Feb. 11, 1941. H. H. ANDRESS 2,231,790

APPARATUS FOR USE IN STERILIZING

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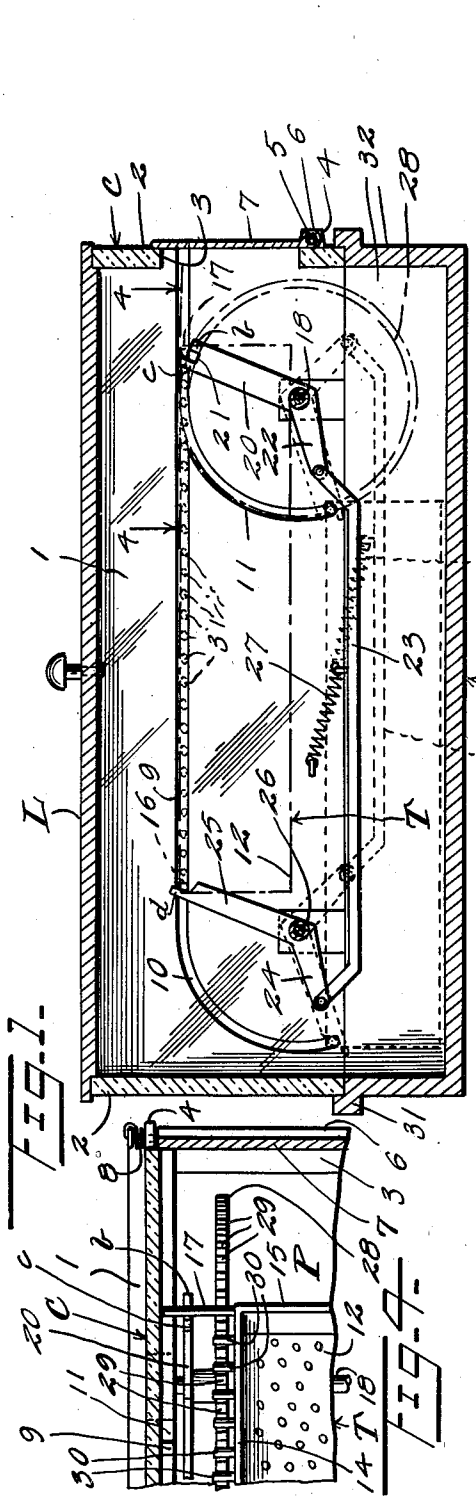


FIG. 1.

FIG. 1-A.

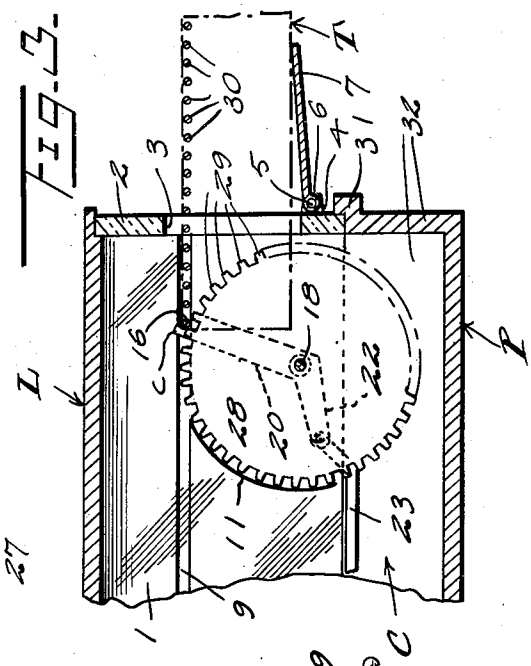


FIG. 4.

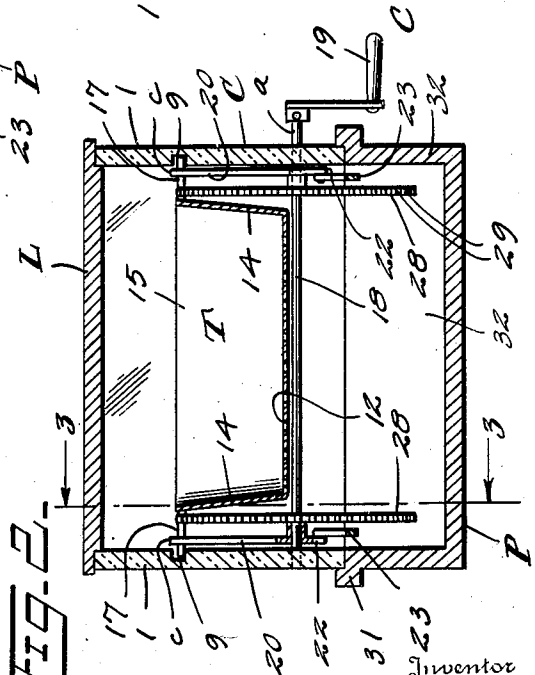


FIG. 2.

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APPARATUS FOR USE IN STERILIZING

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5 Claims. (Cl. 21—87)

This invention relates to an apparatus for use in sterilizing and has relation more particularly to an apparatus of this kind especially designed and adapted for use in sterilizing barber tools, surgical and dental instruments, etc.

It is an object of the invention to provide an apparatus or device of this kind wherein means are provided to permit the tools or instruments to be sterilized to be immersed within a desired sterilizing fluid and then lifted out of such fluid to allow said tools or instruments to drain and dry.

Another object of the invention is to provide an apparatus or device of this kind including means for supporting a tool or instrument holding tray in a manner to allow said tray and its contents to be immersed within a sterilizing fluid and then lifted out of such fluid, said operations of the tray being mechanically obtained.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved apparatus for use in sterilizing whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:

Figure 1 is a vertical longitudinal sectional view taken trough a sterilizing apparatus constructed in accordance with an embodiment of my invention and in applied position;

Figure 2 is a transverse vertical section taken through Figure 1;

Figure 3 is a fragmentary vertical longitudinal sectional view taken through the forward end of the apparatus on substantially the line 3—3 of Figure 2, certain of the parts being in a second position;

Figure 4 is a fragmentary detailed sectional view taken substantially on the line 4—4 of Figure 1.

As disclosed in the accompanying drawing, my improved sterilizing apparatus or device comprises a case C including the side walls 1 and the end walls 2 with the top and bottom of the case open. These walls 1 and 2 of the case C are preferably molded. The walls 1 and 2 are relatively high and one end wall 2 is provided thereacross with an entrance opening 3 extending from one side wall 1 to the other. This end wall 2 below the opening 3 and at spaced points therearound is provided with the outstanding lugs 4 through which is inserted a pintle 5 which is also directed through the knuckles or barrels 6 carried by the lower marginal portion of the swinging door 7 This door 7 is constantly urged and maintained in its closed position in a conventional manner by the springs 8.

The side walls 1 at a point below but closely adjacent to the top of the entrance opening 3 are provided with the elongated grooves 9 which have their forward end portions extended through the opening 3 and with their rear portions continued by the downwardly curved extensions 10. At a desired distance inwardly of the forward end wall 2 the side walls 1 are also provided with the opposed and downwardly curved grooves 11. The grooves 10 and 11 are of the same radii and terminate closely adjacent to the lower edges of the side walls 1.

When the door 7 is in open position a tray T is insertible within the case C through the entrance opening 3. This tray may be formed of any desired material and includes a perforated bottom wall 12, the upstanding side walls 14 and the end walls 15 The tray T is of desired depth and other dimensions and the upper marginal portions of the side walls 14 of the tray T are provided at one end portion of the tray with the outwardly and laterally directed elongated supporting lugs 16 and at the opposite end portion of the tray with the similarly disposed supporting lugs 17.

As the tray A is inserted within the case C through the entrance opening 3, these lugs 16 and 17 are received within the grooves 9 which serve as trackways as does also the curved extensions 10 and the curved grooves 11.

Intersecting the space between the side walls 1 of the case C at the forward portions thereof and rotatably supported by said side walls is a shaft 18. This shaft 18 is at the axial centers of the grooves 11 and one end portion of the shaft 18 extends, as at *a*, outwardly beyond one of the side walls 1 and has operatively engaged therewith a crank 19 for manually rotating the shaft 18 when desired. It is believed to be obvious that other means may be employed to rotate this shaft.

Carried by the shaft 19 within the case C and closely adjacent to the side walls 1 thereof are the parallel rock arms 20. These rock arms are of a length to extend across the grooves 9 when

the arms 20 are at the limit of their upward and forward movements.

The upper end portion of each of these arms 20 is provided with a notch 21 with the portion *b* in advance of the notch 12 terminating below the outer end of the portion *c* of the arm 20 to the rear of the notch 21.

The end portions of the arms 20 secured to the shaft 18 are provided with the rearwardly disposed parallel tail pieces 22 which have pivotally connected with the outer or free end portions thereof the forward extremities of the bars 23. These bars 23 are disposed lengthwise of the case C and the rear extremities thereof are pivotally connected with the outer or free end portions of the tail pieces 24 carried by the pivoted end portions of the rear rock arms 25. These arms 25 are in parallel and are pivotally connected, as at 26, with the side walls 1 of the case C.

The bars 23 are of such length as to maintain the arms 25 and the rock arms 20 disposed in the same directions and also to cause such arms to swing or rock in unison. The arms 20 and 25 are normally maintained at the limit of their upward and forward movements by the retractile springs 27 secured to the bars 23 and to the side walls 1 of the case C. These springs 27 operate to pull the bars 23 rearwardly.

Fixedly mounted on the shaft 18 inwardly of but closely adjacent to the rock arms 20 are the wheels 28 provided therearound with the peripheral teeth or cogs 29. The wheels 28 are of such radii to cause the teeth or cogs 29 thereof to extend across the grooves 9.

The upper marginal portions of the side walls 14 of the tray T are provided therealong with the outwardly and laterally disposed cogs 30 to provide ratchets for coaction with the wheels 28 so that upon proper rotation of the wheels 28 the tray T may be moved inwardly of or outwardly from the case C.

As illustrated in the accompanying drawing, when the tray T with its contents is inserted through the entrance opening 3, the lugs 16 will contact with the rear portion *c* and swing the arms 20 and 25 rearwardly until said lugs 16 pass off of said portions *c* and continue along the grooves 9 whereupon the springs 27 will return the arms 20 and 25 to their normal forward position.

As the tray T is continued inwardly of the case C said lugs 16 will ride along the grooves 9 and during which time the lugs 17, at the opposite or outer end portion of the tray T will be received within such grooves 9. These lugs 16 and 17 are so spaced apart lengthwise of the tray that when the lugs 17 contact with the outer or extended parts of the portions *c* of the rock arms 20 the lugs 16 will have contact with the upstanding extensions *d* carried by the upper ends of the arms 25 and lugs 17 will also be received between adjacent teeth or cogs 29 of the wheels 28 so that as the wheels 28 continue to turn, the lugs 16 and 17 will travel downwardly of the curved extensions 10 of the grooves 9 and the curved grooves 11 whereupon the tray T is brought to its lowermost position yet at all times with the longitudinal axis of the tray parallel to the longitudinal axis of the case C. Or, in other words, with the tray T at all times in a level position.

The case C is adapted to be fitted from above within a rabbet 31 defining the inner upper marginal portions of the upstanding walls 32 of a pan or receptacle P containing the required sterilizing fluid.

When the tray T is in its lowermost position the tools or instruments therein will be submerged within the fluid of the pan or receptacle P and after a desired period of time the wheels 28 will be turned in a direction to cause the arms 20 and 25 to swing upwardly to return the lugs 16 and 17 to the grooves 9. The tray T is maintained for a required time in its raised position to allow the fluid to drain from the tools or instruments therein whereupon continued rotation of the wheels 29 will cause the tray T to move forwardly of the grooves 9 and out through the entrance opening 3.

When the tray T is in its lowermost position the lugs 17 of the tray remain between adjacent teeth or cogs 29 of the wheels 28, lugs 16 overlie the extensions *d* of the arms 25 and said lugs 17 are retained within the notches 21. As the wheels 28 rotate inwardly and forwardly engagement of the lugs 17 between adjacent teeth or cogs 29 assure desired upward swinging movement of the rock arms 20 and as these arms 20 are operatively connected by the bars 23 with the rear arms 25, said arms 25 will swing upwardly in unison with the arms 20 after the fashion of a parallelogram.

As is believed to be obvious the arms 20 are freely mounted on the shaft 18.

The top of the case C is adapted to be closed by a removable lid L so that when the case C is in applied position upon a pan P or kindred receptacle, the interior of the case C as well as that of the receptacle or pan is dustproof and which condition will be further assured in view of the fact that the door 7 is normally maintained in closed position with respect to the entrance opening 3 through the medium of the spring 8.

From the foregoing description it is thought to be obvious that an apparatus for use in sterilizing constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A sterilizing apparatus comprising a case having side and end walls, the side walls being provided adjacent their opposite ends with downwardly curved grooves, a tray, outwardly directed lugs carried by the opposite end portions of the tray for travel within the curved grooves whereby the tray may be raised or lowered, rock arms mounted within the case and with which the lugs of the tray engage as said lugs move downwardly of the grooves, means for connecting said rock arms for unitary movement in the same direction, toothed wheels rotatably mounted within the case, lugs of the tray engaging between adjacent teeth of the wheels whereby rotation of the wheels in one direction causes the tray to lower and rotation of the wheels in the opposite direction causes the tray to rise.

2. A sterilizing apparatus comprising a case having side and end walls, the side walls being provided adjacent their opposite ends with down-

wardly curved grooves, a tray, outwardly directed lugs carried by the opposite end portions of the tray for travel within the curved grooves whereby the tray may be raised or lowered, rock arms mounted within the case and with which the lugs of the tray engage as said lugs move downwardly of the grooves, means for connecting said rock arms for unitary movement in the same direction, toothed wheels rotatably mounted within the case, lugs of the tray engaging between adjacent teeth of the wheels whereby rotation of the wheels in one direction causes the tray to lower and rotation of the wheels in the opposite direction causes the tray to rise, and means for constantly urging the rock arms upwardly.

3. A sterilizing apparatus comprising a case having side and end walls, the side walls being provided adjacent their opposite ends with downwardly curved grooves, a tray, outwardly directed lugs carried by the opposite end portions of the tray for travel within the curved grooves whereby the tray may be raised or lowered, rock arms mounted within the case and with which the lugs of the tray engage as said lugs move downwardly of the grooves, means for connecting said rock arms for unitary movement in the same direction, toothed wheels rotatably mounted within the case, lugs of the tray engaging between adjacent teeth of the wheels whereby rotation of the wheels in one direction causes the tray to lower and rotation of the wheels in the opposite direction causes the tray to rise, an end wall of the case being provided with an opening through which the tray passes, said side walls of the case in their opposed faces being also provided with grooves extending lengthwise thereof with which the upper end portions of the curved grooves communicate, said last named grooves extending through the opening to allow the tray to be completely withdrawn from within the case and returned therein.

4. A sterilizing apparatus comprising a case having side and end walls, the side walls being provided adjacent their opposite ends with downwardly curved grooves, a tray, outwardly directed lugs carried by the opposite end portions of the tray for travel within the curved grooves whereby the tray may be raised or lowered, rock arms mounted within the case and with which the lugs of the tray engage as said lugs move downwardly of the grooves, means for connecting said rock arms for unitary movement in the same direction, toothed wheels rotatably mounted within the case, lugs of the tray engaging between adjacent teeth of the wheels whereby rotation of the wheels in one direction causes the tray to lower and rotation of the wheels in the opposite direction causes the tray to rise, an end wall of the case being provided with an opening through which the tray passes, said side walls of the case in their opposed faces being also provided with grooves extending lengthwise thereof with which the upper end portions of the curved grooves communicate, said last named grooves extending through the opening to allow the tray to be completely withdrawn from within the case and returned therein, said tray being provided therealong with racks with which the toothed wheels coact to move the tray lengthwise in either direction.

5. A sterilizing apparatus comprising a case having side and end walls, the side walls being provided adjacent their opposite ends with downwardly curved grooves, a tray, outwardly directed lugs carried by the opposite end portions of the tray for travel within the curved grooves whereby the tray may be raised or lowered, rock arms mounted within the case and with which the lugs of the tray engage as said lugs move downwardly of the grooves, means for connecting said rock arms for unitary movement in the same direction, toothed wheels rotatably mounted within the case, lugs of the tray engaging between adjacent teeth of the wheels whereby rotation of the wheels in one direction causes the tray to lower and rotation of the wheels in the opposite direction causes the tray to rise, an end wall of the case being provided with an opening through which the tray passes, said side walls of the case in their opposed faces being also provided with grooves extending lengthwise thereof with which the upper end portions of the curved grooves communicate, said last named grooves extending through the opening to allow the tray to be completely withdrawn from within the case and returned therein, and means for normally closing the opening in the end wall.

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