Oct. 16, 1956 F. H. FRITTS 2,766,670

DEVELOPING AND DRYING DEVICE FOR X-RAY FILMS

Filed March 8, 1954

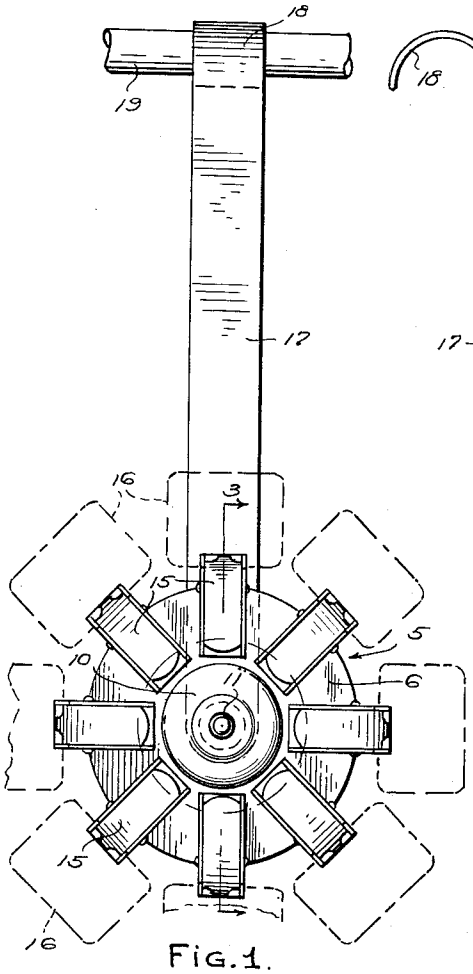


Fig. 1.

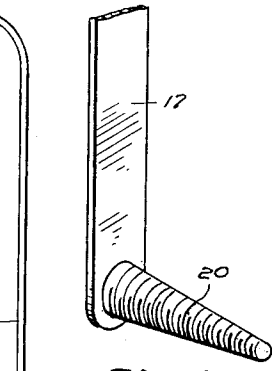


Fig. 4.

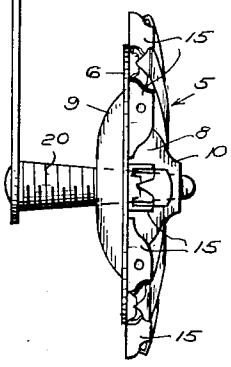


Fig. 2.

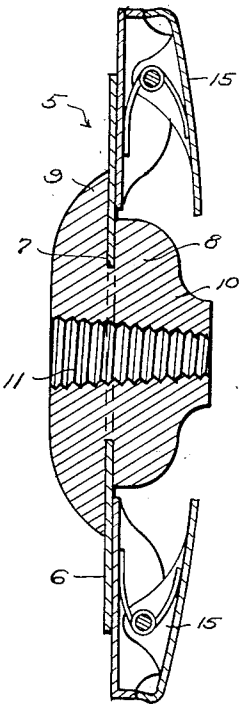


Fig. 3.

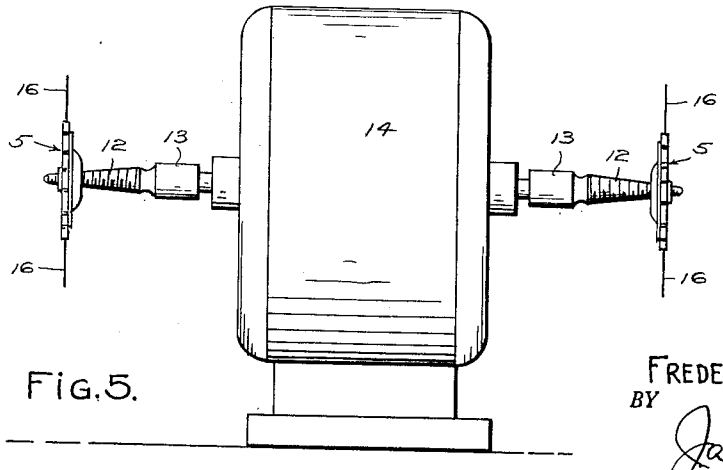


Fig. 5.

INVENTOR.
FREDERICK H. FRITTS,
BY
James H. Lyle
ATTORNEY.

United States Patent Office 2,766,670 Patented Oct. 16, 1956

2,766,670

DEVELOPING AND DRYING DEVICE FOR X-RAY FILMS

Frederick H. Fritts, North Miami, Fla.

Application March 8, 1954, Serial No. 414,729

6 Claims. (Cl. 95—100)

This invention relates to a device to facilitate the developing and drying of photographic films of the type commonly recognized as dental X-ray films, and has for its object a device for simultaneously supporting a plurality of such films both during the developing and drying operations.

The invention has for its prime object a novel form of support whereon is suitably clipped a plurality of X-ray films that have been previously exposed and with the device constituting in combination with a novel form of hanger a means to simultaneously support a group of such films within the various processing solutions, after which the device, due to its construction, may be supported upon the conventional chuck of a dental lathe whereby the dental lathe may serve to rapidly rotate the device to facilitate the drying of the films.

The invention further contemplates a novel form of support that is constructed in a manner to cooperate with the conventional and well known dental chucks now employed, thus greatly extending the use of the device as both a developer and a drier.

Novel structural details and arrangements of parts will be more readily understood by reference to the following description, together with the accompanying drawings wherein has been illustrated a preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

Figure 1 is a side elevation of a device constructed in accordance with the invention and shown in combination with a detachable hanger,

Figure 2 is an edge elevation thereof,

Figure 3 is an enlarged central vertical section taken substantially on line 3—3 of Figure 1,

Figure 4 is a fragmentary perspective view of a connecting end of a cooperating hanger device and,

Figure 5 is a side elevation of a conventional dental lathe showing the device in the drying position.

Referring specifically to the drawings, the numeral 5 designates the device as a whole comprising a circular disc 6 formed of any desirable material, such as a non-corrosive metal. The disc is centrally apertured as at 7 and, disposed within this aperture concentric with the disc, is a hub 8. The hub 8 is preferably formed of a relatively soft metal, such as lead. The hub 8 is molded or otherwise permanently connected with the disc 6 and projects outwardly from the opposite sides of the disc, as clearly shown in Figure 3. The hub may be of any desirable configuration and, as here illustrated, embodies a relatively wide flange portion 9 and a forwardly extending portion 10. The hub 8 is centrally and axially apertured and threaded throughout its length as at 11. The threaded aperture 11 is tapering and conforms substantially identical to the threaded taper 12 formed upon the conventional detachable dental chuck 13. The chuck 13 in normal and well known practice is engaged with the oppositely extending shaft sections of an electric

motor 14. The chuck 13 and its threaded end 12 as commonly employed are formed of a metal such as brass or bronze, and the purpose in forming the hub 8 of lead is to avoid wear upon the threads of the chuck. The hub 8 is formed of a relatively substantial depth in order to provide an effective balanced engagement with the chuck.

The disc 6 is provided upon its outer face with a plurality of spring clips 15. The clips 15 are radially disposed and equidistantly spaced and with the clips preferably projecting slightly beyond the circumferential edge of the disc. The clips 15 may be of any desirable construction and are welded or otherwise rigidly connected to the disc 6. The clips 15, here shown as being eight in number, are adapted to simultaneously have clipping engagement with the X-ray films 16, shown in dotted lines in Figure 1. The clips 15 have been extended outwardly beyond the disc 6 in order to support the films 16 in spaced relation to each other during both the processing and the drying.

Detachable means are provided for supporting the device within the processing solutions, comprising a preferably flat metallic strip 17, the upper end of which is bent to form a hook 18 for engagement with a suitable support 19 or the side wall of the usual and well known processing tanks. The lower end of the strip 17 is provided with an elongated tapered stud 20, corresponding in taper to the threaded tapered end 12 of the chuck 13. The stud 20 in use is adapted to be threaded into the hub 8 and through the medium of the strip 17 forms a novel supporting means for the disc and its attached X-ray films to be processed.

In the use of the device, the films are exposed in the usual and well known manner, after which they are engaged with the several clips 15. The disc 6 and its associated hub 8 are then rotated to threaded engagement with the stud 20, after which the device is bodily suspended into the processing solutions by the hook 18. After suitable processing, the device is removed, using the strip 17 as a handle and the disc with its attached films are then removed from the stud 20 and threaded upon the threaded end 12 of the chuck 13. Assuming that more than one disc is employed to support a plurality of X-ray films, the second disc is threaded upon the opposite chuck 13, after which the motor 14 is connected, causing the discs and their supported films to be rapidly rotated for drying. Any suitable shield may be employed to catch the fluid thrown from the films by centrifugal force. The drying of the films by this rapid rotation is accomplished in a minimum of time in comparison with the old and well known method of hanging the films for such purpose. It is contemplated that a plurality of the discs and associated elements shall be employed with the average equipment in dental X-ray work, and with the novel supporting means for the disc during the processing thereof and the rapid drying through the medium of the well known dental lathe, permits of the exposing, processing and drying of the films in a minimum of time. The use of the novel supporting means, including the strip 17, greatly facilitates the handling of the disc and its supported films and requires no additional equipment, since the stud 20, the threaded aperture 11 and the threaded end 12 of the chuck are identical in taper and pitch of threads. The device is simple in construction, is strong, economical to manufacture, will not injure the threads of the chuck 13, and is highly efficient for the purposes designed.

It is to be understood that the invention is not limited to the precise arrangement shown, but that changes are contemplated as readily fall within the spirit of the invention as determined by the scope of the subjoined claims.

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

1. A developing hanger and dryer for dental X-ray films, the combination of a disc and a supporting handle therefor, the disc having radially disposed spring clips fixed thereto for the clipping support of a plurality of films and with the films projecting radially beyond the disc, a hub formed upon the disc centrally thereof and with the hub being axially apertured and threaded throughout its length, the handle provided with a hook at one end, a threaded stud carried by the opposite end of the handle for detachable threaded engagement with the aperture of the hub whereby the disc and its supported films are suspended in a processing tank, the threads of the hub corresponding to the threads formed upon a dental lathe chuck whereby the disc may be threadedly engaged with the chuck to rapidly rotate the disc and its supported films for drying thereof.

2. The combination according to claim 1, wherein the aperture of the hub and the stud are identically tapered throughout their length and wherein the taper of the aperture is identical to a taper of a threaded end of the dental lathe chuck.

3. The combination according to claim 1, wherein the hub is elongated and projecting outwardly upon opposite sides of the disc and wherein the hub is formed of a relatively soft material.

4. The combination according to claim 1, wherein the films are radially supported outwardly of the disc in substantially the same plane with the disc whereby the films may be rotated in a vertical plane and in an edgewise manner.

5. The combination according to claim 1, wherein the clips are radially disposed upon the disc in equidistantly spaced relation and wherein the clips project beyond the circumferential edge of the disc.

6. A supporting means for developing and drying X-ray films, that comprises in combination, a handle and

a disc for the support of the films during developing and drying, the handle comprising a flat strip of metal that has one end bent to form a hook, the opposite end of the handle providing a tapered and threaded stud at a right angle to the strip, a flat metallic disc that is centrally apertured, an elongated hub that is molded within the aperture and which projects beyond the opposite sides of the disc, the body of the hub overlying an area of the inner and outer sides of the disc, the hub being centrally apertured throughout its length and with the aperture being threaded and tapered throughout its length and with the taper and the threads being identical to the stud, the stud having a detachable threaded engagement with the hub whereby the disc may be suspended within a solution of a developing tank, the disc carrying a plurality of radially disposed and equidistantly spaced spring clips and with the clips projecting beyond the circumferential edge of the disc for the clipping support of X-ray films with the films being arranged in substantially the same plane as the disc and in edgewise relation to each other, the threaded aperture of the hub being identically tapered and threaded to a tapered threaded chuck upon a dental lathe whereby the disc and its supported films may be threadedly supported upon the dental lathe to be rapidly rotated in a vertical plane and in an edgewise manner for drying.

References Cited in the file of this patent

UNITED STATES PATENTS

1,407,961	Taylor	Feb. 28, 1922
1,439,378	Preston	Dec. 19, 1922
1,629,285	Mabee	May 17, 1927
1,747,930	Cook	Feb. 18, 1930
1,903,174	Ferguson	Mar. 28, 1933
2,082,876	Davis	June 8, 1937
2,181,206	Rinn	Nov. 28, 1939
2,269,820	Jones et al.	Jan. 13, 1942