

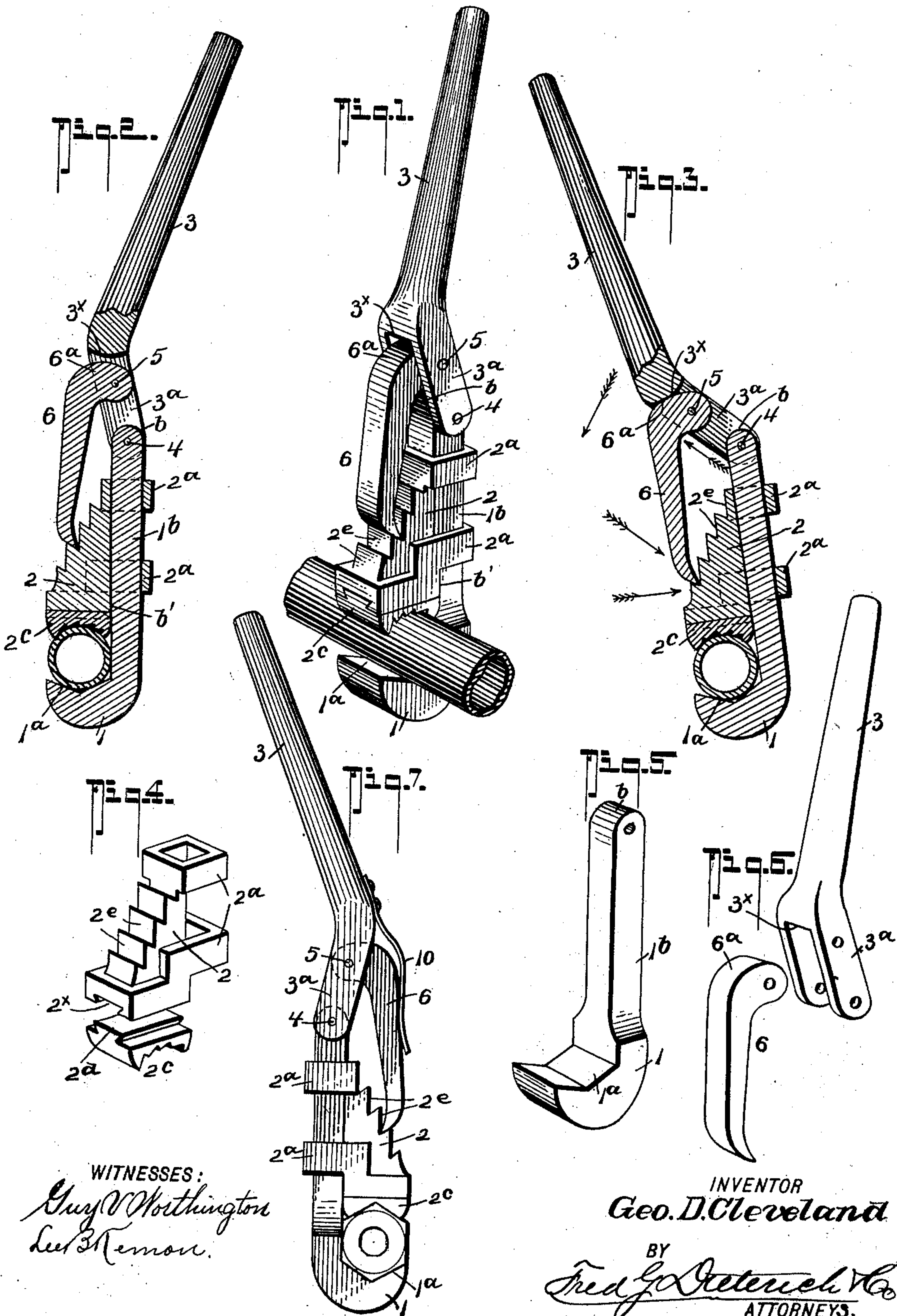
No. 715,025.

G. D. CLEVELAND.
WRENCH.

Patented Dec. 2, 1902.

(Application filed Aug. 6, 1902.)

(No Model.)



WITNESSES:
Guy V. Worthington
Lee M. Remon.

INVENTOR
Geo. D. Cleveland
BY
Fred G. Vetterich & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE D. CLEVELAND, OF FLINT, INDIANA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 715,025, dated December 2, 1902.

Application filed August 6, 1902. Serial No. 118,636. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. CLEVELAND, residing at Flint, in the county of Steuben and State of Indiana, have invented a new and Improved Wrench, of which the following is a specification.

My invention relates to improvements in that type of adjustable wrenches having slidable jaws, and it seeks to provide a wrench of this type of a simple and inexpensive construction which while especially well adapted as a pipe gripper or tongs can also be readily utilized as a nut-wrench.

This invention comprehends a shank having a stationary jaw, a slidable jaw, a handle member pivotally joined with the shank of the stationary jaw, said handle including a bifurcated portion normally disposed at an angle to the stationary shank, a gravity-dropped pawl pivotally and pendently mounted in the bifurcated portion of the handle and provided with a stop portion adapted to engage with the handle and form, as it were, a means for locking the pivoted handle in a fixed relation with the shank of the stationary jaw, whereby to transform the said handle and shank into a lever-arm for turning the pipe or other object gripped by the jaws of the wrench.

In its more complete nature my invention includes a sliding jaw having a stepped ratchet-face, a handle pivotally mounted on the stationary shank, and a pawl fulcrumed on the handle and adapted under certain adjustments of the handle to act as a means for forcing the sliding jaw toward its mate and under certain limitations of movement of said handle to act as a means for locking the handle and the stationary shank together to cause the said two parts to serve as a lever.

In its more subordinate features my invention consists in certain details of construction and peculiar combination of parts, all of which will hereinafter be fully described, and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved wrench, illustrating the manner of gripping a pipe-section. Fig. 2 is a vertical section of the same, illustrating the parts ad-

justed to cause the pawl to act as a sliding-jaw pusher. Fig. 3 is a similar view, the pawl being shown in a position for locking the fixed-jaw shank and the swingable handle to produce a single lever member. Fig. 4 is a detail view of the movable jaw, its grip-face being shown detached. Fig. 5 is a detail view of the stationary jaw and shank. Fig. 6 is a similar view of the pivoted handle and the pawl, the latter being shown detached from the handle. Fig. 7 is a view of a slightly-modified form of my wrench, the same being shown as adapted for use as a nut-wrench.

In its practical construction my improved wrench comprises a stationary jaw 1, whose gripping-face 1^a is of angular or other shape, according to the work for which the wrench is especially designed, and the said jaw is an integral part of a short shank 1^b, the end of which is rounded, as at *b*, for a purpose presently explained. The shank 1^b is preferably square or rectangular in cross-section, whereby to present flat sides and ends to receive the clips or eye portions 2^a of the sliding jaw 2, whose inner face is flat to freely ride against the contiguous face *b'* of the jaw 1.

The grip end of the jaw 2 is suitably shaped to properly coact with the grip-face of the jaw 1, and the said grip end consists of a steel die 2^c, having a dovetail flange 2^d to engage the dovetail socket 2^x in the jaw 2, as shown. The outer edge of the jaw 2 is provided with a stepped ratchet portion 2^e, disposed in the inclined plane extending outwardly from the upper end of the jaw to its gripping-head, as shown, the reason for which will presently appear.

To the upper end of the shank 1^b is pivotally connected a lever or handle, which consists of a lower bifurcated end 3^a and a handle portion proper, 3, which is bent at an obtuse angle to the portion 3^a, as clearly shown in the drawings. The lower end of the bifurcated member 3^a is fulcrumed upon a cross-pin 4, mounted in the upper end of the shank 1^b, and at a suitable point above the pin 4 the bifurcated member 3 carries a cross-pin 5, and the adjacent or crotch face 3^x of the bifurcated end 3^a is convexed, for a reason presently understood.

6 designates a pawl or dog, which comprises

a head 6^a, curved at an angle to the body portion or shank and apertured to engage with the cross-pin 5, which forms the fulcrum-bearing for the said pawl 6, and the lower end of the pawl 6 is shaped to coact with the ratchet portion 2^e of the sliding jaw, as shown. By bending the head of the pawl at an angle, as shown and described, the shank portion thereof is extended to one side to conveniently gravitate with its lower end to engage the ratchet portion 2^e when the handle member is shifted to the position shown in Fig. 2, it being manifest that when adjusted to the position just stated a pull strain on the handle 3 in the direction of the arrow will cause the pawl 6 to act as a pusher for forcing the sliding jaw toward its mate.

The curvature of the pawl-head 6^a, its fulcrum, and the crotch portion of the bifurcated end of the lever, together with the pivotal connection of the said lever to the fixed-jaw shank 1^b, is relatively such that the pushing action of the pawl 6 against the sliding jaw ceases when the lever 3 is moved over in the direction indicated by the arrow to a predetermined position, or to that extent that the crotch-surface 3^x thereof will positively engage the head portion of the pawl at a point eccentric to its fulcrum, at which time the function of the pawl ceases as a pusher, and it then acts as a fixed link for locking the handle 3 and the shank 1^b of the stationary jaw together to cause the two parts to act as a single lever for turning the object held between the gripper-jaws.

Under ordinary conditions the pawl 6 may be a gravity-acting one, as the two fulcrum-points 4 and 5 are so disposed and the angle direction of the forked end of the handle is such that the pawl will automatically swing against the ratchet edge of the sliding jaw; but when the wrench is adapted for use where it is desired to manipulate the same in the horizontal plane the pawl may be preferably held against the ratchet-face of the jaw 2 by a spring 10, as shown in Fig. 7.

I am aware that wrenches of this type have heretofore been provided in which a pivoted handle member is utilized for carrying the pawl that engages the serrated or ratchet surface on the sliding jaw to force it against its mate. My invention differentiates from such type of wrenches heretofore provided, so far as I know, in the peculiar shape of the pivoted member 3 3^a, the manner in which it is fulcrumed on the fixed-jaw shank, the peculiar hanging of the pawl, the angle-shaped head thereof, and its coöperative arrangement with the crotch-face of the bifurcated end of the operating-handle, whereby the pawl is utilized to serve several distinct functions—first, that of a pusher for moving the sliding jaw, and, second, as a link-brace for locking the stationary-jaw shank 1^b and the pivoted handle together to serve as one solid lever-arm. The round-

ing of the upper end of the shank 1^b permits the pawl 6 to lie close thereagainst, as the said pawl has its edge opposing the said upper end of the shank 1^b suitably curved to fit closely over the said rounded edge and by reason thereof properly gravitate into engagement with the ratchet portion of the jaw 2. My invention also differs from other wrenches of this type in that the fixed-jaw shank and the pawl-carrying member pivoted thereto and the pawl have such a peculiar shape and arranged to coöperate in such manner that under certain adjustments the handle is a pawl-shifter and under other adjustments the pawl by reason of its bearing against the sliding jaw on the stationary-jaw shank and the handle serves to firmly join the shank 1^b and the handle as a rigid lever-arm.

Slight changes in the details shown and described may be readily made without departing from my invention as defined and the scope of the appended claims.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A wrench, comprising in combination, a stationary jaw having an integral shank, a sliding jaw mounted on the said shank, and having a stepped ratchet edge, a lever comprising a bifurcated end and a handle portion, the latter projecting at an obtuse angle from the bifurcated end, said bifurcated end being pivotally mounted on the end of the stationary-jaw shank, a pawl having an angle-head fulcrumed in the bifurcated end of the lever at a point above its fulcrum, said pawl having a shank adapted to gravitate over and engage the ratchet-face of the sliding jaw, as set forth.

2. A wrench of the character stated, comprising a stationary jaw and a shank therefor, a movable jaw slidably mounted on the shank of the stationary jaw, said movable jaw having a stepped ratchet-face, a lever member consisting of a bifurcated end pivotally mounted on the extreme end of the stationary-jaw shank, a handle portion integral with the bifurcated portion, projected at an obtuse angle from the said bifurcated portion, a pawl, said pawl comprising an angle-head, and a shank, a fulcrum in the bifurcated portion of the lever, upon which the pawl is mounted, said pawl-fulcrum, the crotch on the bifurcated portion of the lever, and the angle portion of the pawl being relatively so arranged, whereby at predetermined times, the crotch end of the lever will positively engage the pawl at a point eccentric to its pivot, for the purposes described.

3. As a new article, a wrench consisting of a stationary jaw having an integral short shank, a movable jaw slidably mounted upon the said shank, and having a stepped ratchet-face, the lever member comprising a bifurcated end pivotally mounted on the outer end

of the stationary jaw, and an integral handle
portion extended at an obtuse angle from
the bifurcated portion; a fulcrum-pin 5 in
the said bifurcated portion adjacent its crotch
5 3^x, the pawl 6, said pawl consisting of the
apertured angle-head 6^a to engage the ful-
crum-pin 5, and a pendent shank curved on

its inner face to ride over the upper end of
the stationary shank, all being arranged sub-
stantially as shown and described.

GEORGE D. CLEVELAND.

Witnesses:

WARREN ARNOLD,
ORLO ARNOLD.