(No Model.)

D. R. PORTER.

PIPE WRENCH.

No. 413,961. Patented Oct. 29, 1889.

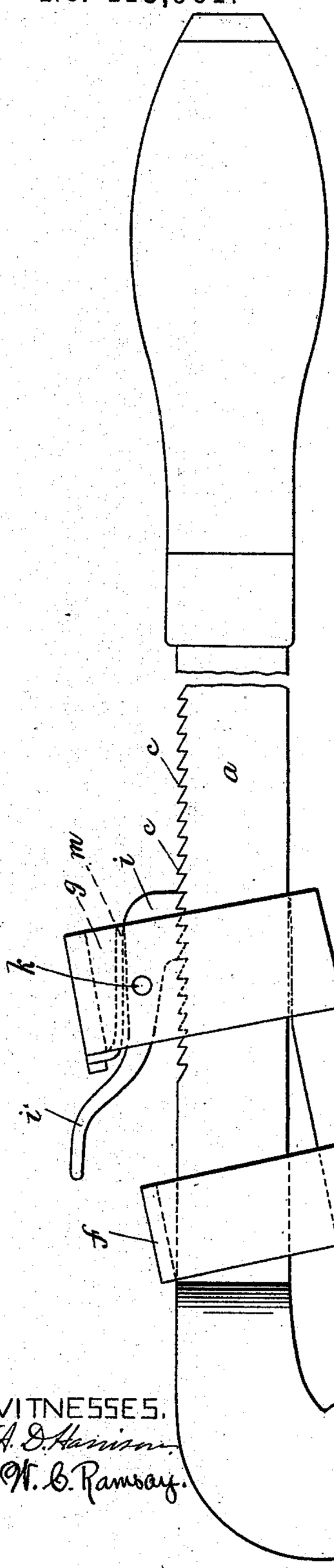

FIG. 1.

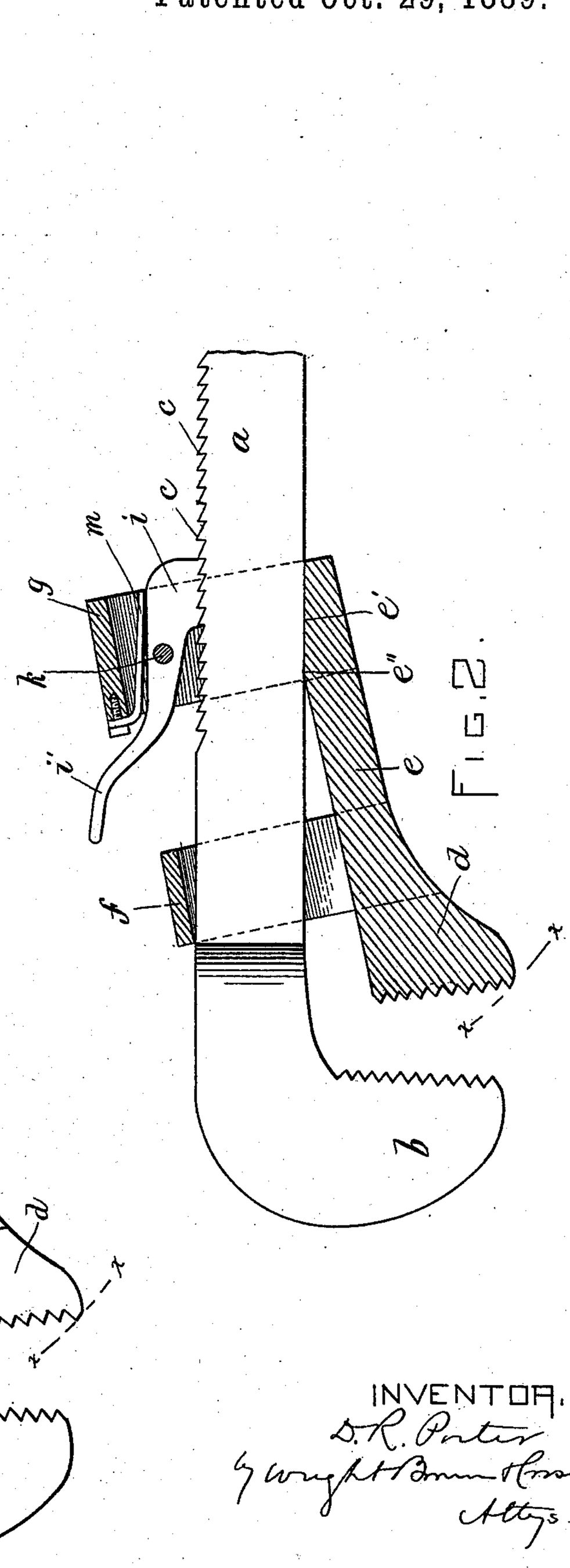

FIG. 2.

WITNESSES.
A. D. Harrison.
W. B. Ramsay.

INVENTOR.
D. R. Porter
by Wright Brown Quinby & Ormsby
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

DANIEL R. PORTER, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO WILLIAM F. GOLDTHWAITE, OF SAME PLACE.

PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 413,961, dated October 29, 1889.

Application filed March 15, 1889. Serial No. 303,406. (No model.)

To all whom it may concern:

Be it known that I, DANIEL R. PORTER, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pipe-Wrenches, of which the following is a specification.

This invention has for its object to provide a simple and effective pipe-wrench of the oscillating jaw-and-ratchet type, adapted to grasp and hold a pipe or other cylindrical object without liability of slipping upon and tearing the surface thereof, and in which the inward throw or movement of the oscillating jaw shall close or carry it toward the fixed jaw sufficiently to insure a firm hold on the article grasped, said closing movement enabling the serrated surfaces of the jaws to be made substantially parallel, so that the wrench can be used to turn nuts should occasion require.

To these ends the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side view of my improved wrench. Fig. 2 represents a longitudinal section of the same.

The same letters of reference indicate the same parts in both figures.

In the drawings, *a* represents the shank of the wrench, on which is formed the fixed jaw *b*, said shank and jaw being of the usual or any suitable form. On the back of the shank—viz., the edge opposite that from which the jaw *b* projects—are formed the ratchet-teeth *c*.

d represents the sliding jaw, which is formed on an arm *e*. On said arm are formed two yokes or slides *f g*, which inclose the shank *a* and slide thereon with the jaw *d*. The yoke *g* at the rear end of the arm *e* is the longer of the two and contains a block or dog *i*, which is pivoted at *k* to said yoke, and is provided with teeth formed to engage the ratchet-teeth *c* and prevent backward movement of the jaw *d*. Said dog is provided with a handle *i'*, whereby it may be turned on its pivot *k* to throw its teeth out of engagement with the ratchet-teeth *c*, and thus permit the sliding movement of the jaw *d* and its arm *e* along the shank *a*. A spring *m*, interposed between the dog *i* and the outer portion or back of the yoke *g*, serves the twofold purpose of holding the teeth of the dog in engagement with the teeth of the shank *a*, and also holds the rear portion of the arm *e* with a yielding pressure against the front edge of the shank *a*. The arm *e* is provided at its rear portion with a seat *e'*, which is beveled or diagonal, so that when said seat is held against the front edge of the shank *a* by the spring *m* the arm *e* is yieldingly held in the inclined position shown, its jaw end being thrown outwardly from the shank *a*.

It will be seen that when the dog *i* is engaged with the ratcheted back of the shank *a* it constitutes, in effect, a fixed support for the pivot *k*, on which the arm *e* and jaw *d* oscillate, and said pivot being located outside of the back of the shank *a*, or at the opposite side of said shank from the jaws *b d*, the inwardly-swinging movement of the jaw *d*, caused by its engagement with a pipe grasped by the two jaws, carries the movable jaw toward the fixed jaw, as indicated by the dotted curved line *x x*, which represents the arc in which the lower end of the jaw *d* swings. The jaws are thus given a strong bite or closing movement on the article held, whereby their teeth are caused to quickly and strongly engage the pipe without slipping thereon or scraping the surface thereof.

The described closing movement enables the jaws to be provided with V-shaped teeth the sides of which have equal angles. Said movement also enables the acting-faces of the jaws to be made substantially parallel, so that they can be applied to a nut or other object having parallel sides.

It will be observed that by arranging the spring *m* between the yoke *g* and the dog *i* rubbing contact of the spring with the shank *a* is avoided. It will also be observed that the spring *m*, serving both to press the dog *i* against the ratchet-teeth of the shank and to normally throw the jaw *d* outwardly from said shank, obviates the employment of a spring between the jaw *d* and the shank where it (the spring) would necessarily be in rubbing contact with the shank. It will also be observed that when the jaw *d* swings inwardly in the

act of grasping a pipe the arm *e* turns on the angle *e''*, formed by the intersection of the seat *e'* with the inner edge of the arm, and in thus turning so increases the pressure of the dog *i* on the ratcheted back of the shank *a* as to make it impossible for the dog to become accidentally disengaged from and slip on the shank.

I claim—

1. In a pipe-wrench, the combination of the shank *a*, having the jaw *b* projecting from one side and the ratchet-teeth *c* formed on its back or opposite side, the movable jaw *d*, having the arm *e* and yokes *f g*, the dog *i*, pivoted to the yoke *g* at the opposite side of the shank *a* from the jaws *b d*, and a spring whereby the dog is normally held yieldingly in engagement with the ratchet-teeth of the shank *a*, the arrangement of the pivot connecting the yoke of the movable jaw with the dog *i* being such that said jaw in swinging inwardly is also moved toward the fixed jaw, as set forth.

2. In a pipe-wrench, the combination of the shank *a*, having the jaw *b* projecting from one side and the ratchet-teeth *c* formed on its back or opposite side, the movable jaw *d*, having the arm *e*, provided with a beveled seat *e'* and yokes *f g*, the dog *i*, pivoted to the yoke *g* at the opposite side of the shank *a* from the jaws *b d*, and a spring whereby the dog is normally held yieldingly in engagement with the ratchet-teeth of the shank *a* and the beveled seat *e'* is held against the front edge of the shank, thereby holding the arm *e* in an inclined position with the jaw *d* thrown outwardly, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 12th day of March, A. D. 1889.

DANIEL R. PORTER.

Witnesses:

C. F. BROWN,

A. D. HARRISON.