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Apparatus for feeding insulating material, such as rock wool or glass wool, into the cavity of a hollow wall

The invention relates to an apparatus for feeding insulating material, such as rock wool or glass wool, into the cavity of a hollow wall, provided with an ejector, which on the one hand is connected to a supply pipe for the insulating material and which on the other hand is connected to a supply pipe for a gas stream, the insulating material being sucked into the ejector by this gas stream, said ejector being further connected to a discharge tube, from which the insulating material is blown into the cavity.

An apparatus of this type is known from Belgian patent specification 863.805. In this known apparatus a pump supplies air under pressure to a first conduit, which divides into two branch conduits. One of these branch conduits debouches into a reservoir for the insulating material, whilst the other branch conduit is connected to a first inlet leg of a Y-shaped connection part. The second inlet leg of this Y-shaped connection part is connected to the outlet of the reservoir for the insulating material. The outlet leg of the Y-shaped connection part is connected to a rather long conduit, which ends in the discharge tube. The air under pressure which enters the first inlet leg of the Y-shaped connection part exerts a suction action in the second inlet leg of the Y-shaped connection part in order to support the supply of the insulating material from this reservoir by means of the air under pressure fed to this reservoir through the first mentioned branch conduit. Therefore the Y-shaped connection part operates as an ejector.

This known apparatus has the disadvantage, that although the suction effect exerted on the insulating material tends to loosen the insulating material the rather long conduit between the Y-shaped connection part and the discharge tube leads to a compression of the insulating material, which abolishes the loosening effect obtained by the suction action in the ejector.

However, this loosening of the insulating material is of great importance, as this leads to lower material costs for filling a cavity of a hollow wall without unfavourably influencing the insulating effect.

It is an object of the present invention to provide an apparatus for feeding insulating material, such as rock wool or glass wool, into the cavity of a hollow wall, wherein the above disadvantage is effectively removed.

To this end the apparatus according to the invention is characterized in that the ejector and the discharge tube are combined in a discharge unit, which comprises a housing equipped with a central channel, the supply pipe for the insulating material being connected to this central channel at the side remote from the discharge tube, said central channel being provided with a first portion having a cross-

section which becomes smaller in the direction towards the discharge tube, said first portion adjoining a second portion having an approximate constant cross-section, the supply pipe for the gas stream being connected to a plurality of gas channels formed in the housing, which gas channels debouch into the said second portion of said central channel, said gas channels enclosing an acute angle with the longitudinal axis of said central channel.

Due to the divided gas supply through the plurality of gas channels according to the present invention it becomes possible to transport the insulating material to the ejector by suction only, so that an improved loosening effect of the insulating material which is sucked into the central channel by the gas flow is attained. In view of the fact that the ejector and the discharge tube are combined to a discharge unit, so that the loosened material has only to cover a short path between the gas supply to the central channel and the discharge tube, the insulating material is deposited via the discharge tube into the cavity while it still has its loosened state.

It is observed that from U.S. patent specification 2.235.542 an apparatus is known for feeding insulating material into a cavity, wherein a pump delivers an air stream to a long hose, which ends in the discharge tube. The insulating material is applied to the air stream from a hopper from which it is fed a little at a time under the influence of gravity and under the influence of the suction effect induced by the air stream. In this known apparatus the air under pressure is centrally fed, whilst the insulating material is laterally fed from the hopper. Further, the long hose between the ejector and the discharge tube again jeopardizes the loosening effect exerted by the suction on the insulating material.

From U.S. patent specification 4.134.242 an apparatus is known for feeding insulating material into the cavity of a hollow wall, wherein the insulating material is fed from a hopper to a blowing machine, which is connected to the discharge tube by means of a lengthy hose. The insulating material is pressed by the blowing machine through the hose without any suction being exerted on this material.

The invention will hereafter be elucidated with reference to the drawing, which shows a cross-section of an embodiment of the apparatus according to the invention by way of example.

The drawing shows an apparatus for feeding insulating material such as rock wool or glass wool into the cavity 4 of a hollow wall consisting of an inner wall and an outer wall 10.

The apparatus is provided with an ejector which on the one hand is connected to a supply

pipe 3 for the insulating material and which on the other hand is connected to a supply pipe for a gas stream, said ejector being further connected to a discharge tube 7, which debouches through a bore 9 in the outer wall 10 into the cavity 4.

The ejector and the discharge tube 7 are combined in a discharge unit, which comprises a housing 1 equipped with a central channel 2. The supply pipe 3 for the insulating material is connected to the central channel 2 at the side remote from the discharge tube 7.

The central channel 2 comprises a first portion having a cross-section which becomes smaller in the direction towards the discharge tube 7, and a second portion having an approximate constant cross-section.

The supply pipe for the gas stream is connected to an inlet stub 6 on the housing 1, while the gas stream passing this inlet stub 6 reaches a main gas channel formed in the housing 1 and having a centre line coinciding with the centre line of the central channel 2. From this main gas channel the gas is fed to a plurality of gas channels 5 formed in the housing 1. These gas channels 5 debouch into the second portion of the central channel 2 with the approximate constant cross-section and enclose an acute angle with the longitudinal axis of this central channel 2.

The discharge tube 7 which is detachably mounted in the housing 1 may be provided with an end wall 11 and an outflow aperture 12 arranged in the side wall of the discharge tube 7. In front of the end wall 11 a filling member 13 may be mounted in the discharge tube 7 to rectangularly deflect the flow of the gas and the insulating material. The housing 1 may support driving means (not shown) by means of which the discharge tube 7 may be brought into rotation.

Claims

1. Apparatus for feeding insulating material, such as rock wool or glass wool, into the cavity (4) of a hollow wall, provided with an ejector, which on the one hand is connected to a supply pipe (3) for the insulating material and which on the other hand is connected to a supply pipe for a gas stream, the insulating material being sucked into the ejector by this gas stream, said ejector being further connected to a discharge tube (7), from which the insulating material is blown into the cavity (4), characterized in that the ejector and the discharge tube (7) are combined in a discharge unit, which comprises a housing (1) equipped with a central channel (2), the supply pipe (3) for the insulating material being connected to this central channel (2) at the side remote from the discharge tube (7), said central channel (2) being provided with a first portion having a cross-section which becomes smaller in the direction towards the

discharge tube (7), said first portion adjoining a second portion having an approximate constant cross-section, the supply pipe for the gas stream being connected to a plurality of gas channels (5) formed in the housing (1), which gas channels (5) debouch into the said second portion of said central channel (2), said gas channels (5) enclosing an acute angle with the longitudinal axis of said central channel (2).

2. Apparatus according to claim 1, characterized in that the supply pipe for the gas stream is connected to a main gas channel formed in the housing (1), the centre line of said main gas channel coinciding with the centre line of the central channel (2), whilst the gas channels (5) are connected to said main gas channel.

3. Apparatus according to claim 2, characterized in that the discharge tube (7) is detachably mounted in the housing (1).

Revendications

1. Appareil pour introduire une matière isolante, telle que de la laine minérale ou de la laine de verre, dans la cavité (4) d'une paroi creuse, comportant un éjecteur qui, d'une part, est raccordé à une tuyau 3 d'alimentation en matière isolante et qui, d'autre part, est raccordé à un tuyau d'alimentation en un courant gazeux, la matière isolante étant aspirée à l'intérieur de l'éjecteur par ce courant gazeux, ledit éjecteur étant en outre raccordé à un tube (7) de décharge duquel la matière isolante est injectée dans la cavité (4), caractérisé en ce que l'éjecteur et le tube (7) de décharge sont combinés en une unité de décharge qui comprend un corps (1) présentant un canal central (2), le tuyau (3) d'alimentation en matière isolante étant raccordé à ce canal central (2) sur le côté éloigné du tube (7) de décharge, ledit canal central (2) comprenant un premier tronçon ayant une section qui diminue dans le sens vers le tube (7) de décharge, ledit premier tronçon rejoignant un second tronçon ayant une section approximativement constante, le tuyau d'alimentation en courant gazeux étant raccordé à plusieurs canaux (5) de gaz formés dans le corps (1), lesquels canaux (5) de gaz débouchent dans ledit second tronçon dudit canal central (2), lesdits canaux (5) de gaz formant un angle aigu avec l'axe longitudinal dudit canal central (2).

2. Appareil selon la revendication 1, caractérisé en ce que le tuyau d'alimentation en courant gazeux est raccordé à un canal principal de gaz formé dans le corps (1), la ligne centrale dudit canal principal de gaz coïncidant avec la ligne centrale du canal central (2), tandis que les canaux (5) de gaz sont raccordés audit canal principal de gaz.

3. Appareil selon la revendication 2, caractérisé en ce que le tube (7) de décharge est monté de manière amovible dans le corps (1).

Patentansprüche

1. Vorrichtung zum Einfüllen von Isoliermaterial wie Steinwolle oder Glaswolle in den Hohlraum (4) einer hohlen Wand, mit einer Saugstrahlpumpe, die einerseits an ein Zuführungsrohr (3) für das Isoliermaterial und andererseits an ein Zuführungsrohr für einen Gasstrom angeschlossen ist, wobei das Isoliermaterial in die Saugstrahlpumpe durch diesen Gasstrom gesaugt wird und die Saugstrahlpumpe des weiteren mit einem Austrittsrohr (7) verbunden ist, aus dem das Isoliermaterial in den Hohlraum (4) eingeblasen wird, dadurch gekennzeichnet, daß die Saugstrahlpumpe mit dem Austrittsrohr (7) zu einer Austrittseinheit zusammengefaßt ist, die ein Gehäuse (1) umfaßt, das mit einem Mittelkanal (2) versehen ist, wobei das Zuführungsrohr (3) für das Isoliermaterial mit diesem Mittelkanal (2) an der vom Austrittsrohr (7) entfernten Seite verbunden ist, der Mittelkanal (2) einen ersten Teil mit einem

Querschnitt aufweist, der in Richtung zum Austrittsrohr (7) kleiner wird und sich an einen zweiten Teil mit ungefähr konstantem Querschnitt anschließt, das Zuführungsrohr für den Gasstrom mit einer Zahl von Gaskanälen (5) verbunden ist, die im Gehäuse (1) ausgebildet sind, wobei die Gaskanäle (5) in den zweiten Teil des Mittelkanals (2) münden, und die Gaskanäle (5) einen spitzen Winkel mit der Längsachse des Mittelkanals (2) bilden.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das Zuführungsrohr für den Gasstrom mit dem im Gehäuse (1) ausgebildeten Hauptgaskanal verbunden ist, wobei die Mittellinie dieses Hauptgaskanals mit der Mittellinie des Mittelkanals (2) zusammenfällt, und wobei die Gaskanäle (5) mit diesem Hauptgaskanal verbunden sind.

3. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß das Austrittsrohr (7) abnehmbar in das Gehäuse (1) eingebaut ist.

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