W. A. WINTER.

SURGICAL MOTOR CASING.

APPLICATION FILED APR. 28, 1916.

1,229,694.

Patented June 12, 1917.

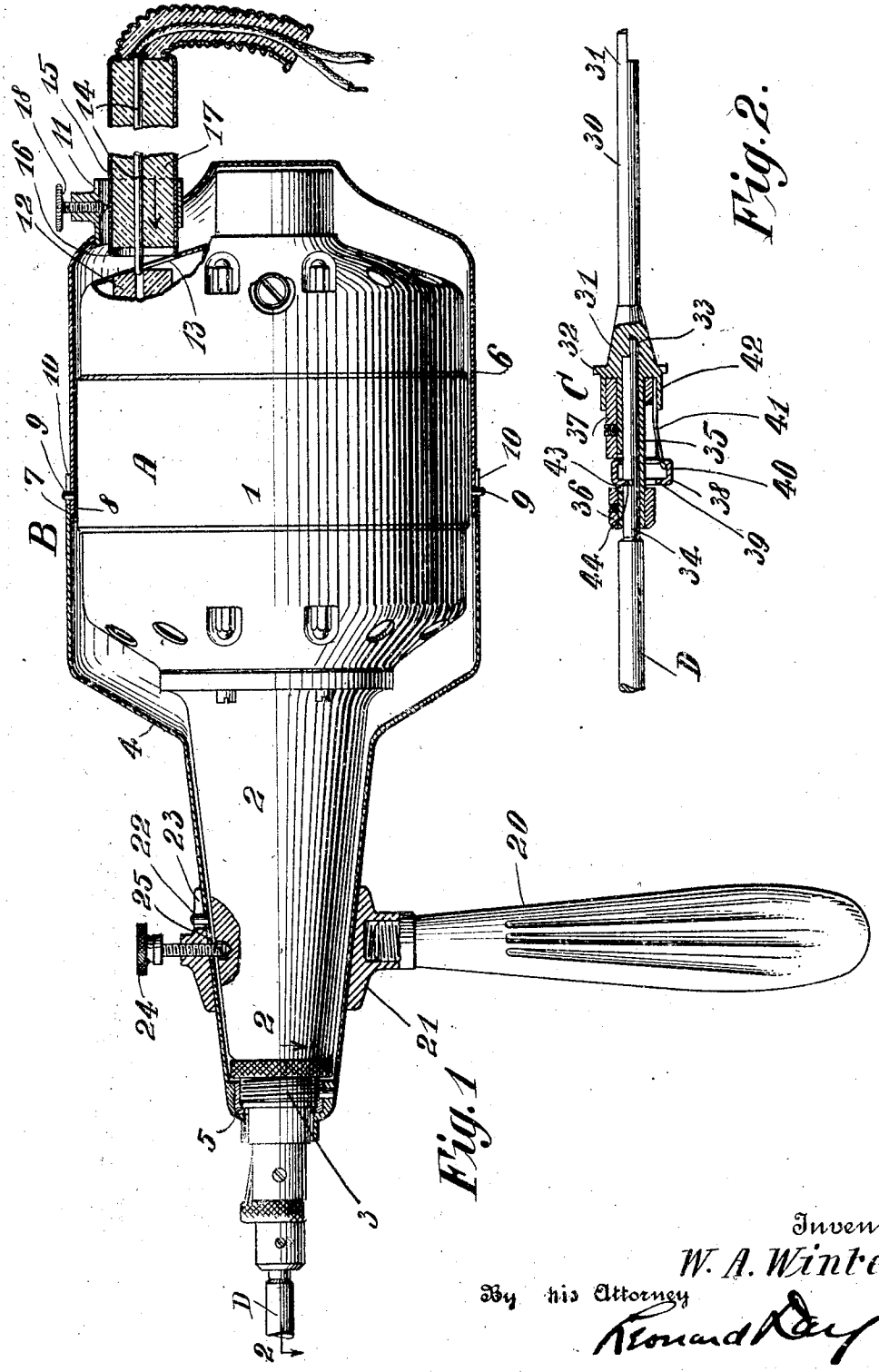

Fig. 1

Fig. 2.

Inventor

W. A. Winter

By his Attorney

Leonard Day

UNITED STATES PATENT OFFICE.

WILLIAM A. WINTER, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO THE KNY-SCHEERER CORPORATION, A CORPORATION OF NEW YORK.

SURGICAL-MOTOR CASING.

1,229,694. Specification of Letters Patent. Patented June 12, 1917.

Application filed April 28, 1916. Serial No. 94,125.

To all whom it may concern:

Be it known that I, WILLIAM A. WINTER, a citizen of the United States, and a resident of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Surgical-Motor Casings, set forth in the following specification.

This invention relates to surgical motors. An object of the invention is to facilitate the manner in which a surgical motor may be made sterile for use during an operation. A further object of the invention is to facilitate the universal adaptation of the motor to various operating tools.

The manner and means whereby the objects of the invention are furthered will be set forth in the following claims which are directed to the illustrative embodiment of the invention described in the following specification and shown in the accompanying drawings which form a part hereof, in which like characters designate corresponding parts in the figures and in which Figure 1 is a vertical elevation with parts shown in section illustrating an embodiment of the invention; and Fig. 2 is a detail vertical section of the tool clutch. A is an electric motor of any approved construction which has a structural casing of any approved form conforming to the structural needs of the motor itself. The casing illustrated comprises a main part 1 and a conical extension 2. The extension 2 houses the service end of the motor shaft.

The lower end of the extension 2 is provided with an externally threaded coupling 3. One of the objects of the invention requires in its embodiment a removable shell B which may be sterilized and replaced to inclose and guard the non-sterile motor A. The shell B is spun into cylindrical form from sheet metal and comprises a lower portion 4 somewhat in the shape of the neck of a bottle. This portion 4 is provided with a threaded nipple 5 to screw on to the threads 3 of the motor casing. The top portion 6 of the shell B somewhat resembles the bottom portion of a bottle and is likewise cylindrical and may be formed of spun sheet metal. The portions 4 and 6 are arranged to overlap and snugly fit each other along the margins 7 and 8, which are provided with a suitable number of bayonet joints formed by the pins 9 and slots 10. Two joints are illustrated in the drawings.

A tubular structure 11 is formed in the top of the part 6 to aline with the cylindrical terminal connector 12, which may be of any standard type and is exposed through a suitable opening 13 in the structural casing A. This tubular extension 11 permits the entrance of the plug 14 to coöperate with the terminal connector 12. It is preferable that the plug 14 comprise a cylindrical shell or tube 15, which has a rim 16 extending beyond the insulating body 17 of the plug, so as to take over and mechanically grip the body of insulating material of the terminal 12. A set screw 18 serves to clamp the tube 15 in position fixedly to the part 6 of the sterile shell, so that the grip of the flange 16 about the connector 12 prevents rotation of the parts 6 relatively to the structural casing A.

A handle 20 to aid the operator in using the motor is provided. This handle comprises in its structure a sleeve 21 to fit over the conical portion or neck of the shell part 4. A pin 22, fixed to the shell 4, coöperates with a slot 23, formed in the sleeve 21, to facilitate the positioning of the handle. A set screw 24 is provided to pass through a suitable opening in the shell 4 and seat in a pocket 25 formed in the structural casing 2. This set screw fixes the handle 20 firmly to the structure and prevents the shell 4 from turning relatively to the structural casing 2. Thus, the shell 4 and the shell 6 both being fixed against rotation, the bayonet joints 9—10 are held fast against accidental release and the entire structure is readily made so that everything is substantially integral for service.

The shell 4, as constructed, also serves a further purpose in the way of assemblage. That is, it serves to hold the tool chuck C assembled to the motor. The chuck C comprises a shaft or stem 30 having its inner end 31 suitably formed to be driven by the main shaft of the motor. The outer end of the stem 30 merges into a bearing part 31 which turns in a suitably formed bore in the coupling 3 of the structural housing 2. The flange 32 is somewhat enlarged and is locked by the flange of the nipple 5 to prevent the removal of the chuck C when the

shell 4 is in place, but to remove the chuck from the motor when the nipple 5 or the end of the casing 4 engages the ring-catch 38 on the removal of the shell 4. There is nothing to hold the chuck C against removal from the motor except the flange 32 and the nipple 5. Interiorly the conical portion 31 is cut to form a socket to seat the chamfered or half-round flat-sided end 33 of a tool shank 34. A cylindrical portion or sleeve 35 extends outwardly and carries two longitudinally separated cylindrical sleeves 36 and 37, suitably secured to the inner sleeve 35. A cam ring 38 having an inwardly directed flange 39 and an outer cylindrical portion 40 is located between the sleeves 36 and 37 and is pulled by a spring 41 to one side, the spring being seated under a flange 42, formed as a part of the head 31. The inner sleeve 35 is slotted at 43 throughout only a fraction of its circumference to permit the entrance thereto through slot 39 of the cam ring 38. Each tool shank 34 is provided with a notch 44 of a size to receive the flange of the cam ring 38. Finger pressure on the cam ring 38 against the action of the spring 41 is all that is necessary to remove a tool such as the bone drill D.

What I claim and desire to secure by United States Letters Patent is:—

1. A portable motor having a structural casing in combination with a removable sterilizable inclosing shell, said shell comprising two joinable parts; a bayonet joint for joining said parts; and means for anchoring said parts against turning relatively to said structural casing.

2. A two-part sterilizable shell for surgical motors having bayonet joint construction for purposes of assemblage and a plug and socket construction for locking the said bayonet joint construction.

3. The combination with a surgical motor having various structural parts, of a sterilizable inclosing shell comprising two parts; means for securing one of said shell-parts to a structural part of said motor; means requiring a rotation of said second shell-part for securing said second shell-part in position; and means comprising an electric connector for preventing a reverse rotation of said second shell-part.

4. The combination with a surgical motor having various structural parts of a sterilizable inclosing shell comprising two parts; means for securing one of said shell-parts to a structural part of said motor in a predetermined angular position; means for securing the second shell-part to the first shell-part requiring an angular or rotary movement; and separate means for locking said second shell-part against reverse angular movement.

5. A two-part sterilizable shell forming a complete inclosure for a surgical motor; having a tubular extension forming a duct through said shell to permit the entrance of and to fit about a removable electrical plug.

6. In surgical motors a sterilizable shell having an inturned flange 5; a tool-chuck having a flange 32 which by coöperation with flange 5 holds the chuck in operative position when said shell is in place; and a movable catch for holding said chuck against removal from said shell when said shell is removed from said motor.

In witness whereof I have signed my name to this specification, this 26th day of April, 1916.

WM. A. WINTER.

Disclaimer in Letters Patent o. 1,229,694.

DISCLAIMER.

1,229,694.— *William A. Winter*, East Orange, N. J. SURGICAL-MOTOR CASING. Patent dated June 12, 1917. Disclaimer filed July 10, 1917, by the assignee, *The Kny-Scheerer Corporation.*

Enters this disclaimer—

"To that part of the claim in said specification which is in the following words, to wit:

"1. A portable motor having a structural casing in combination with a removable sterilizable inclosing shell, said shell comprising two joinable parts; a bayonet joint for joining said parts; and means for anchoring said parts against turning relatively to said structural casing.

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"3. The combination with a surgical motor having various structural parts, of a sterilizable inclosing shell comprising two parts; means for securing one of said shell-parts to a structural part of said motor; means requiring a rotation of said second shell-part for securing said second shell-part in position; and means comprising an electric connector for preventing a reverse rotation of said second shell-part.

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"5. A two-part sterilizable shell forming a complete inclosure for a surgical motor; having a tubular extension forming a duct through said shell to permit the entrance of and to fit about a removable electrical plug."

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