(No Model.) 2 Sheets—Sheet 1.

M. R. HUNT.

BLAST FURNACE.

No. 452,607. Patented May 19, 1891.

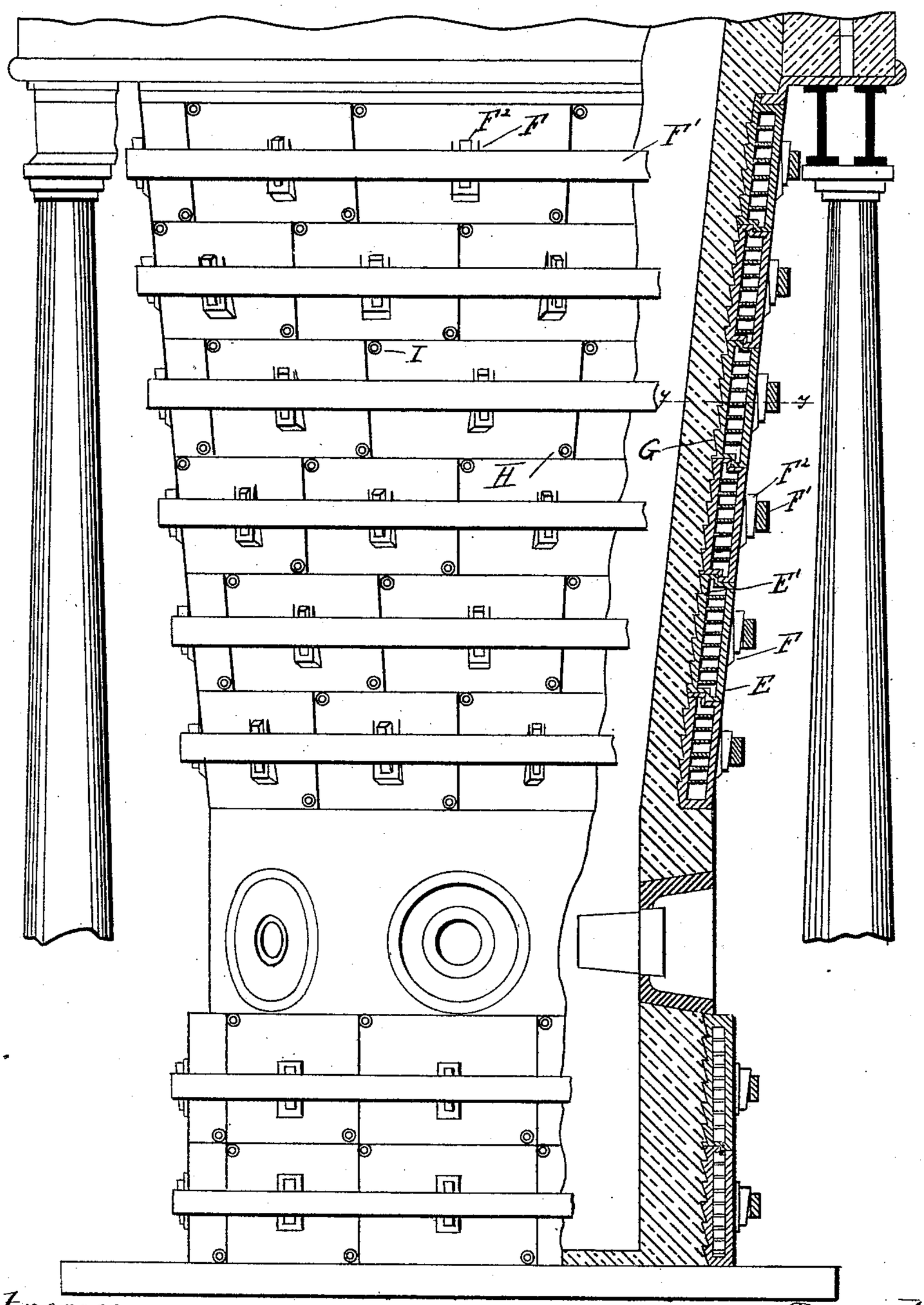

Fig. 1.

Witnesses
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Monit R. Hunt,
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His Attorney

(No Model.)

2 Sheets—Sheet 2.

M. R. HUNT.

BLAST FURNACE.

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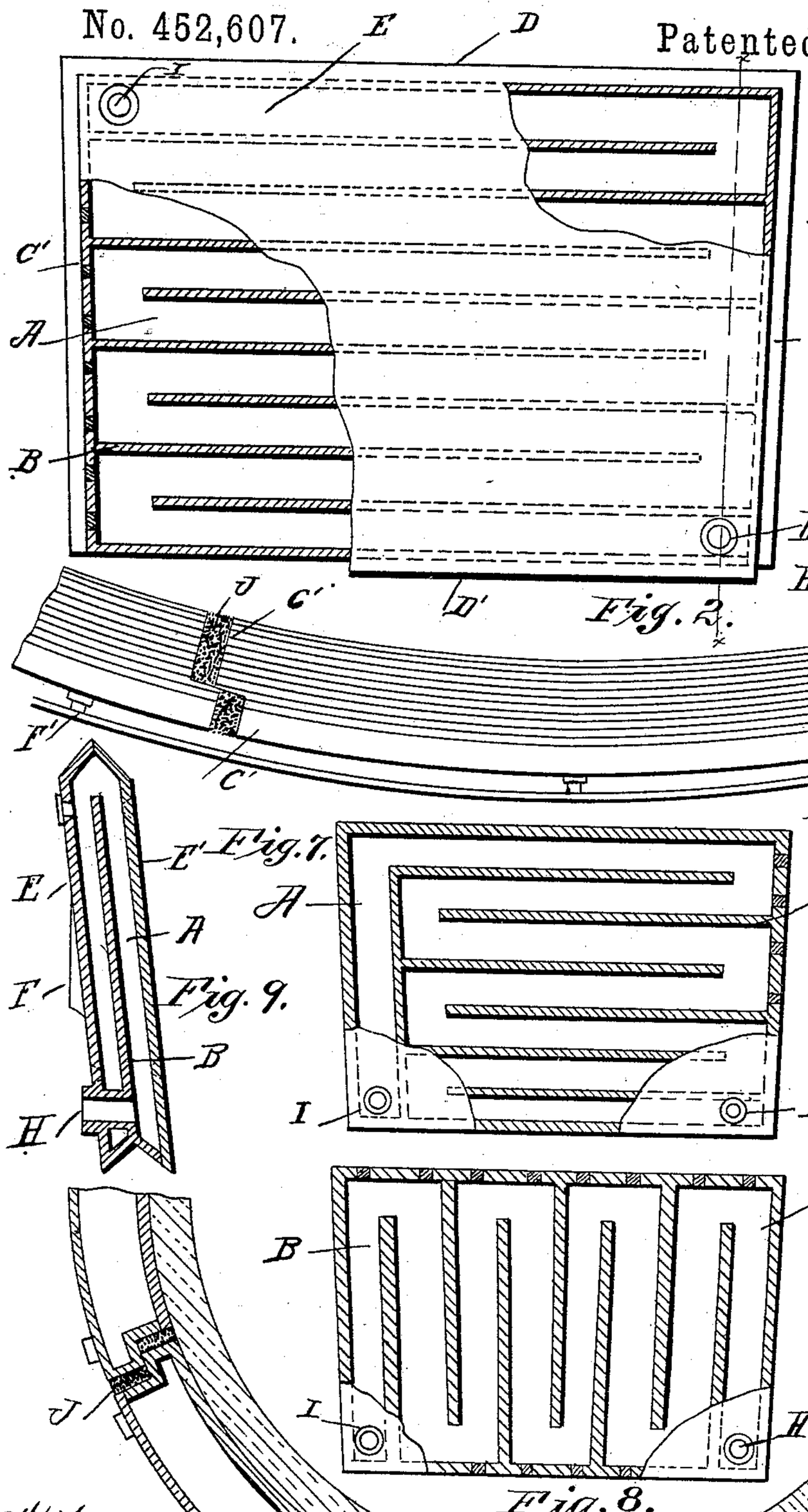

Fig. 2.

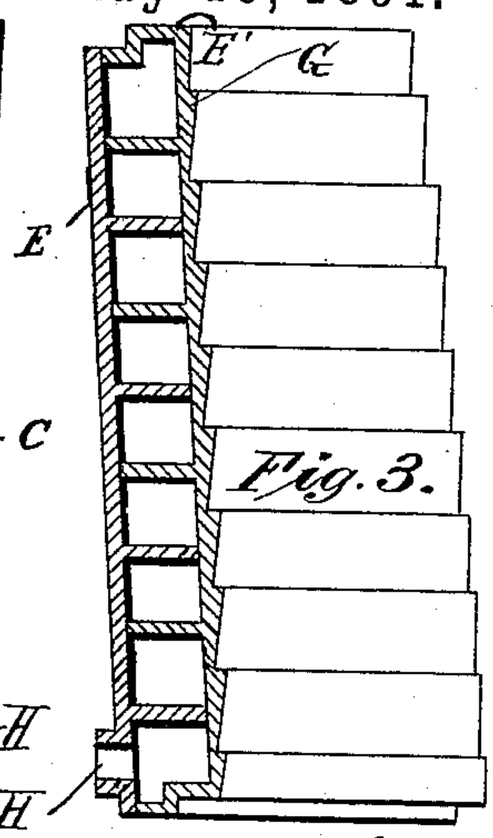

Fig. 3.

Fig. 4.

Fig. 9.

Fig. 7.

Fig. 6.

Fig. 8.

Fig. 5.

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UNITED STATES PATENT OFFICE.

MORRIS R. HUNT, OF ASHLAND, WISCONSIN.

BLAST-FURNACE.

SPECIFICATION forming part of Letters Patent No. 452,607, dated May 19, 1891.

Application filed January 27, 1890. Serial No. 338,321. (No model.)

To all whom it may concern:

Be it known that I, MORRIS R. HUNT, of Ashland, in the county of Ashland, State of Wisconsin, have invented a new and useful Improvement in Blast-Furnaces; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention has relation to improvements in bosh-jackets for blast-furnaces.

Heretofore in devices of this character operators have found it necessary to provide some device to overcome the destructive action of the intense heat and friction upon the brick-work of the bosh. If no cooling is used in the bosh, from one-half to three-fourths of the original masonry is cut away in a few weeks, except at tuyere-breasts or coolers, which are held intact by the cooling effect of water in the same. The increased diameter of the bosh above such water-cooled breasts forms a ledge or projection at the latter. This prevents the furnace from working regularly, (causing slipping,) and the fuel consumption is materially increased. To hold the original bosh-lines intact, various devices are used, one of the most popular being bosh-plates made of iron or bronze. These plates are made in sections of six or eight to a circle and built two or more feet apart. Years of experience with these plates have proved them not satisfactory, as the brick-work is only kept intact a few inches from the plate, and thereby an increased number of shells are formed, causing very unsatisfactory working of the furnace. If these plates are made of iron, speedy corrosion sets in, the pipe chokes with sediment or leaves, and the water must be turned off, leaving the plate dry in the furnace, as it is next to impossible to remove it for the purpose of replacing. Other devices used for the same purpose are iron or bronze bosh-boxes made circular or square in shape and formed so as to be removable when necessary. These boxes are placed apart horizontally about fifteen inches, and vertically about twenty-four inches. With these devices, also, more or less cutting out of the brick-work between the boxes takes place, increasing fuel consumption and shortening the life of furnaces. Both bosh-plates and bosh-boxes have a tendency to weaken the walls more or less. Various devices are used for cooling the bosh from the outside. Series of pipes running horizontally or vertically and held to the brick-work by bands or jackets have been used. Experience has also proven that these means are a failure for the purpose intended, as the cooling-surface of the pipe is so small as to cause the masonry of the furnace to frequently break through between the pipes. To replace a leaky or defective pipe when placed behind the jacket is a very difficult matter. Buckets or pockets secured to furnace-shells are occasionally used, and also means for spraying the shell with water. Unsatisfactory results, however, have been obtained with both. Spraying the masonry of the bosh is sometimes adopted; but that method is very objectionable, owing to the speedy destruction of brick, caused by moisture on outside and heat on inside.

It is the object of my invention to avoid the disadvantage pointed out and incident to the devices now ordinarily employed, and I propose to effectually cool the bosh from the outside and so arrange the structure as to add strength to the furnace and also increase its life.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a furnace provided with my invention. Fig. 2 is a detail view, partly in section, of one of the bosh-plates, showing the interior arrangement of the tortuous passages. Fig. 3 is a vertical section on the line *x x*, Fig. 2. Fig. 4 is a plan view of the connected plates, showing a luting placed between the meeting edges. Fig. 5 is a horizontal section. Fig. 6 is an end view of one of the plates; and Figs. 7, 8, and 9 are views of modified forms of the plates.

Like letters of reference refer to like parts throughout the several views.

A single plate of bosh-jacket is represented by Fig. 2 of the drawings. From this figure it will be seen that the plate consists of a hollow casting two inches thick, more or less, and provided with a series of water-ways A, formed by webs or partitions B, arranged intermediate the front and back portions of the plate, running horizontally, as in Fig. 1, vertically, as shown in Fig. 8, or both horizon-

(No Model.)

R. W. KYDD.

SNOW SKATE.

No. 452,608. Patented May 19, 1891.

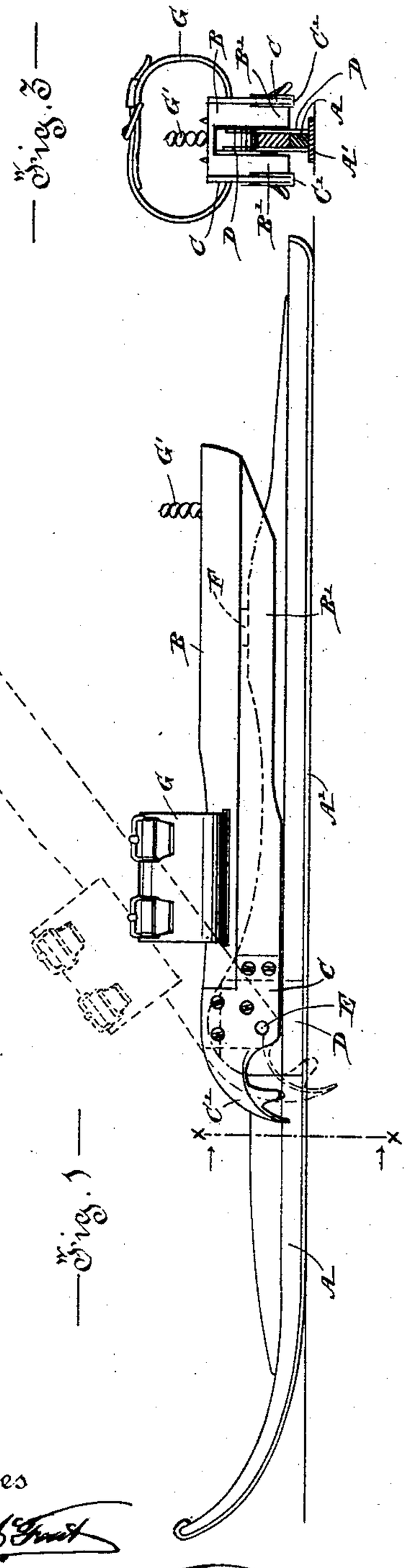

Fig. 1.

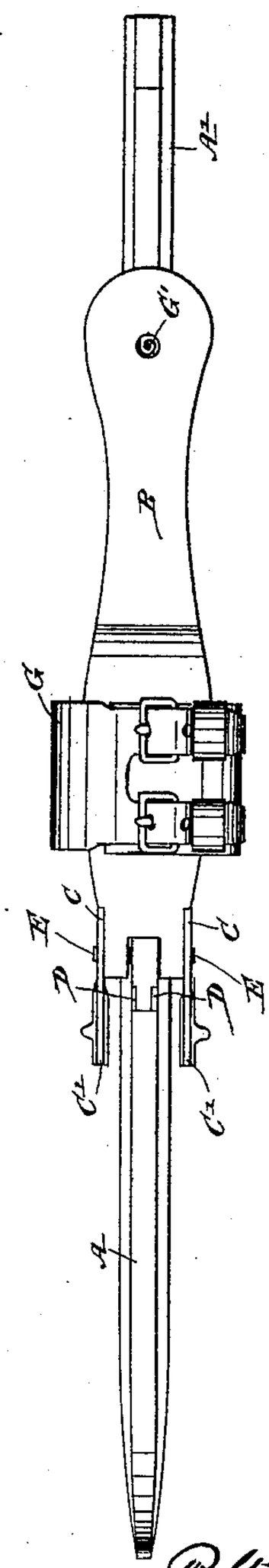

Fig. 2.

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