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(54) Improvements in wine barrel racks

(57) Starting from a rack where a rectangular base structure (1), preferably metal, equipped with seating for a pair of barrels (2). A base structure fitted to on the apices of its posts (3) acting as separators for the piling up between racks and consequently, for the piling up of barrels. The improvements consist of establishing a seating for each barrel (2), a set of four wheels (7), assembled with free rotation on short arms (6) fitted to

the base structure (1), in such a way the said set of wheels determines perfect stability for the respective barrel (2), yet, allowing rotation of the said barrel (2) on its own axis, to facilitate its mobility during barrel control manoeuvres, decanting of its contents or cleaning of the same.

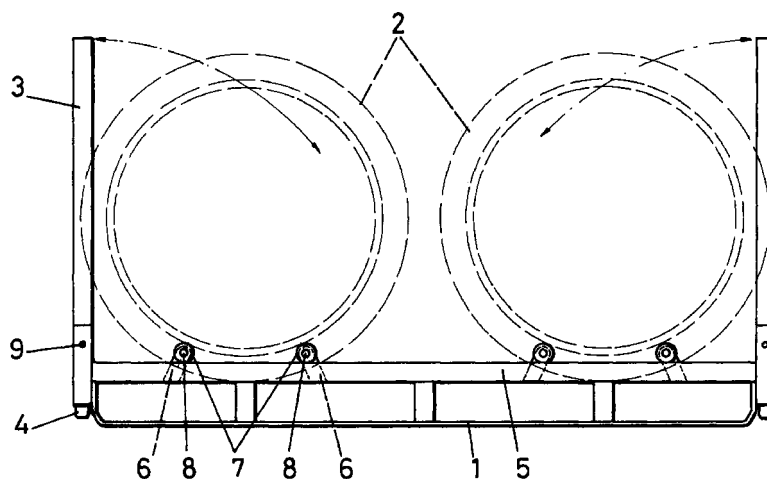


FIG.1

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Description

PURPOSE OF THE INVENTION

[0001] This invention refers to the improvements incorporated in wine barrel racks, which are used in large wine cellars to be precise. These improvements permit the accumulation of barrels, stably supported in horizontal position without them to withstand the weight of those arranged above them; as the load of each and every one of the barrels is transferred directly towards the floor via the structure defined by the racks. In other words, the barrels are only required to support their individual load.

[0002] The invention improvements are designed to facilitate the mobility of each of the barrels within the within the corresponding rack.

INVENTION BACKGROUND DATA

[0003] In the large wine cellars, wine aging in barrels is done via the accumulation or piling up of the barrels, in an horizontal position, i.e., with their bases resting against vertical planes, so that the barrel bottoms rest between pairs of beams arranged in parallel on the floor, and conveniently wedged to prevent displacement, but at the same time guaranteeing a stable positioning of the barrels in question.

[0004] The subsequent barrel levels are obtained by resting the barrels in between each other so they finish arranged in quincunxes, always equipped with wedges, and piled up as high as necessary, limited logically by the height of the cellar.

[0005] This system of piling up, commonly used in the large wine cellars for aging wine, presents a series of problems and inconveniences, which to date have yet to be resolved, and are as follows:

- The stability of the barrels lacks security, since this is exclusively obtained by means of wedges, which in the event of these "failing", the barrels would obviously move, in other words collapse, involving the subsequent accident risk of the workers engaged in their tasks within the cellar, not to mention the economic cost involved.
- Barrels, which are piled up forming different levels, all resting against each other implies handling difficulties.
- The barrels on the lowest levels are obliged to withstand the weight of the higher ones. Naturally, a barrel is manufactured in relation to its function and the load of its contents when full. Therefore, barrels are normally not designed to withstand heavy weights, which means that when are piled up as set out above, they may become deformed or damaged.

[0006] In an attempt to solve this problem, the petitioner himself is the owner of the Spanish utility model U 9801070, describing a wine barrel rack. This consists of a rectangular shaped metal structure, constituting the rack base, equipped with the corresponding apices of vertically orientated tubular sections destined for immobile coupling of vertical posts or columns acting as separators in the piling up between the racks, whose length must obviously be greater than the maximum diameter of the barrels, including the mentioned base with leg supports on the rack posts immediately below, plus a metal structure constituting the base of each rack in relation to the crossbeams, with cross-sections or rods appropriately shaped to form cavities for perfect stabilisation of the barrels.

[0007] In this way each rack accommodates two laterally adjacent, perfectly stabilised barrels on the mentioned cross-sections or rods attached to the base structure. On top of this pair of barrels others can be arranged, resting only the legs of each one on top of the posts immediately below, with the metal structures sufficiently separated so the barrels are physically independent of each other.

[0008] The petitioner himself, is also the owner of the European patent number 99500085.8 "Improved support for barrels" and of the European patent 99500111.2 "Support structure for wine barrels", where with modifications in relation to the previously mentioned utility model, racks are obtained which can be assembled together with considerable lateral displacement, in a quincunxes arrangement to be precise, applicable to the relative arrangement between the barrels themselves.

[0009] These racks, whilst completely resolving the previously mentioned problem, also present a problem, which is the mobility of the barrels themselves, mobility which may be necessary for different causes, such as when controls are carried out regarding the reduction or leakage, on decanting, cleaning the barrel, etc.

DESCRIPTION OF THE INVENTION

[0010] The improvements proposed by the invention fully resolve the problem previously set forth, allowing easy movement of the barrels within their racks, to the extent these may freely rotate on their own axis with minimum effort.

[0011] To this end and more specifically starting from the structuring similar to that of the previously mentioned utility model 9801070, the invention improvements consist of replacing the cross-sections or rods for the seating and stabilisation of the barrels for pairs of wheels assembled with free rotation on short arms, in such a way the said wheels become barrel supports, allow free rotation of the same on their own axis with minimum effort as previously mentioned.

[0012] In accordance with the other invention features the said arms will adopt oblique arrangements,

preferably radials in relation to the barrel, for the purpose of an optimum transmission of efforts towards the rack structure.

[0013] It has also been foreseen that the said wheels be sufficiently resistant to withstand the barrel load, but at the same time of a material sufficiently soft, so as not to mark or damage the barrel surface, both in the stable position of the same, as when it is subjected to a rotary movement.

[0014] In this way, easy movement is obtained on those occasions when the barrel, has to be refilled either due to depletion or leaks. It also facilitates the extraction of the wine during decanting, and the barrel can be cleaned "in situ" without the need for displacements, since the analogous form of its nozzle can be orientated laterally or downwards, again with minimum effort.

[0015] Finally and in accordance with the other invention characteristics, it has been foreseen the posts acting as separators between the racks can be folded onto the base structure, instead of being dismountable, for the purpose of facilitating and simplifying the rack folding operations during its storage and transport when empty, as well as facilitating its unfolding, i.e., converting it to the operative position.

DESCRIPTION OF THE DRAWINGS

[0016] To complement this description and for the purpose of offering a greater comprehension of the invention characteristics, in accordance with a preferential practical execution of the same, a set of drawings are attached as an integral part of the said description, where the following has been represented in an illustrative but not limiting fashion:

Figure 1. — By means of a schematic representation with frontal elevation shows a barrel rack executed in accordance with the improvements, which are the purpose of this invention.

Figure 2. — Shows a floor view of the rack in the previous figure.

PREFERENTIAL EXECUTION OF THE INVENTION

[0017] With these figures it can be seen how the rack according to the invention improvements is structured on a base platform (1) preferably metal, set on crossbeams and head beams conferring it structural rigidity, to withstand the loads to which it is to be subjected, defining a rectangular shape with appropriate dimensions for a pair of barrels (2). Its apices are attached to corresponding vertical posts (3). Likewise, its upper end surpasses the highest barrel level (2), in such a way that the posts act as separators in the piling up between racks, transmitting the efforts directly between them, through the said posts (3), without the

barrels (2) being affected by the load placed on top of them. The said posts (3) could be hollow free ends with its bottom end having a wedge (4) that can be plugged into the said hollow ends, to stabilise the assembly in the light of possible forces tending to create transverse displacements between the racks.

[0018] From this basic structure and in accordance with the invention improvements, on the cross beams (5) of the base structure (1), these are firmly joined to the same pairs of arms (6), in such a way that the arms of each pair are symmetrically arranged in relation to the imaginary vertical diameter of the barrel (2), in the position planned for the same. Each one of these arms (6) has a wheel (7) on the end, assembled with free rotation, constituting a support point for the barrel (2), in such a way that each barrel rests on four wheels, as can be seen on the floor view of figure 2; perfectly stabilised, but with the possibility of turning on its own axis, with the application of minimum effort.

[0019] The arms (6) will preferably have a tilted arrangement, clearly radial in relation to the barrel (2) they have to support, for the purpose of improving the transmission of efforts towards the base structure (1) due to the barrel's own weight including its contents.

[0020] Furthermore the axes (8) of the wheels (7) must also adopt an oblique position, in such a way they finish parallel to the barrel's imaginary tangent at its point of contact on the wheel with the same.

[0021] As previously mentioned the wheels (7) have to be of sufficiently resistant material to withstand the efforts to which they are to be subjected, yet at the same time sufficiently soft so as not to mark the external surface of the barrel, both when resting stably on the wheels and when subjected to a rotary movement on their own axis.

[0022] Finally, the posts (3) are attached to the base structure (1) via articulated joints (9) enabling their tilting between two limit positions. A tilting on its own base structure (1) corresponding to the storage, transport situation i.e. when the rack is inoperative; and the other, that represented in figure 1, where it adopts a vertical arrangement, which under no circumstance may be surpassed in an outward direction. In this sense, and as shown in the said figure 1, the tilting axis (9) for the posts (3) may be clearly situated above the lower end of the same, in such a way that the said lower end rests against the corresponding end of the base structure (1), acting as a tilt buffer limit going outwards, for the said posts. Nevertheless, any other limit system may be used provided it establishes the said limits.

Claims

1. Improvements in the barrel racks, particularly in racks set on a rectangular shaped base structure, preferably metal, defining seatings for a pair of barrels, laterally adjacent from whose apices emerge posts acting as separators in the piling up between

racks. The said seatings for each barrel (2) consist of on four wheels (7) assembled with free rotation at the end of the respective arms (6) conveniently fitted to the base structure (1), in such a way, the said wheels (7), apart from stabilising the barrels (2), also allow rotation of the same on their own axis with minimum effort. 5

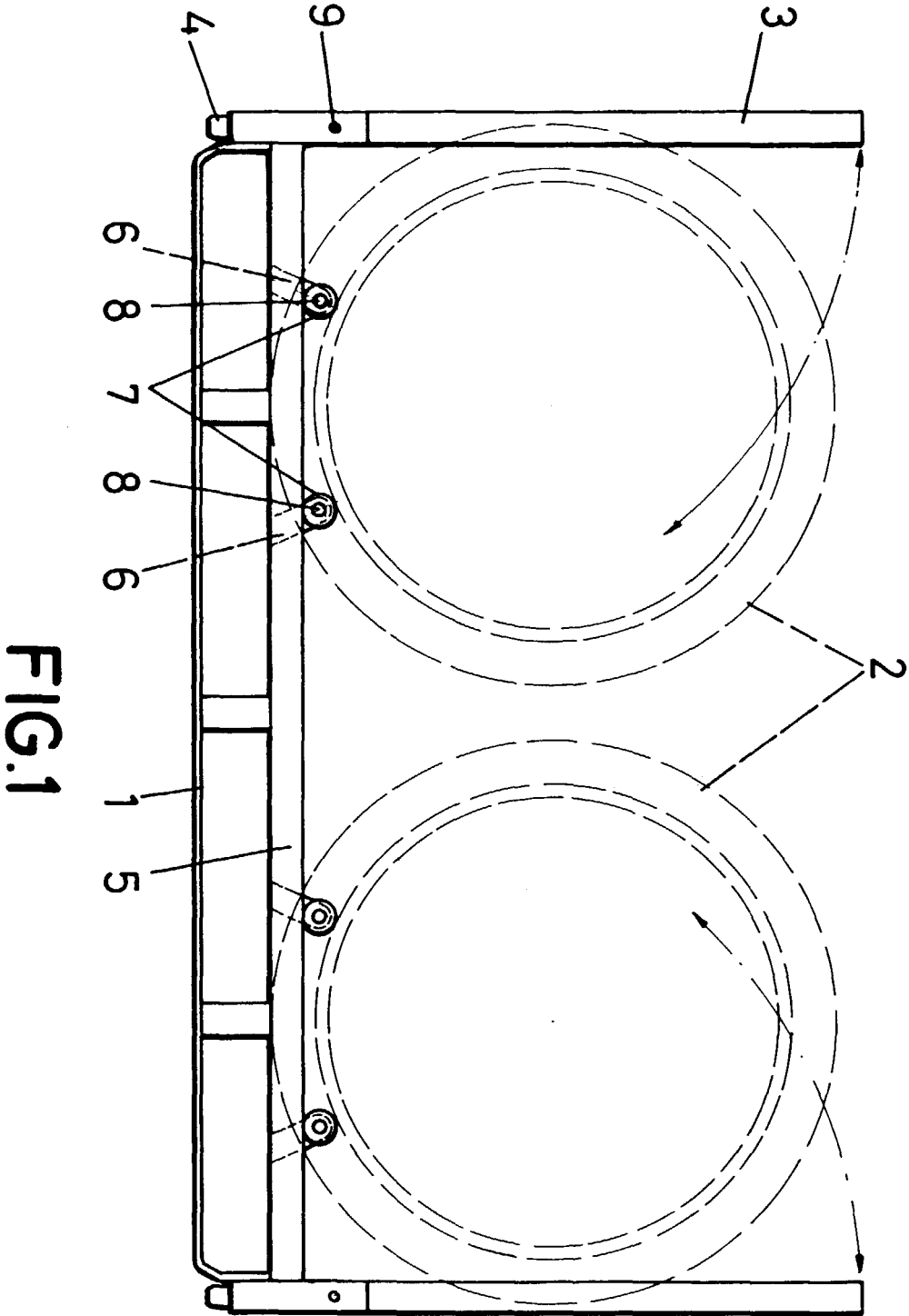
2. Improvements in the barrel racks according to the 1st claim, so defined, because the mentioned arms (6) adopt an oblique position, preferably radial in relation to the corresponding barrel (2) for an optimum transfer of efforts towards the base structure (1). 10
3. Improvements in the barrel racks according to the 1st claim, so defined, because the axes (8) of the wheels (7) are arranged in parallel to the imaginary tangent to the barrel on the wheel resting point (7) on the same. 15 20
4. Improvements in the barrel racks according to the 1st claim, so defined, because the wheels (7) are made from a material, which apart from being sufficiently resistant in relation to the barrel load with its contents, does not produce marks on the barrel (2) either in a stable situation for the same or when the said barrel is subjected to rotation on its own axis. 25
5. Improvements in the barrel racks, according to the 1st claim, so defined, because the posts (3) are connected to the base structure (1) by tilting axes (9) allowing the said posts to be folded onto the base structure, in the inoperative rack position, whose tilting is limited, in the contrary direction by means of appropriate buffers, perpendicular to the posts (3) in relation to the base structure (1). 30 35

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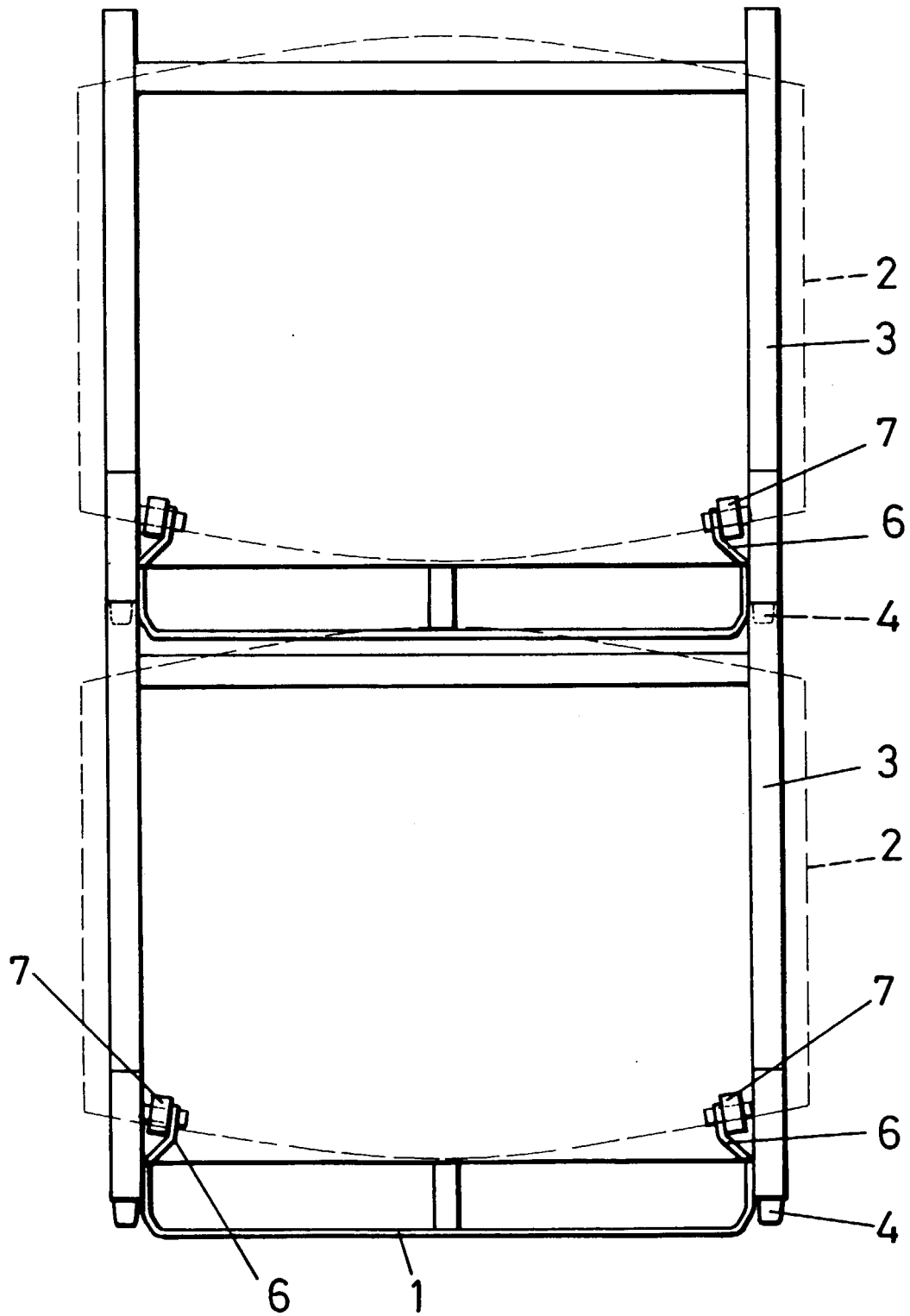


FIG. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 99 50 0215

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)		
Y	GB 880 985 A (CROWTHER LTD) 25 October 1961 (1961-10-25)	1	A47B81/00		
A	* page 2, line 24 - page 3, line 3; figures 1,2 *	3			
Y	GB 858 912 A (BRYDON) * page 2, line 23 - line 41; figures 1,11 *	1			
A	US 4 335 990 A (APTER CARL ET AL) 22 June 1982 (1982-06-22) * column 2, line 32 - line 44; figures 1-4 *	1,3			
A	US 2 406 937 A (ZABRISKIE) 3 September 1946 (1946-09-03) * column 2, line 31 - line 51; figures 1-3 *	1			
A	US 4 391 377 A (ZIAYLEK JR THEODORE) 5 July 1983 (1983-07-05) * abstract; figures 1-3 *	1	<table border="1"> <tr> <td>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</td> </tr> <tr> <td>A47B</td> </tr> </table>	TECHNICAL FIELDS SEARCHED (Int.Cl.7)	A47B
TECHNICAL FIELDS SEARCHED (Int.Cl.7)					
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The present search report has been drawn up for all claims					
Place of search THE HAGUE		Date of completion of the search 26 April 2000	Examiner Jones, C		
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 50 0215

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26-04-2000

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82