No. 695,463. Patented Mar. 18, 1902.

M. G. LEWIS.

PIPE WRENCH.

(Application filed June 26, 1901.)

(No Model.)

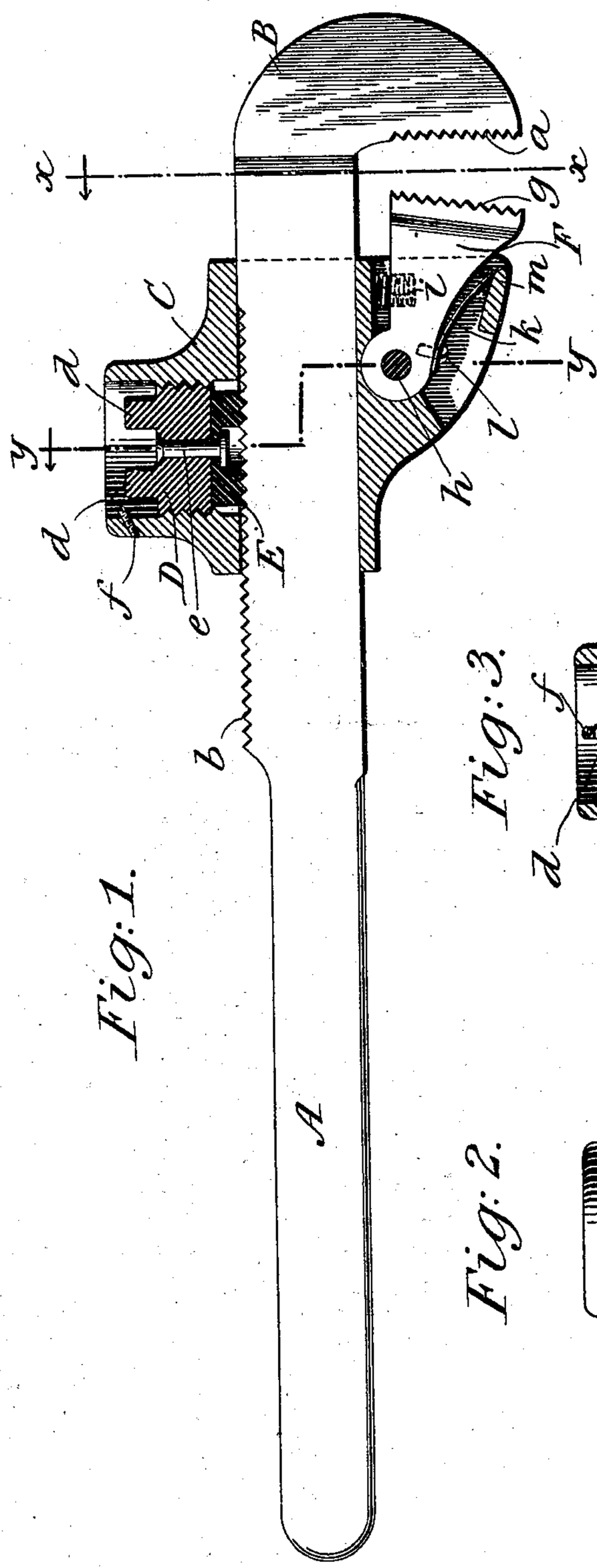

Fig. 1.

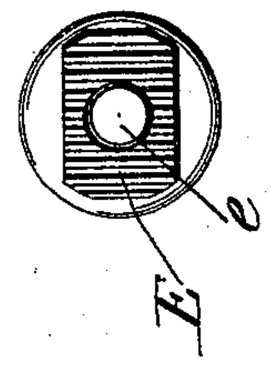

Fig. 4.

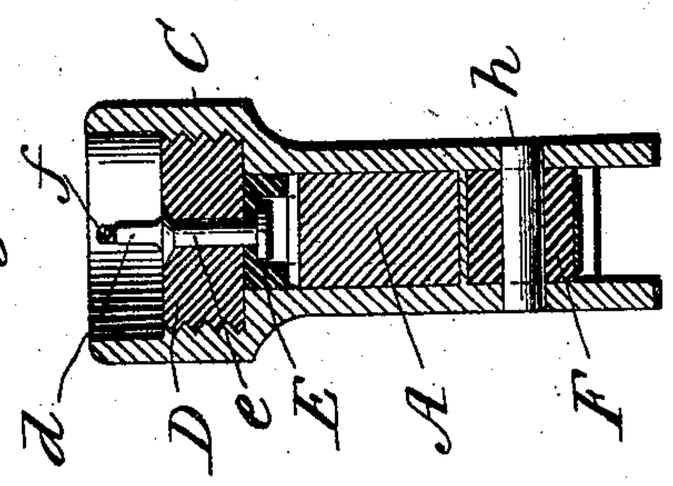

Fig. 3.

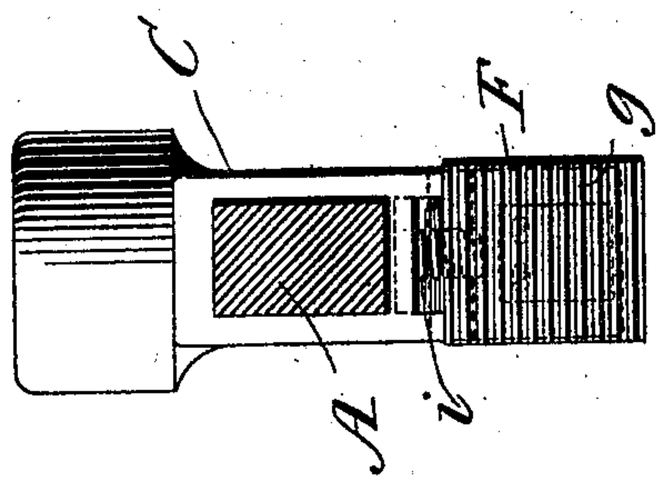

Fig. 2.

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PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 695,463, dated March 18, 1902.

Application filed June 26, 1901. Serial No. 66,074. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER G. LEWIS, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Pipe-Wrenches, of which the following, taken in connection with the accompanying drawings and the letters of reference marked thereon, is a full, clear, and exact specification.

My invention has relation to that well-known class of implements denominated "pipe-wrenches" and intended for turning or holding pipes or rods or other cylindrical pieces, the grasp or bite of the wrench being automatically loosened by moving the wrench in one direction and automatically tightened by moving it in the opposite direction upon the piece to be held or turned, the distance between the heads of the wrench being variable, so as to adapt the implement for operation in connection with pieces of various diameters.

The principal objects of my invention are to improve and simplify the movable head of the wrench, so that it may be easily, quickly, and accurately adjusted to the desired point upon the handle or bar and held thereon in an unyielding manner; to protect the means by which the movable head is locked or released, so that this means will not be accidentally damaged or disarranged during use and handling of the wrench, and to simplify and improve the manner of mounting the movable jaw in the movable head, so that it will be amply strong and durable for the work required and so that it may be easily dismounted for repairs or for cleaning the implement whenever desired.

To accomplish all of these objects and to secure other and further advantages in the matters of construction, operation, and use, my invention involves certain new and useful peculiarities of construction, relative arrangements or combinations of parts, and details of manufacture, as will be herein first fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side view, partly in section and partly in elevation, representing one size of my improved pipe-wrench constructed and arranged for operation in accordance with my invention and involving my improvements, the parts being shown as assembled for use. Fig. 2 is a partial section and elevation on a plane through line $x\,x$ of Fig. 1 looking in the direction of the arrow. Fig. 3 is also a view, partly in section and partly in elevation, on the broken line $y\,y$ of Fig. 1 and looking in the direction of the arrow. Fig. 4 is a plan view of the under side of the movable block and the adjusting-screw applied in connection therewith as they appear when detached from the implement.

In all the figures like letters of reference wherever they occur indicate corresponding parts.

A is the wrench handle or bar, which may be of any required length, according to the size of the wrench or according to the character of the work to be performed. This handle carries at one end a fixed wrench-head B, having the usual teeth or serrations (represented at *a*) and being preferably formed with the handle, although it may be made in a separate piece and rigidly fixed to the handle in any suitable manner. This head is usually a trifle broader than the handle and is intended to be amply strong to withstand all the strains to which the wrench may be subjected. The head and the handle, especially when made in one piece, constitute what is commonly called the "wrench-bar." On the top of the bar are a number of serrations, (represented at *b*,) the same serving to hold the movable head at any point to which it may be adjusted upon the bar.

C represents the movable head, which is adjustable back and forth upon the wrench-bar within the limits determined by the serrations *b*. This head for cheapness of manufacture and for strength and durability I prefer to make of cast metal. The upper portion of head C is of general cylindrical form and contains the means by which the head is locked in place on the bar or by which it is released, so that it may be moved to any desired point. A portion of the inner wall of the top of this head is screw-threaded, as indicated, and receives the adjusting-screw,

(represented at D,) which screw moves up and down accordingly as it is turned by the thumb and finger. The screw D is supplied with projections, as *d d*, the same being located one on each side of the axis of the screw and when the screw is down being both below the top of the head C. In its up-and-down movement the screw D carries with it a locking-block E, the same being applied to the screw in any suitable way, so that it will be caused to move up and down with the screw, but not compelled to turn therewith, the lower face of the locking-block having serrations fitted to engage with those on the wrench-bar. The manner of connecting the screw D and the locking-block E is preferably by a simple form of rivet, such as represented at *e*, the same having a head which enters a recess in the block E, its shank passed up through the block and through the screw and being upset or otherwise headed, so as to remain properly in place.

The block E should be prevented from turning with the screw, and this may be effected by any suitable means, a simple way being to make the block a trifle narrower in one direction than the other and making the lower part of the cavity in the head of suitable form to receive it, substantially as indicated in the drawings.

The head being constructed and arranged substantially as above indicated and the locking mechanism being located within the head substantially as explained, it is plain that when once the head is set at the desired point on the bar and locked it will not become displaced by any use of the wrench for the purpose of turning or holding, nor will it be displaced or disarranged upon dropping the wrench or otherwise casting it about, as always occurs during the use of the tool. Heretofore in wrenches of this general class the movable heads gradually became loosened from one cause or another, so that the operator was required to continually adjust and set the head. With my improved form, however, it is clear that this disadvantage will be obviated. The block E being made to properly fit the serrations *b*, when once locked in connection with the latter the head will be rigidly secured in place, and this obviates the rattling and loose fitting of the head upon the bar, as is observed in former constructions and which destroys the adaptability of the implement for fine and accurate work.

To prevent the screw D from being unturned so far as to become displaced from its seat in the head C, I provide the walls of the latter with any suitable form of stop—as, for instance, a small screw *f*, which projects inwardly and over the path of the screw D. This screw may be removed whenever it may be desired to displace the screw D and block E.

F is a movable jaw hinged or pivoted in the movable head, which latter is suitably recessed to receive it. This jaw is serrated on its outer face, as at *g*, these serrations, like those at *a*, being properly hardened. The object or piece of work to be turned or held is grasped between these two sets of serrations.

The jaw F bears at the back against a seat provided for it in the head C and is keyed in place by a substantial hinge-pin, as *h*, which may be driven out whenever desired to displace the jaw. The recessed head forms a substantial seat and backing for the movable jaw, so that the latter will withstand the effects of any work to which it is subjected. A coil-spring, as *i*, is set in a socket in the upper portion of the jaw F and bears against the adjacent portion of the head or the wall of the cavity which receives the jaw F, and beneath the jaw F is a flat spring *k*, secured in place, as by a screw *l* entering the back portion of the jaw, the free end of this spring bearing upon a bridge *m*, with which the jaw is provided for the purpose. Between the bridge *m* and the back portion of the head is an open space through which a screw-driver or other implement may be inserted for the purpose of removing the screw *l* whenever desired. This opening also prevents filings or chippings or other accumulations from collecting and interfering with the proper working of the jaw F.

To set the wrench, the head C is first loosened and then moved on the bar so that the work will be touched by the serrations, (represented at *a* and *g*,) and then the screw D is turned down, causing the block E to lock the head firmly in the position to which adjusted. By moving the wrench-handle back the jaw F will swing between the two springs, so as to slightly enlarge the distance between the jaw F and the head B, and then on moving the handle in the opposite direction the jaw F turns slightly on its axis, causing the work to be grasped tightly. A further movement of the bar in this same direction will cause the work to be turned in the manner desired.

The improved wrench being constructed and arranged substantially in accordance with the foregoing explanations is of few and simple parts, all easy to construct and mount in place, and it will otherwise be found to answer all the purposes or objects of the invention hereinbefore alluded to.

The improvements are equally adapted for use in connection with wrenches of any size, large or small.

Having now fully described my invention, what I claim as new herein, and desire to secure by Letters Patent, is—

1. In a pipe-wrench, the combination with the wrench-bar of the movable head mounted thereon, said head having the interiorly-threaded opening in the top and the locking-screw and connected locking-block located within the opening in the head and protected thereby, substantially as and for the purposes set forth.

2. In combination with the movable wrench-

head, a locking-screw located within the interiorly-threaded opening in the head and below the top thereof, the locking-block connected with said screw and entering a recess within the head whereby the block is prevented from being turned by the screw, substantially as and for the purposes set forth.

3. In a pipe-wrench, the movable head, a locking-screw and locking-block located within the head and below the top thereof, and a removable stop located in the wall of the head and arranged to limit the upward travel of the locking-screw, the parts being arranged and combined substantially as and for the purposes set forth.

4. In a pipe-wrench, the movable head recessed as explained, the movable jaw seated in the recessed head, the hinge-pin and springs above and below the jaw, the head being supplied with a clearing-opening beneath the jaw, the parts being combined and arranged substantially as and for the purposes set forth.

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