

June 9, 1931.

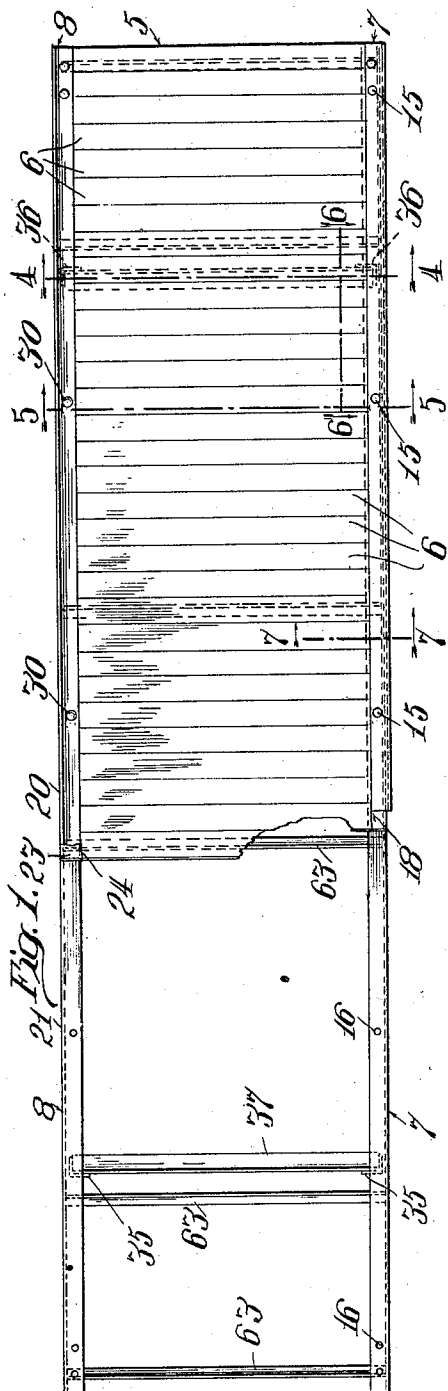
A. M. BARRETT

1,809,153

SHOP BENCH

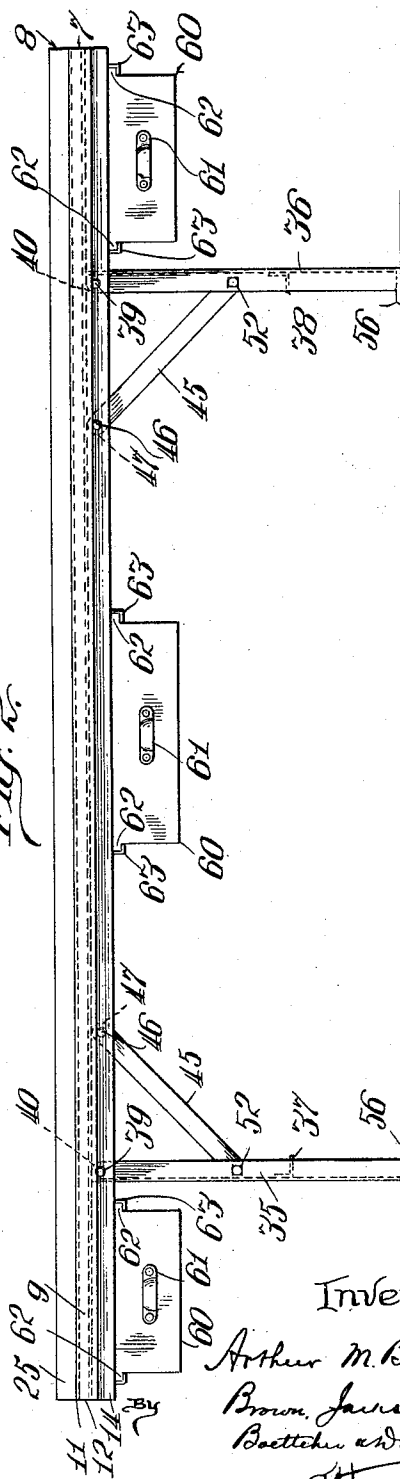
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2 Sheets-Sheet 1



Witness
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Fig. 2.



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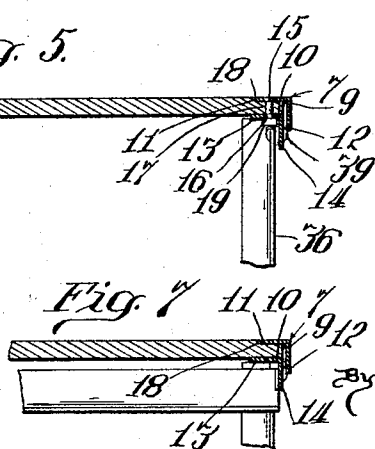
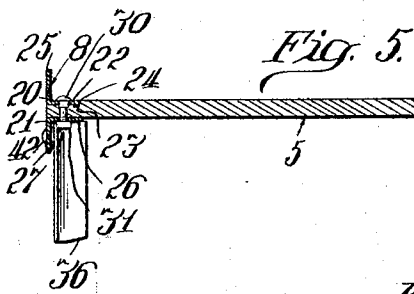
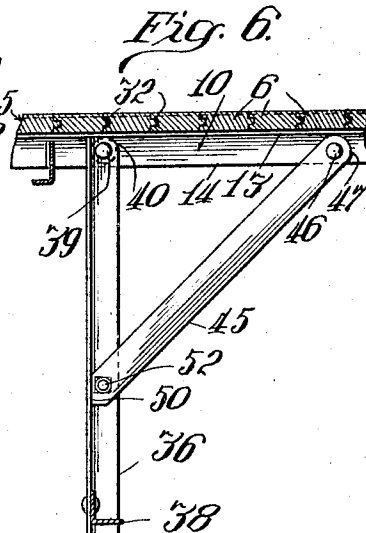
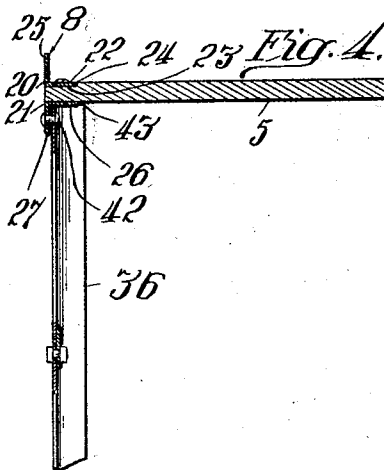
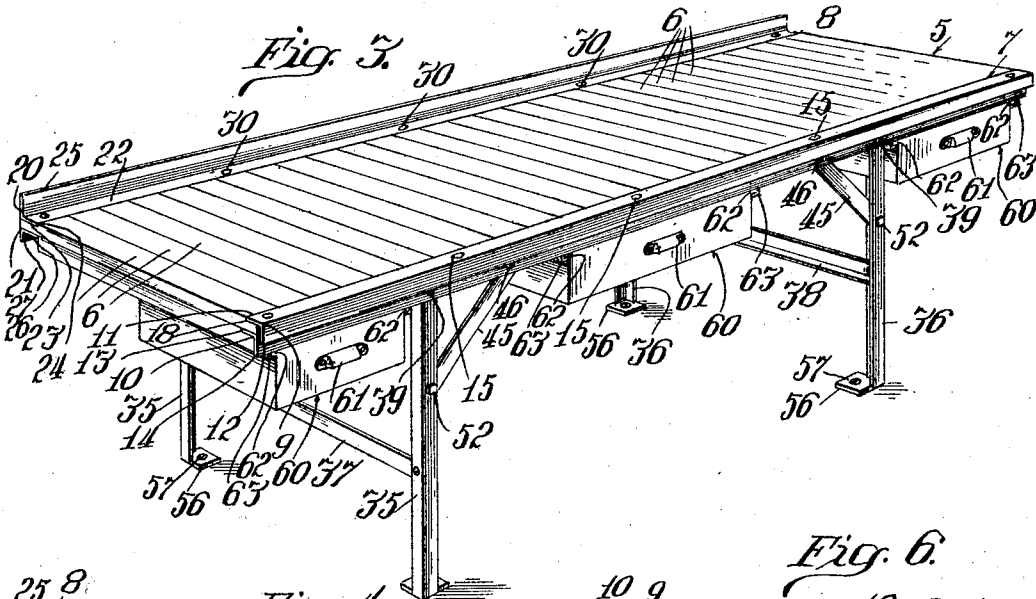
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SHOP BENCH

Application filed January 23, 1928. Serial No. 248,626.

This invention relates to work or shop benches and its objects are the provision of a generally improved, simplified and economical construction having great strength as well as advantageously reinforced where the heavy loads are usually placed and protected against uneven or undue wear, particularly along the outer or front edge of the bench.

In the ordinary shop benches, as heretofore constructed, the boards forming the top of the bench have usually been arranged longitudinally of the bench. This longitudinal disposition of the boards is not best suited for carrying the stresses imposed by a heavy load upon the bench and, in addition, the front board receives an undue amount of wear and is very quickly rounded off along its front or outer longitudinal edge with the result that the upper surface of the bench becomes uneven or irregular.

The present invention provides an improved arrangement of the boards forming the top of a bench of this sort and an improved protecting reinforcement along the front or outer edge of the bench. With this improved board arrangement and reinforcement, the deflection under heavy loads is greatly decreased and the protecting reinforcement also provides a hard steel or working edge along the front of the bench. The protecting reinforcement also protects the edge of the bench in the handling of heavy castings, dies or the like on and off the bench.

The invention further provides a bench that may be made up complete by the manufacturer and shipped all ready to be set up and without buying steel or pressed steel legs and constructing the bench in the shop in which it is to be used, as heretofore. To this end the invention provides a leg and brace structure that may be folded up compactly and adapted to be unfolded and set up with ease and facility.

The structure of the present bench is such that sections or lengths of it may be bolted or fastened end to end to provide a bench of any desired length, as well as to make a continuous bench down any length of factory and sections of various depths may be used to pass posts, radiators or other obstructions

without interfering with or interrupting the continuity of the bench.

Still further provisions of the present invention are an improved mounting of the leg and brace structure and an improved rear edge reinforcement which, in addition to its reinforcing and leg mounting function, is arranged to provide an upstanding ledge for preventing accidental displacement of articles from the rear of the upper surface of the bench.

The invention is illustrated in the accompanying drawings, in which

Fig. 1 is a top plan view of a bench embodying the present invention;

Fig. 2 is a front elevational view of the bench shown in Fig. 1;

Fig. 3 is a perspective view of the same;

Fig. 4 is a transverse section taken on the line 4—4 of Fig. 1;

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 1;

Fig. 6 is a fragmentary longitudinal section taken on the line 6—6 of Fig. 1; and

Fig. 7 is a fragmentary transverse section taken on the line 7—7 of Fig. 1.

Referring to the drawings, the bench selected for illustration, has a top 5, comprising parallel transverse boards 6 arranged with their lengths or longitudinal dimensions extending transversely across the length or longitudinal dimensions of the top 5. The ends of the boards 6 are secured or bound together and held in rigid relation along the front of the bench by a front frame designated generally at 7 and are secured or bound together and held in rigid relation along the rear of the top 5 by a rear frame designated generally at 8.

The front frame 7 comprises a pair of angle bars 9 and 10, preferably of suitable steel or iron. The angle bar 9 has a horizontal flange 11 which overlies the tops of the front ends of the boards 6 and a depending vertical flange 12 which depends down over and covers and protects the outer ends of the boards 6. The flange 12 also forms a stiffening flange or element along the front of the top 5 and the bar 9 finishes the front marginal edge of the top. The angle bar 10 has a horizontal

flange 13 which overlies the under sides or bottoms of the front ends of the boards 6 and a depending vertical flange 14 which serves as an additional stiffening flange longitudinally along the front edge of the top 5 and, in addition, as an element to which the legs and/or brace structure at the front of the bench may be suitably attached or connected with the top 5.

The front ends of the boards 6 are bound or secured between the horizontal flanges 11 and 13 of the bars 9 and 10, as by means of bolts 15, which serve to clamp the upper and lower angle bars 9 and 10 together with the front ends of the boards 6 between the horizontal flanges 11 and 13 thereof. To permit of the passage of the shanks of the bolts 15 therethrough, the flanges 11 and 13 have longitudinally spaced openings 16 which, with the parts assembled, as shown, register with each other and with openings 17 through the front ends of the boards at the opposite ends of the top 5 and through the front ends of several of the intermediate boards. The front ends of the boards 6 are preferably rabbeted or scarfed at 18 to receive the flange 11 flush with the upper surface of the top 5 and the openings 16 through the upper flange 11 are preferably countersunk, as shown in Figure 5, with the heads of the bolts 15 lying flush with the upper surface of the flange 11 and the top of the flange 11 presenting a smooth surface. The depth of the rabbet is substantially equal to the thickness of the flange 11 and with the top of the flange 11 flush with the upper surfaces of the boards 6, the top 5 is provided with a smooth upper surface. The lower ends of the bolts 15 have threaded engagement with nuts 19 which are drawn up into cooperation with the bottom of the flange 13 and draw the flanges 11 and 13 together with the adjacent ends of the boards 6 between them. In the illustrated embodiment of the invention the front ends of each of the end boards and the front ends of only some of the intermediate boards are bolted between the flanges 11 and 13 with the remaining boards bound between the flanges 11 and 13 and restrained against displacement longitudinally of the bench by means of the boards which are bolted and against forward displacement as by the cooperation of the inner edge of the flange 11 with the vertical shoulders formed by the scarfing 18. The depending flange 12 is adapted to form an additional barrier against forward displacement of the boards which are not bolted.

The rear frame member 8 comprises a pair of angle bars 20 and 21 which may also be of suitable iron or steel. The angle bar 20 has a horizontal flange 22 overlying the tops of the rear ends of the boards 6, the rear ends of the boards 6 being preferably rabbeted or scarfed at 23 to receive the flange 22 flush

with the upper surface of the top 5 and, in addition, providing vertical shoulders 24 for cooperating with the adjacent edge of the flange 22 and preventing rearward displacement of the boards which are not bolted, similar to the retention provided longitudinally along the front of the top 5. The angle bar 20 also has an upstanding vertical flange 25 preferably with its rear surface substantially flush with the rear ends of the boards 6 and forming a stiffening flange along the rear of the top 5. The upstanding flange 25 may, in addition, serve to prevent displacement of articles from the rear of the upper surface of the top 5.

The rear angle bar 21 has a horizontal flange 26 underlying the bottoms of the rear ends of the boards 6 and a vertical flange 27 depending substantially in the plane of the flange 25, this depending flange 27 serving as an additional stiffener along the rear of the top 5 and as an element to which the legs and brace structure, at the rear of the bench, may be suitably attached or connected with the top 5.

The rear ends of the boards 6 are bound or secured between the horizontal flanges 22 and 26 of the bars 20 and 21, as by means of bolts 30 the shanks of which preferably pass through the flanges 22 and 26 and through the rear ends of the end boards and intermediate boards through which the shanks of the bolts 15 pass at the front of the bench. Beneath the flange 26 the bolts 30 engage in nuts 31 which are adapted to be drawn up into cooperation with the flange 26 to draw the flanges 22 and 26 together with the rear ends of the boards 6 clamped firmly therebetween. With the arrangement shown it is unnecessary to provide bolts at the opposite ends of each board and only a relatively small number of intermediate bolts are necessary depending upon the length of the top 5. The adjacent edges of the boards 6 may have tongue and groove joints as indicated at 32 in Fig. 6.

The top 5 is supported by two pairs of legs 35, 35 and 36, 36, preferably arranged at the corners of a generally rectangular figure and each preferably of angle iron or other suitable stock. The legs 35, 35 may be braced crosswise or transversely of the bench by a cross brace 37 and the legs 36, 36 may be similarly braced by a cross brace 38. The cross braces 37 and 38 may likewise be of angle iron or other suitable stock. The upper ends of the longitudinally disposed flanges of the front legs are pivoted at 39 to the depending flange 14 of the angle bar 10 and the corners 40 of these longitudinally disposed flanges are preferably rounded, as shown in Fig. 6, to permit the front legs 35 and 36 to be folded toward each other and up into the plane of the frame member or bars 10 for compact shipment, handling or storage when the bench is not set

up for use. The upper ends of the longitudinally disposed flanges of the rear legs 35 and 36 are similarly pivoted at 42 to the depending flange 27 of the rear frame member or bar 21 and are preferably similarly rounded to fold with the front legs up into the plane of the rear bar 21. The transversely disposed flanges of the two legs of each pair are preferably finished off square, as shown at 43 in Fig. 4 and when the legs are positioned in their upright unfolded or supporting position these square upper ends of the transverse flanges of the legs and the adjacent square portions of the longitudinally disposed flanges preferably abut the under surfaces of the flanges 13 and 26 for transmitting the stresses imposed by the top 5 and any load thereon directly to the legs 35, 35 and 36, 36 without imposing, at least, all of these stresses upon the pivots 39 and 42.

For the purpose of maintaining and bracing the legs in their upright supporting positions, each leg is provided with a diagonal brace 45. The diagonal braces 45 at the front of the bench, are pivoted at 46 to the depending flange 14 of the front frame member or bar 10 and these pivoted ends are rounded at 47 to permit the braces to be swung into their bracing position as shown in Fig. 6 and, when disconnected from the legs, to be swung away from the legs and up into the plane of the frame member 10. The braces 45 for the rear legs are similarly pivoted to the depending flange 27 and are similarly formed to be swung into bracing position and into the plane of the bar 21. The lower ends of the braces 45 are mitered off at 50 to abut the transverse flanges of the legs when set up as shown in Fig. 6 and when the legs are set up for use these lower ends of the braces 45 may be secured to their respective legs as by means of bolts 52 which bolts 52 are separately removable to permit the legs and braces to be disconnected and folded up compactly into the plane of the top frame members.

In use the longitudinal front and rear frame members 7 and 8 take and distribute the stresses imposed by loads upon the top 5 and carry or transmit these stresses to the upright supporting legs. The deflection of the top under load is much less than that which occurs where the boards are arranged longitudinally even where the longitudinal boards are of greater thickness. The heavy loads on a bench of this sort are usually placed toward the front edge of the bench and with the present construction the reinforced front edge will carry a very large load. There is no longitudinal board edge exposed along the front to be quickly rounded off and with the present construction the front frame member provides a hard steel edge upon which the mechanic may straighten nails, cotter pins and perform other work. The front edge of the bench is also protected in the handling of

heavy castings and the like and the bench may be made up complete in the manufacturer's shop and shipped to the customer all ready to be set up. The bench requires but a minimum space when folded and is of great strength when set up for use and a number of benches or bench sections of this sort may be folded end to end to make a continuous bench down any length of a factory.

The lower ends of the legs 35, 35 and 36, 36 may be provided with end flanges or web-like feet 56 which may be apertured at 57 to permit bolting to the floor or other surface upon which the bench is set up.

The bench may be made up with and without provision for drawers. In the bench shown three drawers 60 are provided. Each drawer 60 is provided, at its front with a handle 61, and along its opposite sides with shoulders 62, 62 slidably supporting or suspending the drawer in hangers 63. The hangers 63 extend transversely between the depending flanges 14 and 27 and may be suitably secured at their opposite ends thereto and there is one of these hangers 63, which are of generally L-formation along each of the opposite sides of each drawer 60 and cooperating with each of the side shoulders 62. The particular disposition of the drawers may be varied or they may be omitted or increased or decreased in number.

I claim:—

1. In a bench of the class described, a top made up of a plurality of transversely arranged boards lying contiguous and with their adjacent ends in substantial longitudinal alignment, a pair of angle bars extending longitudinally along the ends of the boards and substantially normal the direction of extension of the boards, one of said bars having one flange disposed horizontally and overlying the ends of the boards and its other flange disposed vertically, the other bar having one flange disposed horizontally and underlying the ends of the boards and its other flange disposed vertically, said boards being solid, and means for securing the boards between the horizontal flanges of said angle bars, said board securing means forming the sole connection between said angle bars and the vertical flange of one of said angle bars depending downwardly with the vertical flange of the other angle bar upstanding upwardly above the top.

2. In a bench of the class described, a top made up of a plurality of transversely arranged boards lying contiguous and with their adjacent ends in a substantial longitudinal alignment, a pair of angle bars extending longitudinally along each of the opposite ends of the boards and substantially normal the direction of extension of the boards, one of the bars of each pair having one flange disposed

horizontally and overlying the ends of the boards and its other flange disposed vertically, the other bar of each pair having one flange disposed horizontally and underlying the ends of the boards and its other flange disposed vertically, said boards being solid, and means for securing the boards between the horizontal flanges of said angle bars, the vertical flanges on both bars along one of the longitudinally aligned board ends depending downwardly from the horizontal flanges of the bars and being free of each other at all times and the vertical flange on one of the bars along the oppositelongitudinally aligned ends of the boards depending downwardly with the vertical flange of the other bar upstanding upwardly above the boards.

3. In a bench of the class described, a top made up of a plurality of transversely arranged boards lying contiguous and with their adjacent ends in substantial longitudinal alignment, a pair of angle bars extending longitudinally along the ends of the boards and substantially normal the direction of extension of the boards, one of said bars having one flange disposed horizontally and overlying the ends of the boards and its other flange disposed vertically, the other bar having one flange disposed horizontally and underlying the ends of the boards and its other flange disposed vertically, said boards being solid, means for securing the boards between the horizontal flanges of said angle bars, said board securing means forming the sole connection between said angle bars, and the vertical flanges of both bars depending downwardly from the horizontal flanges of the bars and being free of each other at all times and supporting legs pivoted to the depending flange of one of said bars for supporting the top in elevated position at substantially the level of the arms of a workman in standing position.

4. In a bench of the class described, a top made up of a plurality of transversely arranged boards lying contiguous and with their adjacent ends in substantial longitudinal alignment, a pair of angle bars extending longitudinally along the ends of the boards and substantially normal the direction of extension of the boards, one of said bars having one flange disposed horizontally and overlying the ends of the boards and its other flange disposed vertically, the other bar having one flange disposed horizontally and underlying the ends of the boards and its other flange disposed vertically, said boards being solid, means for securing the boards between the horizontal flanges of said angle bars, said board securing means forming the sole connection between said angle bars, and the vertical flanges of both bars depending downwardly from the horizontal flanges of the bars and being free of each other at all times, supporting legs pivoted to

the depending flange of one of said bars for supporting the top in elevated position at substantially the level of the arms of a workman in standing position, said pivoted legs being swingable up beneath the top and into upright position for use and brace means also pivoted to said depending flange and foldable up beneath the top and adapted to be connected diagonally to said legs and to be disconnected from said legs.

5. In a bench of the class described, a top made up of a plurality of transversely arranged boards lying contiguous and with their adjacent ends in substantial longitudinal alignment, a pair of angle bars extending longitudinally along the ends of the boards and substantially normal the direction of extension of the boards, one of said bars having one flange disposed horizontally and overlying the ends of the boards and its other flange disposed vertically, the other bar having one flange disposed horizontally and underlying the ends of the boards and its other flange disposed vertically, said boards being solid, means for securing the boards between the horizontal flanges of said angle bars, said board securing means forming the sole connection between said angle bars, and the vertical flanges of both bars depending downwardly from the horizontal flanges of the bars and being free of each other at all times, supporting legs pivoted to the depending flange of one of said bars for supporting the top in elevated position at substantially the level of the arms of a workman in standing position, the upper ends of said legs being formed to permit swinging said legs up beneath the top and shouldered for abutting engagement with the horizontal flanges underlying the board ends when in supporting position.

6. In a bench of the class described, a top made up of a plurality of transversely arranged boards lying contiguous and with their adjacent ends in substantial longitudinal alignment, a pair of angle bars extending longitudinally along the ends of the boards and substantially normal the direction of extension of the boards, one of said bars having one flange disposed horizontally and overlying the ends of the boards and its other flange disposed vertically, the other bar having one flange disposed horizontally and underlying the ends of the boards and its other flange disposed vertically, said boards being solid, means for securing the boards between the horizontal flanges of said angle bars, said board securing means forming the sole connection between said angle bars, and the vertical flanges of both bars depending downwardly from the horizontal flanges of the bars and being free of each other at all times, supporting legs pivoted to the depending flange of one of said bars for supporting the top in elevated position at sub-

stantially the level of the arms of a workman in standing position, said pivoted legs being swingable up beneath the top and upright position for use, brace means also pivoted to said depending flange and foldable up beneath the top and adapted to be connected diagonally to said legs and to be disconnected from said legs, and a drawer suspended from the bottom of the top and in position between the pivoting of said brace means to said depending flange.

In witness whereof, I hereunto subscribe my name this 17th day of January, 1928.

ARTHUR M. BARRETT.

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