O. J. ERICKSON.

PIPE CUTTER.

APPLICATION FILED SEPT. 7, 1910.

1,007,651. Patented Oct. 31, 1911.

Fig. 1.

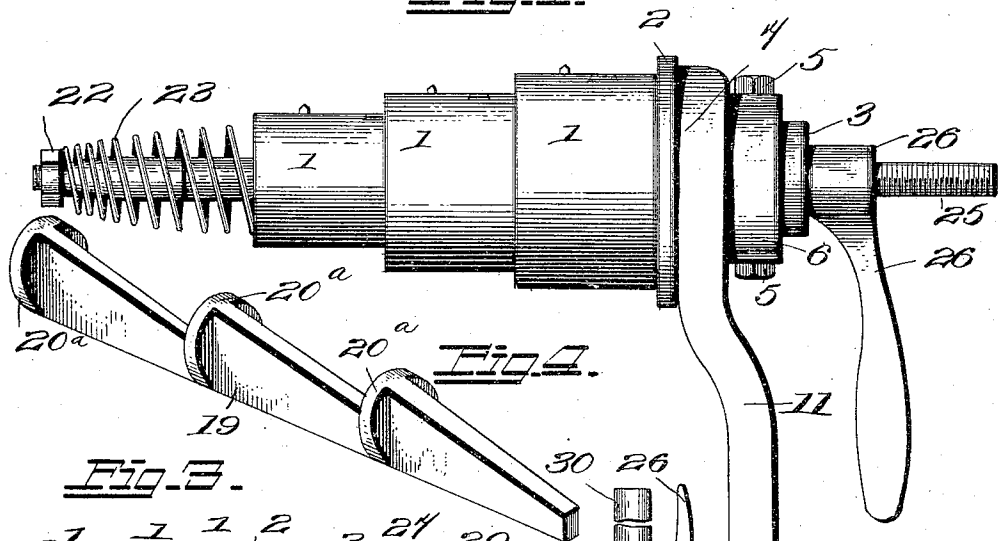


Fig. 4.

Fig. 3.

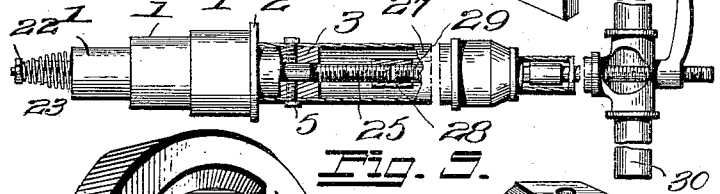
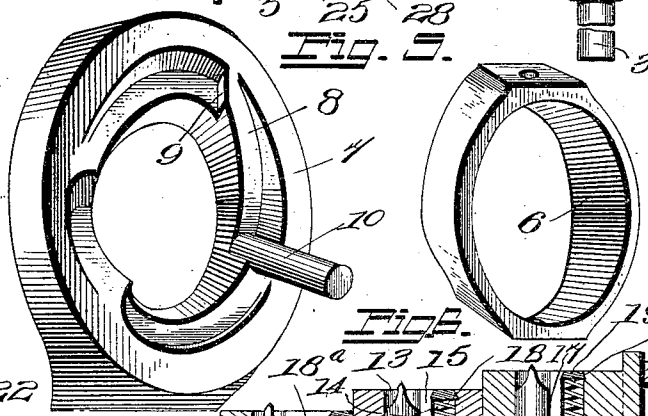


Fig. 5.

Fig. 9.



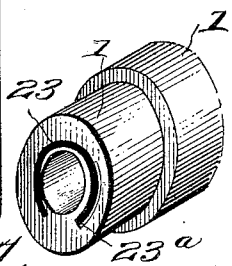


Fig. 8.

Fig. 6.

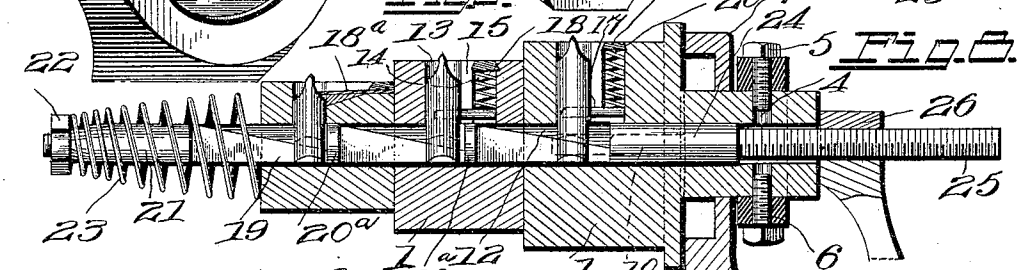


Fig. 2.

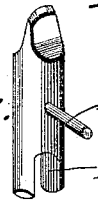
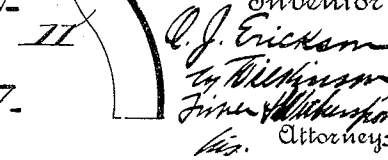


Fig. 7.



Witnesses

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PIPE-CUTTER.

1,007,651. Specification of Letters Patent. Patented Oct. 31, 1911.

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To all whom it may concern:

Be it known that I, OSCAR J. ERICKSON, a citizen of the United States, residing at Benson, in the county of Swift and State of Minnesota, have invented certain new and useful Improvements in Pipe-Cutters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in pipe cutters and is of the type in which a suitably supported cutter is rotated within the pipe to be cut.

While the invention is particularly adapted to use in connection with the cutting of boiler tubes, it will be obvious that it may be used with other tubing or pipes.

The primary object of the invention is to provide a tool that is durable, effective in action, and adapted for use with varying tubes, instead of having a separate tool for each sized tube.

Other objects and advantages will appear from the drawings and the following specification and the particular features of novelty will be more succinctly pointed out in the claims.

It will be understood that the invention is not limited to the exact details shown and described, still, for the purpose of disclosure, reference is had to the accompanying drawings illustrating a practical embodiment of the same, in which drawings like letters designate the same parts in the several views and in which—

Figure 1 is a view in side elevation of my improved cutting tool in its assembled order; Fig. 2 is a central longitudinal section through same; Fig. 3 is a view similar to Fig. 1 with a different form of operating handle connected to the end of the tool; Fig. 4 is a perspective view of a wedge member for adjusting the cutters, being shown separated from its operating stem; Fig. 5 is an internal perspective view of a clutch member of a ratchet handle; Fig. 6 is a perspective view of a collar for holding said handle clutch in place; Fig. 7 is a detail perspective view of one of the cutters; Fig. 8 is a fragmentary perspective view looking toward the end of the cutting barrels and showing a curved slot for seating the end of a coil spring; and Fig. 9 is a perspective view of a wedge key hereinafter referred to.

1 designates the support or body proper of the tube, being shown as comprising three cylindrical portions of varying diameters and adapted to be used in connection with different sized tubes. The right hand end of this body portion may be flanged as at 2 and the face thereof is provided with a projection or cylindrical hub 3 provided with threaded apertures 4 to receive set screws 5, passing through a fastening collar 6 adapted to hold the clutch member 7 of a ratchet arrangement in position against the face of the flange head 2. The support and hub is bored centrally its entire length to receive operating mechanism hereinafter referred to.

As seen more clearly from Fig. 5, the clutch member of the ratchet arrangement consists of a recessed inner face cut away to form the curving inclined surfaces 8 forming shoulders 9 adapted to abut against the ratchet rollers 10 disposed in cylindrical sockets formed on the face of said flange head 2 and being normally pressed outward by coil springs located within said sockets so that the outer ends of the clutch rollers coöperate with the cam faces or inclined surfaces 8 and operate the clutch member so that the whole body support is turned in a movement of the handle 11 from left to right, but the clutch rollers are pressed inwardly and allow the clutch member to be freely turned in the opposite direction after the form of ordinary ratchet mechanism.

Communicating with the central bore 12 and formed radially of the body portion are recesses 13 for the cutters. In the construction shown where the cutters have a cylindrical body portion, these recesses are cylindrical as indicated at 13 and have preferably a second cylindrical aperture or pocket 14 communicating with the recess 13 by a narrow slot 15.

The bottom of the cutter is bifurcated as at 16 for the purpose hereinafter described and the bifurcations are so formed that their side walls are parallel. Each of the cutters is also provided with a lateral pin 17 operating in the slot 15 and projecting into the pocket 14 where the end is engaged by a coil spring 18 held in place by a bev-

eled wedge key 18[b] working in a beveled recess 20 cut in the periphery of the body portion. On the left hand corner of Fig. 2 it will be observed, however, that the pocket 14, slot 15, pin 17 and spring 18 may be done away with and a flat spring such as 18[a] may be provided to engage and hold the cutter inwardly against spring tension. The particular method of holding the cutters inwardly, therefore, is not limited to any particular form of spring.

Passing through the bore 12 is a wedge member 19 having as many inclining surfaces as there are cutters. The integral sections of the wedge member terminate at their larger ends in cylindrical heads 20[a] which form guiding means for the wedge member through the central bore 12, the wedge sections themselves being of flat construction, having a common straight lower edge, parallel side walls, and the inclining upper edges, whereby the upper edges of the wedge sections ride freely within the bifurcations of the cutters, but in engagement therewith. This is shown more clearly in Fig. 4, and a bifurcated end 16 of the cutters being adapted to straddle said wedges. Extending from the left hand edge of said series of wedges is a projection 21 threaded to receive a nut 22 and interposed between this nut and the end of the smallest body portion 1 is a coil spring 23 the inner end of which is seated in the recess 23[a] (Fig. 8). This spring tends to pull the wedge member toward the left of the tool with the shallow part of the wedge straddled by the cutter, so that the cutters are normally held in their innermost position. The other end of the wedge member is provided with an extension partly of smooth cylindrical form, as indicated at 24, and terminating in a threaded spindle 25 engaged by a threaded lever 26.

From the foregoing it is believed that the operation of the tool will be evident and when the cutters are to be spread outwardly the lever 26 is slightly turned from left to right and abutting against the end of the hub 3 will move the spindle and its wedges from left to right against the tension of the spring 23, and during this movement the inclining surface of the wedges will force the cutters outwardly against the spring tension. Also in Fig. 3, it will be observed that the same operation is carried out, but in this view there is shown an operating means whereby the handle and ratchet 7 is not employed, a barrel or sleeve 27 being secured to the hub 3 by means of set screws 5. In this barrel the threaded spindle 25 is connected by means of a coupling 28 to a threaded extension or spindle 29 passing through the attachment. In this case instead of the single ratchet handle 11 a double arm or handle 30 is employed whereby great leverage is accomplished, and the lever 26 threads on the spindle 29 and engages said double handle for operating the wedge member as heretofore described.

Having thus described a practical and preferred embodiment of the invention, the particular features of novelty will now be pointed out more succinctly in the following claims.

1. In a tube cutter, the combination of a cylindrical barrel, a cutter disposed radially of said barrel and projecting within a central bore formed therein, a wedge member engaging the inner end of said cutter, a beveled recess formed on the peripheral surface of said barrel, a spring engaging said cutter, tending to hold same normally in its innermost position, the free end of said spring terminating adjacent said beveled recess, and a beveled key operating in said recess and engaging said spring, substantially as described.

2. In a tube cutter, the combination of a cylindrical barrel having a shoulder formed integral therewith and a hub portion extending from said shoulder, said barrel and hub being centrally bored, and a radial socket formed in said barrel and communicating with said central bore, a cutter freely operating in said socket, resilient means tending to hold said cutter in its innermost position, a wedge member operable through said bore and engaging the inner end of said cutter for feeding same outwardly against the tension of said resilient means, said wedge member being provided at one end with an axial projecting extension, and at its other end with a threaded spindle extending through said hub, an abutment nut on the end of said extension, a coiled spring surrounding said extension and extending between said abutment nut and said barrel, a ratchet device provided with an operating handle mounted on said hub, a collar detachably mounted on said hub and engaging said ratchet device for holding same against said shoulder, and a threaded lever operating on said spindle and engaging said hub to reciprocate said wedge member, substantially as described.

3. In a tube cutter, the combination of a cylindrical barrel provided with a central bore and a radial socket extending from said bore to the periphery of said barrel, a cylindrical radial pocket being formed adjacent same and communicating therewith by means of a narrow slot, a cutter mounted in said socket and provided with a lateral pin projecting within said pocket through said slot, a coiled spring in said pocket and engaging said pin, means for holding said spring against displacement, a wedge member operating in said bore in engagement with the inner end of said cutter, means for rotating said barrel, and means for recipro-

cating said wedge member, substantially as described.

4. In a tube cutter, the combination of a plurality of stepped barrels provided with a longitudinal bore therethrough and also provided with radial sockets extending from the periphery of said barrels into communication with said bore, means for rotating said barrels, a cutter mounted in each of said sockets and having its inner end extending within said bore, a reciprocating wedge member mounted in said bore and provided with inclining faces engaging said cutters, said wedge member having a threaded spindle projecting beyond said rotating means, and at its other end provided with an extension projecting beyond the opposite end of the barrel members, an abutment nut threaded on said extension, a coiled spring disposed between said abutment nut and the outer face of the smaller barrel normally tending to hold said wedge member out of engagement with said cutters, springs engaging said cutters and tending to normally hold them in their innermost positions, and a threaded lever operating on said spindle and engaging said barrels to reciprocate said wedge members and bring their inclining surfaces into operative engagement with said cutters, substantially as described.

5. In a tube cutter, the combination of a plurality of stepped barrels, means for rotating same, a bore being provided through said barrels and radial sockets communicating with said bore, a cutter for each of said sockets having its lower end extending within said bore, and bifurcated to form a recess having parallel walls, and a reciprocating wedge member comprising a plurality of flat sections having a common straight lower edge, parallel side walls and inclining upper edges operating within said bifurcations in non-interlocked engagement with said cutters, the enlarged end of each of said inclining sections terminating in a cylindrical head to form guiding means for said wedge member within said bore, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

OSCAR J. ERICKSON.

Witnesses:
C. L. KANE,
D. P. CARNEY.