

**Aug. 27, 1963**

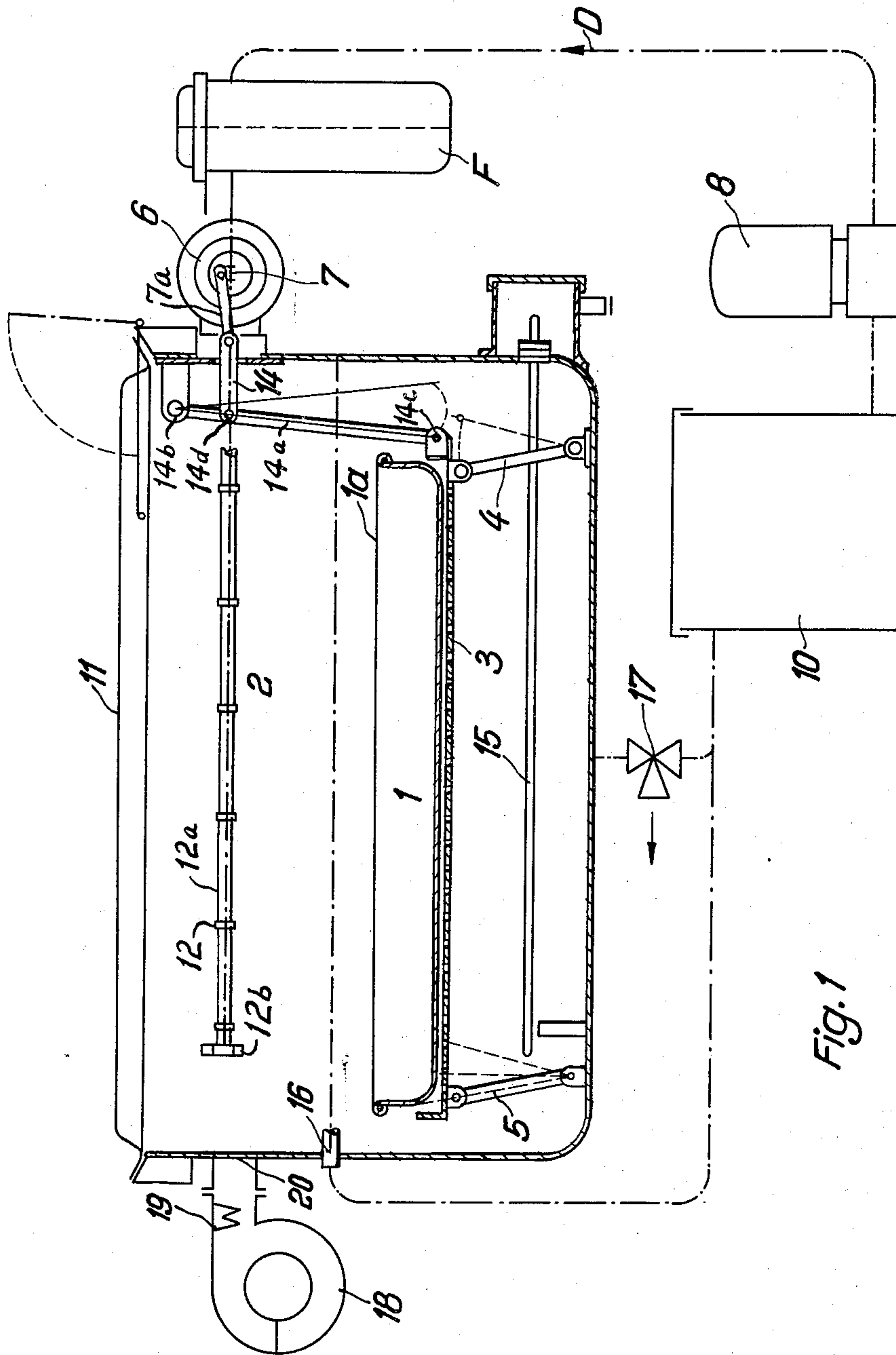
Filed June 10, 1960

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2 Sheets-Sheet 1



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APPARATUS FOR THE CLEANING AND STERILIZATION OF INSTRUMENTS, IN PARTICULAR MEDICAL INSTRUMENTS

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2 Sheets-Sheet 2

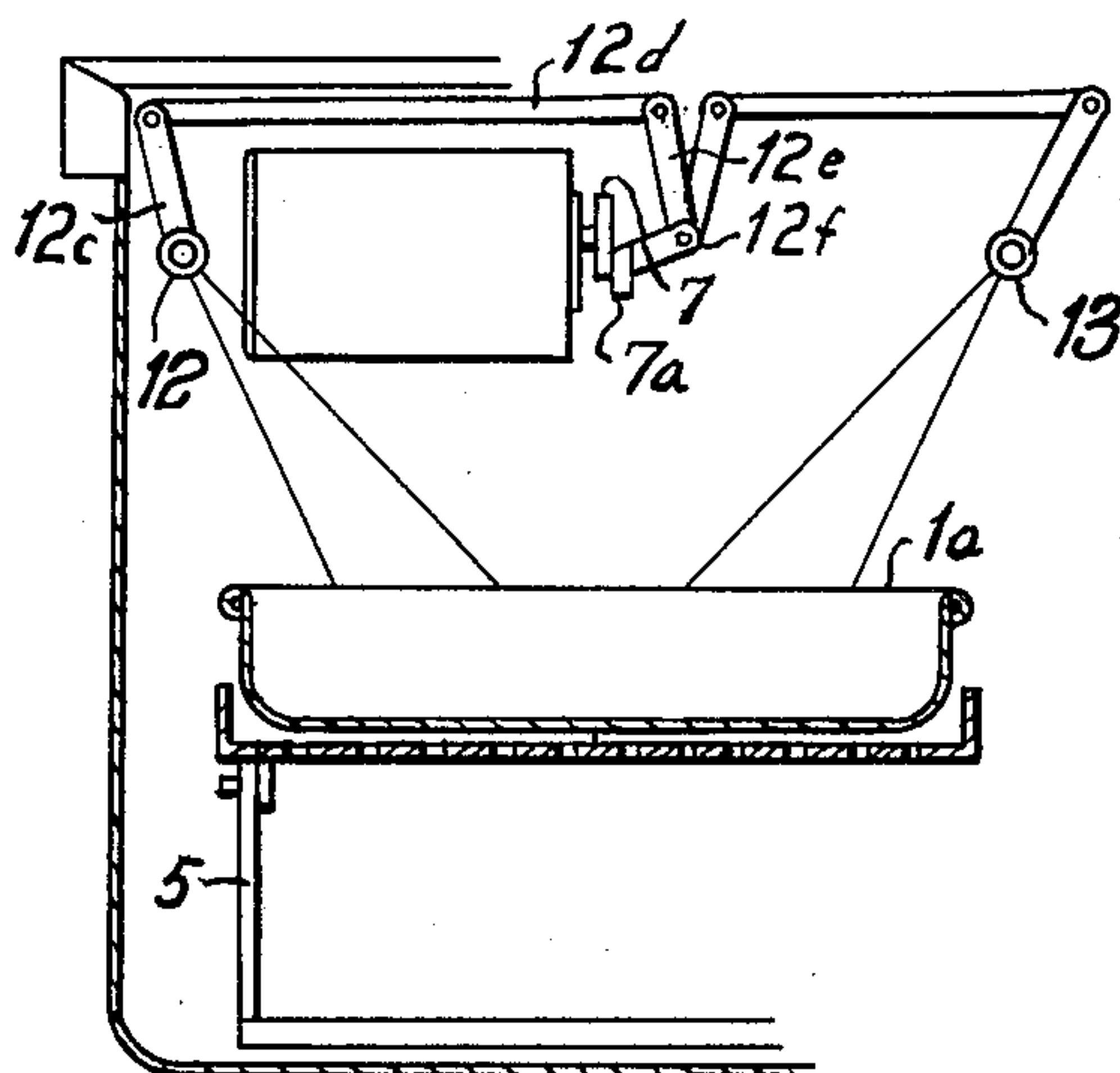


Fig. 2

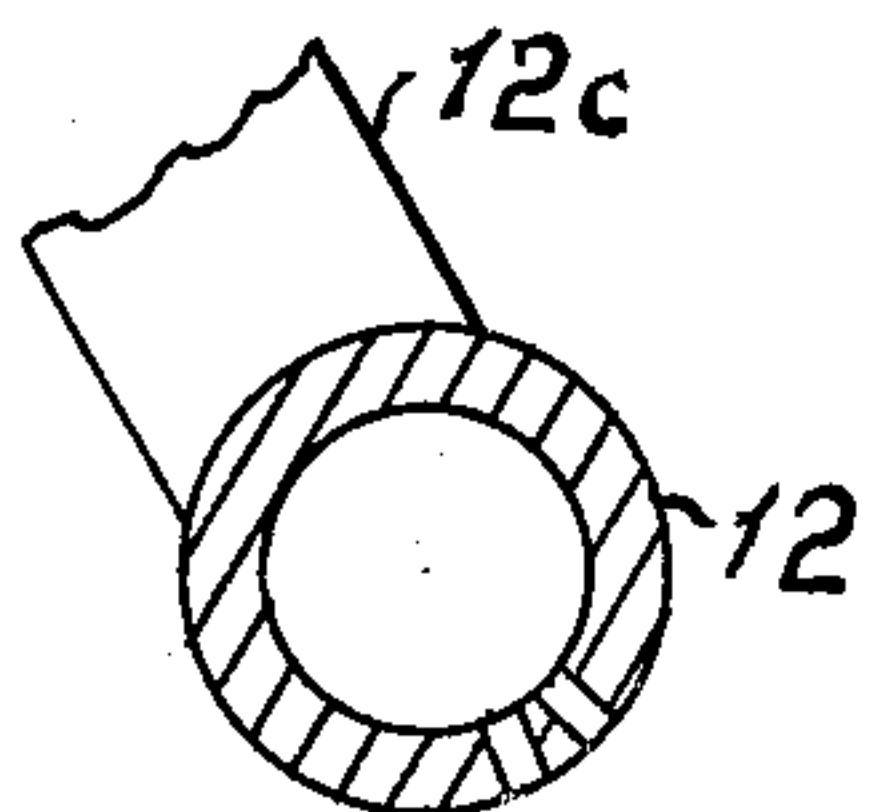


Fig. 4

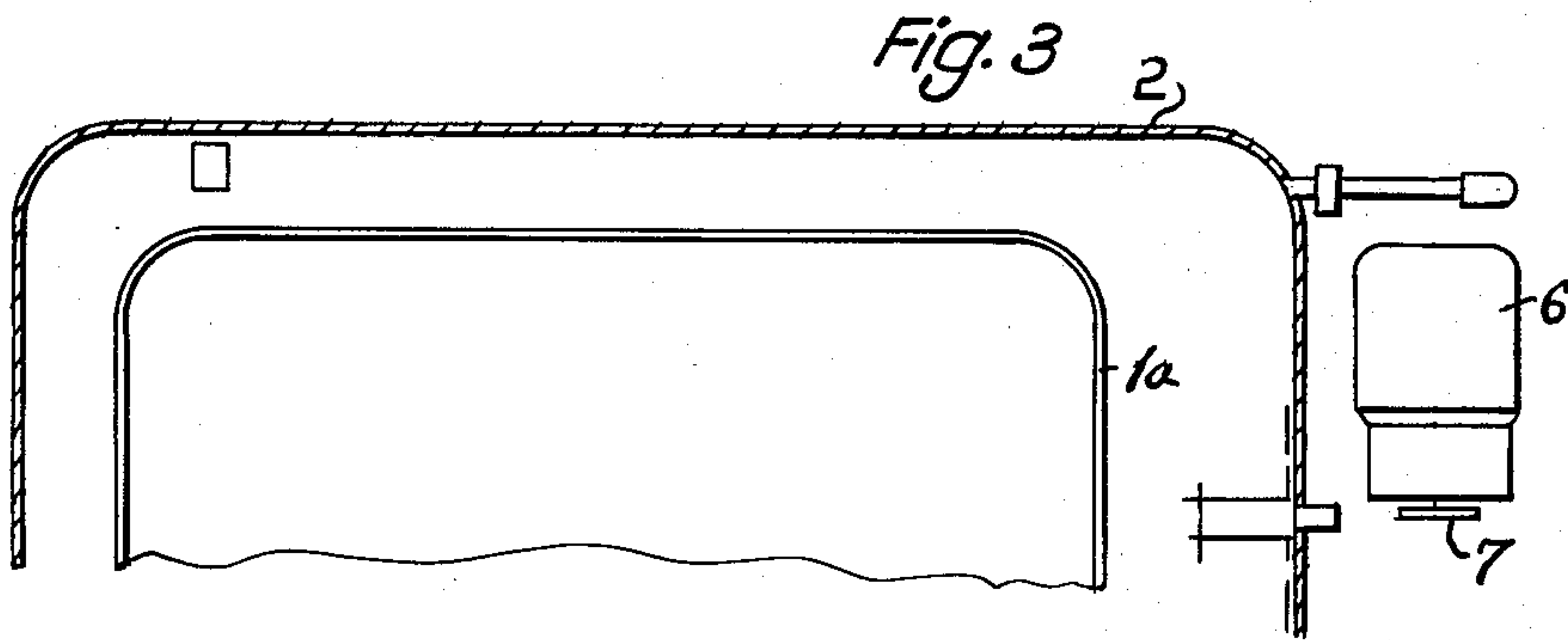


Fig. 3

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## APPARATUS FOR THE CLEANING AND STERILIZATION OF INSTRUMENTS, IN PARTICULAR MEDICAL INSTRUMENTS

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Filed June 10, 1960, Ser. No. 35,196

6 Claims. (Cl. 134-99)

The present invention relates to an apparatus for the cleaning and sterilization of instruments, in particular medical instruments.

The invention resides in that within a lockable container there is arranged a reciprocating grate which carries, if desired, by an intermediary arrangement of a tray, the instruments, the latter being exposed to the action of jet nozzles. The reciprocating movement of the grate permits the water jet directed by the nozzles onto the grate to contact effectively all parts of the instruments arranged on the grate. The cleansing effect becomes particularly efficient when provision is made for the issuing jets to move within the container. This can be achieved according to the invention by the disposition in the upper part of the container of one or several nozzle tubes which themselves are pivotable over a certain angular range, so that a respective extended active range is obtained per nozzle. When it is considered that the instruments are firstly reciprocated in the horizontal plane and secondly the nozzle jets perform movements transverse thereto, it is seen that the object of enabling the water jets to act completely upon all instrument parts is achieved.

In a preferred embodiment of the invention provision is made for the grate to be motor driven and to be reciprocated in the horizontal plane.

It is advantageous to arrange, according to the invention, an eccentric control between the motor and the grate.

It is further suitable according to the invention to make the grate removable from the container.

The cleansing effect of apparatus according to the invention is relatively large when the plurality of water nozzles are fed with water under very high pressure, e.g. in the range of 10 to 100 atmospheres.

Within the scope of the invention there can be added dissolving agents to the container. It is further recommended to add purifying agents and it is also advantageous when there are added sterilizing agents. There also should be arranged means for the admission of cooling medium (e.g. gas) to the container.

One embodiment of apparatus according to the invention is illustrated in the drawing.

In the drawing:

FIGURE 1 is a schematic cross-sectional view of the complete container with the feeding means.

FIGURE 2 is a detail view of a part of the interior of the container.

FIGURE 3 is a plan view of the container, partially cut away.

FIGURE 4 is a cross-sectional detail view of the nozzle tube.

According to the drawing the instruments 1 must be considered as being arranged in the tray 1a within the container 2. The tray 1a rests on the grate 3. The grate is reciprocated through a lever arrangement 4, 5 by means of the motor 6 through an eccentric 7. A circulating pump 8 provides for the feeding of the water under pressure in the direction of the arrow D. The water under pressure is conducted over a filter F. The further arrows indicate the flow direction of the water under pressure. At a reservoir 10 there can be added purifying solutions, sterilizing

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agents etc. If desired cold or hot water or a gas may be admitted to the receptacle.

The numeral 11 indicates the lockable lid. The cleansing streams or jets are ejected from two nozzle tubes 12 and 13, which are movably arranged at the longitudinal sides of the container 2. The articulated control link 14 pivoted to the eccentric 7 provides for horizontal movement of the instruments arranged in the sieve tray 1a and thus reciprocates grate 3.

Within the container 2 there is arranged at a suitable location a heating means 15 for heating the purifying water until it reaches the overflow 16. This is effected after a pre-purification operation has been conducted for a certain period during which the liquid is drawn off via the drain 17. After the pre-purification the drain is closed and the water rises to the overflow 16 to flow off at this point. During this step the heating means 15 is switched on.

It is found to be suitable to provide a special blower 18 with heater 19 opening at 20 into the container. The resulting hot air passes through the container and contacts the instruments arranged in the tray 1. At 17 the heated air can issue from the container.

What I claim is:

1. Apparatus for cleaning medical instruments and the like, comprising a housing forming a cleaning chamber, support means in said chamber for holding articles to be cleaned, mounting means in said chamber carrying said support means for reciprocable displacement thereof within said chamber, angularly displaceable nozzle means within said chamber for directing a stream of cleaning fluid under pressure against the articles held by said support means, and drive means for reciprocating said support means relatively to said nozzle means and for angularly displacing said nozzle means in a plane generally transverse to the direction of reciprocation of said support means whereby said stream of fluid sweeps the articles carried by said support means.

2. Apparatus for cleaning medical instruments and the like, comprising a closable housing forming a cleaning chamber, support means in said chamber forming an apertured surface for holding articles to be cleaned, mounting means in said chamber carrying said support means for substantially horizontal reciprocable displacement thereof within said chamber, nozzle means within said chamber angularly displaceable about a substantially horizontal axis above said surface for directing a stream of cleaning fluid under pressure against the articles held by said support means, and drive means for reciprocating said support means relatively to said nozzle means and for angularly displacing said nozzle means in a plane generally transverse to the direction of reciprocation of said support means whereby said stream of fluid sweeps said surface.

3. Apparatus for cleaning medical instruments and the like, comprising a housing forming a cleaning chamber, support means in said chamber for holding articles to be cleaned, mounting means in said chamber carrying said support means for reciprocable displacement thereof within said chamber, angularly displaceable nozzle means within said chamber for directing a stream of cleaning fluid under pressure against the articles held by said support means, drive means for reciprocating said support means relatively to said nozzle means and for angularly displacing said nozzle means in a plane generally transverse to the direction of reciprocation of said support means whereby said stream of fluid sweeps the articles carried by said support means, and blower means for directing a current of heated gas into said chamber.

4. Apparatus for cleaning medical instruments and the like, comprising a housing forming a cleaning chamber, support means in said chamber for holding articles to be



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cleaned, mounting means in said chamber carrying said support means for reciprocable displacement thereof within said chamber, angularly displaceable nozzle means within said chamber for directing a stream of cleaning fluid under pressure against the articles held by said support means, drive means for reciprocating said support means relatively to said nozzle means and for angularly displacing said nozzle means in a plane generally transverse to the direction of reciprocation of said support means whereby said stream of fluid sweeps the articles carried by said support means, and valve means for draining said fluid from said chamber.

5. Apparatus for cleaning medical instruments and the like, comprising a closable housing forming a cleaning chamber, support means in said chamber forming an apertured surface for holding articles to be cleaned, mounting means in said chamber carrying said support means for substantially horizontal reciprocable displacement thereof within said chamber, nozzle means within said chamber angularly displaceable about a substantially horizontal axis above said surface for directing a stream of cleaning liquid under pressure against the articles held by said support means, and drive means for reciprocating said support means relatively to said nozzle means and for angularly displacing said nozzle means in a plane generally transverse to the direction of reciprocation of said support means whereby said stream of liquid sweeps said surface, and valve means for draining said liquid from said chamber at a location below said support means, said housing being provided with an overflow disposed above said support means and adapted to drain said liquid from said chamber upon said valve means being closed.

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6. Apparatus for cleaning medical instruments and the like, comprising a closable housing forming a cleaning chamber, support means in said chamber forming an apertured surface for holding articles to be cleaned, mounting means in said chamber carrying said support means for substantially horizontal reciprocable displacement thereof within said chamber, nozzle means within said chamber angularly displaceable about a substantially horizontal axis above said surface for directing a stream of cleaning liquid under pressure against the articles held by said support means, and drive means for reciprocating said support means relatively to said nozzle means and for angularly displacing said nozzle means in a plane generally transverse to the direction of reciprocation of said support means whereby said stream of liquid sweeps said surface, valve means for draining said liquid from said chamber at a location below said surface, said housing being provided with an overflow disposed above said surface and adapted to drain said liquid from said chamber upon said valve means being closed, and heating means in said chamber intermediate said location and said overflow for heating liquid contained therein.

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