(No Model.)

H. WILSON.

LOW WATER ALARM.

No. 326,370. Patented Sept. 15, 1885.

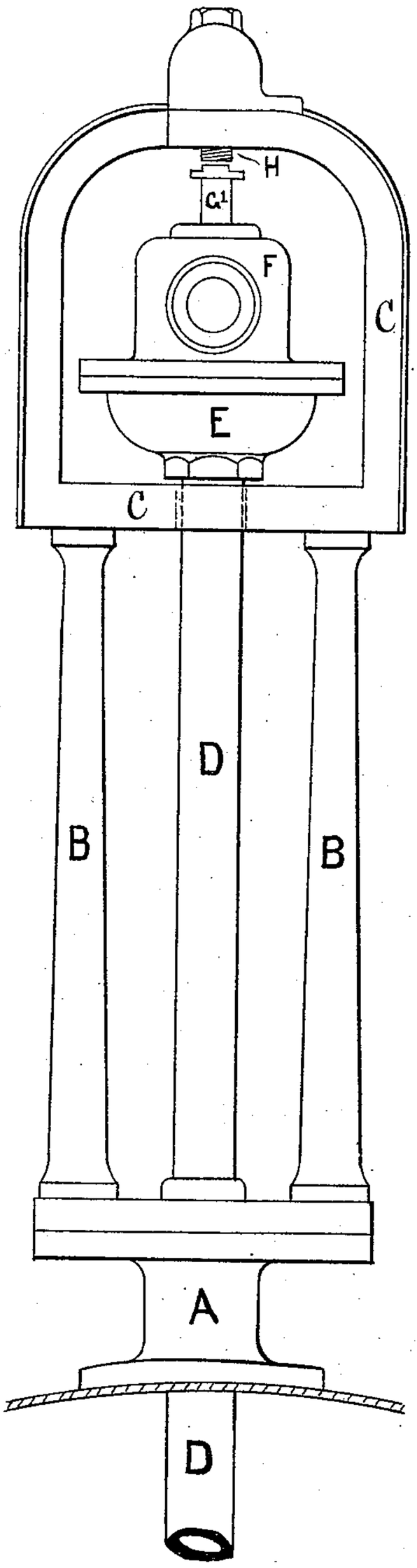

FIG. 1.

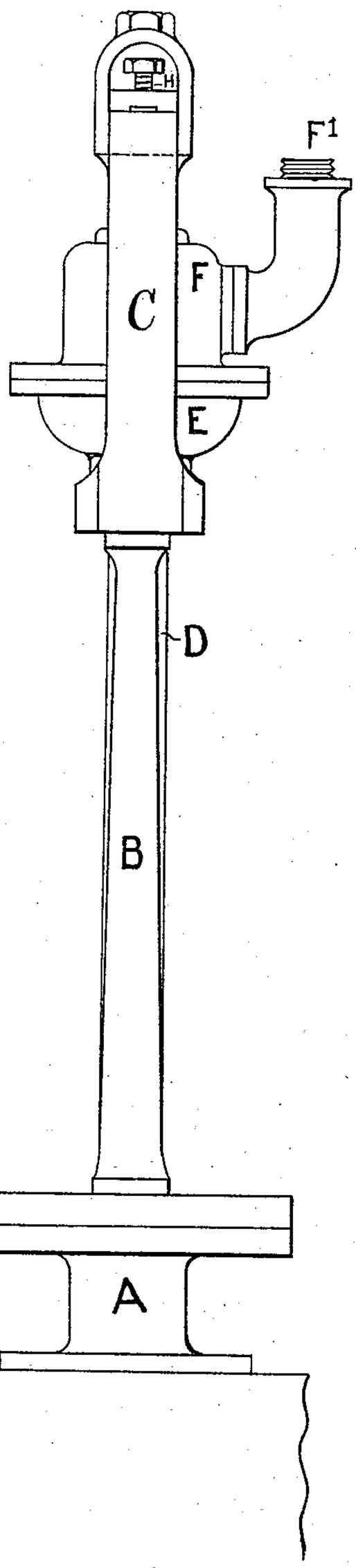

FIG. 2.

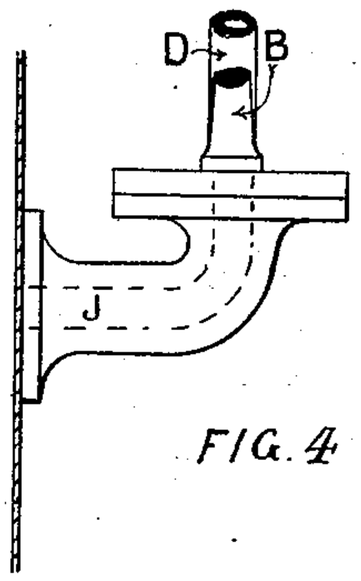

FIG. 4

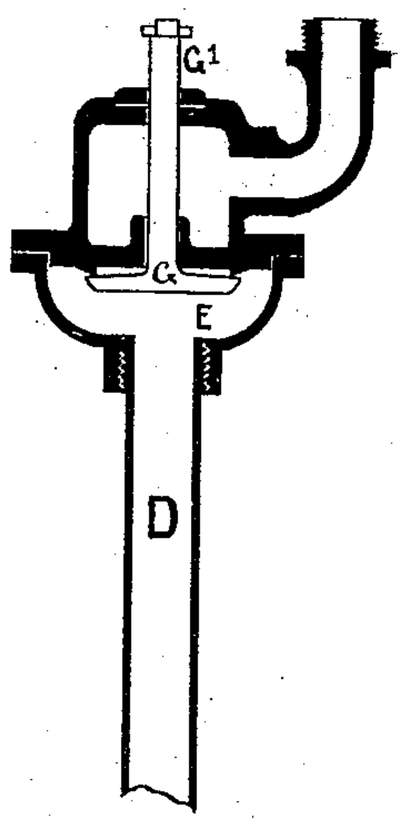

FIG. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

HUDSON WILSON, OF BRADFORD, COUNTY OF YORK, ENGLAND.

LOW-WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 326,370, dated September 15, 1885.

Application filed June 3, 1885. (No model.) Patented in England April 9, 1885, No. 4,395.

To all whom it may concern:

Be it known that I, HUDSON WILSON, a subject of the Queen of Great Britain and Ireland, and residing at Bradford, in the county of York, England, have invented certain Improvements in Low-Water Alarms, (for which I have obtained provisional protection in Great Britain, No. 4,395, dated April 9, 1885,) of which the following is a specification.

The object of this invention is to arrange an apparatus, independent of low-water safety-valves, that will detect and raise an alarm whenever the water-level in the boiler becomes lower than is desirable for the safe working of the boiler.

My apparatus may be fixed to the top or to the front plate of steam-boilers; and it consists in securing to the base-block columns that support a bridge-casting, and of screwing into the base-block a tube made of brass or other well-known alloy, which extends to below the water-level, and also through the bottom bar of the bridge-casting, where a bell-mouthed cup is attached thereto, to which is secured a metal dome or cover fitted with an inverted valve-stopper kept in contact with the seating by the pressure in the boiler forcing the water up the alloy tube, which, in consequence of having no circulation, is cool; but as soon as the level of the water is below the end of the tube steam rushes up, warms and expands the same until the end of valve-spindle comes into contact with a screw, which forces the valve open, and thereby allows steam to escape into the dome or cover, to which is attached an ordinary steam-whistle that calls the attendant's attention to the condition of the water-level in the boiler.

In the accompanying drawings, Figure 1 represents the front elevation of the apparatus fixed to the top of a steam-boiler. Fig. 2 is a side view of the same. Fig. 3 is an enlarged sectional detail through the dome or cover, showing the internal valve; and Fig. 4 is a detail showing the bottom block or base arranged to bolt to the front plate of a boiler.

By Figs. 1 and 2 the apparatus is represented as secured to the top of a boiler, in which the base-block is indicated by the letter A, and secured thereto are two columns, B B, supporting the bridge-casting C, through which the center tube, D, made of brass or other well-known alloy, is free to pass. This pipe D also extends inside the boiler to below the water-line. and to the upper end of the said pipe, within the bridge-casting, I attach the bell-mouthed cup E, to which is secured the dome or cover F, fitted with an inverted valve-stopper, G, that is kept in contact with the valve-facing by the pressure in the boiler forcing the water up the central tube, D, against the back of the valve-stopper G.

The water having no circulation in the central tube, D, it is therefore cool; but as soon as the water-level is below the bottom end of the tube the latter empties itself of water, steam taking its place, which warms and thereby causes the tube to expand, bringing the end of valve-spindle G′ in contact with an adjustable screw, H, thus stopping the advance of the valve, but allowing the tube to continue expanding, by which an opening is effected, thereby allowing steam to escape into the dome or cover F to an ordinary steam-whistle connected by pipes to the branch pipe F′, thus giving an audible alarm as to the condition of the water in the boiler.

When the apparatus is fixed to the front of the boiler, the base-block is arranged somewhat as shown by Fig. 4, and placed at such an elevation that when the center hole, J, is not covered with water the steam rushes in, expanding the center tube, G, and causing an alarm in the manner as before described.

I am aware that rods have been employed to open a valve by expansion to sound an alarm; but I claim as my invention—

The combination of the bridge C, carrying a stop, H, with an expansion-tube, D, carrying a valve, G, whose stem is adapted to come into contact with the said stop to move the valve from its seat on the expansion of the tube, as set forth.

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

HUDSON WILSON.

Witnesses:

E. CRITCHLEY,

JNO. GILL.