WORK BENCH SYSTEM WITH ADJUSTABLE DIMENSIONS AND CONFIGURATIONS

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This invention relates to a bench system and more particularly to a plurality of bench components which may be assembled into bench equipment of various configurations in order to satisfy a great variety of needs for factories, shops, laboratories etc.

The present invention constitutes an improvement over co-pending application, U.S. Serial No. 598,801 of D. Bruce Johnston et al., filed on July 19, 1956, in which the problem confronting industry of an efficient, flexible work bench system has been set forth. It should be noted, however, that the present invention is directed to a simplified, selective bench system in which a minimum of constructional details are utilized without sacrificing the sturdiness and efficiency of the bench system.

An object of the present invention is the provision of a plurality of bench components which may be adjusted individually as to height, width and length and which may form a bench system arranged in line, back to back, and right angle, and that may be easily and rapidly converted from one arrangement to another depending upon the particular need.

Another object of the present invention is to provide an integrated bench system which has built-in services, for example electric power, water and gas, all of these services being accessible from the front of each bench component.

A further object of the present invention is a novel locking device having a cam action and which is adapted for rapid, effective and simple locking and unlocking of work bench top and, if desired, leg struts.

Another object of the present invention is to provide a reinforced work bench top which is designed for supporting heavy loads. A number of different size tops may be employed with the present bench system dependent upon the particular needs. It should be noted that the present bench system may be utilized with a belt or package conveyor adjacent to the front or rear of the bench system as desired.

The flexibility of the present bench system permits factories to change their production line set-up to satisfy a great variety of requirements in a minimum amount of time.

The above and other features, objects, and advantages of the present invention will be fully understood from the following description considered in connection with the accompanying illustrative drawings.

Fig. 1 is a partial perspective view of the bench system in accordance with invention forming an integrated unit showing one section in extended position and provided with an interchangeable work bench top.

Fig. 2 is a side elevation view of the telescoping back legs and part of the leg strut.

Fig. 3 is a partial elevation and partial sectional view disclosing a preferred form of securing the work bench top to the front legs.

Fig. 3a is a side elevation view of the double cam element.

Fig. 4 is one form of an interchangeable work bench top for use in our bench system.

Fig. 5 is an alternative form thereof).

Referring more particularly to the drawings the present flexible bench system comprises a plurality of vertically adjustable legs 10 which will be described hereinafter. Each leg 10 is provided with a planar supporting element 12 which preferably is of a rectangular form having a multiplicity of apertures 14 therein. The supporting element 12 extends transversely to the leg 10. Each leg 10 has a freely rotatable base 16 which herein is shown in a generally triangular form. The base 16 may rest on the floor or be secured thereto by means of screws (not shown). Adapted to rest on planar supporting elements 12 are work bench tops 18 which are available in a number of sizes. A back panel 20 is provided with a service duct 22 referred to generally by the numeral 22 and located on the front of the back panel thereby affording easy access to the various electrical and plumbing services located in the duct. On the lower back panel 20 is a channel 23 which extends in the direction of length of said back panel. The channel 23 may be secured to the back panel 20 for example, by means of welding or it may be formed as an integral part of the back panel. Attached to each leg 10 is a leg strut 24 which is preferably channel-shaped. The leg strut 24 may be constructed of telescoping sections, as shown, or may be of various fixed lengths. One end of each leg strut 24 is slidable secured in channel 23. It should be noted that leg strut 24 may be moved at will in the channel 23 until the desired position of the front leg relative to the desired work bench top is found.

Fixed to said one end of the leg strut 24 is a transverse slide plate 25 which slides in the channel 23. If desired, a suitable locking member (not shown) may be employed adjacent to the slide plate in order to securely maintain the leg strut in its selected position. Each rear leg 10 is housed in back panel as clearly seen in Fig. 2 and similar to the construction of the front legs constitutes telescoping portions 26 and 28 and a locking ring 30. In order to elevate or lower leg 10, section 26 is screwed into or out of section 28, and locking ring 30 on section 26 is screwed up tight against section 28 when the desired height of the leg is obtained. Rear legs 10 are fixed against lateral movement in the back panel 20 by means of elements 32 and 34. Thus, it should be noted that rear legs 10 are fixed against lateral movement but are able to be adjusted vertically. However, the present simplified construction permits the front legs 10 to be moved forward and backwards, and laterally at will in order to accommodate various sizes and/or numbers of work bench tops 18. Each top 18 has its rear edge inserted under lip 36 of the back panel 20 and the front part affixed to planar supporting element 12. Work bench tops 18 are shown in two preferred forms in Figs. 4 and 5. Fig. 5 shows elongated reinforcing elements 38 which are herein shown as channel-shaped but may take other forms, and which are adapted to be located around the periphery of the bench top which occupies space 39 (not shown). However, it is to be understood that it is within the scope of the present invention to provide the reinforcing elements in a rectangular shape on the underside of the bench top or in a crossed position. The reinforcing elements also may be of various fixed lengths. The aforesaid construction permits the use of heavy work loads on the bench top. Located in each of the adjacent ends of reinforcing elements 38 are screw-threaded holes 41. The elements 38 are adapted to rest on planar supporting element 12 and the apertures 14 therein aligned with screw-threaded holes 41. Thereafter,
3. A locking means such as illustrated in Fig. 3 and Fig. 3a may be inserted through apertures 14 and holes 41, to removably fix the work bench top 18 to the front legs 10. Alternatively, Fig. 4 illustrates a work bench top 18 of a relatively thick, preferably wood composition, having protrusions at the corners of the work bench top for affixing the same to the planar supporting element. Securing or locking means as hereinabove described may be utilized to secure the work bench top 18 to planar support element 12 as is clearly seen in Fig. 3. A pair of standards 31 are affixed to the back of said bench 20 and carry a lighting fixture 33 and an article-receiving tray 35.

Referring now, more particularly to Figs. 3 and 3a in which are shown a locking means in accordance with the present invention. The locking means comprises a screw bolt 50 having a transverse pin 52 which pivotally secures a double cam 54 to the bolt 50. Double cam 54 is provided with an elongated handle 56. Fig. 3a illustrates a side view of one of the cams 54. The screw bolt 50 is adapted to be inserted through one of the apertures 14 of the planar-supporting element 12 from the underside thereof and threaded into the threaded aperture 40 of the work bench top 18. Obviously, if a work bench top of the type shown in Fig. 5 is used then the screw bolt 50 may be threaded into hole 41 of a reinforcing element 38. It is apparent, therefore, that screw bolt 50 is adapted for rotation in threaded apertures 40 and 41 of the work bench, for example as shown in Figs. 4 and 5 until the top 53 of the double cam 54 abuts against the bottom of planar supporting element 12. Thereafter, the handle 56 of the double cam 54 is pivotally moved in the direction of the arrow A of Fig. 3a thereby causing the cam faces 54a of double cam 54 to firmly engage the underside of said bench 20. In this position of the double cam 54 the handle 56 extends in a direction substantially parallel to the element 12. Naturally, the locking means shown in Fig. 3 may also be utilized to secure the channel-shaped leg strut 24 to the channel 23. While we have shown and described the preferred embodiment of our invention, it will be understood that the latter may be embodied otherwise than as herein specifically illustrated or described and that in the illustrated embodiment certain changes in the details of construction and in the arrangement of parts may be made without departing from the underlying idea or principle of the invention within the scope of the appended claims.

What we claim is:

1. A bench comprising a back assembly having two rear legs and longitudinally-extending members connected to said legs and holding said legs in spaced relation to one another, a plurality of front legs, leg struts connecting the front legs with the back assembly of the bench, one of the longitudinally-extending members of the back assembly being of channel cross-section, an element connected to the rearward end of each leg strut and movable along the length of the channel member as a guide for shifting the front legs longitudinally with respect to the back assembly to space the front legs at any desired spacing from one another and independently of the spacing of the back legs, and means connected with the front legs for supporting panels of various sizes and of lengths substantially shorter than the back assembly and for which the spacing of the front legs is adjusted.

2. The bench described in claim 1 and in which the back is adapted to support a plurality of panels forming a top for the bench, the back assembly has means for supporting the panels, and the leg struts are extendable for increasing the spacing of the front legs from the back assembly whereby a panel can be supported with a longer dimension of the panel extending either longitudinally or transversely of the bench.

3. A bench comprising a plurality of front legs, a back panel having two rear legs secured thereto, a plurality of leg struts, an elongated guide and retaining member on said back panel and extending in the direction of the length thereof, and each of said leg struts including an element that fits said guide and retaining member and that is adjustable lengthwise along the guide and retaining member, the elements of the leg struts connecting the front legs with selected portions of said guide and retaining members, and a planar supporting element on each of the front legs extending transversely of the longitudinal axis of the leg for supporting removable work panels.

4. A bench comprising a plurality of front legs, a back panel having two rear legs secured thereto, a plurality of leg struts, an elongated guide and retaining member on said back panel and extending in the direction of the length thereof, and each of said leg struts including an element that fits said guide and retaining member and that is adjustable lengthwise along the guide and retaining member, the elements of the leg struts connecting the front legs with selected portions of said guide and retaining member, the guide and retaining member being a channel extending substantially the entire length of the back panel, and each leg strut being provided with a plate at one end thereof and extending substantially perpendicularly to the leg strut, said plate being slidable positioned on said guide and retaining member.

5. The bench described in claim 3 and in which there are a plurality of reinforcing elements for the work panels, means connecting the reinforcing elements to said planar supporting elements, at least two removable work panels abutting one another and secured to a common planar supporting element, and each of the leg struts having locking means for locking the leg strut in any adjusted position along the guide and retaining member, said locking means comprising a pair of clamping elements and a screw that clamps the elements together.

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