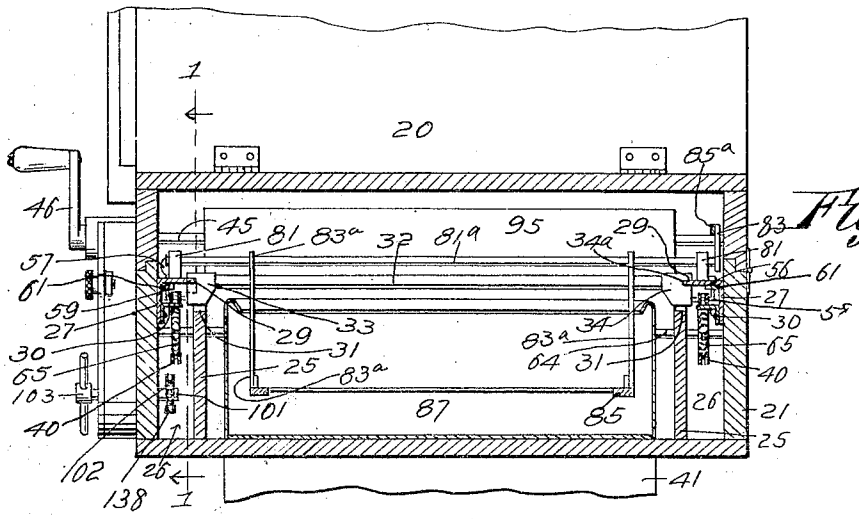


Fig. 19.

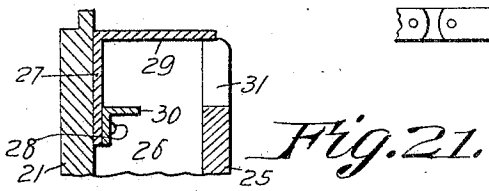


Fig. 21.

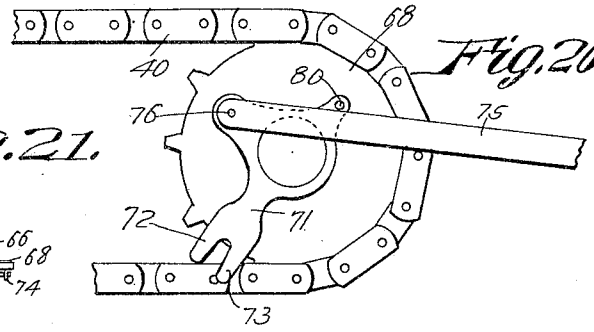


Fig. 20.

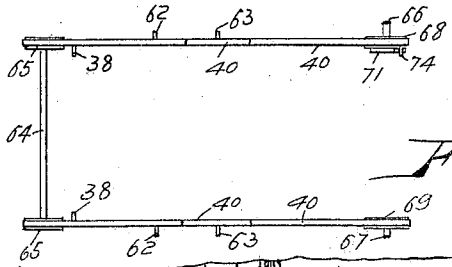


Fig. 22.

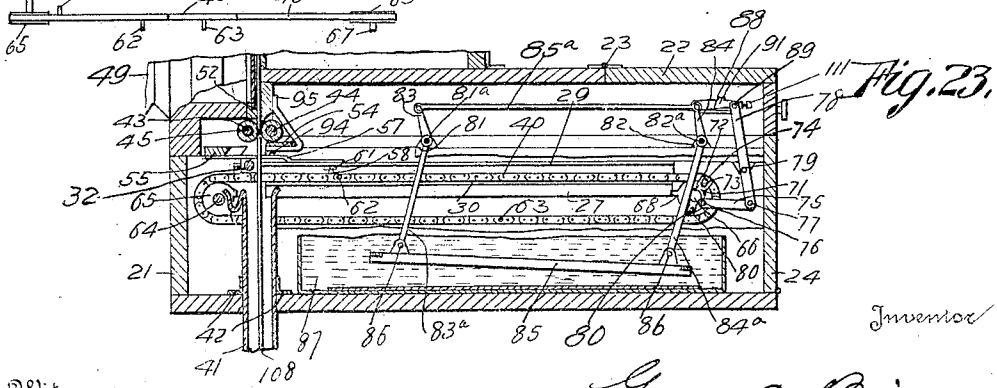


Fig. 23.

Witnesses
M. I. Pfeifer.
L. E. Barkley.

Inventor
George C. Beidler
By Frank A. Appleman
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE C. BEIDLER, OF ROCHESTER, NEW YORK.

PHOTOGRAPHING AND DEVELOPING APPARATUS.

1,377,454. Specification of Letters Patent. Patented May 10, 1921.

Application filed July 19, 1915. Serial No. 40,728.

To all whom it may concern:

Be it known that I, GEORGE C. BEIDLER, a citizen of the United States of America, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Photographing and Developing Apparatus, of which the following is a specification.

This invention relates to means for subjecting photographic film to fluids adapted to act on the coated surface of the film after the same has been exposed to light, the said means including mechanically actuated and automatically operated means for drawing the film from a roll or spool and delivering it to a receptacle for containing liquid adapted to act on the sensitizing of the film, a further object of the invention being to provide means for withdrawing the film from the receptacle, means for cutting the portion of the film that has been delivered to the said receptacle from the web of which it forms a part, for effecting a transfer of the film from the first mentioned receptacle to another receptacle, for immersing the film in the second receptacle, means being furthermore provided for mechanically driving or operating the film moving and treating parts in time. The invention relates to improvements on that class of machines or apparatus disclosed in my application filed June 11, 1914, numbered 844,516.

A further object of this invention is to provide means whereby a motor while running continuously or intermittently in one direction operates the film feeding, transferring, cutting and submerging means. In the operation of the apparatus it is preferable that the motor be intermittently driven and that during certain periods, the film be allowed to remain at rest as for instance, when the film treating means is coupled with a film exposing means for it is then possible, while the film is at rest, to effect an exposure of the same to actinic light photographically. It is also desirable that the film remain at rest when submerged in the developing fluid so that the fluid may have time to affect the sensitized surface of the film, the said period of time depending upon the exposure, the light, strength of the developing fluid and other considerations which those skilled in the art will appreciate.

The present invention is designed for and is intended to effectively take the place of manually operated mechanism for accomplishing the result stated, thereby minimizing the manual attention necessary in the treatment of film by the photographing and developing apparatus, particularly those employed for copying records or the like.

With the foregoing and other objects in view, the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed or in the broad idea to be set forth in the claims during the prosecution of the application, the said claims to be of such scope as to give protection commensurate with the inventive act, in view of the state of the art when the invention was produced.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a sectional view of a fragment of a photographing and developing apparatus with the stand omitted;

Fig. 2 illustrates a side elevation of the apparatus shown in Fig. 1 with parts omitted;

Fig. 3 illustrates a view in elevation of a gearing for transmitting power from a motor to the film moving apparatus, the face plate being removed;

Fig. 4 illustrates a sectional view on the line 4—4 of Fig. 7;

Fig. 5 illustrates a sectional view on the line 5—5 of Fig. 7;

Fig. 6 illustrates a sectional view on the line 6—6 of Fig. 7 with the back wall of the casing broken away;

Fig. 7 illustrates a vertical sectional view of the transmitting mechanism;

Fig. 8 illustrates a plan view of a fragment of the transmitting mechanism showing the conductors for the current;

Fig. 9 illustrates a detail view in elevation of a clutch;

Fig. 10 illustrates a sectional view on a line corresponding with the line 10—10 of Fig. 11;

Fig. 11 illustrates a sectional view on the line 11—11 of Fig. 10;

Fig. 12 illustrates a view in elevation of a wheel binding clamp;

Fig. 13 illustrates a view in perspective of an adjustable stud;

Fig. 14 illustrates a diagrammatic view of a shunt circuit by which the motor is temporarily energized after it has come to rest;

Fig. 15 illustrates a perspective view of a rod carrying block with a fragment of the rod shown detached therefrom;

Fig. 16 illustrates a perspective view of the said block from the opposite side illustrating a fragment of the conveyer chain for moving the said block;

Fig. 17 illustrates a perspective view of a fragment of a guide for parts of the mechanism;

Fig. 18 illustrates a side elevation of a link forming a part of a submerging apparatus;

Fig. 19 illustrates a view of the interior mechanism taken transversely of the apparatus;

Fig. 20 illustrates a side elevation of a conveying chain associated with means for operating the same;

Fig. 21 illustrates an enlarged detail sectional view of a fragment of the casing;

Fig. 22 illustrates a plan view of the gearing for operating the conveyer chains;

Fig. 23 illustrates a vertical sectional view of the apparatus, a portion thereof being shown in elevation; and

Fig. 24 illustrates a perspective view of the knife and attachments.

In these drawings, I have shown an inclosure divided into several compartments but the manner of forming the compartments is not material and may be changed to suit particular requirements. In the present embodiment of the invention, I have shown a magazine section 20 and a receptacle casing 21, the latter of which is provided with a door 22 hinged at 23, so that access to the interior of the receptacle casing may be facilitated and the said receptacle casing may be further provided with a hinged end 24.

The receptacle casing is shown as having longitudinally disposed partitions 25 near the sides thereof, the said partitions forming compartments 26 adapted to contain operating mechanism which is preferably constructed of metal so that the said partitions act as shields for these metal parts and protect them against chemicals which are used in the development or fixing of the film.

The inner surface of each side of the receptacle casing has a substantially F-shaped guide 27 secured to it and an angle bracket is furthermore secured to the guide plate producing the double guides 29 and 30 for a purpose to be presently explained. The partitions 25 have slots 31 horizontally disposed and extending longitudinally to form ways for the passage therethrough of blocks 33 and 34, slidable on the guides 29, it being observed that the said blocks have slots 34ª forming clearances for the reception of the said guides. Each block is provided with a socket 35 to receive the trunnion 36 on the rod 32 so that said rod may rotate, although the rotary action is not essential to its operation. The purpose of the rod is to engage and pull film from a receptacle.

As a means for moving the blocks longitudinally of the guides, each block has a socket 37 which receives a stud 38 forming a continuation of one of the link pins 39 of the chain 40 and, therefore, movement of the chain of each block results in moving the block. The guides 30 act as supports for the chains in their travel longitudinally of the casing.

A receptacle 41 extends through the bottom of the casing 21 and is supported or suspended by any appropriate means as by angle irons 42 and the said receptacle is adapted to contain fluid which will act on the coated surface of the film, after it has been exposed to light and in most instances, the said receptacle is used as a container for developing fluid. At a point above the receptacle 41 or in such position that film may be delivered to the receptacle by their action, are film drawing rolls 43 and 44 which may be journaled in any appropriate way in the casing, one of said drawing rolls, preferably the drawing roll 43 having a shaft 45 extending beyond the casing and a crank handle 46 applied to it so that the said roll may be turned and as the peripheries of the said rolls are practically in contact under normal conditions and are adapted to bear against the surface of film when they are caused to coact for the purpose of drawing the film, the said rolls operate to draw film from the magazine 20 so that said film may be delivered to the receptacle 41.

The magazine 20 has a front wall 47 which constitutes a backing for the film, which is drawn over the anti-friction roller 48, journaled near the top of the mechanism, and the film is caused to travel over said anti-friction roller and down into the casing 21 containing the receptacle 41.

That portion of the magazine in front of the wall 47 constitutes an exposing chamber in which the film is subjected to the action of light which may be admitted through the bellows 49 and the bellows frame 50 which latter is fitted to the front portion of the magazine or an extension thereof. The dark slide 51 which may move transversely of the exposing chamber is of a type ordinarily employed and is movable in guides 52 and 53 formed in the structure constituting the magazine chamber or an extension thereof.

The interior of the casing 21 has a sup-

porting means for the ends of a stationary knife 54 which knife is stationed with its cutting edge in vertical alinement or nearly so, with the contacting surface of the rolls 43 and 44 so that the film fed between the rolls passes the cutting edge of the stationary knife and is in position to be cut when the movable knife 55 is carried into engagement or coaction with the stationary knife. In order to operate the movable knife, it is mounted on the spring arms 56 and 57 and said arms are slidably supported on the guides 29, it being shown in the drawings that the arms have their ends remote from the knife 55 offset downwardly with respect to the other portions of the arms so that the knife is held slightly above the surfaces of the guides 29 to permit a yielding action thereof when the movable knife travels under the stationary knife. The ends of the arms remote from the knife 55 are further provided with depending pins 58 and 59 respectively, which pins extend through slots 60 formed in the guides 29. The pins 58 and 59 are held in the slots by nuts 61 applied to the said pins under the guides 29 so that the said nuts prevent the pins from withdrawing from the slots, but at the same time, allow free movement of the arm longitudinally of the guides.

The pins 58 and 59 are of such length that they extend into the path of travel of the studs 62 and 63 projecting from the sides of the chains 40, so that movement of the chains is communicated to the knife when the studs encounter the pins.

As a means for operating the sprocket chains, a shaft 64 is journaled transversely of the casing 21 and near each side of the casing a sprocket wheel 65 is mounted on the shaft, and each of said sprocket wheels engages one of the sprocket chains 40. Near the opposite end of the casing 21, stub shafts 66 and 67 are journaled in the sides of the casing, one of which stub shafts being on each side. The stub shaft 66 has a sprocket wheel 68 and the stub shaft 67 has a sprocket wheel 69. The turning of the shaft will result in moving the sprocket chains in unison and as the blocks 33 and 34 are connected to the chains, motion of the chains will be imparted to the blocks and consequently to the rod 32.

An arm 71 is mounted to freely rotate on one of the stub shafts and the arm has two lugs 72 and 73 spaced apart for receiving a stud 74 projecting from the side of one of the sprocket chains, so that as the sprocket chain moves backward and forward, the stud 74 engages one of the lugs 72 or 73 and partially rotates the arm 71 according to the direction of movement of the chain. A link 75 is provided for the arm 71 and has one end pivotally mounted on a stud 76 projecting from the face of the arm. The end of the link 75 remote from the arm is connected by a pivot 77 with the lever 78 which lever is mounted on a fulcrum 79. One side of the arm 71 has a pin 80 acting as a stop to limit the rotation of the arm so that the chain may rotate the arm only a predetermined distance.

The upper portions of the partitions 25 have bearings 81 and 82 for shafts 81^a and 82^a on which the arms 83 and 84 are respectively mounted. The shafts 81^a and 82^a have hangers 83^a and 84^a which are connected to an immersing frame 85 by pivots 86 so that as the arms swing, the immersing frame is moved with relation to the casing. A receptacle 87 is preferably placed in the casing and is designed to contain liquid such as fixing fluid into which the film may be submerged by the immersing frame. The upper ends of the arms 83 and 84 are connected by a link 85^a so that motion communicated to one arm is communicated to the other arm and as the arms operate in unison for communicating motion to the immersing frame, it follows that film delivered to the receptacle 87 will be forced into the liquid. As a means for communicating the motion of the arm 71 to the immersing frame or the hangers supporting the same, the link 75 and the lever 78 heretofore described are interposed between the arm 71 and the arms 84 but in addition to this link and lever just described, there is another element interposed between the lever and the arms 84 which it actuates, the said member comprising a slotted plate 88; the upper end of the lever 78 having a pivot 89 movable in the slot of the plate. The plate 88 has a recess 90 merging with the slot, the said recess forming a seat for the pivot 89 under certain conditions of operation. The plate is furthermore provided with a latch 91 mounted on a pivot 92 of the plate and the said latch has a shoulder 93 adapted to engage the pivot 89 so that movement of the lever 78 is communicated to the arms as the said lever oscillates. When the latch is moved from the full line position shown in Fig. 18, to the dotted line position thereof, the lever may oscillate without communicating motion to the arm 84 in one direction.

When the latch 91 is out of engagement with the pivot 89 the outward movement of the lever 78 is effective to lift the immersing frame, but the said frame instead of being positively actuated in its descent is allowed to descend by gravity.

When the immersing frame is to be held in elevated position, as for instance, when the film is removed from the receptacle or for any other purpose, the plate is adjusted with relation to the pivot 89 so that the said pivot lies in the recess or notch 90.

In order to guard the stationary knife 54 from the action of the fluids which might

be displaced by the immersing frame, the arms 56 and 57 are provided with a supporting bar 94 and the said supporting bar carries a shield 95 which partially embraces the knife 54 as shown in Fig. 23; the said shield being carried from the stationary knife as the arms 57 are moved to cause the movable knife to approach the stationary knife.

In order to mechanically drive the mechanism, means are provided for moving the sprocket chains alternately in opposite directions. I furthermore provide gearing by which the drawing rolls are rotated and in doing so, in the present embodiment of the invention, the shaft 45 has a pinion 96 mounted on it meshing with the gear wheel 97 which is rotatable on a bearing bolt 98 within the gear casing 99. The said gear casing also incloses a pinion 100 which meshes with the gear wheel 97, the said pinion 100 being driven through the medium of the shaft 101, sprocket wheel 102 and clamp 103. The clamp 103 has a threaded shank 104 which is threaded in an aperture 105 in the outer end of the shaft 101, the said shaft 101 near its outer end having a flange 106 against which the pinion is frictionally held by the flange 107 of the clamp. The clamp 103 may be turned to release the pinion 100 and when this is done, the said pinion will rotate on the shaft 101 when the shaft 45 of the feed roll is being manipulated by the crank 46.

The means for driving the sprocket wheel 102 will be presently explained. The bearing bolt is slidable in a slot 98^a formed in the gear casing and is held at different positions of adjustment by a set nut 98^b. By this arrangement the gears may be changed or adjusted to vary the rotation of the feed roll shaft 45.

The magazine 20 is provided with any appropriate type of support for the spool 109 and as the type of spool is immaterial, it is not described in detail.

The plate 88 has an apertured lug 110 in which an adjusting screw 111 is threaded, said adjusting screw having its end adapted to bear against the pivot 89 so that said pivot may be held in the recess of the latch 91.

The receptacle 41 has hangers 112 extending downwardly to support a drip pan 113, the said drip pan being provided to receive drippings of material discharged from the faucet 114 in the bottom of the receptacle 41, so that the said receptacle may be conveniently drained.

In driving the apparatus mechanically, the shaft 67 is extended through a gear casing 115 and said shaft has a sliding clutch 116 with a slot 117 to receive a screw 118 which is threaded in a recess 119 in the said shaft, so that the said clutch may slide longitudinally of the shaft. The inner face of the clutch has pins 120 adapted to enter sockets 121 of a pinion 122 which pinion is driven through the gear wheels 123 and 124 mounted on shafts 125 and 126 respectively, carried by the plate 127, which plate is secured to a flange 128 of the gear casing by fastenings such as screws 129.

The shaft 126 has a pinion 130 back of the plate 127 and it is alternately rotated in opposite directions by segmental gears 131 and 132 carried on the outer face of a gear wheel 133, the said gear wheel being mounted to rotate on the shaft 67. The manner of fastening the segmental gears 131 and 132 to the said gear wheel is an immaterial detail of construction and will not be described, the drawing being sufficiently illustrative to enable one skilled in the art to carry the invention into practice.

The outer face of the gear wheel 133 is further provided with a segmental gear 134, the teeth of which extend beyond the periphery of the wheel 133 and the segmental gear 134 is intended to engage the teeth of a pinion 135 on the shaft 136, which shaft extends into the gear casing and through one side of the receptacle casing 21, and its inner end is supplied with a sprocket wheel 137 to engage a sprocket chain 138, which sprocket chain also runs over the sprocket wheel 102 for driving the drawing rolls.

The position of the segmental gears 131 and 132 to each other should preferably be in about the relation shown in Figs. 3 and 4 of the drawing as it is desirable that the teeth of the segment 131 disengage the teeth of the pinion 130 before the teeth of the segment 132 contact the teeth of the pinion 130, and vice versa according to the direction of rotation.

The wheel 133 has peripheral worm teeth 139 throughout its circumference which are engaged by a worm 140 rotated by the shaft 141. The shaft 141 is rotatable in bearings formed in lugs 142 and 143 carried by the plate 144, the said plate being secured to the external surface of the casing by screws 145, and the said lugs extend through apertures 146 formed in the casing. The plate has an arm 147 forming a bearing for the shaft and the outer end of said shaft has a pulley 148 by which it is motor driven as will presently appear. The inner face of the wheel 133 has a stud 149 which, in its rotation, rides on the cam surface 150 of a switch lever 151, which lever is pivoted on a stud 152 extending from the rear wall of the gear case. The switch lever has a contact blade 153 adapted to engage the contacts 154 for establishing a circuit to the motor through the conductors 155 and 156 connected to terminals of the said contacts 154, circuit through which is established, as stated, by the switch blade 153. The cam

150 of the switch lever terminates in an abrupt shoulder 157 so that when the stud 149 passes the end of the cam and spring 158 which is connected to the lever and anchored to an arm 160 extending from the gear case exerts pull on the said switch lever to draw the switch members into engagement, thereby establishing a circuit, as stated, through the motor, which will cause the motor to operate. The cam 150 is preferably rather abrupt and is effective to quickly throw the switch members out of contact to minimize the arc.

When the motor is operated through the electric current to drive the gear wheel 133, the rotation of the motor continues until the switch arm is thrown to disconnect the switch and the motor immediately comes to rest with the parts in the position shown in Fig. 3. In order to start the motor to release the switch, the motor is provided with a shunt circuit as shown diagrammatically in Fig. 14 wherein a conductor of electricity 161 leads from a manually operated switch 162 to the switch lever 151, and a conductor 163 leads from the switch lever to the motor 164. Another conductor 165 leads from the motor to the source of electricity 166 and a conductor 167 leads from the source of electricity to the switch terminal 168, so that by pressing the switch 162, the motor is energized and the stud 149 is moved from the nose of the cam 150 after which a normal current is established through the switch, and the motor will continue to run until the gear wheel 133 has traveled once around and the stud has contacted the cam and lifted the switch lever.

The clutch 116 may be moved so that the gear just described will rotate the shaft 67 or if the clutch is disengaged, the shaft will not be driven even though the motor is in operation.

By reason of the gearing and means for connecting it to operate, the film drawing rolls and the mechanism for subjecting film to the action of fluid within the apparatus, provision is made for operating the drawing rolls while the other parts of the apparatus are at rest and for operating the film transferring, the film cutting and the film submerging devices synchronously while the drawing rolls are at rest, the whole being timed to subject the film to the action of light and to the development of the film and its removal from the developing fluid and its delivery to and submergence in the fixing fluid without the intervention of an operator except for exposing the film to light and establishing the shunt circuit to start the motor, the means for which may be conveniently located so that the person who is placing copy to be photographed may make the exposure and start the motor without material change in position.

In order that it may be understood how the apparatus is operated to carry out the functions just described, a résumé of the operation will now be given, viz: Referring to the drawing in which there is illustrated a film 108, a length of which is projecting into the receptacle 41, supposing the same has been exposed to the action of light and has been drawn from the exposing chamber delivered to said receptacle through the rotation of the feed rollers heretofore described, the said film is drawn from the receptacle by the following described mechanisms. Fig. 23 shows the first or initial position of the developing, cutting and conveying apparatus and it will be seen that the rod 32 is normally stationed in front of the film 108 and that it is to be drawn rearwardly to engage the said film and draw it from the receptacle 41 while the film is being held by the rollers 43 and 44 and, thereafter, the said film is to be severed by the actuation of the movable knife with respect to the stationary knife. With this understanding of the mode of operation, rotation of the shaft 67 will result in communicating motion to the shaft 64 through the medium of the sprocket chain on one side of the case 21 and through the rotation of the shaft 64, the sprocket chain on the other side of the casing will likewise be moved to the same degree. As the shaft 67 will be moved in a clockwise direction initiatively, the rod 32 will be carried by the sprocket chains toward the rear or right hand end of the apparatus as shown in Fig. 23, being thereby caused to engage the film and draw it from the receptacle 41. Upon movement of the sprocket chains, the pin 74 of one chain engages the lugs 72 and 73 of the arm 71 and partially rotates the said arm so that movement is communicated to the lever 78 and through such movement, the immersing frame 85 is lifted from the receptacle 87 and the hangers 83^a and 84^a are elevated above the path of travel of the rod 32, thus permitting the said rod to carry the film over the said receptacle 87. The studs 62 and 63 which are carried by the chain are in such relation to each other and to the other parts of the apparatus that one stud of each chain contacts a pin 58 or 59 and thereby the movement of the chains is communicated to the arms 56 and 57 which carry the knife 55 into engagement or coaction with the stationary knife so that the film is cut after it has been drawn by the rod 32 as stated.

The arm 71 is partially rotated by the action of the chain, but in the travel of the chain, the pins 74 disengage the lugs 72 and 73 and continue to travel with the chain while allowing the arm to remain stationary with the parts in the position shown in Fig. 20 where the pin 80 is in engagement

with the link serving to lock the parts against movement until such time as the chain is moved in an anti-clockwise direction, causing the return of the pin 74 into engagement with the lugs 72 and 73 and a reversal of movement of the arm 71, so that the parts are again brought to the position shown in Fig. 23, it being understood that in the anti-clockwise movement of the chains, a stud engages each of the pins 58 and 59 to move the arms 56 and 57 to the positions which they are shown to occupy in Fig. 23. After the parts have been brought to the position shown in Fig. 23, the film feeding or drawing rolls are again operated to feed film into the receptacle and the operation is repeated.

As has been heretofore stated, it is possible to positively actuate the immersing frame through the action of the lever 78 by causing the latch 91 to lock the pivots 89 in the end of the plate 88, but when the latch is in the position to release the pivot 89, the lever 78 moves the immersing frame in one direction only, that is to say it elevates it whereas it is allowed to descend by gravity.

I claim—

1. In an apparatus relating to photography, means for containing a supply of film, means for drawing the film therefrom, a receptacle to which the film is delivered by the drawing means, a knife near the path of travel of the film, a knife adapted to coact with the first mentioned knife for severing film, means for operating the second mentioned knife, a rod past which the film travels to the receptacle, means for moving the rod to draw the film from the receptacle, means actuated in conjunction with the rod moving means for moving one of the knives in cutting the film, and motor driven means for actuating the aforesaid movable elements.

2. In an apparatus relating to photography, a casing, a receptacle therein, means for delivering film to the said receptacle and for supporting it, guides in the casing, flexible members operating over the guides, blocks engaged by the said guides, a film drawing member supported by the blocks and movable therewith, means for moving the flexible members, a stationary knife and a movable knife adapted to coact therewith, arms on which the movable knife is mounted, said arms being supported by the guides, means whereby the flexible members communicate motion to the said arms for moving the knife into engagement with the stationary knife, and motor driven means for operating the film moving, cutting and immersing mechanisms in time.

3. In an apparatus relating to photography, means for drawing a web of film to deliver a portion thereof to a receptacle and supporting the film therein, a member past which the film travels to the receptacle, means on which the member is supported, means for moving the flexible means to draw film from the receptacle, a knife past which the film travels in its delivery to the receptacle, a knife coacting therewith to cut the film, means moved by the flexible means for actuating the knife, gearing for actuating the means for drawing the film while the flexible means is at rest including means for actuating the flexible means when the means for drawing the film is at rest, an electric motor for driving the gearing, a switch lever pivotally mounted and having a contact for controlling the current through the switch, a cam on the inner end of the lever, a member carried by the gearing for contacting the cam and oscillating the switch lever and breaking the circuit, whereby the motor and gearing come to rest, a shunt circuit for delivering current to the motor for releasing the switch lever, and means for drawing the switch lever into position to establish circuit to the motor.

4. In an apparatus relating to photography, means for drawing a web of film, a receptacle to which film is delivered by the drawing means and by which it is supported in the receptacle, a member past which the film travels to the receptacle, means on which the said member is supported, means for moving the last mentioned means to draw the film from the receptacle, a knife past which the film travels in its delivery to the receptacle, a knife coacting therewith to cut the film, gearing coupled to drive the means for drawing the film, gearing coupled to communicate forward and backward movement to the means on which the first mentioned member is carried, a motor, means for communicating the movement of the motor to the said gearing, and means operated by the gearing for controlling the motor.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

GEORGE C. BEIDLER

Witnesses:
R. B. La Force,
E. W. Hamilton.