Nov. 5, 1968 R. T. BREES 3,409,179

DISPENSING UNIT WITH MOVABLY MOUNTED SUPPLY CONTAINER

Filed Jan. 16, 1967 2 Sheets-Sheet 1

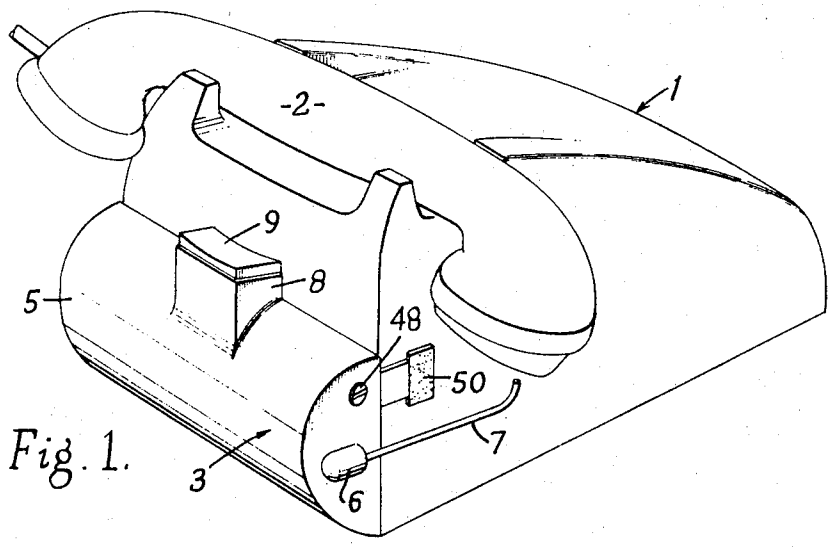

Fig. 1.

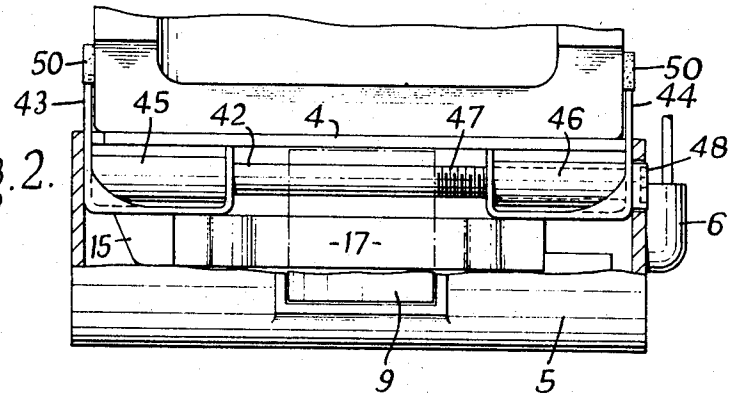

Fig. 2.

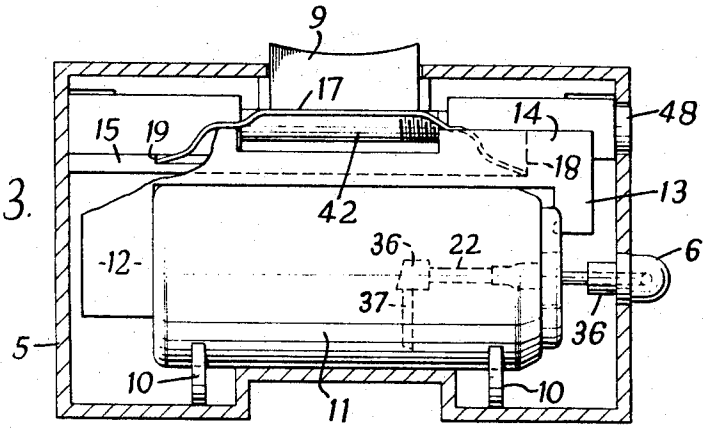

Fig. 3.

Nov. 5, 1968 R. T. BREES 3,409,179

DISPENSING UNIT WITH MOVABLY MOUNTED SUPPLY CONTAINER

Filed Jan. 16, 1967 2 Sheets-Sheet 2

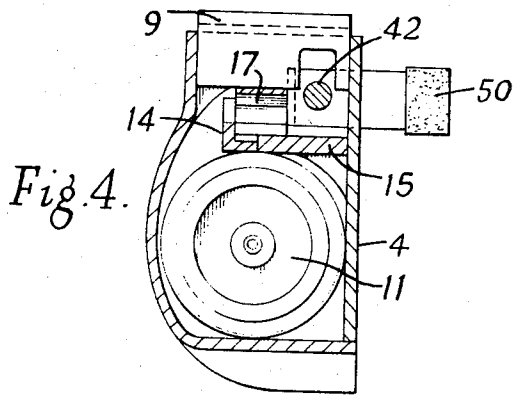

Fig. 4.

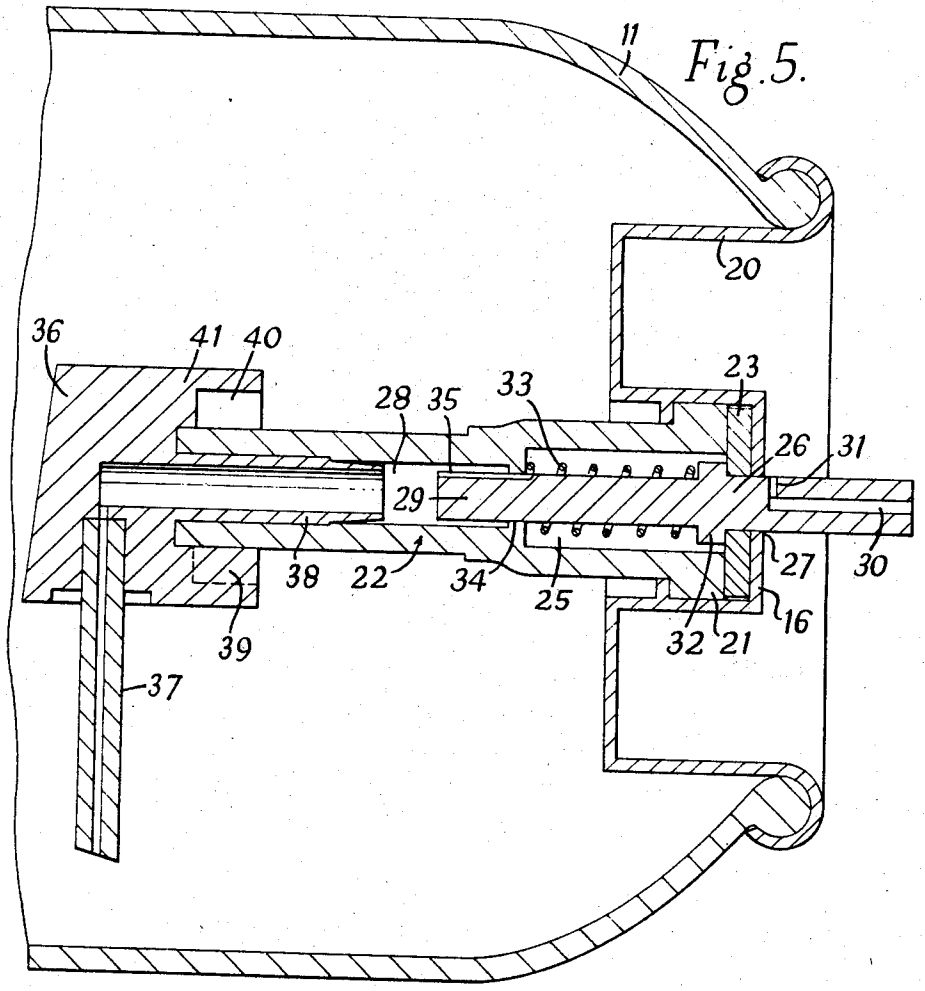

Fig. 5.

United States Patent Office

3,409,179

Patented Nov. 5, 1968

3,409,179

DISPENSING UNIT WITH MOVABLY MOUNTED SUPPLY CONTAINER

Raymond T. Brees, Oadby, England, assignor to Brees Plastics Limited, Leicester, England, a British company

Filed Jan. 16, 1967, Ser. No. 609,529
Claims priority, application Great Britain, Feb. 5, 1966, 5,134/66; Feb. 25, 1966, 8,423/66
4 Claims. (Cl. 222—162)

ABSTRACT OF THE DISCLOSURE

A self-contained unit for sterilizing telephone receivers or other appliances, comprising a casing housing a fluid container which can be moved by press stud operation, and through a resilient coupling, to open a metering valve and dispense a specific quantity of fluid into the appliance.

The subject of this invention is a dispensing unit which has been devised for ready application to an appliance which can benefit from periodic treatment with a small quantity of a sterilizing medium.

Typical of such appliances is a telephone receiver, and the invention will hereinafter be described and illustrated in this particular context, it being understood that this is not exhaustive of its potential applications.

The object of the invention is to furnish a self-contained dispensing unit which can be readily fitted to the appliance to be served and can be operated in convenient and foolproof fashion.

To this end the present invention presents a self-contained dispensing unit comprising a casing with a dispensing outlet having means for detachably affixing the same to the appliance to be served, a container for sterilizing fluid slidably mounted within said casing and incorporating metering valve means cooperating with a fixed abutment in said casing, a press stud or equivalent carried by said casing and operable from the exterior of the latter, and spring means in said casing forming a resilient coupling between the press stud or the like and the fluid container, the arrangement being such that depression of the stud or the like by a user will act through said spring means to provoke a sliding movement of said container and thereby apply said valve means against said abutment to cause a discharge of a predetermined quantity of fluid from said container to the dispensing outlet of the casing. Where the contents of the container are pressurised the discharge of fluid can be brought about directly by this pressure. In other cases, the valve means may be so devised, or the container itself may be so equipped, as to impart the fluid from the metering chamber with a pump action.

As will be observed from the foregoing, the unit of this inventiton is arranged to dispense one metered amount of sterilizing medium per operation of the press stud or the like—a useful safeguard against excessive application of the sterilizing medium. This medium may be a disinfectant or germicide, for example with an addition of perfume, which may be dispensed in the form of an aerosol.

A form of dispensing unit according to the invention, primarily intended for use with a telephone receiver, is illustrated in the accompanying drawings in which:

FIGURE 1 is a perspective illustration of the unit shown attached to the body of the telephone receiver,

FIGURE 2 is a plan view of the unit, with parts cut away, and showing part only of the telephone instrument,

FIGURE 3 is an elevational view of the unit, seen from the rear, with the casing in section and with parts cut away,

FIGURE 4 is a vertical cross section through the unit seen in FIGURE 3, and

FIGURE 5 is an enlarged cross sectional illustration of the fluid container of the unit, showing details of the metering valve.

In FIGURE 1 the telephone receiver is generally denoted **1** and its hand piece **2**. The dispensing unit is denoted **3** and it will be observed that this is detachably clipped to the rear of the instrument by clamping pads **50**.

The unit **3** illustrated comprises a substantially semi-cylindrical cover **5** mounted on and bonded to a flat backing plate **4** to form a closed casing. The parts **4** and **5** may be injection moulded from a suitable thermoplastics material such as polystyrene, which may be coloured similarly to the body of the telephone receiver. With the backing plate **4** applied to the plain rear face of the body of the telephone instrument, the unit **3** forms an unobtrusive fitment to the latter.

One end wall of cover **5** is provided with a rounded boss **6** defining a dispensing outlet from the unit of sterilising material, and a small bore rigid plastic dispensing tube **7** with an upturned end is fitted into this dispensing outlet. This tube **7** is replaceable to enable the unit to be adapted to different sizes etc. of telephone instruments, and the function of the tube is to direct a puff or shot of sterilizing fluid into the mouthpiece (or it could be the earpiece) of a hand piece resting on its cradle on the receiver.

It will be observed that the cover **5** of the casing also has an upstanding turret formation **8** which receives a press stud **9** with a curved upper face forming a thumb piece by which a fluid-dispensing operation can be performed—as will be described below. The backing plate **4** of the casing, **4**, **5** is formed at its lower part with webs **10** which serve as means for cradling a cylindrical container **11** charged with a pressurised sterilizing medium, as defined above. The upper surfaces of webs **10** are curved in conformity with the cylinder **11**, and the latter is axially slidable thereon.

The container **11** is engaged at its two ends by the depending arms **12** and **13** of a yoke member **14** which is longitudinally and horizontally slidable in casing **4**, **5** and is guided by a fixed ledge **15** projecting from backing plate **4** of the casing. An upwardly-arched leaf spring **17** (see FIGURE 3) is engaged at one end against a step **18** provided in yoke **13** and at the other end against a recess **19** in ledge **15**, providing a fixed stop. This arrangement is used to convert a downward movement of the press button **9** into an axial longitudinal shifting of container **11**. Thus depression of stud **9** tends to flatten or elongate spring **17** and hence shift container **11** rightwards. The effect of right-wards shifting of container **11** is to cause a shot of sterilizing medium to be applied from the container through metering valve means (see below) to the dispensing tube **7**.

The construction and function of the metering valve means used in container **11** will now be described in more detail with reference to FIGURE 5 of the drawings. The filling opening of container **11** is closed by a crimped metal cap **20** having a central boss **16** which houses the flanged end **21** of a tubular fitment **22** of relatively rigid plastics material, e.g. polyethylene. The right hand end portion of fitment **22** is formed with a fluid-metering chamber **25**, whilst its other end portion is of somewhat smaller diameter and formed with a passageway **28** able to communicate with chamber **25**.

A rigid valve member **26** passes through a discharge opening **27** in boss **16**, through a seating washer **23**, through chamber **25**, and into passageway **28**. The mem-

ber **26**, is, it will be observed, solid at its inner end **29**, where it is formed with a short longitudinal channel **35**, but the end **30** thereof projecting outwards from the boss **16** is formed with a blind bore which, at its inner end, communicates with the exterior through a small orifice **31**. The outer end **30** of valve member **26** is engaged in an internal spigot **36** of boss **6**. The valve member **26** is provided between its ends with a collar **32**, and a compression spring **33** bears at one end on this collar and at the other end against an annular internal flange **34** in the fitting **22** defining a fluid inlet opening to metering chamber **25**.

In the normal, relaxed condition the spring **33** applies the collar **32** against washer **23**, and in this condition the discharge opening **27** is closed. At the same time channel **35** at the inner end of the valve member **26** provides communication between tube portion **28** and the metering chamber. Since portion **28** is in communication with the main interior of container **11** (see below) pressurised fluid will therefore also be present in metering chamber **25**.

When container **11** is shifted to the right by application of pressure to stud **9**, the engagement between end **30** of valve member **26** and spigot **36** causes valve member **26** to move leftwards relatively to container **11**, until orifice **31** is brought into communication with metering chamber **25** allowing the contents of the latter to be expelled into the dispensing outlet **6** and through dispensing tube **7**. At the same time, however, the relative shifting of valve member **26** carries the channel **35** out of register with the chamber **25** and so shuts off the access of pressurised fluid from the container **11** into chamber **25**. Consequently, only a single shot of sterilizing material of predetermined volume, i.e. the volume of chamber **25**, will be dispensed.

When the thumb pressure on stud **9** is released valve spring **33** will return the container **11** leftwards and valve member **26** will resume its relative position illustrated in FIGURE 5 in which the inlet of metering chamber **25** is opened and its outlet **31** closed.

FIGURE 5 also shows that the spigot portion **38** of a coupling piece **36**, from which depends a section of rigid capillary tubing **37**, is fitted into passageway **28**. The purpose of this coupling is to provide a dip tube to the bottom of container **11** which will enable the latter to be completely exhausted of its fluid contents. It is also to be noted that the piece **36** has a cupped recess receiving the end of the fitment **22**, and is provided in this recess with radial pips or lands, one of which is seen in section at **39**, to guide and grip the end of tube **28**. Further, it may be arranged that the base of the cupped recess **40** shall be provided with web portions, (one indicated at **41**) which cut into the end of tube **28** so as to hold the coupling piece **36**, and hence the capillary tube **37**, in permanent position relatively to the container **11**, thus avoiding any likelihood of angular displacement of the capillary tube **37** despite a long period use of the unit.

Finally, the means for detachable clamping of the unit to an applicance, e.g. a telephone receiver as illustrated, will now be described. For this purpose use is made of a rod **42** which is mounted longitudinally in the upper part of the casing **4**, **5** and carries stirrup shaped pieces **43** and **44** at its two ends. Each of these pieces is provided with a sleeve, **45** and **46** respectively. The left hand sleeve **45** is loosely threaded on rod **42**, whilst sleeve **46** has internal threading mating with threading **47** on rod **42**. The latter is provided with an external head **48** with a saw cut therein. The outer arms of each of stirrups **43** and **44** is provided with a clamping pad **50**. When the unit is to be attached to a telephone instrument, the head **48** is turned to loosen the stirrups, the latter slipped over the back of the instrument, and the head **48** tightened up.

I claim:

1. A dispensing unit for attachment to an appliance such as a telephone receiver or the like, for use to sterilizing the same, comprising a casing, means for detachably affixing the casing to the appliance to be served, a dispensing device leading outwardly from the casing, a sterilizing fluid container having two opposite ends and mounted for axial end to end movement in said casing, valve means at one end of the container operable from the exterior of the casing for connecting the container to the dispensing device, said valve means comprising a single shot metering valve carried by the container and having a metering chamber, a press element mounted on said casing, a stop in said casing, a leaf spring acting between said stop and the fluid container, said press element being adapted to engage and flex said leaf spring, whereby depression of said press element is operable to displace said container in said casing in one direction and open said metering valve to discharge a single shot of sterilizing fluid of predetermined volume from said metering chamber to said dispensing device and release of said press element is operable to cause movement of the container in the opposite direction to close the metering valve and permit said predetermined volume of fluid to flow from said container to said metering chamber in preparation for being released upon the next depression of the press element.

2. A dispensing unit according to claim **1**, in which the casing is of part-cylindrical shape with a longitudinal flat face which, in use, is applied against the appliance served, with the axis of the casing horizontal and the press element or the like at the upper side of the casing, the fluid container then being disposed with its axis horizontal and the leaf spring being arched beneath the press element or the like with one end engaging said fixed stop and the other an abutment on a yoke piece itself engaging said container.

3. A dispensing unit according to claim **1** in which the metering chamber comprises a tubular fitting disposed in a discharge opening of said fluid container, and including a valve member slidable on said tubular fitting and having one end projecting through said discharge opening and the other end passing into a portion of said fitting communicating with the interior of the fluid container, said valve member being adapted, when the fluid container is shifted by said press element operation, to be moved by said dispensing device relatively to the remainder of the fitting against return spring action to provide communication between said chamber and the dispensing outlet of the casing and simultaneously between said metering chamber and the interior of the fluid container.

4. A dispensing unit according to claim **3**, in which the inlet end of the tubular fitting receives a coupling piece carrying a rigid capillary tube extending at right-angles to the axis of said fitting.

References Cited

UNITED STATES PATENTS

2,673,008	3/1954	Ryan	222—162
3,001,524	9/1961	Maison et al.	222—402.2 X
3,028,055	4/1962	Wood	222—180
3,032,081	5/1962	La Cotta	222—180 X
3,039,656	6/1962	Wentz	222—464 X
3,310,830	3/1967	Gattone	222—162 X
2,129,322	9/1938	Hakanson.	
2,578,821	12/1951	McBride	239—308 X
2,632,585	3/1953	Tomasek	222—402.1 X
2,721,010	10/1955	Meshberg	222—402.2
2,942,631	6/1960	Biewald	222—402.15 X
3,069,097	12/1962	Cheney	239—303 X
3,084,871	4/1963	Puglis	239—303 X

FOREIGN PATENTS

885,733	12/1961	Great Britain.

SAMUEL F. COLEMAN, *Primary Examiner.*