

REPLACED SHEETS	
☒	Description : paged ..3... to paged ..4....
☒	Claim(s) : paged ..5... to paged ..6....
☐	Drawing(s) : paged to paged
☒	Abstract : paged ..h... to paged ..i....
DATE OF RECEIPT	

Fire alarm

The invention relates to a fire alarm according to the preamble of Patent Claim 1.

Fire alarms of this type are generally known.
 5 They are employed to protect human life and material assets in fire-alarm installations for the early detection of fires. Such fire alarm installations generally comprise a signal control station and fire alarms disposed distributed in the premises to be
 10 protected.

The fire alarms include fire-specific sensors, electronic amplifiers and devices for the transmission of information to the signal control station. In terms of construction, a fire alarm as a rule comprises the actual
 15 fire alarm (alarm insert), which includes the sensors and the electronic system, and an alarm base (mounting), which is fixedly mounted in the room to be monitored and into which the alarm insert is inserted. In this way it is possible to remove the alarm inserts for checking and
 20 to reinsert them.

Having regard to the stringent requirements which are imposed upon the reliability of fire alarm systems, it is urgently necessary to eliminate weak points in such systems as far as possible. Such a weak point is
 25 undoubtedly the alarm insert/mounting connection, since the functional capability of the entire fire alarm system is to a high degree dependent thereon. Accordingly, it is understandable that the manufacturers of such systems are endeavouring to guarantee the reliability of the alarm
 30 insert/mounting connection by good constructional solutions.

The following requirements are, inter alia, imposed upon the alarm insert/mounting connection:

- reliable electrical contact
- 35 - protection of the contacts against contamination and corrosion
- reliable mechanical securing
- good external design (appearance)

The last requirement is raised in particular on

account of the fact that the alarms are frequently installed at locations where the aesthetics of the design play a part. This includes theatres, museums and historical buildings.

5 In order to combine a design of an attractive shape with a good protection against contamination of the contacts, it was proposed inter alia in the German utility model DE-U1-92'10'858, to design the alarm insert so that in the inserted condition it fully masks the
10 mounting. This additionally has the further advantage that colour changes of the mounting due to ageing do not have a disadvantageous effect on the appearance of the alarm, when, for example after a certain length of time, the alarm insert is replaced.

15 It is necessary to consider as a disadvantage of such a construction the circumstance that with all alarms in which the alarm insert fully masks the alarm mounting, it is difficult to recognise whether the insert is sitting correctly in the mounting. However, this is an
20 indispensable prerequisite for all fire alarms which comprise mounting and insert. Incorrectly inserted alarm inserts are a priori sources of error and disturbance and nowadays frequently give rise to complaints.

 Sufficient account of this problem has clearly
25 not been taken in the past. A monitoring of the correct position of the alarm insert following completion of insertion by trained specialist personnel was only later found to be essential. The increased expenditure associated with this must be tolerated in the interests
30 of the functional capability of the entire system, even though this leads to an increase in the installation costs.

 The object of the present invention is to overcome the disadvantages of the fire alarms of the prior
35 art and especially to provide a fire alarm of the type mentioned at the outset, which alarm exhibits a closure device which is fitted to the alarm insert and which both effects the mechanical arresting of the alarm insert and permits a clear recognition of the correct final position



of the alarm insert, even from a distance of a few metres. As a result of this, the monitoring is substantially facilitated and the associated expenditure is reduced to a minimum.

5 This object is achieved, in the case of a fire alarm of the type mentioned at the outset, by the characterizing features of Patent Claim 1. Preferred embodiments and refinements of the invention are defined in the dependent patent claims.

10 In the text which follows, the invention is explained in greater detail with reference to the preferred embodiment shown in the figures. In the figures:

15 Figure 1 shows a side elevation of a fire alarm according to the invention with a closure device in the open condition,

 Figure 2 shows a cross-section through a fire alarm according to Figure 1, along the line A...A,

20 Figure 3 shows a side elevation of a fire alarm according to Figure 1 with the closure device closed,

25 Figure 4 shows a cross-section through a fire alarm according to Figure 3 along the line B...B.

 Figure 1 shows a fire alarm having a mounting 1 and an alarm insert 2, which comprises a movable ring 3 and a lower part 4. The ring 3 is freely movable within a specified angular range relative to the lower part 4 of the alarm insert 2. The alarm insert 2 is locked to the mounting 1 by a closure device. A first marking element 5 is disposed at the outer surface of the ring 3 and a second marking element 6 is disposed at the outer surface of the lower part 4 of the alarm insert 2 so that in the open, unlocked condition of the fire alarm the first marking element 5 is clearly displaced from the second marking element 6 by a specified angle.

 The locking device comprises three guide cams 7 and an arresting cam 8, which are disposed at the inner

surface of the ring 3. Further, the mounting 1 exhibits three guide detents 9 associated with the guide cams 7 as well as a retaining cam 10 associated with the arresting cam 8. In order to lock the alarm insert 2 to the mounting via the closure device, the alarm insert 2 is in the first instance brought into a joining position with respect to the mounting 1, which position is shown in Figure 2. To this end, the three guide cams 7 are inserted into the guide detents 9 associated with them.

10 The closure device is actuated in that the ring 3 is rotated through a specified angle and the guide cams move along the guide detents. The locking is completed in that the arresting cam 8 is brought above the retaining cam 10. In this position, as shown in Figures 3 and 4, the

15 first marking element 5 and the second marking element 6 lie in a straight line. A complete and correct locking is readily visible, by means of these marking elements, from a distance of several metres.

20 Modifications of the above-described fire alarm construction are possible within the limits of the invention according to the claims and are familiar to a person skilled in the art.

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Patent claims

1. Fire alarm comprising an alarm insert (2) and a mounting (1), into which the alarm insert (2) can be inserted and in which, in the inserted condition, the alarm insert (2) fully masks the mounting (1), characterized in that the alarm insert (2) exhibits a movable closure device (3) by which the alarm insert (2) is mechanically arrested in relation to the mounting (1) and which includes a first marking element (5), which in the final position of the alarm insert (2) is brought into a definite position in relation to a second marking element (6) fitted to the lower part (4) of the alarm insert (2), whereby the correct final position of the alarm insert (2) in relation to the mounting (1) is recognisable from outside.
2. Fire alarm according to Patent Claim 1, characterized in that the closure device comprises a ring (3), which is fitted to the upper end of the alarm insert (2).
3. Fire alarm according to one of Patent Claims 1 or 2, characterized in that the marking elements (5, 6) comprise shaping elements, which are positioned alongside one another or one above the other for the purpose of the recognition of the final position of the alarm insert (2).
4. Fire alarm according to Patent Claim 3, characterized in that the shaping elements (5, 6) comprise projecting ribs.
5. Fire alarm according to one of Patent Claims 1 to 4, characterized in that the marking elements (5, 6) differ in colour from the alarm insert.
6. Fire alarm according to one of Patent Claims 1 to 5, characterized in that the closure device (3) exhibits means which are disposed and constructed so that they can actuate an electrical contact which generates a signal when the final position of the alarm insert (2) is reached.
7. Fire alarm according to Patent Claim 6, characterized in that further means are provided which are

arranged so that the signal is transmitted to the control station.

8. Fire alarm according to one of Patent Claims 5 to 7, characterized in that further means are provided which are arranged so that an optical signal is generated by the electrical contact at the alarm insert (2).

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