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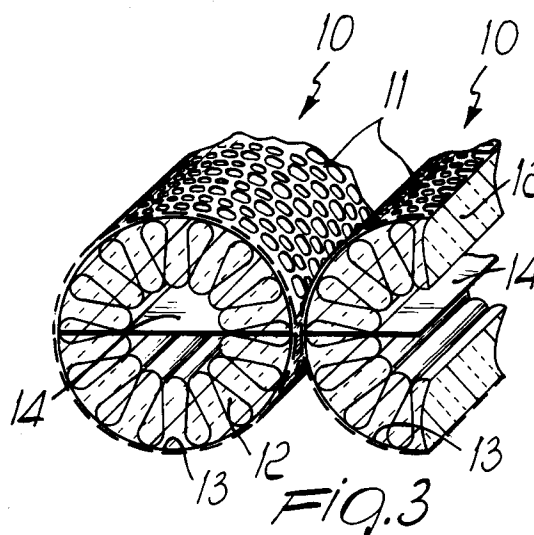
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54 **Antinoise barrier.**

57 Antinoise barrier comprising a plurality of elements (10), each of which is composed of a perforated tubular container (11) which contains a ring (12) of sound-deadening material and a dividing transverse lamina (14) arranged on its longitudinal axis.



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The present invention relates to an antinoise barrier.

As is known, one of the primary causes of noise pollution is constituted by intense traffic on highways, mass-transit roads and railroad lines.

Industrial areas are also sources of considerable noise pollution.

The propagation of sound toward the residential areas which surround these noise sources reaches levels which are often well above the acceptable limits of tolerance.

In countries aware of the need to solve this problem, antinoise barriers able to constitute obstacles which modify the propagation of noise toward residential areas have been devised and installed.

However, these barriers must not reflect the sound back toward its source and in any case toward other inhabited areas.

Various drawbacks have been observed for barriers currently in use, including low impact absorption characteristics and difficulty in replacing parts in case of damage.

Furthermore, barriers are currently made of materials which reflect light waves, and this creates problems in applications along roads, particularly at night, when the light of vehicle lights is reflected.

Finally, barriers installed so far have a negative environmental impact, and this has contributed to prevent their large-scale diffusion.

An aim of the present invention is to provide an antinoise barrier which eliminates the drawbacks observed above in known types.

A consequent primary object is to provide an antinoise barrier which maintains maximum noise absorption efficiency in time.

Another important object is to provide a barrier which does not deform or change appearance as a consequence of the aggressive action of the weather.

Another object is to provide a barrier which is quick and economical to install and which can be easily replaced in case of damage.

Another object is to provide a barrier which can absorb sound waves on both faces.

Another object is to provide a barrier which can be manufactured with conventional equipment and facilities.

This aim, these objects and others which will become apparent hereinafter are achieved by an antinoise barrier, characterized in that it comprises a plurality of elements, each one of which comprises a perforated tubular container which contains a ring made of sound-deadening material and a transverse dividing lamina arranged adjacent on its longitudinal axis.

Advantageously, said ring of sound-deadening material is protected by a film which is permeable

to sound waves and weatherproof.

Further characteristics and advantages of the present invention will become apparent from the following detailed description of some preferred embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of a portion of antinoise barrier according to the invention;

figure 2 is a perspective view of a module used in the barrier of figure 1;

figure 3 is an enlarged sectional schematic perspective detail view of a pair of modules of figure 2;

figure 4 is an enlarged sectional schematic perspective detail view of a pair of modules according to a different embodiment;

figure 5 is a sectional view, taken along the plane V-V of figure 2.

With reference to the above figures, an antinoise barrier according to the invention comprises a plurality of elements arranged side by side, each of which is designated by the reference numeral 10 and is composed of a perforated tubular container 11 which is preferably obtained from a sheet of stainless steel or of plastic material shaped so as to form a cylinder and contains a ring or cylinder 12 made of sound-deadening material.

Conveniently, said tubular container 11 is provided by means of a band-like element, wound so as to form a cylindrical helix, with overlapping and seamed edges (figures 2 and 5).

Advantageously, the ring 12 can be made of materials such as glass wool, rock wool, mineral wools in general, which are incombustible and impure-sible.

The ring 12 is externally covered by a film 13 which is permeable to sound waves and is weatherproof.

The tubular container 11 furthermore contains a transverse dividing lamina which is arranged along its longitudinal axis and can either be flat, as shown by 14 in figure 3, or have one or more longitudinal folds, as shown by 15 in figure 4.

The lamina 14 or 15 is advantageously made of plain sheet steel.

The elements 10 can be assembled horizontally, as shown in figure 1, vertically and/or diagonally so as to compose geometrical figures in modular panels.

In the case of figure 1, elements 10 are arranged horizontally above one another and are inserted between pairs of uprights 16 which are constituted by H-shaped steel profiled elements supported by a foundation 17.

It is possible to provide anchoring systems such as plates, traction elements, expansion locking devices welded to the barriers and anchored to

existing structures such as walls, pillars etc.

Antinoise barriers constituted by the above described elements have numerous advantages with respect to known types, including: that they maintain, in time, the maximum efficiency of the materials in terms of noise insulation and deadening; that no deformation or change in appearance occurs as a consequence of the aggressive action of the weather; good impact absorption; quick and cheap installation; and easy replacement of the elements in case of damage.

The barriers according to the invention are in practice of the double-absorbing type, since sound waves arriving from any direction are not reflected.

This is particularly interesting if between the roads and the inhabited area there is a further noise source whose sound pressure level might be increased, in the case of current barriers, also by the noise reflected by the barriers themselves.

In the case of installations on roads, the materials are particularly resistant to the corrosion produced by exhaust gas.

The particular composition of the elements which compose the barriers allows to design them according to the required sound insulation power and to the acoustic aims to be achieved, in a manner which is fully appropriate to the individual case.

The fact should also be stressed that the particular modularity of the barriers allows to compose geometrical figures and blending into the landscape with a reduced environmental impact.

In view of the modest dimensions and of the modularity of the elements, the barriers can easily adapt to slight grades of the ground, whereas they are easily inserted on step-like and terraced foundations.

Their construction in perforated cylindrical modules facilitates the drainage of rainwater.

Finally, due to the roundness of the elements, the reflection of light waves, which is unpleasant in roadside installations, is practically eliminated.

In practice it has been observed that the intended aim and objects of the present invention have been achieved.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims

and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

## Claims

1. Antinoise barrier, characterized in that it comprises a plurality of elements (10), each of which comprises a perforated tubular container (11) which contains a ring (12) made of sound-deadening material and a transverse dividing lamina (14;15) arranged along its longitudinal axis.
2. Antinoise barrier, according to claim 1, characterized in that said ring is protected by a film (13) which is permeable to sound waves and weatherproof.
3. Antinoise barrier according to one or more of the preceding claims, characterized in that said perforated tubular container is cylindrical.
4. Antinoise barrier according to one or more of the preceding claims, characterized in that said perforated tubular container is made from a sheet of stainless steel or of an equivalent material or plastic materials.
5. Antinoise barrier according to one or more of the preceding claims, characterized in that said perforated tubular container is defined by a laminar element which is wound in the shape of a cylindrical helix with its edges overlapped and joined by seams or equivalent joints.
6. Antinoise barrier according to one or more of the preceding claims, characterized in that said ring of sound-deadening material is made of mineral wools such as glass wool, rock wool or other equivalent materials with incombustibility and imputrescibility characteristics.
7. Antinoise barrier according to one or more of the preceding claims, characterized in that said dividing transverse lamina (14) is flat.
8. Antinoise barrier according to one or more of claims 1 to 6, characterized in that said dividing transverse lamina (15) has at least one longitudinal fold.
9. Antinoise barrier according to one or more of the preceding claims, characterized in that said transverse lamina is made of a metallic plate of steel or equivalent material.

10. Antinoise barrier according to one or more of the preceding claims, characterized in that said film which is permeable to sound waves and weatherproof is made of a film of polyurethane or equivalent material. 5
11. Antinoise barrier according to one or more of the preceding claims, characterized in that said elements which compose it are assembled mutually side by side vertically, horizontally 10 and/or diagonally so as to form panels.

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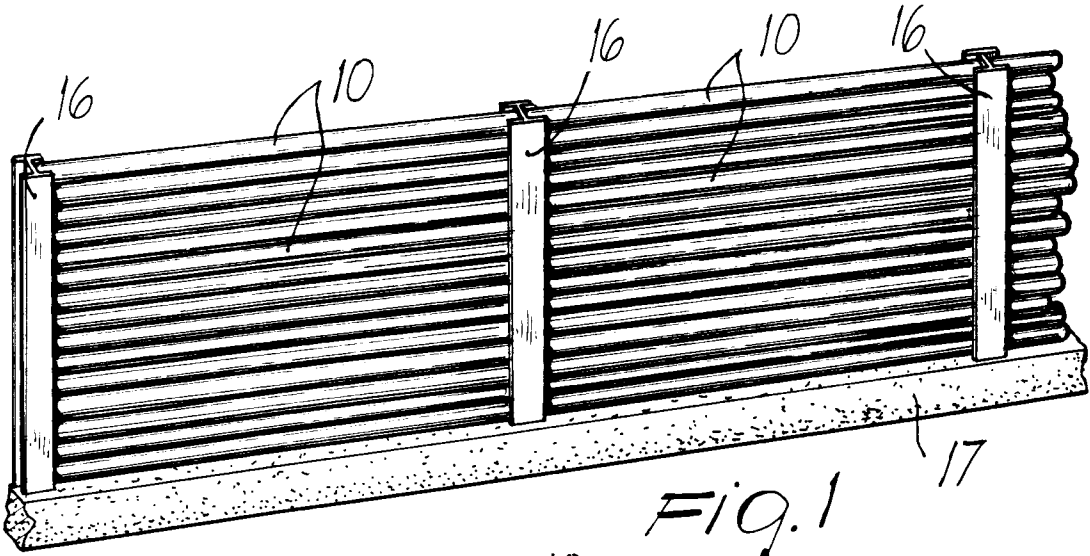


Fig. 1

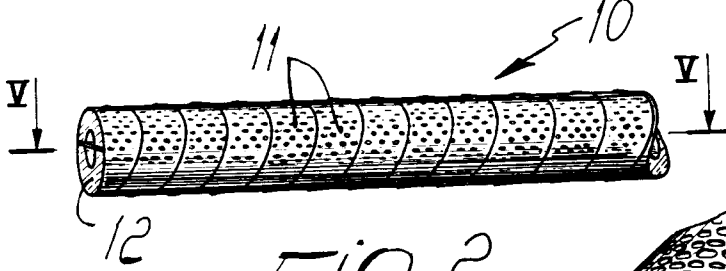


Fig. 2

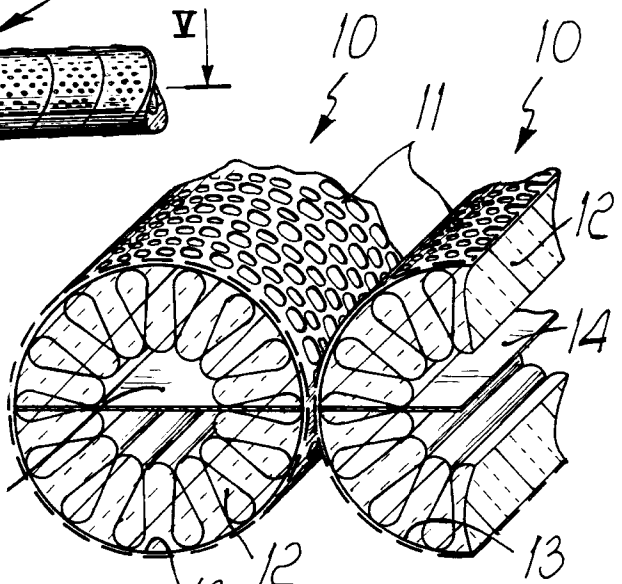


Fig. 3

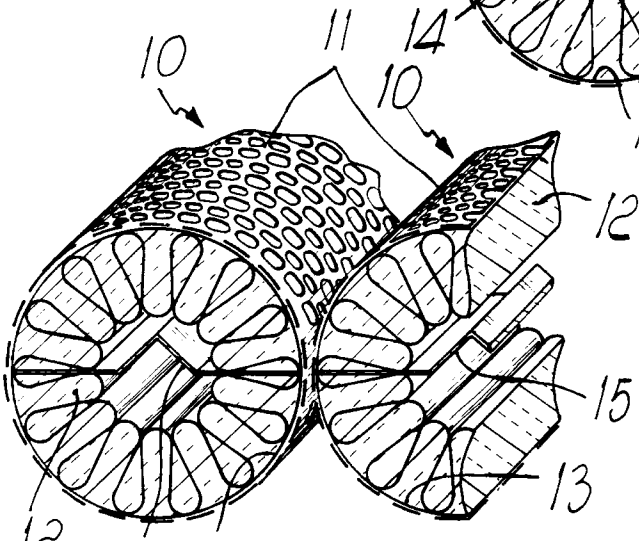


Fig. 4

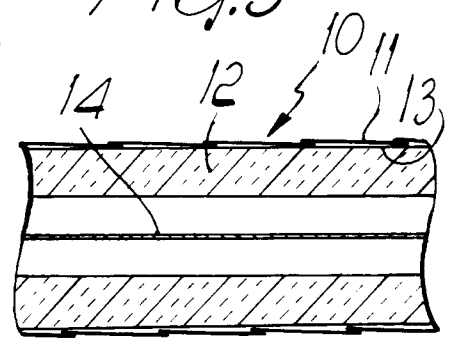


Fig. 5