

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference T180006801	FOR FURTHER ACTION		See item 4 below
International application No. PCT/CN2018/102726	International filing date (<i>day/month/year</i>) 28 August 2018 (28.08.2018)	Priority date (<i>day/month/year</i>) 22 September 2017 (22.09.2017)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant CISDI ENGINEERING CO., LTD			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report 24 March 2020 (24.03.2020)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Xiaofan Tang
Facsimile No. +41 22 338 82 70	e-mail: pct.team2@wipo.int

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference T180006801		Date of mailing (day/month/year) 09 November 2018
International application No. PCT/CN2018/102726		FOR FURTHER ACTION See paragraph 2 below
International filing date (day/month/year) 28 August 2018	Priority date (day/month/year) 22 September 2017	
International Patent Classification (IPC) or both national classification and IPC C21C 5/52(2006.01)i		
Applicant CISDI ENGINEERING CO., LTD		

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/	Date of completion of this opinion	Authorized officer

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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Box No. II Priority

1. The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:
 - [1] Upon verification, the priority claim is established.

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	<u>1-10</u>	YES
	Claims	<u>None</u>	NO
Inventive step (IS)	Claims	<u>4-7,, 9, 10</u>	YES
	Claims	<u>1-3,, 8</u>	NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims	<u>None</u>	NO
2. Citations and explanations :			
	[1]	The present written opinion cites the following document:	
	[2]	D1: CN 103003453 A 27 March 2013 (27.03.2013)	
	[3]	<p>D1 (description, paragraphs [0038]-[0060], and fig. 1) discloses a device used for heating a metal raw material fed in continuous to a smelting furnace by means of a second horizontal heating region. The conveyor 32 passes through a first flue region 33 and a second flue region 34 respectively used for preheating and heating the raw material 31. The first flue region 33 preferably but not necessarily has a height lower than the second flue region 34. The conveyor 32 constitutes the bottoms of the flue regions 33 and 34. The flue regions 33 and 34 are aligned with each other and are connected in an operable manner by means of an intermediate flue gas extraction region 35. The device consists of a second heating region 34 introducing a scrap metal 31 into an EAF furnace 30, the intermediate flue gas extraction region 35 existing in the device, and a first preheating region 33 with chemical energy and for receiving the scrap metal raw material 31 from a traditional scrap metal receiving system. A heating device is provided on the position close to the lower metal raw material 31, for example, a burner 11. The burner 11 is preferably provided at a slight inclination on a vault 12 of a fire resisting structure 10. The burner 11 is provided on a position close to the scrap metal 31 to increase the penetration of the heating means in the gaps of the scrap metal per se, so as to improve the heating efficiency of the bottom layer of the raw material. The vault 12 of the fire resisting structure 10 keeps very close to the height of a feeding passage 8 to enhance radiation and limit the hot flue gas 18 generated by the burner 11 within a region as close to the scrap metal 31 as possible. A sealing device 14 suitable for limiting external air to flow into the flue is inserted in an entrance of the first preheating region 33.</p>	
	[4]	1. Novelty	
	[5]	Claim 1 differs from D1 in that: D1 does not disclose that the direction of the horizontal components of combustion air flow of a nozzle I is opposite to the material conveying direction. Therefore, claim 1 is novel in the sense of PCT Article 33(2). Accordingly, the subject matter of claims 2-10, which directly or indirectly refer to claim 1, is also novel in the sense of PCT Article 33(2).	
	[6]	2. Inventive step	
	[7]	D1 is considered to be the closest prior art document.	
	[8]	<p>Although D1 does not disclose that the direction of the horizontal components of combustion air flow of the nozzle I is opposite to the material conveying direction, and does not likewise disclose providing a nozzle II and the direction thereof, a person skilled in the art could select and adjust the distinguishing technical features according to actual needs. The additional technical features of dependent claims 2 and 8 are disclosed by D1. Therefore, the subject matter of claims 1-3 and 8 is obvious, and claims 1-3 and 8 do not satisfy PCT Article 33(3).</p>	
	[9]	<p>Claim 4 differs from D1 in that: D1 does not disclose that a mixed flue gas pipe is connected to a first dust removing port, and a hot flue gas pipe is connected to a second dust removing port. The mixed flue gas pipe and the hot flue gas pipe are both connected to a settling chamber. Moreover, the combination of the features is not likewise a common technical means in the art, and thus, the subject matter of claim 4 is not obvious, and therefore, claim 4 complies with PCT Article 33(3). Accordingly, the subject matter of claims</p>	

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Box No. V

Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability;
citations and explanations supporting such statement

5-7, 9, and 10, which directly or indirectly refer to claim 4, is likewise not obvious, and therefore, claims 5-7, 9, and 10 comply with PCT Article 33(3).

[10] 3. Industrial applicability

[11] The subject matter of claims 1-10 can be made or used in industry, and therefore, said claims are industrially applicable and comply with PCT Article 33(4).