

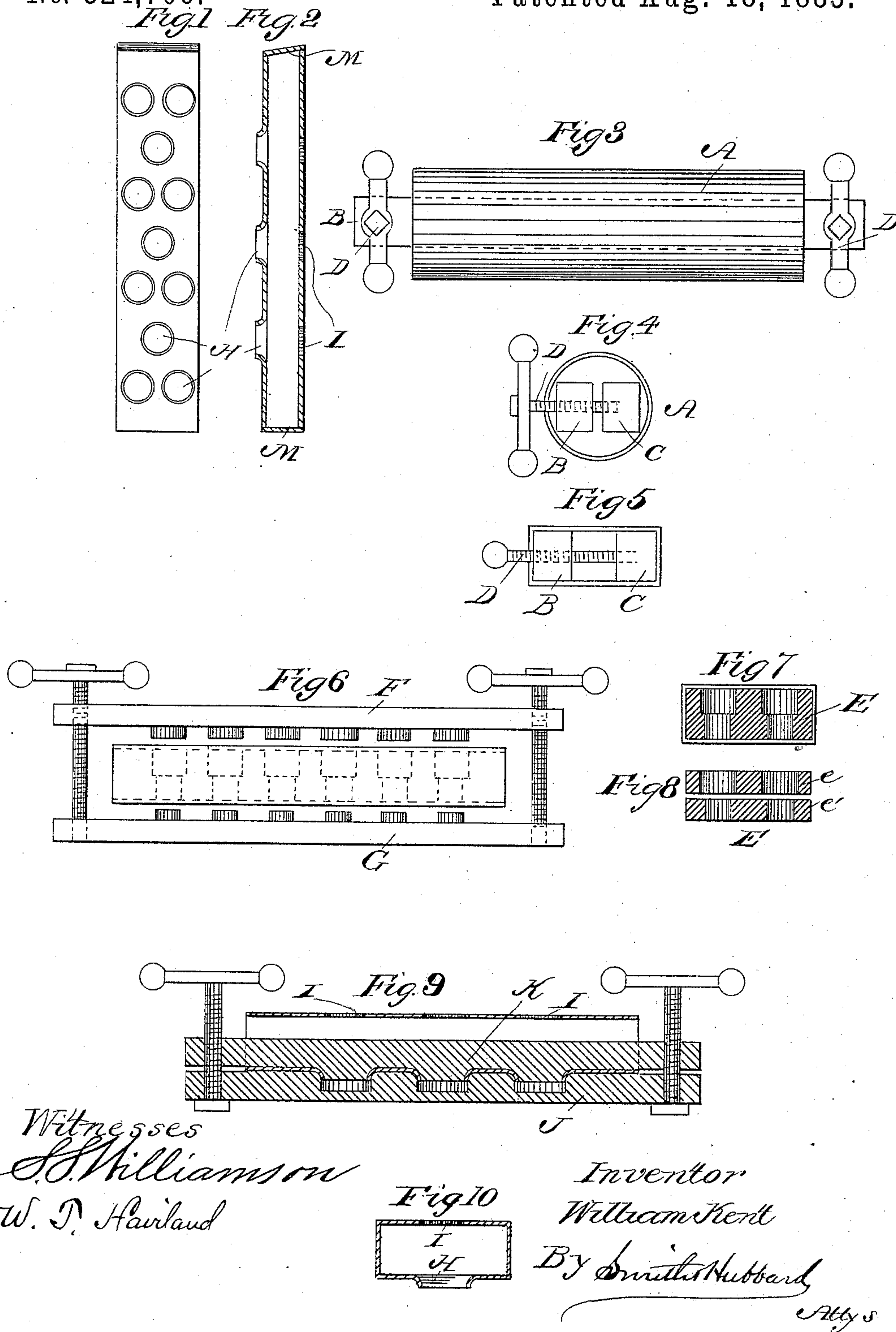
(No Model.)

W. KENT.

METHOD OF MAKING HEADERS FOR WATER TUBE BOILERS.

No. 324,706.

Patented Aug. 18, 1885.



UNITED STATES PATENT OFFICE.

WILLIAM KENT, OF JERSEY CITY, NEW JERSEY.

METHOD OF MAKING HEADERS FOR WATER-TUBE BOILERS.

SPECIFICATION forming part of Letters Patent No. 324,706, dated August 18, 1885.

Application filed October 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KENT, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in the Method of Manufacturing Headers for Water-Tube Boilers; 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.

My invention relates to certain new and useful improvements in the process of manufacturing "headers" for water-tube boilers, and has for its object to simplify and cheapen the same; and with these ends in view my invention consists in the method hereinafter in detail explained, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may fully understand its operation, I will proceed to describe the same in detail, referring by letter to the accompanying drawings, forming a part of this specification.

Figure 1 is a front view of a completed header; Fig. 2, a central vertical section of the same, which is formed from a wrought-iron or steel tube, as hereinafter explained; Fig. 3, a side elevation showing a tube with the mandrels inserted; Fig. 4, an end view of the same; Fig. 5, an end view showing the shape of the tube and the position of the mandrels after the latter have been spread to their limit; Fig. 6, a plan view showing the rectangular tube in position between the male cutting-dies, the female dies being shown inside the tube by dotted lines; Fig. 7, a cross-section taken through one of the female dies; Fig. 8, a similar view showing a modified form of dies made in two parts; Fig. 9, a central longitudinal section showing the hand-hole dies operating upon the rectangular tube to form the seats, and Fig. 10 a cross-section of the tube taken through one of the completed hand-holes.

Similar letters denote like parts in the several figures of the drawings.

I first take a tube, A, of the desired length

and circumference, and pass two mandrels, B C, through it, as seen in Figs. 3 and 4, when, by means of screws D or other device, the mandrels are spread apart, causing the tube to take the shape shown in Fig. 5, approximately rectangular in cross-section, when the mandrels are withdrawn, which leaves the header ready for the second operation, which is as follows:

A multiple die, E, of a single bar of metal, as shown in cross-section, Fig. 7, is placed within the rectangular header, when two series of male dies, F G, are forced from either side into the female multiple die E, thus cutting the holes H I, the latter of which are preferably smaller than the former.

For convenience the multiple die E may be formed in two sections, *e e'*, Fig. 8, and held apart and tight in the header by means of wedges or the like. This will enable them to be more readily removed after the operation of punching the holes.

The last operation, which is raising the hand-hole seats, is accomplished by placing the header upon a female multiple die, J, Fig. 9, and placing inside of said header a multiple male die, K, and forcing the latter into the former, thus raising the seats, as seen in Figs. 2, 9, and 10.

The ends of the header are closed by caps M, riveted or otherwise secured thereto, which completes the header as seen in Figs. 1 and 2.

Having thus described my invention, what I claim as new and useful is—

1. The method or process of making a header for a water-tube boiler, the same consisting in first cutting the holes in two opposite sides of a tube and then pressing the metal surrounding the hand-holes into the desired form to constitute raised seats for hand-hole plates, substantially as set forth.

2. The method or process of forming the raised hand-hole seats for a header of a water-tube boiler, consisting in placing the header with the hand-hole side on a suitably-formed mandrel or die having depressions corresponding to the seats, and, by means of formers or male dies attached to a block which is placed inside of the header, pressing the metal surrounding the hand-holes into the desired form

to constitute raised seats for hand-hole plates, substantially as set forth.

3. The method of making a tube approximately rectangular in cross-section, by inserting two mandrels rectangular in cross-section
5 inside of the tube, and forcing them apart by the action of screws passed through the extremities thereof, substantially as set forth.

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

WILLIAM KENT.

Witnesses:

S. S. WILLIAMSON,
H. T. SHELTON, Jr.