(Model.)

T. W. FELTON.

TUBE PLATE HOLE CUTTER.

No. 558,583. Patented Apr. 21, 1896.

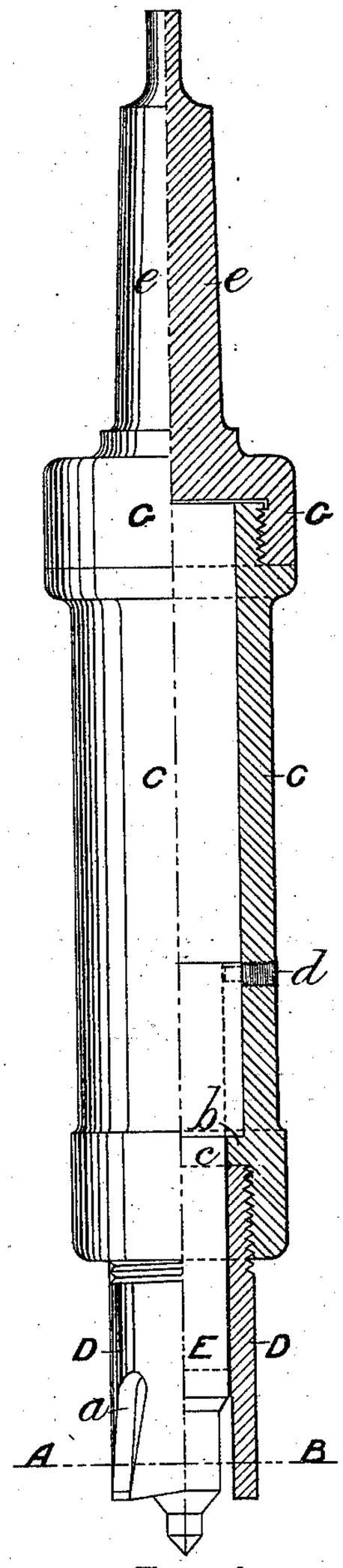

FIG 1

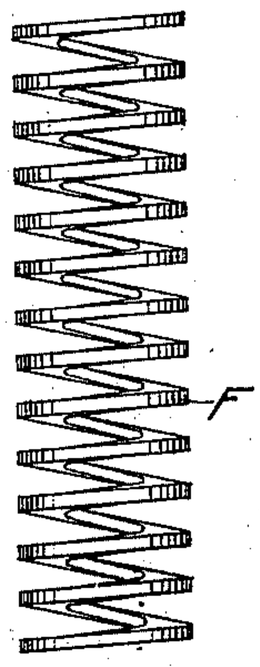

FIG 2.

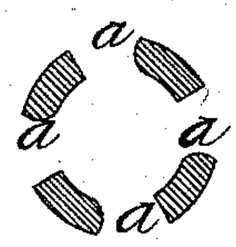

FIG 3

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS WILLIAM FELTON, OF ADDINGTON, NEW ZEALAND.

TUBE-PLATE-HOLE CUTTER.

SPECIFICATION forming part of Letters Patent No. 558,583, dated April 21, 1896.

Application filed January 31, 1894. Serial No. 498,640. (Model.) Patented in New Zealand June 9, 1893, No. 6,232, and in England February 2, 1894, No. 2,328.

To all whom it may concern:

Be it known that I, THOMAS WILLIAM FELTON, a subject of the Queen of Great Britain and Ireland, residing at Addington, Canterbury, in the Colony of New Zealand, have invented certain new and useful Improvements in Tube-Plate-Hole Cutters, of which the following is a specification, and for which I have obtained Letters Patent of Great Britain, No. 2,328, dated February 2, 1894, and of New Zealand, No. 6,232, dated June 9, 1893.

This invention of improvements in tube-plate-hole cutters relates to a very simple tool for cutting tube-holes in boiler-tube plates.

The following are some of its advantages and capabilities: First, simplicity of construction and no complicated parts to get out of order; second, absolute accuracy in its work, (an important item in tube-plate drilling;) third, marking off the work entirely superseded; fourth, no centering required, and consequently "drawing" the center (a most expensive and slow process) abolished; fifth, multiple drilling made possible and easy; sixth, skill in working reduced to the lowest limit.

Capabilities with a "single" drill: "Copper plate," five-eighths of an inch ($\frac{5}{8}$ inch) thick, ninety-seven holes one and three-quarters of an inch ($1\frac{3}{4}$ inches) in diameter per hour; "steel plate," same thickness, thirty-seven holes of same diameter per hour; "lowmoor" plate, same thickness, thirty-six holes of same diameter per hour.

No tool that I am aware of at present is sufficiently simple in its construction as to enable six or eight drills to be run at the same time by one man. Now this can be accomplished by the use of my improved cutter.

Briefly, my improved cutter consists of a tube or barrel inclosing a spiral spring and movable centerer, and having a tubular cutter screwed to the lower end, the upper end being screwed to a socket having a stem fitting the machine.

Referring to the drawings, which form a part of this specification, Figure 1 is a view of my improved cutter drawn half in section and half in elevation. Fig. 2 is a view of the spiral spring, while Fig. 3 is a section of cutter through line A B.

C is the tube or barrel, into the lower end of which the tubular cutter D is screwed. This cutter has four vertical slots or openings *a*, forming the end of the cutter into four distinct cutting edges. The centerer E is placed inside the tube or barrel C from the top side, the shoulder *b*, formed on the exterior of the center abutting upon or fitting a corresponding rim *c* inside said tube or barrel, the bottom point of said center projecting beyond the face of cutter. The spiral spring F (see Fig. 2) is then placed inside the tube or barrel C above the said center.

The upper and larger part of the centerer E has a vertical groove (shown by dotted lines) into which the end of a screw *d* is inserted through the tube or barrel C to prevent the said center turning independently of the cutter during its action.

The upper end of the tube or barrel C is screwed into the socket G, a flange being formed on said tube or barrel to make a butt-joint. This socket has a tapered stem *e* fitting the machine which operates the tool.

The socket G is made detachable to enable the center E and spiral spring F to be inserted in the tube or barrel C, and also that sockets having different-sized stems to suit different machines may be used.

It will be readily seen that when the pressure is applied by the machine to which the tool is attached the spiral spring F allows the center E to recede until the face of the cutter D comes in contact with the plate to be cut and also enables the said center to support the said cutter during the whole process of cutting.

The improved cutter can of course be made different sizes, according to requirements.

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

The combination of the barrel interiorly screw-threaded for a suitable distance at its lower end and exteriorly screw-threaded for a suitable distance at its upper end and formed at a suitable distance from its lower end with an interior annular shoulder *c*, the removable socket G having stem *e*, the cutter fitting into said lower end and formed with the cutting edges and intermediate spaces, the cen-

terer having an annular shoulder similar to shoulder *c*, and resting upon or supported by the latter shoulder, the said centerer being formed with the vertical groove, the screw or pin entering the groove from the side of the barrel, and the spring tending to force the centerer outwardly, substantially as described.

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

THOMAS WILLIAM FELTON.

Witnesses:

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GEORGE HART.