L'invention concerne un boîtier de détecteur de boîte chaude et de frein bloqué (2), doté de capteurs infrarouge et d'un dispositif de chauffage. Le couvercle (5), conçu en forme de cheminée, possède des parois latérales (7, 8) qui convergent vers le bord supérieur et portent sur leur face intérieure (6) un dispositif électrique de chauffage (4). Le couvercle (5) présente sur son bord supérieur ou à proximité de ce dernier des orifices (9) adaptés à la géométrie de balayage du ou des capteur(s) infrarouge.

The invention relates to a casing for a hot-box detector or blocked brake detector (2) with infrared detectors and a heat device. The casing consists of a casing bottom part and a cover (5), said cover (5) being configured as a chimney top with lateral surfaces (7, 8) which converge towards the top edge. The interior faces (6) of said lateral surfaces support an electrical heat device (4) and the cover (5) has openings (9) on its top edge or near the top edge, for the scanning geometry of the infrared detector(s).
Abstract:

The invention relates to a casing for a hot box or blocked brake detection scanner (2) comprising infrared detectors and a heating means, wherein the casing is comprised of a casing lower part and a lid (5), the lid (5) is designed as a chimney top with lateral surfaces (7, 8) converging towards the upper edge and carrying an electrical heating means (4) on their inner sides (6), and the lid (5) includes openings (9) for the scanning geometry of the infrared detector(s) on its upper edge or near its upper edge.
Casing for a Hot Box or Blocked Brake Detection Scanner

The invention relates to a casing including a heating means for a hot box or blocked brake detection scanner comprising infrared detectors as well as to a track section with a casing attached thereto.

Hot box or blocked brake detection scanners usually are mounted to rails with the measuring openings of the detectors being at a relatively slight distance relative to the rail upper edge. Such a slight distance in case of a snow or ice covering, as a rule, will not constitute a major problem if the layer of snow above the detector is melted by a heating means incorporated in the scanning means. Due to the slight distance, the upper edges of such detectors are cleaned by the relative wind. Known such devices have been described in DE-A-19 18 317, wherein a special supporting structure is screwed with the rail webs and the respective hot box or blocked brake detection means is mounted to the supporting structure.

DE-A-42 17 681 has already suggested the installation of hot box detection scanners or blocked brake detection scanners in a trough-shaped sleeper. The upper edge of such trough-shaped sleepers is located on the level of the rail foot and the hot box or blocked brake detection scanners are, therefore, immersed in the trough-shaped sleeper, from which results a relatively large distance between the upper edge of the rail and the measuring means. With such a large distance, also larger amounts of snow or ice may build up above the detector, thus impairing or even preventing measurements.

The invention aims at providing a casing of the initially defined kind, which is suitable for being incorporated in a trough-shaped sleeper and safely utilizes the advantages of an installation directly in the trough-shaped sleeper even if adverse meteorological conditions and, in particular, intensive snow fall or the like is likely to build up a
thicker layer of snow or ice on the detector. To solve this object, the configuration according to the invention essentially consists in that the casing is comprised of a casing lower part and a lid, that the lid is designed as a chimney top with lateral surfaces converging towards the upper edge and carrying an electrical heating means on their inner sides, and that the lid includes openings for the scanning beams of the infrared detector(s) on its upper edge or near its upper edge. By providing, in addition to a casing lower part which, as in accordance with a preferred further development of the invention, is formed by the trough-shaped sleeper itself, a lid which is designed as a chimney top having lateral surfaces converging towards the upper edge, it is ensured that even in case of heavy snow fall that snow fall will descend along the converging lateral surfaces under the action of gravity. By providing electrical heating means on the inner sides of the lateral surfaces and openings for the scanning beams of the infrared detector(s) in the lid on its upper edge or near its upper edge, it is now ensured that the integrated heating reliably keeps clear from snow or ice the respective opening cross section on the upper side of the lid by ascending hot air so as to safeguard the safe scanning and detection of hot boxes or blocked brakes. The surface available for a possible snow cover is relatively small, since that surface directly merges into the laterally sloping lateral surfaces converging towards the upper edge. By heating those lateral surfaces, at least a film in direct contact with the lateral walls will melt in each case such that the snow load can descend under its own weight and melt subsequently. Due to the stack effect, the openings on the upper edge are safely kept clear even at a comparatively low heating performance, since, bearing in mind the small upper surface, the overall amount of snow or ice built up thereabove remains relatively small. This applies all the more, since the upper edge of the casing lid is brought near the travelling edges of the rail due to the chimney top such that even the relative wind of rolling rail vehicles will cause an additional
mechanical cleaning effect. Advantageously, the configuration is devised such that the casing lower part comprises a further electrical heating means and is provided with discharge openings for melt water so as to prevent major amounts of snow from collecting in the interior of the upwardly open casing.

In a particularly simple manner, the heating means of the lid is designed as an electrical resistance heating whose winding(s) extend substantially parallel with the bottom of the casing lower part. Such an arrangement of the electrical resistance heating directly results in the desired flow course of the ascending hot air, thus ensuring particularly efficient keeping clear of snow even at low heating performances.

In order to further enhance mechanical cleaning by rolling rail vehicles, the track section with the casing attached thereto advantageously is devised such that the track section comprises a trough-shaped sleeper, that the casing is arranged in the trough-shaped sleeper, that the upper edge of the lid is arranged at a distance from the upper edge of the sleeper, which distance corresponds to the smallest admissible free space or clear space between the plane of the rail upper edge and the hot box detection scanner or blocked brake detection scanner. In order to ensure the correct orientation of the scanning beams and better take into account the geometrical conditions of hot box or blocked brake detection scanners installed in a trough-shaped sleeper, the configuration advantageously is devised such that the lid, in the cross sectional plane through which the axis of the trough-shaped sleeper passes, is designed to be asymmetrically trapezoidal and that the upper surface, which is parallel to the plane of the rail travelling edges, is located in the projection on the trough-shaped sleepers, of the bearings of a rolling rail vehicle to be detected.

In a particularly simple manner, the casing lower part, as already mentioned in the beginning, may be designed as a
partial region of the trough-shaped sleeper and the lid may extend over the total width of the trough-shaped sleeper, viewed in the longitudinal direction of the rail, and be fixable thereto. In that case it will do to appropriately
spot-drill, and provide with a thread, the end faces of the side walls of the trough-shaped sleeper such that the lid can be directly screwed and placed on the trough-shaped sleeper. Trough-shaped sleepers are usually provided with covers and the same means as are provided for fixing the covers of the trough-shaped sleeper may also be used for fastening the lid including the chimney top.

In order to render the penetration or pressing in of snow or the like even more difficult, the configuration advantageously is devised such that the openings of the lid are equipped with closeable covers. The closeable covers may be formed by simple slides or flaps and connected with an actuator, opening of the covers being effected merely during the scanning procedure.

In the following, the invention will be explained in more detail by way of an exemplary embodiment schematically illustrated in the drawing. Therein, Fig. 1 is a perspective illustration of an opened trough-shaped sleeper with the lid being removed and hot box detection scanners being inserted, and Fig. 2 shows the illustration according to Fig. 1 with the lid being closed.

From Fig. 1 a trough-shaped sleeper 1 is apparent, in which hot box detection scanners 2 are inserted. A heating means is provided within the trough-shaped sleeper, a connecting cable 3 for a heating means 4 being visible in the lid 5. The heating means 4 provided in the lid is designed as a resistance heating and extends over the inner sides 6 of the lid side walls as denoted by 7 and 8 in Fig. 2. As is apparent, in particular, from Fig. 2, the upper edge of the lid includes openings 9 so that the required scanning geometry of the scanner on the bearings of a rolling rail vehicle can be ensured. In Figs. 1 and 2, the rail is denoted by 10, wherein just one rail is depicted in each case. The trough-shaped sleeper 1 extends over the total width of the track.
As is apparent from Fig. 2, the trough-shaped sleeper is closed by a plane lid 11 by means of screws 12. On the laterally protruding parts of the trough-shaped sleeper, in which the hot box detection means 2 is arranged, the lid 13 comprises two lateral surfaces 7 and 8 converging towards the upper edge, wherein the openings 9 are provided in a top surface 14 extending parallel to the upper edge of the rails 10. Due to the chimney-like top comprising mutually converging side walls 7 and 8, the area of the plane top surface 14 is extremely small and can be reliably cleared by the relative wind. The openings 9 are reliably kept clear of snow and ice by the heating means arranged on the internal walls 6 of the side walls 7 and 8 and by the stack effect caused by the same.
Claims:

1. A casing including a heating means for a hot box or blocked brake detection scanner (2) comprising infrared detectors and a heating means, characterized in that the casing is comprised of a casing lower part and a lid (5), that the lid (5) is designed as a chimney top with lateral surfaces (7, 8) converging towards the upper edge and carrying an electrical heating means (4) on their inner sides (6), and that the lid (5) includes openings (9) for the scanning geometry of the infrared detector(s) on its upper edge or near its upper edge.

2. A casing including a heating means according to claim 1, characterized in that the casing lower part comprises a further electrical heating means and is provided with discharge openings for melt water.

3. A casing including a heating means according to claim 1 or 2, characterized in that the heating means (4) of the lid (5) is designed as an electrical resistance heating whose winding(s) extend substantially parallel with the bottom of the casing lower part.

4. A track section with a casing according to claim 1, 2 or 3 attached thereto, characterized in that the upper edge of the lid is arranged at a distance from the upper edge of the sleeper, which distance corresponds to the smallest admissible free space or clear space between the plane of the rail upper edge and the hot box detection scanner or blocked brake detection scanner (2).

5. A track section with a casing attached thereto according claim 4, characterized in that the track section comprises a trough-shaped sleeper, that the casing is arranged in the trough-shaped sleeper, that the lid (5), in the cross sectional plane through which the axis of the trough-shaped sleeper (1) passes, is designed to be asymmetrically
trapezoidal and that the upper surface, which is parallel to the plane of the rail travelling edges, is located in the projection on the trough-shaped sleepers (1), of the bearings of a rolling rail vehicle to be detected.

6. A track section with a casing attached thereto according claim 4, characterized in that the casing lower part is designed as a partial region of the trough-shaped sleeper (1) and the lid (5) extends over the total width of the trough-shaped sleeper (1), viewed in the longitudinal direction of the rail, and is fixable thereto.

7. A casing including a heating means according to any one of claims 1 to 4, characterized in that the openings (9) of the lid (5) are equipped with closable covers.