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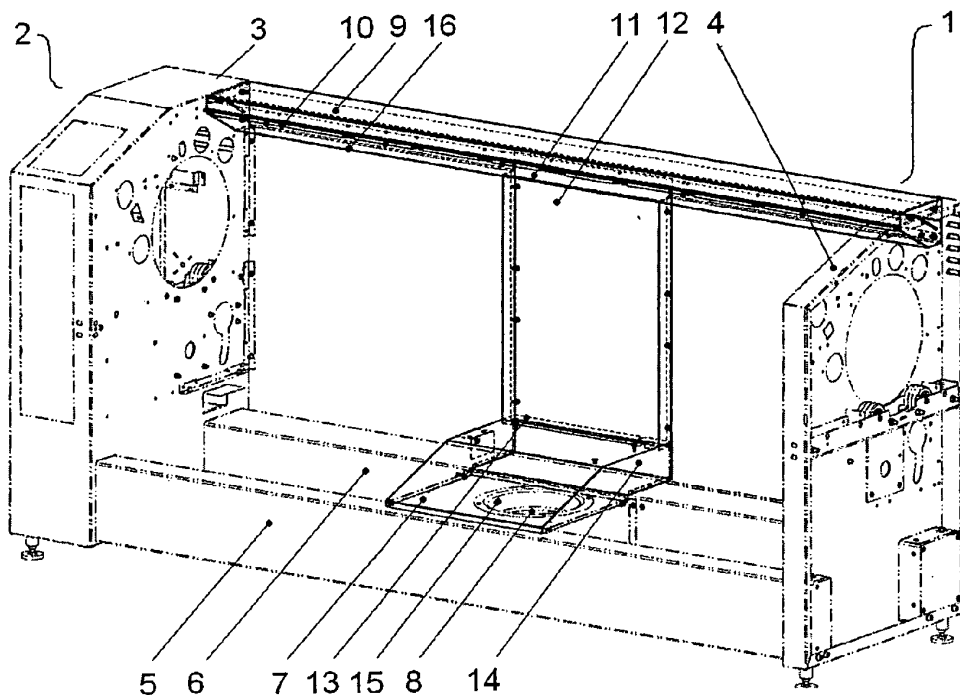
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(54) **Vapour suction device for the flatwork ironer**

(57) Vapour suction device for the flatwork ironer comprising a suction chamber provided by neighbouring suction openings placed in the line on the chamfering bottom side of the longitudinal suction chamber and comprising a fan, where it further consists of the streamleading web (12), the web (12) is connected by its upper opening (11) to the bottom opening of the suction chamber

(9) and the web (12) is connected by its bottom opening (13) to the guiding cover (14), whereas the guiding cover (14) rests on the rear lower hollow longitudinal column (6) and closely overlaps the opened upper side of the fan box (7) with fan opening (15), in which the fan (8) with vertical axe of its rotation is placed, whereas rear lower longitudinal column (6) is provided by a chimney outlet.



Obr. 1

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Description

Background of the invention

[0001] The invention concerns the vapour suction device for the flatwork ironer.

State of the art

[0002] Plenty of vapour, which is generated during ironing inside of a flatwork ironer demands to be continuously and sufficiently sucked. From the state of the art is known the solution, where a dense vaned fan is placed inside one of the side bearing columns of the flatwork ironer.

[0003] Such suction method is described in ES 2041564. Hot air is sucked from an area above an ironing roller by two longitudinal suction tubes and afterwards it is led into the space inside of columns on the sides of the flatwork ironer. Afterwards the hot air is discharged from the bottom of that space into a exhaust chimney. Said system has many disadvantages. Due to the side suction of the vapour from the longitudinal suction tubes, there is no technological possibility to achieve efficient continuous suction of the vapour along the whole length of the flatwork ironer. Another problem arises due to the vertical placing of the fan inside the columns. Arrangement of the fan inside the column demands its small size and so to keep intense suction performance it is necessary to install a radial fan with forwards bent vanes. Densely arranged vanes are lower effective and louder. Such fan to be choked by small fibrous particles, which are emitted both from ironed clothes and from feeding strips during ironing. The large number of particles choke the densely vaned fan, which leads to the reduction of its effectivity. Because of that it is necessary to supply the suction system with filters, which have to be however periodically cleaned. This solution gives additional requirements for the operator and it increases demands for the maintenance.

[0004] In JP 7328294 a method of vapour suction from the inner area of the flatwork ironer is presented, which is performed by two four-vanes fans, which are placed vertically at the bottom of the front wall of the machine. The disadvantage of the solution is the lack of direct extraction of the vapour from the area above the ironing cylinders, where the vapour concentration is the greatest. Another disadvantage is blowing of the hot air directly onto the operator's legs.

[0005] In ES 8702963 the flatwork ironer provided by vertical fans at the rear side of the machine is presented. Even here, however, the sufficiently intensive and uniform suction of the vapour from the area above the ironing cylinders is missing. The lack of it is compensated by higher performance of the fans.

[0006] The aim of the invention is to disclose the vapour suction device for the flatwork ironer, which provides sufficiently intensive and uniform suction and simultane-

ously limits the complexity of the suction equipment.

Feature of the invention

[0007] The above mentioned disadvantages are considerably eliminated by use of the vapour suction device for the flatwork ironer comprising a suction chamber provided by neighbouring suction openings placed in the line on the chamfering bottom side of the longitudinal suction chamber and comprising a fan, where it further consists of the streamleading web, the web is connected by its upper opening to the bottom opening of the suction chamber and the web is connected by its bottom opening to the guiding cover, whereas the guiding cover rests on the rear lower hollow longitudinal column and closely overlaps the opened upper side of the fan box with fan opening, in which the fan with vertical axis of its rotation is placed, whereas rear lower longitudinal column is provided by a chimney outlet.

[0008] In an advantageous embodiment the suction openings are bigger on the side parts of the longitudinal suction chamber than in the middle of it.

[0009] In another advantageous embodiment the outlet in the rear lower longitudinal column is provided as the side outlet.

[0010] In another advantageous embodiment the outlet in the rear lower longitudinal column is provided as the rear outlet.

[0011] In another advantageous embodiment the vapour suction device is placed in the middle of the length of the flatwork ironer.

Description of the drawings

[0012] The invention will be further explained by using the drawings, in which Fig. 1 presents the view of the vapour suction device for the flatwork ironer according to the invention, which is placed in the frame of the flatwork ironer shown there in phantom, Fig. 2 presents the device according to the invention in the general detail, Fig. 3 presents the front view of the fan box with the fan and the rear longitudinal crossbar, Fig. 4 presents the rear view of the fan box with the fan and the rear longitudinal crossbar provided by side outlet and Fig. 5 presents the rear view of the fan box with the fan and the rear longitudinal crossbar provided by rear outlet.

Preferred embodiments of the invention

[0013] In Fig. 1 a vapour suction device 1 for the flatwork ironer 2 according to the invention is presented, which is placed in the middle of a flatwork ironer 2, shown in phantom, between the side columns 3 and 4. At the bottom of the flatwork ironer 2 are shown the connecting elements of the whole structure, namely the lower longitudinal front crossbar 5 and the lower longitudinal rear crossbar 6. Among them is placed the fan box 7 with a fan 8.

[0014] In Fig. 2 the detail of the vapour suction device 1 is presented, which comprising a longitudinal suction chamber 9 provided with longitudinal openings 10. Into the longitudinal suction chamber 9 a streamleading web 12 is connected by its upper opening 11 and by bottom opening 13 the streamleading web 12 is connected with a guide cover 14. The guide cover 14 rests on the rear longitudinal crossbar 6 and closely overlaps the upper side of the fan box 7 with the fan opening 15.

[0015] The fan box 7 with the fan 8 is connected to the lower rear longitudinal column 6, which connects the side columns 3, 4 of the flatwork ironer 2, namely in the middle of its length. This is shown in Fig. 3. The streamleading web 12 is rectangular, but it is possible to imagine a different shape. The streamleading web 12 together with the guide cover 14 forms the L-shape.

[0016] The longitudinal suction chamber 9 is provided by suction openings 10 placed in the line on the chamfering bottom side of the longitudinal suction chamber 9. The openings 10 are bigger on the side parts of the longitudinal suction chamber 9 than in the middle of it, to improve the quality of the uniform intensity of suction. Suction which is indicated by an arrow 17 is uniform along the whole length of the longitudinal suction chamber 9, because less suction on the side parts of the longitudinal suction chamber 9 is compensated by larger size of the openings 10. Conversely the suction intensity of the openings 10 placed in the middle part of the longitudinal suction chamber 9 is limited there by smaller size of the openings 10.

[0017] The longitudinal suction chamber 9 is intended not just to suck the vapour, but also to form the upper crossbar of the flatwork ironer 2.

[0018] The sucked vapour is pulled due to the fan 8 into the rear lower longitudinal crossbar 6 through the inlet opening 18 in its wall. One wall of the fan box 7 is open and faced to the rear lower longitudinal crossbar 6 and follows up with the opening 18 provided on the vertical side of the rear longitudinal crossbar 6, which is orientated inside the flatwork ironer 2. The lower rear longitudinal crossbar 6 is hollow. The inlet opening 18 through the vapour leaves the fan 8 is good to see in Fig. 5

[0019] In Fig. 3 the direction of the sucked vapour passing through the streamleading web 12 and the guide cover 14 and through the opening 15 to the fan 8 is indicated by an arrow 19. The fan 8 is partially shown in Fig. 4 and 5.

[0020] The rear lower longitudinal crossbar 6 is provided by two outlets 20, 21 intended to be connected an unshown chimney. Fig. 4 presents the embodiment provided with side outlet 20 and Fig. 5 presents the embodiment provided with rear outlet 21, which is placed across the inlet 18. The outlet 20, 21 which is not used is covered by cover 22.

[0021] Moreover, in the rear lower longitudinal crossbar 6 is placed a guide element, which is made by e.g. metal plate. It is not shown in the pictures. The guide element improves guiding of the exhausted vapour to the outlet 20 or to the outlet 21 according to that, which outlet

20, 21 is through and which one is covered by cover 22.

[0022] Above described embodiment of the vapour suction device 1 for the flatwork ironer 2 allows to use the fan 8 with backwards bent vanes, which has larger diameter and lower number of the big aerodynamically shaped vanes with big distance between the vanes, which is low-demanding for its maintenance in a comparison to the prior art, due to absence of the filters as well as it has a positive influence on effectivity and loudness.

[0023] Another advantage is the ability to offer to customers two possibilities of exhaust chimney connection, which makes the vapour suction device 1 more variable and user-friendly.

[0024] In the case of using of the vapour suction device for the flatwork ironer with gas heating, an outlet of burnt gas from the combustion chamber of the gas heating is led into the guide cover 14 so that the burnt gas is led horizontally and simultaneously tangential to the external diameter of the fan 8 according to the turning direction of the fan 8 to the fan box 7. The mixture of the burnt gas and vapour is created before the inlet into the fan 8. Afterwards that mixture is blown out through the exhaust chimney. The tangential inlet of the heat burnt gas simultaneous protects overheating of the rotor of the drive of the fan 8.

Claims

1. Vapour suction device for the flatwork ironer comprising a suction chamber provided by neighbouring suction openings placed in the line on the chamfering bottom side of the longitudinal suction chamber and comprising a fan **characterized in that**, it further consists of the streamleading web (12), the web (12) is connected by its upper opening (11) to the bottom opening of the suction chamber (9) and the web (12) is connected by its bottom opening (13) to the guiding cover (14), whereas the guiding cover (14) rests on the rear lower hollow longitudinal column (6) and closely overlaps the opened upper side of the fan box (7) with fan opening (15), in which the fan (8) with vertical axe of its rotation is placed, whereas rear lower longitudinal column (6) is provided by a chimney outlet.
2. Vapour suction device according to the claim 1, **characterized in that**, the suction openings (10) are bigger on the side parts of the longitudinal suction chamber (9) than in the middle of it.
3. Vapour suction device according to the claim 1, **characterized in that**, the outlet in the rear lower longitudinal column (6) is provided as the side outlet (20).
4. Vapour suction device according to the claim 1,

characterized in that, the outlet in the rear lower longitudinal column (6) is provided as the rear outlet (21).

5. Vapour suction device according to the claim 1, **characterized in that**, the vapour suction device (1) is placed in the middle of the length of the flatwork ironer (2).

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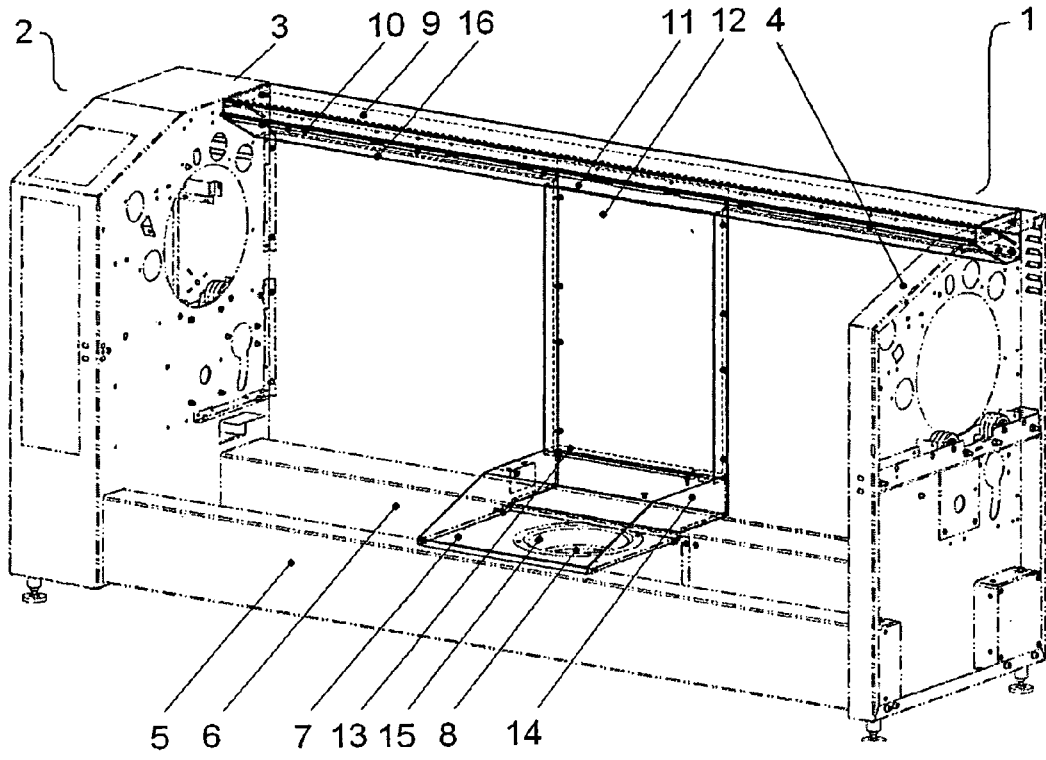
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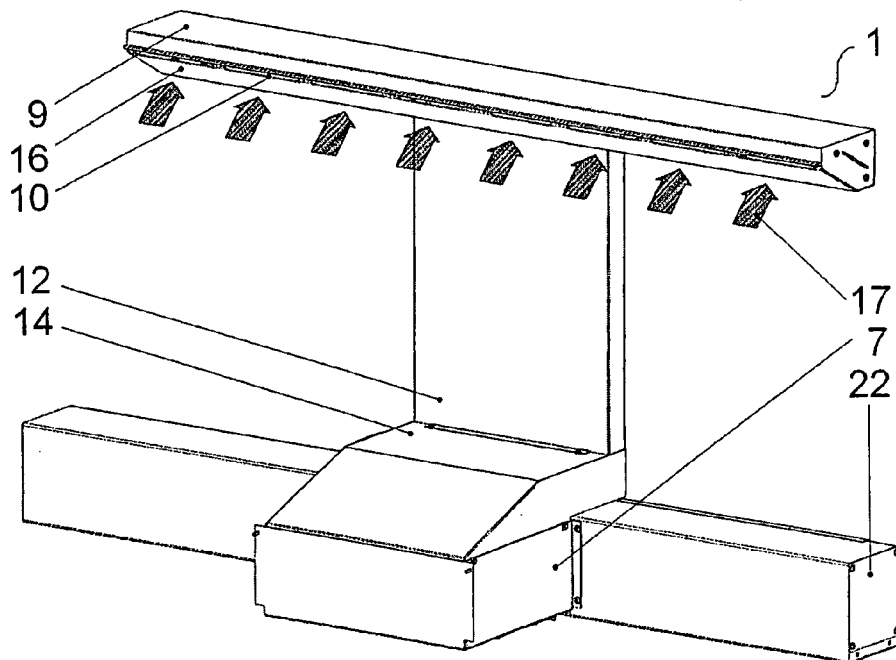
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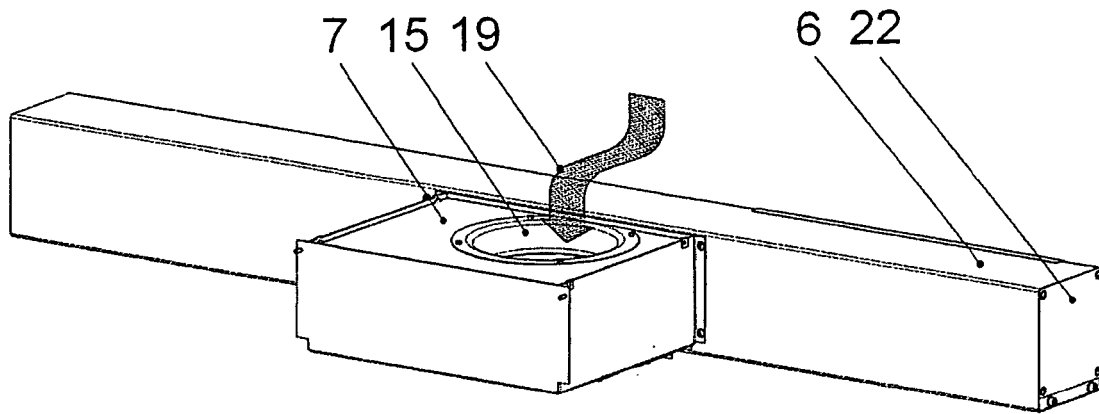
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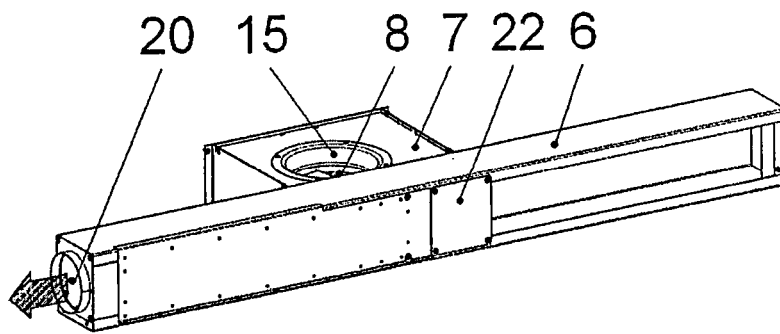
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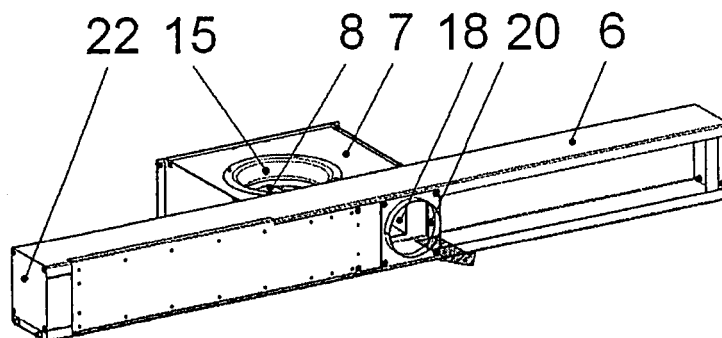
Obr. 2



Obr.3



Obr.4



Obr.5



EUROPEAN SEARCH REPORT

Application Number
EP 11 46 6007

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	ES 2 041 564 A2 (GIRBAU SA [ES]) 16 November 1993 (1993-11-16) * column 4, line 55 - column 5, line 13; figures 1,2 *	1	INV. D06F71/04
A,D	JP 7 328294 A (TOKAI CORP) 19 December 1995 (1995-12-19) * abstract *	1	
A	US 3 667 143 A (HALL ROGER SMITH) 6 June 1972 (1972-06-06) * column 1, line 49 - column 1, line 69; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F D06G
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 September 2011	Examiner Fachin, Fabiano
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 46 6007

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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23-09-2011

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		AT 149591 T	15-03-1997
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