

Feb. 22, 1938.

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2,108,982

APPARATUS FOR DEVELOPING FILM IN DAYLIGHT

Filed Jan. 22, 1936

2 Sheets-Sheet 1

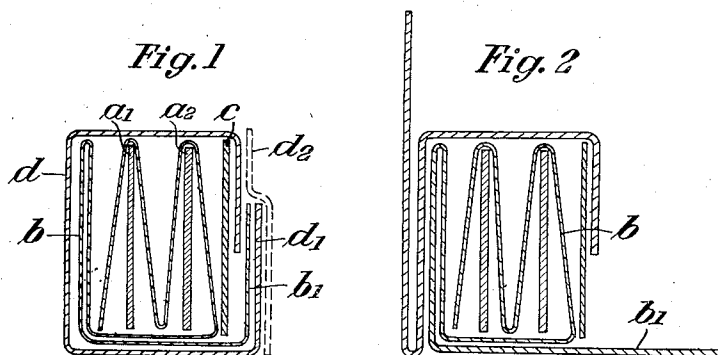
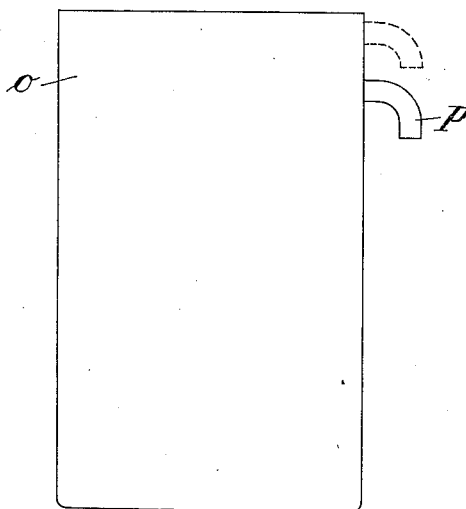


Fig. 6



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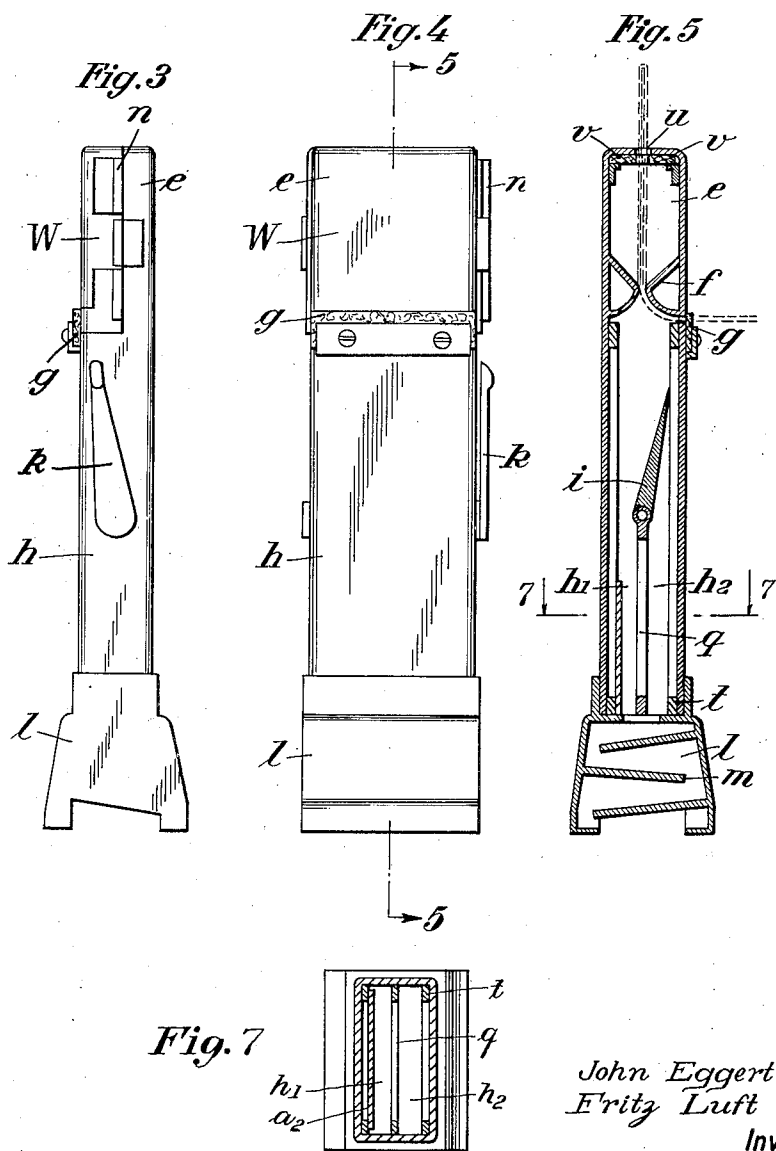
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UNITED STATES PATENT OFFICE

2,108,982

APPARATUS FOR DEVELOPING FILM IN DAYLIGHT

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Application January 22, 1936, Serial No. 60,186
In Germany January 24, 1935

5 Claims. (Cl. 95—90)

This invention relates to an apparatus for developing films in day-light and more particularly to an apparatus for developing dental film in day-light.

One of its objects is an apparatus for developing dental film in day-light which is simple in construction and efficient in use. Further objects will be seen from the detailed specification following hereafter. Reference is made to the accompanying drawings in which:

Figs. 1 and 2 show a package of dental film intended for use with the developing apparatus according to this invention,

Fig. 3 shows a side view of a developing apparatus in accordance with this invention,

Fig. 4 shows a front view of the developing apparatus shown in Fig. 3, and

Fig. 5 shows a section through a developing apparatus in accordance with the invention on the line 5—5 of Fig. 4.

Fig. 6 shows a vessel for receiving the processing baths.

Fig. 7 shows a section on the line 7—7 of Fig. 5.

With the apparatus according to the present invention it is possible to remove dental films, that is to say, cut films without a tab in day-light, from a light-tight package, and to introduce the cut films each separately in a developing vessel without the necessity of performing these operations in a dark room. Apparatus for developing cut films have already been described, but these apparatus are only applicable to cut films provided with tabs or similar devices, which made necessary a particular drawing-off device.

The apparatus in accordance with this invention allows the dentist to have at hand in a very short time a finished X-ray picture on two or more simultaneously developed films which were together in a common package, without the use of a dark room. The apparatus will be described with reference to the accompanying drawings. In the apparatus shown in Figs. 3 to 5 the dental film is inserted after exposure in packed condition in day-light and after closing the apparatus, the films are introduced into a light-tight room in which the films are developed by immersing the apparatus in the different photographic treating liquids. In the developing apparatus a number of separate chambers is provided corresponding with the number of films to be developed.

In Figs. 1 and 2 there is shown for example the manner in which two dental films are

wrapped in a protective paper and made into a dental film package.

Figs. 1 and 2 are shown of exaggerated breadth for the sake of clearness. a_1 and a_2 are the two films, b is the paper strip and c is a metal insertion against the closure. The external wrapper d has the closing flap d_1 outside the protective strip b (b_1); this forms the outer layer on the closure side against the metal sheet c . The dotted line d_2 is a sealing sheet which is gummed to the packet and prevents automatic opening. After removing this sheet d_2 and bending back the flap d_1 of the external wrapper (Fig. 2), the end b_1 of the protective strip is turned down and inserted through the openings g of the antechamber e (Fig. 5) of the developing apparatus where it is clamped in such a manner that as the strip b is withdrawn the films fall successively into the developing chamber h .

The films freed from the light-tight package are introduced into the developing chamber h (Figs. 3 to 5). An opening g made light-tight by a lining with velvet serves for drawing off the protective paper strip b by pulling the end b_1 . The apparatus operates in the following manner:

If the fold of the strip b which envelopes the film a_2 is pulled off the developing apparatus, the said film falls into the chamber h_1 which is opened for its reception by suitable adjustment of the flap i by means of the lever k . If now the developing chamber h_2 is opened by turning the lever k correspondingly, the film a_1 falls into this second chamber h_2 when further pulling the protective paper strip b . Thus the two films can be developed each in a separate chamber.

Figs. 4, 5 and 7 show an example of the construction of a developing apparatus, e is the antechamber for receiving the film packing and is connected with the lower part h of the apparatus by means of a slot f through which the films fall one after the other in the chambers h_1 and h_2 into which the lower part h is divided by the wall g , when pulling the protective paper strip b (Fig. 5). The film pack which in Figs. 1 and 2 has been shown in a drawn out condition for the sake of clearness is shown in dotted lines in Fig. 5; with its other part it protrudes through a slot u of the casing e and the casing e is protected from the entrance of light by means of washers of felt or velvet. The chambers h_1 and h_2 can be closed by means of flap i (Fig. 5) which can be actuated by means of a lever k . These chambers are provided with ledges t or the like which prevent adhesion of the films to the

wall. As is shown in Figs. 5 and 7, the film a_2 is slightly larger than the distance between the ledges t , so that these latter prevent the film from touching the wall. The chamber h is prevented against the entrance of light by means of a chamber l which is made light-tight in the usual manner by means of oppositely directed baffles m . The upper chamber e can be opened by turning the part w around the hinge n (Figs. 3 and 4).

When two films a_1 and a_2 have been brought into the two developing chambers h_1 and h_2 respectively, the whole device is immersed in the vessel containing the developing or fixing or washing liquid. Advantageously for providing for the different developing and washing liquids to be used in the vessels (Fig. 6) overflow pipes p of the latter are placed at different heights in the several vessels so that the developing apparatus may be immersed to successively greater depths in the several vessels o .

What we claim is:

1. An apparatus for developing dental film in day light which comprises a casing, a chamber in said casing for a dental film pack encased in a protective paper strip, a further chamber below said first chamber and communicating therewith by a slot for allowing the transport of said films from said first into said second chamber, said casing having a slot in a wall thereof leading from said first chamber for the reception of said protective strip, means for excluding the entrance of light through said latter slot, said second chamber having an opening therein for the admission of a treating fluid and means for preventing entrance of light through said opening.

2. An apparatus for developing dental film in daylight which comprises a casing, a chamber in said casing for a dental film pack encased in a protective paper strip, a rear wall in said chamber, a front wall hinged to said rear wall allowing said chamber to be opened for inserting said film pack, a further chamber below said first chamber and communicating therewith by a slot for allowing the transport of said films from said first into said second chamber, said casing having a slot in a wall thereof leading from said first chamber for the reception of said protective strip, means for excluding the entrance of light through said latter slot, said second chamber having an opening therein for the admission of a treating fluid and means for preventing entrance of light through said opening.

3. An apparatus for developing dental film in daylight which comprises a casing, a chamber in said casing for a dental film pack encased in a protective paper strip, a rear wall in said chamber, a front wall hinged to said rear wall allowing said chamber to be opened for inserting said film pack, a further chamber below said first chamber and communicating therewith by a slot for allowing the transport of said films from said

first into said second chamber, said casing having a slot in a wall thereof leading from said first chamber for the reception of said protective strip, means for excluding the entrance of light through said latter slot, said second chamber having an opening therein for the admission of a treating fluid and means for preventing entrance of light through said opening, a wall in said second chamber separating said chamber into two chambers; a flap hinged to said wall and means outside said casing for turning said flap and being connected with said casing in light tight manner.

4. An apparatus for developing dental film in daylight which comprises a casing, a chamber in said casing for a dental film pack encased in a protective paper strip, a rear wall in said chamber, a front wall hinged to said rear wall allowing said chamber to be opened for inserting said film pack, a further chamber below said first chamber and communicating therewith by a slot for allowing the transport of said films from said first into said second chamber, said casing having a slot in a wall thereof leading from said first chamber for the reception of said protective strip, means for excluding the entrance of light through said latter slot, said second chamber having an opening therein for the admission of a treating fluid, removably mounted means for preventing entrance of light through said opening, a wall in said second chamber separating said second chamber into two chambers; a flap hinged to said wall and means outside said casing for turning said flap and being connected with said casing in light tight manner.

5. An apparatus for developing dental film in daylight which comprises a casing, a chamber in said casing for a dental film pack encased in a protective paper strip, a rear wall in said chamber, a front wall hinged to said rear wall allowing said chamber to be opened for inserting said film pack, a further chamber below said first chamber and communicating therewith by a slot for allowing the transport of said films from said first into said second chamber, said casing having a slot in a wall thereof leading from said first chamber for the reception of said protective strip, means for excluding the entrance of light through said latter slot, said second chamber having an opening therein for the admission of a treating fluid, removably mounted means for preventing entrance of light through said opening, ledges in said second chamber at a distance from each other smaller than the width of the film, a wall in said second chamber separating said chamber into two chambers; a flap hinged to said wall and means outside said casing for turning said flap and being connected with said casing in light tight manner.

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