

May 9, 1944.

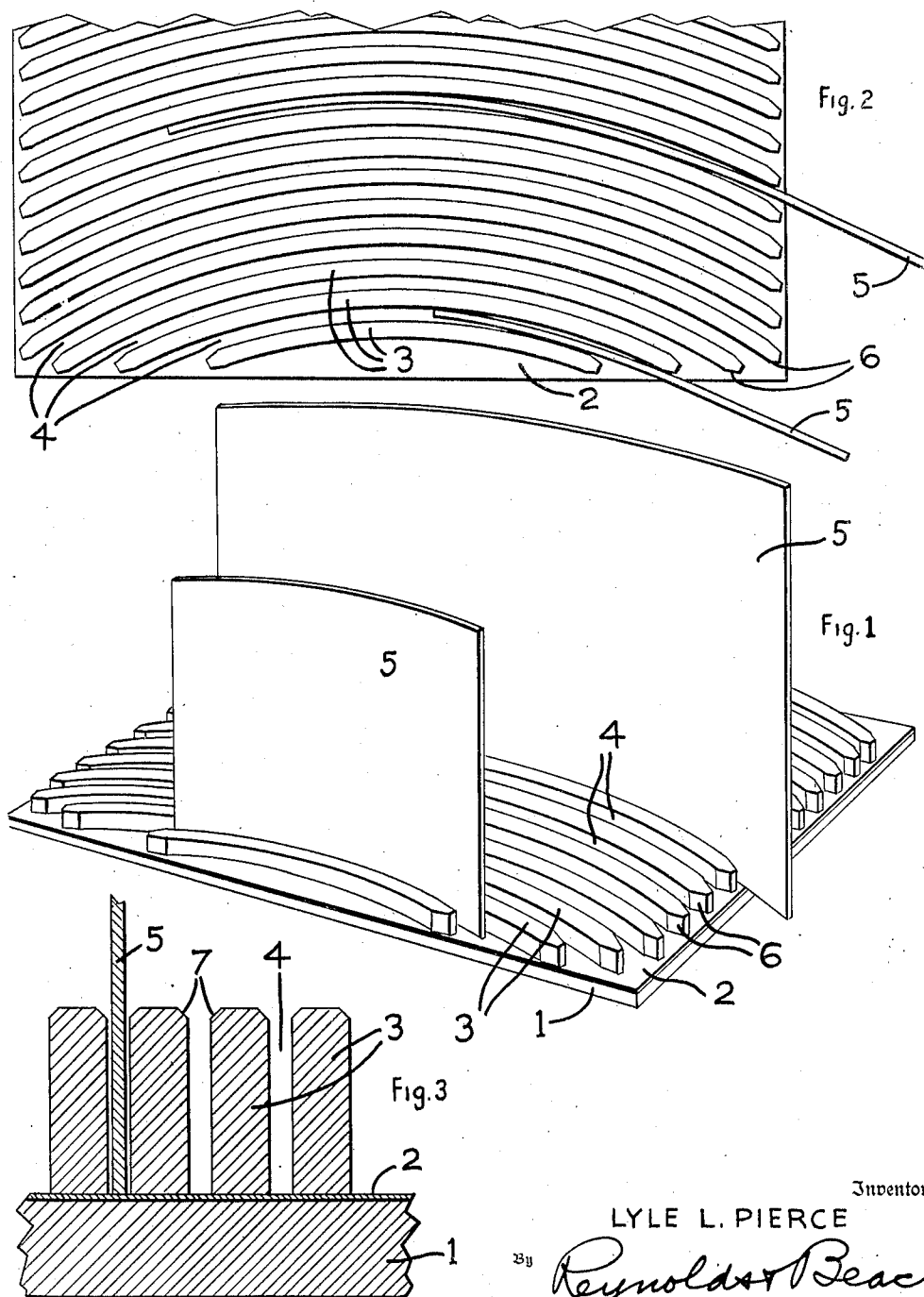
L. L. PIERCE

2,348,414

STORAGE RACK FOR PHOTO-TEMPLATES

Filed Aug. 17, 1942

2 Sheets-Sheet 1



Inventor

LYLE L. PIERCE

By

Reynolds & Beach

Attorneys

May 9, 1944.

L. L. PIERCE

2,348,414

STORAGE RACK FOR PHOTO-TEMPLATES

Filed Aug. 17, 1942

2 Sheets-Sheet 2

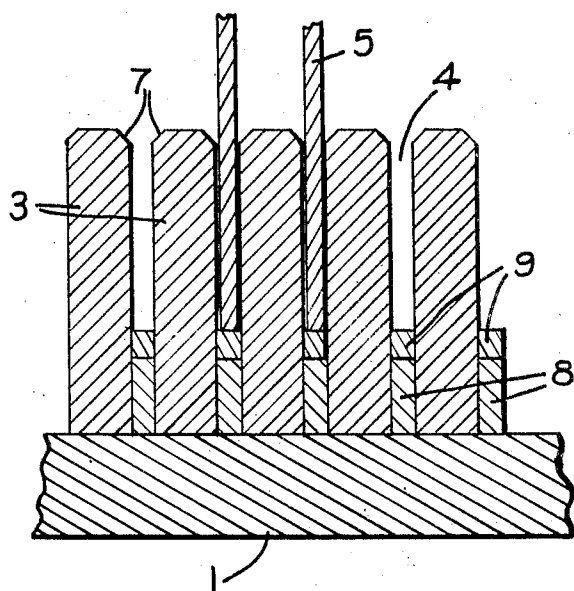
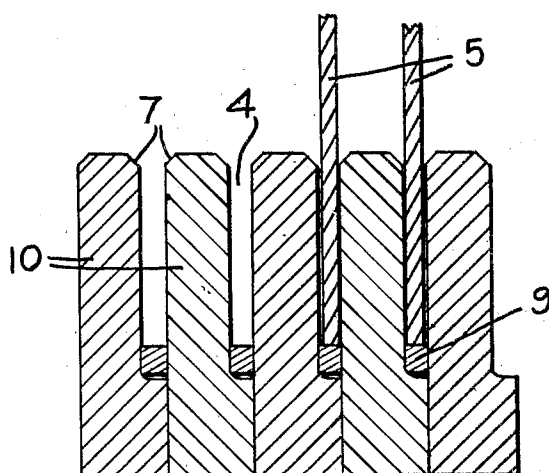


Fig 4

Fig. 5.



Inventor

LYLE L. PIERCE

By

Reynolds & Beach

Attorneys

UNITED STATES PATENT OFFICE

2,348,414

STORAGE RACK FOR PHOTO-TEMPLATES

Lyle L. Pierce, near Seattle, Wash., assignor to
Boeing Aircraft Company, Seattle, Wash., a
corporation of Washington

Application August 17, 1942, Serial No. 455,058

7 Claims. (Cl. 211-41)

Instead of using blueprints, tracings, or like drawings on paper for master layouts and other engineering drawings for permanent record, it has become customary, in large plants, to employ photographic reproductions on sheet metal. Such master layout sheets or photo-templates may be, in a typical instance, four or five feet high by eight feet long, and even though made of light metal they are comparatively heavy, and are clumsy and awkward to handle, in part because of the very flexibility of the sheet itself.

The storage of such sheets, and their production when needed and restorage when the need is past, has become a serious problem. The drawings are photographically applied over a paint-like coating, and while a protective coating is employed to protect the drawing, it not infrequently happens that the protective coating, the drawing, and even the background coating becomes rubbed off or worn or indistinct, due to the methods of handling and storage employed.

Such sheets obviously cannot be stacked flat, for the lines upon them would quickly be destroyed in any handling of the sheets. They have been stored inclined upon easel-like supports, but though only a few are laid one against the other, and they are swung back like the leaves of a book to permit access to the one desired, nevertheless a large amount of rubbing occurs, and the drawings are damaged. Moreover, such easel-like stands require a large amount of floor space, because of the width necessary for proper inclination of the sheets, and for separation of the sheets into small groups, and they are objectionable, too, inasmuch as they also must stand four or five feet high, in order to give adequate support to the upper edge of the sheets. Thus such racks take up a large amount of room when in use, or even when not in use, which room might be more suitably employed, especially if the racks are empty.

It is the primary object of this invention to provide a rack for the storage of such photo-templates, which in addition to supporting each from contact with all others, even during the operations of inserting or withdrawing from the rack, will occupy a minimum of space, and which, when the rack is not in use, can be stored in a minimum of space, to the end that many such empty racks will occupy but small floor space and volume.

It is also an object to provide such a rack which will be inexpensive and extremely simple in construction, and which is yet rugged. It is also an object to provide such a rack constructed in a

form which simplifies the insertion and the withdrawal of the photo-template sheets or the like intended to be stored therein.

A further object is the formation of such a rack largely of non-critical material, such as wood.

With these and similar objects in mind, as will appear in greater detail hereafter, my invention comprises the novel rack shown in the accompanying drawings, and which will be hereinafter described and claimed.

Figure 1 is a perspective view of such a rack, showing sheets stored therein.

Figure 2 is a plan view of such a rack, showing sheets in the process of insertion or withdrawal.

Figure 3 is a transverse vertical section through the rack, in a typical form, with a photo-template sheet received therein.

Figures 4 and 5 are sections similar to Figure 3, of two modified forms of construction.

The sheets to be stored therein are of large size, as has already been indicated, being perhaps four feet high and eight feet long. They may be made of aluminum alloy, or, on occasion, of steel. Even when made of light gauge material and of light metal they are still of appreciable weight, weighing 30 or 35 pounds, and steel sheets weigh around 85 pounds. While they are flexible, they are also somewhat resilient, and tend to remain in flat condition. It is upon this latter quality that the operativeness of my present rack depends.

The rack consists essentially of a base of a length equivalent to the length of a photo-template, which as shown consists of the panel 1 of wood, Masonite, or similar material. This may be covered on its upper surface with a wear plate 2 of steel or like metal. The base has grooves in its upper surface formed by fixed ribs disposed in positively spaced relationship; while the plate might be sufficiently thick that the grooves might be cut into its upper surface, it is more convenient to form the grooves by affixing to the upper surface of the base plate or panel 1 a series of cleats 3, which may be made of hard wood held to the plate by bolts, screws, or the like.

The grooves formed by the spaced-apart cleats are generally parallel and closely spaced, and are preferably arcuate throughout, upon a curve such as a circular segment. They might take some other shape, even a reverse curve, for the principle of this invention is found in grooves which, being other than rectilinear, effect a departure of the supported sheet from planar form, thereby making the sheet self-sustaining. These

grooves 4 are of appreciable depth, enough to afford support to the lower edge of a photo-tem-plate sheet 5, and of a width not greatly in excess of the thickness of the sheet 5. The cleats may be chamfered at their ends, as indicated at 6, and if desired they may be slightly chamfered along their upper edges, as indicated at 7.

The sheets 5 are inserted in the rack, which rests upon the floor or similar support, by holding the sheet in a vertical position, and by introducing a vertical edge within the end of a groove 4, guided by the chamfers 6. This requires but a minimum of lift, since the base panel 1 is not of great thickness, being preferably a plywood panel of a thickness in the neighborhood of one inch. Now with the lower edge of the sheet 5 resting upon the wear plate 2, the entire sheet is slid endwise across the base.

The flexibility of the sheet permits it to conform to the curvature of the groove, yet its resilience and its tendency to return to flat condition exerts a certain amount of lateral pressure at the advancing end of the sheet, at the entering end of the groove, and at an intermediate point, upon respectively opposite sides of the groove, as is best shown in Figure 2. The resulting curvature given to the lower edge of the sheet 5 is imparted to the entire sheet, and it is thereby formed into a part-segment of a cylinder. Vertical stiffness is thereby imparted to the sheet as a whole, and by this vertical stiffness it is enabled to maintain itself upright without further bracing or support of any nature. To emphasize the point, it is not necessary nor desirable to support the upper edge of the sheets; they are supported and caused to maintain themselves upright wholly and entirely by the support afforded the lower edge of the panel, and by the arcuate or part-cylindrical shape given to the sheet by the curvature of the groove which engages and receives its lower edge. Moreover, the racks will hold simultaneously sheets of different height as are the sheets 5 shown in Fig. 1, since there is no engagement of the sheet's upper edge.

Thus supported, each sheet is separate and independent from all others. There is no contact between them at any point, the legend upon each can be easily read when searching for a given sheet, and when the sheet is located it can be withdrawn by pulling it out from either end. It slides easily upon the wear plate, and even though its final edge be accidentally dropped from the surface of the wear plate to the floor which supports the base, the drop is not great and no damage is likely to be done to the sheet by such a drop.

There is some wear on the coating at the lower edge of the sheet, but this is usually outside of a margin on the sheet, for the depth of the grooves need not be more than two inches, although they will be much narrower, perhaps one-half an inch. If care is taken to place no significant data below this level, the wear which occurs thus is immaterial.

Whenever the racks are empty and not in use they can be easily picked up and stacked one on another, or stored on edge, and a large number of such racks will occupy but a small amount of space.

Figure 4 illustrates such a rack which can be assembled by gluing, thus avoiding use of metal screws or bolts. The cleats 3 are spaced apart by narrow wooden slats 8, and this assembly can be held together by glue, with or without

the plate 1, since the slats and the lower edges of the cleats form a base. The cleat assembly can be glued to the plate 1. Wear strips 9, preferably of metal and of minimum size, can be dropped into the bottom of each groove 4.

A similar arrangement is shown in Figure 5. No base plate as such need be employed, for the grooves are formed by cutting away the upper portion of one side of each cleat 10, leaving the lower portion intact. The cleats are joined by glue uniting their lower portions, which then constitute a base. Wear strips 9, preferably of metal, can be used, as already suggested.

In either such modification bolts or the like may be used to secure the cleats together, or to secure them upon a base plate or panel, but the constructions shown in Figures 4 and 5 lend themselves well to elimination of bolts, and to the securing of parts by gluing.

What I claim as my invention is:

1. A storage rack for a plurality of flexible, resilient sheets, comprising a plurality of arcuate cleats arranged on edge, each being shouldered lengthwise to define an upper side portion which is reduced in thickness, relative to its lower side portion, such lower side portion of each cleat being closely held to the corresponding portion of each adjacent cleat, thereby to define a lower base and a plurality of arcuate grooves of a width to receive the lower edge of a sheet to be stored.

2. A rack for supporting large sheets of varying heights and of thin flexible material in upright positions, said rack comprising a base structure having a plurality of upwardly opening channels open at their ends to have the lower marginal portions of such sheets slid endwise into the same, said channels being longitudinally curved to hold the sheets longitudinally flexed and thereby vertically stiff and being of depths to accommodate sufficient of the lower marginal portions of the sheets to hold the sheets in upright positions with their upper portions entirely free.

3. A rack for supporting large sheets of varying heights and of thin flexible material in upright positions, said rack comprising a base structure having a plurality of upwardly opening channels open at their ends to have the lower marginal portions of such sheets slid endwise into the same, said channels being longitudinally curved to hold the sheets longitudinally flexed and thereby vertically stiff and being of depths to accommodate sufficient of the lower marginal portions of the sheets to hold the sheets in upright positions with their upper portions entirely free, and material at the bottoms of said channels upon which the lower portions of the sheets rest, said material being more resistant to wear than the material of said base structure and being highly resistant to abrasion and cutting by the lower edges of the sheets as the latter are slid into and from said channels.

4. A rack for supporting large sheets of varying heights and of thin flexible material in upright positions, said rack comprising a base, a plate covering the top of said base, and a plurality of cleats fastened upon said plate, said cleats being spaced apart to provide therebetween upwardly opening channels open at their ends to have the lower marginal portions of sheets slid endwise into the same, said channels being longitudinally curved to hold the sheets longitudinally flexed and thereby vertically stiff and being of depths to accommodate sufficient

of the lower marginal portions of the sheets to hold the sheets in upright positions with their upper portions entirely free, said plate being composed of a material more resistant to wear than the material of said base and highly resistant to abrasion and cutting by the lower edges of the sheets as the latter are slid into and from said channels.

5. A rack for supporting large sheets of varying heights and of thin flexible material in upright positions, said rack comprising a base, a plurality of cleats fastened upon the top of said base, spacing elements of lesser heights than said cleats between the lower portions of the latter to hold the same spaced apart whereby there are defined between said cleats upwardly opening channels open at their ends to have the lower marginal portions of sheets slid longitudinally into the same, said channels being longitudinally curved to hold the sheets longitudinally flexed and thereby vertically stiff and being of depths to accommodate sufficient of the lower marginal portions of the sheets to hold the sheets in upright positions with their upper portions entirely free, and wear resisting elements in the bottoms of said channels upon which the lower edges of the sheets rest, said wear resisting elements being more resistant to wear than said spacing elements and being highly resistant to abrasion and cutting by the lower edges of

the sheets as the latter are slid into and from said channels.

6. A rack for supporting large sheets of varying heights and of thin flexible material in upright positions, said rack comprising a plurality of arcuate cleats fastened together in side to side relationship, the upper portions of said cleats being of lesser thicknesses than their lower portions so that there are defined between their said upper portions open-top open-ended channels to accommodate the lower marginal portions of the sheets to be supported.

7. A rack for supporting large sheets of varying heights and of thin flexible material in upright positions, said rack comprising a plurality of arcuate cleats fastened together in side to side relationship, the upper portions of said cleats being of lesser thicknesses than their lower portions so that there are defined between their said upper portions open-top open-ended channels to accommodate the lower marginal portions of the sheets to be supported, and wear resisting elements in the bottoms of said channels upon which the lower edges of the sheets rest, said wear resisting elements being more resistant to wear than said cleats and being highly resistant to abrasion and cutting by sliding of the lower edges of the sheets upon the same.

LYLE L. PIERCE.