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Dan^l. Sullivan

Imp'd. Hand Hole Stopper

PATENTED JUL 25 1871

Fig. 1.

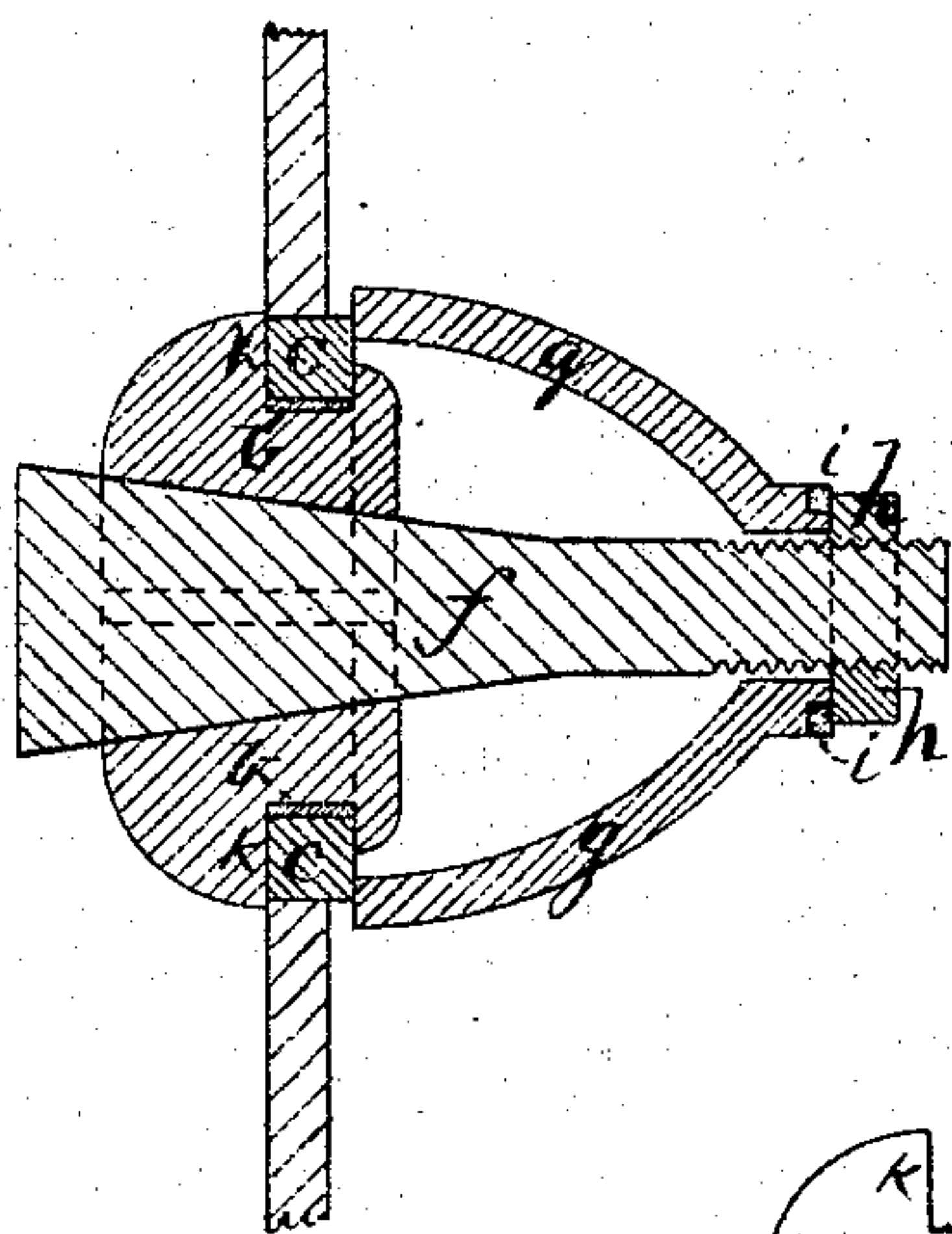
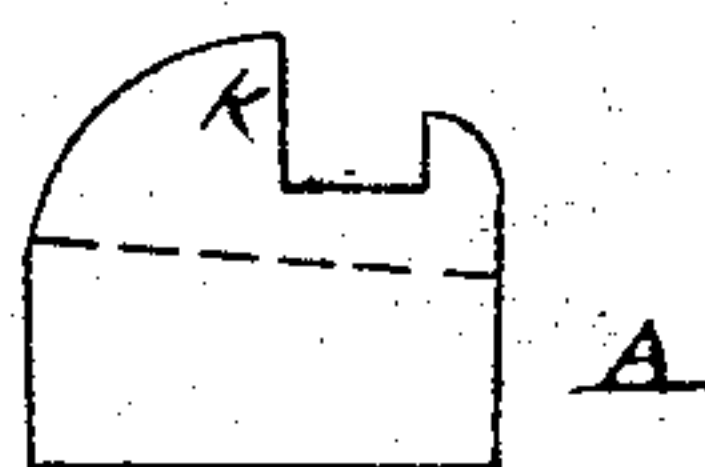
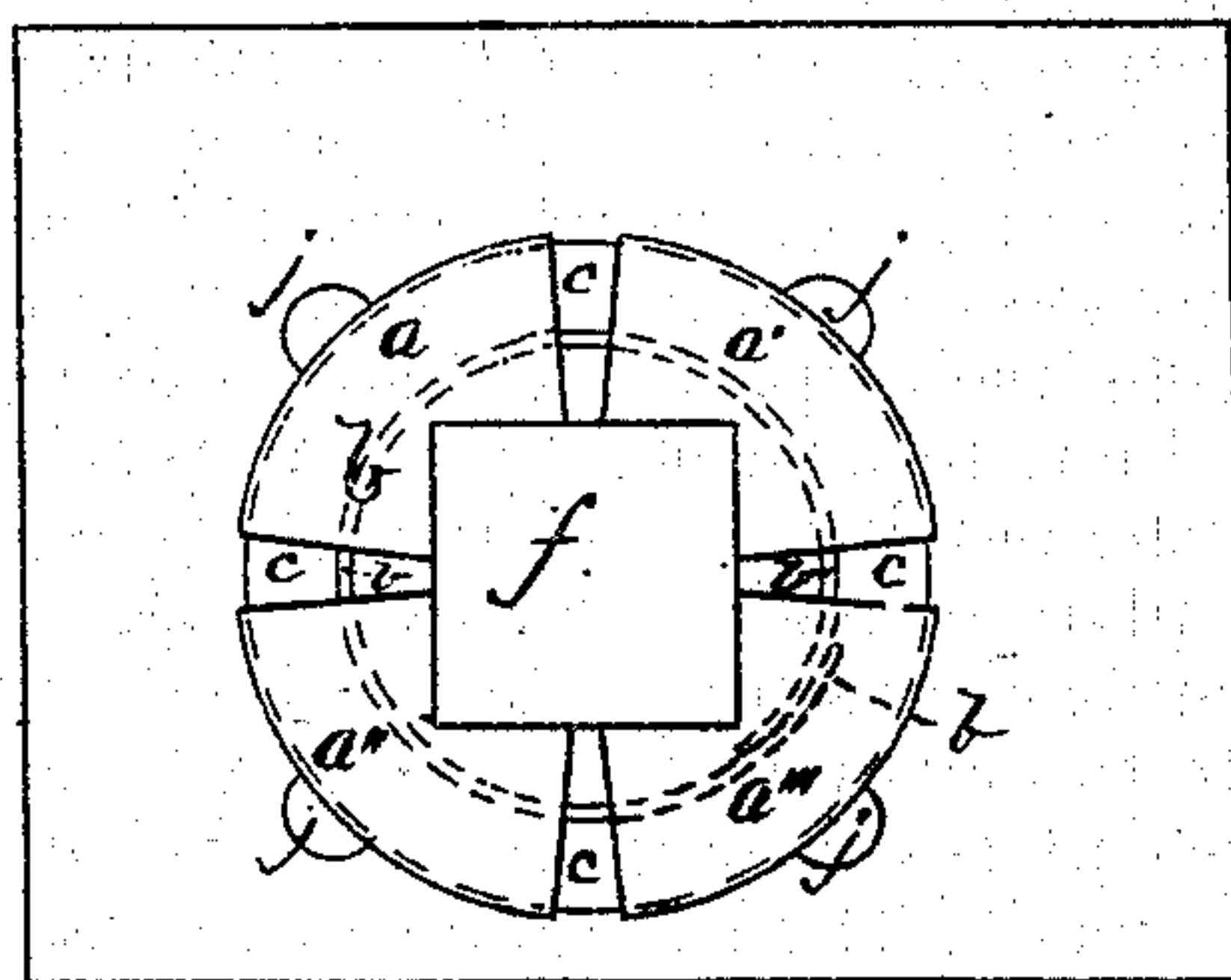


Fig. 2.



Witness

John R. Mason
John J. Chilton

Inventor

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UNITED STATES PATENT OFFICE.

DANIEL SULLIVAN, OF BANGOR, MAINE.

IMPROVEMENT IN HAND-HOLE STOPPERS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 117,480, dated July 25, 1871.

To all whom it may concern:

Be it known that I, DANIEL SULLIVAN, of Bangor, in the county of Penobscot and State of Maine, have invented a new and useful Improved Hand-Hole Stopper; and I hereby declare the following to be a full, clear, and exact description of the same, which will enable others to make and use my invention, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 shows a section of my invention; Fig. 2, view of same from the inside of the boiler; A, a detail.

Same letters show like parts.

My invention relates to a device for filling or stopping up the "hand-holes" of steam-boilers. These holes, as now made, are oval or oblong in form, and are stopped by a plate somewhat larger than the hole itself applied to the inside of the boiler and kept in position by a screw-bolt and crab upon the outside. The joint between the boiler and plate is made tight by the use of red lead and rubber-packing. This method is very injurious to the metal of the boiler, and the iron around these plates often gives out while the rest is perfectly good. The holes have to be made oblong in shape in order to receive a plate of sufficient size. In my improved device the hole may be made round, and thus be more easily cut. The packing, which consists of rubber, doing away with red lead, bears upon the edge of the hole instead of upon the back of the boiler-plate surrounding it.

By reference to the drawing the nature of my invention will be understood. The stopper is constructed in four parts, $a\ a'\ a''\ a'''$, each forming the fourth part of a circle, so that when united they fill the round hand-hole of the boiler. A hole is cut through the center of the circle thus formed, its sides converging toward the outside of the boiler, and a groove is formed around its circumference, in which is placed a spring, b , strong enough to retain the parts $a\ a'\ a''\ a'''$ in place, but elastic enough to allow of their expansion. It also serves to keep the rubber packing c in position and to prevent its forcing itself between the sections $a\ a'\ a''\ a'''$. This packing is also placed in the before-mentioned

groove, outside of the spring b . Through the central hole is put the wedge-shaped bolt f , passing through the cup g to the nut h which screws upon said bolt. The cup g is circular in form, and presses upon the edge of the rubber packing, as shown. Upon its smaller end is the rubber packing-ring i , making a tight joint between the cup and nut. Lips $j\ j\ j\ j$ may also be placed upon the inside of the stopper, as shown in Fig. 2, to assist in resisting the outward pressure of the steam.

The method of using my device is as follows: The wedge-shaped bolt f is partially withdrawn from the hole in the stopper, allowing the spring b to draw the parts together, reducing their size so as to allow them to pass into the hand-hole of the boiler. The stopper is then drawn out till the inner lip is even with the inside surface of the boiler, as shown in Fig. 1, the cup g permitting the threaded end of the bolt to pass through the hole in its smaller end. The nut h is then screwed tightly upon the bolt, drawing its wedge-shaped end into the hole in the stopper, and expanding its parts $a\ a'\ a''\ a'''$, forcing the packing outward against the edges of the hole. It also presses the cup g inwardly, so that the rubber is held tightly between the surfaces of the flange k and cup-bottom. The steam that escapes through the spaces between the parts of the stopper finds its way into the cup g , and forcing it out carries with it the nut and wedge-shaped bolt, expanding the stopper still more.

The advantages of my device—the ease of its application, its simplicity, effectiveness, together with the fact of its obviating the necessity of using red lead—make it valuable as an improvement over the hand-hole plates now in use.

What I claim as my invention, and desire to secure by Letters Patent, is—

A hand-hole stopper, composed of the four parts $a\ a'\ a''\ a'''$, expansible by means of the wedge-shaped bolt f and nut h , and having the cup g and packing-rings c and i , substantially as and for the purposes set forth.

DANIEL SULLIVAN.

Witnesses:

JOHN H. RICKER,

WM. FRANKLIN SEAVEY.