L. H. FLAIR.

WORK BENCH.

APPLICATION FILED AUG. 25, 1916.

1,295,463.

Patented Feb. 25, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

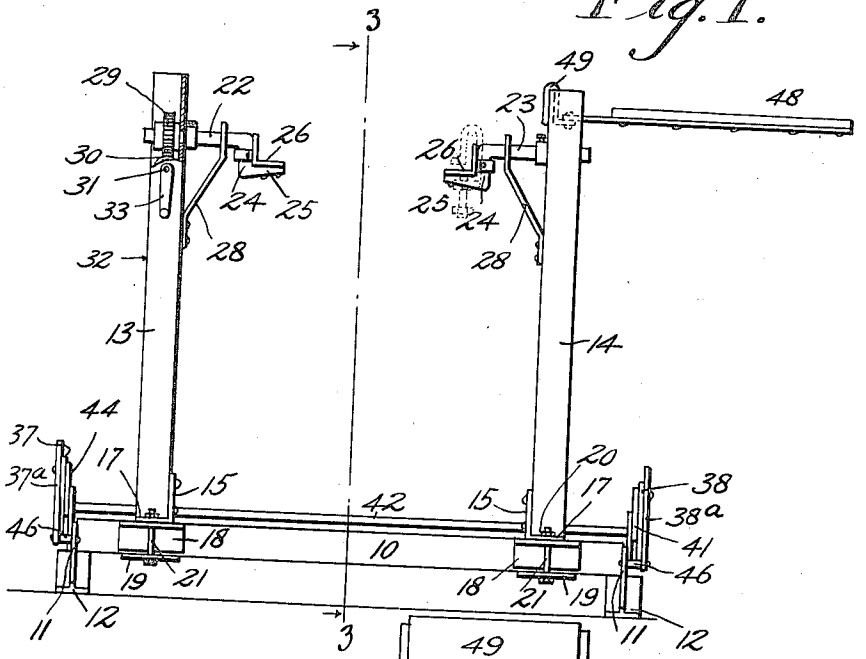
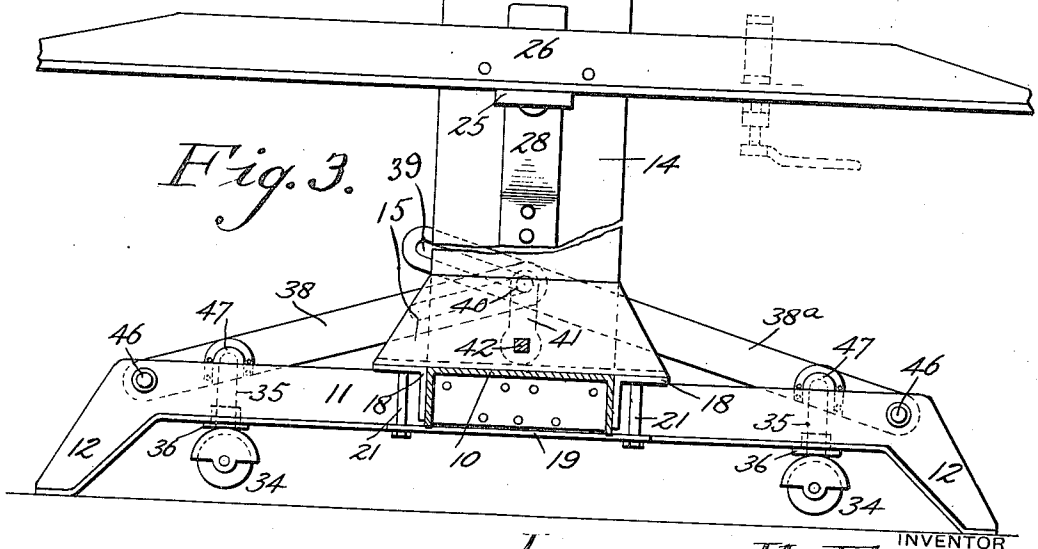


Fig. 3.



WITNESSES

V. L. Williams.

A. P. Hollingsworth

INVENTOR

Louis H. Flair.

BY Richard B. Owen.

ATTORNEY

L. H. FLAIR.

WORK BENCH.

APPLICATION FILED AUG. 25, 1916.

1,295,463.

Patented Feb. 25, 1919.

2 SHEETS—SHEET 2.

Fig. 2.

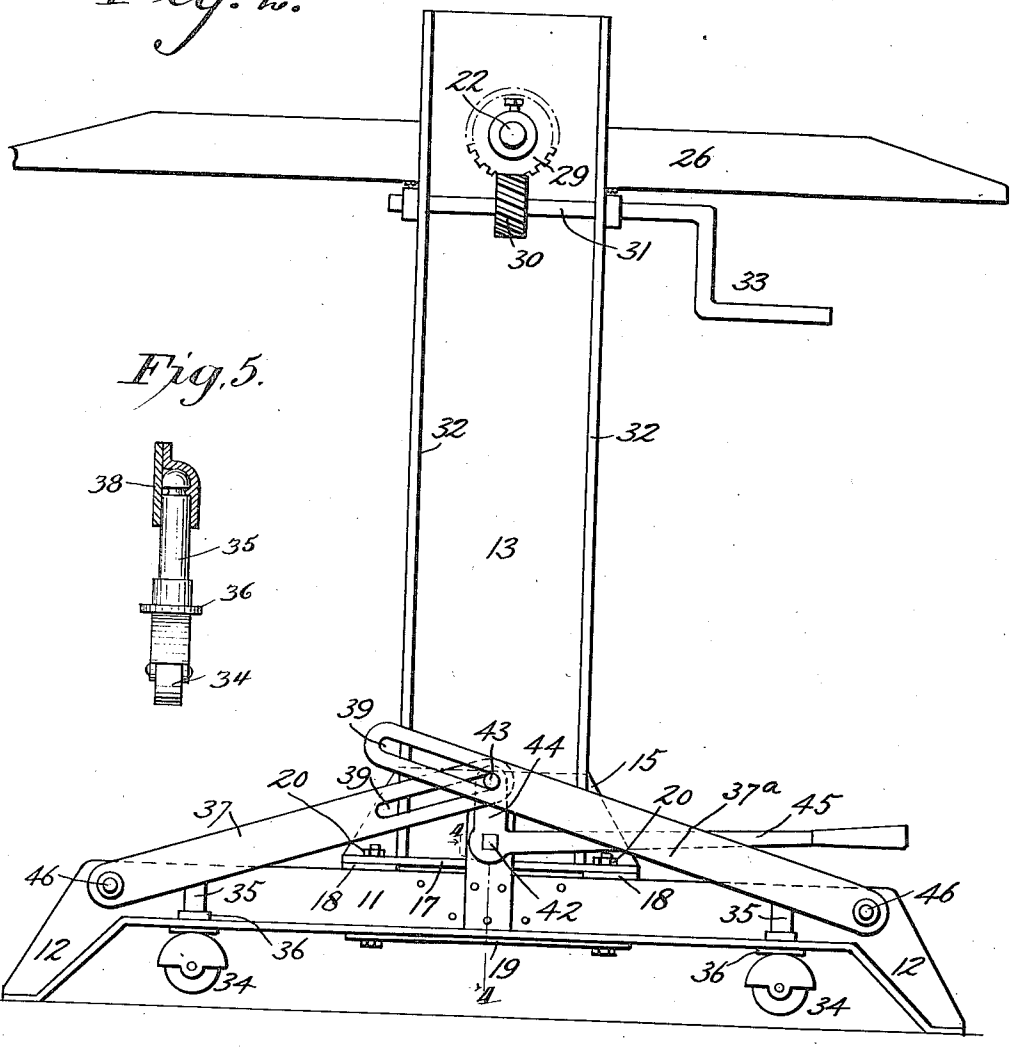
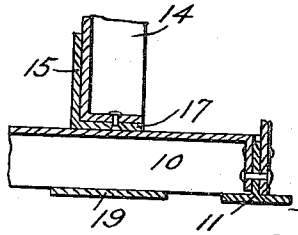


Fig. 5.

Fig. 4.



WITNESSES

K. L. Williams.

S. P. Hollingsworth

INVENTOR

Louis H. Flair.

BY Richard B. Owen.

ATTORNEY

UNITED STATES PATENT OFFICE.

LOUIS H. FLAIR, OF MARSHALL, MISSOURI.

WORK-BENCH.

1,295,463. Specification of Letters Patent. Patented Feb. 25, 1919.

Application filed August 25, 1916. Serial No. 116,919.

To all whom it may concern:

Be it known that I, LOUIS H. FLAIR, a citizen of the United States, residing at Marshall, in the county of Saline and State of Missouri, have invented certain new and useful Improvements in Work-Benches, of which the following is a specification.

This invention relates to work benches and particularly to a bench frame for supporting and carrying engines of the internal combustion type, particularly automobile engines, and has for its object to provide a bench frame upon which engines may be secured in such manner that said engines can be turned thereon to any desired angle or wholly inverted and held in such position rigid and securely as long as may be desired.

Another object of the invention is to provide a bench frame of the class described which will stand rigidly and firmly upon the floor and which may when desired be shifted to casters whereby the frame may be transported with great facility to any part of the shop.

A further object of the invention is to provide a bench frame having a base and a pair of standards which are adjustable on said base to and from each other to accommodate engines of various sizes which are to be repaired.

A still further object of the invention is to provide a bench frame made of relatively few parts simply and strongly constructed and so designated and assembled that men working on engines supported thereon can, without trouble and inconvenience get at any part of the engine.

With the above objects in view as the principal features, the invention consists of a novel construction, combination and arrangement of parts hereinafter described, pointed out in the appended claims, and illustrated in the accompanying drawings, in which,

Figure 1 is a side elevation of the bench frame complete,

Fig. 2 is an end elevation of the same on an enlarged scale,

Fig. 3 is a vertical cross-sectional view on the line 3—3 of Fig. 1 with a portion of the standard broken away, and

Fig. 4 is a detail sectional view through the lower end of one of the standards on the line 4—4 of Fig. 2.

Fig. 5 is a detail view in vertical section showing the pivotal connection of a caster to the rising and lowering arm therefor.

In the drawings, 10 indicates a horizontal base beam preferably of inverted channel formation bolted at each end to a transversely extending beam 11 preferably of T shape in cross section and having its ends cut and bent downwardly as at 12 to form feet that rest upon the floor and provide a rigid support for the base formed as described of the beams 10 and 11.

Projecting upwardly and supported upon the beam 10 are two standards 13 and 14 of channel shape in cross section and capable of being moved longitudinally on the beam 10. The bottom of the standards 13 and 14 are each carried or supported upon an angle bracket 15 riveted as at 16 to the bottom of the standard. The bottom side 17 of each angle bracket that bears upon the beam 10 projects laterally beyond the sides thereof as shown in Fig. 3 and has riveted to each projecting end an angle plate 18, said plates lying snugly against the sides of the beam 10 and serve to guide and hold the standards in alinement as they are moved longitudinally along the beam 10. A plate 19 extends across the under side of the beam 10 below each standard and by means of bolts passing upwardly through said plates, angle plates 18 and brackets 15, these standards are immovably secured, after adjustment to the beam 10 by screwing the nuts 20 downwardly on the aforesaid bolts 21.

Near the top of the standards 13 and 14 are the supports for the engine and comprise a short horizontal shaft 22 projecting inwardly from the standard 13 and adapted to rotate in said standard. A similar shaft 23 projects from the standard 14 in line with the shaft 22. The inner ends of both shafts are bent at a right angle to form short legs 24 and then again turned inwardly toward each other to provide the feet 25 upon each of which is riveted a long angle plate 26, one side of said plate being in a horizontal plane and the other side in a vertical plane, said plates opening toward each other, as shown in Fig. 1. Upon the plates 26 the engine frame is placed and fastened rigidly thereto by any suitable means which will permit ready connection and disconnection of the engine and which will hold the latter properly secured and im-

movable on the angle plates. A form of clamp found suitable for this purpose is shown in dotted lines in Figs. 1 and 3.

The shafts 22 and 23 extend through openings in the standards 13 and 14, respectively, and rotate therein, the inner end of said shafts being supported near the arms 24 by brackets 28, one of which is bolted to each standard below the shaft and extends upwardly to support the same. The outer end of the shaft 22 has fixed thereon a worm-wheel 29 that lies close against the standard 13 and serves when turned as a means for revolving the shafts 22 and 23 when an engine or other piece of machinery is secured thereto so as to place said engine at any angle desired or completely invert the same. Rotary movement is imparted to the worm-wheel 29 by a worm 30 fixed on a shaft 31 extending across the standard 13 and journaled in flanges 32 of said standard, one end of said shaft being provided with a crank 33 by means of which the shaft 31 and work 30 are rotated and movement in the proper direction imparted to the worm-wheel 29 and short shafts 22 and 23.

Adjacent each foot 12 on the ends of the beams 11 is a caster roller 34, each caster being mounted on the lower end of a vertical stem 35 and is movable vertically and rotatably in a bearing 36 on the beam 11 so that when desired these casters may be caused to move downwardly and when sufficient pressure is applied to their stems 35, to raise the feet 12 from the floor and permit ready movement of the entire bench frame to any part of the shop. For the purpose of raising and lowering these casters, there is pivotally connected at each end of the vertical web of each beam 11 one end of a lever, said levers 37, 37ª, 38 and 38ª extending toward the center of the bench frame in planes parallel with the beam 11 at an upwardly inclined angle and intersecting at the center of the bench frame. The levers 37ª and 38ª are shown a little longer than the levers 37 and 38 and each lever has a longitudinal slot 39 in its end. The levers 38 and 38ª are in contact flatwise at one side of the machine and through the slots 39 in their ends, there is passed a pin 40 on the upper end of a rocking arm 41 fixed to a cross shaft 42 journaled in the standards 13 and 14. A like pin 43 extends through the slots 39 in levers 37 and 37ª, said pin projecting from an arm 44 on the opposite end of the shaft 42. A hand lever 45 is also fixed on the shaft 42 and when operated causes the arms 41 and 44 to rock with the shaft 42 and carry the pins 40 and 43 along the slots 39. Each lever near its pivot 46 has secured thereon a bearing 47 into which the upper end of the caster stem 35 is seated so that when the hand lever 45 is operated to rock the arms 41 and 44, the levers are depressed, said movement carrying the bearings 47 downwardly, force the caster against the floor and causes an elevation of the entire bench frame, raising the feet 12 from the floor and placing the entire support on the casters 34.

For the convenience of workmen employed about an engine supported on the herein-described bench frame, a removable shelf 48 is supported on one of the standards by means of a hooked arm 49 that engages over the top of said standard. If desired, one of said shelves may be mounted on each standard.

A bench frame constructed as described is simple, strong, of few parts and enables the piece of work supported thereon to be adjusted into any position desired by the workmen. The parts are few and so connected as to present an open frame and the workmen can, when necessary, be very close to their work. The standards 13 and 14 being adjustable to and from each other renders it very easy to set the frame to suit work of different sizes, which work being supported on horizontal shafts, the same can be turned at an angle when necessary for more convenient operation of the workmen. The rigid feet 12 give a firm and secure support for the bench frame, while the casters 34 adapted to be moved into operative position upon the movement of a hand lever elevates the bench frame from the floor so that it can be moved about from one place to another, wherever desired to expedite the work and to produce the best results.

What is claimed is:

1. A work bench comprising a rigid base formed of a horizontal beam and transverse members immovably fixed on the ends of said beam and provided with feet to support said beam above the floor, a pair of standards slidable on the beam to and from each other and the transverse members, a foot piece rigidly secured to each of said standards and resting on the beam with its ends projecting over each side thereof, and a clamping plate carried by each of said standards and bolted to the foot piece for locking the standard to the beam after adjustment.

2. A work bench comprising a rigid base formed of a horizontal beam and transverse members immovably fixed on the ends of said beam and provided with feet to support said base, a pair of standards slidable on the beam to and from each other and the transverse members, a foot piece rigidly secured to each standard to bear upon said beam and project at its end on each side of the beam, an angle plate secured to the projecting ends of said foot piece and bearing against the sides of the beam for guiding the standard in its movement and preventing disengagement between the standard and beam, clamping plates carried by the stand-

ards for locking the latter to the beam after adjustment, said plates each extending cross wise of said beam and under the same, and locking bolts extending through the projecting ends of said plate and the foot piece.

3. A work bench comprising a rigid base, standards carried by said base and adjustable to and from each other, a work holder supported at the upper ends of the standard, including a short shaft pivoted in each standard and disposed in line with each other, a crank on the inner end of each shaft, an angle plate at the outer end of each crank to which the work may be fixed, and means connected to one of said cranks for rotating the same.

4. A work bench comprising a rigid base, standards carried by said base and adjustable to and from each other, a work holder supported at the upper ends of the standard, including a short shaft pivoted to each standard and disposed in line with each other, a crank on the inner end of each shaft, an angle plate at the outer end of each crank to which the work may be fixed, a worm wheel fixed to one of said shafts, and a worm engaging said worm wheel turning the same and also serving as a lock for preventing movement of the work holder after adjustment by turning.

5. A work bench comprising a rigid base formed of two spaced horizontal beams having downwardly inclined ends to form feet and a central cross beam connecting the first-named beams, a pair of standards carried by said base and adjustable on the cross beam to and from each other, a horizontal shaft projecting inwardly from the upper end of each standard and rotatable in bearings thereon, said shafts being axially alined, a crank on the inner end of each shaft, a work supporting angle bar mounted on each of said cranks and extending transversely of the axis of the shaft, and means for positively rotating one of said shafts.

6. A work bench comprising a base formed of two spaced horizontal beams having downwardly inclined ends to form feet, a central cross beam rigidly connecting said first-named beams, a pair of adjustable standards on said base, a horizontal shaft projecting inwardly from each of said standards, said shafts being axially alined, a crank on the inner end of each shaft carrying a plate to which work is adapted to be clamped, a worm gear secured on one of said shafts, a cross shaft provided with a worm in engagement with the worm wheel and adapted to rotate both of said crank shafts when connected by work clamped to the supporting plates.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS H. FLAIR.

Witnesses:
L. E. BENEDICK,
AL HENTON.