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(54) Concreting jet spray apparatus.

(57) A concreting jet apparatus comprising a concrete mix container (1) having a concrete mix-propelling flight (2) mounted below the container, and a jet nozzle assembly (3) adapted to the end section of the flight assembly, having a compressed-air jet nozzle (4) mounted inside the assembly. The jet nozzle assembly (3) is mounted perpendicular to the axis of the flight (2).

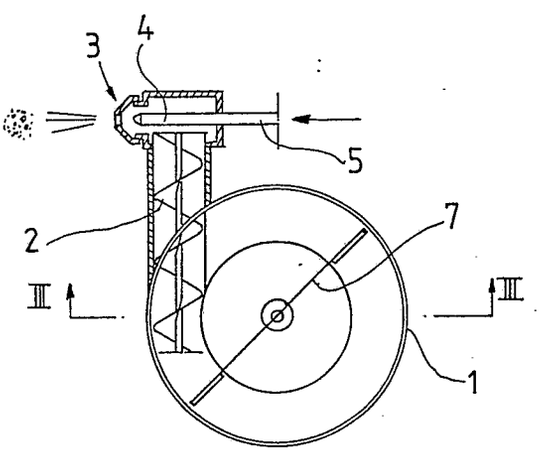

Fig.2

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Description

CONCRETING JET SPRAY APPARATUS

The present invention concerns a concreting jet spray apparatus comprising a concrete mix container having a propelling flight for moving the concrete mix and a jet nozzle assembly at the exit end of the flight assembly with a compressed air jet nozzle inside the jet assembly.

The compressed air channel leading to the compressed air jet nozzle assembly is conventionally adapted to pass through the center of the shaft of the concrete mix propelling flight (Fig. 1). Disclosed in German patent application publications 2 056 145 and 2 103 448 is an alternative embodiment in which compressed air is routed from an annular slot of the nozzle assembly to the jet-forming nozzle.

The present invention aims to achieve a novel type of a concreting jet spray apparatus, which offers significant advantages in comparison with conventional techniques. The concreting jet spray apparatus is characterized by having the jet nozzle assembly mounted to the head of the concrete mix-propelling flight assembly so that the jet nozzle is adapted perpendicularly to the flight axis. Thus, one or several compressed air nozzles can be adapted to the jet nozzle head assembly in a desired manner. The need for routing compressed air via ducts is avoided allowing the flight to be rotated with a solid shaft.

An embodiment of the invention is characterized by having the compressed-air jet nozzle comprised of a pipe placed within the rear section of the nozzle head assembly and perpendicularly to the flight axis. This kind of a compressed-air jet nozzle is simple in construction, cost-effective in manufacturing and, when required, quickly replaceable with different types of jet nozzles.

Another embodiment of the invention is characterized by having the nozzle assembly pivotally mounted to the end of the flight assembly to be rotatable about the axis of the flight. Thus, the nozzle assembly can easily be directed to a desired point if spraying is desired to be performed obliquely from above or from below.

A further embodiment of the invention is characterized by having the jet nozzle assembly rotatably mounted with the help of a ball-socket joint to the head of the flight assembly so that the nozzle direction is freely adjustable to any direction. In this way the jet can be directed in desired directions, and furthermore, if the flight assembly is provided with two auger flights with individual head assemblies, significant improvements will be achieved in comparison with all prior art concreting jet constructions.

In the following, the invention will be examined in more detail by means of an exemplifying embodiment with reference to the attached drawings, in which

Fig. 1 shows a conventional concreting jet spray apparatus in a cross-sectional view.

Fig. 2 shows a concreting jet spray apparatus in accordance with the invention in a top view.

Fig. 3 shows a section of Fig. 3 along line III-III of the apparatus.

Fig. 4 shows the jet nozzle assembly of the apparatus in an enlarged view.

Fig. 5 shows the jet nozzle assembly in a partially sectioned end view.

Fig. 6 shows another embodiment of the concreting jet spray apparatus having two concrete mix-propelling flights and two jet nozzle assemblies.

Fig. 7 shows a concreting jet spray apparatus in accordance with the invention inclined from the vertical axis.

The concreting jet comprises a concrete mix container 1 with a concrete mix-transferring flight 2 below the container, and a jet nozzle assembly 3 mounted to the end of the flight assembly, having a compressed-air nozzle 4 inside the nozzle assembly. The nozzle assembly 3 is mounted to the head of the flight 2 assembly so that the nozzle section is perpendicular to the flight axis. The compressed-air nozzle 4 is comprised of a tube 5, mounted to the rear section of the nozzle assembly 3, so that the tube also is aligned perpendicular to the flight. Fig. 5 illustrates the method of mounting the nozzle assembly 3 rotatably to the end section of the flight assembly as indicated by arrow 6. The angle of rotation may be up to 180°. Figs. 6 and 7 illustrate a concreting jet spray apparatus with dual spray assemblies, in which an inclination α of the apparatus allows the elevations of the spray assemblies to be displaced by height x, whereby the spraying operation is speeded up. The number of compressed-air nozzles can be freely selected so that the embodiment shown in Fig. 5 has, for instance, three nozzles. The concrete mix container 1 also has a fill blade 7, which shears and propels the concrete mix, which now may have a very high stiffness, toward the flight 2. By virtue of the invention, the design of the nozzle section can be varied to a large extent allowing minimization of the flow resistance to the concrete mix and use of extremely stiff and coarse-aggregate mixes.

The nozzle assembly 3 may, of course, be provided with two nozzles adapted horizontally or vertically adjacent. In this arrangement, the nozzle assembly will correspondingly contain two compressed-air nozzles 4, or groups of nozzles, respectively.

Claims

1. A concreting jet apparatus comprising a concrete mix container (1) having a concrete mix-propelling flight (2) mounted below the container, and a jet nozzle assembly (3) adapted to the end section of the flight assembly, having a compressed air jet nozzle (4) mounted inside the assembly, **characterized** in that the jet nozzle assembly (3) is

mounted to the end section of the flight (2) assembly so that the jet nozzle assembly is perpendicular to the axis of the flight.

2. A concreting jet spray apparatus as claimed in claim 1, **characterized** in that the compressed-air jet nozzle (4) is comprised of a tube (5) mounted inside the rear section of the jet nozzle assembly (3) so that the tube also is aligned perpendicular to the axis of the flight.

3. A concreting jet spray apparatus as claimed in claim 1 or 2, **characterized** in that the jet nozzle assembly (3) is mounted rotatably to the end section of the flight (2) assembly so as to be pivotable about the flight axis.

4. A concreting jet spray apparatus as claimed in any of claims 1...3, **characterized** in that the jet nozzle assembly (3) is mounted rotatably with the help of a ball-socket joint to the head of the flight (2) assembly so that the nozzle direction is freely adjustable in any direction.

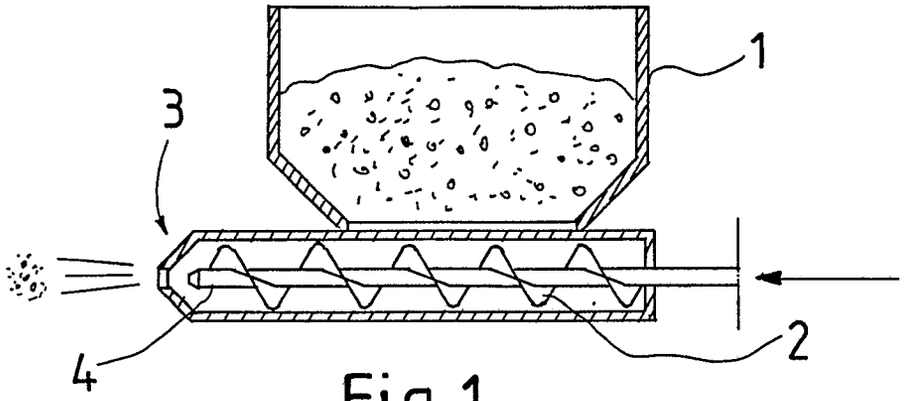

Fig.1

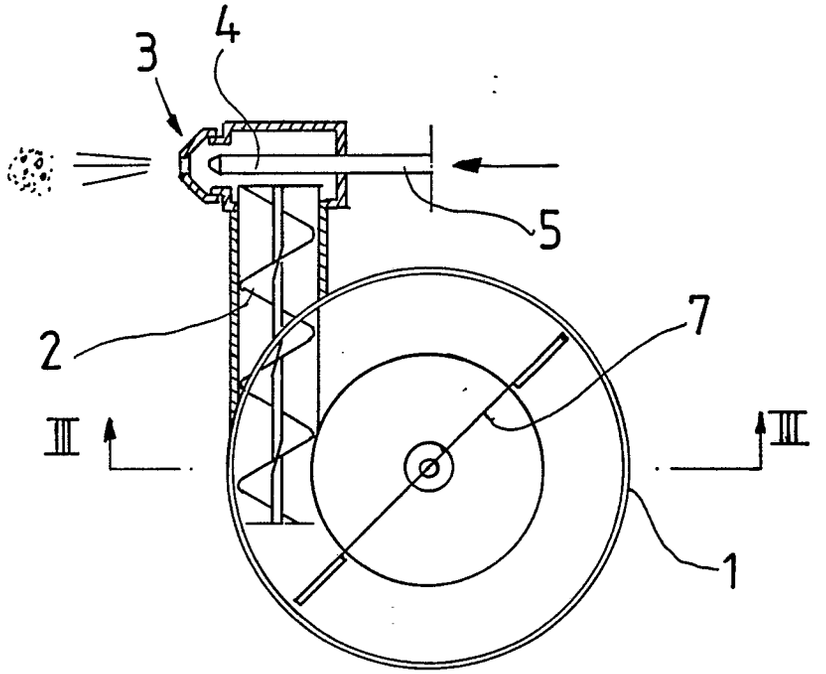

Fig.2

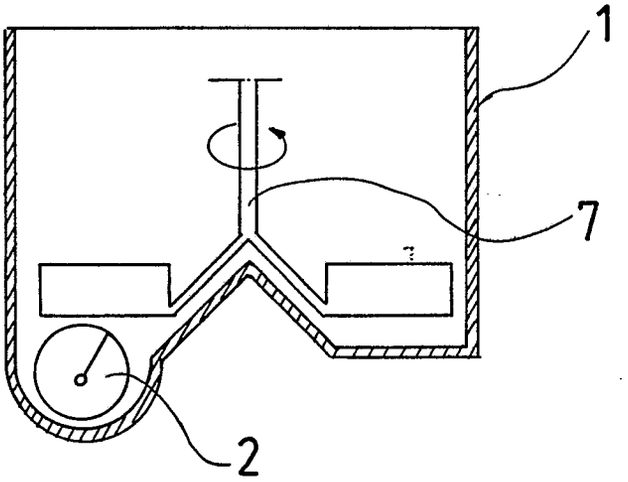

Fig.3

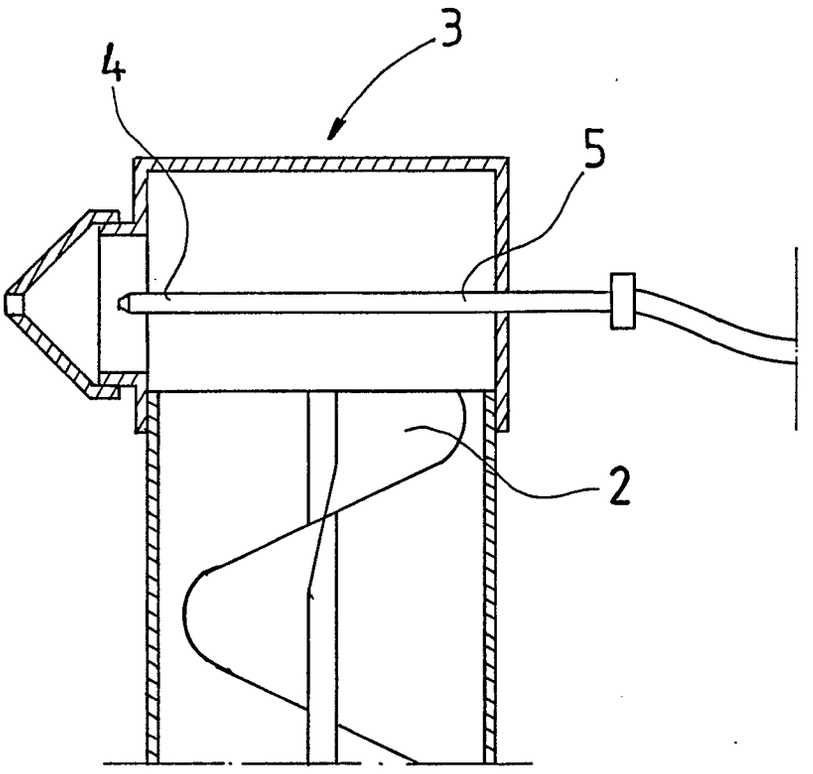

Fig.4

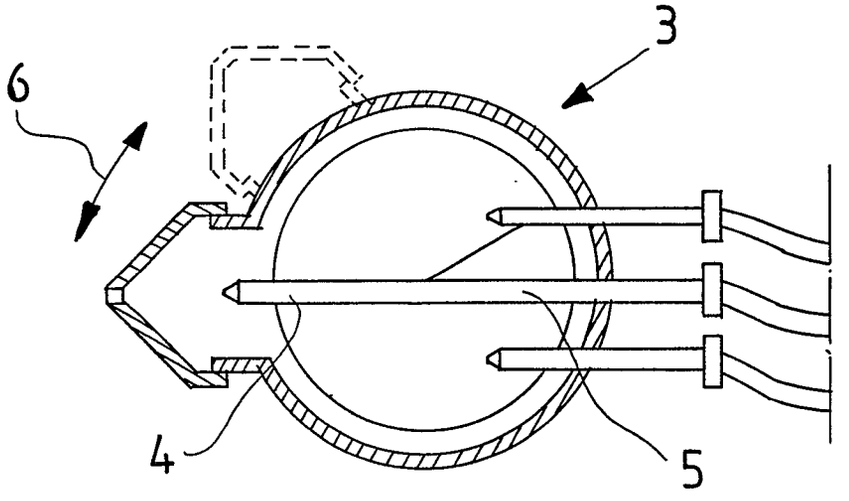

Fig.5

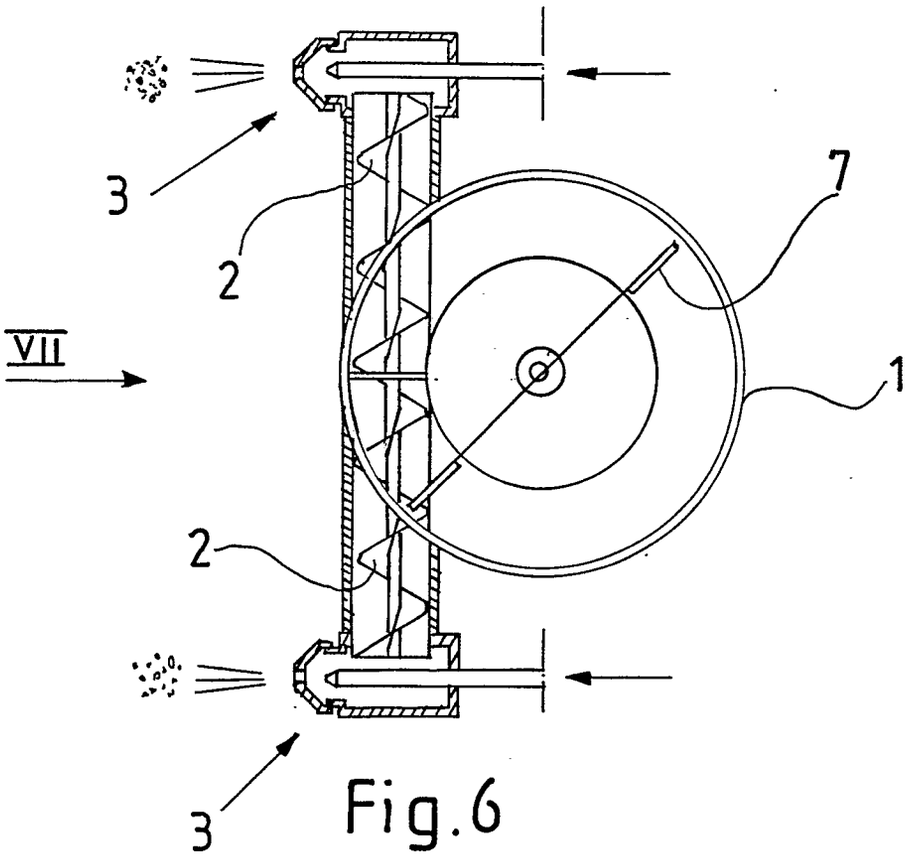

Fig.6

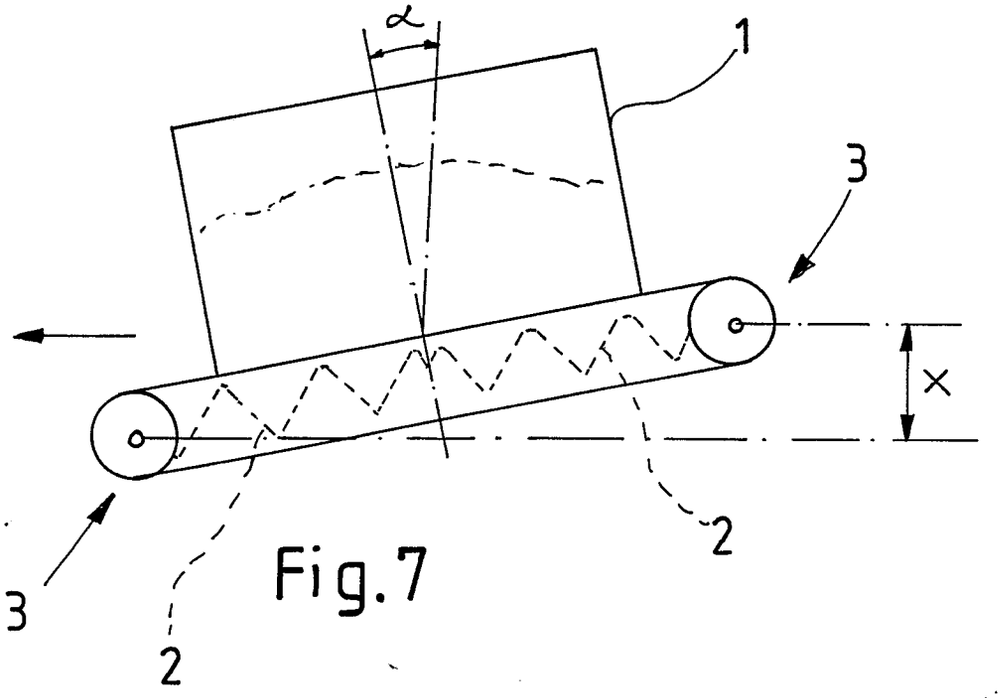

Fig.7

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EUROPEAN SEARCH REPORT

Application Number

EP 89 85 0173

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	FR-A- 550 845 (MAZE) * Page 2, lines 3-31; figures *	1,2	B 28 C 7/16
X	FR-A-2 063 236 (REFRACTAIRES) * Page 5, claims 1-3; figures *	1	
A	US-A-3 370 890 (MORGAN) * Column 3, lines 4-10; figure 1 *	3,4	
A	US-A-4 106 111 (ROSE)		
A	US-A-2 261 441 (LAYNE)		
A	US-A-1 731 953 (THOMSON)		
A	GB-A- 390 257 (BONGARDT)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 28 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12-09-1989	PEETERS S.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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