

No. 721,183.

PATENTED FEB. 24, 1903.

C. W. HARVEY.
HEADER.

APPLICATION FILED JULY 23, 1902.

NO MODEL.

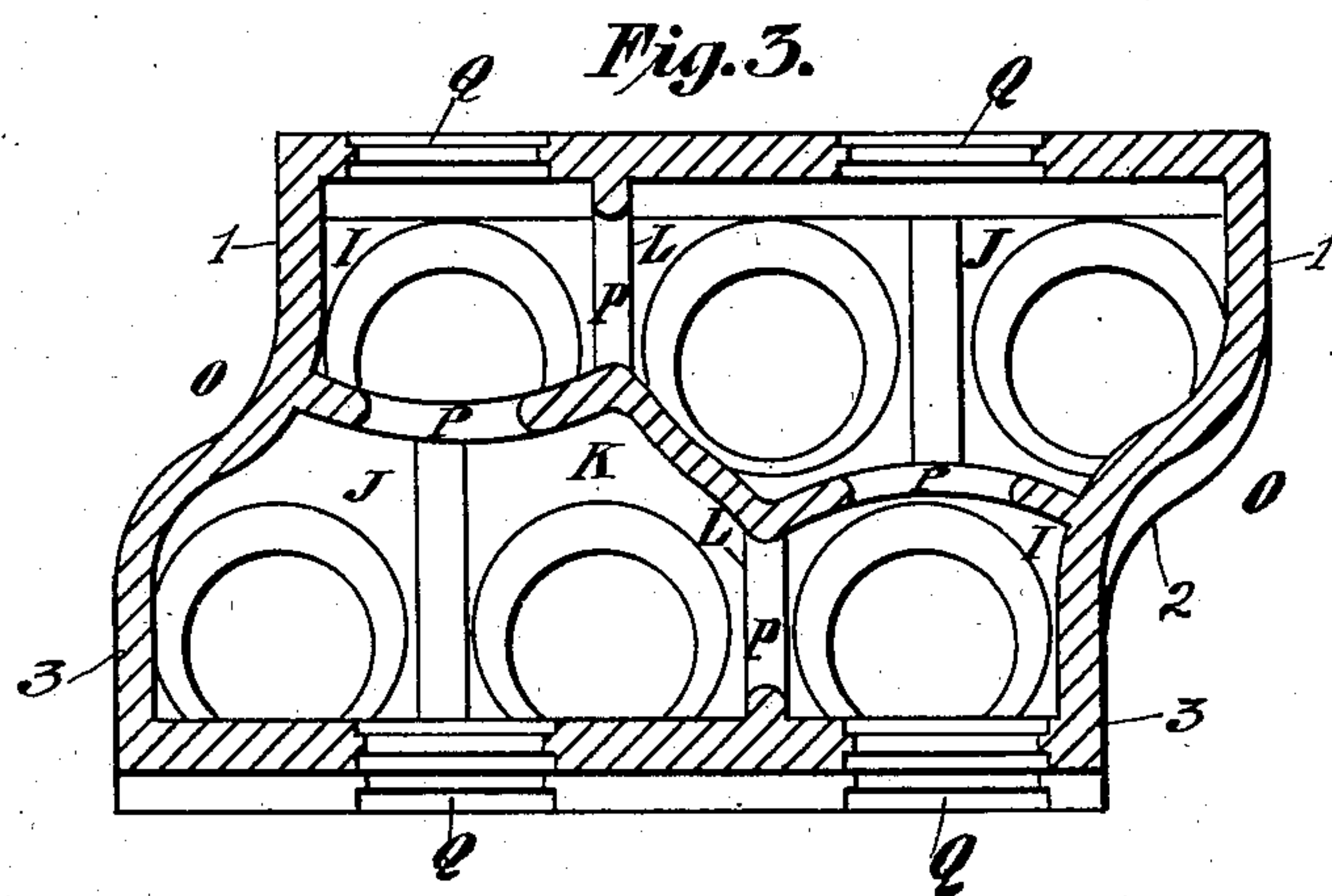
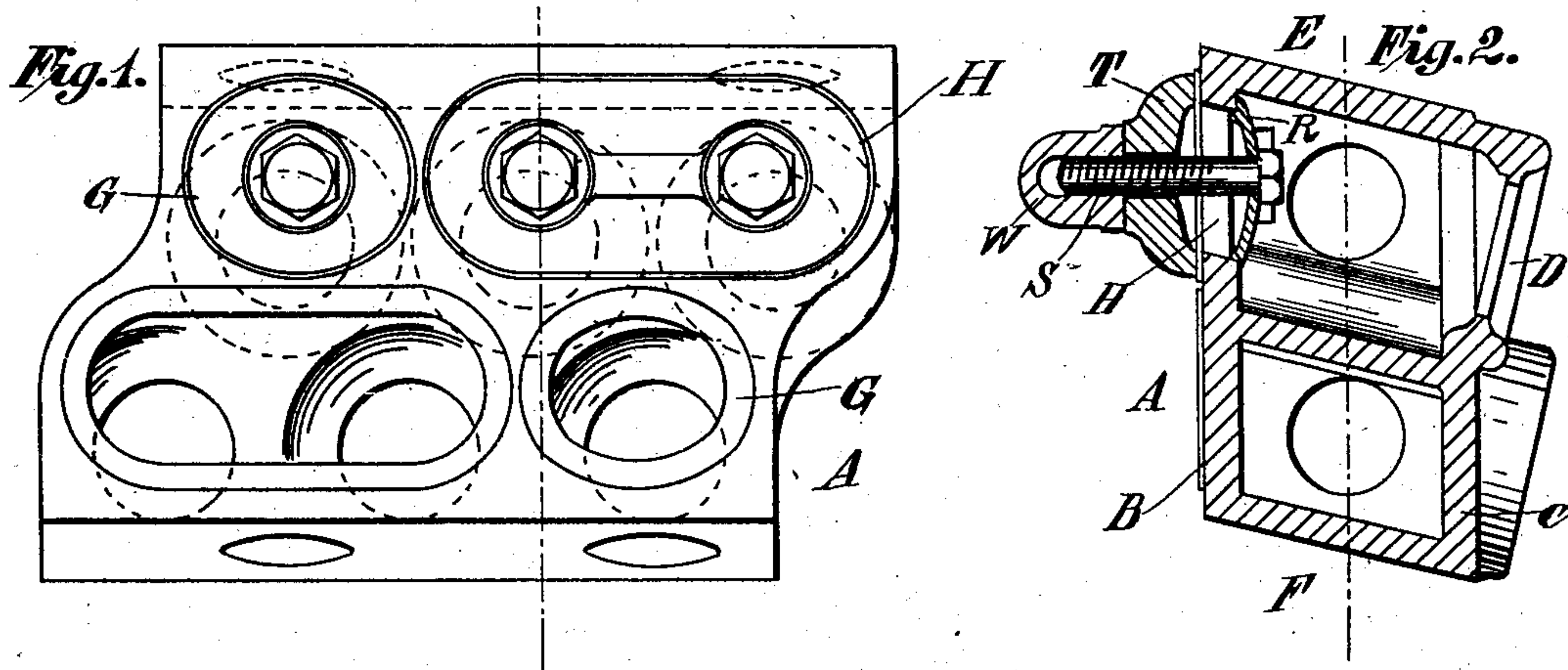
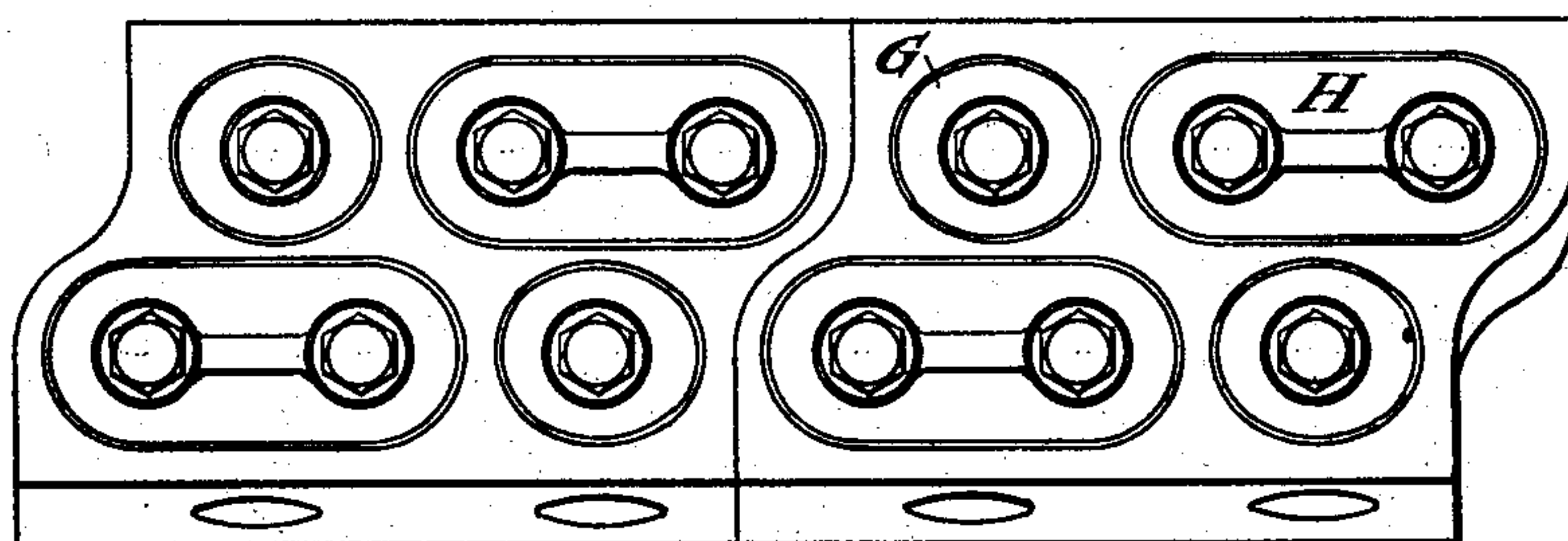


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES W. HARVEY, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO
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HEADER.

SPECIFICATION forming part of Letters Patent No. 721,183, dated February 24, 1903.

Application filed July 23, 1902. Serial No. 116,679. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HARVEY, a citizen of the United States, residing at New Brunswick, in the State of New Jersey, have
5 invented certain new and useful Improvements in Headers, of which the following is a specification, accompanied by drawings.

My invention relates to headers for steam-boilers, and is more particularly an improve-
10 ment upon the header shown and described in United States Patent No. 405,739, granted June 25, 1889, to W. E. Kelly for a "Header for steam-boilers."

One of the objects of my invention is to enable a larger amount of horse-power to be
15 placed in less head-room than is possible with the header disclosed in the above patent.

Further objects of my invention will hereinafter appear; and to these ends my invention
20 consists in a header for carrying out the above objects constructed substantially as hereinafter fully described and shown in this specification and accompanying drawings, in which—

25 Figure 1 is a front view of a header embodying my invention. Fig. 2 is a transverse sectional elevation of the header, taken on the line 1 1 of Fig. 1. Fig. 3 is a longitudinal sectional elevation of the header, taken
30 on the line 2 2 of Fig. 2; and Fig. 4 shows a number of headers embodying my improvement fitted together.

Referring to the drawings, the header A is designed to stand vertically, and while its general construction and arrangement are very
35 similar to the header shown in United States Patent No. 405,739 by reason of the peculiar shape of the header A, made according to my invention, more power may be placed in less
40 space. The header A in this instance has substantially parallel front and rear sides B and C, one of which, as the side C or back, is provided with a suitable number of rows of holes
45 D for tubes, in this instance two rows of holes being shown, and in order to obtain the greatest number of tubes in the smallest possible space the holes D of adjacent rows are staggered relatively to each other, or, in other words, arranged so that alternate rows of

tubes will be in line and intermediate rows
50 of tubes will be opposite the spaces between the others. The top E and bottom F of the header instead of being arranged substantially perpendicular to the sides B and C are shown as extending obliquely thereto to form
55 obtuse and acute angles with the respective sides. Therefore when the headers are set up and assembled vertically the tops and bottoms thereof are sloping and extend at an inclination to the horizontal. Preferably the tops
60 and bottoms E and F are substantially parallel to each other, as shown in the drawings. By this arrangement it will be seen that while the headers may be arranged vertically the boiler-tubes may be arranged at the usual
65 inclination, and thus a greater heating-surface is permitted with less head-room than ordinarily.

The side or front B of the header is provided with apertures G and H to afford free
70 access to the interior of the header and to the tube-holes D. As shown in the drawings, the apertures G and H are elliptical in shape and arranged opposite the tube-holes, the longer apertures H being diagonally opposite
75 each other, while the smaller apertures G are likewise diagonally opposite each other.

The header is divided into several compartments or spaces I I and J J by means of partitions, there being a partition K extending
80 horizontally from end to end of the header between the rows of tube-holes, while substantially vertical partitions L divide the interior of the header into the compartments or spaces,
85 which, as shown in the drawings, are angular in shape. The angularity of the walls of the spaces or compartments I I and J J is formed by the partitions within the header and by the conformation of the header ends O, which, as shown, are not continuously vertical from
90 top to bottom, but the lower portion of each end O is out of line with the upper part. In this instance each end O is composed of an upper portion 1, an inclined portion 2, and a lower vertical portion 3, the inclined portions
95 2 being preferably rounded where they join the vertical portions 1 and 3. The header may therefore be said to have inclined sides,

for it will not have the whole of either of its sides in one vertical plane.

The partitions K and L within the header, as described, divide the same into the larger angular compartments J, which are arranged obliquely or diagonally to each other, while the smaller compartments I are nearly rectangular in shape and are also arranged obliquely or diagonally to each other within the header. The compartments within the header communicate with each other, as by means of openings P within the partitions K and L, so that free circulation may be had between the compartments in each header. Each of the larger compartments J embraces one of the larger and longer elliptical openings H, while each of the smaller compartments I embraces one of the smaller elliptical openings G in the front of the header. The partitions K and L greatly strengthen and stay the header and, owing to their curved or irregular lines of direction as arranged within the header, prevent injury to the header during contraction or expansion. The top and bottom of the header are provided with holes Q, adapted to receive nipples for connecting one header with another next above or below, the nipples being extended into the holes Q.

The elliptical openings in the front of the header are provided with suitable removable covers, in this instance they being shown as inner plates R, through which suitable bolts S are passed, the said bolts also passing through outer plates T, the inner and outer plates R and T being secured over the openings by means of suitable nuts W.

According to my construction of header the headers may be arranged vertically and not at an angle to the horizontal, thereby permitting a greater aggregate length of boiler-tubing, and therefore more heating-surface, to be arranged within a given head-space. A header constructed according to my invention is also light, strong, and compact, permitting free circulation within the same and admitting of the ready assemblage of a num-

ber of headers to form one complete structure.

Obviously my invention may be embodied in widely-varying forms, and

Therefore, without limiting myself to the construction shown and described nor enumerating equivalents, I claim and desire to obtain by Letters Patent the following:

1. A header having substantially parallel, vertical front and rear sides, the latter being provided with holes for tubes, and a top and bottom extending obliquely to said sides, substantially as set forth.

2. A header having substantially parallel vertical sides one of which is provided with rows of holes for tubes, a partition extending horizontally between the rows of holes, and a top and bottom extending obliquely to said sides, substantially as and for the purposes set forth.

3. A header having substantially parallel vertical sides and inclined ends, angular spaces formed within the same by partitions, one of said sides being provided with holes for tubes, and a top and bottom extending obliquely to the sides, substantially as and for the purposes set forth.

4. A header having substantially parallel vertical sides and inclined ends, one of the sides being provided with rows of holes for tubes, the holes of each row being staggered relatively to each other, and the other side having apertures or hand-holes provided with removable covers, the top and bottom of the header being arranged substantially parallel to each other and extending obliquely to the sides, substantially as and for the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES W. HARVEY.

Witnesses:

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W. C. HORNER.