

No. 659,498.

Patented Oct. 9, 1900.

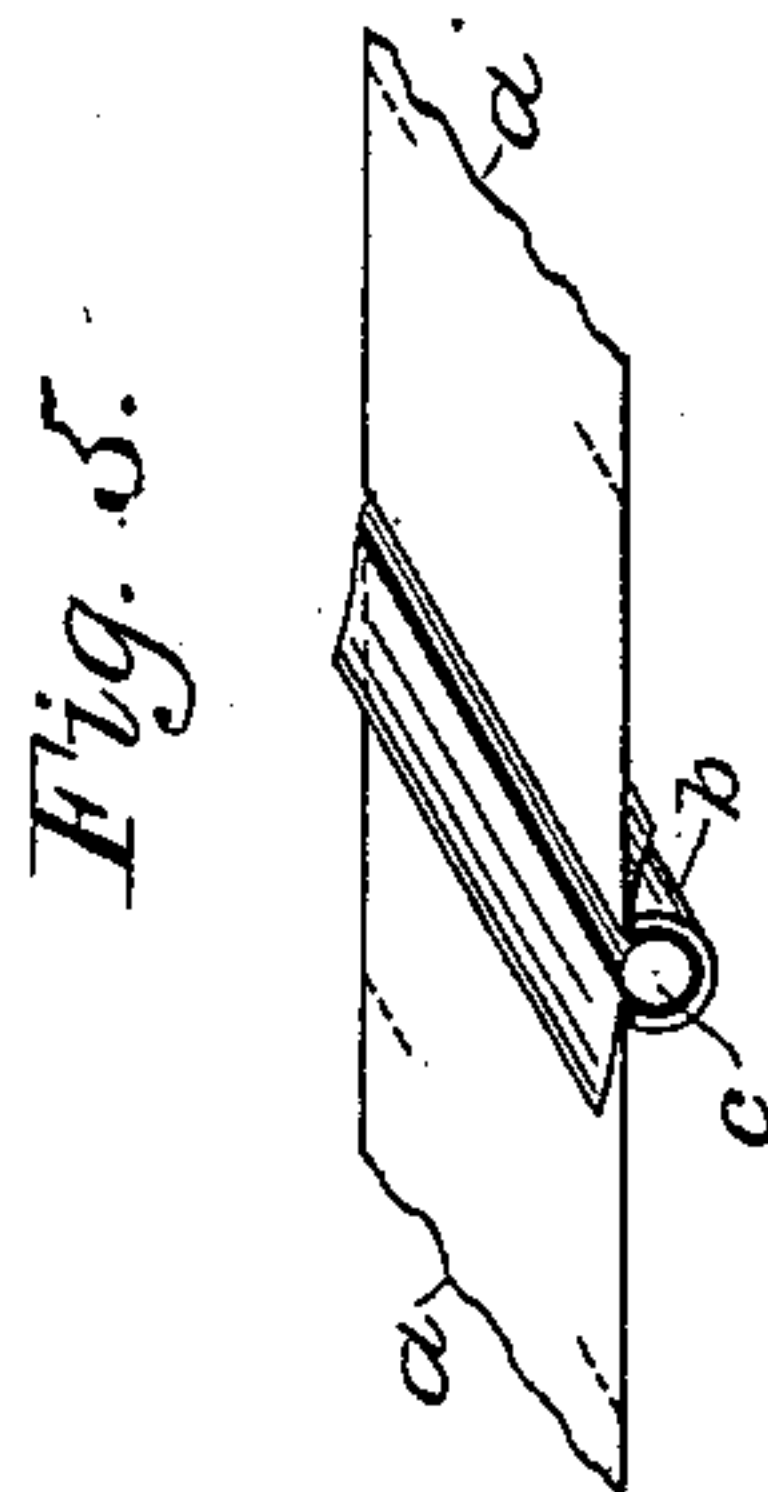
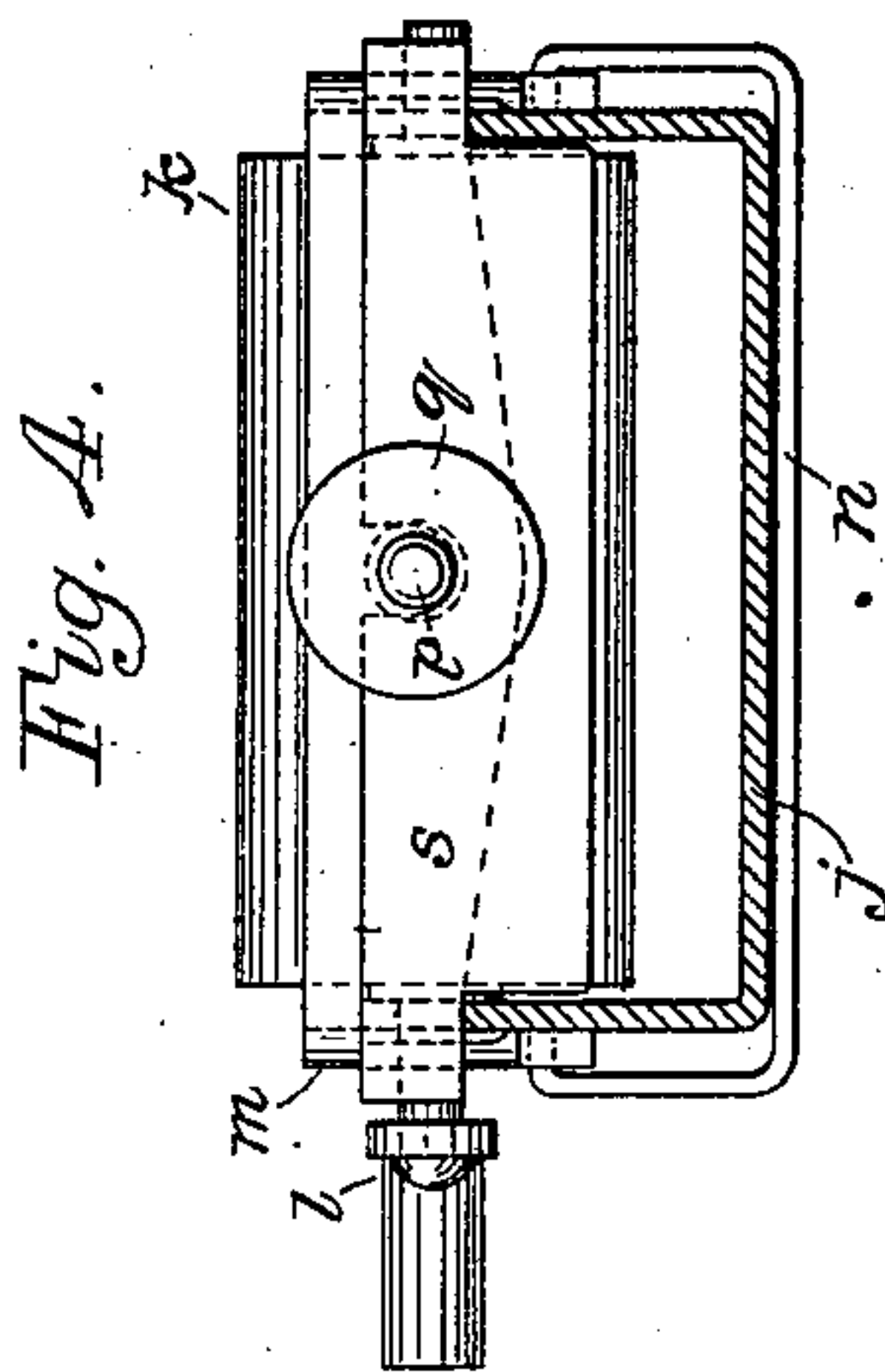
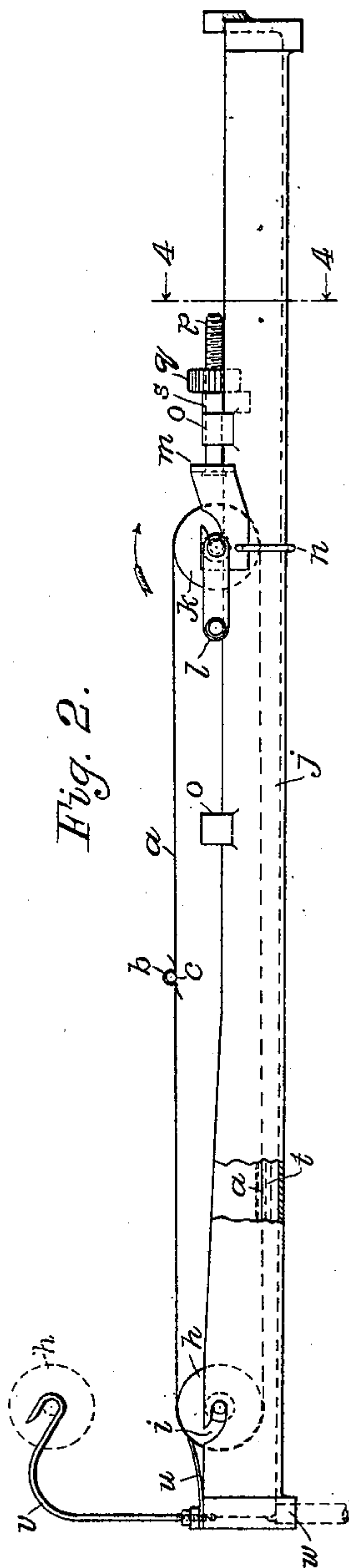
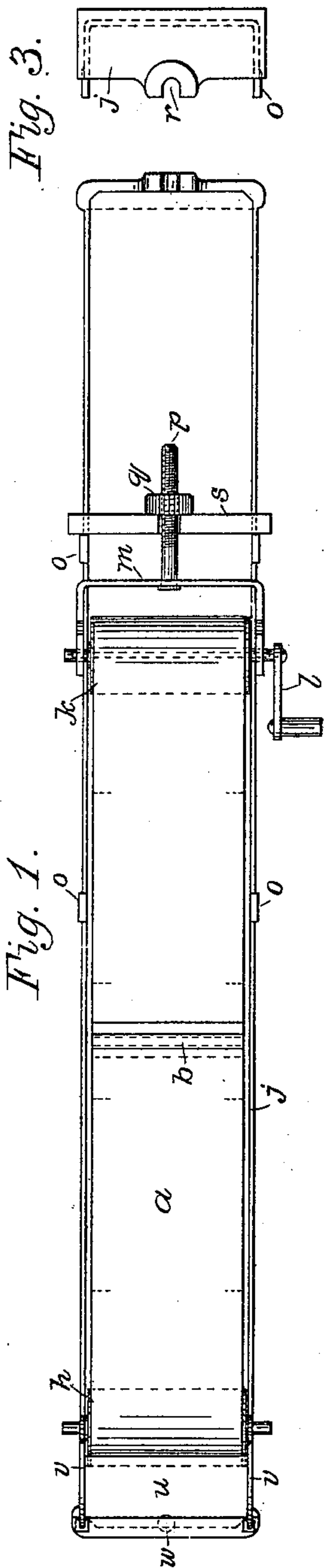
C. TRAXLER.

PHOTOGRAPHIC FILM DEVELOPING APPARATUS.

(Application filed Aug. 29, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses,  
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Frank Miller.

Inventor,  
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2 Sheets—Sheet 2.

Fig. 6.

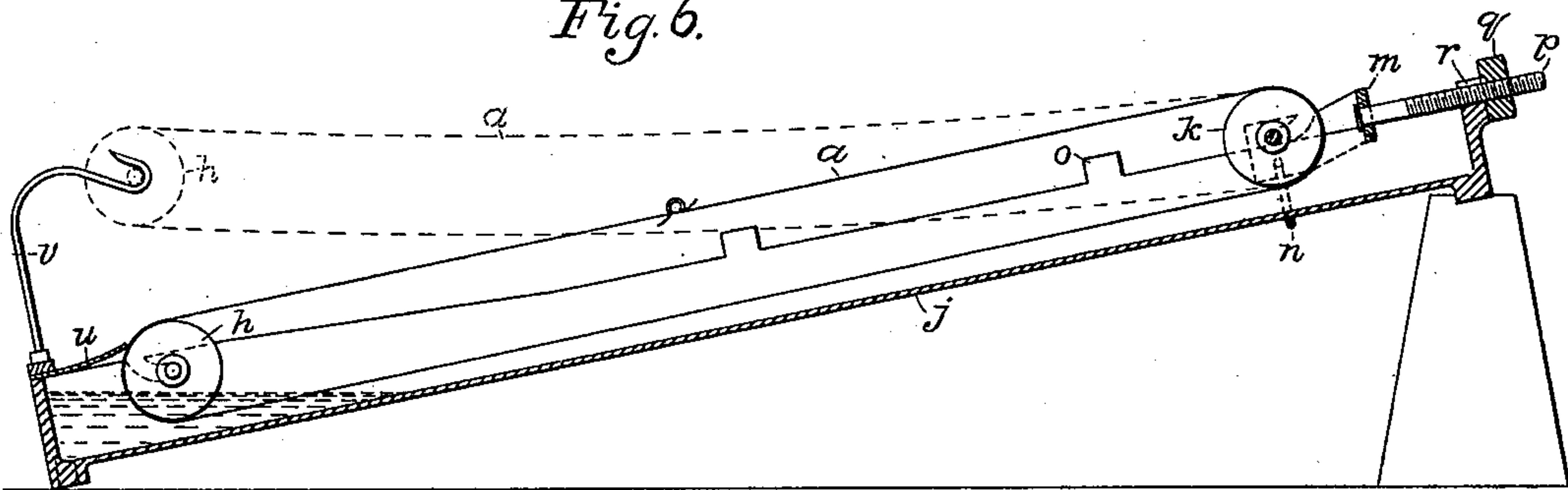


Fig. 7.

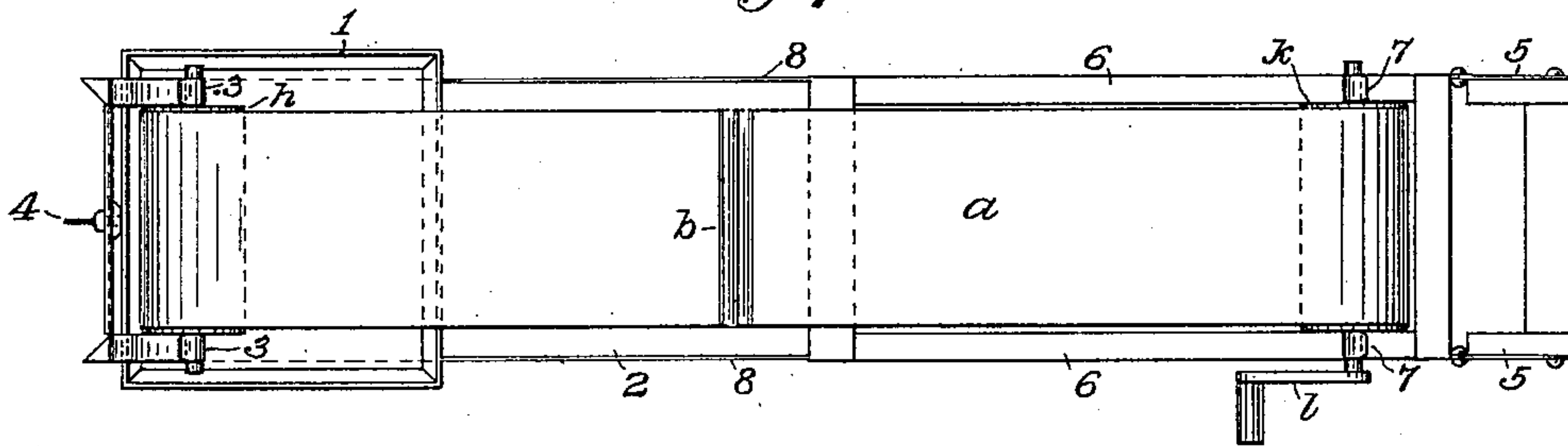
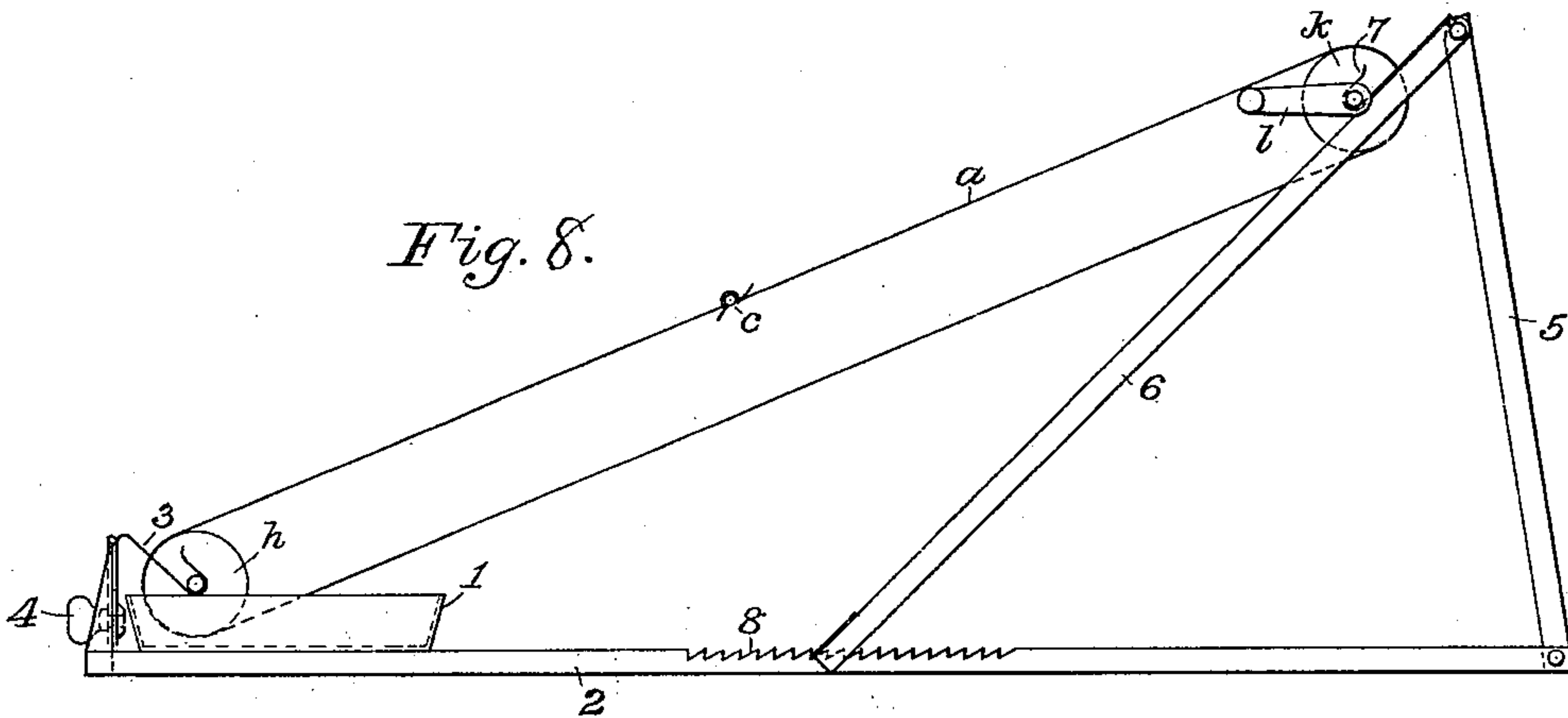


Fig. 8.



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# UNITED STATES PATENT OFFICE.

CHARLES TRAXLER, OF AKRON, OHIO, ASSIGNOR OF TWO-FIFTHS TO  
JOSEPH DANGEL AND EDWARD D. EDWARDS, OF SAME PLACE.

## PHOTOGRAPHIC-FILM-DEVELOPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 659,498, dated October 9, 1900.

Application filed August 29, 1899. Serial No. 728,873. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES TRAXLER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Apparatus for Developing Photographic Films, of which the following is a specification.

My invention relates to improvements in apparatus employed in the development of negatives upon sensitized transparent films which have previously been exposed to light in a properly-constructed camera, and is designed especially for developing a strip of film upon which several consecutive exposures have been made.

My object is to provide apparatus of this class which will develop the full length of a roll of film as taken from a camera, thereby avoiding the danger of ruining exposed portions by cutting into them when endeavoring to separate them one from another before the pictures are visible or of spoiling the end pictures of the roll by handling when they are not cut apart; also, by means of my apparatus the annoying tendency of the films to curl up at the ends is prevented. Half of the pictures being always in full view of the operator, the progress of the developing process may be closely watched, and a great saving of time is effected.

To these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, an embodiment thereof being illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the apparatus, and Fig. 2 is a side elevation of the same. Fig. 3 is an elevation of the rear end of the tray. Fig. 4 is a sectional elevation taken on line 4-4 of Fig. 2. Fig. 5 is a perspective view showing the ends of the film fastened together by the clamp. Fig. 6 is a longitudinal section showing the rear end of the tray elevated. Fig. 7 is a plan view, and Fig. 8 is a side elevation of a modified form of the apparatus.

The reference-letter *a* indicates a strip of film which has been exposed to light in a photographic camera and from which it is desired to make negatives by treating it with a chemical solution in a dark room for a proper

length of time and then washing with water and drying it. The usual practice is to cut the strip apart between the pictures at the points indicated by the dotted lines in Figs. 1 and 5; but as these lines do not appear upon the film itself, and as the pictures are not visible before being treated with the solution, it is difficult to separate the pictures without cutting into them. Another way is to develop the entire strip in an ordinary tray; but this method necessitates handling the ends of the strip, thereby often spoiling the end pictures. To obviate these difficulties, I have devised a spring-clamp to fasten the ends of the strip rigidly together, which can readily be affixed while the film is dry without danger of injuring the pictures, thus making a continuous belt of the film, which may be run smoothly over rolls. The clamp consists of a spring-piece *b*, shaped like a hollow cylinder, with a portion of one side cut away, and a cylindrical mandrel *c*, around which the ends of the film are turned when it is forced into the hollow spring-piece *b*, as plainly shown in Fig. 5. The film is then passed around an idler pulley or roll *h*, having journals at each end, adapted to revolve freely in the hook-shaped notches *i* in the sides of the tray *j*. A similar roll *k*, provided with a crank *l* or other suitable means for turning it, is placed in the opposite bight of the film-belt, and its journals are inserted in hook-shaped notches in the ends of the yoke *m*, which extends across the tray and overlaps the sides thereof, so that the journals of the driving-roll, while being held against the tension of the belt by the yoke, are also supported by the sides of the tray. A bent rod *n*, connected freely to the yoke at each end and passing under the tray, serves to hold the roll down; but the roll being removed the yoke may be revolved forward on the pivotal ends of rod *n*, so as to clear the projecting stops *o* on the sides of the tray, the purpose of which stops is to provide for varying lengths of film. Extending rearwardly from the middle of said yoke is a tension-bolt *p*, threaded to receive a thumb-nut *q*. When the full length of film is to be developed, said bolt is dropped into the groove *r*, and the tension-nut bears against the end of the tray, as shown in Fig. 6; but when



shorter lengths of film are used a cross-piece  
s, having a groove for the bolt and ends pro-  
jecting over the sides of the tray, is placed  
against the rear faces of a pair of the stops o,  
5 as in Figs. 1, 2, and 4. The tray is partly  
filled with developing solution, as shown at  
t, Fig. 2, and the driving-roll is revolved in  
the direction shown by the arrow, which, while  
keeping the fluid constantly agitated and  
10 one-half of the film immersed, the upper half  
of the film is in plain view of the operator.  
A wiper u, of felt or similar light and soft  
material, may be fastened to the front of the  
tray with its rear edge bearing against the  
15 film on the idler-roll to keep back surplus  
solution. Hangers v are provided to hold the  
idler-roll when it is desired to raise the film  
out of the tray for drying it or any other  
purpose. The tray is also provided with an  
20 outlet w, which may be used to draw off the  
chemical solution; but its main purpose is to  
discharge water which is allowed to run into  
the opposite end of the tray when the appa-  
ratus is used for washing the solution from  
25 the film.

When it is found that some pictures on the  
film are slower in developing than others, the  
tray may be elevated at its rear end, as in  
Fig. 6, and the slow pictures worked back and  
30 forth in the solution at the lower end.

While I prefer the apparatus as hereinbe-  
fore described, modifications may be made  
whereby some of the parts may be dispensed  
with and cheaper devices substituted in their  
35 place without departing from the leading  
principles of my invention. One such form  
is shown in Figs. 7 and 8, in which an ordi-  
nary tray 1 is used in connection with the  
endless film-belt and the rolls, as before de-  
40 scribed. A light frame 2 is provided with  
adjustable hangers 3 3 for the idler-roll, which  
may be moved upward or downward and  
clamped in desired position by the thumb-  
screw 4. Hinged to the opposite end of the  
45 base-frame is an upright frame 5, to the top  
of which is hinged a diagonal frame 6, carry-  
ing near its upper end hangers 7 7 for the  
driving-roll. Notches 8 are made in the base-  
frame to engage the bottom edge of the di-  
50 agonal member 6, by means of which the  
proper tension may be produced in the film-  
belt.

The material of which the trays, rolls, and  
other parts liable to come into contact with  
the solution are made should be acid-proof.  
55 Hard rubber is preferable, but japanned  
metal or wood or other materials which the  
solution will not affect may be employed.

Having described the application of my in-

vention as above, what I claim as new, and 60  
desire to secure by Letters Patent, is—

1. In a photographic developing apparatus,  
a driving-roller adapted to carry a film-belt  
and to which power may be applied, an idler-  
roller rotated by said belt, said rollers serv- 65  
ing both to support and actuate said belt,  
suitable open-ended bearings in or attached to  
a tray for the journals of said rollers, means  
for adjusting the distance between the two  
rollers to suit varying lengths of film, and a 70  
tray for developing solution in which the film-  
belt may run, substantially as set forth.

2. In apparatus for developing photo-  
graphic films, the combination of an idler-roll 75  
and a driving-roll adapted to carry a belt  
formed by joining the ends of a strip of sen-  
sitized film, an approximately-rectangular  
tray for developing solution of sufficient  
length and depth to receive said belt, having  
suitable bearings for the journals of one of 80  
said rolls in its sides near its front end, and  
provided with oppositely-registering pairs of  
lugs projecting above its sides, a yoke ex-  
tending across the tray having at each end  
suitable bearings for the journals of the other 85  
one of said rolls, and means for holding the  
yoke to the tray, a tension-bolt carrying a  
nut and attached to the middle of the yoke,  
and a cross-piece adapted to engage said bolt  
and provided with projecting ends supported 90  
upon the sides of the tray and bearing against  
the lugs thereon, substantially as set forth.

3. In apparatus of the class described,  
the combination of an idler-roll and a driv- 95  
ing-roll adapted to carry a continuous belt of  
film, a tray for developing solution of a suit-  
able length and depth to receive said belt and  
rolls, and provided with hook-shaped notches  
in its sides near its front end fitted to receive  
the journals of one of said rolls, oppositely- 100  
registering pairs of stops on the sides of said  
tray, a yoke extending across the tray having  
at each end hook-shaped notches to receive  
the journals of the other one of the said rolls,  
a bent rod passing under the tray and pivot- 105  
ally secured at each end to the ends of the  
yoke, a tension-bolt attached to the middle of  
the yoke and provided with a nut, and a cross-  
piece adapted to receive said bolt having pro-  
jecting ends to engage the stops on the sides 110  
of the tray, substantially as set forth.

In testimony whereof I affix my signature,  
in the presence of two subscribing witnesses,  
at Cleveland, Ohio, August 25, 1899.

CHARLES TRAXLER.

Witnesses:

GEORGE B. RILEY,  
L. G. HOPPER.