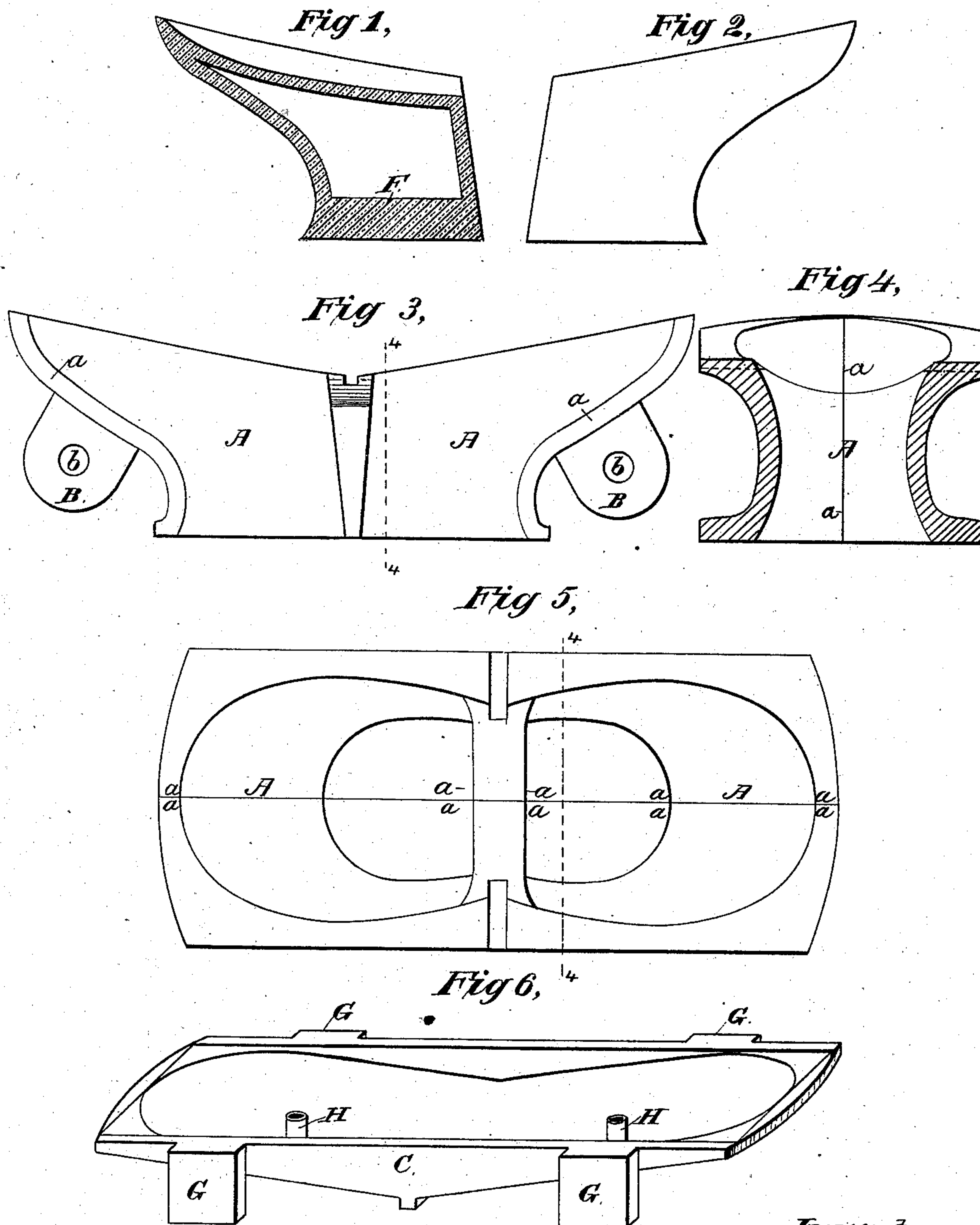


J. J. C. SMITH.
Rubber Heel and Mold Therefor.
No. 239,681. Patented April 5, 1881.



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Geo. T. Smallwood Jr.
Walter Allen

Inventor:
John J. C. Smith
BY Knight Bros attys.

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Fig 7,

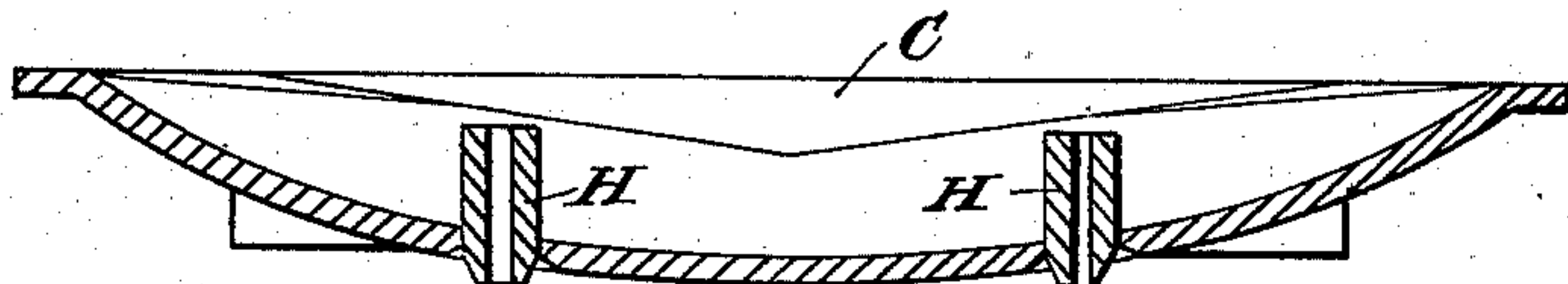


Fig 8,

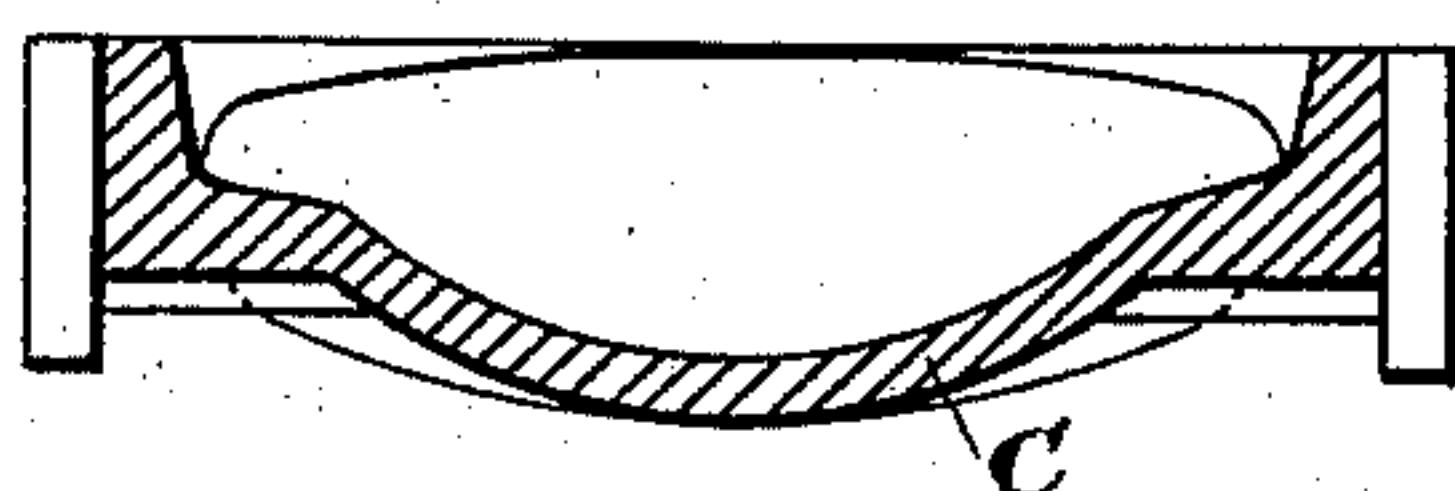


Fig 9,

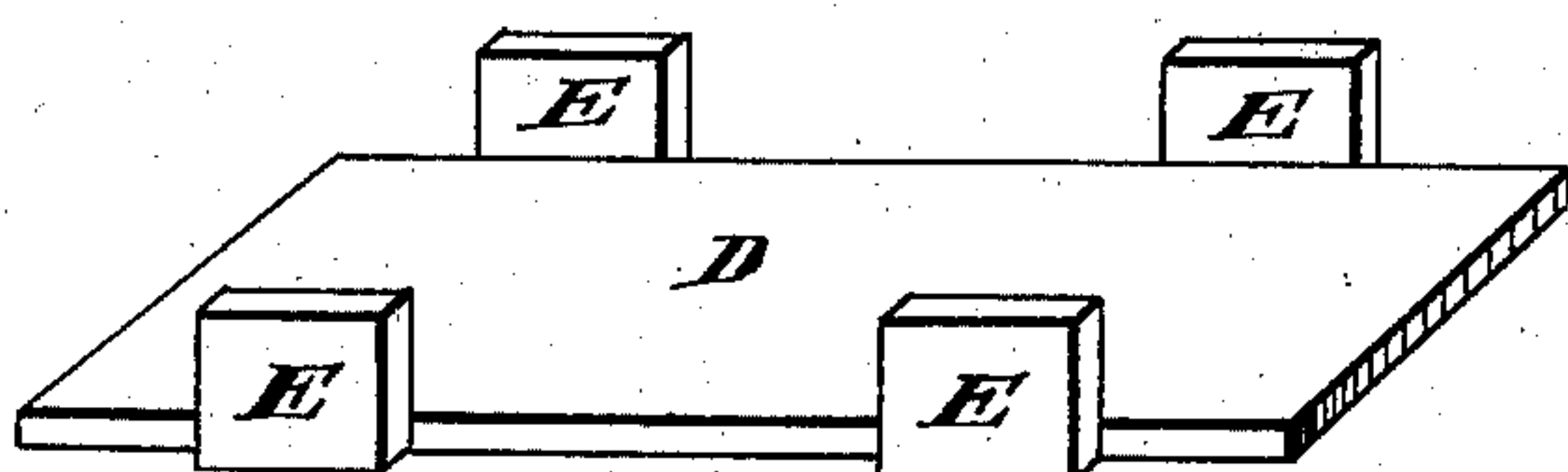
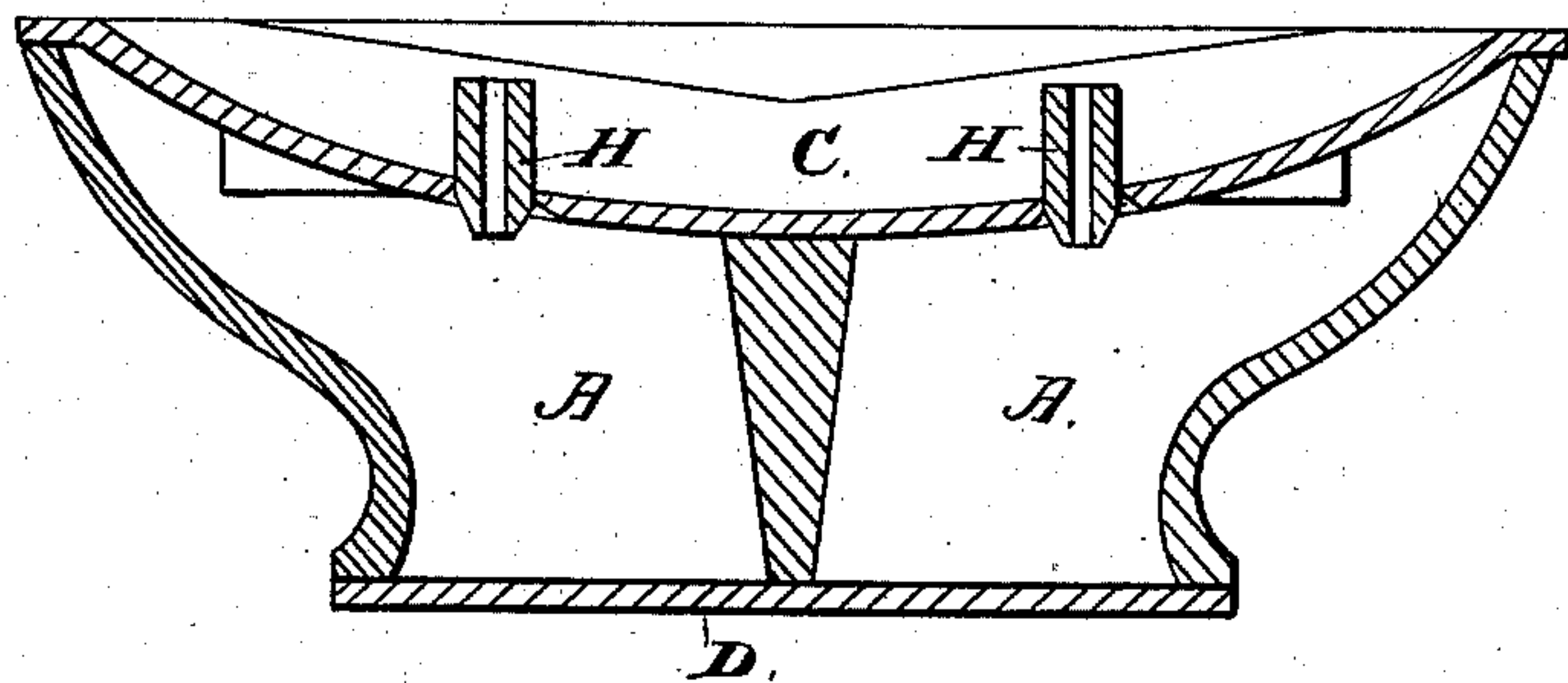


Fig 10,



Fig 11,



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UNITED STATES PATENT OFFICE.

JOHN JOSEPH CHARLES SMITH, OF COLLEGE POINT, NEW YORK, ASSIGNOR
TO COLLEGE POINT RUBBER COMPANY, (LIMITED,) OF SAME PLACE.

RUBBER HEEL AND MOLD THEREFOR.

SPECIFICATION forming part of Letters Patent No. 239,681, dated April 5, 1881.

Application filed July 14, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN JOSEPH CHARLES SMITH, a citizen of the United States, residing at College Point, in the county of Queens and State of New York, have invented Improvements in the Manufacture of Rubber Heels and Molds Therefor, of which the following is a specification.

The subject of my invention is an improved hollow heel for boots and shoes composed of hard india-rubber, celluloid, or other similar and equivalent composition; also, a mold for the heel constructed with lugs formed on the exterior for securing it together, a bottom piece, and a cover provided with nozzles, as hereinafter described.

It has been a long-felt want with shoe-manufacturers to produce a heel which would be light, elegant in shape, in one piece, of durable material capable of preserving a black and smooth surface, and adapted for successful attachment to leather boots and shoes. Metal and metal or rubber capped rubber shoe-heels have been used, but are objectionable for many obvious reasons. Wooden heels are largely in use; but these require to be covered with leather or other material, and are soon impaired in appearance as well as in shape and durability by wear and moisture.

I have devised a mode of constructing heels in one piece for boots and shoes of hard rubber in a manner which has been proved by practical trial to produce an article which is light, durable, and of elegant appearance. Hard india-rubber, if made of a compound containing not too much sulphur, is very tough, having a texture somewhat like that of hard sole-leather. It is at the same time of a deep black and will take and retain a fine polish. In order that my shoe-heel may be as light as possible consistent with strength, I make it hollow in the manner hereinafter described.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my hollow heel. Fig. 2 is a side view of the same. Fig. 3 is an elevation of the interior of one-half of a double mold or pair of molds adapted for the formation of two of my improved heels at one operation, the cover and base of said molds being omitted. Fig. 4 is a transverse section

of the said molds on the line 4 4, Figs. 3 and 5. Fig. 5 is a top view thereof. Fig. 6 is a perspective view of the cover of the said pair of molds. Fig. 7 is a vertical longitudinal section of the said cover. Fig. 8 is a transverse section thereof. Fig. 9 is a perspective view of the base or bottom of the said molds. Fig. 10 is a longitudinal section of the same. Fig. 11 is a sectional view of the completed mold, charged with rubber compound in readiness for vulcanization.

In making my rubber heel I proceed as follows: Each half A of the body of the pair of molds represented in Figs. 3, 4, and 5 is covered on its interior with sheet-rubber composition about one-eighth of an inch in thickness, the rubber being carefully pressed into the cavity or irregular interior surfaces of the mold. At the edges where the two half-molds join, as at *a a* in Figs. 3 and 5, the rubber is extended slightly beyond the said edges, so as to adapt the said projecting edges of rubber in each mold-section to lap one over the other, in order to insure a perfect connection of the whole in one continuous piece when vulcanized. The top cover, C, (shown in Figs. 6, 7, 8, and 11,) is also overlaid with rubber so far as its convex under surface extends. The bottom cover, D, Fig. 9, is also overlaid with a similar sheet of rubber composition of such size as to overlap and unite with the edges of the rubber in the body of the mold. When all parts of the mold are thus overlaid with rubber composition, the two halves or parts of the paired molds are placed and pressed together, and are held in correct position by steady-pins passing through holes *b* in the lugs B, formed on the exterior of each part A of the body of the mold, as illustrated in Fig. 3. The bottom D is then placed and pressed on the under side of the connected mold A A, and is held in position by the lugs E clamped on the sides of the mold A A. An additional piece or thickness of rubber composition is then placed and pressed in the bottom of the mold, so as to thicken up the bottom of the heel, which is subject to wear, as seen at F in the section of the finished heel, Fig. 1. The top cover, C, is lastly placed over the mold and pressed down thereon, and is held in place by the lugs G G clamped over the

sides of the mold at top. This completes the filled mold, as shown in Fig. 11.

Two small connection holes or nozzles, H H, are provided in the top cover, which are made
5 on the principle described in Letters Patent No. 212,633, granted to Jacob Stepp, the 25th February, 1879, for the purpose of admitting water to be forced to the interior of the molded heel, in order to produce internal pressure dur-
10 ing the vulcanizing operation. This operation I carry out in the manner described in Letters Patent No. 178,432, granted to Charles Grasser June 6, 1876, which method of vulcaniza-
15 tion I prefer, as it is found to produce a more perfect impression of the shape of the mold than the old system.

The method of producing a hollow hard-rubber article is fully described in Letters Patent
No 220,947, granted to me the 28th October,
20 1879, for constructing hollow brush-handles. This method I employ substantially in carrying out my present invention.

After vulcanization, the heels are taken from

the molds and finished by the well known methods of polishing hard rubber. 25

My improved hollow heel is adapted to be firmly fastened in place by means of two or three screws inserted from the inside of the shoe or boot.

By making the heels hollow I not only save 30 much cost of material, but produce a light heel and one possessed of a certain degree of elasticity.

Having thus described my invention, the following is what I claim as new therein and 35 desire to secure by Letters Patent:

1. A hollow heel for boots and shoes, the sides, bottom, and top being formed of one piece of rubber composition.

2. The heel-mold A A, constructed with lugs 40 B B B B, the bottom D, and the top cover C, having nozzles H H, as set forth.

JOHN JOSEPH CHARLES SMITH.

Witnesses:

JOHN P. STEPP,

JULIUS ZWIRLEIN.