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IN THE HIGH COURT OF JUDICATURE AT MADRAS

DATED: 04.03.2025

CORAM

THE HONOURABLE **MR.JUSTICE SENTHILKUMAR RAMAMOORTHY**

CMA(PT)/20/2024

Dr. Joy Vadakkan Thomas
Parakkulam Road, Tana
Irinjalakuda, Kerala,
India-680 121. ... Appellant

-vs-

The Assistant Controller of Patents and Designs,
Patent Office Branch,
Intellectual Property Office Building,
G.S.T. Road, Guindy,
Chennai 600 032. ... Respondent

PRAYER: Civil Miscellaneous Appeal (Patents) is filed under Section 117(A)I2)-A of the Indian Patents Act, 1970, praying (a) to set aside the impugned order dated 03.01.2024 issued by the Respondent; (b) the Appellant be allowed to amend, add or alter any ground of Appeal and also be permitted to place on record any other relevant material; and (c) Such other appropriate relief, order and/or direction which this Court may deem fit and proper in the circumstances of the case and to meet the ends of justice be granted.

For Appellant : Ms.H.Rajeshwari for

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Mr. R.Sathish Kumar

For Respondent : Mr.R.Subramanian, CGSC

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JUDGMENT

This appeal is directed against order dated 03.01.2024 rejecting Patent Application No.201941042481 for grant of patent for an invention titled "A method for capturing carbon dioxide". Upon receipt of the patent application, pursuant to a request from the appellant, the respondent issued the First Examination Report (FER) on 09.12.2021. In the FER, objections were raised *inter alia* on the ground of lack of inventive step by citing prior arts D1 and D2; and on the ground of non-patentability under Section 3(d) of the Patents Act, 1970 (the Patents Act). The appellant replied to the FER on 08.06.2022. In the reply, the appellant stated that none of the cited documents teach or motivate a person skilled in the art to arrive at the process set out in the claims of the appellant's claimed invention. Pursuant to hearing notices, a hearing was fixed on 06.10.2023. Post hearing submission was made by the appellant on 20.10.2023, and

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the impugned order came to be issued thereafter.

2. Learned counsel for the appellant submitted that the claimed invention relates to a single stage process for capturing and sequestering carbon dioxide by using an insoluble system comprising alkali metals carbonate or alkaline earth metals carbonate and an organic solvent with a little water. Since the system is insoluble, she pointed out that by a simple process of filtration, it becomes possible to separate the carbon dioxide and thereby produce fresh air without carbon dioxide. By comparing and contrasting the claimed invention with the cited prior arts, she submitted that both prior arts D1 and D2 used a soluble system at the first stage. Consequently, she submits that the processes of D1 and D2 involve a second stage at which the segregation is carried out. She also points out that D1 is used as a process for capturing carbon dioxide in course of industrial processes. As regards D2, she submits that the process is intended to reduce carbon dioxide emissions in effluent, exhaust or other carbon dioxide bearing gases from a

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variety of sources. As regards D3, she points out that amine compounds are used. Therefore, she contends that the cited prior arts do not contain teaching, suggestion or motivation that would lead a person skilled in the art to the claimed invention.

3. By referring to the counter affidavit of the respondent, learned counsel submits that a fresh ground has been raised therein by comparing the claimed invention with granted application No.201941040876. By pointing out that this ground of objection was not raised earlier in the FER or hearing notice, she also submits that the impugned order contains no discussion thereon. In support of these contentions, learned counsel referred to and relied upon the judgment of this Court in *Rhodia Operations v. Assistant Controller of Patents and Designs, 2024:MHC:6024*. She also relied upon the judgment in *Windsurfing International INC v. Tabur Marine (Great Britain) LTD [1985] RPC 59.*

4. In response to these contentions, learned counsel for the

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respondent relies on the impugned order. She submits that it was concluded therein that the claimed invention would be obvious from prior arts D1 to D3 and that the appellant failed to establish technical advance or economic advantage.

5. At the outset, it is pertinent to set out independent claim 1 of the claimed invention. The said claim is as under:

> *"1. A process for capture of carbon dioxide from air and gas streams, comprising the steps of: contacting carbon dioxide from the air and the gas streams with at least one metal carbonate in an aqueous organic solvent at a predetermined temperature;*
> *wherein the predetermined temperature is in a range of -50°C to 100°C;*
> *wherein ratio of carbon dioxide to metal carbonate is in a range of 1-2:1 molar equivalents."*

It is evident from independent claim 1 that the appellant deploys one metal carbonate in an aqueous organic solvent for purposes of

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capturing and segregating carbon dioxide from air and gas streams. It becomes necessary to compare the claimed invention with the cited prior arts.

6. Before doing so, it is also pertinent to set out the summary and description of the claimed invention from the complete specification. Paragraphs 12 and 13 of the claimed invention are as under:

> *"[12] The present invention provides a process for capture of carbon dioxide from air/atmosphere and/or from gas streams. The process is relatively fast and involves the use of inexpensive, non-toxic and readily available raw materials.*
> *[13] The present invention relates to a process for capture of carbon dioxide comprising the steps of contacting the carbon dioxide with at least one metal carbonate in an aqueous organic solvent at a predetermined temperature."*

7. Prior art D1 is patent literature pertaining to an invention titled "Process for removal of carbon dioxide from a gas stream".

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Paragraphs 4 and 10 of the complete specification set out the context and problem that D1 set out to resolve:

> *"[0004] In order to capture a significant fraction of cement plant carbon dioxide emissions in a processing unit of a reasonable dimension and cost, it is necessary to have an efficient gas-scrubbing system which can rapidly remove carbon dioxide. One way of storing the captured carbon dioxide in a stable form is to convert it into a stable mineral carbonate, for example an alkaline earth metal carbonate (such as a form of calcium carbonate, magnesium carbonate or a mixed calcium/magnesium carbonate).*
>
> *....*
>
> *[0010] The invention accordingly provides a process for reducing the carbon dioxide concentration of a carbon dioxide-containing gas (preferably a flue gas, more preferably cement plant flue gas) which process comprises, in a first stage, contacting the carbon dioxide-containing gas with a treating solution comprising an alkali metal carbonate and/or hydroxide and with a catalyst to promote the absorption of carbon dioxide to form a second solution comprising an*

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alkali metal carbonate and bicarbonate and, in a further stage, contacting the second solution with a carbonatable silicate-containing material comprising an alkaline earth cation capable of forming an insoluble carbonate to produce silica and a solid carbonate comprising the cation and thus to regenerate a solution comprising alkali metal carbonate."

The above extracts indicate that prior art D1 involves a two stage process. It also indicates that such process involves the use of a soluble system at the first stage. In addition, it is clear that the starting point is the emission of carbon dioxide in industrial processes, particularly in cement plants.

8. Prior art D2 is also patent literature titled "Capture and sequestration of carbon dioxide in flue gases". The abstract of prior art D2 is as under:

*"(57) **Abstract**: There is provided a process for the capture and sequestration of carbon dioxide that would otherwise enter the atmosphere and contribute to global warming and other problems.*

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CO_2 capture is accomplished by reacting carbon dioxide in flue gas with an alkali metal carbonate, or a metal oxide, particularly containing an alkaline earth metal or iron, to form a carbonate salt. A preferred carbonate for CO_2 capture is a dilute aqueous solution of additive-free (Na_2CO_3). Other carbonates includes (K_2NO_3) or other metal ion that can produce both a carbonate and a bicarbonate salt. Examples of suitable metal oxides include several alkaline earths including CaO and MgO. The captured CO_2 is preferably sequestered using any available mineral or industrial waste that contains calcium magnesium or iron in non-carbonate forms, or iron in the Fe+2 oxidation state."

The nature of D2 is evident from the detailed description, which, in relevant part, is as follows:

"Once a carbonate solution has been converted to a bicarbonate, there are generally two preferred options for transferring the carbon dioxide that it contains to be either sequestered or utilized. The first option is to warm the bicarbonate solution to a temperature that will

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cause it to decompose and release the carbon dioxide as a concentrated gas.

....

The second option is to inject the bicarbonate solution into mineral and industrial wastes so that it can react directly with the minerals, in the process converting the bicarbonate solution back into a carbonate solution to be recycled for reuse."

9. As submitted by learned counsel for the appellant, perusal of prior art D3 discloses that amine compounds are used therein. Prior art D3 is non-patent literature titled "Solvents for Carbon Dioxide Capture".

10. In order to determine whether the claimed invention would be obvious from the cited prior arts, it becomes necessary to consider whether there are cues or pointers in the cited prior arts which would cause the person skilled in the art to put it together and arrive at the claimed invention. It is necessary to bear in mind that the

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claimed invention relates to a pure process claim, as is evident from independent claim 1 which has been extracted above. The said prior arts pertain to capturing carbon dioxide emissions in industrial processes, including in effluents. The processes described in the complete specifications of prior arts D1 and D2 deployed a two stage process involving a soluble system at the first stage, thereby entailing a more complex two stage process for the segregation of carbon dioxide. Therefore, it cannot be said that a person skilled in the art would arrive at the claimed invention on the basis of the cited prior arts.

11. In the impugned order, after concluding that the claimed invention would be obvious from the cited prior arts, the respondent has also recorded that the claimed invention does not exhibit unexpected / advantageous effect over prior arts. In the operative portion of the impugned order, the following conclusions are recorded:

"Hence, in view of disclosure of D1-D2

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with D3 the claimed process is considered obvious for a person skilled in the art and the mere changes (i.e. Solvent charge from aqueous to non-aqueous/organic solvent) without any unexpected/advantageous effect over the prior art, not considered inventive.

1.5 Moreover, the complete specification does not provide any results "how much amount of CO_2 captured or removed as MHCO3/M(HCO3)2 through the instant claimed process". Also, no comparative results provided by the applicant to prove the fact that as claimed process using organic solvents is technically advantageous over the conventional process using aqueous solvent."

12. In response, learned counsel for the appellant referred to the examples at paragraph 20 of the complete specification. She also submitted that the claimed invention is a simple and inexpensive process and that there are economic benefits in the claimed invention over the cited prior arts. These aspects have not been duly considered

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by the respondent.

13. As discussed earlier, the counter affidavit of the respondent raises a new ground relating to a patent granted to the appellant earlier. Such new ground cannot be considered in course of this appeal. Since it is stated in the counter that the claimed invention is substantially similar to the granted patent, it would, however, be in public interest that this aspect is examined on remand.

14. For reasons set out above, impugned order dated 03.01.2024 is set aside and the matter is remanded for reconsideration on the following terms:

(i) the respondent shall examine whether the claimed invention exhibits a technical advance or economic advantage over prior art, including the patent granted earlier to the appellant.

(ii) The appellant shall be provided a reasonable opportunity by the respondent, including with reference to the patent granted

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earlier to the appellant.

(iii) In order to preclude the possibility of pre-determination, an officer other than the officer who issued the impugned order shall undertake such re-consideration.

(iv) A reasoned order shall be issued within four months from the date of receipt of a copy of this order.

15. Consequently, CMA(PT)/20/2024 is disposed of on the above terms without any order as to costs.

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Index : Yes / No

Internet : Yes / No

Neutral Citation : Yes/No

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The Assistant Controller of Patents and Designs,
Patent Office Branch,

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SENTHILKUMAR RAMAMOORTHY J.

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