A cleaning device comprises a holder for a replaceable cleaning element, and a handle. The holder is composed of a stationary clamping jaw and an adjustable clamping jaw pivoted to each other. The stationary clamping jaw is provided with a neck-like extension for insertion of the handle. A rack provided with thread-type teeth is movable on the neck-like extension along the longitudinal axis thereof. The adjustable clamping jaw of the holder is hingedly connected to the rack, while a nut provided on the neck-like extension and prevented from axial displacement engages the teeth of the rack.

3 Claims, 4 Drawing Figures
HOLDER FOR REPLACEABLE CLEANING ELEMENT

BACKGROUND OF THE INVENTION

This invention relates generally to cleaning devices of the kind comprising a holder for a replaceable cleaning element and provided with a handle, the said holder being composed of a stationary clamping jaw and a movable clamping jaw pivoted to each other, whereby the cleaning element can be clamped fast between the clamping jaws one of which has a neck-like extension for insertion of the handle, whereas the other clamping jaw can be swivelled by hand for the purpose of replacing the cleaning element.

With the known cleaning devices of this kind the movable clamping jaw is actuated with the aid of a toggle lever rotatably attached to the neck of the other clamping jaw, the said toggle lever engaging the movable clamping jaw via tension springs. These cleaning devices have a considerable disadvantage, which is described below. In order to secure the cleaning tool or element firmly between the clamping jaws, the clamping force of the tension springs must be relatively high. As a result a relatively great effort is needed for tensioning the tension springs with a view to securing the cleaning tool between the clamping jaws. This does not preclude a possibility of the hand which actuates the toggle lever being injured when the toggle lever hits the shaft of the cleaning device. A further disadvantage of the known cleaning devices consists in the fact that the cleaning tool secured between the clamping jaws is subject to a more or less constant spring force, irrespective of the given thickness and the nature or characteristics of the material from which it is made. As a result the relatively great effort required in any case for tensioning the springs is further increased with relatively thick cleaning tools particularly if the latter consist of a more or less rigid material, whereas with thin-walled cleaning tools consisting e.g. of foam rubber-like material there is a danger of the cleaning tools being damaged.

SUMMARY OF THE INVENTION

It is the object of the invention to overcome the disadvantages attaching to the known cleaning devices of the kind initially described.

To attain this object the present invention provides a cleaning device which comprises a holder for a replaceable cleaning element and including a stationary clamping jaw and an adjustable clamping jaw pivoted to each other at their rear ends and adapted clampingly to hold the replaceable cleaning element between their front ends; a handle extending from the holder; a neck-like extension on the stationary clamping jaw, into which one end of the handle is inserted; a rack having thread-type teeth and arranged to be movable on the neck-like extension along the longitudinal axis thereof; means pivotally connecting the adjustable clamping jaw to the rack; a manually screwable nut provided on the neck-like extension and engaging the teeth of the rack, and means for preventing said nut from axial displacement.

In order to release or secure the cleaning element it is sufficient to operate the nut by hand, little effort being required for clamping the cleaning element. Another progressive feature of the invention consists in that the force required for safe clamping of the cleaning element can be adjusted with the aid of the nut, so that cleaning elements consisting of relatively sensitive material are no longer liable to be damaged as hitherto. Lastly, there is no longer any danger of the clamping jaws of the holder being broken in case of an impact when the holder is made of aluminum, since the design does not provide for any tension springs, whereas such a danger exists if tension springs are provided owing to the tension forces which have a disadvantageous effect on the structure of the material.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:

FIG. 1 is a side view of a cleaning device according to the invention, a cleaning element being inserted in the holder of said cleaning device;

FIG. 2 is a similar view of the cleaning device after swivelling one clamping jaw of the holder;

FIG. 3 is a plan view of the cleaning device, and

FIG. 4 is a section, on an enlarged scale, on the line IV—IV of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 and 2 show a cleaning device according to the invention which comprises a holder 2 for a replaceable cleaning tool 1 which may be made of foam rubber or the like material. The holder 2 is composed of two clamping jaws 3 and 4. The clamping jaw 3 is stationary and has on its rear end a necklike extension 5 in which one end of a shaft-type handle 6 is firmly inserted. The clamping jaw 4 is adjustable and has on its rear end two fork ends 7 and 8 (FIG. 3) by means of which it encompasses the neck-like extension 5 of the stationary clamping jaw 3 and with which it can be swivelled about pins 9 and 10 projecting from the neck-like extension 5. The reference numeral 11 designates a rack provided with thread-type teeth and axially movable within a groove 12 (FIG. 4) extending along the longitudinal axis within the outer shell of the neck-like extension 5. A manually screwable nut 13 is provided on the neck-like extension 5 and engages the teeth of the rack 11 between two split rings 14 and 15 preventing the nut 13 from axial displacement. At the end of rack 11 which faces the holder 2, a substantially U-shaped arm 16 is provided at right angles to the rack, whereby the said arm 16 can be swivelled about pins 17 projecting from the sides of rack 11. The fork ends 7 and 8 of the adjustable clamping jaw 4 can be swivelled about pins 18 and 19 within the legs of the U-shaped arm 16.

If the nut 13 is turned in one direction the rack 11 is pulled up thereby swivelling the adjustable clamping jaw 4 in the direction towards the stationary clamping jaw 3 until the cleaning element 1 is firmly secured between the clamping jaws 3 and 4. In order to release the cleaning element 1, the nut 13 is turned in the other direction whereby the rack 11 is pushed forward and swivels the adjustable clamping jaw 4 away from the stationary clamping jaw 3 until the cleaning element 1 can be taken out of the holder 2.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiment is therefore to be considered in all respects as illustrative and not restrictive.
What is claimed is:
1. A cleaning device comprising:
a. a holder for a replaceable element and including
   a stationary clamping jaw and an adjustable clamping
   jaw pivoted to each other at their rear ends and
   adapted clampingly to hold the replaceable cleaning
   element between their front ends, the rear end
   of the adjustable clamping jaw having fork-like ex-
   tension;
b. a neck-like extension formed on the rear end of the
   stationary clamping jaw said neck like extension
   extending between the fork-like extension of the
   adjustable clamping jaw,
c. a rack having thread-type teeth and arranged to be
   movable on the neck-like extension along the lon-
   gitudinal axis thereof,
d. arm means pivotally mounted on the rack,

e. means pivotally connecting the fork-like extension
   of the adjustable clamping jaw to the arm means
   pivotally mounted on the rack,
f. a manually screwable nut provided around the
   neck-like extension and engaging the teeth of the
   rack for moving the same, and

g. means for preventing said nut from axial displace-
   ment on said neck-like extension.

2. A cleaning device in accordance with claim 1,
   wherein the means pivotally mounted on the rack com-
   prise a substantially U-shaped arm pivoted to the rack
   at right angles thereto.

3. A cleaning device in accordance with claim 1,
   wherein the rack is axially displaceably located within
   a groove in the shell of the neck-like extension of the
   stationary clamping jaw.