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INSTALLATION OF TAP CHANGING DEVICES IN TRANSFORMERS

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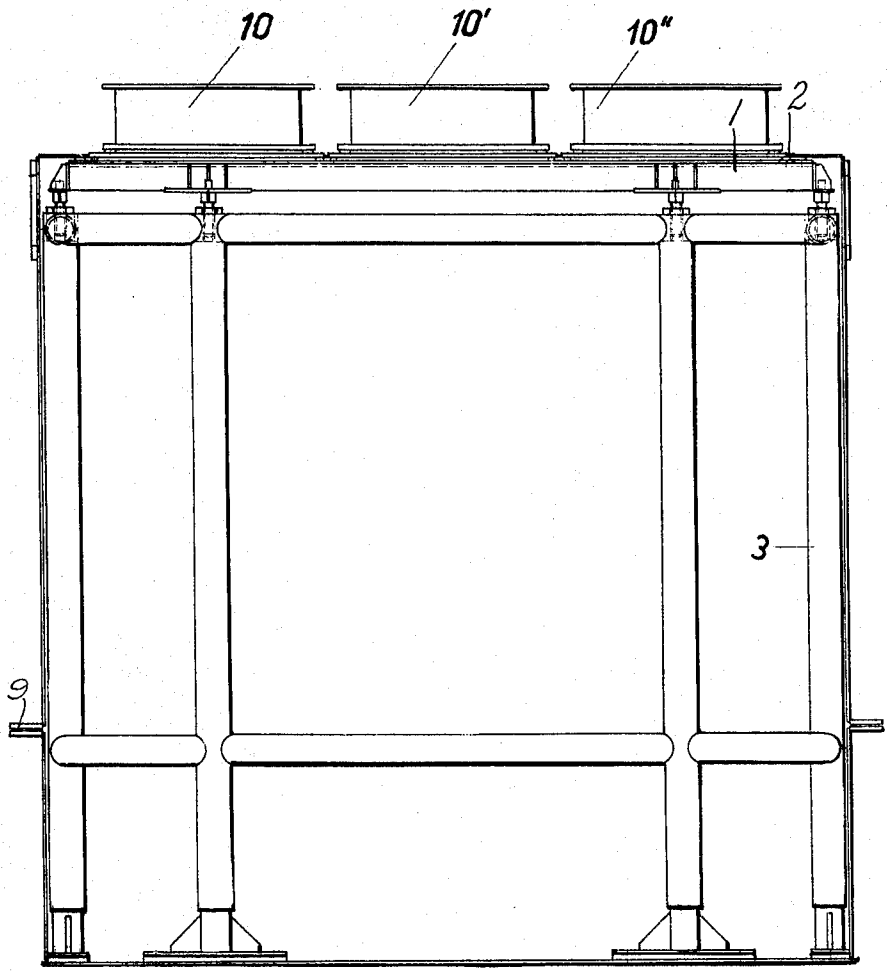
FIG. 1.



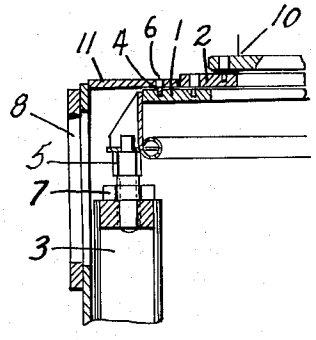


FIG. 2.

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INSTALLATION OF TAP CHANGING DEVICES IN TRANSFORMERS

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6 Claims. (Cl. 336—137)

The present invention relates to the installation of tap changing devices in transformers. In particular, this invention relates to a special problem of transformer design, namely to the installation of tap changing devices within transformer tanks having bell-shaped covers. With bell-shaped cover is meant a transformer cover or hood, the gasket flange of which, between the cover and the tank proper, runs adjacent the bottom of the transformer tank. In other words, the cover has the appearance of a bell hooding the working or effective parts of the transformer.

This mode of tank construction has the advantage that in case of a repair, overhaul or supervisory work on the working parts of the transformer, upon having drained the tank oil, it is only necessary to lift the comparatively light cover for which no exceptional lifting devices are required. There are, however, some difficulties resulting from this tank construction in regard to the installation of tap changing devices.

The difficulties arise from the fact that, owing to the usual attachment of the tap changing devices on the magnetic-core clamping structure which is also used for clamping the windings, the tightening up of the clamping structure after baking the assembled magnetic core and windings, level-differences result for the tap changing device relative to the transformer bottom and cover, respectively. These level differences render problematic a satisfactory sealing of the tap changing devices passing through the transformer cover.

In other words, the tap changing device attached to the core and winding clamping structure changes its height after the transformer baking (drying out the core and coils) while the internal tank height remains unchanged. Consequently, difficulties result in sealing the tap changing device within the transformer tank.

The main object of this invention is to avoid the aforementioned sealing difficulties as regards tap changing devices associated with transformers having bell-shaped covers.

In the following the invention will be explained in more detail, with reference to the accompanying drawing, which comprises

FIG. 1 shows the installation of three tap changing devices in accordance with the present invention; and

FIG. 2 is a sectional view of a detail of this installation, on an enlarged scale.

In the drawing, a transformer tank is shown, with supporting columns, bell-shaped cover or hood, and details of the tap changing devices with their installation according to the present invention. In particular, numerals **10**, **10'**, **10''** denote three tap changing devices which are jointly mounted on a plate **2**. Plate **2** in its turn rests on a framework **1** which is supported by columns **3** resting on the transformer tank bottom.

As it is shown in FIG. 2, the ends of these columns **3** on the side of the framework **1** are formed as spindles **5** for raising and lowering the framework **1**. By means of holes **8** in the transformer cover, these spindles **5** may be readily operated. When the framework **1** is sufficiently lifted, it is held together with a transformer

cover **11** by means of screws **6** and packings **4**. The spindles **5** are secured by means of nuts **7**. Finally, numeral **9** denotes the sealing flange between the bell-shaped cover and the lower part of the transformer tank.

Following the proposal of the present invention, the tap changing devices **10**, **10'**, **10''** are entirely separate from the clamping structure for the transformer core and the windings. Therefore, it is possible to mount the tap changing devices independent of and separate from the transformer core.

In particular, the clamping structure may be tightened after heating up the transformer core and coils, irrespective of the attachment of the tap changing devices. The bell-shaped cover may readily be bolted to the lower part of the transformer tank. A lever-difference between the cover and the framework **1**, possibly existing after the cover has been set up, may be corrected by raising the framework **1** to a rate corresponding to the height of the packings **4**, by means of the spindles **5**. In other words, the framework **1** supporting the tap changing devices **10**, etc. is raised to the cover **11**, by the intermediary of the spindles **5**, to such an extent that the sealing screws **6** actually have to apply only the clamping pressure when these screws are subsequently tightened but are not bound to take part in supporting the tap changing devices by means of the framework **1**. The supporting task is undertaken solely by the columns **3**. In this way reliable sealing of the tap changing device is guaranteed, even with transformers having bell-shaped covers.

What we claim is:

1. An oil-filled transformer having a tank with a bell-shaped cover, apertures in the top thereof, and tap-changing devices mounted over said apertures, a supporting installation comprising columns resting on the bottom of said tank, a framework attached to said columns and mounting said tap-changing devices, and adjusting means between said columns and said framework for regulating the height of said tap-changing devices with respect to said tank, said adjusting means including a spindle supporting a portion of said framework from the free end of each column, and holes in said bell-shaped cover adjacent said spindles to permit access for adjustment thereof.

2. An installation as defined in claim **1**, wherein said free column ends are formed into said spindles, said adjusting means further including a tightening nut for each spindle.

3. An installation as defined in claim **1**, further comprising a plate removably attached to said framework for releasably supporting said tap-changing devices.

4. An installation as defined in claim **1**, further comprising attaching means between said framework and peripheral portions of said cover protruding thereabove.

5. An installation as defined in claim **4**, further comprising packing means between said framework and said peripheral cover portions at least in the region of said attaching means.

6. An installation as defined in claim **5**, further comprising a sealing flange between said cover and lower portions of said tank.

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