(No Model.) 2 Sheets—Sheet 1.

W. S. SHIPE.

MACHINE FOR HEADING WATER BOILERS.

No. 472,957. Patented Apr. 12, 1892.

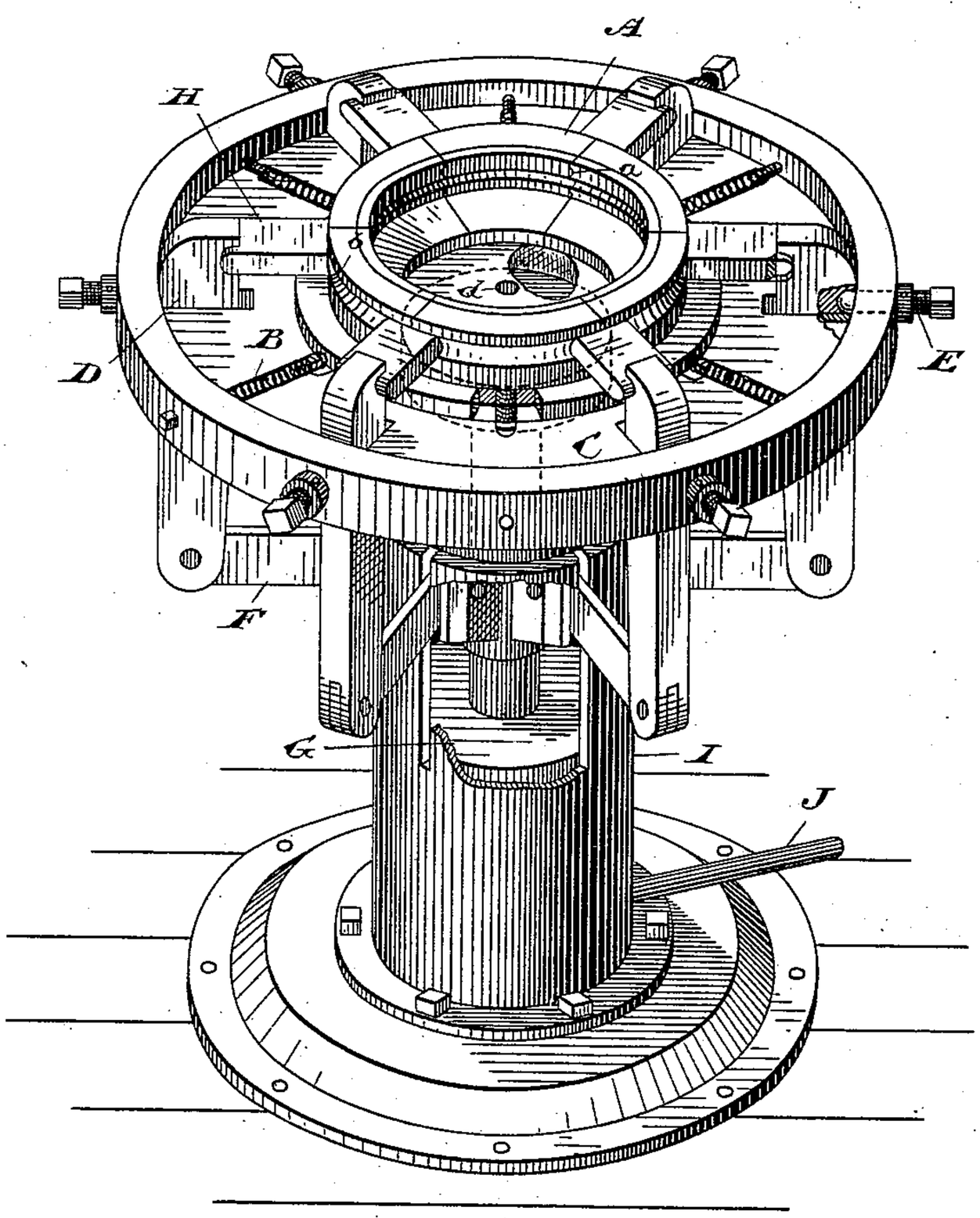

Fig. 1

Witnesses

L. Edw. Maybee

W. G. McMillan.

Inventor

Walter S. Shipe

by Donald C. Ridout & Co.

Attys.

(No Model.) 2 Sheets—Sheet 2.

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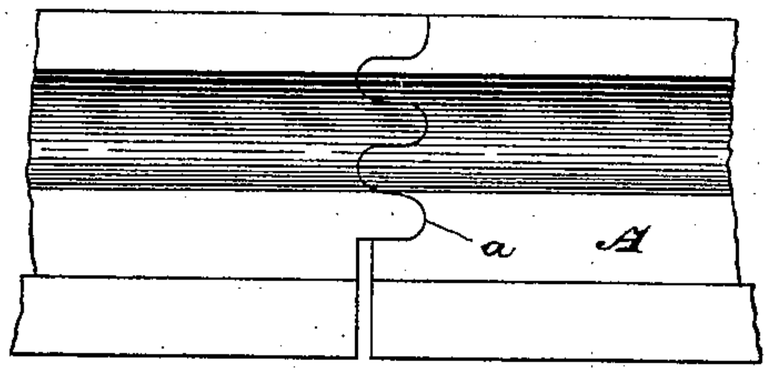

Fig. 3

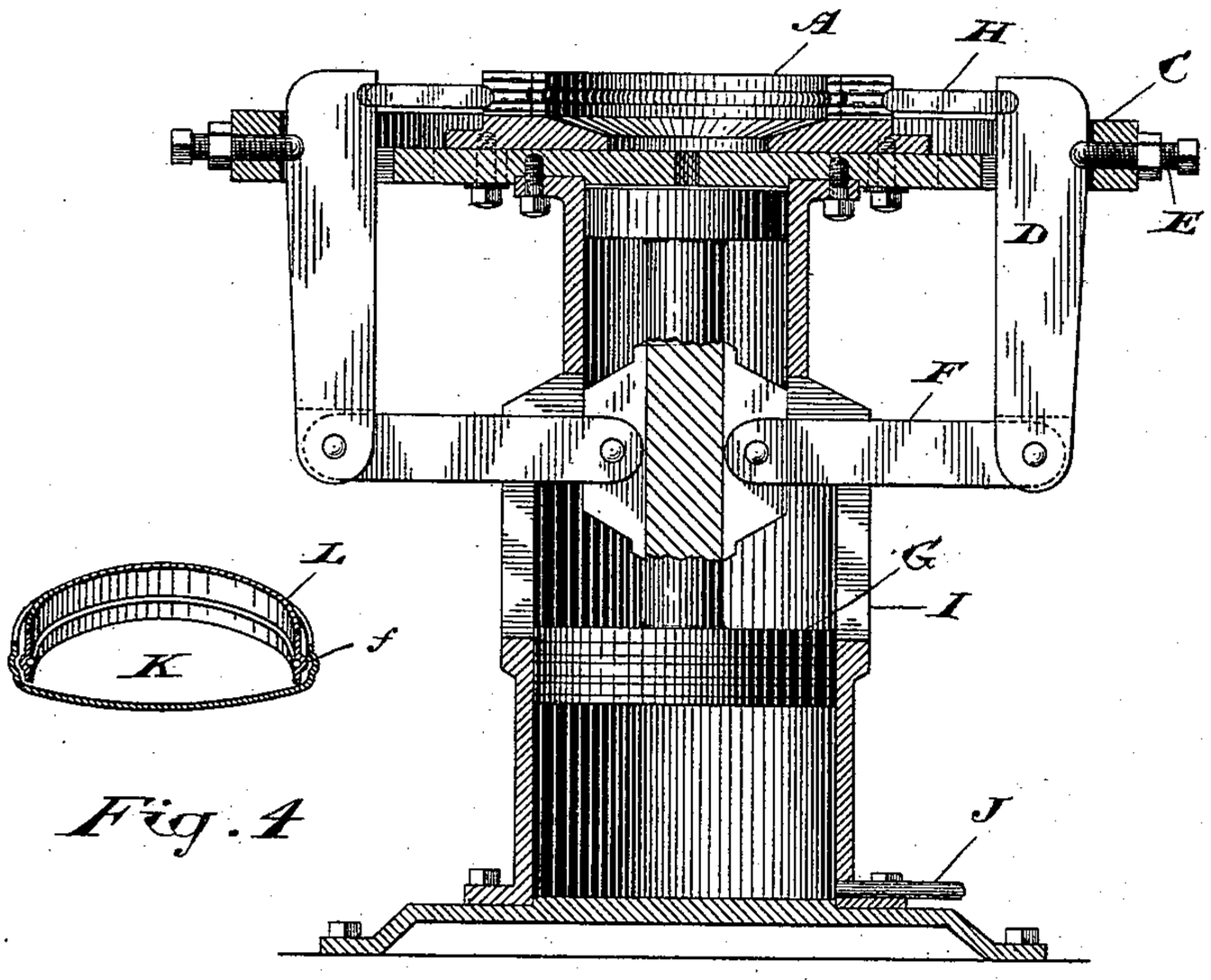

Fig. 4

Fig. 2

Witnesses

S. Edw. Maybee

W. G. McMillan.

Inventor

Walter S. Shipe

by Donald C. Ridout & Co.

Attys.

UNITED STATES PATENT OFFICE.

WALTER S. SHIPE, OF TORONTO, CANADA, ASSIGNOR TO JAMES MORRISON, OF SAME PLACE.

MACHINE FOR HEADING WATER-BOILERS.

SPECIFICATION forming part of Letters Patent No. 472,957, dated April 12, 1892.

Application filed April 27, 1891. Serial No. 390,619. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT SHIPE, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented a certain new and Improved Machine for Heading Water-Boilers and other Cylindrical Vessels, of which the following is a specification.

The object of the invention is to design a machine by which the head or heads of a water-boiler or other cylindrical vessel may be quickly and securely fixed in position; and it consists, essentially, of a strongly-formed ring built in sections and manipulated by pivoted arms suitably connected to a steam or water piston, all the parts being arranged in such a manner that when the flanged head is placed within the segment-ring and the end of the cylinder placed inside of the flanged head the movement of the piston shall cause the segments forming the ring to come together and compress the flange of the head tightly against the periphery of the cylinder end, the head being hot during the time that it is being compressed, after which it is permitted to cool and shrink more closely to its cylinder, substantially as hereinafter more particularly explained.

Figure 1 is a perspective view of my improved heading-machine, the position of the parts being such as they will be in at the time that the cylinder-head has been compressed into position. Fig. 2 is a sectional elevation of the heading-machine. Fig. 3 is an enlarged detail showing the form of connection between the segments of the ring. Fig. 4 is a perspective detail showing a portion of a cylinder-head and cylinder.

In the drawings, A represents a strongly-built ring formed in segments connected together, as indicated in Fig. 3. Each segment is connected by a spring B to the annular flange of the table C. Each spring is designed to draw its segment outwardly, so as to enlarge the ring A sufficiently to receive the head of the cylinder, which enlargement is not sufficient to withdraw the fingers *a* from mesh with each other. There are a series of arms or levers D arranged around the inside of the ring C and supported on the end of the set-screws E, screwed through the ring C, all these parts being held in place by the tension of the spring B, as indicated. The bottom end of each arm or lever D is pivoted on a link F, which connects it to the double-ended piston or plunger G. A block H fits into a notch formed near the end of each arm or lever D, the other end of the said block fitting into an annular groove *b* made around the ring A, each block H fitting over the joint formed between the sections. Each of the links F passes through a longitudinal slot made through the cylinder I.

J is a pipe through which the steam or water to operate the piston G is admitted. A hole *d* is made through the table C into the cylinder I, which hole permits the air to escape when the piston G is forced up, but so slowly that an air-cushion is formed above the piston G to prevent it moving too quickly. As shown in the drawings, the pressure is supposed to be upon the bottom side of the piston G. When that pressure is removed, the springs B draw apart the segments of the ring A, leaving the said ring sufficiently large to receive the head of the cylinder.

The machine just described has been specially constructed by me for the purpose of securing the heads of a hot-water boiler which I have recently invented; but of course I do not wish to confine myself to the use of the said machine for the purpose of constructing this particular boiler. In the boiler I refer to I roll a groove on the inside of the flange of the head K and form a bead around the outside of the cylinder-head to correspond with the groove formed around the inside of the flange of the said head. I make the head K sufficiently large in diameter, so that the bead *f*, formed around the end of the cylinder L, will enter the head K until the bead *f* is opposite to the annular groove formed around the flange of the said head. Pressure is then turned on through the pipe I, the piston G forced up through the links F, the upward motion of the piston G causing the arms or levers D to rock on their pivots formed by the set-screws E and simultaneously press all the segments of the ring A inwardly, forcing the segment of the said ring against the flange of the head K, compressing the said flange tightly against the cylinder L, the bead *f* on the said

cylinder being forced into the groove formed around the interior of the said head and the entire flange of the said head compressed so as to hug the cylinder tightly. As the head cools, it of course shrinks tighter onto the cylinder.

With the view of adapting my machine for the heading of boilers of different diameters, I make the ring A sufficiently large for the largest class of boilers I intend to make. I use reducing-rings, placing them inside of the ring A proper to make its inner diameter the proper size. It will be seen on examining Fig. 2 that the opposite links F are so connected with the piston as to form a toggle-joint, and thus great power is exerted on the levers D and segments of the ring A.

What I claim as my invention is—

1. A ring made in segments, the ends of each segment having fingers formed on them to interlock with the corresponding fingers formed on the adjacent segments, in combination with mechanism arranged to force the said segments together to reduce the size of the ring and compress the head onto the cylinder, substantially as and for the purpose specified.

2. A ring A, made in segments and supported on the table C, the said segments being held apart by the springs B, the arms or levers D, pivoted each on the end of a set-screw E and connected by the block H to the ring A, in combination with the link F, pivoted on the end of the arm or lever D and connected to the piston G, substantially as and for the purpose specified.

3. A ring A, made in segments, each segment having fingers *a* formed on its ends and supported on the table C, the said segments being held apart by the springs B, the arms or levers D, pivoted each on the end of a set-screw E and connected by the block H to the ring A, in combination with the link F, pivoted on the end of the arm or lever D and connected to the double-ended piston G, fitted into the cylinder having an inlet-pipe J at one end and the hole *d* at its other end, substantially as and for the purpose specified.

Toronto, April 16, 1891.

WALTER S. SHIPE.

In presence of—

CHARLES C. BALDWIN,

JOHN E. CAMERON.