

No. 751,553.

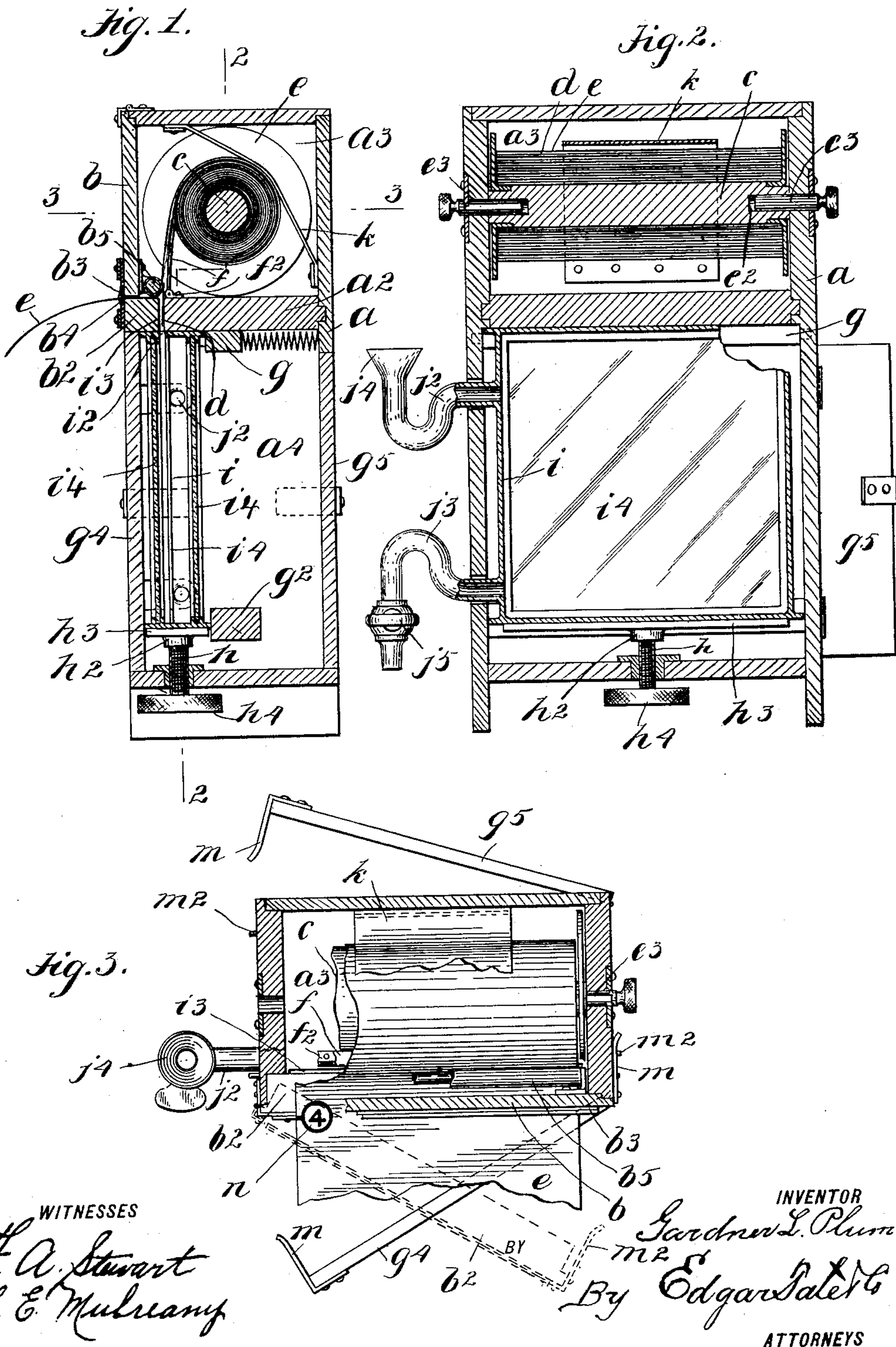
PATENTED FEB. 9, 1904.

G. L. PLUMLEY.
PHOTOGRAPHIC DEVELOPING APPARATUS.

APPLICATION FILED JUNE 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



No. 751,553.

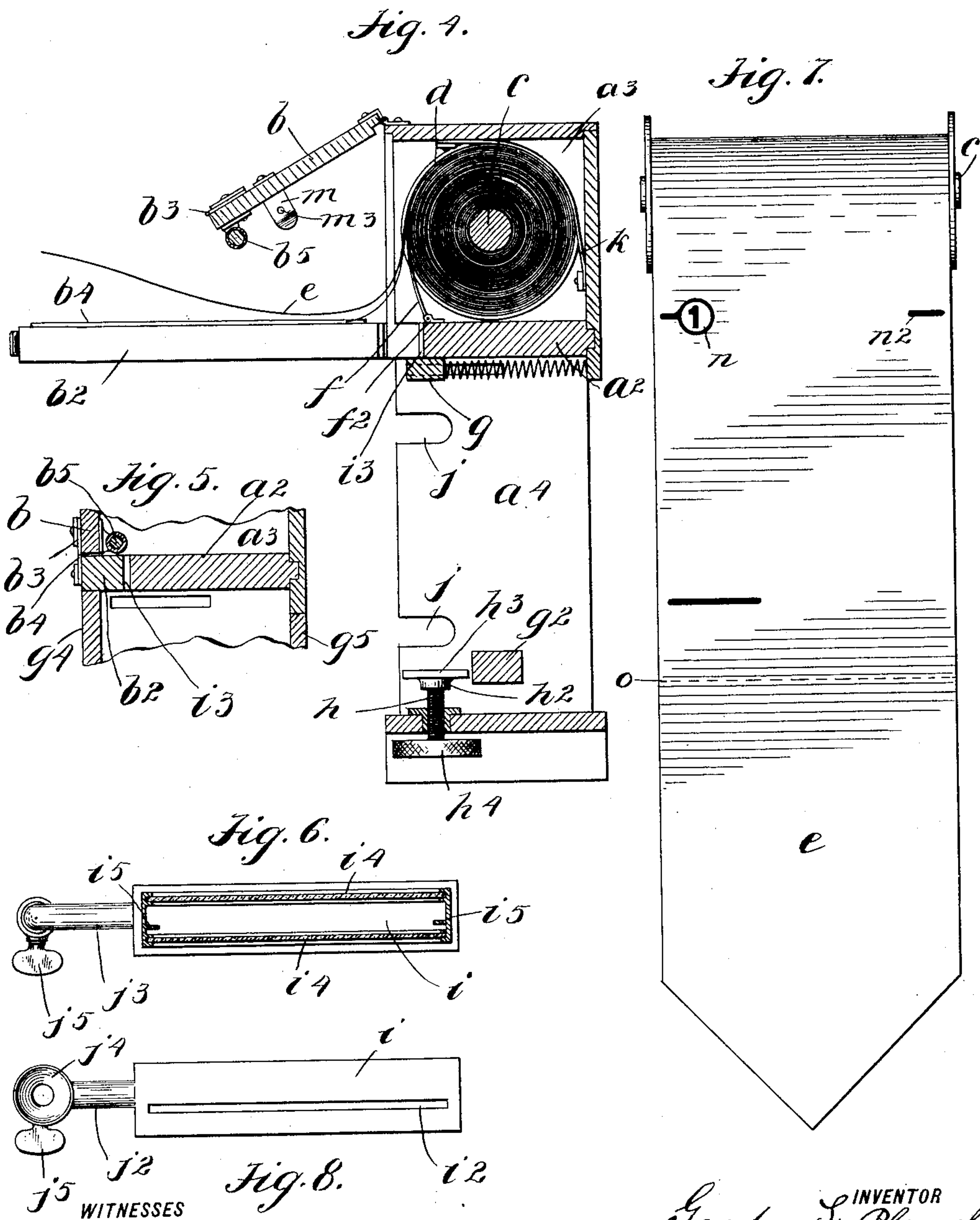
PATENTED FEB. 9, 1904.

G. L. PLUMLEY.
PHOTOGRAPHIC DEVELOPING APPARATUS.

APPLICATION FILED JUNE 29, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES
F. A. Stewart
C. E. Mulrany

BY

Gardner S. Plumley
Edgar S. Paten

ATTORNEYS

UNITED STATES PATENT OFFICE.

GARDNER L. PLUMLEY, OF NEW YORK, N. Y.

PHOTOGRAPHIC DEVELOPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 751,553, dated February 9, 1904.

Application filed June 29, 1903. Serial No. 163,525. (No model.)

To all whom it may concern:

Be it known that I, GARDNER L. PLUMLEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Photographic Developing Apparatus, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved photographic developing apparatus designed particularly for use in connection with what is known as a "photographic" film arranged in a long strip and rolled in connection with a strip of black paper on a suitable spool or holder, a further object being to provide an apparatus of this class which is simple in construction and operation and by means of which pictures on the photographic film may be developed without the use of a dark room; and with these and other objects in view the invention consists in an apparatus of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a sectional side view of an apparatus embodying my invention; Fig. 2, a section on the line 2 2 of Fig. 1; Fig. 3, a section on the line 3 3 of Fig. 1 and showing some of the parts broken and showing certain hinged parts in an open position; Fig. 4, a sectional side view showing certain removable parts detached and showing certain hinged parts in an open position; Fig. 5, a view similar to Fig. 4, but showing only a part of the construction; Fig. 6, a transverse section of a developing-tank which I employ; Fig. 7, a view of a spool or roll on which the photographic film and light-proof strip or wrapper is wound, the said light-proof strip or wrapper being partly unwound; and Fig. 8, an end view of the developing-tank, a section of which is shown in Fig. 6.

In the practice of my invention I provide a

main box or case a , which is divided by a transverse partition a^2 into a main compartment a^4 and a supplemental compartment a^3 , the compartment a^3 being much smaller than the compartment a^4 . The compartment a^3 is provided with a hinged front door b , the free edge of which when said door is closed is adjacent to and transversely arranged a hinged bar b^2 , and said door is provided at its free edge with a transverse strip b^3 of felt or other similar material, and the edges of these strips abut, and said strips are adapted to close the opening between the free edge of the door and the side of the hinged bar b^2 , and the door b is also provided on the inner side thereof and adjacent to the free edge thereof with a roller b^5 .

The chamber a^3 is adapted to receive the film-spool c , on which the photographic-film strip and the light-proof strip are wound, and this spool is provided in each end with a socket c^2 , and these sockets are adapted to receive pivot-pins c^3 , which pass through the side walls of the compartment a^3 , and in order to place the spool in position the pivot-pins which constitute bearings for said spool, are withdrawn, and when the spool has been properly positioned the pivot-pins are inserted, and any suitable means may be employed for holding these pivot-pins or bearings in position. The photographic film which is wound on the spool c is designated by the reference character d , and the light-proof strip, usually of strong black paper, which is also wound on said spool with said photographic film, is designated by the reference character e .

The transverse partition a^2 or the side thereof adjacent to the spool c is provided with a guide-plate f , which is hinged to said transverse partition at f^2 , and this plate is intended to serve as a guide for the photographic-film strip in the operation of the apparatus, as hereinafter described, and the free edge thereof when the apparatus is in use rests on the front side of the roll of film and light-proof strips on the spool c , as indicated in Figs. 1 and 4.

Within the compartment a^4 adjacent to the partition a^2 is a transverse bar g , which is normally placed forwardly, so as to cover the

space between the front edge of the said partition and the hinged bar b^2 , as shown in Fig. 4, but which may be placed backwardly, as shown in Fig. 1, when the developing-tank is in position, and across the opposite end of the compartment a^1 or the bottom thereof is a stationary transverse bar g^2 , which is the counterpart of the bar g and corresponds therewith and forms a support and guide for the developing-tank when the latter is placed in position, as hereinafter described. The compartment a^1 is also provided with a hinged front door g^4 and a hinged back door g^5 and passing through the bottom end of the box or case a is a screw h , the inner end of which has a swivel connection at h^2 with a plate h^3 and the outer end of which is provided with a milled head or similar operating device h^4 . I also provide a developing-tank i , which is adapted to be inserted into the compartment a^1 when the door g^4 is open, and in which operation the upper end of said tank strikes the bar g and forces it backwardly into the position shown in Fig. 1 and the other end of said tank strikes the stationary bar g^2 . The tank is provided in the end thereof adjacent to the partition a^2 with a transverse slot or opening i^2 , and between the hinged bar b^2 when the latter is closed and the adjacent edge of said partition is a slot or opening i^3 , and when the tank i is in proper position the slot or opening i^2 in the end thereof will register with the slot or opening i^3 . In order to hold the tank i securely in place, the screw h is turned and the plate h^3 is forced inwardly against the adjacent end of said tank, and this operation forces the opposite end of said tank against the partition a^2 and also against the bar b^2 when the latter is closed, and after the tank i has thus been secured in place the door g^4 may be closed.

One side of the box or case a is provided with two similar recesses j in the front edge thereof, and the tank i is provided with a filling-tube j^2 and a discharge-tube j^3 . The filling-tube j^2 is made in the form of a U-shaped trap, provided at its upper end with a filling nozzle or funnel j^4 , the top of which is slightly below the top of the tank i . The discharge-tube j^3 is also U-shaped in form, or the bend thereof is directed upwardly, and this tube is preferably provided with a filling j^5 , but may be provided with an ordinary plug, if desired. The object of bending the tubes j^2 and j^3 as shown and described is to prevent light from entering therethrough into the tank i .

The tank i is provided at its front and back sides with panels of ruby glass i^4 , and said tank is also provided at its narrow sides with inwardly-directed flanges or supports i^5 , designed to retain the photographic film in proper position in the operation of the device, as hereinafter described.

Within the compartment a^3 is secured an elastic brake-band k , one end thereof being

in the form of construction shown secured to the back wall of said compartment and the other to the top or end wall thereof opposite the partition a^2 , and this brake-band is preferably composed of rubber and bears on the spool c and in the form of construction shown directly on the outer layer of the light-proof or protecting strip e . The doors g^4 and g^5 and the hinged bar b^2 and also the front door b of the compartment a^3 are each provided with a spring fastening-clip m , and the box or case a is provided with a corresponding pin m^2 , adapted to enter a hole m^3 in the spring fastening-clips m , and by means of this construction the said doors and the bar b^2 may be secured in the closed position; but any suitable device or devices may be provided for this purpose.

It will be understood, of course, that the box or case a may be made in any desired manner and of any preferred material, the only object in this connection being that the chamber a^3 be light-proof when closed, and when the tank i is in position its connection with the chamber a^3 or the partition-wall a^2 thereof and the hinged bar b^2 must also be light-proof.

In using photographic films of the class described in which the film consists of a strip wound on a spool or other holder and provided with a covering or protecting strip which is light-proof the covering or protecting strip is provided at regular intervals with designating-marks n and n^2 , and one of these marks contains a numeral, these numerals being intended to designate the number of sections of the film employed in the strip and the beginning and end of each, and in Fig. 7 of the drawings I have shown the end of the first section provided with the number "1" and in Fig. 3 the end of the fourth section.

In the operation of this apparatus the bar b^2 is first opened, the door b is then opened, the plate f is then swung outwardly, and the spool c is secured in position, as shown in the drawings. The end of the protecting-strip e is longer than the end of the film strip d , the dotted line o in Fig. 7 being used to approximately designate the end of the photographic film. The end of the strip e is then pulled out into the position shown in Fig. 4, and the door b is closed. The strip e is then pulled farther until the edge of the first section of the film or its connection with the strip e is exposed, after which the door b is closed. The end of the photographic film, which in practice is always secured to the strip e , is then separated from said strip e , and that part thereof is turned back against the partition a^2 , the cover or wrapper e is turned upwardly, and the bar b^2 is closed against the end of the film. The tank i is then placed into position, as shown in Figs. 1 and 2, and by pulling on the projecting end of the strip e which is outside of the door b and bar b^2 the first section of the film will be projected into the tank i , the edges of the film resting on the flanges or guides i^5

and the prepared surface thereof being directed toward or back of said tank. When the first section of the film is projected into the tank *i*, this fact will be indicated by the appearance of the numeral "1" on the protecting-strip *e*, where it passes between the strips *b*³ and *b*⁴ at the front of the device, and the appearance of this mark at said point indicates that the edge of the second section of the photographic film is about to enter or in position to enter the tank *i*, and the distance from the outer surface of the door *b* and the bar *b*² at their abutting edges to the inner side of the roller *b*⁵ is exactly the same as from said inner side of the roller *b*⁵ to the slotted end of the tank *i* when the latter is in position, the object of this construction being to enable the operator to determine exactly when the end of one photographic section of the film is reached and also to prevent the exposure of the end of the photographic film or the section thereon.

When the film or the first section thereof has been projected into the tank, the developing of the film is accomplished in the following manner: The apparatus is held in an upright position, as shown in Fig. 2, and the developing liquid is poured into the tank from the tube *j*², and the process of developing may be observed through the front and back transparent panels *i*⁴ of the tank *i*, the doors *g*⁴ and *g*⁵ being open. It is not absolutely necessary that this developing process be observed, and the doors *g*⁴ and *g*⁵ may under certain conditions be kept closed during the process of the developing operation, as a time limit may be set under certain conditions for this purpose.

When the developing operation is fully completed, the developing liquid is discharged through the pipe *j*³, and for this purpose the box or case *a* may be tipped or tilted, so as to discharge all of said liquid. After the developing liquid is discharged the film is washed by filling the tank *i* with water through the tube *j*², and this water is also discharged through the tube *j*³ when the washing is completed.

After the photographic film has been developed and washed the screw *h* is turned backwardly, and the tank *i* is moved slightly away from the partition *a*³ and the bar *b*². A knife-blade is then inserted, and the film is cut off closely adjacent to said bar *b*², after which the tank *i* is removed, and the film is drawn out of the tank and deposited in a developing tank or reservoir in which the usual fixing liquid is placed. In cutting off a section of the photographic film, as above described, a very narrow strip thereof is left projecting through the slot *i*² in the end of the tank *i*, and this strip is caught between the thumb and finger, and said section of the film is pulled out of the tank, the said film-section being bent in this operation over the front edge of the slot *i*², so that the picture-surface thereof will not come in contact with the opposite edge of said slot.

It will be observed that the partition *a*²

which separates the compartments *a*³ and *a*⁴ is only a partial partition, the hinged bar *b*² when closed forming the other part of said partition. It will also be observed that in the form of construction shown the developing-tank *i* is almost square in form; but it will be apparent that this tank may be of any desired length, as may also the compartment *a*⁴, the length of said tank depending on the length of the photographic sections of the film strip.

This entire device or apparatus is simple in construction and operation and comparatively inexpensive and by means thereof photographic films of the class described may be quickly and easily developed without the use of a dark room, and the device may be conveniently carried in a satchel, and by reason of the form and construction of the parts and the size of the tank *i* but little developing liquid is required.

After one section of the photographic film strip has been developed, as hereinbefore described, all that is necessary is to place the tank *i* in position, as shown in Figs. 1 and 2, and pull on the projecting end of the light-proof or protecting strip *e*, and another section of the film strip will be projected into the tank *i*, as will be readily understood, and this operation may be rapidly repeated until all the sections of the film strip are developed.

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

1. In an apparatus of the class described, a box or case divided by a partially-transverse partition into a main chamber and a supplemental chamber adapted to receive a photographic-film spool, said supplemental chamber being provided with a hinged door and one side of the box or case being provided with a transverse bar which is hinged thereto and between which and the partition when the bar is closed is a narrow space, said bar and said door being also separated when closed by a narrow space, and a developing-tank adapted to be secured in the main chamber and provided in one end with a slot or opening which registers with the narrow space between said bar and the partition, substantially as shown and described.

2. In an apparatus of the class described, a box or case divided by a partial transverse partition into a main chamber and a supplemental chamber adapted to receive a photographic-film spool, said supplemental chamber being provided with a hinged door and one side of the box or case being provided with a transverse bar which is hinged thereto and between which and the partition when the bar is closed is a narrow space, said bar and said door being also separated when closed by a narrow space, and a developing-tank adapted to be secured in the main chamber and provided in one end with a slot or opening which registers with the narrow space between said bar and

the partition, said supplemental chamber being also provided with a plate which is hinged to the partition adjacent to said bar when the latter is closed and the door of said chamber
5 being provided at its free edge with a guide-roller which is secured to the inner side thereof, substantially as shown and described.

3. In an apparatus of the class described, a main box or case provided with a main chamber and at one end thereof with a smaller supplemental chamber, said chambers being separated by a partial transverse partition, a bar hinged to one side of the box or case and adapted to complete said partition and between
10 which and the latter when said bar is closed is a narrow space, said supplemental chamber being also provided with a hinged door between which and said bar when said bar and said door are closed is also a narrow space,
15 substantially as shown and described.

4. In an apparatus of the class described, a main box or case provided with a main chamber and at one end thereof with a smaller supplemental chamber, said chambers being separated by a partial transverse partition, a bar hinged to one side of the box or case and adapted to complete said partition and between
20 which and the latter when said bar is closed is a narrow space, said supplemental chamber being also provided with a hinged door between which and said bar when said bar and said door are closed is also a narrow space, the
25 main chamber being also provided with a spring-operated bar which is adapted to close the space between the partial partition and the hinged bar when the developing-tank is not in position, substantially as shown and described.

5. In an apparatus of the class described, a main box or case provided with a main chamber and at one end thereof with a smaller supplemental chamber, said chambers being separated by a partial transverse partition, a bar hinged to one side of the box or case and
30 adapted to complete said partition and between which and the latter when said bar is also provided with a hinged door between which and said bar when said bar and said door are closed is also a narrow space, the
35 main chamber being also provided with a spring-operated bar which is adapted to close the space between the partial partition and the hinged bar when the developing-tank is not in position, and one side wall of the main
40 compartment being also provided with re-

cesses, and the developing-tank with filling and discharging tubes adapted to enter said recesses, substantially as shown and described.

6. In an apparatus of the class described, a main box or case provided with a main chamber and at one end thereof with a smaller supplemental chamber, said chambers being separated by a partial transverse partition, a bar hinged to one side of the box or case and adapted to complete said partition and between
45 which and the latter when said bar is also provided with a hinged door between which and said bar when said bar and said door are closed is also a narrow space, the main chamber being also provided with a
50 spring-operated bar which is adapted to close the space between the partial partition and the hinged bar when the developing-tank is not in position, and one side wall of the main compartment being also provided with re-
55 cesses, and the developing-tank with filling and discharging tubes adapted to enter said recesses, said main compartment being also provided at its opposite sides with hinged doors, substantially as shown and described.

7. In an apparatus of the class described, a main box or case provided with a main chamber, at one end of which is a supplemental chamber, said chambers being separated by a partition having a narrow slot or space, said
60 supplemental chamber being also provided with a door between which and said partition is a narrow slot or space, substantially as shown and described.

8. In an apparatus of the class described, a main box or case provided with a main chamber, at one end of which is a supplemental chamber, said chambers being separated by a partition having a narrow slot or space, said
65 supplemental chamber being also provided with a door between which and said partition is a narrow slot or space, and a developing-tank adapted to be secured in the main chamber and provided in one end with a slot or
70 opening which registers with the slot or space in the partition, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 27th day
75 of June, 1903.

GARDNER L. PLUMLEY.

Witnesses:

F. A. STEWART,
C. E. MULREANY.