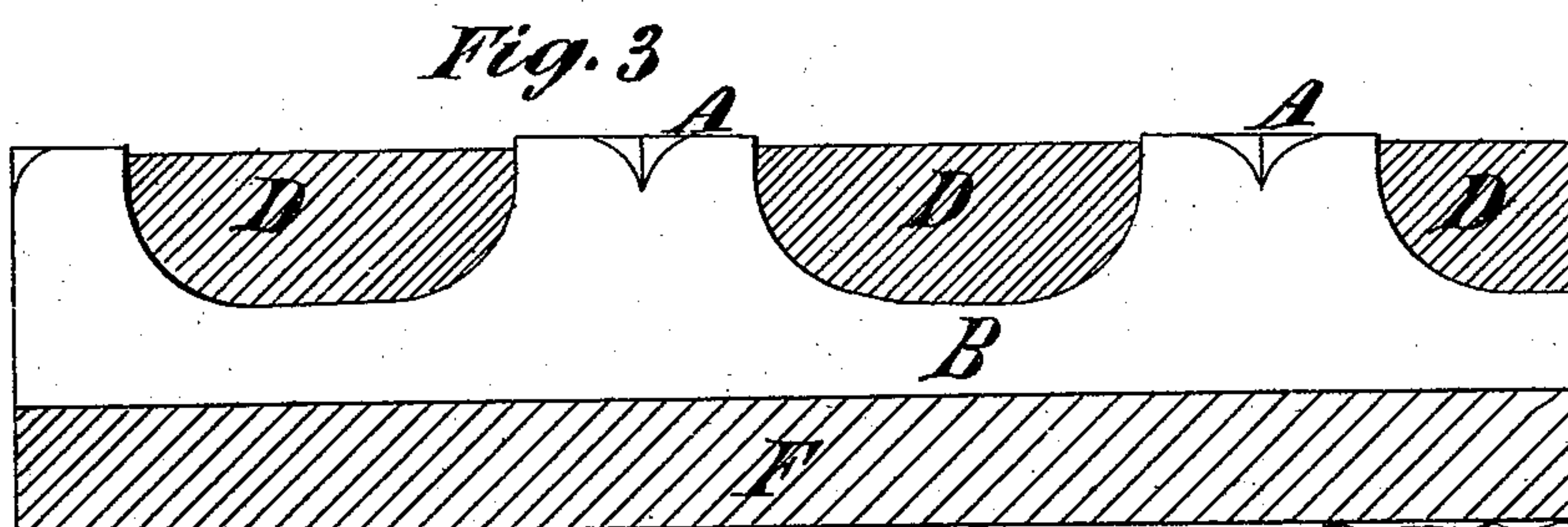
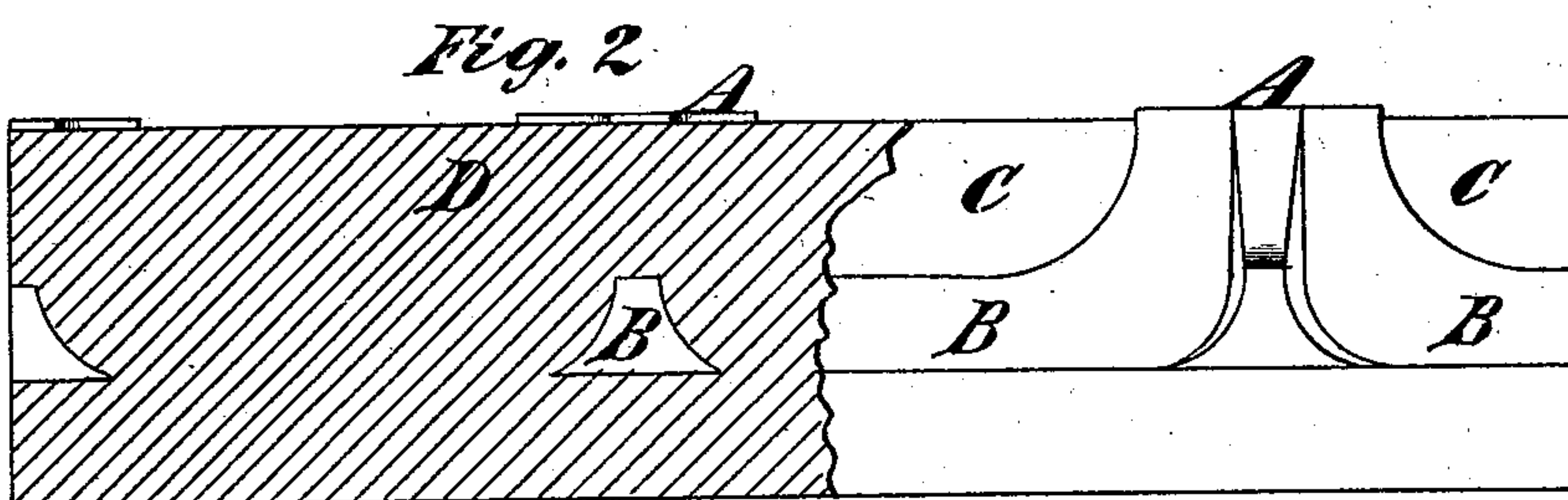
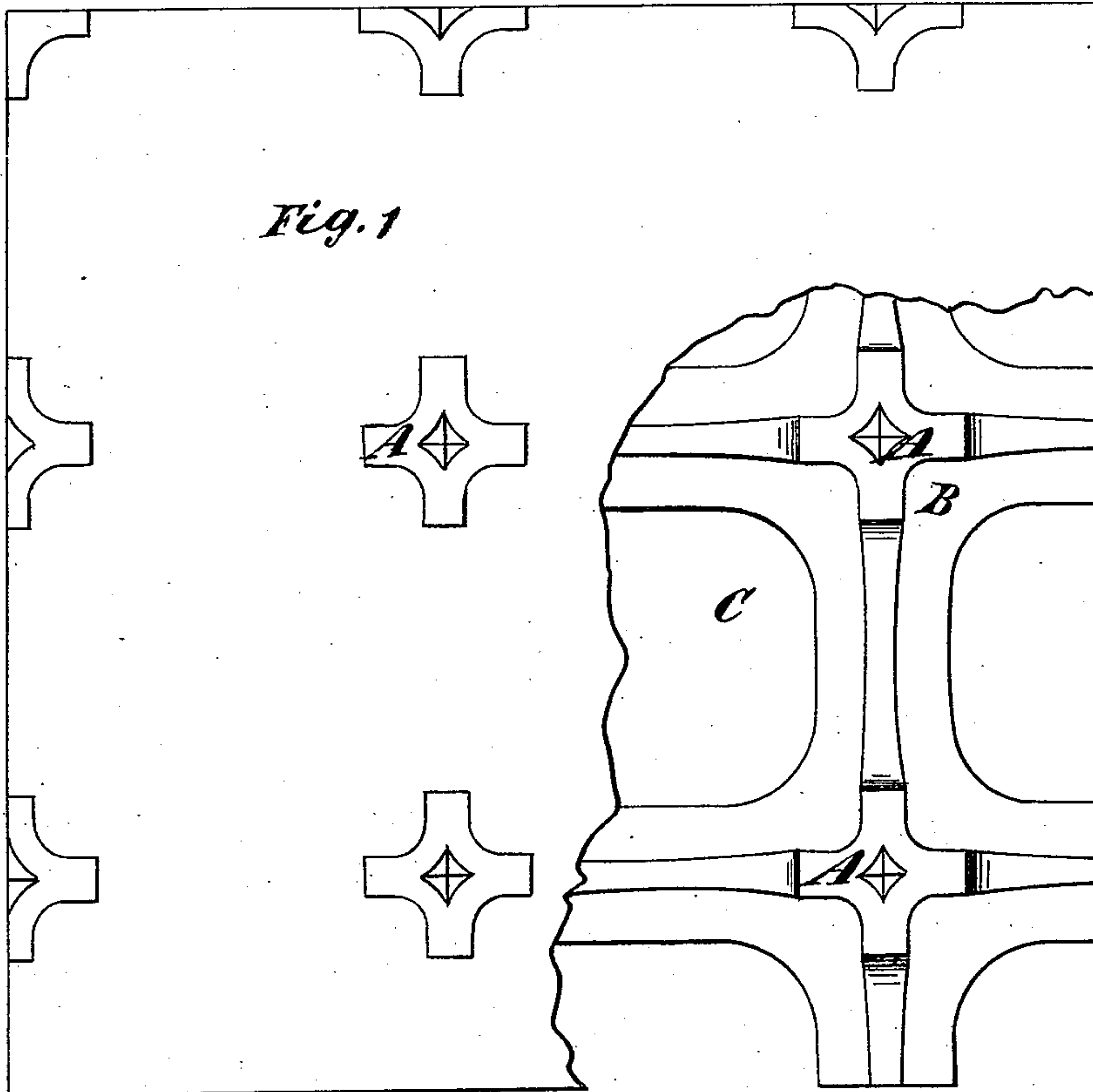


R. DAVISON.  
PAVEMENTS.

No. 185,302.

Patented Dec. 12, 1876.



Witnesses  
*H. Horner*

*John Becker.*

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# UNITED STATES PATENT OFFICE

ROBERT DAVISON, OF NO. 4 SHOREDITCH, HIGH STREET, ENGLAND.

## IMPROVEMENT IN PAVEMENTS.

Specification forming part of Letters Patent No. 185,302, dated December 12, 1876; application filed April 27, 1876.

### *To all whom it may concern:*

Be it known that I, ROBERT DAVISON, of No. 4 Shoreditch, High Street, in the county of Middlesex, England, civil engineer, have invented Improvements in Pavements, Roads, and Ways, of which the following is a specification:

This invention has for its object the construction of a paving of great durability, with a minimum adhesion of wheel-surfaces, thereby diminishing friction and the power required to draw a load, and at the same time securing ample provision for the foothold of animals; and the invention consists in the adaptation and application to asphalt pavements of iron plates or frames, with projecting chilled iron studs or bearing-surfaces at suitable intervals, the spaces between them being filled in with asphalt, thereby producing a pavement of asphalt with slightly projecting chilled-iron studs or bearing-surfaces, adapted to sustain heavy traffic, and to give the requisite foothold for horses. The iron plates or frames for retaining the chilled studs or bearing-surfaces in position, as required, may be cast altogether in iron molds or chills, or in molds composed partly of iron and partly of sand, the molds being constructed and arranged so as to produce castings with suitable pieces or webs of metal for retaining and supporting the chilled-iron studs or bearing-surfaces. The said plates or frames may be varied in size and thickness to suit the traffic, and it is intended to form the pavement by first laying a substratum of concrete, then covering this bed with a thin lay of asphalt where necessary, and afterward laying the iron plates or frames evenly on the top thereof. Asphalt will then be run over the whole surface sufficient to fill up the spaces in the plates or frames, and leaving the chilled-iron studs or bearing-surfaces flush with the surface of the asphalt, but which will slightly project therefrom on the shrinking of the asphalt during the process of cooling; or, if necessary, the asphalt may be pressed in order to give the requisite projection to the studs. The asphalt employed for filling in the interstices of the iron framing may consist of a mixture of natural rock, asphalt, chalk, or stone-dust, bituminous shale, or other approved

materials, combined by the action of heat or otherwise.

The above-described system of paving may also be advantageously used for passages, staircases, brewery-cellars, and the like floors of buildings, and other positions where great durability and power to sustain traffic are required, and it can be made ornamental by the introduction of castings of white or yellow metal or other durable substance or material.

Figure 1 is a plan or horizontal view of a metal frame with a number of slightly-projecting chilled-iron studs or bearing-surfaces, with interstices to be filled in with asphalt or other suitable comparatively yielding material, as hereinafter described. In this figure a portion represents the metal frame alone, and another portion represents the roadway as completed by the addition of the filling-in material. Figs. 2 and 3 represent the same in vertical section.

The frame, of iron or other suitable metal, is composed of a number of projecting studs or bearing-surfaces, A A, supported and sustained, as required, by curved webs and base-plate B B, leaving spaces C C to be filled in with asphalt D, in such a manner as to cover the whole surface of the road or way, with the exception of the studs or bearing-surfaces A A, which are left slightly projecting from the surface of the asphalt D, as shown in Figs. 2 and 3. In Fig. 3, E is the bed of concrete or other sufficient substratum adapted to constitute the foundation of the road or way, and F is a thin layer of bituminous material, which is laid so as to present an even surface upon which to bed the metal frame carrying the projecting studs or bearing-surfaces, forming the hard unyielding and durable portion of the road or way. These metal frames are laid on and pressed down onto the bituminous material F while heated and yielding, so as to form a solid bearing for the metal frame-work.

The frames are, by preference, made of cast-iron run into either stationary or movable molds, made by hand or machine, arranged so as to chill and thereby harden the parts of the frames which, when in use, will be exposed to abrasion, and the frames and such parts thereof are made of such sizes, weights, (varying



for roads from fifty to one hundred and fifty pounds or upward per square yard,) and shapes as may be most suitable for the conditions of the road or way to be formed. These plates or frames are formed of a perforated base plate, with the holes or perforations arranged regularly in rows, and of such a size as to leave between them sufficient bearing-surface of metal to support the weight of the vehicles passing over the road or way.

Upon the parts where the webs B B intersect there are projecting pieces, the faces of which form the projecting studs or bearing-surfaces A A, which constitute the metallic portion of the surface of the improved road or way. The molds in which these plates or frames are cast may be made of sand in the usual manner, or partly of sand and partly of iron, so that the surfaces of the projecting pieces above referred to may be chilled by the melted iron flowing upon an iron surface, or the molds may be of fire-clay, or fire-clay and iron, or wholly of iron. In some cases the plates or frames may be made of hard or white iron, so as to produce hard castings without chilling. These plates or frames are filled in with asphalt or other suitable material (intended to form the surface of the road or way in the spaces between the said projecting pieces) to within a small distance of the studs or bearing-surfaces A A, so as to leave them slightly projecting from the general surface of

the filling-in material, thereby forming a good foothold for horses, and presenting a diminished resistance to traction.

From the foregoing description it will be evident that the essential feature of the invention consists in forming the surface of roads or ways partly of a comparatively yielding material, such as asphalt, impervious to water, and with minimum liability to abrasion, and partly of a hard unyielding and durable material, such as chilled cast-iron.

By means of this combination is obtained a durable and even road-surface, suitable for all kinds of traffic, with a sufficient amount of roughness to give foothold for horses and other animals when drawing loads, and reduce the resistance of traction, thereby securing the advantages of asphalt paving while avoiding the slipperiness inseparable from the ordinary construction thereof.

I claim as my invention—

A pavement constructed of a series of iron frames, having a number of studs or bearing-surfaces, A, formed with the curved webs and base-plates B, and bearing spaces C, to receive the asphalt, and the whole adapted to a foundation, F, substantially as described.

ROBT. DAVISON.

Witnesses:

WILLIAM SPENCE,  
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