July 11, 1933. M. M. PAULE 1,917,851

DENTAL INSTRUMENT

Filed May 9, 1930

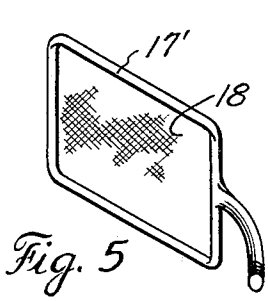


Fig. 5

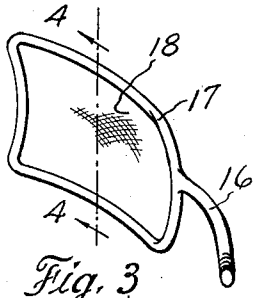


Fig. 3

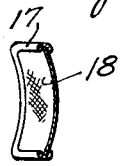


Fig. 4

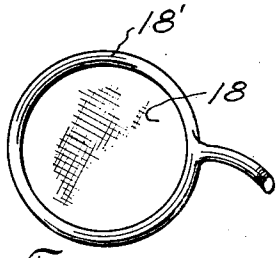


Fig. 6

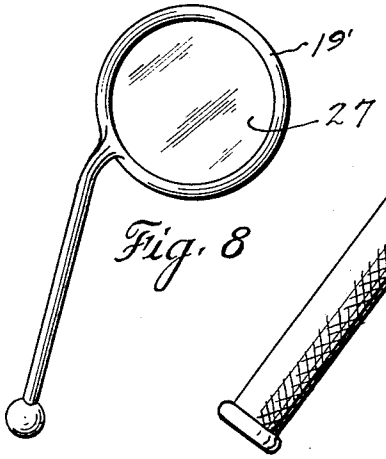
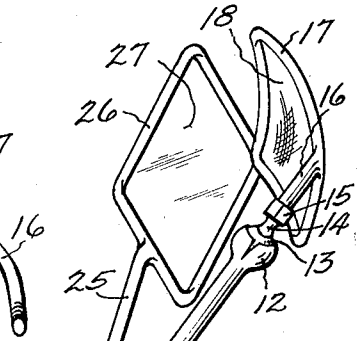


Fig. 8



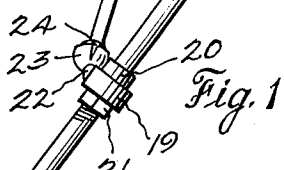


Fig. 1

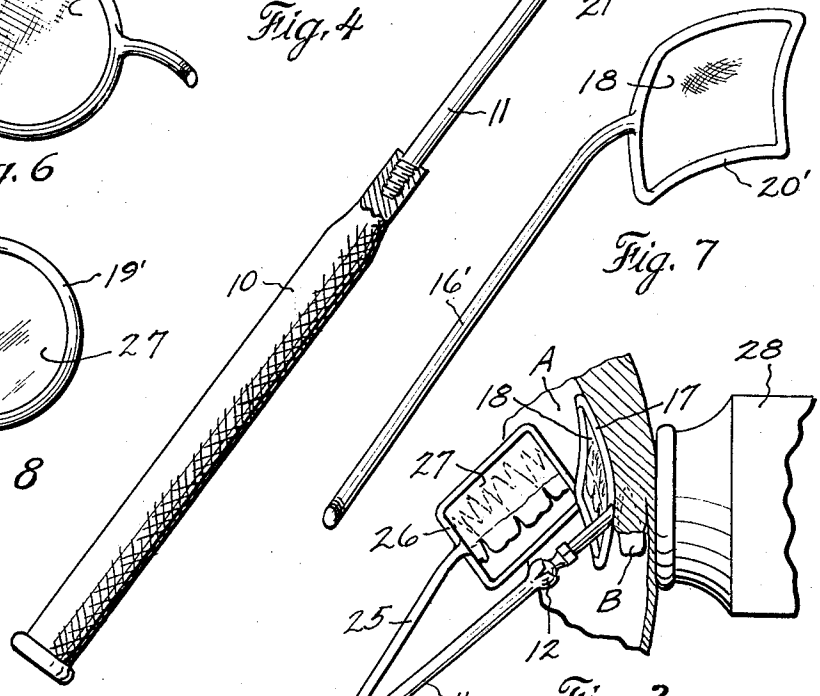


Fig. 7

Fig. 2

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UNITED STATES PATENT OFFICE

MITCHELL M. PAULE, OF DALLAS, TEXAS

DENTAL INSTRUMENT

Application filed May 9, 1930. Serial No. 450,985.

This invention relates to new and useful improvements in dental instruments.

As is now common practice in dental surgery, X-ray photographs are taken for examining and diagnosing the condition of the teeth and relative parts of the mouth. Such procedure unnecessarily consumes a good deal of time and expense due to the developing of the photograph films, which often turn out bad and have to be retaken.

One object of the invention is to provide an improved dental instrument to be used in connection with an X-ray machine for examining the teeth and relative parts of the mouth, whereby a complete, quick, and accurate diagnosis of the condition of the teeth and relative parts of the mouth may be obtained.

Another object of the invention is to provide adjustable means for adapting a fluoroscopic screen within the mouth to various positions opposite the teeth therein, whereby a true image of the teeth may be thrown on the screen by an X-ray machine positioned outside the mouth and opposite the screen.

A further object of the invention is to provide an adjustable reflector which may be positioned at various angles to the fluoroscopic screen whereby the images on the screen will be reflected at a convenient visible angle to the dentist's eyes.

A still further object of the invention is to provide an instrument of the type illustrated, so shaped and constructed as to occupy a small amount of space within the mouth and yet reveal the image of several teeth at each position of the device and the X-ray, whereby the number of positions required of the device and the X-ray for examining all of the teeth is reduced.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing in which an example of the invention is shown, and wherein:

Figure 1 is a perspective view of a device as constructed in accordance with the invention,

Figure 2 is a view partly in section and partly in elevation showing the device as used in connection with an X-ray machine.

Figure 3 is a perspective view of the fluoroscopic screen,

Figure 4 is a vertical sectional view taken on line 4—4 of Figure 3,

Figures 5, 6 and 7 are perspective views of alternate forms of fluoroscopic screen holders, and

Figure 8 is a perspective view of an alternate form of reflector.

In the drawing the numeral 10 designates a handle having screwthreaded into one end thereof one end of an elongated stem 11. The other end of the stem has a socket 12 made integral therewith for receiving a ball 13 on one end of a stub shank 14. An internally screw-threaded collar 15 is provided on the other end of the shank 14 for receiving the threaded end of a curved shank 16 made integral with a concavo-convex frame or holder 17 at one end thereof.

The rim of the holder is of arcuate shape in cross section (Fig. 4) to provide for the replaceable mounting therein of a fluoroscopic screen 18, such as is commonly used in medical practices. It is to be understood, that the invention is not to be limited to a particular mounting of the screen 18 in the holder 17 as various forms of screen mountings may be used with equal results.

A collar 19 is rotatably mounted on the stem 11 intermediate its ends between a collar 20 secured to the stem and a nut 21 screw-threaded on said stem. A stub shank 22 made integral with the collar extends therefrom at a curve and is provided at its outer end with a socket 23. The socket receives a ball 24 on one end of a shank 25 made integral with and extending at a curve from a rectangular frame 26. A suitable reflector 27, such as a mirror or the like, is suitably mounted in the frame.

In using the device the screen 18 is adjusted in relation to the stem 11 whereby the screen may be conveniently positioned in a patient's mouth A, opposite teeth B, which are to be

examined. As best shown in Fig. 2, an X-ray machine 28 is positioned outside the mouth and opposite the screen 18 whereby the rays from the machine 28 will throw a clear image of the teeth and their relative parts intermediate the machine and screen onto said screen, thus disclosing to the operators' or dentists' vision the condition of the teeth. It may be readily seen that by shifting the positions of the screen 18 and X-ray machine relative to the teeth that the dentist may make a quick and accurate diagnosis of the condition of the teeth. Best results are obtained in a darkened room.

By positioning the reflector 27 adjacent the screen 18 and at a suitable angle thereto, the images on the screen are reflected at a convenient visible angle to the dentist's eyes, thus making for visibility of the device as well as convenience in use.

It is pointed out that as inner portions of the mouth relative to the teeth are curved the concavo-convex shape of the screen 18 will permit the ready application of said screen to the curved portions of the mouth thereby providing for a clearer and more accurate image of the teeth on the screen.

In Figs. 5 and 6 I show two modified forms of screen holders 17′ and 18′ either of which may be screwed into the collar 15 to replace the concavo-convex frame 17 for use opposite the straighter portions of the mouth, such as the lower jaws.

Also in Fig. 8 I show a modified form of reflector 19′ which may be used in connection with holder 18′ shown in Fig. 6.

In Figure 7 I show a concavo-convex shaped holder 20′ which has a modified form of shank 16′ extending therefrom for screwing into the handle 10 to replace the stem 11 and its associated parts, whenever it is desired to use the screen without the reflector. This form also provides a rigid mounting for the screen.

It is pointed out that the simplicity of structure together with the compact arrangement and adjustability of the parts not only makes for convenience in use, but for practicability as well.

Obviously by the use of this device much unnecessary expense and inefficiency, due to the taking and developing of X-ray photographic films, is eliminated, also time can be saved as a quick and efficient diagnosis of the teeth by the use of the X-ray can be obtained while the patient is in the chair. By the use of this instrument, broken roots as well as broken hypodermic or surgical needles can be accurately located and removed.

Due to the replaceable mounting of the screen in the holder, said screen may be removed for the sterilizing of the instrument after use.

What I claim is:

1. In a dental fluoroscope, an elongated stem having a handle at one end thereof, an enlarged open frame extending from the other end of the stem and at an angle thereto, a fluorescent screen carried by said frame, and an enlarged reflector adjustably mounted with relation to said frame and adapted in close proximity thereto, whereby said reflector may be adjusted with relation to said frame for reflecting an image on the screen to a desired point of visibility.

2. In a dental fluoroscope, an elongated stem-like handle, an enlarged open frame extending from one end of said handle and adjustably mounted with relation thereto, a fluorescent screen carried by said frame, and an enlarged reflector mounted on the handle and adapted for adjustment with relation thereto and in close proximity to the frame, whereby said reflector may be adjusted with relation to said frame for reflection of an image on the screen to a desired point of visibility irrespective of the position of the screen.

3. In a dental fluoroscope, an elongated stem having a handle at one end thereof, an enlarged open frame having a reduced shank extending therefrom at an angle, said shank being connected with the other end of the stem and adapted for adjustment with relation thereto, a fluorescent screen mounted in the frame, and an enlarged reflector having a reduced shank extending therefrom at an angle, said shank being adjustably mounted on the stem and adapted for positioning of the reflector with relation to said stem and in close proximity to the frame, whereby said reflector may be adjusted with relation to said frame for reflection of an image on the screen to a desired point of visibility irrespective of the position of the screen.

In testimony whereof I affix my signature.

MITCHELL M. PAULE.