

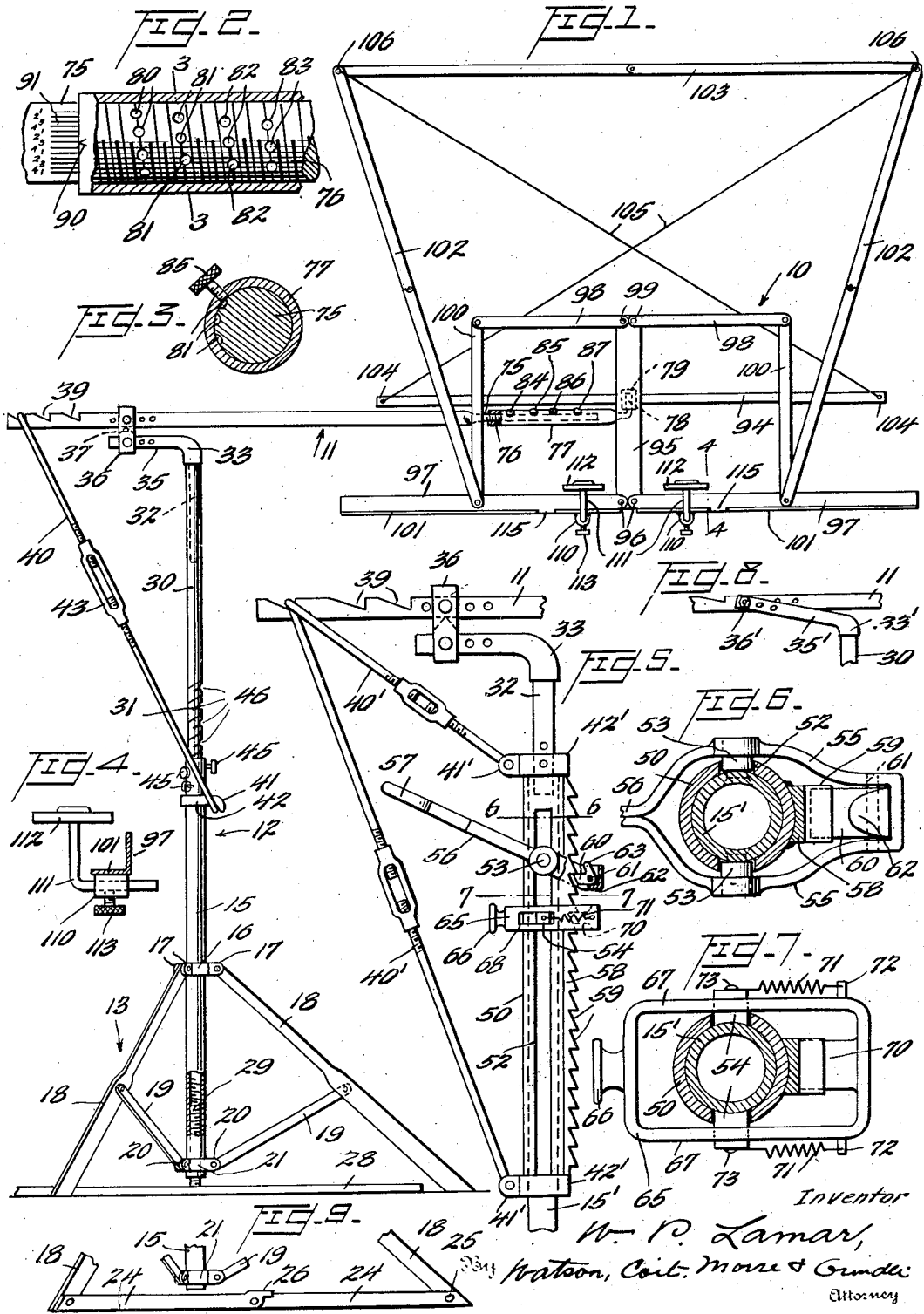
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STAND

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STAND

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This invention relates to stands or similar supports, and more particularly to adjustable stands or racks for supporting books, magazines, newspapers, drawings, music compositions or the like in a variety of positions conveniently accessible to the reader, whether he is standing, seated, or lying in bed.

The general object of the invention is to provide a novel and improved stand of the type described.

A more specific object of the invention is the provision of a novel rack for holding printed matter or other articles of various sizes for ready perusal or other purposes; and also to provide improved means for rotatably adjusting the rack in vertical or horizontal positions or at selected intermediate inclined positions. Novel retaining means are also applied to the rack, and may be employed, for example, for holding the pages of a book or magazine in a flat position and preventing them from turning, or to secure loose sheets of newspapers, drawings, etc. against accidental displacement while in use.

Another object of the invention is the provision of novel and improved means for adjusting the height of the rack from the floor and also laterally from the supporting standard to permit its being employed in numerous ways as, for example, by an orchestra conductor standing, a reader or musician sitting, or an invalid lying in bed.

In its preferred embodiment, the invention further contemplates the provision of supporting means for the rack whereby it may be offset from the vertical standard and, although carrying considerable weight, will be prevented from bending the standard or setting up excessive strains therein.

Other objects and features of novelty will be apparent from the following specification when read in connection with the accompanying drawing in which certain embodiments of my invention are illustrated by way of example.

In the drawing:

Figure 1 is a view in elevation of a stand embodying the principles of my invention, a portion of the lower end being shown in vertical section;

Figure 2 is an enlarged detail view partly in elevation and partly in section of a portion of the horizontal member of the stand;

Figure 3 is a vertical transverse sectional view of the same member taken on line 3—3 of Figure 2;

Figure 4 is an enlarged detail sectional view taken on line 4—4 of Figure 1;

Figure 5 is a fragmentary view in elevation of a modified form of stand in which is incorporated a modified form of raising means;

Figures 6 and 7 are horizontal sectional views of this alternative embodiment taken on lines 6—6 and 7—7 respectively of Figure 5;

Figure 8 is a fragmentary view in elevation of an alternative form of connection between the vertical standard and the cross arm; and

Figure 9 is a fragmentary view in elevation of an alternative arrangement for reinforcing the tripod legs.

In Figure 1 of the drawing, the rack upon which the printed matter or other articles are held is indicated generally by the reference numeral 10 and is supported upon the end of a horizontal arm 11 extending from a vertical standard 12, this standard being supported upon a tripod base 13.

In order to adjust the position of the rack for a variety of uses, means are provided for extending the stand in a vertical direction to alter its height from the floor or supporting surface, and other means are provided for rotating the rack 10 in a vertical plane and for locking it in any of a plurality of inclined positions. These means will now be described in detail.

The standard 12 comprises a lower tubular section 15 around which is disposed a ring 16 which is slidable upon the member 15 and provided with means (not shown) for clamping it rigidly in selected positions thereon. Ears 17 are provided on the sleeve 16 to which are pivoted the upper ends of the legs 18, three of these legs being indicated in the drawing as spaced 120° apart. It is obvious that additional legs could be provided, but three is, of course, the minimum number possible for independently supporting the standard. Braces 19 are pivoted to an intermediate portion of the legs and are also pivotally connected to the ears 20 of a ring or sleeve 21 carried by the lower end of the tubular member 15. It will be seen that by adjusting the sleeve or ring 16 vertically upon the standard, the legs may be spread to any desired extent or the tripod base folded against the sides of the standard.

In Figure 9 the legs 18 are provided at their lowermost ends with connecting strips 24 which are pivoted as at 25 to the ends of the legs and are provided intermediate their length with a locking rule joint 26. These braces 24 effectively reinforce the base of the standard and permit additional weight to be supported by the rack.

An alternative reinforcing feature is illustrated in Figure 1 and comprises a relatively large disc or plate 28 which is keyed at the lower end of the threaded rod 29 which is screwed into the open threaded interior of the tubular member 15, thus providing a vertical adjustment for the disc which will be pressed firmly against the floor when heavy weights are to be carried by the stand.

The upper end of the tubular member 15 is also interiorly threaded for the reception of the lower threaded end of the extension member 30. The threads 31 on this member preferably have a pitch of one inch, for a fairly rapid extension of the telescoping standard 12. Into the upper end of the rod 30 there is inserted the narrowed shank 32 of the bracket 33 which has a laterally extending transversely flattened arm 35. Upon the arm 35 there is adjustably disposed a connecting element or rider 36 which is provided with a rectangular slot for the close reception of this arm and also an upward extension provided with an opening for the reception of the flat vertically disposed cross arm 11. To provide a proper line contact for the arm 11 the upper slot of the member 36 is formed with a relatively sharp fulcrum edge 37. The member 36 is provided with holes which are adapted to be brought into registry with certain of the series of holes formed in the arms 35 and 11, in order to adjust the fulcrum of the cross arm 11 various distances from the axis of the standard 12. The rearwardly projecting short end of the arm 11 is provided with a series of notches 39 within which the upper end of the tie member 40 may be received. The rear end of the member 40 is connected to the hook portion 41 of the ring 42 which is carried by the tubular member 15 of the standard 12. The tie member 40 may be extended and retracted as by means of the turnbuckle 43.

If the horizontal arm 11 were pivoted directly above the top of the vertical standard 12, the forces acting on the standard would tend to bend it in a right hand or clockwise direction as viewed in Figure 1. However, by fulcruming the arm at a point offset toward the left, as in Figures 1, 5 and 8, the top of the standard 12 is constrained to bend toward the left and to tend to offset the general bowing of the standard 12 in the opposite direction especially when an exceptionally heavy weight is placed upon the rack 10. This, together with the slight pull toward the left by the tie member 40, tends to maintain the standard 12 in a vertical position and adds to the strength of the entire support.

An alternative connection between the cross arm 11 and the standard 12 is illustrated in Figure 8 of the drawing in which the upper fulcrum bracket 33' is provided with an inclined arm 35' which is provided with openings which are adapted to directly register with openings in the arm 11 and to be secured thereto as by means of the fastening element 36', without the interposition of the rider 36.

In order to further insure the stability of the stand, means are provided for locking the arm 11 in positions directly above each one of the legs 18. This means comprises set screws 45 which are disposed about the tubular member 15 at intervals corresponding to the intervals between the legs 18, these intervals being 120° in the embodiment illustrated. Holes or recesses 46 are provided in the threaded portion of the

shaft or rod 30 for the reception of these set screws 45.

An alternative means for raising the rack 10 by the extension of the standard 12 is illustrated in Figures 5, 6 and 7 of the drawing. In this embodiment the tubular member 15' of the standard is extended vertically so that it is several inches higher than the corresponding member 15 in the previously described embodiment. Upon this member 15' there is slidably disposed an elongated sleeve 50 carrying upon its ends the rings 42' having lugs or ears 41' which are connected with the notched short end of the arm 11 by means of the extensible tie members 40'. To the upper end of the elongated sleeve member 50 is pinned the shank 32 of the bracket 33 which provides an adjustable fulcrum for the arm 11 in the same way as described in connection with Figure 1. It will be seen that the arm 11 with its rack 10, the bracket 33, the sleeve 50 and the connections 40' are all capable of moving vertically as a unit and means are provided for effecting this movement by a step-by-step operation in order to adjust the position of the rack 10. The sleeve 50 is provided upon each side with an elongated slot 52 through which project the oppositely directed trunnions 53 which are carried by the member 15' and also the lower oppositely directed squared studs 54. Upon the trunnions 53 are pivoted the arms of a yoke 55 which forms part of the operating lever 56, the handle of which is slightly offset as at 57 to avoid one of the tie members 40' during operation.

Upon the sleeve 50 there is provided a ratchet rack 58 having the teeth 59 which are spaced apart a distance corresponding to the length of the separate steps by which the rack is to be raised. The yoke 55 is provided with a pawl 60 which is pivoted thereto as at 61. A stop member such as, for example, the ledge 62 is provided for preventing the pawl 60 from moving downwardly too far. A lug 63 is provided on the pawl for manually holding it in raised position during certain adjustments.

A retaining member 65 is provided having a handle 66 and the side arms 67 which are adapted to embrace the standard. The arms are provided with elongated slots 68 of a width permitting them to snugly receive the squared projections 54. The bight portion of the member 65 is provided with a rigid retaining pawl 70 which is resiliently urged into engagement with the teeth 59 of the ratchet rack 58 by means of the springs 71 having their ends secured to projections 72 on the member 65 and to the ends of the squared lugs 54 as at 73.

The operation of this raising means will be readily apparent. The retaining pawl 70 supports the upper portion of the stand by engagement with one of the teeth 59 as shown in Figure 5. The handle 66 in its raised position permits the dog or pawl 60 to engage beneath one of the teeth 59 and when the handle 66 is depressed the dog will raise the upper portion of the stand to the distance of approximately the length of one of the teeth 59. During this lifting movement the member 65 will slide laterally as the inclined face of the adjacent tooth 59 forces the retaining pawl 70 outward against the influence of the springs 71. At the end of this movement the pawl 70 will snap beneath the tooth 59 and the handle 66 when raised again will permit the dog 60 to descend for engagement with the next tooth. When the rack is to be lowered the dog 60 is re-

leased from engagement with any of the teeth 59 by manipulation of the projection 62 and the retaining member 65 is retracted manually and the upper portion of the stand lowered to the desired position.

The rack 10 may be rotated upon the arm 11 from the vertical position indicated in Figure 1 of the drawing to a horizontal position and may be held in intervening angular adjustments. The outer end 75 of the flattened cross arm 11 is cylindrical and provided with the screw threads 76. A tubular member 77 is threaded internally and receives the end 75 of the cross arm 11. Member 77 is closed at its outer end and formed with a projecting prong 78 which is received within the socket 79 provided on the rack 10. In order to secure the rack 10 in its adjusted angular positions the end 75 of the arm 11 is provided with several series of sockets or holes 80, 81, 82 and 83 which are arranged as clearly indicated in Figure 2 of the drawing. The sleeve member 77 is provided with a series of set screws 84, 85, 86 and 87 which are adapted to register successively with certain of the holes 80, 81, 82 and 83. In the embodiment illustrated, the set screw 84 when in register with the first hole of the series 81 will hold the rack in its horizontal position. Then a slight rotation of the sleeve 77 above the horizontal, say about six or seven degrees, will bring the set screw 85 into register with the first hole of the series 81. A further rotation through the same selected interval will bring the set screw 86 into register with the first hole of the series 82. Then the set screw 87 is brought into registry with the first hole of the series 83 and after the next interval the first set screw 84 reaches the second hole of the series 80 and the set screws again are successively brought into registry with succeeding holes in the numbered series until the vertical position is reached. Of course, the intervals of adjustment may be varied by multiplying or diminishing the numbers of the holes in the several series. A mark 90 is provided on the sleeve or socket member 77 for indicating upon the scale 91 on the member 75 the set screw to be operated at any position of rotation of the member 77. The set screws may be numbered 1, 2, 3 and 4 and the indications on the scale correspondingly designated. Figure 3 shows the position of the described arrangement when the set screw 84 is in engagement with the first hole of the series 80 at which point the set screw 85 shown is just approaching the first hole of the series 81.

The rack 10 is provided with the central longitudinal strip 95 which is connected to the member 77 by means of the elements 78 and 79. Pivoted to the lower end of the member 95 at the spaced points 96 are the ends of the laterally extending base members or sills 97 of the rack. Corresponding short members 98 are pivoted as at 99 at the upper end of the member 95 and the side members 100 pivotally connect the ends of the strips 98 with the sills 97. The sills 97 are angular in cross section to provide a flange 101 for retaining the books or other printed matter on the rack 10 when in vertical or inclined positions. Thus far the rack 10 is very similar to the conventional form of knock-down music rack. In order to adapt this type of stand to the retention of large sheets such as drawings, blueprints or newspapers, the sills 97 are extended laterally as shown and the elongated jointed side arms 102 are provided which are connected by the jointed top member 103. The intermediate horizontal strip 94 is also extended and the ends 104 are

connected by means of the wires 105 with the outer corners 106 of the extended rack. Additional cross wires may be provided for further support of large sheets and also for providing means for holding down such sheets.

In order to retain books or magazines which may be supported on the rack in the desired open positions the leaf holding arrangement is provided and will now be described. Projections 110 are secured to the flanges 101 of the sills 97 through which are adapted to extend the arms of the angular rods 111. The other arms of these rods are adapted to overlie the printed matter carried by the rack and are provided at their ends with the rubber discs 112 which rest against the pages. The position of these leaf holders is adjusted and maintained by the set screws 113. In order that the hold-down discs may be swung out of position as for the removal of books from the rack 10 notches or openings 115 are provided in the flanges 101 as clearly shown in Figure 1 of the drawing.

It will be realized from the foregoing description that an exceedingly adaptable stand has been provided by the present invention which is susceptible of many uses and adjustable in many ways for the convenience of the reader.

The same principles embodied in the stand which has been described may be applied to a derrick or jib crane constructed in a very similar manner to the support disclosed herein.

It is understood that various changes and modifications may be made in the embodiments illustrated and described herein without departing from the scope of my invention as defined by the following claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a stand of the class described, in combination, a vertical standard, a substantially horizontal arm fulcrumed intermediate its length upon the upper end of said standard, at a point offset from the axis of said standard in the line of said arm, the supported load being carried on the end of said standard which extends in the direction opposite the said offset, a tie member connecting the other end of said arm with said standard at a point intermediate the length of the latter.

2. In a stand of the class described, in combination, a vertically adjustable standard, a bracket secured to the upper end of said standard having a horizontal lateral extension, a cross arm selectively fulcrumed upon said extension at one of a plurality of points of connection, said cross arm being disposed in the same vertical plane as said extension, the supported load being carried by the end of said arm extending in the direction opposite to that of said extension, an adjustable tie member having its lower end connected with said standard at a point intermediate the length of the same, and its upper end selectively attached to the other end of said cross arm at one of a plurality of points of connection.

3. In a stand of the class described, in combination, a vertical standard, a tripod base for said standard, a bracket secured to the upper end of said standard having a horizontal lateral extension, a cross arm fulcrumed upon said extension, said cross arm being disposed in the same vertical plane as said extension, one of the legs of the tripod base also lying in the said plane, the supported load being carried by the end of

said arm extending in the direction opposite to that of said extension, a tie member having its lower end connected with said standard at a point intermediate the length of the latter and its upper end attached to the other end of said cross arm.

4. In a stand of the class described, in combination, an extensible vertical standard comprising an internally threaded member and an externally threaded member, one received within the other whereby the vertical height of the standard may be adjusted by relative rotation of said members, a cross arm extending trans-

versely of said standard at the top thereof, a bracket projecting laterally from said upper member and provided with a fulcrum for said cross arm offset with respect to the axis of said standard, a tie member connecting a projecting end of the cross arm with an intermediate point on the standard, a plurality of legs constituting a base for said standard and extending radially from the lower one of said members, and means for locking one of said members to the other only in rotated positions wherein said cross arm is above one of said legs.

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