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PIPE TONGS

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This invention relates to and has for an object the provision of a pipe wrench or tongs, by means of which pipes, tool joints, well casing and similar work may be gripped and turned in either direction at will without necessitating reversing or changing the position of or other manipulation of the tool, except as to changing the direction of movement of the handle, the tool hereof having a double ratchet action selectively effective through manipulation of the handle.

Another object of this invention is to provide pipe tongs of the character described which will be superior to those heretofore used in point of simplicity and inexpensiveness of construction, strength, ruggedness, ease of operation, as well as due to the absence of removable parts and pivot pins which must be placed in different positions for effecting different operations of the tool.

Another object is to provide pipe tongs such as described wherein the jaws may be gripped when the handle is moved in either a clockwise or a counter clockwise direction from a neutral position in which the jaws are released, without requiring any adjustment or manual change in position of pivot pins or parts, and due to the provision of two slidable pivot connections of one jaw with the handle and a single pivot connection of the other jaw with said handle.

A further object is to provide in tongs of the character described a novel fulcrum selector in form of a simple slide bar or bolt which when in neutral position will permit of the hereinbefore noted gripping of the jaws upon oscillation of the handle but when moved to a position to limit the handle to fulcruming on either of two pivots, will effect application and release of the jaws with each oscillation of the handle.

With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, the invention is carried into effect as illustrated by way of example in the accompanying drawing, in which:

Fig. 1 is a top plan view of the pipe tongs of my invention;

Fig. 2 is an enlarged fragmentary side elevation of the tongs;

Fig. 3 is a sectional view on the line 3-3 of Fig. 2; and

Fig. 4 is a sectional view on the line 4-4 of Fig. 2.

In one embodiment of the pipe tongs of my invention, as shown in the accompanying drawing, a handle A has two slidable or what may be termed, lost-motion pivot connections B and C with one

jaw D and a single fixed pivot connection E with a companion jaw F, whereby when said jaws are held as by means of the latch G, in embracing relation to a pipe or the like to be gripped, and a fulcrum selector means H on said handle is disposed in neutral position, a movement of the handle in either direction from a position in which said jaws are released, will bring about a clamping of said jaws. However, the fulcrum selector means H by a simple adjustment, makes possible a selective fulcruming of the handle on said pivots, B and C, so that with one selection, clockwise and anti-clockwise movement of the handle will respectively set and release the jaws, whereas in the other selection, anti-clockwise and clockwise movement of said handle will respectively set and release the jaws.

The foregoing provision makes possible quicker, easier and more efficient screwing and unscrewing and related operations, in that the wrench or tongs of this invention after being positioned on a pipe or like, may be operated at will to perform any pipe-wrench function without reversing the position thereof or removing and repositioning pivots or in fact making any adjustments except as to changing the direction movement of the handle.

As here provided the jaw D has an arcuate bifurcated shank portion 1, in apertured extremities of which, pivot pins 2 and 3 are mounted so as to extend through arcuate slots 4 and 5 in the handle A, the pin 2 and slot 4 providing the slidable pivot connection B and the pin 3 and slot 5, the connection C. It is noted that the arc of each slot is struck from the center of the pin passing through the other slot, whereby the lever may be alternately fulcrumed on either pin to the exclusion of the other, dependent on the setting of the selector means H.

As here shown the other jaw F has an arcuate bifurcated shank portion 6 which embraces the handle at a point between pivotal connections B and C. The pivot connection E for this jaw is formed by a pin 7 extending through the apertured free ends of the portion 6 and an opening 8 in said handle, this pin being keyed in place as are the pins 2 and 3.

It is now seen that with the means H in neutral position as shown in full lines in Fig. 3, when the handle is moved clockwise from the neutral position likewise shown in Fig. 3, it will fulcrum on the pivot pin 3 of the connection C which pin is then at the outer end of slot 5, while the slot 4 permits the handle to move or slide in said direction relative to the pivot pin 2 of the

connection B. By this movement of the handle, the pivot connection E is moved clockwise in an arc an extent as permitted by the pivot 9 of the latch G and the distance of space in which the jaw F must travel to grip the pipe. Thus the pipe may be gripped and turned with a clockwise movement of the handle and the jaws may be released upon a return or anti-clockwise movement of the handle provided the handle will yet be fulcrumed on the pin 3 of connection C, as otherwise said handle will fulcrum on pin 2 of connection B and thereby tend to move the jaws into gripping relation. One way of causing the handle to fulcrum on the pin 3 is to pull the jaw F outwardly in the direction of movement (anti-clockwise) of said handle while the handle is being thus moved, and this will keep the pin 3 against the outer end of its slot 5 while the pivot pin 7 of connection E moves anti-clockwise to release the jaws. When the handle is turned anti-clockwise from neutral position it will fulcrum on the pin 2 of the connection B and exert a clockwise or jaw-clamping movement of pivot whereby to cause the jaws to grip the work.

Unless the operator manually exerts forces as aforesaid to cause the lever to fulcrum so as to move the pivot 7 anti-clockwise, when the lever is moved in either direction towards its neutral position, then the jaws will be applied instead of released. Thus when the jaws are applied as a result of clockwise or anti-clockwise movement of the lever the operator may quickly and easily hold them applied or reapply them by simply reversing the direction of movement of the handle and therefore the pipe or work may be screwed or unscrewed or rotated in either direction without adjustment other than changing the movement of the handle.

In accordance with this invention the fulcrum selector H is in the form of a slide bar or bolt 10 slidable longitudinally in a recess 11 formed in the handle, pins 12 hold the slide bar 10 in the recess and a finger piece 13 provides for sliding of the bar into either of the slots 4 and 5. Detent shoulders or protuberances 14 on the handle A provide for frictionally holding the finger piece so that the slide bar is releasably held in adjusted position. When this bar is moved into slot 5 under the pivot pin 3 the handle A will be limited to fulcruming about said pivot pin. Thus as the handle A is moved in a clockwise direction it will cause the jaws to be applied and when moved in the opposite direction will effect release of said jaws. When the bar is moved into slot 4, the lever will fulcrum on pivot pin 2 and will cause an application of the jaws when moved anti-clockwise and a release thereof when moved clockwise. These provisions facilitate certain repeated screwing or unscrewing operations so that no adjustment is necessary after setting the slide bar 10 as desired.

As here shown the latch G is urged by leaf spring 15 so as to seat in recess or pocket 16 in the jaw D, whereby to detachably and pivotally couple the outer ends of the jaws D and F.

While I have shown and described a specific embodiment of my invention I do not limit myself to the exact details of construction set forth, and the invention embraces such changes, modifications and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

I claim:

1. Pipe tongs, including a handle, opposed jaws

adapted to embrace and grip a pipe or the like, two lost-motion pivotal connections between said handle and one of said jaws, arranged to alternately serve as fulcrums for the handle upon movement of said handle in opposite directions, means for pivoting the other jaw on said handle at a point between said two pivot points of the first named jaw, and latch means for detachably coupling the outer ends of said jaws to hold them embraced on the work.

2. Pipe tongs, including a handle, opposed jaws adapted to embrace and grip a pipe or the like, two lost-motion pivotal connections between said handle and one of said jaws, in an arrangement whereby one connection serves as a fulcrum and the other as a lost-motion connection when said handle is moved in one direction relative to said one jaw, and said other connection serves as a fulcrum, and said one connection provides for lost motion between the handle and said one jaw, when said handle is moved in the opposite direction relative to said jaw, means for pivoting the other jaw on said handle at a point between said two pivot points of the first named jaw, and latch means for detachably coupling the outer ends of said jaws to hold them embraced on the work, said first named pivot means including pivot pins fixed to the first named jaw, said handle having arcuate slots in which said pins extend.

3. Pipe tongs, including a handle, opposed jaws adapted to embrace and grip a pipe or the like, means for slidably and pivotally connecting the handle at spaced points with correspondingly spaced points of one of said jaws whereby the handle may fulcrum on either pivotal connection, means for pivoting the other jaw on said handle at a point between said two pivot points of the first named jaw, and latch means for detachably coupling the outer ends of said jaws to hold them embraced on the work, said first named pivot means including pivot pins fixed to the first named jaw, said handle having arcuate slots in which said pins extend, each of said slots being concentric with the pivot pin in the other slot.

4. Pipe tongs, including a handle, opposed jaws adapted to embrace and grip a pipe or the like, means for slidably and pivotally connecting the handle at spaced points with correspondingly spaced points of one of said jaws whereby the handle may fulcrum on either pivotal connection, means for pivoting the other jaw on said handle at a point between said two pivot points of the first named jaw, latch means for detachably coupling the outer ends of said jaws to hold them embraced on the work, said first named pivot means including pivot pins fixed to the first named jaw, said handle having arcuate slots in which said pins extend, and a bolt slidable on the handle from position clear of said slots and pins into position to limit the handle to fulcruming on either pin.

5. Pipe tongs, including a handle, opposed jaws adapted to embrace and grip a pipe or the like, means for slidably and pivotally connecting the handle at spaced points with correspondingly spaced points of one of said jaws whereby the handle may fulcrum on either pivotal connection, means for pivoting the other jaw on said handle at a point between said two pivot points of the first named jaw, and latch means for detachably coupling the outer ends of said jaws to hold them embraced on the work, and a fulcrum selector movable on said handle from a position

in which the handle may be alternately fulcrumed on the pivotal connection of the two pivots of the first jaw, into position to limit the handle to fulcruming on either of said pivots.

5 6. Pipe tongs including a handle, a jaw having two lost-motion pivot connections with said handle affording fulcruming of the handle on alternate pivots upon movement of the handle in opposite directions, and another jaw having a one point pivot connection with said handle for effecting movement thereof towards and away from the first jaw when the handle is fulcrumed on the pivot connections of the first jaw.

10 7. Pipe tongs including a handle, a jaw having a two point pivot connection with said handle affording fulcruming of the handle on either pivot, and another jaw having a one point pivot connection with said handle for effecting movement thereof towards and away from the first jaw when the handle is fulcrumed on the pivot connections of the first jaw, and a fulcrum selector movable on said handle from a position in which the handle may be alternately fulcrumed of the first named pivot connections, into position to limit the handle to fulcruming on either of said named pivots.

15 8. Pipe tongs including a handle, a jaw, an arcuate shank on said jaw, pivot pins fixed at spaced points on said shank, said handle having arcuate slots at spaced points thereon through which said pins extend for affording the fulcruming of said handle on either pin, each slot being concentric with the pivot pin in the other slot, a second jaw, an arcuate shank on the second jaw and a pivot connection between the shank of said second jaw and said handle at a point on the latter which is between the slots, and a latch pivoted on one jaw and engageable with the other jaw to hold the same coupled around the work.

20 9. Pipe tongs including a handle, a jaw, an arcuate shank on said jaw, pivot pins fixed at spaced points on said shank, said handle having arcuate slots at spaced points thereon through which said pins extend for affording the fulcruming of said handle on either pin, each slot being concentric with the pivot pin in the other slot, a second jaw, an arcuate shank on the second jaw and a pivot connection between the shank of said second jaw and said handle at a point on the latter which is between the slots, and a latch pivoted on one jaw and engageable with the other jaw to hold the same coupled around the

work, a bolt slidable on said handle to position in either slot to limit the fulcruming of the handle to either of said pivots.

10. Pipe tongs including a handle, a jaw, an arcuate shank on said jaw, pivot pins fixed at spaced points on said shank, said handle having arcuate slots at spaced points thereon through which said pins extend for affording the fulcruming of said handle on either pin, each slot being concentric with the pivot pin in the other slot, a second jaw, an arcuate shank on the second jaw and a pivot connection between the shank of said second jaw and said handle at a point on the latter which is between the slots, a latch pivoted on one jaw and engageable with the other jaw to hold the same coupled around the work, and a bolt slidable on said handle to position in either slot to limit the fulcruming of the handle to either of said pivots, said handle having a recess in which said bolt is slidable, and means for slidably retaining the bolt in said recess.

11. Pipe tongs including a handle, a jaw, an arcuate shank on said jaw, pivot pins fixed at spaced points on said shank, said handle having arcuate slots at spaced points thereon through which said pins extend for affording the fulcruming of said handle on either pin, each slot being concentric with the pivot pin in the other slot, a second jaw, an arcuate shank on the second jaw and a pivot connection between the shank of said second jaw and said handle at a point on the latter which is between the slots, a latch pivoted on one jaw and engageable with the other jaw to hold the same coupled around the work, a bolt slidable on said handle to position in either slot to limit the fulcruming of the handle to either of said pivots, a finger piece on said bolt, and detents on said handle for engaging said finger piece in adjusted position.

12. Pipe tongs including a handle, a jaw having a two point pivot connection with said handle affording fulcruming of the handle on either pivot, and another jaw having a one point pivot connection with said handle for effecting movement thereof towards and away from the first jaw when the handle is fulcrumed on the pivot connections of the first jaw, and a fulcrum selector operable for limiting the handle to fulcruming on either pivot of said two pivotal connections.

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