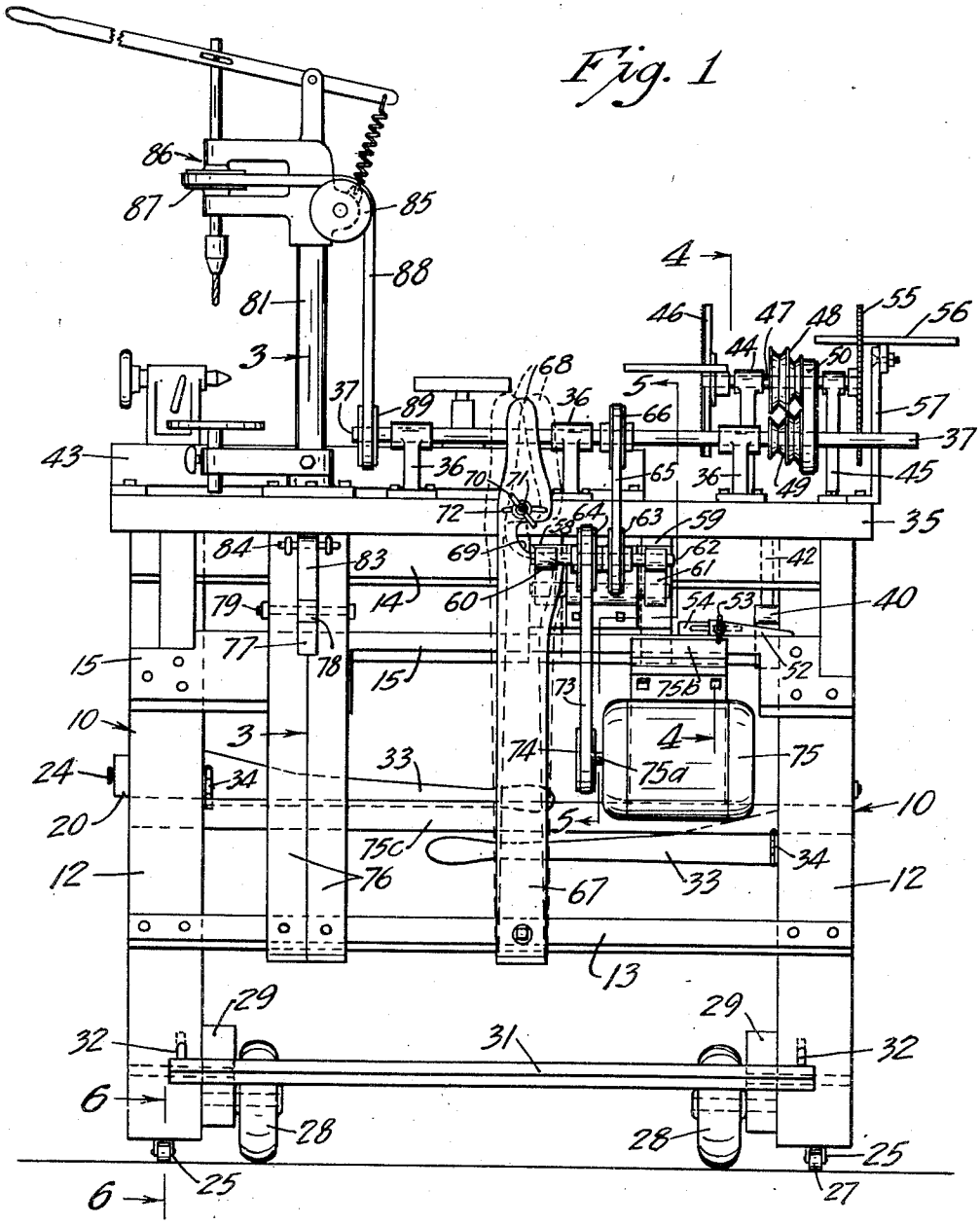
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FOLDING WORKBENCH FOR POWER TOOLS

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Fig. 1



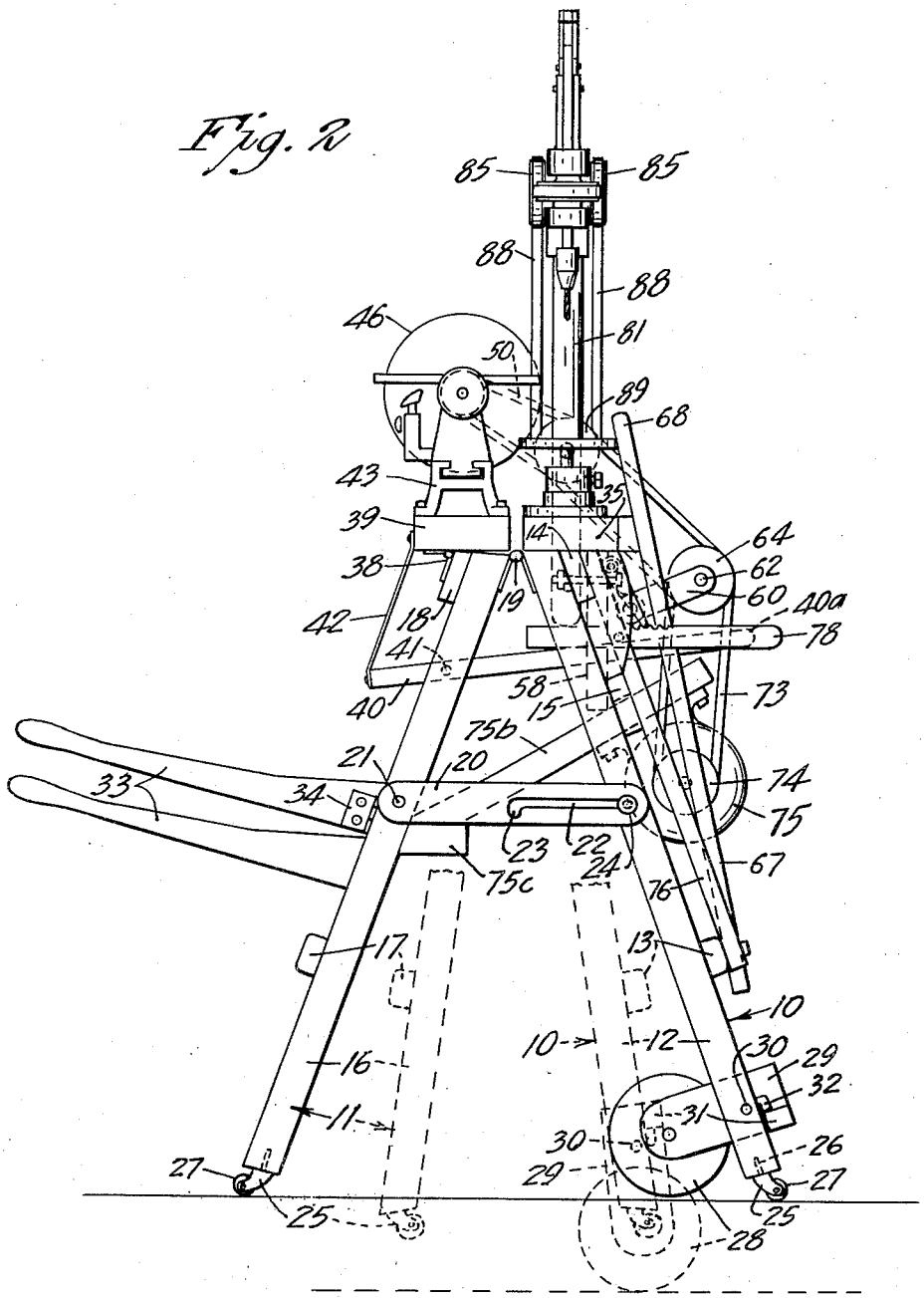
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Fig. 2



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Fig. 3

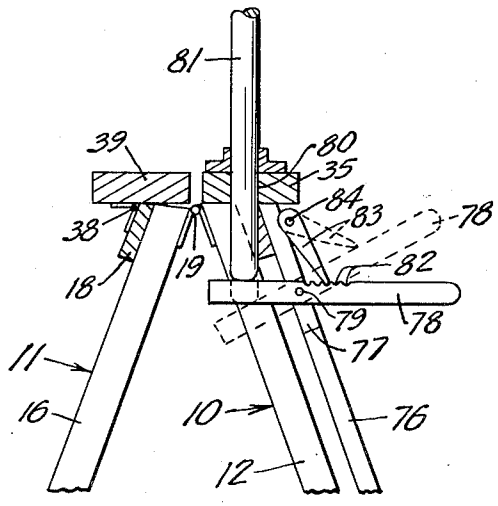


Fig. 6

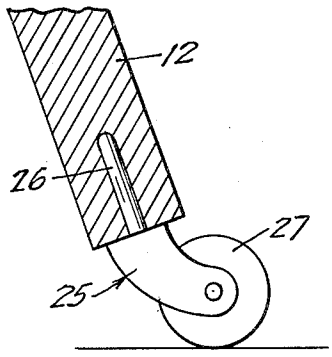


Fig. 5

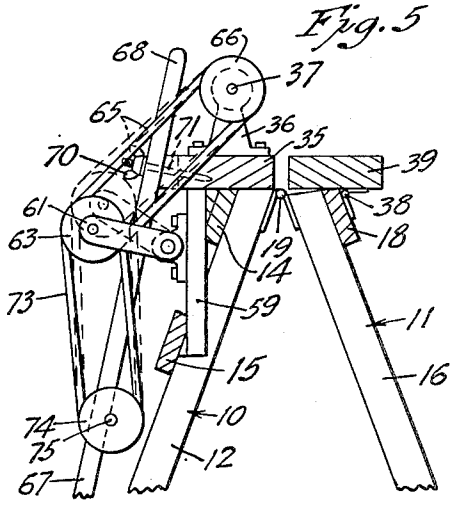
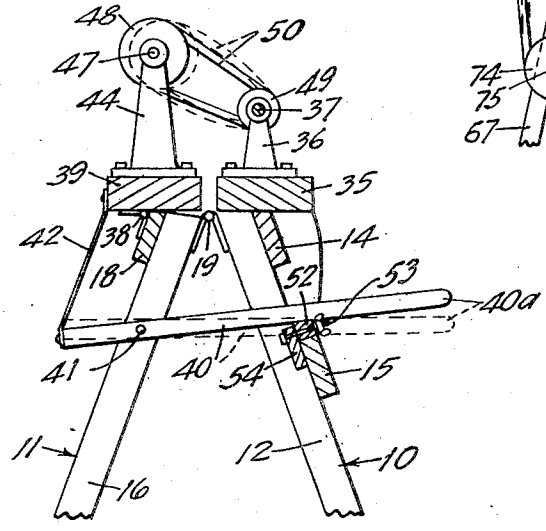


Fig. 4



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FOLDING WORKBENCH FOR POWER TOOLS

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Application May 14, 1949, Serial No. 93,251

4 Claims. (Cl. 144—286)

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This invention relates to a bench or supporting structure which is particularly adapted for use as a means for conveniently and compactly supporting a number of power tools.

It is an object of the invention to provide a compact bench construction having two leg units which are shiftable from expanded to collapsed positions and so arranged that the entire unit is in an operative tool supporting position, whether collapsed or expanded. In its collapsed position the device can be readily pushed into a small space for temporary storage or it can be expanded so that it will provide a supporting structure which covers a greater floor area and thereby is more steady than when the leg units are drawn closely together. In either case, however, the device can be used and power tools thereon can be used without danger of the bench tipping.

Another object of the invention is to provide a bench for power tools including advantageous means for supporting belt driven tools in such a way that the belt drive can be readily tightened or released.

Another object of the invention is to provide a power tool bench with means for supporting a pulley driven shaft and wherein means is provided for conveniently and efficiently varying the speed of a variable speed pulley carried by the pulley shaft support.

A further object of the invention is to provide a bench structure including means for quickly and easily varying the vertical position of a tool post support such as might be used in connection with a small drill press attachment or the like.

Another object of the invention is to provide a caster arrangement in connection with the bench supporting leg units which will cause the casters to remain relatively steady when the leg units are expanded to their more usual operative position.

A further object of the invention is to provide means whereby the bench can be readily transported by means of wheels larger than ordinary furniture casters when moving of the structure for a considerable distance or over a rough floor space is desired.

The above and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same parts throughout the views, and, in which:

Fig. 1 is a side elevational view of an embodiment of the invention with the pulley speed adjusting means in full and dotted lines in alternate positions thereof.

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Fig. 2 is an end elevational view showing the leg units in full and dotted lines in their expanded and collapsed positions respectively.

Fig. 3 is a fragmentary sectional detail taken approximately on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional detail taken approximately on the line 4—4 of Fig. 1.

Fig. 5 is a fragmentary sectional detail taken approximately on the line 5—5 of Fig. 1, and

Fig. 6 is an enlarged sectional detail taken approximately on the line 6—6 of Fig. 1.

The bench includes a pair of leg units 10 and 11. The leg unit 10 includes legs 12 having a lower cross-member 13 and an upper cross-member 14. There is also an intermediate cross-member 15.

The leg unit 11 is constructed similarly to the leg unit 10 and has a pair of legs 16, a lower cross-member 17 and an upper cross-member 18. The leg units 10 and 11 are connected at their upper ends by means of hinges 19, there being a hinge for each of the adjacent leg elements 12 and 16, so that the leg units 10 and 11 can be swung toward and away from each other.

Pivotally connected to the leg unit 16, shown in Fig. 2, is a brace 20 mounted on a pivot pin 21. The brace 20 is provided with a slot 22 having an angular end 23. A stud 24 on the leg 12 shown in Fig. 2 slidably fits the slot 22. In the full line position of Fig. 2 the stud 24 is at the right hand end of the slot 22 and the leg units 10 and 11 are expanded. When the leg units are positioned together to approximately the dotted line positions shown in Fig. 2 and the stud 24 is seated in the angular offset 23 of the slot 22, said leg units will be held in their contracted position as indicated by the dotted lines.

The legs 12 and 16 are provided with casters 25. As shown in Fig. 6, the caster includes a spindle 26 and an offset roller 27. When the leg units are collapsed the caster spindles are fairly close to upright, but when the legs are expanded the spindles 26 lie at a decided angle to the vertical. As a result the rollers 27 will tend to assume and maintain the position shown in Fig. 6, thereby rendering the bench less readily shiftable over the floor when work is being done with power tools supported by the bench.

The leg unit 10 has an additional pair of wheels thereon. The wheels 28 are considerably larger than the caster rollers 27. Each wheel 28 is mounted on a member 29 which is pivot-

ally connected at 30 to each of the legs 12. The members 29 have a cross-member 31 extending therebetween. It is longer than the distance between the legs 12, as shown in Fig. 1. Adjacent each end of the cross member 31, and on each leg 12, is a rotatable latch member 32 which can be swung upwardly or downwardly to hold the cross-member 31 in a raised or lowered position, and consequently to change the vertical positions of the wheels 28, so that they can be in an inoperative position as shown in Fig. 2 in full lines or in a bench transporting position as indicated in dotted lines in that figure.

In conjunction with the wheels 28 I have provided a pair of handles 33 which are connected to the legs 12 by means of hinges 34. When the handles 33 are swung out so that they extend from the bench, as shown in Fig. 2, and the wheels 28 are lowered, the structure can be more or less balanced on the two wheels 28 and trundled in the manner of a wheelbarrow.

Extending across the upper ends of the legs 12 is a bench top element 35 which preferably is rigidly connected to the leg unit. It is adapted to support bearing brackets 36 which carry a horizontally disposed pulley shaft 37.

Extending across the upper ends of the legs 16 and secured to the leg cross-member 18 by means of a suitable hinge or hinges 38 is a bench top section 39. This bench top section is connected to a lever 40 which is pivotally supported at 41 to the leg 16 shown in Fig. 2. The lever 40 extends to the right through the leg unit 10 and terminates in a handle portion 40a. The other end of the lever 40 extends beyond the pivot 41 and is connected by a strap 42 to the hinged bench top section 39. This bench top section may support a lathe bed 43 or other suitable power tool. In Fig. 1 the right hand end of the bench top is shown carrying a pair of bearing brackets 44 and 45. A lathe head plate 46 is shown on one end of a shaft 47, which is carried by the brackets 44 and 45. The shaft 47 has a set of pulleys 48 thereon which are of different sizes to give different gear ratios and the pulley set 48 is disposed oppositely thereto a set of pulleys 49 on the shaft 37, which is located on the relatively stationary bench top section 35. As shown in Fig. 4 a belt 50 connects the pulley unit 48 with the pulley unit 49. In order to properly tension the belt 50 the lever 40 is pulled upwardly at its long end to tilt the hinged bench top section 39 and its pulleys 48 away from the pulleys 49. In Fig. 1 the lever 40 is shown extending through the open leg unit 10 and just above the intermediate cross-member 15 which extends between the legs 12. A wedge 52 is slidably supported on the cross-member 15 to hold the lever 40 in any one of a number of angular positions. A bolt 53 is connected to the wedge 52 and extends through a slotted block 54 on the intermediate cross-member 15 so that the wedge can be adjustably held in different positions.

It will be noted in Fig. 1 that the shaft 47 which carries the lathe head stock 46 may have a cicular saw 55 on its opposite end and a suitable work rest 56 may be positioned adjacent the saw 55 and on a bracket 57 which is mounted on the extreme end of the bench top section 39.

A pair of relatively short vertical members 58 and 59 extend downwardly from the stationary bench top section 35 to the intermediate horizontal cross-member 15. Extending from the members 58 and 59 are pivoted pulley shaft carriers 60 and 61 and their outer ends support a short pulley shaft 62 having pulleys 63 and 64 thereon. The pulley 63 is connected by a belt 65 to a pulley 66 on the horizontal pulley shaft 37 on the bench top section 35. The pulley 64 is of the variable speed expansible flange type which is well-known in the pulley art and in mechanical arts generally.

Pivotally connected to the lower cross-member 13, which extends between legs 12, is a lever 67, which terminates at its upper end in a handle portion 68. Beneath the handle portion and, as viewed in Fig. 1, the lever 67 is provided with a cut-out portion 69 which slopes upwardly as indicated in Fig. 1. The pulley shaft support 60 rests upon the lower edge of the cut-out 69. When the lever 67 is shifted to the left hand dotted position shown in Fig. 1 the pulley shaft support 60 will drop, the complementary pulley shaft support 61 also dropping. When the lever 67 is moved to the right it will raise the pulley shaft 60 by reason of the camming or wedged action of the upwardly sloping surface of the bottom of the cut-out 69 in said lever 67. The position of the lever 67 can be adjustably fixed by means of a wing nut 70 on a bolt 71 which passes through an arcuate slot 72 extending generally across the upper portion of the lever 67 below the handle 68.

When the pulley shaft is raised by movement of the lever 67 it will place added tension on a belt 73 which connects the variable speed pulley 64 with a pulley 74 on the shaft 75a of a motor 75. This added tension will expand the pulley 64 axially and the belt 73 will work on a smaller circle of the pulley 64 thereby increasing the speed of rotation of shafts 62 and 37, so that any tools connected to the shaft 37 will have their speed increased. As is generally known in connection with variable speed pulleys, when the lever 67 is shifted to the left the spring loaded movable side or flange of the pulley 64 will move toward the other flange and cause the belt 73 to work out to a larger working circle and the speed of rotation of the shifting will be reduced.

Referring back to the motor 75, it will be seen that it is carried on the upper end of a diagonal support 75b, which in turn is supported only at its lower end by a frame member 75c, providing a slightly resilient mounting for the motor and properly balancing it on the frame.

Extending upwardly between the lower leg unit cross-member 13 and the stationary bench top section 35 is a pair of members 76 having adjacent upper portions cut away to provide a slot 77. In this slot is located a lever 78 mounted on a pivot pin 79 which extends between the uprights 76. The lever 78 has its inner end lying beneath a tool post guide opening 80 formed in the stationary bench top section 35. A tool post 81 is shown extending through the opening 80 and, of course, is slidable thereon. The bottom of the post 81 rests upon the inner end of the lever 78 so that vertical manipulation of the lever will raise or lower said tool post.

The lever 78 is provided with a series of teeth 82 which extend across the upper medial portion thereof and these teeth are selectively engaged by a locking member 83 which is pivotally mounted on a pin 84 carried by the upper ends of the vertical members 76.

The tool post 81 carries a pair of pulleys 85 which is shown in connection with a drill press unit 86, having a pulley 87 thereon. A belt 88

extends from the pulley 87 around the pulley 85 which is actually a double pulley unit as shown in Fig. 2. A belt then extends downwardly around a pulley 89 on the main pulley shaft 37 which is driven as described above.

When the lever 78 is pressed downwardly at its outer or handle end it will push the tool post 81 upwardly and tighten the belt 88. The catch member 83 can be dropped into engagement with one of the teeth 82 on the lever 78 to hold the belt 88 in a tight driving condition. Of course, when the catch 83 is released and the tool post 81 is dropped, the belt 88 will be freed from the driving pulley 89 and the tool on the post 81 will be rendered inoperative.

From the foregoing description it will be seen that I have provided a bench for power tools which is capable of operatively supporting a number of different types of power tools so that a rather complete workshop can be contained in a very small space. The main pulley shaft 37 can be driven with variable speeds through the medium of the adjustment lever 67 and devices driven from the pulley unit 49 on the shaft 37 can be given additional speed variation by means of the different diameters of the pulleys on the unit 49. Means is provided for tilting the movable bench top section 39 about its hinge 38 to serve as a pulley drive tightening means and means for accomplishing the same purpose has been described just above in connection with the vertical movability of the tool post 81.

The device is one which can be moved on its supporting casters in its collapsed or its expanded position although in the expanded position shown in full lines in Fig. 2 the casters will not swing freely about their spindles 26 shown better in Fig. 6, by reason of the divided angle to which the caster spindles are tilted when the frame is expanded. As a result the bench will remain rather firmly in position on the floor under such conditions. When it is collapsed the caster spindles are more nearly vertical and the bench can be readily shifted in any direction over the floor.

For transportation or movement of the structure over considerable distances or on rough floors, I have provided the wheels 28 and the handles 33 so that the device can be shifted much in the manner of a wheelbarrow or a two-wheeled cart.

While my apparatus is adaptable for use in commercial machine shops, it is of particular advantage to home workshop owners, since a large number and variety of machine tools can be mounted on a structure which takes up little space. When the leg units are collapsed toward each other the entire structure can be conveniently placed in a small corner or moved into a closet when not in use, and it takes up no greater amount of space when the legs are expanded to give the unit more stability.

The various controls and the like are all mounted on one side of the structure so that the operator can readily change different parts of the operating mechanism with facility.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What I claim is:

1. In a bench of the class described, a pair of downwardly diverging legs at each end of the bench, means hingedly connecting the legs of each pair for inwardly folding movement, longitudinal tie members connecting the legs on each side of the bench at their upper ends, a top structure comprising two separate and independent longitudinal top members each overlying the legs on one side of the bench, one of the top members being rigidly secured to the respective legs, hinges attaching the other top member to the respective tie member for outward and downward tilting movement, a lever extending transversely of the bench and intermediately pivoted to one of the legs that the tilting top member overlies, a strap connecting the lever at one end to the outer portion of the tiltable top member, and means holding the lever from moving pivotally.

2. The structure defined in claim 1 in which the hinges are outwardly of the longitudinal center line of the tilting top member whereby the respective top member is under strain to move out of a tilted position.

3. In a bench of the class described, a pair of downwardly diverging legs at each end of the bench hingedly connected for inward folding movement, a pair of top members, one of which connects the legs on one side of the bench being rigidly secured thereto, the other top member connecting the legs on the other side of the bench and being hingedly attached thereto for outward and downward tilting movement, and means for tilting the last-noted top member.

4. The structure defined in claim 3 in which the hinged attachment of the last-noted top member is outward of the longitudinal center line of said member.

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