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(54) **Process and apparatus for filling up the cavity of a cavity wall with insulation material.**

(57) A process and an apparatus for filling up the cavity of a cavitywall with insulationmaterial, such as rockwool or glasswool, in which the insulationmaterial is sucked or drawn from a supply by means of an elector and introduced into the cavity together with the driving gas through an outflowpipe which has been brought through an opening or bore in the outer wall.

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Process for filling up the cavity of a cavity wall with insulation material.

The present invention relates to a process for filling up the cavity of a cavity wall with insulation material,  
5 in particular with rockwool or glasswool.

Such a process is known.

In this known process larger apertures are made in the outer wall spaced from each other by removing bricks from the wall and through which larger apertures the insulation  
10 material is introduced into the cavity.

This process has the drawback of being time consuming and cumbersome.

A further drawback of the known process is, that the wall, by breaking out and replacing the bricks, is seriously marred  
15 because always remains visible which bricks were temporarily removed from the wall to introduce the insulation material into the cavity.

Also a process is known by which the insulation material in the shape of granulated rockwool is blown into  
20 the cavity through a hole drilled into the outer wall.

This known process has the drawback, that the conduit or the channel through which the granulated rockwool is to be blown into the cavity by overpressure, very easily may become obstructed or blocked so that this known process has turned  
25 out to be not practically applicable.

The present invention provides a new process to introduce insulation material, in particular rockwool or glasswool, into the cavity of a cavity wall.

5 According to the invented process, the insulation material is drawn or sucked by means of an ejector and introduced together with the driving gas into the cavity through an outflowpipe applied into an aperture or bore into the outer wall.

10 Favourably the insulation material may have the shape of rockwoolflakes or glasswoolflakes which, without any trouble, may be sucked by the ejector from a storage.

Introduction through the outflowpipe of the ejector of the sucked insulation material may be carried out in various ways.

15 Favourably, according to the invention, the insulation material is introduced into the cavity in a direction substantially perpendicular to the longitudinal axis of the outflowpipe.

20 By this measure the insulation material may be brought in the cavity at a greater distance of the place of introduction, by which the number of borings, to be applied into the outer wall to wholly fill up the cavity with insulation material, is reduced.

25 In a very favourable manner, the outflowpipe, according to a further feature of the invented process, is rotated during the introduction of the insulation material into the cavity.

During the introduction of the insulation material, this insulation material is deposited in the cavity more or less circularly or spirally around the outflowpipe, and this

initially at locations further from the outflowpipe  
and at last at the immediate surroundings of the outflowpipe.

According to a further feature of the invented process,  
the velocity of rotation of the outflowpipe is gradually in-  
5 creased and/or the pressure of the driving gas is gradually  
decreased during the progressive filling of the cavity.

The apparatus for applying the invented process is  
characterized by an ejecter with a supply for the driving gas,  
a supply for the sucked insulation material and a discharge  
10 connecting to an outflowpipe.

According to a feature of the invented apparatus, the outflow-  
pipe ends in an end wall, substantially extending perpendicular  
to the longitudinal axis of the pipe and in front of which  
end wall a discharge opening is applied in the pipe wall  
15 for discharging the insulation material in a direction  
substantially perpendicular to the longitudinal axis of the  
pipe.

Rotating the outflowpipe during the introduction of the  
insulation material into the cavity, to thereby achieve a  
20 spirally filling of the cavity, may be carried out in various  
manners.

Favourably, according to a further feature of the invented  
process and apparatus, the outflowpipe may be rotated with  
respect to the ejecter by driving means.

25 In an embodiment of the invented apparatus, the number of  
revolutions per minute and/or the pressure of the driving gas  
may be governed automatically in dependence of the number  
of revolutions carried out by the outflowpipe.

The insulation material may be simply sucked by the ejecter

from a storage situated nearby the ejecter to be introduced together with the driving gas into the cavity.

In the case of longer supply lines or -conduits from a supplye located at a greater distance of the ejecter, it may be favourable, to supply the insulation material at first under overpressure to the ejecter to be sucked then by the ejecter under underpressure.

The invention is illustrated by way of an example in the accompanying drawing.

As is shown in the drawing, the apparatus comprises an ejecter, consisting of a housing (1), in which a venturi-tube (2) is formed, which, on the one side is connected to a supply-hose (3) for the material to be introduced into the cavity (4).

Into the throat of the venturi-tube debouch a number of channels (5) for the driving gas which may be supplied through the connection (6) of the housing (1).

At the discharge side of the venturi-channel the outflowpipe (7) is mounted detachably and exchangeably to the housing (1) and which debouches through the bore (9) in the outer wall (10) into the cavity (4).

The outflowpipe (7) is provided with an end wall (11), in front of which the outflow aperture (12) is arranged in the pipe wall.

In front of the end wall (11) a filling member (13) is mounted to rectangularly lead or bend the driving gas and the insulation material flow.

The housing (1) supports driving means, not shown in the drawing, by means of which the outflowpipe may be brought into rotation.

## C L A I M S

1. Process for filling the cavity of a cavity wall with insulation material, in particular with rockwool or glasswool, characterized, in that the insulation material is sucked or drawn from a supply by means of an ejecter and introduced into the cavity together with the driving gas through an outflowpipe which is brought through an opening or bore in the outer wall.  
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2. Process as claimed in claim 1, characterized, in that the insulation material is introduced into the cavity according to a direction substantially perpendicular to the longitudinal axis of the outflowpipe.  
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3. Process as claimed in claim 1 or 2, characterized, in that the outflowpipe is rotated during the introduction of the insulation material into the cavity.
- 15 4. Process as claimed in claim 1, 2 or 3, characterized, in that during the progressive filling of the cavity, the velocity of rotation of the outflowpipe gradually is increased and/or the pressure of the driving gas is gradually decreased.
- 20 5. Apparatus for applying the process according to one of the preceding claims, characterized, in that this is provided with an ejecter with a supply for driving gas, a supply for the sucked or drawn insulation material and a discharge connecting to an outflowpipe.
- 25 6. Apparatus as claimed in claim 5, characterized, in that the outflowpipe ends in an end wall substantially extending perpendicular to the longitudinal axis of the pipe, in

front of which an outflow opening is arranged in the pipe wall to discharge insulation material according to a direction substantially perpendicular to the longitudinal axis of the pipe.

- 5        7.    Apparatus as claimed in one of the preceding claims, characterized, in that the outflowpipe may be brought into a rotation by means of driving means.
- 10       8.    Apparatus as claimed in one of the preceding claims, characterized, in that the number of revolutions per minute of the outflowpipe and/or the pressure of the driving gas may be governed automatically in dependence of the number of revolutions made by the outflowpipe.

