

(No Model.)

W. H. HANNA.
NEEDLE THROAT FOR SEWING MACHINES.

No. 573,327.

Patented Dec. 15, 1896.

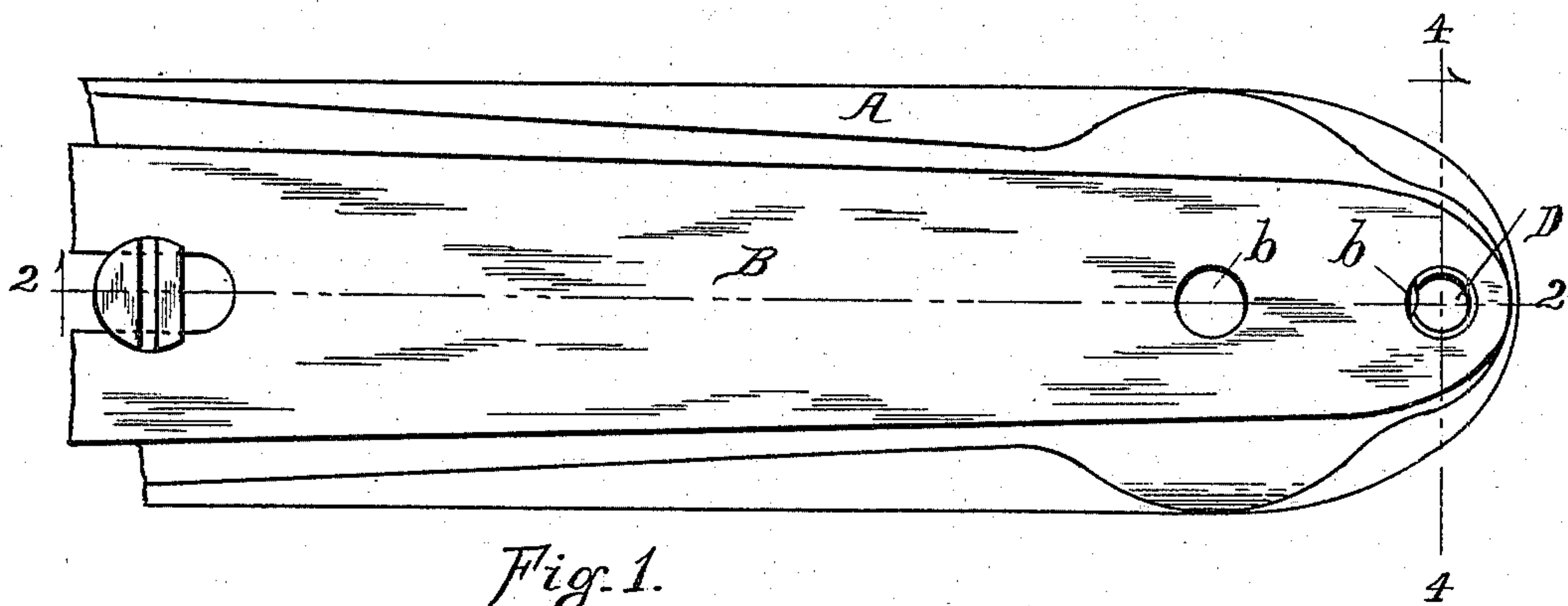


Fig. 1.

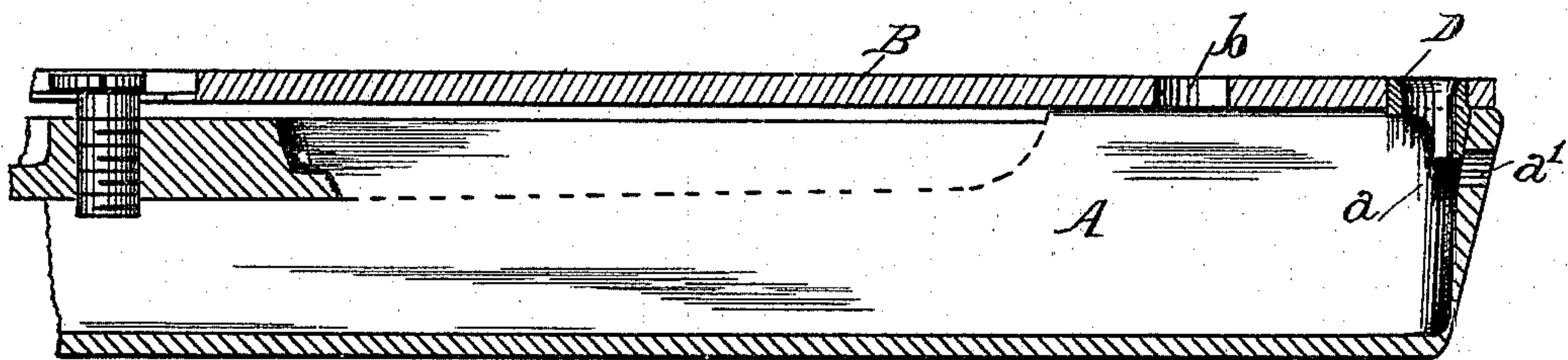


Fig. 2.

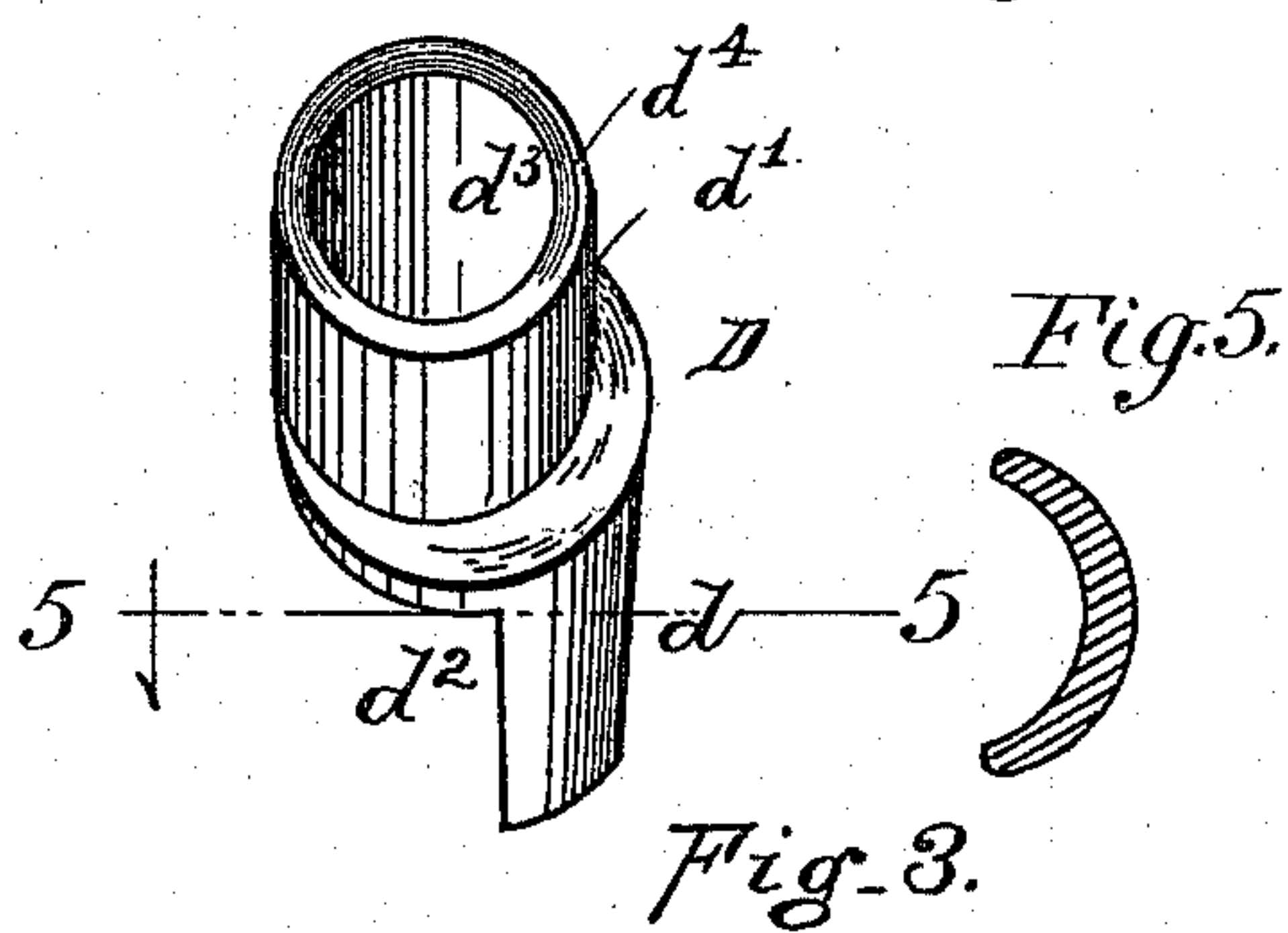


Fig. 3.

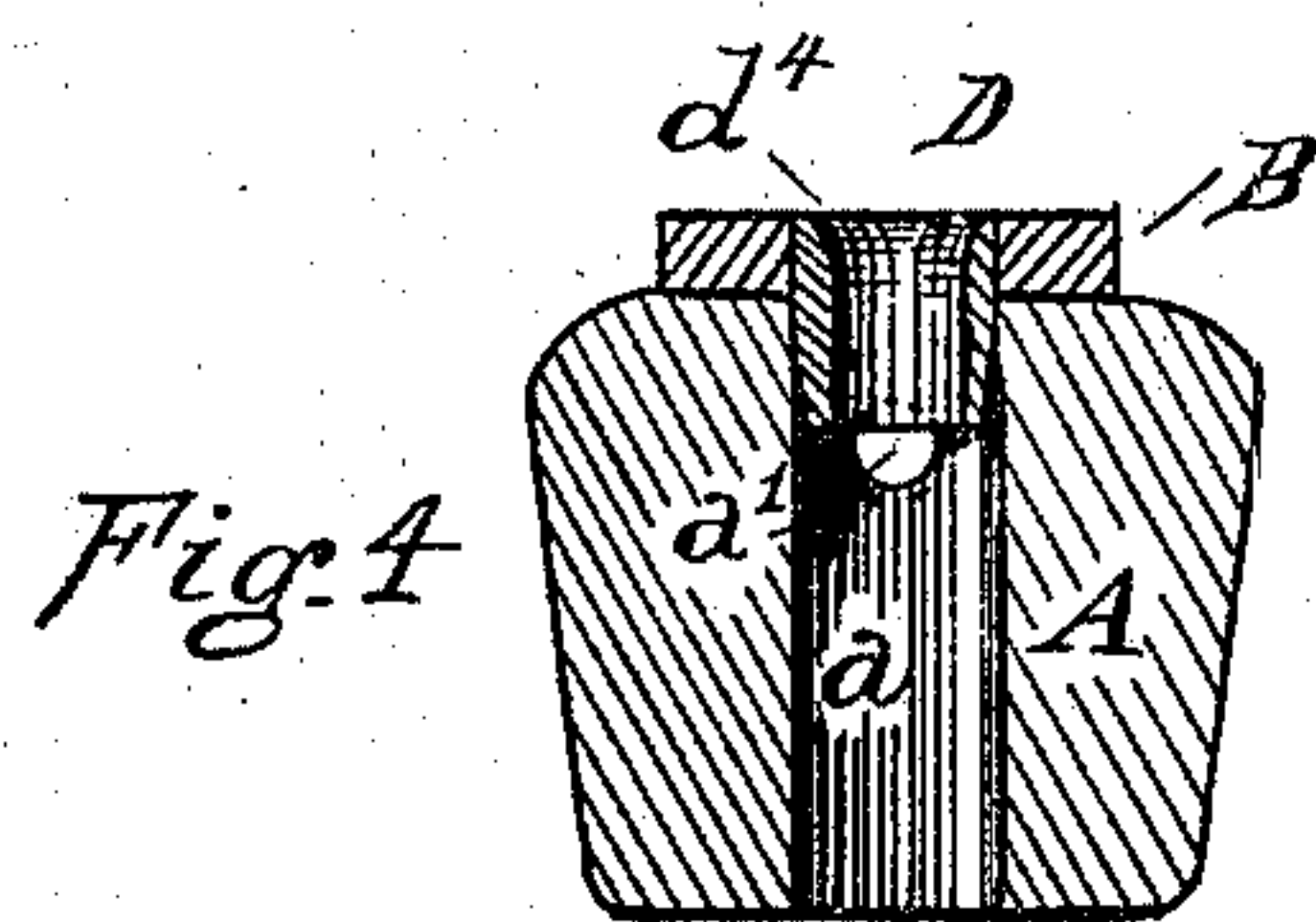


Fig. 4.

Witnesses,
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UNITED STATES PATENT OFFICE.

WILLIAM H. HANNA, OF PETERSBURG, ILLINOIS.

NEEDLE-THROAT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 573,327, dated December 15, 1896.

Application filed February 14, 1895. Serial No. 538,368. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HANNA, a citizen of the United States, residing at Petersburg, in the county of Menard and State of Illinois, have made certain new and useful Improvements in Needle-Throats for Sewing-Machines; and I do hereby declare the following to be such a full, clear, and exact description of my invention as will enable those skilled in the art to which it pertains to make and use the same.

The purposes of my invention are to provide a throat-plate which may be readily attached to and used with sewing-machines of that class technically known as "universal feed-arm" machines; to provide a throat-plate for sewing-machines, of tempered or hardened material, such as will resist the blows of the needle and will not be abraded thereby; to provide means whereby my improved throat-plate may be conveniently and effectively connected with the work-arm of the sewing-machine and may be disconnected therefrom without the use of a screw-driver or wrench, and to provide a hardened throat-plate which may be applied to old sewing-machines without the expense or trouble of remodeling the machine.

With these ends in view my invention consists in certain novel features of construction and combinations of parts, which I will herein after fully describe and specifically claim.

In the drawings hereto annexed and to which reference is hereby made, Figure 1 is a top plan view of the tubular throat in position on the work-arm of the machine. Fig. 2 is a partial vertical longitudinal section through the work-arm and its connected throat-plate on the line 2 of Fig. 1. Fig. 3 is an enlarged detached perspective view of the tubular throat. Fig. 4 is a transverse vertical section through the work-arm and tubular throat on the line 4 of Fig. 1. Fig. 5 is a transverse section through the base of the tubular throat on the line 5 of Fig. 3.

Similar letters indicate like parts in all of the views.

In the drawings I have shown only so much of the work-arm and connected parts of the sewing-machine as is necessary to illustrate the connection of my improved tubular throat

with the work-arm and its relation to the vibrating throat-plate on the work-arm.

The work-arm A and the throat-plate B herein shown are of the usual well-known form and need not be particularly described.

I do not in this application lay any claim to the operative parts of the sewing-machine, and therefore do not illustrate or describe the same.

The tubular throat D is preferably made of steel, which may be hardened to any desired extent by any of the well-known processes of tempering. The tubular throat D has an enlarged slightly-tapering base d and an upwardly-extending reduced cylindrical part d' . The tapering part d of the throat fits in a hole a near the end of the work-arm A. A part of the periphery of the tapering base d is cut away, as shown at d^2 .

When the throat D is in position in the work-arm, the upper reduced end of the throat projects upward above the upper face of the work-arm about the thickness of the throat-plate B, and the reduced part d' of the throat is adapted to fit loosely in the holes b in the plate B. When the throat is in place in the arm, the opening d^2 is adjacent to and communicates with the shuttle-race in the work-arm in such position relative to the point of the shuttle that while the needle is passing to and fro through the needle-orifice d^3 in the throat the point of the shuttle may engage with and take the loop of the thread in the usual well-known manner. The upper end of the throat is beveled inward, as shown at d^4 , so as to deflect the needle when the point of the needle strikes the end of the throat, thereby in many cases obviating the breaking of the needle.

In the manufacture of my improved tubular throat I temper the whole throat to the proper degree of hardness to resist the strokes of the needle.

In practice I have found that soft or untempered throats are subject to great injury by the point of the needle striking the end of the throat and forming corrugations or sharp projections thereon which serve to weaken or cut the needle-thread and frequently serve to draw out the shuttle-thread, thereby forming loops on the under side of the work, which

clog the work and prevent the successful operation of the machine.

By tempering the throat and slightly beveling inward the needle-orifice, as described, I am enabled to produce a throat which will not be cut or abraded by the needle and on which it is impossible for the needle to form projections which will cut or hinder the passage of the thread. This improvement is of great practical advantage and completely obviates the objection commonly made to throats which are of softer material and subject to be cut or abraded by the needle.

The preferable method of constructing my tubular throat is as follows: I take a round solid steel wire or bar of proper length and diameter, and for the needle-orifice d^3 I drill a longitudinal hole the proper size entirely through the wire or rod and to one side of the center thereof sufficient only to form a thin shell of metal on one side of the throat. I then cut away the thick part of the upper end of the rod until a round tube is formed having a uniform thickness all around, thereby forming a round tube d' at the upper end of the throat. This tubular part of the throat is equal in length to the thickness of the throat-plate, which ordinarily is not more than one-eighth of an inch. This one-eighth of an inch then is, strictly speaking, the length of the tubular throat. I then turn to a slight taper the lower part or base d . There will then be one thin side of the base d . This thin part of the base below the tubular part d' is then cut away up to the lower end of the tubular part, as shown at d^2 , thereby forming a slot or opening, which permits free passage of the needle-thread through the opening in the base, so that the shuttle may engage with the thread to form the loop in the usual manner.

I prefer to make my tubular throat as described, but the throat instead of being tubular may be square and tapering or of any other suitable and convenient form adapted to be readily connected with the work-arm and detachable therefrom without the use of tools; but it is of the essence of my invention to provide a throat which may be retained in the work-arm or in the work-plate of the sewing-machine by frictional contact with said arm or plate. Furthermore, it is of the es-

sence of my invention to provide a throat which shall be tempered or otherwise hardened so as to resist cutting or abrasion by the needle.

In sewing-machines of the class herein referred to there is usually in the work-arm a vertical hole, as shown at a , for the passage of the needle.

One of the practical advantages of my needle-throat is that it may be readily applied to old machines of this class. To insert the throat in the work-arm, it is only necessary to enlarge somewhat and make slightly tapering the hole a , which serves as a way for the needle, and also to give to said hole a slight taper, so that the base of the throat will rest firmly therein and be held or retained by frictional contact therewith.

When the throat is in the arm in the position described, the cylindrical part d' adjacent to the shuttle-race overhangs the face of the shuttle-race, so as to bring the orifice of the throat in position for the needle to pass centrally through the throat and also in position for the shuttle to engage with and take the thread, as already described. A horizontal hole a' is then cut through the end of the arm A , so that a pin or other suitable instrument may be inserted through the hole and by lifting against the lower edge of the base may serve to loosen the throat and raise it from its seat in the work-arm.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A tempered needle-throat for sewing-machines, consisting of a longitudinally-tapering base, by which it is adapted to be held in a correspondingly-tapering hole in the work-arm of a sewing-machine, and an upper cylindrical part integral with said base, said cylindrical part and base being pierced by a longitudinal needle-orifice, and a part of said base being cut away, as set forth.

In witness whereof I have hereunto subscribed, at Petersburg, Illinois, this 30th day of January, A. D. 1895.

WILLIAM H. HANNA.

In presence of—

AARON HATFIELD,
IRA C. BROOKS.