

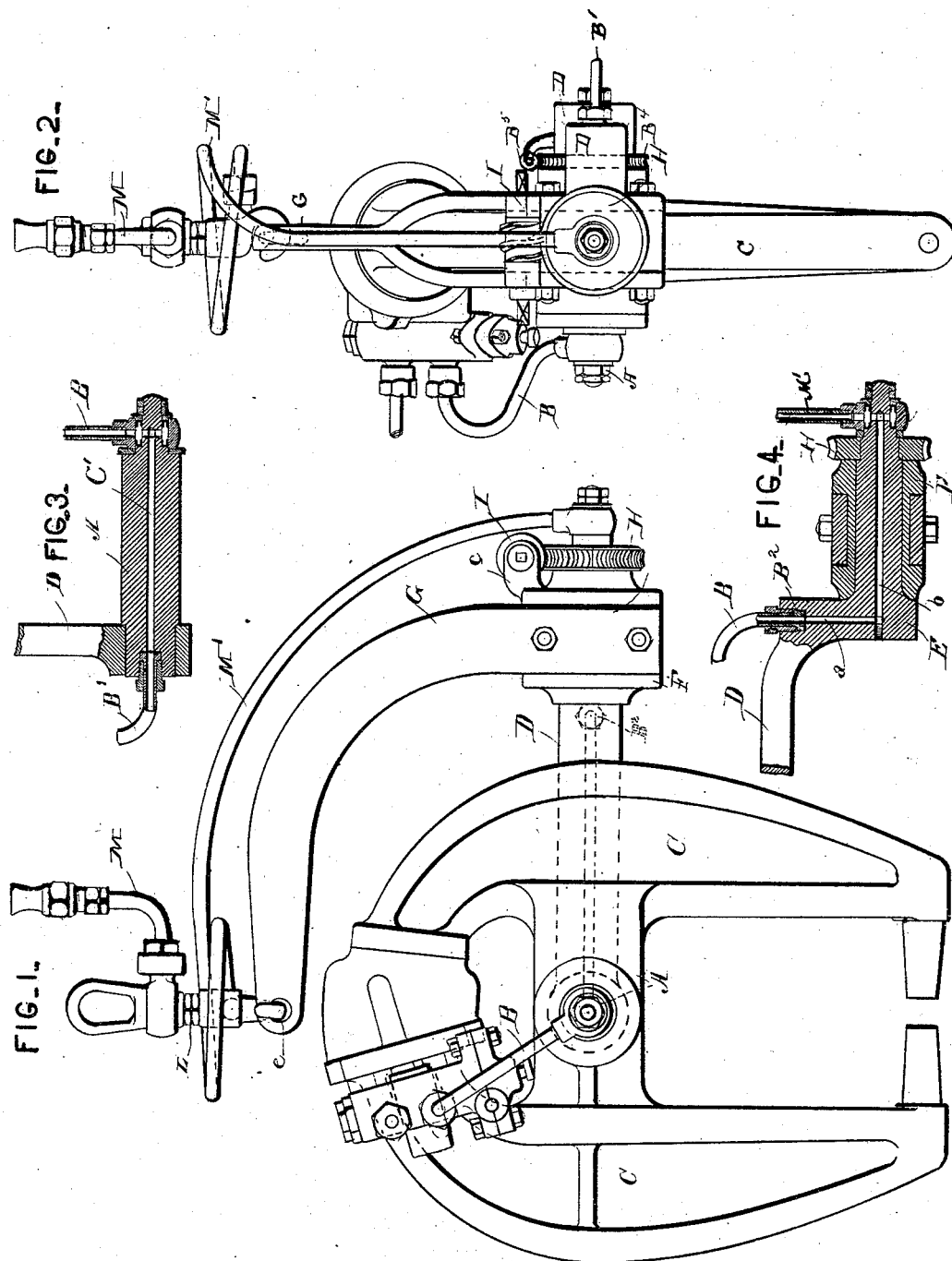
(No Model.)

2 Sheets—Sheet 1.

R. H. TWEDDELL, J. PLATT & J. FIELDING.
PORTABLE RIVETING MACHINE.

No. 307,360.

Patented Oct. 28, 1884.



ATTEST-

Wm. F. Gill
Geo. F. Downing.

INVENTORS.

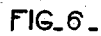
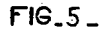
Ralph Hart Tweddell
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By H. A. Seymour Atty

2 Sheets—Sheet 2..

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UNITED STATES PATENT OFFICE.

RALPH HART TWEDDELL, OF WESTMINSTER, COUNTY OF MIDDLESEX, AND
JAMES PLATT AND JOHN FIELDING, OF GLOUCESTER, COUNTY OF
GLOUCESTER, ENGLAND.

PORTABLE RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,360, dated October 28, 1884.

Application filed June 21, 1884. (No model.) Patented in England November 10, 1880, No. 4,609.

To all whom it may concern:

Be it known that we, RALPH HART TWEDDELL, of Westminster, in the county of Middlesex, and JAMES PLATT and JOHN FIELDING, of Gloucester, in the county of Gloucester and Kingdom of Great Britain, have invented certain new and useful Improvements in Portable Riveting-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an improvement in portable riveting-machines, the object of the same being to provide improved means for adjusting the riveting-machine to any desired angle or inclination; and it consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of one style of riveting-machine embodying our invention. Fig. 2 is an end view of the same. Fig. 3 is a longitudinal sectional view of one of the trunnions. Fig. 4 is a similar view of the other trunnion. Fig. 5 is a view showing a slightly modified construction, and Fig. 6 is an end view of the same.

This improvement relates particularly to manipulating the riveter, and not to the construction of the riveter itself; and for the purpose of illustration we have shown our improvements on two distinct kinds of machines, and would have it understood that we do not limit ourselves to any particular construction, but consider ourselves at liberty to apply them to any and all portable machines to which they are applicable.

The riveter shown in Fig. 1 consists of two levers connected together at a convenient point between their ends, one of said levers being provided at one end with a piston adapted to work in a cylinder formed on or attached to the adjacent end of the other lever. The lever having the cylinder thereon is provided with a valve for governing the flow of water into and from the cylinder, which is supplied through the pipe B, one end of which is secured to the hollow trunnion A. This trun-

nion A supports the levers C, which latter are journaled thereon, and the trunnion is provided with a central bore, C', which latter is merely a continuation of the pipe B. This trunnion A is secured at one end to the arm D, which latter is provided at its outer end with a trunnion, E. One of the levers C is provided on the side adjacent to the arm D with a worm-wheel, B', which latter meshes with a worm, B⁵, secured to the arm D. Thus it will be seen that by turning the worm the levers can be turned so as to rest in the same vertical plane—that is, the levers can be turned to a horizontal position, with their riveting-tools in a vertical position.

To one end of the bore C' of the trunnion A is secured the pipe B', through which the actuating-fluid is conveyed to the trunnion A. This pipe passes rearwardly alongside of the arm D, and is secured thereto at the point B², the said part B² of the arm D being provided with a bore, a, leading to the bore b of the trunnion E. This trunnion E is journaled in the box F, rigidly secured to the lower open end of the arm G, and the trunnion E is provided with the worm-wheel H, rigidly secured thereto, with which the worm I, journaled in the bearings c of the box F, meshes. Thus it will be seen that by means of the worms at the opposite ends of the arm D the machine can be turned to any angle or inclination to suit the work to be operated on.

The arm G, before referred to, is curved, substantially as shown, and terminates over the center of gravity of the riveter. This arm is provided with an opening, e, through which the lower hooked end of the suspending link L is passed. This link is suspended from a crane or other suitable device, and forms a connection between the supply-pipe M and the flexible pipe M', which latter is preferably made of copper and connected at its lower end to the trunnion E. The actuating-fluid passes from the pipe M into pipe M', and from thence, through trunnion E, pipe B', trunnion A, and pipe B, into the valve.

In Fig. 5 we have shown a slightly-modified arrangement of parts as applied to a direct-acting riveter. The body or frame of this riveter

is made U-shaped, and provided with a cylinder, in which a plunger carrying the movable riveting-tool works. This cylinder communicates with the valve by the pipe B³, and the valve with the trunnion A by the pipe B.
 5 The trunnion A in this construction need not be hollow, and is supported by the arms D⁴ of the trunnion A, which latter is journaled in the lower end of the arm G. In this instance
 10 the pipe B and pipe B' are on the same side of the machine, and are secured together at the trunnion A by a swivel-joint, B⁶. One of the arms D⁴ is formed integral with the trunnion E, while the one on the side
 15 shown in elevation in Fig. 5 is removably secured thereto by the bolts f. The trunnion E passes through the lower end of the arm G, and is provided at its outer end with a worm-wheel meshing with a worm similar to that
 20 shown in Fig. 1. In this construction I have dispensed with the worm-gear on the trunnion A, and substituted therefor a pinion (not shown) meshing with the rack-bar O, formed integral with or secured to the body of the
 25 riveter. This pinion is secured to one end of the shaft O', while the worm-wheel O², meshing with the worm O³, is secured to the opposite end of said shaft. The shaft O' and worm O³ are journaled in the removable arm D⁴ of the
 30 trunnion E. The rack O is formed in the arc of a circle, and in the present instance will admit of a quarter-turn of the machine; but it is evident that the rack-bar can be continued or lengthened sufficiently to give the machine
 35 a half-turn. Thus it will be seen that by turning the worm O³ the riveter will be turned on the trunnion A, and by turning the worm I the movement of the riveter will be at right angles to the first movement. The worms and
 40 worm-wheels not only afford means for turning the riveter, but also effectually lock the same against accidental movement.

By means of the construction shown and described the horizontal arm to which the riveter is journaled can be turned so as to rotate
 45 the riveter in one direction, while by turning the riveter around its own axis on the trunnion A the movement is at right angles to the first movement; hence by means of the
 50 combined movements the riveter can be set at any angle or inclination to enable it to accommodate itself to the work.

Heretofore in machines of this character the riveter has been journaled to opposite ends of
 55 a curved suspending arm, and the curved suspending arm movably supported on a roller. When desired to adjust the riveter in one direction, the curved suspending arm is moved longitudinally on the pulley. In such devices
 60 the supporting-arm is loosely mounted in the pulley, and is liable to change its position if the parts are not evenly balanced, and from the sudden jars during the operation of riveting. In our device the curved suspending

arm is attached at its upper end to a hook, and provided at its opposite end with a bearing, in which a horizontal arm is journaled, while the riveter is in turn journaled to said horizontal arm. By the above arrangement the riveter can be turned to any position without
 70 moving the curved arm, and as the latter is not free to move over the hook, all danger of the riveter changing its position is obviated.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of a curved arm adapted to be suspended from a crane or other suitable support, a horizontal arm journaled to the lower end of the curved arm, a portable riveting-machine journaled to the horizontal arm, and the locking devices for locking the movable parts in any desired adjustment.

2. The combination of a curved suspending arm, a horizontal arm journaled thereto, a portable riveting-machine journaled to the horizontal arm, and adapted to turn on the horizontal arm in a direction at right angles to the movement of the said horizontal arm, and the devices for locking the movable parts
 85 in any desired adjustment.

3. The combination, with a portable hydraulic riveting-machine and a suitable supply or pressure pipe and swivel-joints, of a horizontal arm to which the riveting-machine
 95 is journaled, the devices for turning the machine and locking it to the arm, a curved arm to which the horizontal arm is journaled, and the devices for turning the horizontal arm and locking it to the curved arm, substantially as
 100 set forth.

4. The combination, with a portable riveting-machine provided with a rack-bar formed in the arc of a circle, of a horizontal arm journaled to a curved arm, and provided with a
 105 pinion, the devices for turning the pinion, a worm-wheel rigidly secured to said horizontal arm, and a worm journaled to the curved arm.

5. The combination, with a portable riveting-machine and suitable supply-pipe, of the
 110 horizontal arm, curved arm, rack-bar and pinion, worm-gear and worm, and the hook L, all of the above parts combined as described.

In testimony whereof I have signed this specification in the presence of two subscribing
 115 witnesses.

RALPH HART TWEDDELL.

Witnesses:

H. G. SCOTT,

WM. BAILEY.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JAMES PLATT.
 JOHN FIELDING.

Witnesses:

JOHN A. POPE,

H. CADENNE.