(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 161 897 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.12.2001 Bulletin 2001/50

(51) Int Cl.[7]: **A47B 37/00**, A47F 9/00

(21) Application number: **01660107.2**

(22) Date of filing: **06.06.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **06.06.2000 FI 20000234 U**

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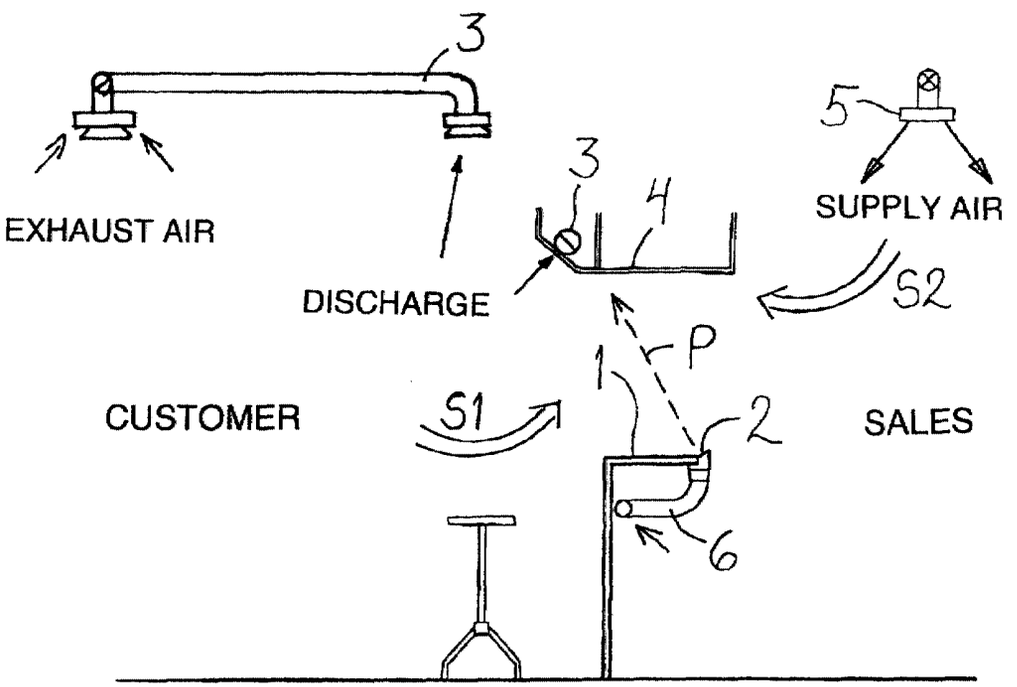
(54) Restaurant service counter and a method for using same

(57) The invention relates to a restaurant service counter (1) such as a bar counter, containing an air nozzle (2) whose nozzle opening or openings is/are directed upwards to produce an air curtain within a particular width. The air nozzle (2) is placed on the rear edge of the counter (1) on the staff's side and the air intake of the same is connected to fresh air. The air nozzle (2) is directed diagonally upwards and forward and in the blasting area of the same there is an exhaust duct (3) for extracting of blast air and secondary air entrained therein in local exhaust ventilation.



SECTION A – A

Fig.1

EP 1 161 897 A1

Description

[0001] The invention relates to a restaurant service counter, such as a bar counter. The invention also relates to a method in connection with a restaurant service counter.

[0002] For a long time, attempts have been made to restrict smoking in restaurant facilities by means of legislation by referring e.g. to the exposure of the staff in the restaurant to tobacco smoke. For example in Finland, the law on tobacco nowadays forbids smoking at bar counters.

[0003] Solutions for solving the problems caused by tobacco smoke in restaurant facilities are disclosed for example in the US patent 5441279, in which a casino table contains a filter which filters the air sucked from the customers' side and blows it up on the worker's side. Similar type of circulation is disclosed in the GB application publication 2180054, in which on the customer's side of the counter an air curtain is blown upwards with the purpose of isolating tobacco smoke from the person working behind the table, and the air that is blown upwards is collected and filtered to be blown again. A problem in the latter solution is the unpleasant feeling of draught on the customer's side, in addition to which a common problem occurring in the circulation of air is that despite of the filter, smoke-laden air may be released in the air blast (e.g. if the filter functions in reduced capacity/is out of order), and problems are, at any rate, caused by the need for maintenance resulting from the heavy loading.

[0004] It is an aim of the invention to eliminate the aforementioned drawbacks. To attain this purpose, the invention is primarily characterized in what will be presented in the characterizing part of claim 1.

[0005] In this invention an air nozzle is arranged on the worker's side of the counter in particular, wherein the customer does not experience a feeling of draught. Fresh air that will be blown upwards is taken from the free smokeless air space of the restaurant, for example under the counter. An exhaust duct is connected to the air-discharge system of the restaurant. The blast air is capable of taking along secondary air both from the staff's side and from the customers' side.

[0006] Preferably, the air nozzle is directed diagonally above the counter. Thus, the air blast takes place in an area where it cannot be noticed easily.

[0007] The method according to the invention, in turn, is primarily characterized in what will be presented in the characterizing part of the appended claim 9. An air curtain of is blown upwards from the rear edge of the counter and it is extracted by means of local exhaust ventilation as exhaust air. When the clean air of the room is used as fresh blast air and the air blown upwards is extracted with the exhaust air of the room, problems of closed circulation of air do not occur. When the blast exits from the rear edge of the counter, the above-described advantages are attained.

[0008] In the following, the invention will be described in more detail with reference to the appended drawing, in which

Fig. 1 shows a side-view of the apparatus,
Fig. 2 shows a rear view of the apparatus, and
Fig. 3 shows the nozzle on a larger scale.

[0009] On the rear edge of a restaurant service counter 1, such as a bar counter, an air duct is arranged in parallel with the edge, one side of the air duct being equipped with a horizontal air nozzle 2 by means of adjacent nozzle openings. The nozzle structure can also be composed of a continuous longitudinal nozzle opening (nozzle slot) or adjacent slots. The nozzle structure is attained by perforating the wall of the pipe forming the air duct with a suitable spacing in such a manner that when the holes are formed, collars extending outwards are produced therein. The air nozzle 2 (openings) are directed in such a manner that air is directed diagonally upwards towards the front edge (arrow P). Thus, the air current is primarily directed to an area not attended, and the customers and workers do not experience the feeling of draught. The air duct is partly built in below the table level so that only the wall containing the nozzle is visible therefrom, and thus it can be made to look like an elevated rear edge of the counter. In Fig. 1 the wall of the air duct in which the nozzle is located is arranged in an inclined position rising from the plane of the counter 1. The air duct in the wall of which the opening/openings are located, is a pipe-like structure located against the rear edge of the table top of the restaurant service counter and shown in cross-section on a larger scale in Fig. 3.

[0010] The produced air curtain is directed towards the upper bracket, i.e. a shelf 4, located above the table level of the counter 1, and the air current and the smoke entrained therein, coming from the customer's side with the secondary air (arrow S1) ends up in a horizontal exhaust duct 3 extending on top of the shelf 4 and located closer to the customer's side, i.e. the front side, when seen from the rear edge of the counter. The exhaust duct 3 can contain a sufficient amount of discharge openings, i.e. the discharge openings form a local exhaust ventilation area substantially parallel to the air curtain. The exhaust duct 3 is connected to the air discharge system of the restaurant, i.e. it can lead to the exhaust air unit belonging to the general ventilation of the restaurant. Behind the counter 1, above the working area there is also an inlet 5 of the supply air ducting bringing fresh supply air, i.e. a diffuser of supply air, and secondary air (arrow S2), entrained by the air curtain from the fresh supply air coming from said inlet, enters the exhaust duct 3. When the supply air is brought to the staff's side, it is at the same time possible to ensure the flow of air therefrom to the customers' side, which prevents the access of tobacco smoke to the other direction. Similarly, the air intake point of the air nozzle 2 is located behind

the front panel of the counter, i.e. it is isolated from the customer premises and at the same time located on the inlet side of fresh air. Thus, the air intake of the nozzle and the air exhaust of the nozzle are connected to the general ventilation system of the restaurant room, the air intake to the supply air of this general ventilation and the exhaust to the exhaust air of the general ventilation, and a closed circulation is not necessary. The blast air intake point for the nozzle is also clearly separated from the area (customers' side) in which the emission (especially tobacco smoke) is produced that is to be isolated and extracted by the air curtain P.

[0011] Fig. 1 also shows the alternative that the exhaust duct 3 is brought to the blasting area of the nozzle from the ceiling, for example as a pipe branching from an exhaust air duct belonging to the general ventilation of the room and located on the ceiling. The air intake point is located in the blasting area of the nozzle, towards the customers' side from the rear edge of the counter. Thus, the air coming from the air nozzle 2 and the secondary air entrained therein are discharged as local exhaust ventilation in this alternative as well. In this alternative, there may also be several intake points distributed over the width of the counter, as in the horizontal exhaust duct extending parallel to the counter.

[0012] Fig. 2 shows the location and air intake of the air nozzle 2 when seen from behind the counter. In the middle of the horizontal air duct located at the rear edge of the counter, an inlet duct 6 of blast air is coupled, said inlet duct containing a control damper 7 and possibly a filter in its intake end. The inlet duct 6 contains a blower 8 (for example with a thyristor control) and on both sides of the same silencers, i.e. sound traps 9. The intake end can also be located elsewhere than underneath the counter and behind the front panel of the same, in such a point, however, that it is connected to the fresh air coming from the general ventilation of the room.

[0013] Hereinabove, the concept of air curtain refers either to a curtain extending continuously in the lateral direction of the counter, or to several adjacent air cones (coming from separate nozzle openings) together producing an isolating and secondary air guiding effect similar to that produced by an air curtain.

Claims

1. A restaurant service counter (1) such as a bar counter, containing an air nozzle (2) whose nozzle opening or openings are directed upwards to produce an air curtain (P) within a particular width, **characterized in that** the air nozzle (2) is positioned on the rear edge of the counter (1) on the staff's side and its air intake is connected to fresh air.

2. The restaurant service counter according to claim 1, **characterized in that** the nozzle opening/openings of the air nozzle (2) is/are directed diagonally upwards above the counter (1).

3. The restaurant service counter according to claim 1 or 2, **characterized in that** there is an exhaust duct (3) in the blasting area of the nozzle.

4. The restaurant service counter according to claim 3, **characterized in that** the exhaust duct (3) is positioned on top of a shelf (4) located above the level of the counter (1).

5. The restaurant service counter according to claim 3, **characterized in that** the exhaust duct (3) is fixed to the ceiling.

6. The restaurant service counter according to any of the preceding claims, **characterized in that** the air nozzle (2) is formed in a longitudinal horizontal air duct extending parallel to the rear edge of the counter.

7. The restaurant service counter according to claim 6, **characterized in that** the air duct of the air nozzle (2) that contains the nozzle opening/openings in its wall, is at least partly built in below the level of the counter (1).

8. The restaurant service counter according to claim 6, **characterized in that** the nozzle opening/nozzle openings is/are located on the wall of the air duct which forms a border rising above the level of the counter in the rear edge of the counter (1).

9. A method in connection with a restaurant service counter (1) such as a bar counter, in which an air curtain (P) is blown upwards within a particular width, by means of which air curtain the travel of air currents and possible tobacco smoke with the same from the customers' side to the staff's side of the counter is prevented, **characterized in that** the air curtain (P) is blown from the rear edge of the counter on the staff's side and the air of the air curtain (P) and the secondary air entrained therein is extracted in local exhaust ventilation as exhaust air.

10. The method according to claim 9, **characterized in that** the air curtain (P) is directed diagonally forward and upwards above the counter.

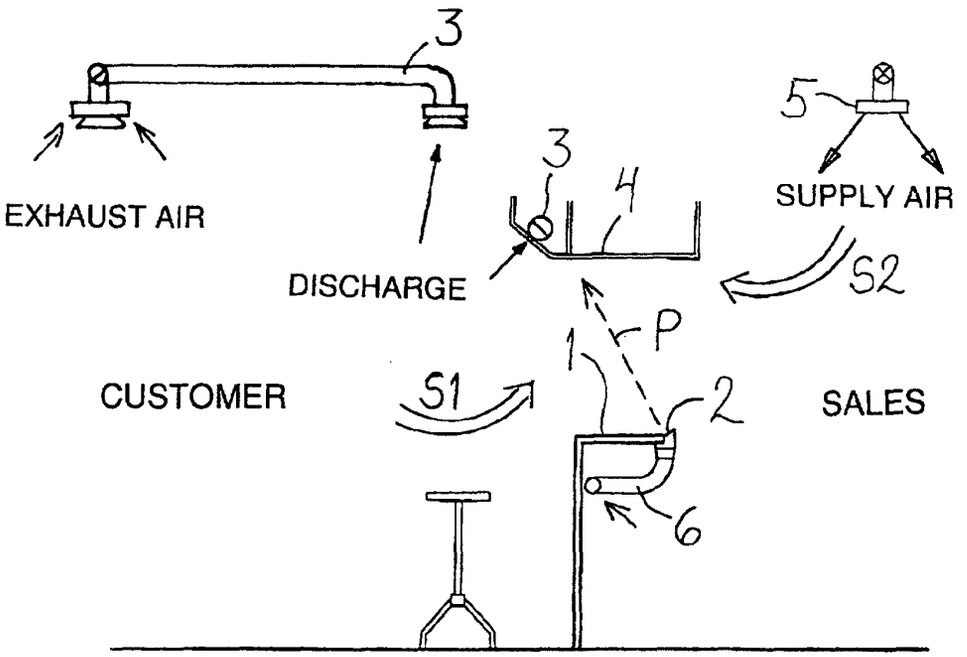


Fig.1

SECTION A – A

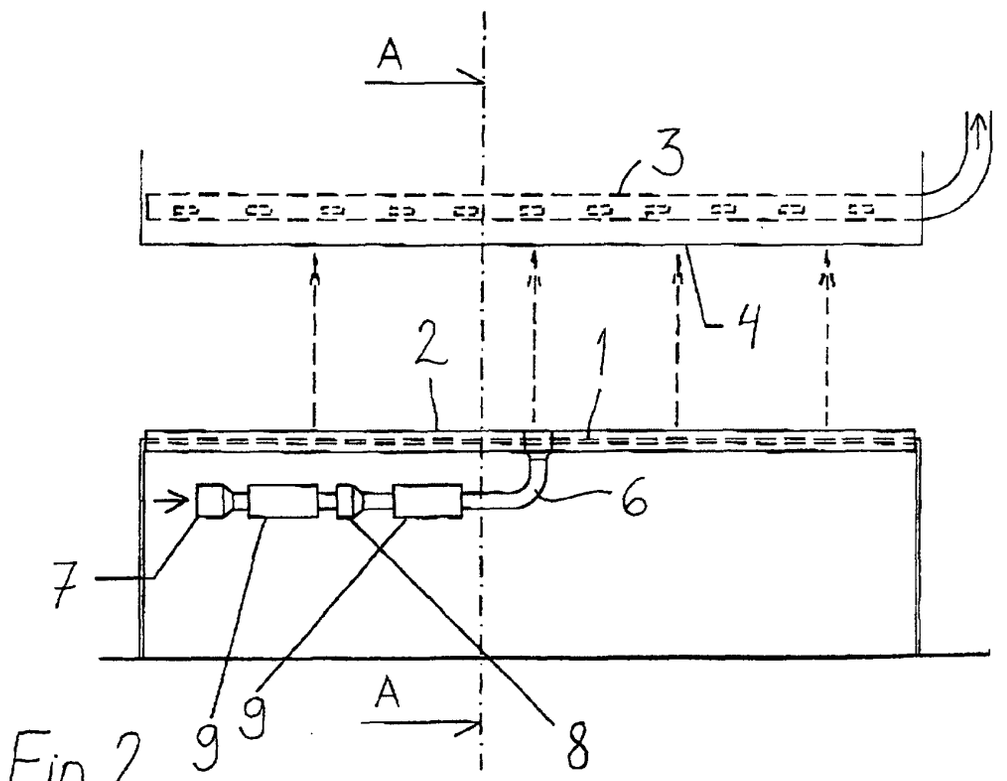


Fig.2

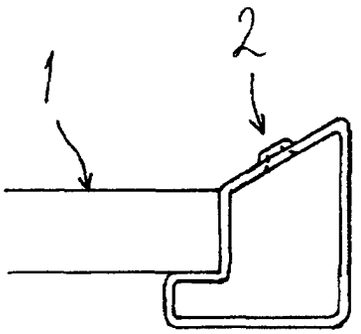


Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 01 66 0107

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,Y	GB 2 180 054 A (HOLWAY JOHN WALTER) 18 March 1987 (1987-03-18) * page 2, line 86 - line 101 * * page 2, line 108 - line 112; figure 3 *	1-10	A47B37/00 A47F9/00
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A	US 5 417 433 A (PHILLIPS DONALD A) 23 May 1995 (1995-05-23) * column 2, line 40 - line 47; figures 1,2 *	1-10	
A	WO 85 04240 A (FOSTER LEO J;CALDERBANK FRANCIS J) 26 September 1985 (1985-09-26) * figure 2 *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A47B A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	24 August 2001	Papadimitriou, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 66 0107

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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