

Nov. 30, 1965

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3,220,424

HAND SANITIZER

Filed May 6, 1963

3 Sheets-Sheet 1

FIG. 1

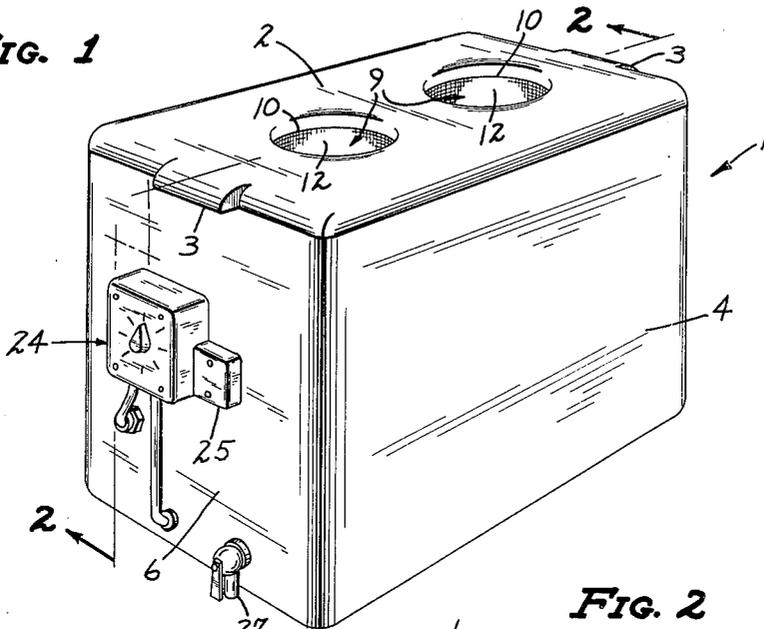
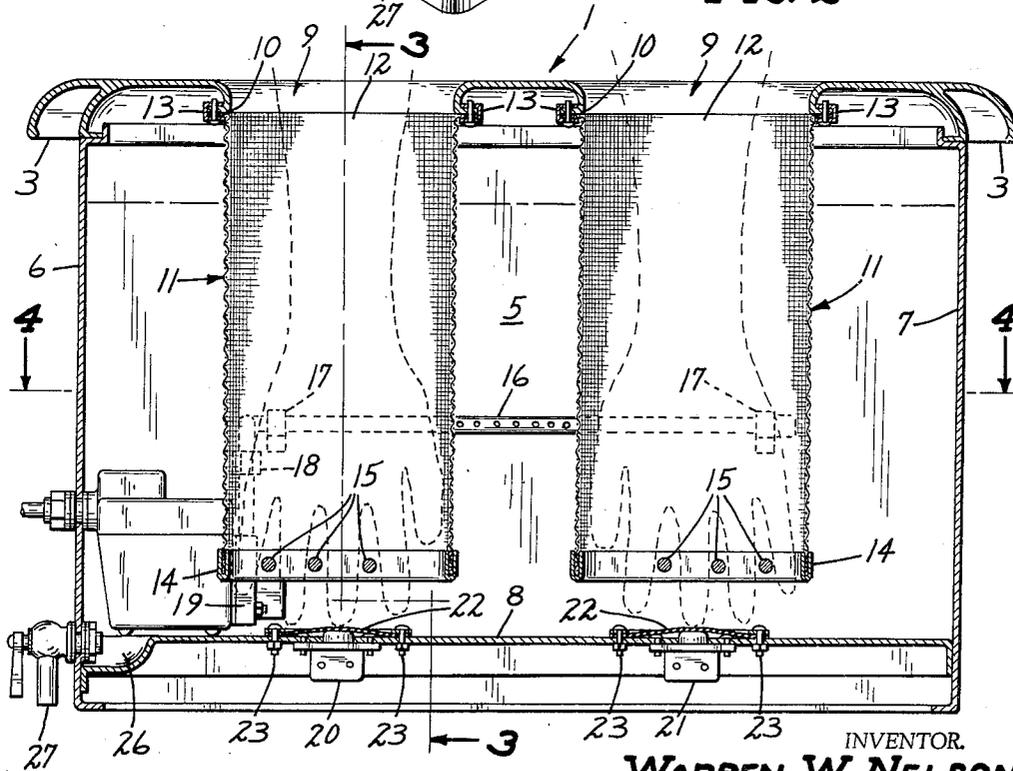


FIG. 2



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FIG. 3

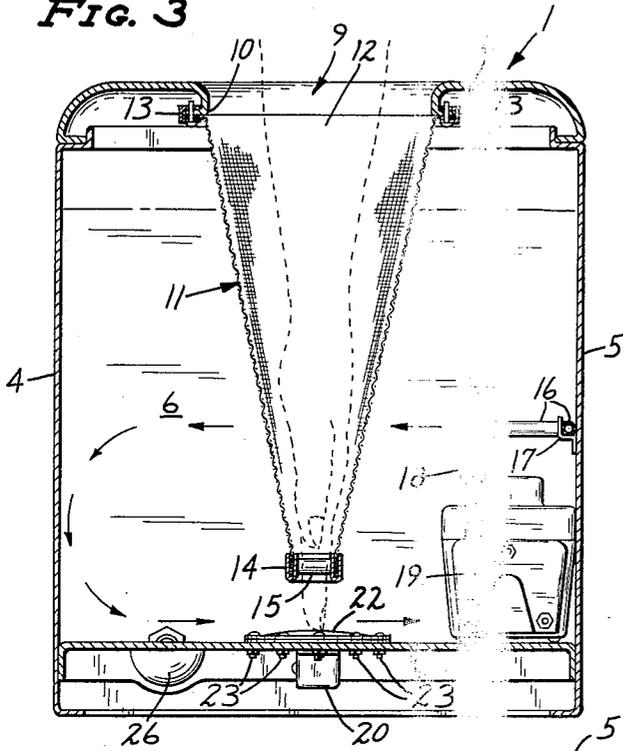


FIG. 5

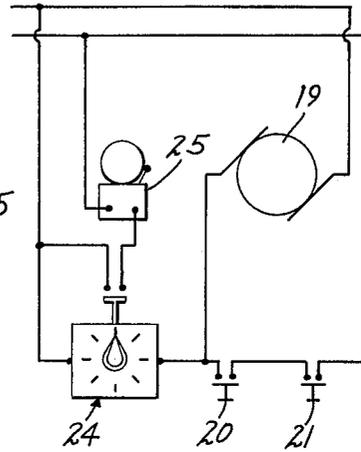
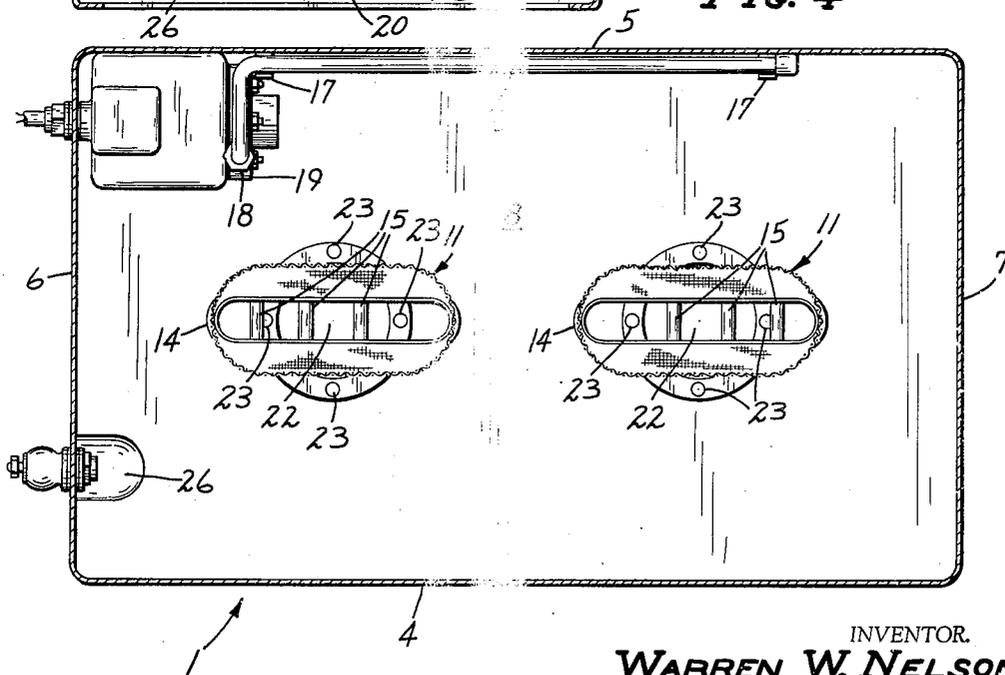


FIG. 4



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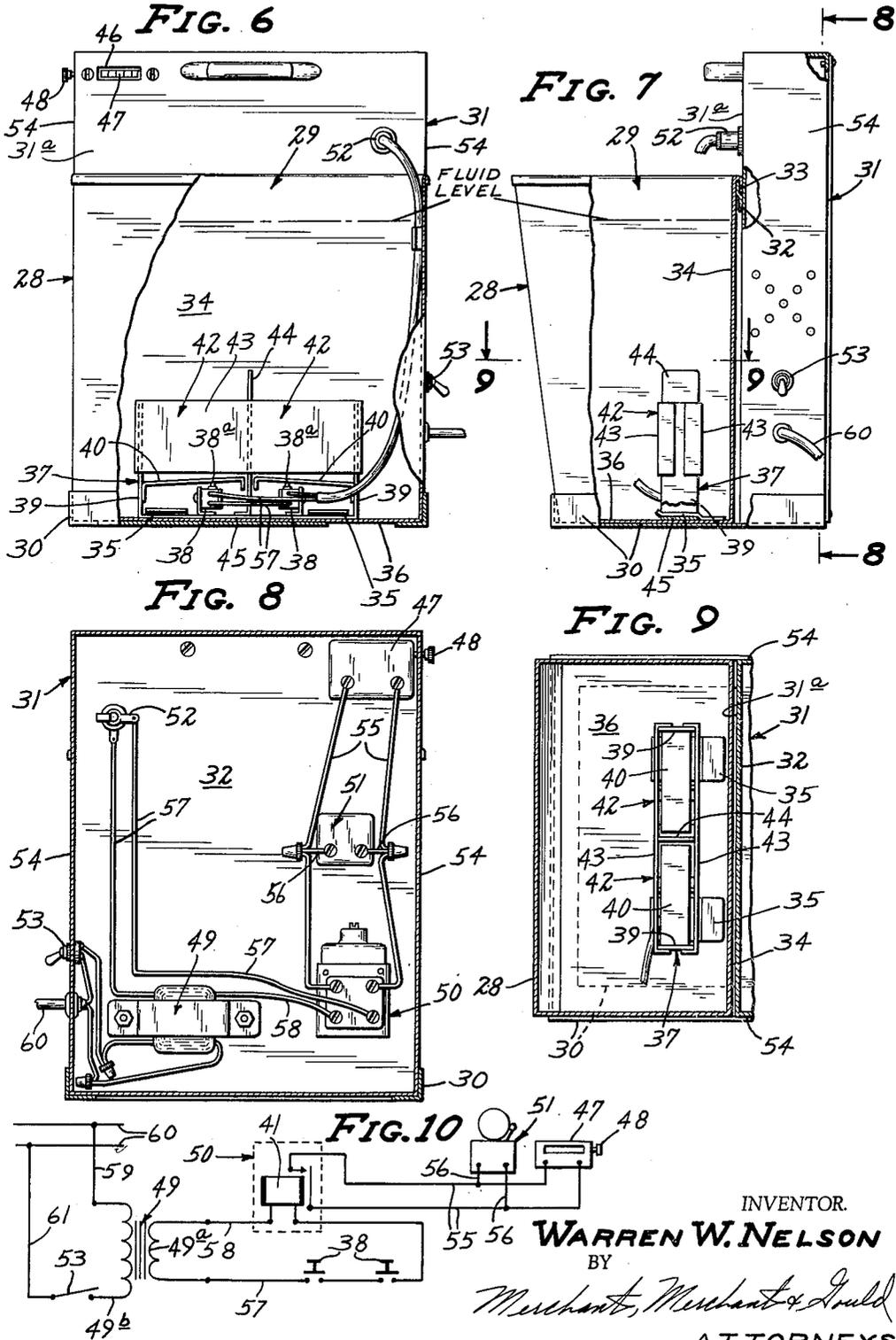
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3 Sheets-Sheet 3



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**HAND SANITIZER**

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Filed May 6, 1963, Ser. No. 279,037

9 Claims. (Cl. 134-47)

This application is a continuation-in-part of an application filed December 6, 1961, under Serial No. 157,366, now abandoned, and entitled "Hand Sanitizer." This invention relates generally to sanitizing equipment and more particularly to a sanitizer for a person's hands.

One of the most serious sanitation problems concerns the need for simple, economical and efficient means for insuring that kitchen employees, hospital and medical aids, etc., sufficiently cleanse their hands. This invention is therefore directed to a solution of the above noted sanitation problem, and generally speaking, it comprises a receptacle adapted to contain a quantity of sanitizing fluid, fluid pervious hand guide members extending into the receptacle and into the sanitizing fluid, and means for insuring that the person's hands are sufficiently exposed to permit the desired cleansing thereof.

An important object of this invention is the provision of a sanitizer for a person's hands which is constructed so as to require complete submersion of the person's hands in the sanitizing fluid to energize timing and indicating means for insuring that the person's hands will be subjected to the cleansing of the sanitizing fluid for the desired interval of time.

Another object of this invention is the provision of a sanitizer for a person's hands which is provided with hand guide members which are constructed so that a person's hands may be inserted therein only when they are held in an open and outstretched condition whereby to expose substantially all of the skin area of the hands to the sanitizing fluid contained within the receptacle.

A further object of this invention is the provision of a sanitizer for a person's hands which is equipped with switch means for energizing the timing mechanism and any other electrical components associated with the machine such as counters and other indicating devices, which switch means is disposed in such spaced relationship with respect to the above noted hand guide members as to require complete submersion of the person's hands in the sanitizing fluid in order to operate the switching means.

A still further object of my invention is the provision of a device of the class immediately above described in which the switch means for energizing said timing mechanism and other electrical devices comprises a separate switch for each of the hand guide members, said switches being arranged in series whereby to require simultaneous engagement by both hands of the operator, whereby to assure that both hands of the operator are sanitized.

A still further object of this invention is the provision of a sanitizer for a person's hands in which the lower open end portions of the above noted hand guide members are provided with cross bars adapted to separate the fingers of the person's hands inserted therein so as to expose substantially all of the skin area thereof and also to help guide the person's fingers toward the switch means to be engaged thereby.

Other objects of this invention reside in the provision of a sanitizer for a person's hands which is economical to manufacture, simple but extremely efficient in operation, and durable and strong throughout long periods of continued use.

The above and still further objects of this invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings, wherein like reference char-

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acters indicate like parts or elements throughout the several views:

FIG. 1 is a view in perspective of this invention;

FIG. 2 is an enlarged view in vertical section taken on the line 2-2 of FIG. 1, and showing a person's hands properly located in the machine;

FIG. 3 is a view in vertical section taken on the line 3-3 of FIG. 2, and showing the recirculating flow of fluid by arrows;

FIG. 4 is a view in horizontal section taken on the line 4-4 of FIG. 2;

FIG. 5 is a diagrammatic view of the electrical circuit for this invention;

FIG. 6 is a view in front elevation of a modified form of my invention, some parts being broken away and some parts shown in section;

FIG. 7 is a view in side elevation of the structure shown in FIG. 6, some parts being broken away and some parts shown in section;

FIG. 8 is a view in vertical section as seen substantially from the line 8-8 of FIG. 7;

FIG. 9 is a view in horizontal section as seen from the line 9-9 of FIG. 7; and

FIG. 10 is a diagrammatic view of the electrical circuitry of FIGS. 6 to 9, inclusive.

Referring with greater particularity to the drawings and initially to the structure of FIGS. 1 to 5, inclusive, the reference numeral 1 represents a cabinet in its entirety. The cabinet 1 comprises a top wall 2 having opposed handle portions 3, a front wall 4, a back wall 5, opposed end walls 6, 7, and a recessed bottom wall 8. The cabinet 1 defines a receptacle adapted to contain a quantity of sanitizing fluid at a depth sufficient to permit the complete submersion of a person's open and extended hands, the approximate fluid line being shown by broken lines in FIGS. 2 and 3.

In accordance with this invention, the top wall 2 of the cabinet 1 is provided with a pair of spaced apertures 9 which define depending and inturned annular edges 10. A pair of generally cylindrical open-ended hand guide members 11 are one each secured at the upper end portion 12 thereof to the annular edge 10 of a different one of the apertures 9 by means of suitable fasteners 13. The hand guide members 11 are formed of fluid pervious material, such as screen material, and extend into the receptacle and into the sanitizing fluid from the top wall 2 of the cabinet 1. The hand guide members 11 are generally downwardly tapering in form, the generally upper portion thereof being generally circular in cross-section and the generally lower portions thereof being generally cross-sectionally elongated. With this construction, it is possible for people to completely insert their hands within the hand guide members 11 only when the hands are held in an open and outstretched condition so as to expose substantially all of the skin area of the hands to the sanitizing fluid contained within the receptacle of the cabinet 1. The open bottom end portions of the hand guide members 11 are provided with annular beads 14, and are also provided with a plurality of spaced cross bars 15 adapted to separate the fingers when a person's hands are placed in the hand guide members 11. The cross bars 15 also help to guide the person's fingers toward the desired position of contact with the switches, to be referred to and described hereinafter.

In order to provide means for recirculating the above noted sanitizing fluid contained within the receptacle of the cabinet 1 through the fluid pervious hand guide members 11, an elongated spray bar 16 is secured by suitable brackets 17 to the back wall 5 of the cabinet 1 in a position shown particularly in FIGS. 2-4. One end portion of the spray bar 16 is connected by suitable fittings 18

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to the outlet of a motor and recirculating pump 19. Upon energization of the motor and recirculating pump 19, the sanitizing fluid is sprayed laterally from the spray bar 16 so as to set up a recirculating current through the hand guide members 11, substantially as shown by arrows in FIG. 3.

As shown particularly in FIGS. 2 and 3, a pair of switches 20, 21 are secured to the recessed bottom wall 8 of the cabinet 1. Each of the switches 20, 21 is positioned in spaced relationship below the open bottom end of a different one of the hand guide members 11 so as to require complete submersion of both of the person's hands in the sanitizing liquid in order to reach and operate the switches 20, 21. The switches 20, 21 are adapted to be engaged by the finger tips when the person's hands are placed in the hand guide members 11 and moved downwardly to the general position shown in FIGS. 2 and 3. The switches 20, 21 are covered by flexible and waterproof discs 22 secured to the bottom wall 8 of the cabinet 1 by means of a plurality of fasteners 23, whereby to protect the switches 20, 21 from the sanitizing fluid contained within the cabinet 1. It is noted that the switches 20, 21 are connected in series so as to require that both thereof be engaged by the person's fingertips in order to energize the machine.

An electric and adjustable timer, represented generally by the reference numeral 24 is secured to the end wall 6 of the cabinet 1, the same being adapted to energize indicating means, such as the bell 25 shown in FIG. 5, whereby to signal the expiration of a pre-set time interval during which it is desirable for the person to keep his hands submerged within the sanitizing fluid. Referring particularly to FIG. 5, it will be noted that the switches 20, 21 are connected in series by suitable lead wires so that both thereof must be engaged by a person's finger tips in order to close the circuit and energize the motor and recirculating pump 19 and the timer 24. Of course, after the pre-set interval for the desired hand sanitizing action has expired, the bell 25 will indicate to the person that his hands may at that time be removed from the sanitizing machine. In order to permit easy draining of the sanitizing fluid from the cabinet 1, a depression 26 is formed in the bottom wall 8 thereof so as to permit drainage of the sanitizing fluid through a spigot 27. It will be appreciated that other indicating means besides the bell 25 may be suitably employed in connection with this invention for indicating to the person using the machine that the desired sanitizing interval of use has expired. It is noted that the particular construction of the hand guide members 11 requires that the person's hands be held in the most desirable sanitizing position before the switches 20, 21 may be engaged by the person's finger tips in order to start the sanitizing cycle of the machine.

Coming now to the modified and considerably simplified structure of FIGS. 6 to 10, inclusive, the numeral 28 indicates a sanitizing fluid receptacle, preferably and as shown having an open top 29. Container 28 is adapted to rest upon a generally angular bracket 30 rigidly secured to and projecting forwardly from an upstanding housing 31, the forward face 31a of which is provided with an upwardly opening clip 32 for locking reception of a depending anchoring lip 33 on the upper rear wall 34 of the receptacle 28.

Preferably, and as shown, forwardly opening clip means 35 carried by the bottom 36 of the receptacle 28 is adapted to detachably receive a generally U-shaped bracket 37 to which are rigidly secured a pair of submersible microswitches identified by 38. Each of the microswitches 38 is provided with an upstanding plunger-like button 38a which, in conventional manner, is yieldingly biased in an upward circuit-breaking condition. Secured to the opposite legs 39 of the bracket 37 are a pair of opposed resilient actuator tongues 40 which, when depressed, bear upon their respective plungers 38a where-

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by to cause closing of an electrical circuit, hereinafter to be described in detail.

Also carried by the bracket 37, immediately above the level of the actuator tongues 40, are a pair of laterally spaced elongated tubular hand guide members 42, said guide members 42 being formed by the upper end portions of the legs 39 of the bracket 37, a pair of laterally spaced plates 43, welded or otherwise secured to said legs 39, and an upstanding separator plate 44 carried by the plates 43 and extending from the bottom 45 of the bracket 37 to a point above said plates 43, thus isolating one tongue 40 and its associated micro switch 38 from the adjacent tongue 40 and its associated micro switch 38. Obviously, both hands of an operator must then be utilized to depress the tongues 40.

Enclosed within the housing 31, and viewed exteriorly through a window or port 46, is an electronically operated counting device 47 of conventional design. The numeral 48 indicates a rest knob. Also enclosed within the housing 31 is a stepdown transformer identified by 49, a timing device 50, and a buzzer or other audible electronically operated device 51. Timer 50 is of conventional design such as Agastat type NE-11 manufactured by Elastic Stop Nut Corp. of America. For the purpose of portability a jack-plug is provided, same being identified collectively by 52. Finally, a master switch 53 is carried by one of the side walls 54 of the housing 31.

As shown in FIGS. 8 and 10, the circuitry includes a pair of lead wires 55 extending from the counter 47 to the normally open points of a relay 41 contained within the timer 50 with the buzzer 51 being connected thereto in parallel by the lead wires 56. The lead wire 57 extends from one side of the coil of the relay 41 through one side of the jack-plug 52; the microswitches 38 in series and thence to one side of the secondary 49a of the transformer 49; whereas the lead wire 58 continues from the opposite side of the secondary 49a of the transformer 49 to the opposite side of the coil of the relay 41 of the timer 50. Leading from one side of the primary 49b of the transformer 49 is a lead wire 59 to a source of power 60 and leading from the other side of the primary 49b is a lead wire 61 which likewise leads to the source of power through the master switch 53.

As in the case of the structures of FIGS. 1 to 5, inclusive, the hand guides 42 are so positioned with respect to the fluid level, as indicated by the broken line, that the full outstretched hand of the operator is exposed to the sanitizing fluid when the outstretched fingers of the operator's hands are inserted into the relatively narrow hand guides 42. When both of the operator's hands are inserted into the hand guides and caused to depress the tongues 40 sufficiently to close the microswitches 38, the timer 50 is energized and after a predetermined set time the circuitry between the timer and the counting device will be automatically closed by the relay 41 of the timer 50 whereby to energize both the buzzer 51 and the counter 47. Some delay is obviously desirable so as to assure a complete sanitizing affect upon the hands of the operator. Obviously, the cycle of the timer may be varied, as desired.

This invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects; and while I have shown and described a preferred embodiment thereof, I wish to be specifically understood that the same may be modified without departure from the scope and spirit of the appended claims.

What I claim is:

1. A sanitizer for person's hands, said sanitizer comprising:
  - (a) a housing defining a sanitizing chamber region adapted to contain a quantity of sanitizing fluid of a depth sufficient to permit complete submersion of a person's open outstretched hands,
  - (b) a pair of laterally spaced upwardly opening hol-

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low guide members mounted in said chamber extending into said region and adapted to receive one each of an open and outstretched hand so as to expose substantially all of the skin area thereof, one end of each of said guide members being positioned adjacent to the bottom of said chamber, each said guide member being provided with an open bottom having a plurality of spaced crossbars adapted to separate the fingers when a person's hand is projected therethrough,

(c) operating means for performing a predetermined function and

(d) means positioned at said open bottom of each of said guide members and responsive to the simultaneous predetermined location of each of said hands within each of said guide members for actuating said operating means.

2. A device as set forth in claim 1 wherein said means positioned is positioned at a sufficient depth in said chamber so that a hand actuating said means positioned is fully immersed in said sanitizing fluid.

3. A sanitizer for a person's hands, said sanitizer comprising:

(a) a receptacle adapted to contain a quantity of sanitizing fluid at a depth sufficient to permit the complete submersion of a person's open and extended hands,

(b) a pair of fluid pervious hand guide members extending into said receptacle and into said sanitizing fluid, said hand guide members being constructed so that a person's hands may be inserted therein only when they are held in an open and outstretched condition whereby to expose substantially all of the skin area thereof to the sanitizing fluid contained within said receptacle,

(c) pump means for recirculating said fluid through said fluid pervious hand guide members,

(d) and dual switch means adapted to be engaged by the finger tips when the hands are placed in said hand guide members for energizing said pump means, said switch means being disposed in said receptacle in such relationship to said hand guide members as to require complete submersion of both of the person's hands in the sanitizing liquid in order to reach and operate the same.

4. A sanitizer for a person's hands, said sanitizer comprising:

(a) a receptacle adapted to contain a quantity of sanitizing fluid at a depth sufficient to permit the complete submersion of a person's open and extended hands,

(b) a pair of fluid pervious hand guide members extending into said receptacle and into said sanitizing fluid, said hand guide members being constructed so that a person's hands may be inserted therein only when they are held in an open and outstretched condition whereby to expose substantially all of the skin area thereof to the sanitizing fluid contained within said receptacle,

(c) pump means for recirculating said fluid through said fluid pervious hand guide members,

(d) adjustable timing and indicating means adapted to signal to expiration of a pre-set time interval,

(e) and dual switch means adapted to be engaged by the finger tips when the hands are placed in said hand guide members for energizing said pump means and said timing means, said switch means being disposed in said receptacle in such relationship to said hand guide members as to require complete submersion of both of the person's hands in the sanitizing liquid in order to reach and operate the same.

5. A sanitizer for a person's hands, said sanitizer comprising:

(a) a receptacle having top, bottom and side walls and adapted to contain a quantity of sanitizing fluid at a

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depth sufficient to permit the complete submersion of a person's open and extended hands,

(b) a pair of fluid pervious generally cylindrical open-ended hand guide members extending into said receptacle and into said sanitizing fluid from the top wall of said receptacle, said hand guide members being cross-sectionally elongated in form so that a person's hands may be inserted therein only when they are held in an open and outstretched condition whereby to expose substantially all of the skin area thereof to the sanitizing fluid contained within said receptacle,

(c) pump means for recirculating the fluid through said fluid pervious hand guide members,

(d) adjustable timing and indicating means adapted to signal the expiration of a pre-set time interval,

(e) and a pair of switches adapted to be engaged by the finger tips when the hands are placed in said hand guide members for energizing said pump means and said timing means, said switches being disposed adjacent the bottom wall of said receptacle and one each disposed in spaced relationship below the open bottom end of a different one of said hand guide members so as to require complete submersion of both of a person's hands in the sanitizing liquid in order to reach and operate the same.

6. A sanitizer for a person's hands, said sanitizer comprising:

(a) a receptacle having top, bottom and side walls and adapted to contain a quantity of sanitizing fluid at a depth sufficient to permit the complete submersion of a person's open and extended hands,

(b) a pair of generally cylindrical open-ended hand guide members formed of fluid pervious screen material and extending into said receptacle and into the sanitizing fluid from the top wall of said receptacle, said hand guide members being generally cross-sectionally elongated in form so that a person's hands may be inserted therein only when they are held in an open and out-stretched condition so as to expose substantially all of the skin area thereof to the sanitizing fluid contained within said receptacle, the open bottom end of each of said hand guide members having a plurality of spaced cross bars adapted to separate the fingers when a person's hands are placed therein,

(c) pump means for recirculating said fluid through said fluid pervious hand guide members,

(d) adjustable timing and indicating means adapted to signal the expiration of a pre-set time interval,

(e) and a pair of switches adapted to be engaged by the finger tips when the hands are placed in said hand guide members for energizing said pump means and said timing means, said switches being disposed adjacent the bottom wall of said receptacle and one each disposed in spaced relationship below the open bottom end of a different one of said hand guide members so as to require complete submersion of both of a person's hands in the sanitizing liquid in order to reach and operate the same.

7. A sanitizer for a person's hands, said sanitizer comprising:

(a) a receptacle adapted to contain a quantity of sanitizing fluid at a depth sufficient to permit the complete submersion of a person's open and extended hands,

(b) a fluid transmitting hand guide member in said receptacle below the level of said sanitizing fluid and adapted to receive an open and out-stretched hand so as to expose substantially all of the skin area thereof to the sanitizing fluid contained within said receptacle,

(c) a pre-set timing mechanism operatively associated with said receptacle for determining the duration of said period of time, a fluid circulating means connected to said timing mechanism for operation there-

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by, and an actuator connected to said mechanism and mounted within said receptacle for initiating the operation of said mechanism and therefore said circulating means, said actuator being disposed adjacent the lower end of said guide and engageable by the submerged hands of an operator within said guide. 5

8. The structure defined in claim 7 in which said guide is vertically disposed and is open at its opposite ends, said actuator being spaced below the open lower end of said guide and engageable by the operator's finger only when projecting through said open bottom. 10

9. The structure defined in claim 8 in which the lower

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end portion of said guide is so formed as to permit the operator's hand to extend therethrough only when his fingers are in an out-stretched spread condition.

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