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J. O. ISVEN

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ARRANGEMENT FOR STORING OBJECTS IN SEPARATE  
STORING SPACES JUXTAPOSITED IN PAIRS

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2 Sheets-Sheet 1

FIG. 1

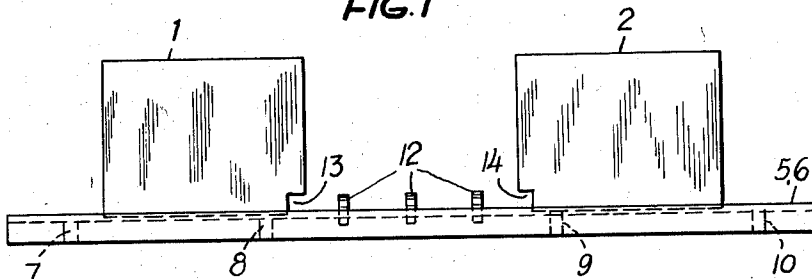


FIG. 2

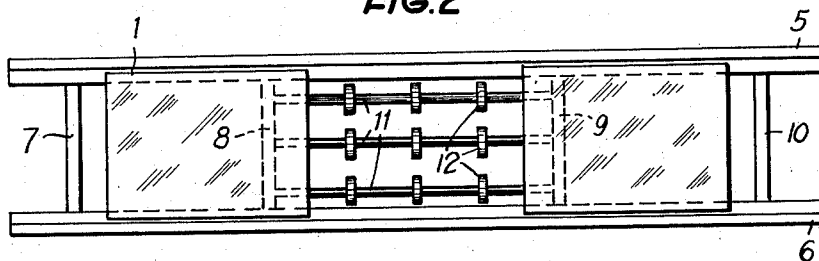


FIG. 3

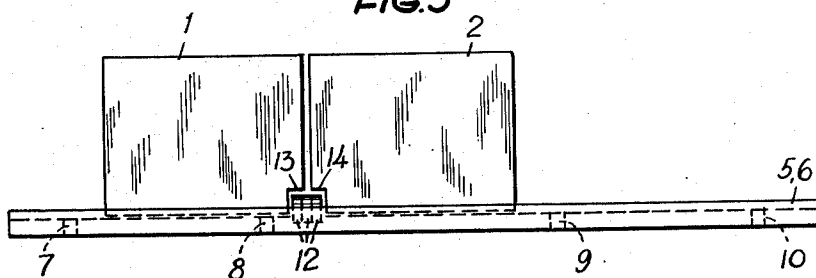
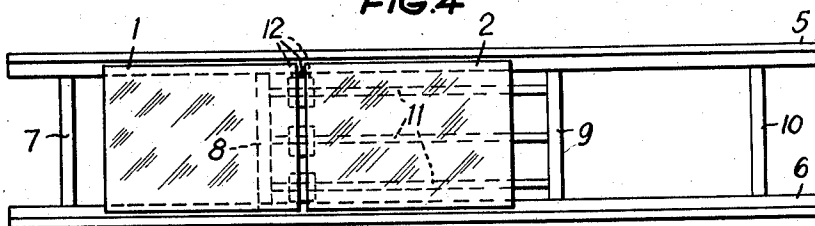


FIG. 4



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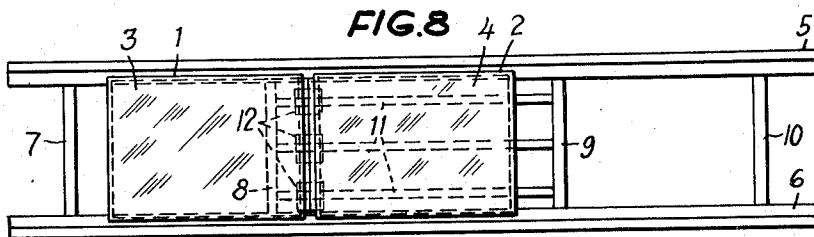
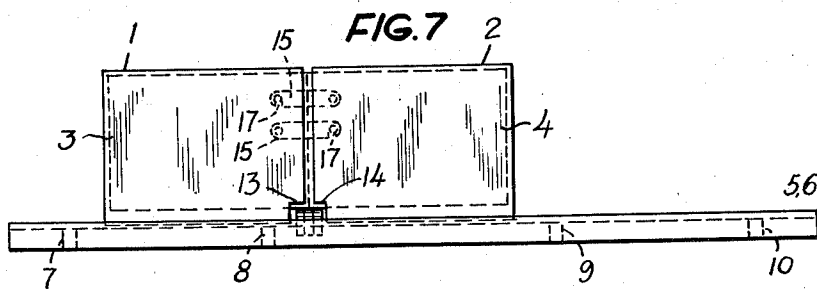
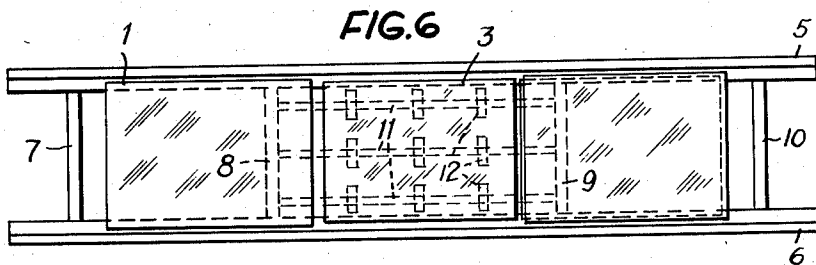
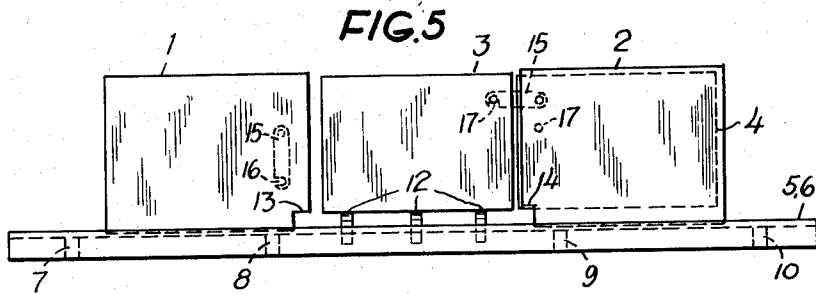
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## ARRANGEMENT FOR STORING OBJECTS IN SEPARATE STORING SPACES JUXTAPOSED IN PAIRS

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Claims priority, application Sweden February 25, 1955

4 Claims. (Cl. 214—16)

The present invention refers to an arrangement for the storing of objects in separate storing spaces juxtaposed in pairs, said spaces being mutually displaceable in a direction to and from each other.

The invention has for its object to provide for storing of objects of various kinds in a number of separate spaces, in a manner such that the space occupied for storing is utilized in the best manner, without the objects becoming difficultly accessible.

The invention is substantially distinguished by the feature that said objects and said store spaces are provided with interconnecting means for coupling the objects in the respective store spaces to the opposed store space, in order to move an object in one store space out of the latter with the aid of the other store space, when the store spaces are moved apart.

The invention is particularly suitable for storing wares and the like in stock-rooms or for garaging motor cars stored in boxes, the floor surface being thus utilized to the greatest extent.

A form of embodiment of the invention will be described hereinbelow in connection with the accompanying diagrammatic drawings, wherein Figs. 1 and 2 show two store spaces pulled apart in elevation and viewed from above, respectively. Figs. 3 and 4 show the store spaces according to Figs. 1 and 2 viewed from the side and from above, respectively, said spaces being here brought together. Figs. 5 and 6 show two spaces viewed from the side and from above, respectively, said spaces being here pulled apart and having one object stored in the one space and another object standing between the store spaces. Figs. 7 and 8 show the store spaces brought together with objects enclosed therein.

In the embodiment shown in the drawing, the store spaces are constituted by two cabinets 1 and 2, wherein the stored objects consist of boxes 3 and 4 respectively. The cabinets are of a square elongated shape with their one end wall open, and are placed in pairs with the end wall openings facing one another. The cabinets are mutually displaceable in the longitudinal direction, that is to say in parallel to the longitudinal sides thereof, on a frame structure consisting of two longitudinally extending rail-like beams 5 and 6 interconnected by means of four transversely extending braces 7, 8, 9 and 10. In the example of embodiment shown, the longitudinally extending beams 5, 6 have a length at least three times the length of a cabinet, so that the cabinets may be moved apart so much that an intermediate space is obtained between them, said space amounting at least to the length of a cabinet. The cabinets are preferably moved with the aid of some mechanical contrivance (not shown), for instance by means of a hydraulic or pneumatic servomotor arranged in the end portion of the frame structure and having a piston rod acting directly on the cabinets, or by means of ropes or toothed racks driven by electric motors or the like. The cabinets may also be provided with their own independent moving means.

Provided in the space between the pulled-apart cabi-

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nets 1, 2 in the plane of the frame structure is a roller way for the conveyance of the boxes 3, 4 stored in the cabinets 1, 2. The roller way is constituted by a plurality of carrying rods or shafts 11 extending between a pair of transverse braces 8, 9 in parallel to the longitudinal beams 5, 6 such rods or shafts being three in number in the example shown. A plurality of rollers 12 are rotatably and at the same time displaceably mounted on the shafts 11. In the drawing, three such rollers 12 are shown on each shaft 11. The rollers 12 on each shaft 11 are mutually connected by ropes or cable means (not shown), the end points of which are arranged in the respective cabinets 1, 2, said ropes being so arranged that the rollers 12 will spread along the shafts 11 to take definite positions, when the ropes are brought under tension by the cabinets 1, 2 being moved apart. When the cabinets 1, 2 are brought adjacent to each other, the rollers 12 are brought together onto each other along the shafts 11 and are gathered within a space between the cabinets, which is produced by corresponding recesses 13, 14 in the opposed end portions of the cabinets. When the cabinets are pulled apart, a roller way is thus obtained, on which a box 3 or 4 may roll in a direction at right angles to the direction of displacement of the cabinets.

The contrivance according to the invention is also provided with means for coupling the boxes 3, 4 to the cabinets 1, 2, the coupling means being arranged in such manner that the box 3 in the cabinet 1 is coupled to the corresponding cabinet 2, while the box 4 in the latter cabinet 2 is coupled to the first-mentioned opposed cabinet 1. The coupling means are shown diagrammatically in Figs. 5 and 6 and may consist of a hook 15, which is swingably arranged in a cabinet or on an object in a cabinet and provided with a recess 16 adapted to engage a pin 17 or the like arranged on another cabinet or on another object in a cabinet. Such a hook 15 may thus be arranged on a cabinet and be adapted to be locked with a pin on an opposed cabinet or on an object in an opposed cabinet. The hook may also be arranged on an object in one cabinet and be adapted to be locked to a pin on an object in an opposed cabinet. Such coupling means make it possible selectively either to bring along the box kept in the cabinet, or to leave said box standing in its place, by displacing one of the cabinets, said box being thus released from its cabinet to be rolled away on the roller way. These coupling means are preferably made automatically operable, preferably in combination with the operation of the means adapted to move the cabinets proper. Here, a push button operation may be made use of, for example, so that when a certain button is depressed, the box corresponding to this button is released and may be moved along the roller way. It may also be found suitable to cause the boxes themselves to perform operations for moving the boxes between various units.

Figs. 5-8 illustrate the function of the above described arrangement according to the invention. In Figs. 5 and 6, the cabinets 1 and 2 are pulled apart with a box 3 standing on the spread-apart rollers 12 that form a roller plane between the cabinets. A box 4 is housed within the cabinet 2. When the cabinet 2 is moved to the left in the figure toward the cabinet 1, the box 3 standing between the cabinets is brought along and moved into the cabinet 1, while the rollers 12 are at the same time brought together and gathered in the spaces 13, 14 underneath the cabinets. The boxes 3 and 4 are then preferably coupled with the respective cabinets 2 and 1 with the aid of the hooks 15. Now, if the box in Figs. 7 and 8 is again to be taken out of its cabinet 1, the corresponding button is operated, the coupling means 15, 17

between the cabinet 1 and the opposing box 4 being then released and the servomotor pulling the cabinet 2 to the right in the figure, the box 3, which is still coupled to the cabinet 2, being thus brought along, until it is in its entirety pulled out from its cabinet 1 and may be rolled down onto the now extended roller plane. If instead the box 4 in Figs. 7 and 8 is to be taken out of its cabinet 2, the corresponding button is depressed, the coupling means 15, 17 of both cabinets with the respective boxes being then released and the servomotor pulling away the cabinet 2 at a simultaneous spreading of the roller plane, the box 4 then remaining in its place and being free to roll away on the roller plane.

Many pairs of store spaces of cabinets may be placed side by side, a continuous roller way being then obtained, when the cabinets of the different pairs are pulled apart. This roller way may form a definite angle to the horizontal plane, whereby a box placed on the roller way may slide forward on the latter between the cabinets to a predetermined cabinet, where the movement of the box may be caused to cease by suitable means. When the box has been caused to stop, the cabinets are juxtaposed, the box being then moved into its definite cabinet at the same time.

The arrangement described above and shown in the drawings only constitutes an example of embodiment of the invention, which may be varied in its construction and details within the scope of the appended claims. Thus the store spaces may also be constituted by shelf-compartments for records or for store rooms or by boxes for keeping motor cars on platforms in a garage. Instead of boxes, loading stools and the like may be made use of. The rollers serving as roller planes for the boxes may be constituted by wheels, ball bearings or other means forming carrying planes. In the drawings, only one pair of cabinets with appertaining boxes have been shown for convenience with a view to explaining the invention, but obviously any number of cooperating store spaces arranged consecutively side by side and in a row behind one another can be combined, as desired.

#### What I claim is:

1. Apparatus for storing objects comprising a frame, a pair of open-ended storage units movably secured to said frame, said storage units being arranged with the open ends facing each other and being adapted to receive one of the objects to be stored, means for mutually displacing said storage units toward or away from each other on said frame, and roller means on said frame intermediate said storage units, said roller means being arranged to receive transversely of the frame the object to be stored and being longitudinally expansible and contractible on said frame in accordance with the positions of said storage units with respect to each other.

2. Storage apparatus as defined in claim 1 including means for connecting the object to be stored with either of said storage units so that the object may be stored in the other of said storage units.

3. Storage apparatus as defined in claim 2 wherein said rollers are rotatably movable and axially slidable on shafts longitudinally mounted in said frame, and further including cable means connecting said rollers to said storage units to cause said roller means to expand longitudinally as said storage units are moved apart and to contract as said storage units are moved together.

4. Storage apparatus as defined in claim 3 including recessed portions in adjacent lower portions of said storage units adapted to receive said roller means when said storage units are moved together.

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