No. 858,271. PATENTED JUNE 25, 1907.

J. W. FAESSLER.

STAY BOLT CUTTER.

APPLICATION FILED OCT. 30, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

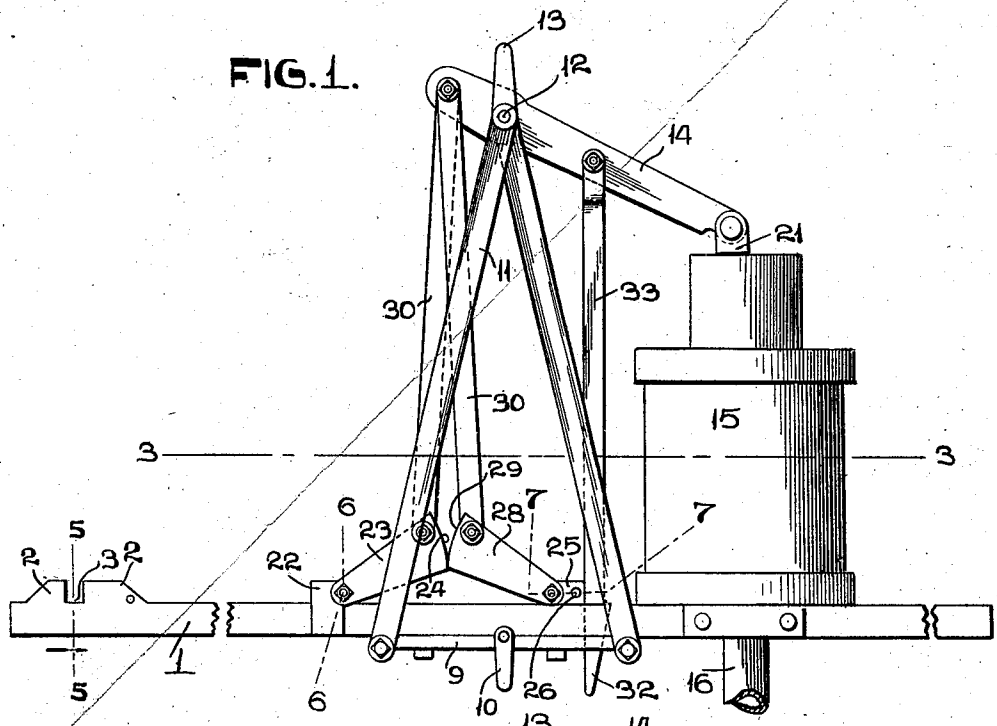
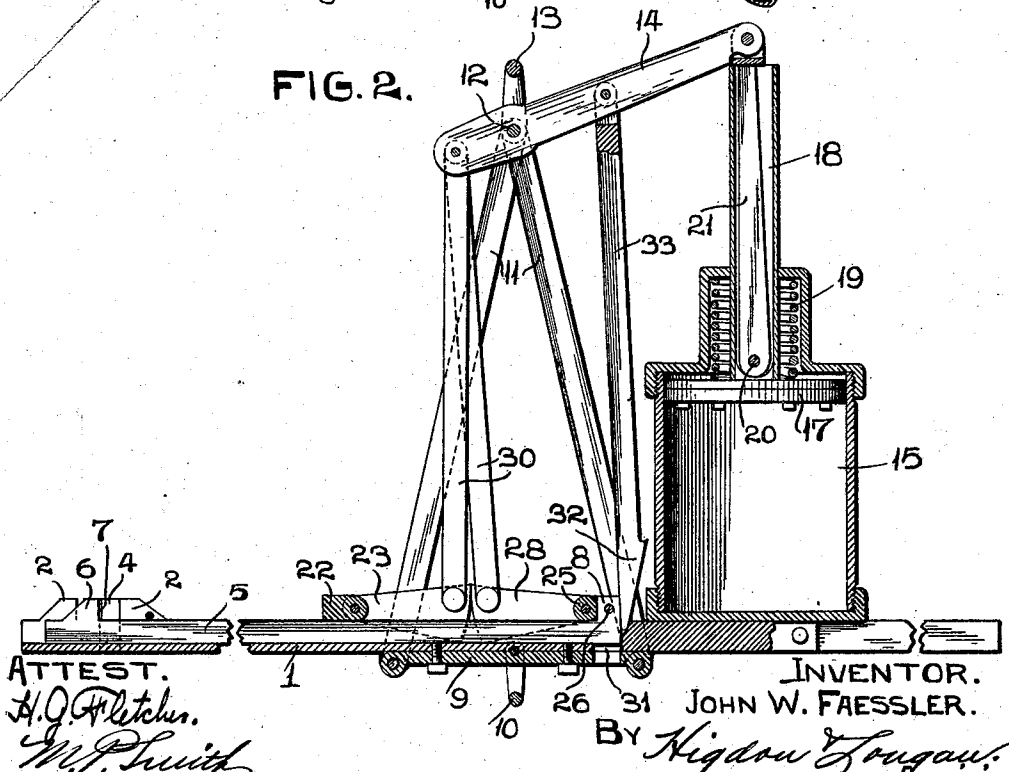


FIG. 2.



ATTEST.

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2 SHEETS—SHEET 2.

FIG. 3.

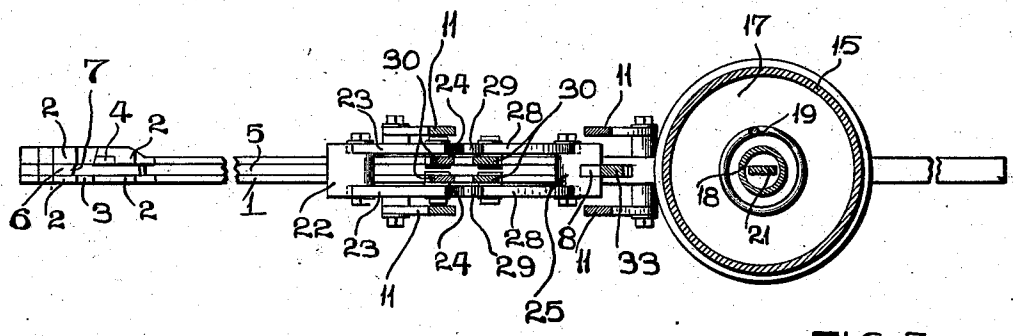


FIG. 5.

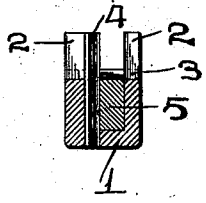


FIG. 4.

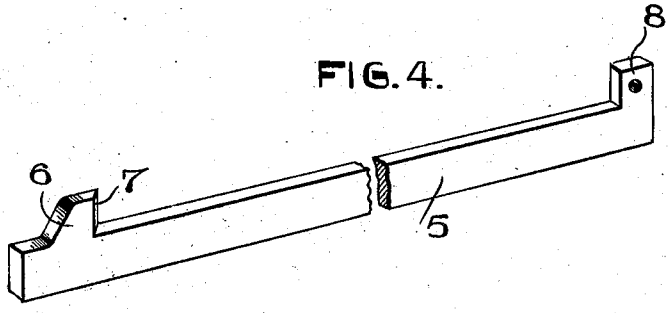


FIG. 7.

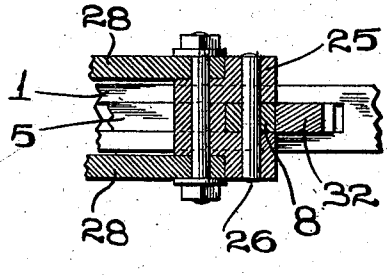
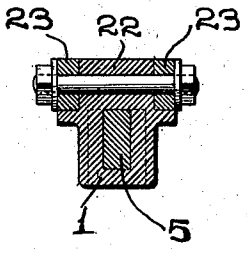


FIG. 6.



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UNITED STATES PATENT OFFICE.

JOHN W. FAESSLER, OF MOBERLY, MISSOURI.

STAY-BOLT CUTTER.

No. 858,271. Specification of Letters Patent. Patented June 25, 1907.

Application filed October 30, 1906. Serial No. 341,325.

To all whom it may concern:

Be it known that I, JOHN W. FAESSLER, a citizen of the United States, and a resident of Moberly, Randolph county, Missouri, have invented certain new and useful Improvements in Stay-Bolt Cutters, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a stay-bolt cutter which is adapted to be used for cutting the stay bolts used in boilers and the like when the inner sheet or fire box of the boiler is to be removed.

The object of my invention is to construct a simple mechanism utilizing fluid pressure for actuating a series of levers which in turn operate the cutting blades, which machine may be suspended so as to be easily swung from one position to another in order to rapidly accomplish the work of cutting stay bolts and the like.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of my improved stay bolt cutter, and showing the cutting jaws open; Fig. 2 is a vertical section longitudinally through the center of the cutter, and showing the jaws closed; Fig. 3 is a horizontal section taken approximately on the line 3—3 of Fig. 1; Fig. 4 is a perspective view of the cutter bar, and showing the blade or jaw thereon; Fig. 5 is an enlarged vertical section taken on the line 5—5 of Fig. 1; Fig. 6 is an enlarged vertical section taken on the line 6—6 of Fig. 1; Fig. 7 is an enlarged horizontal section taken on the line 7—7 of Fig. 1.

Referring by numerals to the accompanying drawings;—1 designates a bar of some length, approximately U-shaped in cross section, and provided adjacent its outer end with the upwardly extending pairs of lugs 2, thus forming a rectangular opening 3 in which the stay bolt is positioned when cut. A cutting jaw 4 having its forward edge beveled is removably positioned in the rear one of the lugs on the right hand side of the bar.

Arranged to slide longitudinally in the U-shaped bar 1 is a bar 5, the forward end of which is provided with a lug 6, the front vertical edge of which is beveled to form a cutting jaw 7, which opposes the jaw 4. Formed integral with the rear end of the bar 5 is an upwardly projecting lug 8 which is perforated transversely.

Rigidly fixed in any suitable manner to the under side of the bar 1, immediate its ends, is a plate 9, to the center of which is pivotally attached a loop 10, by means of which the entire cutter is suspended when in an inverted position. Bolted to the ends of the plate 9 on each side of the bar 1 are hangers 11 arranged in pairs, the upper ends of which are connected by a transverse pin 12. Arranged on this pin 12 is a loop 13 which is used for suspending the cutter, and journaled on the center of the pin is a lever 14.

Fixed on top of the bar 1 to the rear of the plate 9 is a cylinder 15, to the lower end of which leads a tubular connection 16, by means of which fluid pressure is conveyed to and from said cylinder. Operating in the cylinder 15 is a piston 17, and fixed thereto is a hollow piston rod 18, which operates through the top of the cylinder 15, there being an expansive coil spring 19 located upon this hollow piston rod between the piston 17 and the top of the cylinder. Located in this tubular piston rod and held therein by means of a pin 20 is a connecting rod 21, the upper end of which is loosely connected to the rear end of the lever 14.

Rigidly fixed in any suitable manner to the bar 1 and extending across the top thereof above the bar 5 and in front of the plate 9 is a block 22, and to the ends of this block are journaled the rear ends of a pair of segments 23, the outer faces 24 of which are concentrically curved.

25 designates a block which is journaled to the lug 8 on the bar 5 by means of a pin 26 passing through the perforation in said lug 8, and journaled to said block are the rear ends of a pair of segments 28, in every way similar to the segments 23, and having eccentrically curved outer faces 29 which bear directly against the corresponding faces 24 of the segments 23.

Connecting the forward corners of each of the segments 23 and 28 are the lower ends of connecting rods 30, the upper ends of which are pivotally connected to the end of the lever 14 opposite the end to which the connecting rod 21 is pivoted.

Formed through the bar 1 and through the plate 9, immediately to the rear of the lug 8

when the bar 5 is moved forwardly so as to bring the jaw 7 into an open position, is an aperture 31, and adapted to pass therethrough is a wedge 32, which is formed at the lower end of a connecting rod 33, the upper end of which is pivotally connected to the lever 14 at a point between the pin 12 and the end of said lever that is pivoted to the connecting rod 21.

The parts of the cutter are shown in their normal positions in Fig. 1, with the jaws open and the piston 17 in the lower end of the cylinder 15.

The cutter is suspended or supported in any suitable manner, and to cut a stay bolt or the like, the forward end of the bar 1 is guided so that the stay bolt occupies the opening 3 between the cutting jaws 4 and 7. Fluid pressure is now delivered to the cylinder 15 through the pipe 16, and, as a result, the piston 17 is forced upwardly in said cylinder, compressing the spring 19, elevating the connecting rod 21, and the rear end of the lever 14. As said lever 14 shifts upon its fulcrum, which is the pin 12, the forward end of said lever and the connecting rods 30 will be moved downwardly, in turn moving the segments 23 and 28 downwardly, and the eccentric faces 24 and 29 on said segments will engage with one another, and, as a result, the pair of segments 28 which are fixed to the block 25 will be moved rearwardly a slight distance, and said block being pivotally connected to the lug 8, the latter, together with the bar 5 and jaw 7, will be likewise moved rearwardly. Thus, the stay bolt positioned between the jaws 4 and 7 will be cut easily and cleanly, and the power for effecting such cut being obtained by the arrangement of the lever 14 and the toggle action of the segments 23 and 28.

When the parts are in their normal positions, the wedge 32 is at its lowermost position and occupies the opening 31, and when the lever 14 is shifted upon its fulcrum, connecting rod 33 is elevated, which movement withdraws the wedge from the opening 31, and thus allows the bar 5 to move rearwardly. After the cut has been thus effected, the operator shifts the controlling valve, (not shown,) in the pipe 16 to allow the fluid pressure to exhaust from beneath the piston in the cylinder 15, and, as this exhaust takes place, the spring 19 will expand to move the piston downwardly in the cylinder and return the various movable parts of the cutter to their normal positions. As this action takes place, the segments 23 and 28 are pulled upwardly, and simultaneous with this movement, the wedge 32 moves downwardly behind the lug 8 on the bar 5, and moves said bar 5 forwardly, thus shifting the jaw 7 into an open position.

When in use, the cutter is generally suspended by chains or cables in either an upright or an inverted position, and when in this position, the forward end of the bar 1 can be swung in between the boiler sheets so as to readily engage the stay bolts.

Air or steam at a comparatively low pressure will readily furnish the necessary power to elevate the piston 17, and through the leverage obtained by the mechanism as described, this power is utilized for moving one of the jaws toward the other to effect the necessary cut.

The apparatus is simple in construction and operation, comprises a minimum number of parts, is easily assembled, and very rapidly performs the operation of cutting stay bolts and the like.

I claim:—

1. A stay bolt cutter, constructed with a U-shaped member, a cutting jaw, detachably secured to one end of said member, a bar arranged to slide in said member, a jaw integral with the sliding bar opposite the first mentioned jaw, and means carried by the U-shaped member for imparting a reciprocating movement to the sliding bar; substantially as specified.

2. A stay bolt cutter, constructed with a member, a cutting jaw fixed to one end thereof, a bar arranged to side on said member, a cutting jaw carried by the bar and arranged opposite the fixed jaw, means carried by the member for imparting reciprocating motion to the sliding bar, a cylinder carried by the member, and a piston operating in said cylinder and connected to the sliding bar operating members; substantially as specified.

3. In a machine of the class described, a U-shaped member, a jaw fixed in said member, a bar arranged to slide in the member, a jaw arranged on the sliding bar, segments pivotally connected to the member which segments have eccentrically curved faces, a second set of segments pivotally connected to the sliding bar and the faces of the pairs of segments engaging one another, and means whereby the segments are actuated to impart motion to the sliding bar; substantially as specified.

4. In a machine of the class described, a member, a jaw fixed in said member, a bar arranged to slide on the member, a jaw arranged on the sliding bar, segments pivotally connected to the member which segments have eccentrically curved faces, a second set of segments pivotally connected to the sliding bar and the faces of the pairs of segments engaging one another, means whereby the segments are actuated to impart motion to the sliding bar, means whereby said segments are actuated to shift the bar in one direction, and means arranged on the member for shifting the bar in the opposite direction; substantially as specified.

5. In a machine of the class described, a member, a jaw fixed in said member, a bar

arranged to slide on the member, a jaw arranged on the sliding bar, segments pivotally connected to the member which segments have eccentrically curved faces, a second set of segments pivotally connected to the sliding bar and the faces of the pairs of segments engaging one another, a fulcrumed lever carried by the member, connections between one end thereof and the segments, and means carried by the member whereby said lever is moved upon its fulcrum; substantially as specified.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

JOHN W. FAESSLER.

Witnesses:
CHESTER JOHNSON,
E. R. HICKERSON.