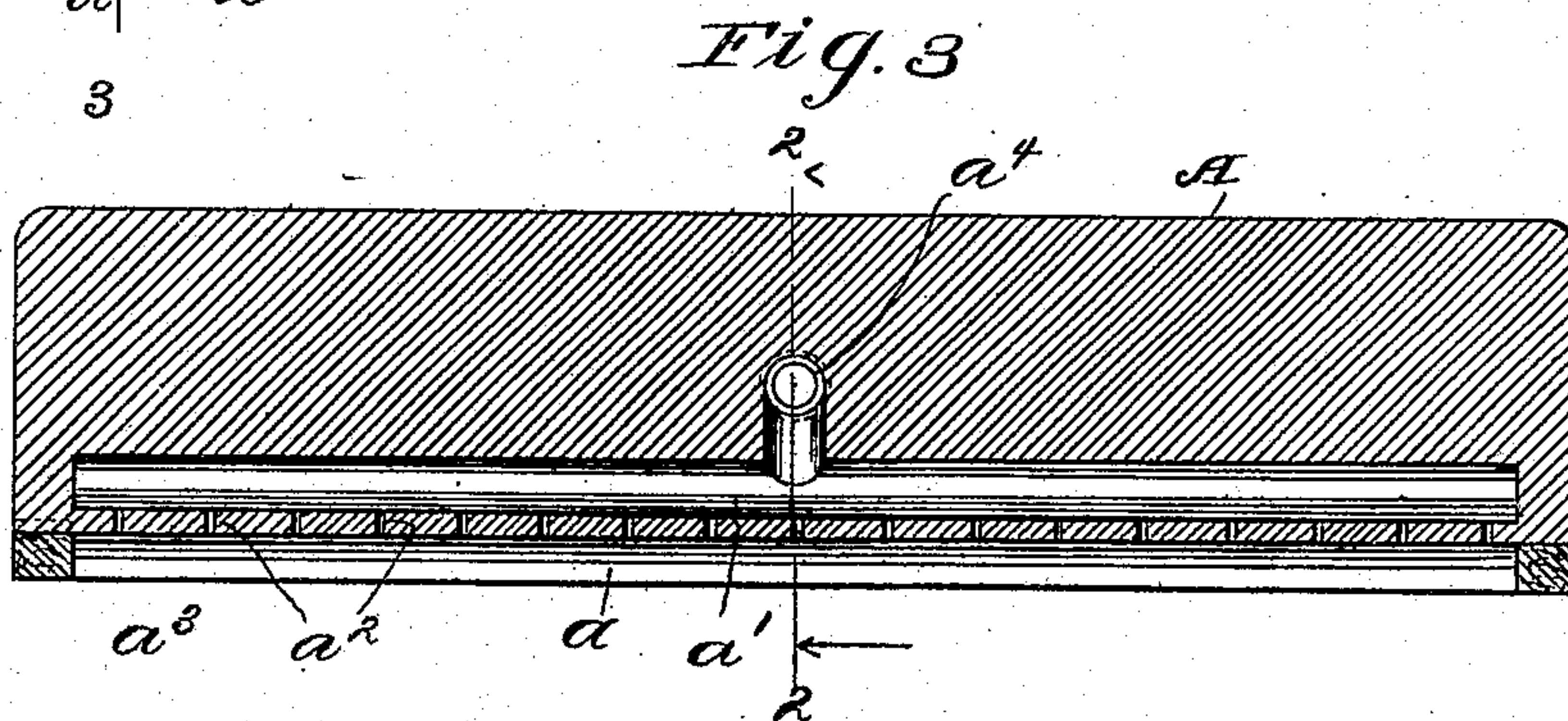
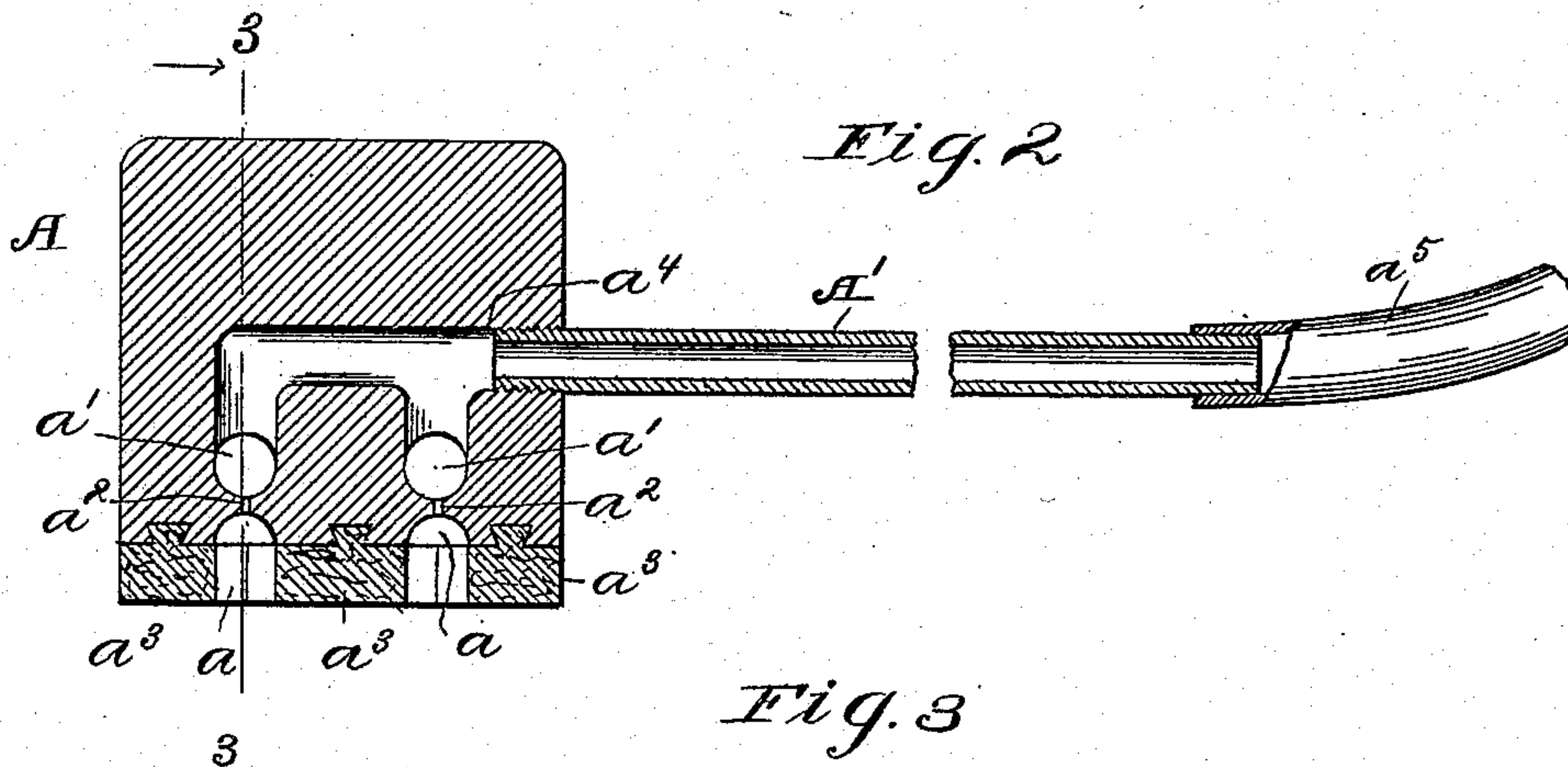
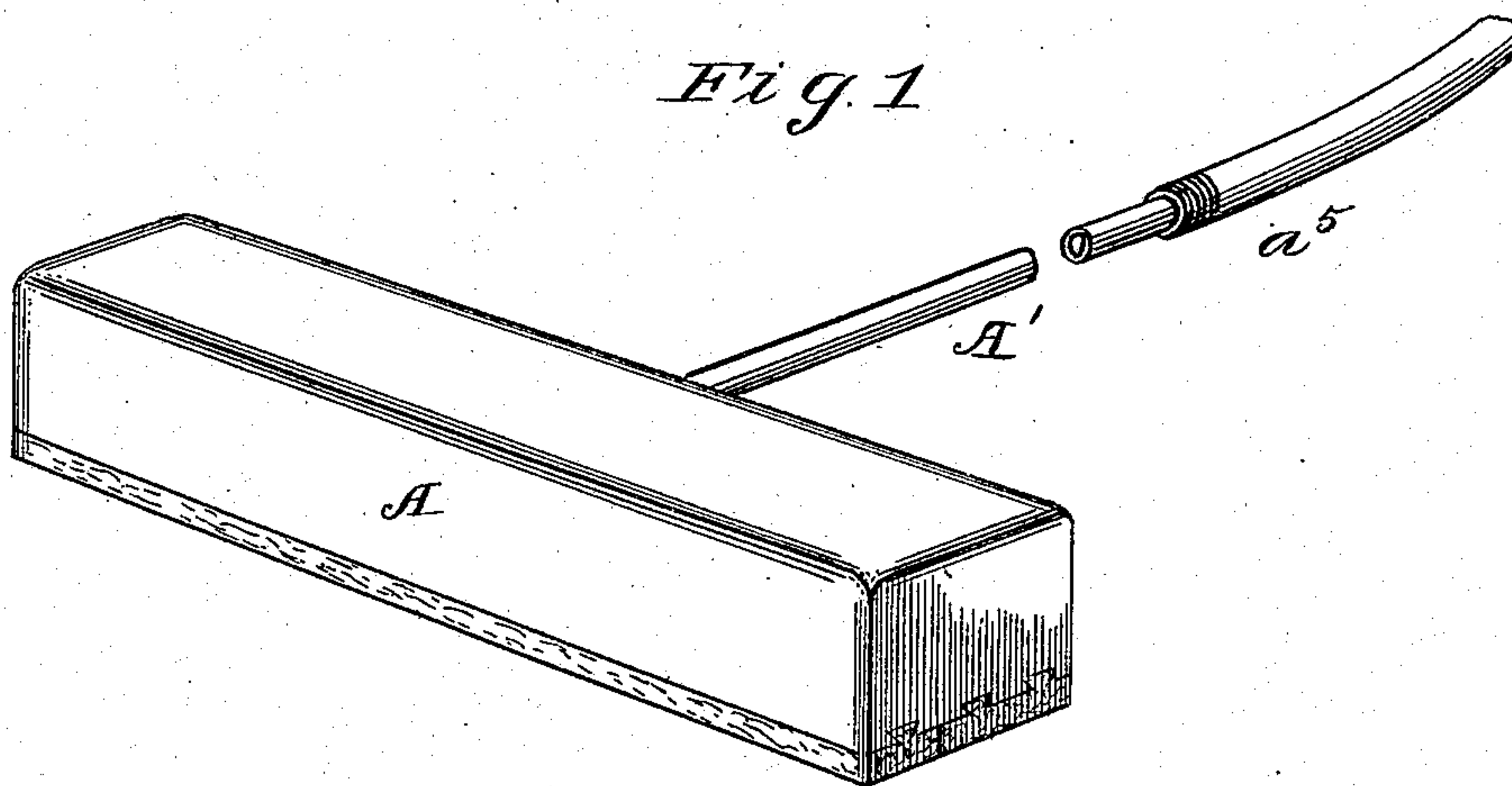


R. L. FRINK.
GLASS FLATTENING TOOL.
APPLICATION FILED MAR. 6, 1907.

930,658.

Patented Aug. 10, 1909.



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UNITED STATES PATENT OFFICE.

ROBERT L. FRINK, OF CLEVELAND, OHIO.

GLASS-FLATTENING TOOL.

No. 930,658.

Specification of Letters Patent.

Patented Aug. 10, 1909.

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To all whom it may concern:

Be it known that I, ROBERT L. FRINK, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Glass-Flattening Tools, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to the art of glass making and particularly to the flattening of sheet glass.

The object of said invention is the provision of an improved flattening tool, or block.

Said invention consists of means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain means embodying the invention such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 represents in perspective a sheet flattening, or ironing, tool embodying my several improved features of construction; Fig. 2 is a vertical transverse cross-section of such tool taken on the line 2—2, Fig. 3; and Fig. 3, is a vertical longitudinal cross-section taken on the line 3—3, Fig. 2.

In the manufacture of sheet glass the finished cylinder after being split open is prepared for flattening by being preliminarily warmed and then introduced into the flattening furnace by means of a cropper, or iron instrument, onto the flattening stone. The flame or heated gases of the furnace passing over the plate quickly soften the unsupported portions of the cylinder sufficiently to cause them to fall back into a wavy sheet. It is with the smoothing out or ironing of such wavy sheet that the present invention is chiefly concerned. In the prevailing method, the flattener simply applies to the sheet while in this condition an ironing tool, or rod of iron furnished at the end with a block of wood, with which he rubs down the waviness into a flat surface using such force as may be necessary. The force thus required is oftentimes considerable in the case of a refractory piece, and the possibility of marring or distorting the sheet

is more or less present in all cases irrespective of the force applied, where the wooden block is utilized. A further objection to this form of block is that the wood, bass wood is preferred, requires the expenditure of considerable time and trouble in its preparation for its use as a flattening tool. Thus it is necessary that it be soaked in water until completely water-logged, a process requiring from a month to a year depending upon the thoroughness with which it is carried out. And in using the block at the furnace it can only be kept in the furnace chamber, that is in actual use, for a relatively short time, and then requires to be removed and plunged in the water tank again. In spite of all this a block will seldom last for more than a few hours. The liability of marring the sheet, to which reference has been made, arises from the fact that the wooden block as soon as the moisture is expelled from the face which happens to be in contact with the sheet, seems to have a slight tendency to adhere to the latter. Subsequent movement is hence apt either to mar the sheet as stated or else to draw the sheet off the flattening stone, and thereby scratch the same.

By my improved flattening tool, I propose not only to render the manipulation of the same easier upon the operative but also to eliminate to a much greater degree the possibilities of distorting and marring the sheet that are incident to the use of the present type of tool, or wooden block. At the same time it is proposed to provide a block that may be subjected to an indeterminate amount of use without deterioration. The manner in which these results are accomplished will be more evident from the description of the construction of the tool, which now follows.

Referring to the several figures of the drawings, A will be seen to designate the body of such tool, which is preferably of the oblong rectangular form shown. This body is desirably cast of metal, as iron, and is formed on its under side with one or more grooves or recesses *a* extending longitudinally of the same. Said body is further formed interiorly with inter-connected chambers *a'* corresponding to, and coextensive with, recesses *a*. A series of apertures *a*² serve as means of communication between the respective recesses and chambers.

Surrounding each recess *a* are strips *a*³ of non-abrasive, heat-resisting, material that

laterally inclose such recesses on all sides. I contemplate employing for such strips asbestos composition, which combines to a high degree both the qualities indicated as desirable. Strips of properly treated wood, or like material, however, may be substituted therefor. These strips a^3 are preferably secured to the block by being provided with tongues designed to fit in corresponding, longitudinally disposed grooves on the under face of the block A. Such strips are formed at their ends with integral laterally extending portions that serve to terminally inclose the recesses and thus effect the total surrounding of the latter with this facing of asbestos, as previously described.

For the sake of rendering manipulation of the block A convenient, a handle A' consisting of a hollow section of pipe is threaded or otherwise mounted in one side of the same. The opening provided for the reception of the pipe is but part of a passage a^4 whereby communication is afforded the pipe section, forming the handle, with the chambers a' in such block, or body A. The outer, or free end, of handle A' is connected by means of a hose a^5 , or equivalent flexible connection, with a suitable source of fluid pressure which may be either steam, compressed air, or such other fluid as might suggest itself as suitable for the purpose in hand. Such pressure fluid is obviously free to flow, once it is admitted into the handle A', into chambers a' . Filling the latter, it escapes in tiny jets through apertures a^2 into recesses a on the under side of the block forming the body of the tool. In operation, then, the aforesaid fluid pressure being first turned on, the tool is thrust into the flattening furnace upon the wavy sheet of glass as it rests on the flattening stone, and there moved back and forth until all the wrinkles and waviness in the sheet have been ironed out. In this operation, however, by virtue of the construction above described the tool at no time rests other than very lightly upon the sheet; for it is designed that the pressure of the pressure fluid shall be so gaged as in effect to support the block A on the portions of such fluid as are confined between recesses a and the upper face of the sheet of glass. The tool, as it is moved across the sheet, thus rides in effect upon a resilient layer of steam or air, where either of these fluids is employed while at the same time it exerts the same pressure upon such sheet as it would were it directly superimposed thereon. Not only is the manipulation of the tool in the furnace by this means made easier, but the resultant product obtained thereby is superior to that which has been flattened by the old style of block. Moreover, as will be evident the tool is practically indestructible and hence may be allowed to rest within the furnace when proper provision is made therein for this purpose.

This is particularly the case where asbestos strips are utilized to face the under side of the block.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a device of the character described, the combination of a block having an elongated recess on its under side disposed transversely with respect to the direction of movement of the device when in use, such recess being adapted to form a chamber in conjunction with the surface on which said block rests; and fluid pressure connections communicating with such recess.

2. In a device of the character described, the combination of a block having a plurality of elongated recesses on its under side disposed transversely with respect to the direction of movement of the device when in use, such recesses being adapted to form chambers in conjunction with the surface on which said block rests; and fluid pressure connections communicating with said recesses.

3. In a device of the character described, the combination of a block having an elongated recess on its under side and formed interiorly with a chamber, said recess extending to the lower face of said block and being adapted to form a second chamber in conjunction with the surface on which said block rests, a plurality of apertures connecting said interior chamber with such recess; and fluid pressure connections for said interior chamber.

4. In a device of the character described, the combination of a block having an elongated recess on its under side, and formed interiorly with a substantially co-extensive chamber, a plurality of apertures connecting said chamber with said recess; a hollow handle for said block communicating with said chamber; and fluid pressure connections for said handle.

5. In a device of the character described, the combination of a metallic block having a recess on its under side; a strip of non-abrasive material surrounding said recess; and fluid pressure connections communicating with said recess.

6. In a device of the character described, the combination of a metallic block having a recess on its under side; a strip of heat resisting material surrounding said recess; and fluid pressure connections communicating with said recess.

7. In a device of the character described, the combination of a metallic block having

a recess on its under side, and formed interiorly with a chamber, a plurality of apertures connecting said chamber with said recess; a strip of non-abrasive, heat-resisting, material surrounding said recess; and fluid pressure connections for said chamber.

8. In a device of the character described, the combination of a metallic block having a plurality of elongated recesses on its under side, and formed interiorly with chambers substantially co-extensive with said recesses, a plurality of apertures connecting said chambers with said recesses; strips of non-abrasive, heat-resisting, material surrounding said recesses; a hollow handle for said block communicating with said chambers; and fluid pressure connections for said handle.

9. In a device of the character described, the combination of a metallic block having a plurality of elongated recesses on its under side, and formed interiorly with chambers substantially co-extensive with said recesses,

a plurality of apertures connecting said chambers with said recesses; strips of asbestos composition surrounding said recesses; a hollow handle for said block communicating with said chambers; and fluid pressure connections for said handle.

10. In a device of the character described, the combination of a block having a plurality of elongated recesses on its under side disposed transversely with respect to the direction of movement of the device when in use, such recesses being adapted to form chambers in conjunction with the surface on which said block rests; strips of asbestos composition surrounding said recesses; and fluid pressure connections communicating with said recesses.

Signed by me, this 27th day of February 1907.

ROBERT L. FRINK.

Attested by—

D. T. DAVIES,
JNO. F. OBERLIN.