

Description

The subject invention concerns an improved operating device for a device for storing primarily elongate objects, such as timber, tubing and similar articles.

The conventional method of storing elongate objects is to simply push them into horizontal compartments. However, this storage method suffers from a number of disadvantages, both from a handling and storage economy aspect. For instance, when elongate objects are stored in the conventional way they have to be pushed into their individual compartments manually, which is very time consuming and therefore uneconomical. In addition, the operation requires a large physical effort and the strain on the worker's back is considerable, particularly when the objects are heavy, for instance as is the case of battens or tubes. Further, the method makes it difficult to store the articles at high levels out of the worker's normal reach, in which case it becomes necessary to construct gangways or to use ladders. However, ladders are useful only when the articles are comparatively light and short.

A further serious disadvantage inherent in this conventional storing system is that the aisles alongside the storage compartments must be at least as wide as the stored objects are long. This means that considerable space in the storage area remains unused and wasted, which is not economically justifiable, particularly not in indoor storage premises.

One prior-art structure which aims at reducing these disadvantages concerns a storage system in which the compartments are provided with transverse rollers. This construction allows bundled or packaged objects, such as timber, to be pushed into the compartments as one integral unit. However, a particular pushing mechanism is required to put the bundled objects or units in position, which mechanism comprises a motor-operated steel-frame conveyor belt. The steel frame is quite heavy and a powerful fork lift truck is required for its displacement. A high-range fork lift truck must be used to deposit the timber bundles in compartments situated above the lowermost storage level. The prior-art construction solves only the problem of handling entire timber bundles. All disadvantages found previously, such as handling a small number of objects, wide aisles and difficult accessibility at high storage levels still remain.

An object of the invention is to provide an operating device for a device for storing and handling essentially elongate objects, in which the disadvantages outlined above are eliminated. This storing device comprises a frame which is provided with leg members and which is designed to sup-

port the objects thereon, said leg members of the device being mounted in such a manner as to allow the storing device to be placed both in a horizontal position for loading and unloading of said objects and in an essentially vertical position intended primarily for storage of said objects, in which latter position the device occupies a considerably smaller ground area than in its horizontal position.

From DK-B-137 832 is known a carriage for storing elongate objects, which carriage may be shifted between horizontal and vertical positions. However, this prior-art construction is not a mere storage unit but a complete carriage with a number of wheels and stays. To build a storage system from a number of carriages of this kind would be quite expensive. Further, shifting the carriage between horizontal and vertical positions requires a fork truck or other similar devices, engaging with the side of the carriage frame to pivot the carriage. As a result, it is necessary to provide a side area that will accommodate a fork truck moving in and out. This also makes the pre-known carriage disadvantageous as part of a storage system since it requires a storage house of uneconomically large dimensions.

An object of the invention is to eliminate these disadvantages by means of an operating device comprising a handling frame which is connectable to the storing device and which is articulated to an operating mechanism, such as a fork lift truck, by means of at least one stay and at least one double-acting piston-and-cylinder unit for folding the handling frame from an upright position to a collapsed position in which it is supported on forks of the operating mechanism, said frame being erectable to the upright position and being arranged to bring along said storing device from the vertical position thereof to an essentially horizontal position and vice versa.

Further characteristics of the operating device in accordance with the invention will appear from the dependent claim.

One preferred embodiment of the invention will be described in the following with reference to the accompanying drawings, wherein

Fig. 1 is a lateral view of two storing devices which are positioned in the erected storing position and are fully loaded with timber,

Fig. 2 is a detail view on an enlarged scale of the fitting means for attachment of the upper collapsible support leg member of the device,

Fig. 3 is a lateral view of a storing device, shown in its erected storing position and coupled to an operating truck,

Fig. 4 is a view corresponding to Fig. 3 but showing the storing device in its horizontal collapsed loading and unloading position, and

Fig. 5 is a lateral view of a part of the operating truck, showing the truck operating frame in both end positions thereof.

The storing device 1 mainly consists of a frame 6 which is provided with a number of leg members 2, 3, 4 and an end plate 5 and onto which frame the articles 7 to be stored, such as timber, may be deposited. To prevent the objects 7 from sliding off the frame laterally the frame is also provided with obliquely extending lateral stays 8 adjacent the end plate 5 and at the opposite end of the device with removable lateral rods 9.

The storing device 1 comprises one pair of fixed leg members 2 extending perpendicularly away from the frame 6 in the form of an extension of the end plate 5, and one pair of leg members 3 positioned at the opposite end of the frame 6. The latter pair of leg members 3 are foldable or collapsible in order to allow a number of storing devices 1 in accordance with the invention to be erected close to one another, as is clearly shown in Fig. 1. Owing to this arrangement efficient use may be made of the available storage space. The device also has yet another pair of leg members 4 extending perpendicularly relative to the other pairs of leg members 2, 3 and being secured to the extremity of the end plate 5 which faces away from the frame 6. This pair of leg members thus is used in the storing position, as illustrated in Fig. 1.

Fig. 2 shows one embodiment of a fitting member for attachment of the foldable or collapsible leg members 3 to the frame 6. The fitting member comprises a U-shaped yoke member 10 the two arms of which are secured in the frame 6. The leg member 3 which preferably consists of a tube of square cross-sectional shape is provided with a through-hole at its upper end through which a pin 11 is inserted in such a manner that it passes through the U-shaped yoke member 10 on the frame 6. The size of the yoke 10 preferably is chosen to ensure a good fit between the yoke member and the tube forming the leg member 3. In this manner, the leg member 3 is locked in position when under load (illustrated in dash-and-dot lines).

Figs. 3 and 4 illustrate the storing device in accordance with the invention when coupled to an operating truck 12. Fig. 3 shows the erected loading position, in which the storing device normally is supported on the leg members 2 and 4, and Fig. 4 illustrates the folded or collapsed position devised for loading and unloading operations and during which the storing device normally is supported on the leg members 2 and 3.

Fig. 5 is a lateral view of a part of the operating truck 12 and shows the interconnecting frame 13 and the control means therefor. This drawing figure also shows the various positions from and into which the interconnecting frame 13 may be moved

in order to allow the storing device 1 to be erected and folded without the leg members 2, 3, 4 trailing on the ground. The frame 13 is attached to the forks 14 of the fork lift truck 12, both by means of oblique stays 15 and by means of at least one double-acting piston-and-cylinder unit 16. In addition, support wheels 17 are provided at one end of the frame 13, said wheels resting on the forks 14 of the truck 12. In the drawing figure, the frame 13 is illustrated in the position corresponding to the lower, folded position of the storing device shown in Fig. 4. In addition, dash-and-dot lines show the position of the frame corresponding to the erected position of the storing device illustrated in Fig. 3. The frame 13 is also provided with automatic locking means, not shown, allowing the frame to be coupled to the storing device either in the lower folded position thereof (Fig. 4) or in its erected position (Fig. 3).

An important advantage gained by the manner described in the foregoing of attaching the interconnecting frame 13 to the truck 12 is that when shifting from the position in Fig. 3 to the position in Fig. 4 the centre of gravity of the storing device 1 is displaced inwards, towards the truck 12, which would not have been the case, had the frame been attached at its lower part merely by means of hinges to the forks 14 of the truck 12. In turn, this means that the forks 14 of the truck 12 may be shorter, which adds to the manoeuvrability of the truck.

The storing device in accordance with the invention thus functions in the following manner. With the device 1 in its lower, folded position (Fig. 4) timber, tubing or the like is loaded thereon. The operating truck 12 is then coupled to the storing device 1, and the latter may be erected to the position shown in Fig. 3, which is the storing position. Because the leg members 3 are foldable, two devices may be juxtaposed in comparatively close relationship, as illustrated in Fig. 1. In opposition to prior-art storing systems wide aisles are not either required between the rows of juxtaposed storing devices 1, since the latter may be pivoted before being folded to their collapsed position illustrated in Fig. 4. Because the storing devices 1 may be positioned freely considerable flexibility and freedom is gained as regards the structure of the storing premises since no stationary stands or similar structural means are required.

Another advantage found in the storing device 1 in accordance with the invention is that because it is easy to transport it may be used as an integral "package" in which e.g. timber may be transported and handled. The wood may for instance be worked in a carpentry, e.g. be severed, planed or submitted to similar treatments and then be transferred straight into a storing device 1 instead of

first being bundled. The storing device 1, loaded with the thus treated wood, may then be driven to the storage and/or sales premises and be erected without the timber having to be shifted even once. In the sales premises the customer may select the timber straight from the vertically erected storing device 1. When used in this way it is advantageous to provide the storing device 1 with a label holder (not shown) in which labels may be inserted on which information on the stored timber may be displayed. Examples of such information are the nature of the timber, the dimensions of the wood, prices and so on.

Finally, it should be pointed out that the invention is not limited to the embodiment described in the foregoing but that a number of different embodiments are possible within the scope of the appended claims. For instance, the storing device may be provided with additional lateral supports in the form of nets or similar means for storage of bulky, non elongate objects, such as bales of insulating material. Furthermore, the operating truck 12 may be replaced by a fork lift truck on the forks of which is attached an interconnecting frame 13 in a manner similar to that shown in Fig. 5.

The storing device 1 could also be provided with means allowing removable attachment of a measuring rod for instance alongside one side of the frame.

Claims

1. An operating device for a storing device (1) which is designed to store primarily elongate objects (7) such as timber, tubing and similar articles and which comprises a frame (6) which is provided with leg members (2, 3, 4) and which is designed to support the objects thereon, said leg members (2, 3, 4) of the device being mounted in such a manner as to allow the storing device to be placed both in a horizontal position (Fig. 4) for loading and unloading of said objects and in an essentially vertical position intended primarily for storage of said objects, in which latter position (Fig. 3) the device occupies a considerably smaller ground area than in its horizontal position, the operating device comprising a handling frame (13) which is connectable to the storing device (1) and which is articulated to an operating mechanism, such as a fork lift truck (12), by means of at least one stay (15) and at least one double-acting piston-and-cylinder unit (16) for folding the handling frame (13) from an upright position to a collapsed position in which it is supported on forks (14) of the operating mechanism, said frame being erectable to the upright position and being ar-

ranged to bring along said storing device (1) from the vertical position thereof to an essentially horizontal position and vice versa.

2. An operating device as claimed in claim 1, wherein said handling frame (13) at one of its ends is provided with support wheels (17) designed to travel along the forks (14) of the operating mechanism in the course of the handling operation.

Patentansprüche

1. Betriebsvorrichtung für eine Lagereinrichtung (1), die vornehmlich längliche Objekte (7), wie beispielsweise Holzlatten, Röhren oder ähnliche Gegenstände, aufnimmt und einen Rahmen (6) aufweist, der mit Ständerelementen (2,3,4) versehen ist und auf dem die Gegenstände ablegbar sind, wobei die Ständerelemente (2,3,4) der Vorrichtung derart angebracht sind, daß sie für die Lagereinrichtung die Anordnung sowohl in einer horizontalen Position (Figur 4) zum Auf- und Abladen der Gegenstände als auch in einer im wesentlichen vertikalen Position zulassen, in der die Gegenstände vornehmlich gelagert werden, wobei die Einrichtung in letzterer Position (Figur 3) eine wesentlich geringere Grundfläche als in ihrer horizontalen Position einnimmt, wobei die Betriebsvorrichtung einen Handhabungsrahmen (13) umfaßt, der mit der Lagereinrichtung (1) verbindbar ist und an einen Betriebsmechanismus, etwa einen Gabelstapler (12), über zumindest eine Strebe (15) und zumindest eine doppelseitig wirkende Kolben-Zylinder-Einheit (16) angelenkt ist, so daß der Handhabungsrahmen (13) von einer aufrechten Position in eine umgelegte Position bringbar ist, in der er auf Gabeln (14) des Betriebsmechanismus aufgelagert ist, wobei der Rahmen in die aufrechte Position aufrichtbar und so angeordnet ist, daß er dabei die Lagereinrichtung (1) aus der vertikalen Position in eine im wesentlichen horizontale Position bzw. entsprechend umgekehrt bringt.
2. Betriebsvorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der Handhabungsrahmen (13) an einem seiner Enden mit Lagerrollen (17) versehen ist, die während der Handhabung entlang der Gabeln (14) des Betriebsmechanismus verfahren.

Revendications

1. Dispositif de stockage (1) construit pour entreposer principalement des objets allongés (7)



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2. Betriebsvorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der Handhabungsrahmen (13) an einem seiner Enden mit Lagerrollen (17) versehen ist, die während der Handhabung entlang der Gabeln (14) des Betriebsmechanismus verfahren.

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tels que des bois de construction, des tubes et d'autres articles semblables, qui comprend un bâti (6) équipé de jambages (2, 3, 4) et qui est destiné à servir de support aux objets, lesdits jambages (2, 3, 4) du dispositif étant montés de façon qu'il puisse être placé aussi bien en une position horizontale (figure 4) pour le chargement et le déchargement desdits objets qu'en une position essentiellement verticale, principalement réservée au stockage desdits objets, le dispositif, dans cette dernière position (figure 3), occupant une surface au sol nettement inférieure à celle qu'il occupe dans sa position horizontale, le dispositif de stockage comprenant un châssis de manutention (13) qui est relié au dispositif de stockage (1) et qui est articulé à un mécanisme de manoeuvre tel qu'un chariot élévateur à fourches (12), au moyen d'au moins une jambe de force (15) et d'au moins un ensemble piston-cylindre à double action (16) destiné à replier le châssis de manutention (13) d'une position dressée à une position repliée dans laquelle il est supporté sur les fourches (14) du mécanisme de manoeuvre, ledit châssis pouvant être érigé dans la position dressée et étant agencé pour faire passer en même temps ledit dispositif de stockage (1) de sa position verticale à sa position horizontale et inversement.

2. Dispositif de stockage selon la revendication 1, caractérisé en ce que ledit châssis de manutention (13) est équipé, à l'une de ses extrémités, de roues supports (17) prévues pour le déplacement dudit châssis le long des fourches (14) du mécanisme de manoeuvre au cours de l'opération de manutention.