To all whom it may concern:

Be it known that I, GUSTAV HOFFMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Quick-Adjusting Wrenches, of which the following is a specification.

My present invention relates to improvements in quick adjusting wrenches, and the present application thereof has particular reference to a quick adjusting pipe wrench embodying the well-known feature of a jaw having a limited arcuate movement which functions upon the application of power to the wrench to cause the jaw to firmly engage but not to crush the pipe or other element to which it is applied.

Wrenches, in general, and pipe wrenches in particular, are subject to the most severe service as they are not only employed for screwing up new pipes, rods and fittings, but for disassembling old installations where the pipes, rods and fittings have rusted or corroded at their joints and become set.

Wrenches also should not be dependent upon gravity for the operation of their respective parts as they should be capable of use with equal facility in all positions, and should be capable of dependably retaining the desired adjustment. Wrenches, besides sustaining an extremely severe service are also subjected to a great deal of abuse.

The objects of my invention are, therefore, to provide a quick acting wrench which is simple in construction and requires but few parts so that it may be economically manufactured and sold at a comparatively moderate price. Another object of my invention is to provide a wrench in which the mechanism for controlling the relation of the respective jaws is all firmly incased so that it cannot be injured either by use or abuse. Still another object of my invention is to provide a construction which will stand any strain which it may be required to undergo without distorting the respective parts, and functionally considered, I have sought to provide a wrench in which both jaws, instead of only one, have a slight movement tending to bring them together upon the application of power, and also in which the parts may be locked in any desired adjustment so that they will not work loose during the operation of the wrench.

Further objects will be apparent to those after an understanding of my invention is had, and I prefer to accomplish these diverse objects in substantially the manner herein-after fully described, and as more particularly pointed out in the claims, reference being now had to the accompanying drawings forming a part of this specification.

In the drawings:

Figure 1 is a side elevation of my wrench.

Fig. 2 is an enlarged longitudinal side elevation of the jaw mechanism of my improved wrench, a portion of the inclosing casing being broken away for disclosing the adjusting and locking mechanism.

Fig. 3 is a detail of the locking dog.

The wrench consists of an inclosing casing 1, for the adjusting and locking mechanism, which is of substantially U-shaped in cross-section. Pivotted by the bolt or pin 2 between the free ends at one corner of the casing is a handle member 3 which adjacent its pivotal end is provided with a separate jaw casing 4 which may be given a desired temper, or can be replaced when broken at a moderate expense. This jaw 4 is pivotted to the adjacent portion of the member 3 by a pin 4a and is preferably U-shaped in cross-section so that the side plates thereof frictionally engage the sides of the member 3 and the jaw may be slightly moved upon its pivot when the member 3 has been moved to such an extent as to permit the edges of said side plates of the jaw 4 to engage the adjacent edges of the plates of the casing 1 as shown in dotted lines in Fig. 2 of the accompanying drawings, thereby developing a leverage of small movement but of great power for the engagement of the article to be gripped. The handle member 3 opposite jaw 4 is elongated to extend out of the opposite portion of casing 1 to provide a gripping portion with the desired amount of leverage. Adjacent the edge of casing 1 the handle is provided with oblique stops 5 to limit the arcuate movement of jaw 4 so that the pipe, rod or other object engaged by the wrench will not be in danger of deformation or crushing when gripped.

Between the walls of the casing opposite to the end at which handle 3 is pivotted is a 105 block or partition 6 between which and the connection portion of the U-shaped casing loosely slides the straight shank 7 of the adjustable jaw 8 which latter extends laterally from the outer end of the shank and is 110
provided with serrations 9 opposite and facing similar serrations 10 provided on jaw 4. In order to prevent the accidental withdrawal of shank 7 from casing 1, I have provided said shank with a longitudinally extending depression or channel 20 into which the end of a short screw 19 tapped into casing 1 projects, so that by loosening or removing said screw 21 the shank is released and may be withdrawn for the purpose of cleaning or replacements. The edge of shank 7 facing and opposite handle member 4 is provided with serrations, as at 11. Pivoted upon a bolt or pin 12 extending between the free portions of casing 1, and located between handle 8 and shank 7, is a latching pawl 13 the edge of which adjacent the serrations 11 on the shank is serrated to engage therewith. The casing 1 is cut away upon one side to provide an aperture or window 14 opposite the serrated portion of pawl 13, and the latter is provided with a lateral lug 15 which extends into but not through window opening 14 so that none of the elements will project beyond the outer surface of the casing to be accidentally engaged. Upon a pin 16, similarly positioned, but at the opposite portion of the casing to pin 12, is pivoted a locking dog 17 which is adapted to be swung to one end of its arc to engage and maintain the latching pawl 13 in engagement with the serrations upon shank 7 to be swung to the opposite end of its arc to unlock and permit the latching pawl to be released from the serrations upon the shank. The locking dog is provided with a lateral lug 18, similar to lug 15, and also extending into but not through window 14 through which latter both the lateral lugs 15 and 18 may be manually operated. Adjacent the pivoted ends of latching pawl 13 and locking dog 17 are provided openings 13a and 17a, respectively, by slotting, boring, or in any other suitable manner for the passage of a hook-shaped spring element 19 one end whereof holds latching pawl 13 misguided against the serrations upon shank 7, and the opposite end whereof holds the locking dog in either one or the other of its extreme positions in which it is manually placed. It will thus be seen that a single spring is all that will be required in connection with both the latching pawl and the locking dog.

The jaw 4 has an upward and inward movement with relation to the adjustable jaw 8 by reason of its arcuate movement around pin 2 as a center. Also, because the adjustable jaw 8 is latched in desired position by the yielding latching pawl 13 it has a slight forward and downward movement with respect to jaw 4 about the point where the end of shank 7, opposite jaw 8, engages the connection portion of the U-shaped casing 1. These relative movements of the respective jaws increase their gripping efficiency upon the pipe, rod, or other element engaged thereby. From the foregoing description, taken in connection with the drawings, it will be perceived that I have provided a design for a wrench structure which consists of few and simple parts, which may be adjusted quickly to the size of article to be operated upon, and securely and dependably locked in the desired adjustment, and in which the instrument of securing the jaws in adjusted positions are wholly covered and protected from breakage either through use, accident or abuse.

What I claim is:

1. A wrench comprising a casing of U-shaped cross-section between the free ends of the side plates of which is pivotally secured an element having a jaw at one end and extended beyond said casing to provide a handle at its other end, a shank slidably mounted in said casing and provided with a lateral jaw, said shank being further provided with serrations upon its inner edge, a latching pawl pivoted within said casing adjacent and engaging the serrations on said shank, a locking dog also pivoted within said casing and movable into and out of engagement with said latching pawl, and a single spring element holding said pawl in operative position and said dog at the respective limits of its pivotal movement.

2. A wrench comprising a suitable support, a relatively stationary jaw and a movable jaw mounted on said support, said movable jaw capable of sliding movement with respect to said support, a latch pivoted on said support and normally engageable with said sliding jaw structure for retaining the latter in position, and a lock movable to engage and disengage said latch when the latter is in contact with said sliding jaw structure, whereby when said lock is out of contact with said latch the latter will normally retain said sliding jaw structure in position, but said latch may be moved to disengage the same.

3. A wrench comprising a suitable support, coaxing jaws carried by said support one of said jaws provided with a shank having a sliding movement in said support, a latch pivoted on said support adjacent said shank and normally engaged therewith to retain the same in position, and a locking dog pivoted on said support adjacent the pivot of said latch and movable into and out of engagement with said latch to lock and release the same, whereby when said locking dog is out of contact with said latch the latter will normally retain said shank in position, but said latch may be moved to disengage the same.

4. A wrench comprising a casing of U-shaped cross-section between the free ends of the side plates of which is pivotally se-
5 cured an element having a jaw at one end and extended beyond said casing to provide a handle at its other end, a shank slidably mounted in said casing and provided with a lateral jaw, said shank being further provided with serrations upon its inner edge, a latching pawl pivoted within said casing adjacent and engaging the serrations on said shank, and a locking dog also pivoted within said casing and moveable into and out of engagement with said latching pawl.

5 A wrench comprising a suitable supporting structure, coacting jaws carried by said structure one of said jaws capable of sliding movement with respect to said structure, a latch for retaining said sliding jaw in diverse positions, a lock moveable into and out of coaction with said latch when the latter is in operative position, and a single spring element holding said latch in operative position and said lock at the respective limits of its movements.

6. A wrench comprising a suitable casing, an arm pivoted to said casing and having a gripping jaw at one end, a shank slidably longitudinally in said casing and having a gripping jaw at one end coactive with the first mentioned jaw, serrations upon one edge of said shank, a vibrating latching pawl engaging said serrations, and a locking dog moveable into and out of engagement with the vibrating end of said pawl whereby said shank is maintained in diverse positions by said pawl and the latter is locked against movement by said dog.

Signed at Chicago, county of Cook, and State of Illinois, this 16th day of October, 1920.

GUSTAV HOFFMANN.