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HEAT-INSULATED HOUSING FOR A SIEVE DRUM APPARATUS

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Fig.1

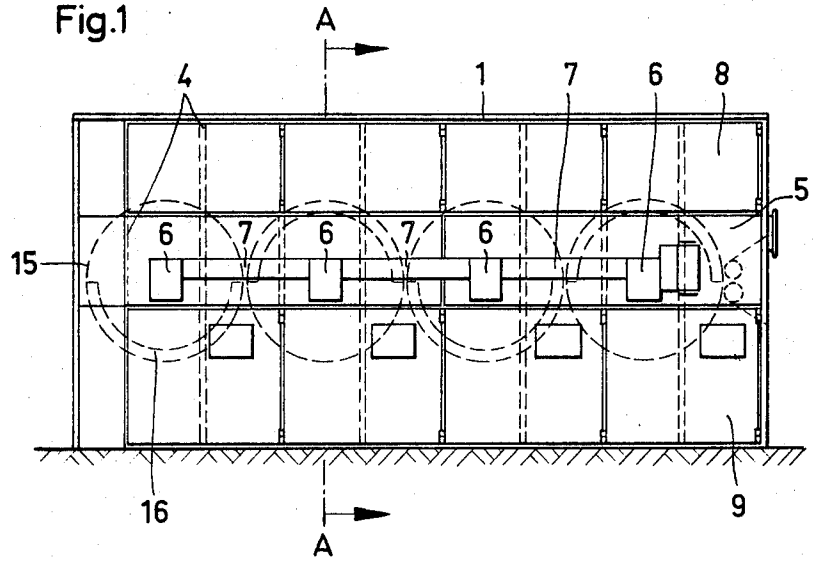
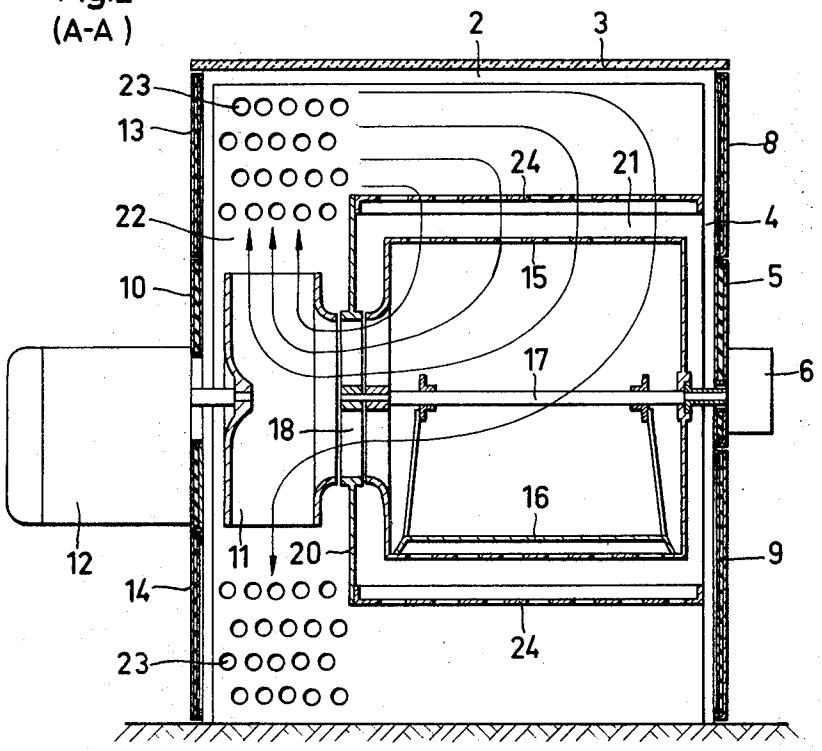


Fig.2
(A-A)



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HEAT-INSULATED HOUSING FOR A SIEVE DRUM APPARATUS

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ABSTRACT OF THE DISCLOSURE

The present disclosure relates to a heat-insulated housing for a sieve drum apparatus. More particularly, the present disclosure is directed to an apparatus for the heat-treatment of materials which comprises a heat-insulated housing containing at least one sieve drum means rotatably disposed therein, said housing comprising a frame and insulating elements attached thereto, at least one of the walls of said housing being subdivided into three sections, the middle section of said wall comprising a metal plate to which the gears, sieve drum drive and other elements are fastened.

BACKGROUND OF THE INVENTION

The present invention to a sieve drum apparatus with a heat-insulated housing comprising a frame and insulating elements mounted to the frame as well as sieve drum means for guiding the material through the housing and gears which are correlated to the faces of the sieve drums and mounted to the outside of the housing.

Sieve drum devices for drying and setting textile materials are well known. Such devices are also used for curing synthetic resin impregnations and for steaming processes. Inside the rotating drums stationary baffles are arranged which are mounted on a stationary drum axis. With these devices generally the driving shaft is a hollow shaft through which the stationary drum axis is passed, said driving shaft being then supported in the gear box.

The gear proper is fastened to the frame of the housing and/or to a plate which is connected with the frame by means of distance bolts. The distance bolts are passed through the borings in the insulation. Drilling and mounting of the gears is usually done during erection. In many cases in addition to the gears, intermediate gears, protective casings, limited switches, tachometers and other elements are fastened using distance bolts to the frame beneath the insulation and/or to the plate connected with the frame. The drillings for the distance bolts penetrate the insulation, thereby producing substantial heat losses in addition to the heat losses produced by the heat transfer of said distance bolts. If the borings for the aforementioned elements are drilled during manufacture, in many cases they must be reworked during erection because the frame is distorted during transportation and erection. In many cases this reworking takes as long or is even longer than the drilling of the holes during erection.

SUMMARY OF THE INVENTION

An object of the present invention is to avoid the prior art disadvantages of heat-insulated housings used in a sieve drum apparatus.

Another object of the present invention is to provide an improved heat-insulated housing for a sieve drum apparatus wherein the assembly time of the housing is substantially improved and heat losses resulting from the final assembly is substantially eliminated.

Other objects and further scope of applicability of the present invention will become apparent from a detailed

description given hereinafter; it should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

Pursuant to the present invention, it has been found that the above-mentioned disadvantages may be eliminated and a much improved heat-insulated housing can be obtained if the wall of the housing which supports the gears and possibly also the drum drive is subdivided into three parts, the middle part comprising a metal plate for supporting the gear, the drum drive and any additional elements. These parts can be mounted to the metal plate during manufacture and can be shipped together with the metal plate as one single unit. Thus, construction of the housing is substantially facilitated in this way.

In order to avoid heat losses it is expedient to provide the inner side of the metal plate with a heat insulation. According to the present invention it is now only necessary to screw the metal plate to the frame of the housing and to fasten all additional units such as gears for the individual sieve drums, intermediate variable gears, protective casings, limit switches, tachometers, etc., to the metal plate.

When using an apparatus comprising several sieve drum means it is advantageous to provide one common metal plate for each pair of sieve drums. The metal plate reinforces the frame at the same time. By fastening all of the elements to one metal plate it is possible to provide one standard frame and/or standard housing for the different sieve drum devices. Also, gears and other units of different companies with different couplings can be used without difficulty and without modification of the housing. By using the metal plate a distinct division of the wall of the housing into various panels is obtained.

In a further embodiment of the present invention it is also possible to design the upper and lower part of the wall of the housing as doors whereby the width of the doors may correspond to one drum compartment. Furthermore, it is suggested to effect the subdivision of the wall of the housing in such a way that the doors of the wall of the housing at the fan side have the same size as the doors of the upper part of the wall of the housing supporting the gears, so that two-door types are sufficient for all sieve drum devices.

As a result of the design of the housing of the sieve drum apparatus according to the present invention, it is possible to standardize the apparatus further so that apart from the reduction of the manufacturing costs, the stock-keeping costs can also be substantially reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only and thus are not limitative of the present invention and wherein,

FIG. 1 is a front view of the sieve drum apparatus of the present invention; and

FIG. 2 is a cross-sectional view of the sieve drum apparatus according to FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawing wherein like reference numerals are used throughout the various views to designate like parts, the apparatus of the present invention comprises a heat-insulated housing **1** which comprises a frame **2** and insulating parts **3** which are fastened to the frame. The front side of the frame consists of vertical

struts 4, two of said struts being provided for each drum. Up to now, these struts 4 have been reinforced by means of transverse struts and by means of metal plates situated beneath the housing. However, according to the present invention a metal plate 5 to which gears 6 protective casings 7 and possibly further elements are fastened is sufficient for the necessary reinforcement. Above and beneath the metal plate 5 doors 8 and 9 are provided. The width of the doors is the same as that of one sieve drum compartment.

The doors are arranged staggered to the sieve drum compartment if the struts 4 are arranged as shown in the drawing and not at the ends of the individual compartments. The design of the frame as shown in the drawing produces a more rugged housing. However, it is also possible to arrange the struts at the end of sieve drum compartment so that the door arrangement corresponds to the compartment arrangement. The housing 1 at the fan side of the apparatus is also subdivided into three parts, that is into a metal part 10 which is designed as a frame and which supports a fan wheel 11 and a fan drive 12 and into doors 13 and 14 above and beneath the part 10. The size of these doors is the same as that of the doors 8 at the gear side of the apparatus.

In the housing 1 sieve drums 15 are arranged in a well known manner, said sieve drums being subjected to a suction draft as a result of fan means 11. It is also possible to subject the sieve drums to an excess pressure and to force the air into the sieve drums so that the air flows out of said sieve drums. The suction draft is interrupted by a stationary baffle means 16 provided in the sieve drums and at that portion of the drum which is not covered with the material being treated. The baffle 16 is mounted to a stationary axis 17 which is supported in a cast iron spider 18 at one side of the apparatus and in a gear 6 at the other side of the apparatus. A partition means 20 separates the treatment chamber 21 from the fan chamber 22. Heater batteries 23 are provided above and beneath the fan wheel. For equalizing the air flow, sieve sheets 24 are arranged above and beneath the sieve drums.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications are intended to be included within the scope of the following claims.

It is claimed:

1. An apparatus for the heat-treatment of materials which comprises a heat-insulated housing containing at least one sieve drum means rotatably disposed therein, said housing comprising a frame and insulating elements attached thereto, at least one of the walls of said housing being subdivided into three sections, the middle section of said wall comprising a metal plate to which the gears, sieve drum drive and other elements are fastened.

2. The apparatus of claim 1 wherein the inner side of the metal plate is provided with a heat-insulating element.

3. The apparatus of claim 1 wherein one common metal plate is provided for each pair of sieve drum means.

4. The apparatus of claim 1 wherein the upper and lower sections of the wall of said housing are designed as doors, the width of said doors corresponding to the width of one sieve drum compartment.

5. The apparatus of claim 1 wherein the opposing other wall of the heat-insulated housing is also subdivided into three sections, the middle section designed as a frame for supporting the fan wheel and the fan drive and the upper and lower sections designed as doors.

6. The apparatus of claim 5 wherein the size of the doors on the fan side of the apparatus is the same as the size of the upper door on the gear side of the apparatus.

7. The apparatus of claim 4 wherein the doors are arranged staggered to the sieve drum compartment.

8. An apparatus for the heat-treatment of materials which comprises a heat-insulated housing containing at least one sieve drum means rotatably disposed therein, said housing comprising a frame having a gear wall and a fan drive wall, wherein said gear wall is subdivided into three sections, the middle section comprising a metal plate to which the gears, sieve drum drive and other elements are attached, the upper and lower sections of said gear wall being designed as doors, and the fan drive wall is also subdivided into three sections, the middle section acting to support the fan wheel means and fan drive means and the upper and lower sections being designed as doors.

9. The apparatus of claim 8 wherein the inner side of the metal plate is provided with a heat-insulating element.

10. The apparatus of claim 8 wherein the top part of the frame of the heat-insulated housing is provided with an insulating element on the outer surface thereof.

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