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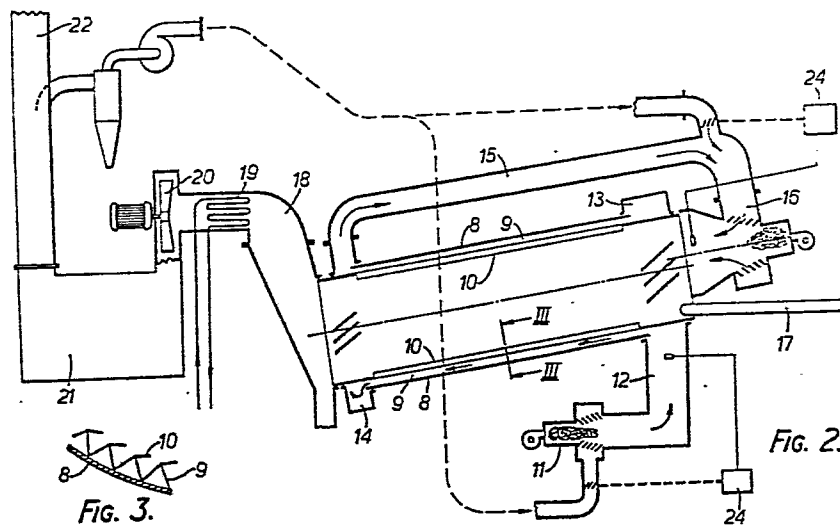
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(54) **Method and device for heating asphalt-containing materials.**

(57) Asphalt-containing materials, in particular materials to be recycled, are heated in a continuous-flow apparatus both indirectly by combustion gases passed through the apparatus in the same direction as the materials and, simultaneously, by direct contact with combustion gases which, as a result of said indirect heating, have cooled to below about 450°C. The materials are preheated to about 80 to 85°C by passing steam therethrough, after which their moisture content is reduced to about 4%. Gases from a burner chamber (11) pass through longitudinally extending channels (9) lining a rotary drum (8) into a by-pass (15), at least part of said gases then being fed into the drum (8) to pass therethrough in the same direction as the materials. The gases can be reheated, before entering the drum, by mixing same at the inlet end thereof with combustion gases from a second burner (16). In other embodiments, the combustion gases pass through tubes and/or an annular channel within the drum into the outlet zone thereof and then flow towards the inlet end.

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 4 165 184 (SCHLARMANN)</u> * Column 1, lines 41-47, 53-62; column 2, lines 47-56, 65-67; column 3, lines 1-7, 50-58, 61-66; column 4, lines 3-6; column 5, lines 31-36, 46-49; column 6, lines 3/4, 36-40, 59-64; column 7, lines 2-5, 37-41; figure 1 *	1,5-7, 10,11, 13,15, 16	E 01 C 19/10
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	<u>GB - A - 220AD1909 (BAXTER)</u> * Page 3, lines 22-24; page 4, lines 11-13, 18-21, 35/36, 50/51; page 5, lines 1-4, 9-11, 24-28,39; page 6, lines 13-41; figure 3 *	1,5,7, 10,11, 13	X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention F: conflicting application D: document cited in the application L: citation for other reasons
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	The present search report has been drawn up for all claims		& member of the same patent family, corresponding document
Place of search	Date of completion of the search	Examiner	
The Hague	25-06-1981	SCHUMAN	



European Patent
Office

EUROPEAN SEARCH REPORT

0024755

Application number
EP 80 20 0727
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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 1 823 189 (CARPENTER)</u> * Page 1, lines 1-3; page 2, lines 10-18, 32-38, 83/84, 86-93, 100-105, 121-127; figures 1,4 * -- <u>US - A - 1 332 137 (NEWHOUSE)</u> * Page 1, lines 8-11, 18-27, 61-75, 95-98, 101-105; page 2, lines 2-9, 28-30, 42-44, 50-53, 59-77; figures 1,2 * -- <u>GB - A - 7141 AD 1915 (HIGHWAYS CONSTRUCTION LTD.)</u> * Page 2, lines 27/28, 49; page 3, lines 1-5, 10-15; figure 3 * -- <u>NL - A - 77 08800 (BV DE MOEL WEGENBOUWMAATSCHAPPIJ)</u> * Page 1, lines 9-12, 18-21, 28; page 2, lines 1/2, 10-14, 31-35; page 3; claim 1 * -- DE PERIODICAL "BITUMEN", vol. 41, no. 2, March/April 1979, pages 56,57 published by: Arbeitsgemeinschaft der Bitumen-Industrie Hamburg, DE. P.J. FLUSS et al.: "Gegenwärtiger Stand der Asphaltwiederaufbereitungstechnik in den USA" * Page 56, left-hand column, lines 6-9, 11-13, footnote, right-hand column, lines 1-3; page 57, lines 38-49; figure 7 * -- ./.	1,5,6, 8,10, 11,13, 16 1,5-7, 10,11, 13,16 1,5,7, 16 1,4-7 1,2,5, 12	TECHNICAL FIELDS SEARCHED (Int. Cl.)



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 4 142 803</u> (MENDENHALL) * Column 1, lines 59-66; column 2, lines 65-69; column 3, lines 1-5, 32-37; column 4, lines 61-66; column 5, lines 21-25; column 6, lines 30-48, 53-62, 67/68; column 7, lines 1, 17-21; figure *	1,2,5, 12	
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	<u>US - A - 2 347 487</u> (KIRCHMANN) * Page 1, left-hand column, lines 18-20; right-hand column, lines 3-9, 23-36, 43-55; page 2, left-hand column, lines 1-4; figures 1,2 *	1,2,5, 6,11- 15	
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	<u>DE - C - 488 751</u> (HAAS) * Lines 14-62; figures 1-3 *	1,2,5, 6,12, 15,16	
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	<u>DE - C - 701 070</u> (GRAUERT) * Lines 21-31, 40-61; figures 1-6 *	1,5-8, 11,13, 16	
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	<u>DE - C - 456 740</u> (MASCHINENFABRIK FRIEDRICH HAAS) * Lines 5-27, 37-43; figures 1-3 *	1,5,6, 8-11, 13,16	
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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>DE - A - 2 446 579 (SCHOLKOPF)</u> * Page 2, lines 1/2, 29-31; page 3, lines 1, 15-21; page 4, lines 1-10, 15-19; page 5, lines 20-26; figure * -- <u>US - A - 2 413 908 (CHESTER)</u> * Column 2, lines 19-26; column 4, lines 42-53, 68/69; column 5, lines 21-24; column 7, lines 6-16; column 8, lines 42-52; figures 1,2 * -- <u>FR - A - 758 470 (LEFEBRE)</u> * Page 1, lines 1-3, 8-12, 25-42; page 2, lines 13-16, 64-67, 78/79, 81-87, 90-99 * -- NL periodical "WEGEN", vol. 50, no. 11, November 1976, pages 327-358 published by: Wegen Boskoop, NL. R.A. BRZESOWSKY: "Enkele indrukken van de NAPA-conventie" * Page 344, center column, lines 21-25; right-hand column, lines 2-11 * -- <u>US - A - 3 866 888 (DYDZYK)</u> * Column 1, lines 4-6; column 2, lines 6-8, 29/30, 39/40, 54-67; column 3, lines 55-57; column 4, lines 36-39, 46-48, 52-59; figures 1,2 * -- ./.	3,5 3,4 3,4 4 5,6, 11-15	TECHNICAL FIELDS SEARCHED (Int. Cl.)



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
P	<u>US - A - 4 190 370 (BROCK)</u> * Column 1, lines 46-51, 65-68; column 2, lines 1-3, 14-20, 25-29; column 3, lines 24-28, 34-45, 55-59; column 4, lines 43-47, 65-67; column 5, lines 2-4, 9-16, 20-23, 36-39; column 6, lines 4-8, 23-28, 36-38, 40-43, 51-60; column 9, lines 45-55; figure 2 *	1, 2, 4-6, 11-15	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
P	GB periodical "CIVIL ENGINEERING", September 1979, pages 56-59, published by Morgan-Grampian Construction Press London, G.B. D.J. BROWN: "Energy saving from asphaltrecycling" * Page 59, right-hand column, lines 23-36 *	1	
P	<u>US - A - 4 191 530 (BEARCE)</u> * Column 1, lines 48-50, 58/59; column 2, lines 4-6, 17, 22-24, 26-29, 60-63; column 3, lines 1-7, 14-16, 23-26; column 4, lines 5-10; figure 1 *	1, 5-7, 11, 13, 15, 16	
E	<u>EP - A - 0 013 946 (HEISE)</u> * Page 3, lines 23/24, 29-31; page 4, lines 1-5, 15-18, 23/24; page 5, lines 1-4; page 6, lines 6-9, 13-15, 27-29; figures 1, 2 *	1, 5-7, 16	
E	<u>NL - A - 79 05309 (BOMAT MATERIEEL)</u> * Page 1, lines 1-3, 20-25; page 2, lines 12-17; page 3, ./.	1, 3-9, 10, 13, 16	



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
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E	<u>NL - A - 79 06432</u> (HOLLANDSCHE WEGENBOUW ZANEN) * Page 1, lines 7-16, 29-33; page 2, lines 3/4, 10-12, 16-21; page 3, lines 1/2, 6-9; fi- gure *	1,3,5, 6,13	
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	<u>NL - A - 79 06433</u> (ESHUIS et al.) ----		