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A. BRANDES

3,220,557

STORAGE RACK

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FIG. 1

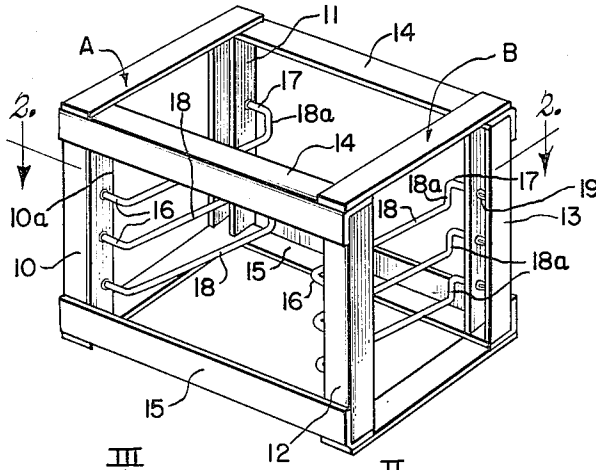


FIG. 2

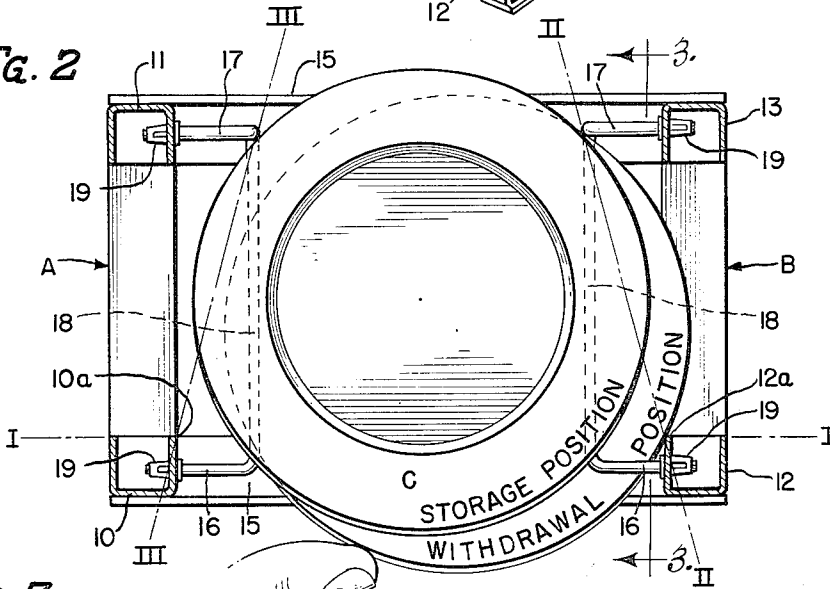


FIG. 3

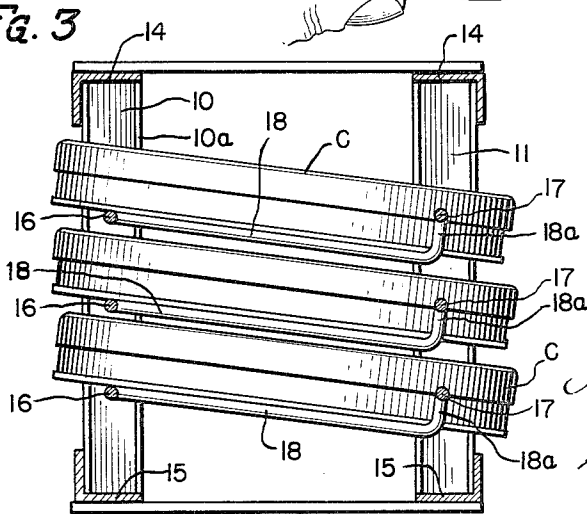
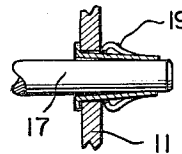


FIG. 4



INVENTOR
Arthur Brandes
BY
Robert Steiner
Atty.

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STORAGE RACK

Arthur Brandes, Monrovia, Calif., assignor to Ekco Products Company, Chicago, Ill., a corporation of Delaware

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1 Claim. (Cl. 211—40)

This invention relates to storage racks and finds particular utility in the storage of cylindrical tape reel containers and the like.

An important object of the present invention is the provision of a rack having individual container holding compartments in which containers are slidably retained in rearward and downwardly inclined positions and accordingly biased by gravity to maintain a storage position within said rack.

A further object resides in providing a rack in which each container is made readily accessible for removal from a storage position notwithstanding the fact that the rack allows the containers to occupy storage positions at a minimum distance apart while the circular perimeters of said containers are in aligned relation along lines projected vertically of said perimeters.

It is therefore another important object of the invention to provide a pair of stops with which the container has rearward engagement to establish a storage position of said container, and each of said stops presents a fulcrum about which a container engaged therewith is operable by pressure against an exposed rim of the container to swing forwardly of the companion stop and thereby occupy a withdrawal position wherein the container is sufficiently forward of its storage position to enable marginal portions of opposite end walls of said container to be readily grasped for complete removal from the rack.

Another object of the present invention is to provide a rack of simple construction, economical of manufacture and which will be reliable and efficient in service.

Other objects and advantages will be more apparent from the following description and accompanying drawing and the essential features will be set forth in the appended claims.

A preferred and practical embodiment of the invention is shown in the accompanying drawing, in which:

FIG. 1 is a perspective view of a storage rack constructed in accordance with the present invention.

FIG. 2 is an enlarged sectional view taken along line 2—2 of FIG. 1 with cylindrical tape reel containers shown in storage as well as withdrawal position therein.

FIG. 3 is an enlarged vertical section taken along lines 3—3 of FIG. 2 showing several containers in storage position.

FIG. 4 is an enlarged fragmentary detail view of a shelf member and its connection to the frame of the rack.

A rack of the type to which the present invention relates is illustrated in the drawings as comprising a first upright rectangular frame A having upright limits thereof defined by front and rear upright members 10 and 11 and a second similar rectangular frame B having upright limits thereof defined by front and rear upright members 12 and 13, said frames being joined in spaced parallel relation by top and bottom cross members 14 and 15 respectively to define a frontward facing open area between said frames of desired dimension determined by the diametrical dimension of the containers to be stored in said space. Each of said upright members is of U or channel shaped stock having spaced parallel flanges joined by a connecting web, with the flanges of the rear members 11 and 13 extending forwardly of the web connecting said flanges and with the flanges of the front members 10 and 12 extending rearwardly of the web connecting said flanges.

The area between said frames A and B is divided along parallel lines extending rearwardly and downwardly from said front upright members 10 and 12 by shelf members at distances apart corresponding to the end wall to end wall dimension of the containers to be stored in said space. As shown, each shelf member comprises a wire rod bent to provide a pair of legs 16 and 17 of uniform dimension joined in spaced parallel relation by an integral bridge portion 18. The legs 16 and 17 are recessed in openings in the innermost flanges of the front and rear upright members of each frame A and B in equally spaced apart relation lengthwise of the vertical dimension of said upright members conforming to the desired spacing between said shelf members. Each of the openings in the front support members contain tubular clip type fasteners 19 with which the legs 16 of each of the shelf members has a force fit while each of the openings in the rear support members contain similar fasteners with which the leg 17 of each shelf member has a force fit. Thus the legs 16 and 17 in cooperation with the openings containing the tubular clip type fasteners 19 in the uprights of the frames A and B establish a fixed connection between said shelf members and said uprights, with the bridge portion 18 of the shelf members secured to frame A and the bridge portion 18 of the shelf members secured to frame B arranged in transversely aligned pairs at such distance apart as to be spanned by the diametrical dimensions of the container C to be supported thereon, as shown in FIG. 2. Each bridge portion 18 is offset downwardly from the leg 17 to define an upright portion 18a at the junction between said bridge portion 18 and said leg 17. Thus bridge portions 18 of the shelf members extend rearwardly and downwardly in uniformly spaced apart relation measured vertically of the area between frames A and B of the rack corresponding to the end wall to end wall dimension of the container to be stored, while the upright portions 18a of each pair of transversely aligned shelf members define a pair of stops with which a container while supported on said shelf members has rearward engagement at circumferentially spaced apart portions of the container substantially conforming to the quadrant of a circle defined by the circular side wall of the container. It will be noted that the legs 16 and 17 of the shelf members are effective to locate the stops 18a at uniform distances in inwardly spaced relation to the area between the frames A and B. Accordingly the stops 18a are also effective to establish the container in central relation between the frames A and B while functioning to establish the rearward storage position of the container.

As shown in the drawings, the shelf members are of such limited dimension as to offer only a minimum of space between each container and containers next above and below said containers while said containers are in storage position. Removal of a selected container from a storage position is therefore an inconvenient operation since the exposed surfaces of the containers while in such position are not readily grasped by the fingers of the person seeking to accomplish such removal of the container. In accordance with the present invention, a marginal portion of the upper and lower end walls of the container to be removed is displaced forwardly to occupy a withdrawal position through facilities incorporated in the construction of the rack. Movement of the container from such storage position to a withdrawal position (as shown in FIG. 2) is achieved by utilizing either of said stops 18a as a fulcrum about which the container is swingable forwardly away from the other stop 18a in response to pressure applied to either of the exposed side wall portions of the container which straddle a plane extending forwardly of and midway between said stops 18a. It will be noted that the area in which the container is free to move from such storage position to

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said withdrawal position is open except for the surfaces of the front uprights 10 and 11 which face the area occupied by the container. Such surfaces thus form a second pair of stops 10a and 12a which can be defined as occupying positions along a line I—I from which the major portion of the container extends rearwardly and which coincide with intersections of said line I—I by a second pair of line II and III extending in uniformly forward diverging relation to said stops 18a with the distance between said stops 10a and 12a sufficient to accommodate the diametrical dimensions of the containers.

By utilizing upright members 10, 11, 12 and 13 of channel shaped stock, the ends of the legs 16 and 17 of the shelf members are confined within the area between the inner and outer flanges of said upright members. Thus the outwardly facing surfaces of said upright members are free of disfigurement or protruding parts and thereby adapted to have close mating relation with corresponding surfaces of the upright members of like racks to establish a neat grouping of such racks when so desired.

It is believed that the advantages of a rack for storing cylindrical film and tape reel containers constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the rack is as illustrated and described, it is to be understood that changes in the details of construction and in combination and arrangement of parts may be resorted to which fall within the scope of the invention as claimed.

What is claimed is:

A rack for the storage of cylindrical tape reel containers and the like, said rack having first and second duplicate frame assemblies joined in spaced parallel upright relation to define a storage area therebetween, each frame assembly including a front upright member of channel shaped contour with the channel facing rearwardly, and a rear upright member duplicating said front upright member with the flanges thereof extending fore and aft of the frame assembly with which it is associated, a first series of container supporting wire rods of duplicate size and shape, each having opposite end sections bent to provide a pair of legs and a bridge section joining said legs in spaced parallel relation, said front and rear upright members of the first frame assembly having openings formed in the flange portion thereof facing the storage area into which the legs of said rods project whereby said rods are fixed to said frame assembly with the bridge sections of said rods arranged along uniformly vertically spaced apart parallel downwardly and rearwardly

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inclined lines within said storage area and the ends of the legs projected through said openings being totally confined within the channel of the upright to which said legs are secured, a second series of container supporting wire rods of size and shape duplicating said first series of rods, said front and rear upright members of the second frame assembly having openings formed in the flange portions thereof facing the storage area into which the legs of said rods project whereby the bridge sections of said second series of rods are fixed to said second frame assembly along vertically spaced apart parallel lines within said storage area in paired transversely aligned relation to the bridge sections of the first series of rods, and the ends of the legs of second series of rods being totally confined within the channel of the upright to which said legs are secured, each of said first and second series of rods having an upright section at the junction of its bridge section and the rearwardmost leg thereof, said upright section of each rod and the rod with which it is transversely paired defining stops with which the perimeter of a container has rearward engagement to establish the stored position of a container when an end wall of a container has downward engagement with the bridge portions of said transversely paired rods, said stops of said transversely paired rods being at such distance apart as to allow either stop to provide a fulcrum about which a container has swinging movement forwardly of the other stop between said stored position and a withdrawal position sufficiently forward of said stored position to enable marginal portions of opposite end walls of a container to be readily grasped for complete removal from said rack.

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CLAUDE A. LE ROY, *Primary Examiner.*

FRANK L. ABBOTT, *Examiner.*