

The invention relates to a switching device in a system of switching devices, which can be coupled to switching devices and auxiliary switching devices or signal switching devices which are to be attached, with
5 the switching device in a cylindrical manual-operation part, covered in the housing, with a handle on the cylindrical body on a receiving side of the cylindrical body being part of a coupling device, in detail according to the generic term of claim 1. A switching
10 device of this kind which can be coupled is known (US-A-2 824 191). In the known design circuit-breakers have a handle at a cylindrical body which can be rigidly coupled in the manner of groove and tongue to a circuit-breaker to be attached, in that the tongue of a
15 cylindrical body engages into the groove of the cylindrical body of the device to be attached. In this respect no separate coupling elements are to be kept ready. However, a coupling of this kind does not meet the requirements which exist in a system of switching
20 devices comprising switching devices, auxiliary switching devices and signal switching devices.

Switching devices which can be coupled are available in the most varied of types. With a known switching device (DE-C-25 40 745) a multipole switch is
25 assembled from single-pole circuit-breakers in that the actuation handles are connected to one another by a rail-like bridge. To be able to compensate for tolerances during assembly, the handles have at their front sides central recesses into which knubs engage
30 with clearance in the longitudinal direction of the bridge. Sometimes one would like to avoid such bridge elements which are specially adapted and which are to be carried specially for the mounting.

The object of the invention is to develop an
35 improved system of switching devices without coupling elements to be provided specially.

The object described is achieved in accordance with the invention through a switching device according to claim 1. In a manual-operation part, covered in the housing, with handle, the claw-like coupling element is designed in coordination with a lug-like coupling element such that with a shorter lug-like coupling element a coupling only takes place in a locking direction and with a longer lug-like coupling element a coupling takes place in both directions.

An application of an earlier period (Art. 54 (3) EPC) relates to the coupling of multipole switches and of auxiliary switches by way of the tripping levers and latches and not by way of the manual-operation parts (EP-A-0 291 374). In this respect, with a small penetration depth of a lug-like coupling element in a claw-like coupling element a coupling is likewise only achieved for a locking direction and with deep penetration a coupling in both directions. The tripping levers and latches, however, are not adequately accessible for an appropriate coupling in all switching devices, for example in the embodiment of circuit-breakers.

In accordance with the invention, with a long lug-shaped coupling element which engages deeply into the claw-shaped coupling element a secure coupling of the manual-operation parts can be attained for all movements of a manual-operation part as a consequence of self-tripping and manual operation. A coupling of this kind is desired, for example, between a circuit-breaker and an auxiliary switch to be attached. If the lug-shaped coupling element of the switching device to be attached is only designed to be so short that the claw-shaped coupling element of a circuit-breaker with a provided second shorter penetration depth only forms a claw tooth in the connecting direction, the switching

device to be attached remains untouched upon manual disconnection. In this way one can easily fulfil the conditions required between signal switches and circuit-breakers of the type of error signal switch.

5 Such a signal switch should only be connected by way of the handle of the circuit-breaker, but should not be capable of being disconnected any more. Generally speaking, the coupling device consists of a first coupling element, selected from a pair - according to
10 function - comprising a claw-like coupling element and comprising a lug-like coupling element of a switching device, and a second coupling element of a switching device to be attached, the second element of the pair which was not selected first of all.

15 The signal switch can only emit a signal if the circuit-breaker has responded with self-tripping. With circuit-breakers which are assembled with one or more poles, a separate tripping coupling ensures that the signal switch, in accordance with requirements, is
20 only disconnected upon an overloading, be it excess current or a short-circuit at the circuit-breaker.

According to a development the claw-like coupling element at the cylindrical body is arranged in a moveable manner behind a housing slot, with the lug-
25 like coupling element being arranged in a housing slot at an outer side and being capable of cooperating with the claw-like coupling element of a device to be attached, in that it engages therein.

The invention is now to be explained in more
30 detail with reference to exemplary embodiments reproduced roughly diagrammatically in the drawings.

Figure 1 reproduces a switching device in its
longitudinal direction, represented partially
35 broken up, the switching device being designed as circuit-breaker and being capable

of being coupled.

Figure 2 reproduces a manual-actuation part for the switching device according to Figure 1 on a larger scale.

5 Figure 3 illustrates a sectional view along III-III according to Figure 2 together with a lug-shaped coupling element of an auxiliary switch to be attached.

10 Figure 4 represents a view rotated by 90° for the representation according to Figure 3.

The switching device 1 according to Figure 1 has a cylindrical manual-actuation part 2, the handle 3 of which projects over the housing. A claw-shaped
15 coupling element 4 is arranged at the cylindrical body in the direction of the switching axis on a receiving side behind the drawing plane. This coupling element 4 is moveable behind a housing slot 5 with its mounting. A lug-shaped coupling element 6 according to Figure 3
20 is arranged in a housing slot at an outer side. The lug-shaped coupling element engages deeply into the claw-shaped coupling element 4. The lug-shaped coupling element 6 engages in long design 6.1 between the claw teeth 7 and 8 in the design 8.1. In this way
25 a secure coupling for all switching movements of the manual-actuation part of a circuit-breaker, to which items are to be attached, is attained.

If the lug-shaped coupling element 6 is only present in short design 6.2, in this engagement depth
30 there is only the edge of a single claw tooth 8.2 to be found, but no claw tooth on its other side. With the claw-shaped coupling element 4 reproduced in the exemplary embodiment a coupling is achieved for a long lug-shaped coupling element 6.1 as is desired for
35 auxiliary switches, and for a short lug-shaped coupling element 6.2 a coupling as is desired for signal

switches. Thus, both auxiliary switches and signal switches can be attached to the circuit-breaker to be attached according to Figure 1 without additional coupling elements for the manual-actuation part.

Claims

1. Switching device (1) in a system of switching devices, which can be coupled to switching devices or auxiliary switching devices or signal devices which are to be attached, with the switching device (1) in a cylindrical manual-operation part (2), covered in the housing, with a handle (3) on the cylindrical body on a receiving side of the cylindrical body being an element of a coupling device having a claw-like coupling element (4) and a lug-like coupling element (6), with these two coupling elements being capable of being brought into engaging connection for a motion locking, characterized in that the lug-like coupling element (6) is provided in shorter design (6.2) or in longer design (6.1) and in that the appertaining claw-like coupling element (4) is formed in such a way that the longer lug-like coupling element (6.1) is dragged in both movement directions of the manual-operation part (2) by the latter, while the shorter lug-like coupling element (6.2) is only dragged in one direction.

2. Switching device according to claim 1, characterized in that the claw-like coupling element (4) is constructed on the cylindrical body and is movably arranged behind a housing slot (5), with the lug-like coupling element (6) being arranged in a housing slot on an outer side and being capable of cooperating with the claw-like coupling element of a device to be attached, in that it engages therein.

