(No Model.)

C. B. ALBREE.

SUSPENSION DEVICE FOR PORTABLE MACHINES.

No. 593,064. Patented Nov. 2, 1897.

Fig. 1.

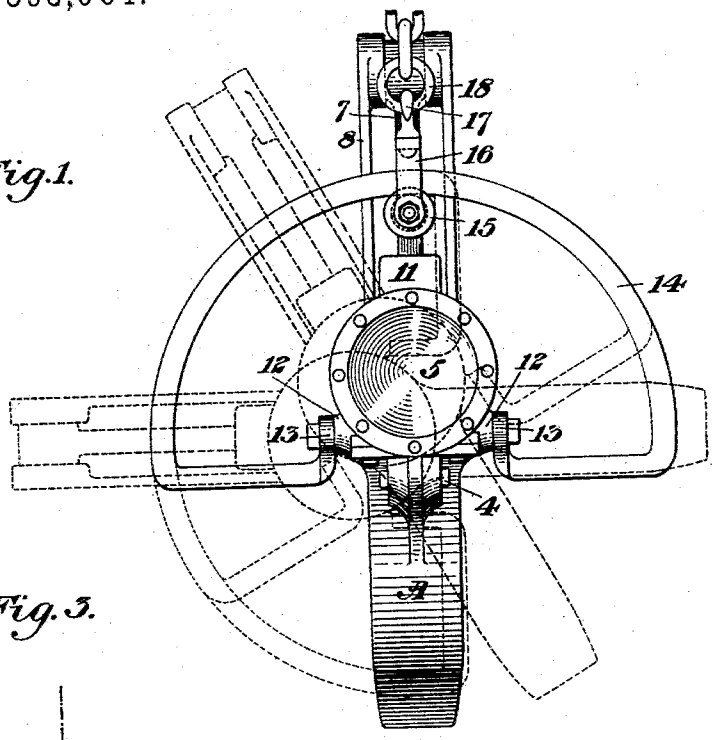


Fig. 3.

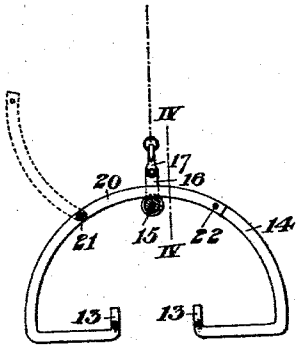


Fig. 2.

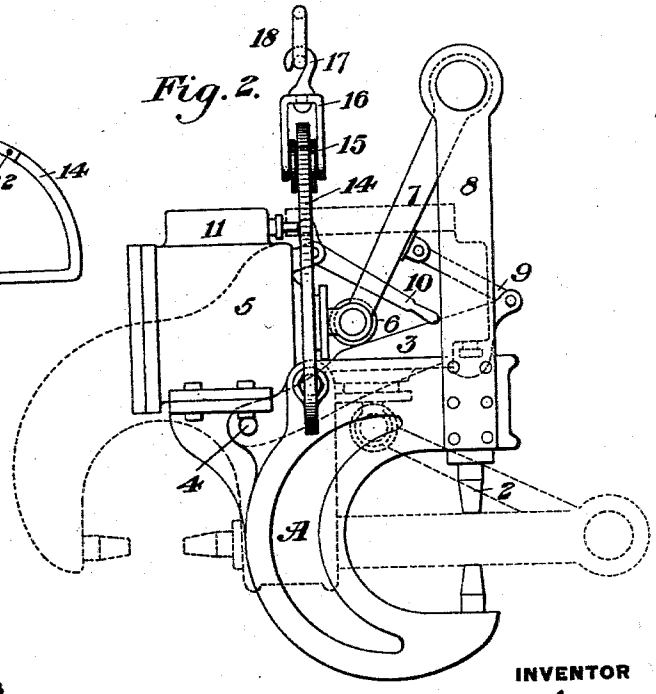
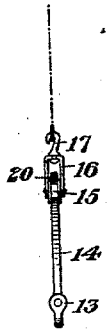


Fig. 4.



WITNESSES

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHESTER B. ALBREE, OF ALLEGHENY, PENNSYLVANIA.

SUSPENSION DEVICE FOR PORTABLE MACHINES.

SPECIFICATION forming part of Letters Patent No. 593,064, dated November 2, 1897.

Application filed March 31, 1897. Serial No. 630,096. (No model.)

To all whom it may concern:

Be it known that I, CHESTER B. ALBREE, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Suspension Devices for Portable Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a rear elevation of a riveting-machine provided with my improved suspension device. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the detached bail, showing a modified form; and Fig. 4 is a cross-sectional view on the line IV IV of Fig. 3.

My invention relates to portable machines—such as riveting-machines, rock-drills, pneumatic tools, &c.—which must be brought into different positions and at different angles, according to the conditions of the work desired.

Heretofore adjusting mechanism has been employed, such as worm-gearing, for bringing the tool into the desired position, but this gearing is cumbersome and expensive and its operation is very slow, thus greatly delaying the work. My invention overcomes these difficulties; and it consists, broadly, in a machine of this portable character having an arc-shaped bail attached and preferably pivotally connected to the machine at substantially its center of gravity, the circle of the bail being struck from the center of gravity of the machine, so that when the machine is swung in different positions it will be in a state of equilibrium in any such position.

It also consists in a machine having a bail pivotally connected thereto in combination with a hanger having a roller or other anti-friction device upon which the bail rests and is supported.

It consists, further, in the above arc-shaped bail pivoted to the machine in such a way that the axial line of the pivots passes through the center of gravity of the machine and through the center of the circle on which the bail is struck, as well as in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, in which I show my invention as applied to a riveting-machine of the type of my prior patent, No. 558,140, granted to me on April 14, 1896, A represents the general frame of the machine.

2 indicates the moving riveting-die, this die being carried upon a plunger which is reciprocated by means of the lever 3, fulcrumed at the point 4 beneath the actuating-cylinder 5. To the end of the piston-rod of the cylinder 5 is pivoted a roller 6, which rides along the lever 3 and depresses the movable die-plunger. To receive the strain upon the roller 6 and the piston-rod, I employ a swinging arm 7, which is pivoted to a post 8 and to the end of the piston-rod, so that as the piston-rod moves outwardly the link 7 will swing and receive the thrust. To return the lever 3 to its original position when the piston is retracted, I provide the pivoted link 9, connecting the end of the lever 3 with the swinging link 7. The operation of the cylinder is controlled by the hand-lever 10, actuating a valve within the valve-chest 11.

Upon opposite sides of the frame A of the machine I provide two projecting bosses 12 12, the axial line of which passes through the center of gravity of the machine, and to these bosses are pivoted the inwardly-projecting ends 13 of a bail 14, by which the whole apparatus is suspended. This bail is struck on a circle with its center at the center of gravity of the machine, and it rests upon a roller 15, carried in a yoke or hanger 16, to which is swiveled a hook 17, by which the entire device may be suspended from a chain 18. It is evident that by moving the bail along its supporting-roller the riveting-dies may be changed from a vertical position, as shown in full lines in Fig. 1, into any desired angle in the same vertical plane and, if desired, into a horizontal position, the roller then resting at the end of the bail, which is extended sufficiently below its axial line to allow the roller to be brought into register with such line. By swinging the riveter upon its side pivots it may be moved back and forth into any desired angle lying in a plane at right angles to the plane of the bail. Thus in Fig. 2 I show in dotted lines the riveter as swung through the bail, so as to bring the dies into horizontal position. By means of the swivel connection between the yoke 16 and the hook

17 the entire apparatus may be rotated in a horizontal plane, and it is evident that by the combination of adjustments described the riveting-dies may be brought into any desired position to suit the class of work operated upon and that in every position the parts will remain in equilibrium on account of their being supported at the center of gravity. When the piston is reciprocated within the cylinder, the moving parts will change positions slightly and correspondingly change, to a small amount, the center of gravity. I find, however, in practice that this variation in the center of gravity may be disregarded, as it is so small as to not materially affect the operation of the machine.

To provide for the swinging of machines of considerable height through the bail, which might necessitate a very large circle for the arc of the bail, I may divide the same, as shown in Fig. 3, the intermediate portion 20 being hinged at the point 21 and provided with a pin connection 22 at its end. When this bail is pivoted to the machine, by swinging the machine so that the supporting-roller is brought to the end of the bail and then swinging back the intermediate bail portion 20 the machine can be swung through the opening and the portion 20 then returned to place and secured.

The advantages of my invention will be apparent to those skilled in the art, since the clumsy and slow-working worm-gear connections heretofore employed are done away with and a suspension device provided which allows the operator to swing the machine into any position that may be desired, the machine remaining in its state of equilibrium in any such adjusted position.

The device is exceedingly simple and may be applied to any portable machine which it is desired to bring into different positions, according to the particular work desired. I therefore do not wish to limit myself to the application of the device to any particular machine or class of machines, nor to any particular construction of suspension device, since I consider myself the first to suspend a portable machine at approximately its center of gravity by a circular bail capable of supporting its load in equilibrium when held at any point in the curve of the bail.

I claim—

1. The combination with a machine having a moving tool, of a bail formed in the arc of a circle whose center is substantially the center of gravity of the machine, said bail being pivotally connected to the machine on an axis passing through substantially the said center of gravity, whereby the machine may be turned in one direction on the said axis and in the other direction by varying its point of suspension on the bail, and equilibrium may be maintained in such changed position.

2. The combination with a portable machine, of a swinging bail pivotally connected thereto, the axial line of the pivot extending substantially through the center of gravity of the machine and the circle of the bail being struck from the center of gravity of the machine, and an antifriction device upon which the bail is supported.

3. The combination with a portable machine, of a swinging bail having its ends pivoted thereto, the axial line of the pivots extending substantially through the center of gravity of the machine and the bail being struck on a circle whose center is the center of gravity of the machine, and a swivel-hanger having a roller upon which the bail is supported.

4. The combination with a portable machine, of a bail pivotally connected thereto, said bail being a movable section in its length.

5. The combination with a portable machine, of a bail pivotally connected thereto at the center of gravity of the machine, said bail lying in the arc of a circle struck from the center of gravity of the machine and having a swinging intermediate section.

6. The combination with a machine having a moving tool, of a bail formed in the arc of a circle whose center is substantially the center of gravity of the machine, whereby the machine may be turned by varying its point of suspension on the bail and equilibrium may be maintained in such changed position.

In testimony whereof I have hereunto set my hand.

CHESTER B. ALBREE.

Witnesses:
H. M. CORWIN,
G. I. HOLDSHIP.