CLAIMS

1. A process for unloading a bed ~~(2)~~ of particulate material from a vessel ~~(1)~~, which comprises inserting an extraction pipe ~~(4)~~ into the lower part of said bed, injecting a fluidization gas upwardly into the extraction pipe ~~(4)~~ from the bottom part thereof, along the entire length of the extraction pipe, and applying a positive pressure differential between the inlet and the outlet of said extraction pipe.

2. The process of claim 1, wherein the fluidization gas is injected at a flow rate such as to create a dense fluidized phase ~~(5)~~ of said particulate material inside the extraction pipe ~~(4)~~, along its length.

3. The process of any preceding claim, wherein a small pressure differential is applied between the inlet ~~(6)~~ and the outlet ~~(7)~~ of the extraction pipe, so that the pressure remains slightly higher at the inlet of the extraction pipe (inside the vessel) than at the outlet of the extraction pipe (outside the vessel).

4. The process of the preceding claim, wherein the pressure differential is applied by applying a higher pressure inside the vessel ~~(1)~~, and preferably within the bed ~~(2)~~ of particulate material, at the inlet ~~(6)~~ of the extraction pipe ~~(4)~~.

5. The process of any preceding claim, wherein a part of the fluidization gas is removed along the length of the extraction pipe ~~(4)~~, in the upper part thereof ~~(11)~~.

6. The process of any preceding claim, wherein the fluidization gas is injected into the extraction pipe ~~(4)~~ in an inclined direction towards the outlet ~~(7)~~ of the extraction pipe, with an inclination angle with regard to the lengthwise axis of said pipe ranging from 0 to 90 degrees, more preferably of 45 degrees.

7. The process of any preceding claim, wherein the fluidization gas is chosen from air, water vapour, oxygen, hydrogen, inert gases such as nitrogen, and mixtures thereof in any proportions, and is preferably chosen from inert gases, such as nitrogen.

8. The process of any preceding claim, wherein the particulate material is a solid catalyst, and the vessel ~~(1)~~ is a reactor.

9. A device for unloading particulate material from a vessel ~~(1)~~, comprising an extraction pipe ~~(4)~~ which comprises along the entire length of its bottom part injection means ~~(9)~~ suitable for injecting a fluidization gas upwardly into said extraction pipe ~~(4)~~.

10. The device of claim 9, wherein the injection means ~~(9)~~ comprise means ~~(12)~~ for injecting a multiplicity of small jets of gas into the extraction pipe.

11. The device of the preceding claim, wherein the injection means ~~(9)~~ comprise a set of high pressure tubes ~~(12)~~, present along the entire length of the bottom part of the extraction pipe ~~(4)~~, which are provided with small holes over their length, and which are connected to a supply of pressurized fluidization gas.

12. The device of anyone of claims 9 to 11, further comprising means ~~(10)~~ for injecting an additional amount of gas at the inlet ~~(6)~~ of the extraction pipe ~~(4)~~, so as to apply a pressure differential between the inlet ~~(6)~~ and the outlet ~~(7)~~ of the extraction pipe ~~(4)~~.

13. The device of anyone of claims 9 to 12, further comprising means ~~(11)~~ for removing fluidization gas along the length of the extraction pipe ~~(4)~~, in the upper part thereof.