

W. W. STEARNS.

SHUTTLE.

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978,503.

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Fig. 2.

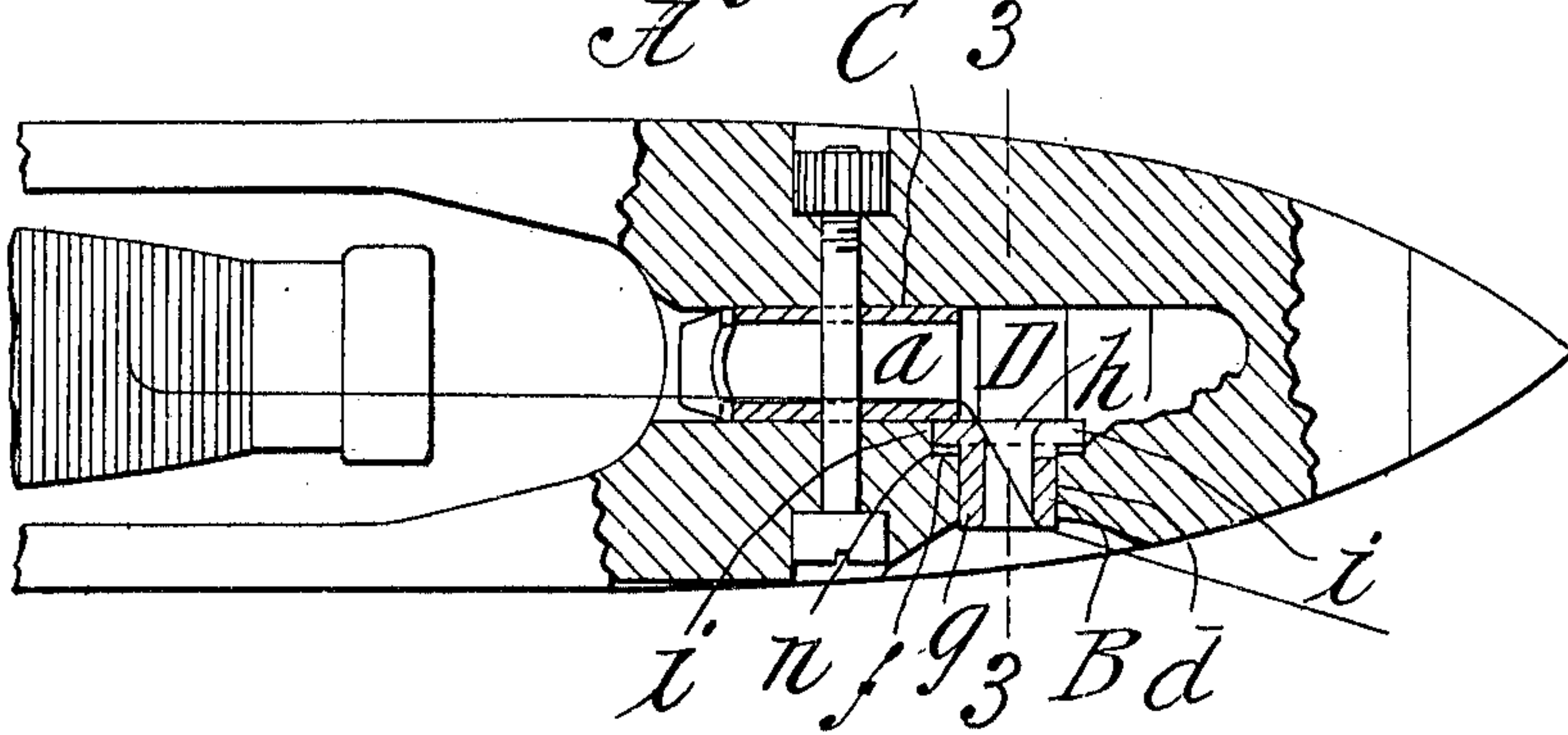


Fig. 1.

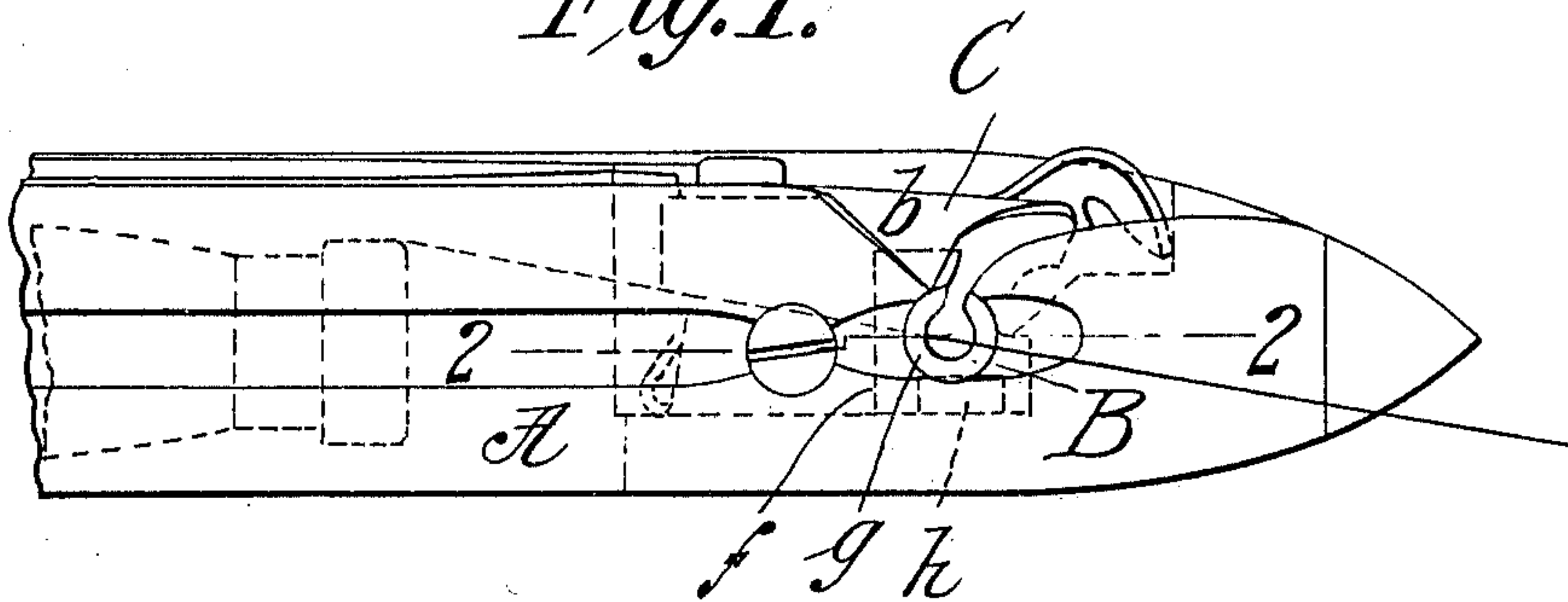


Fig. 3.

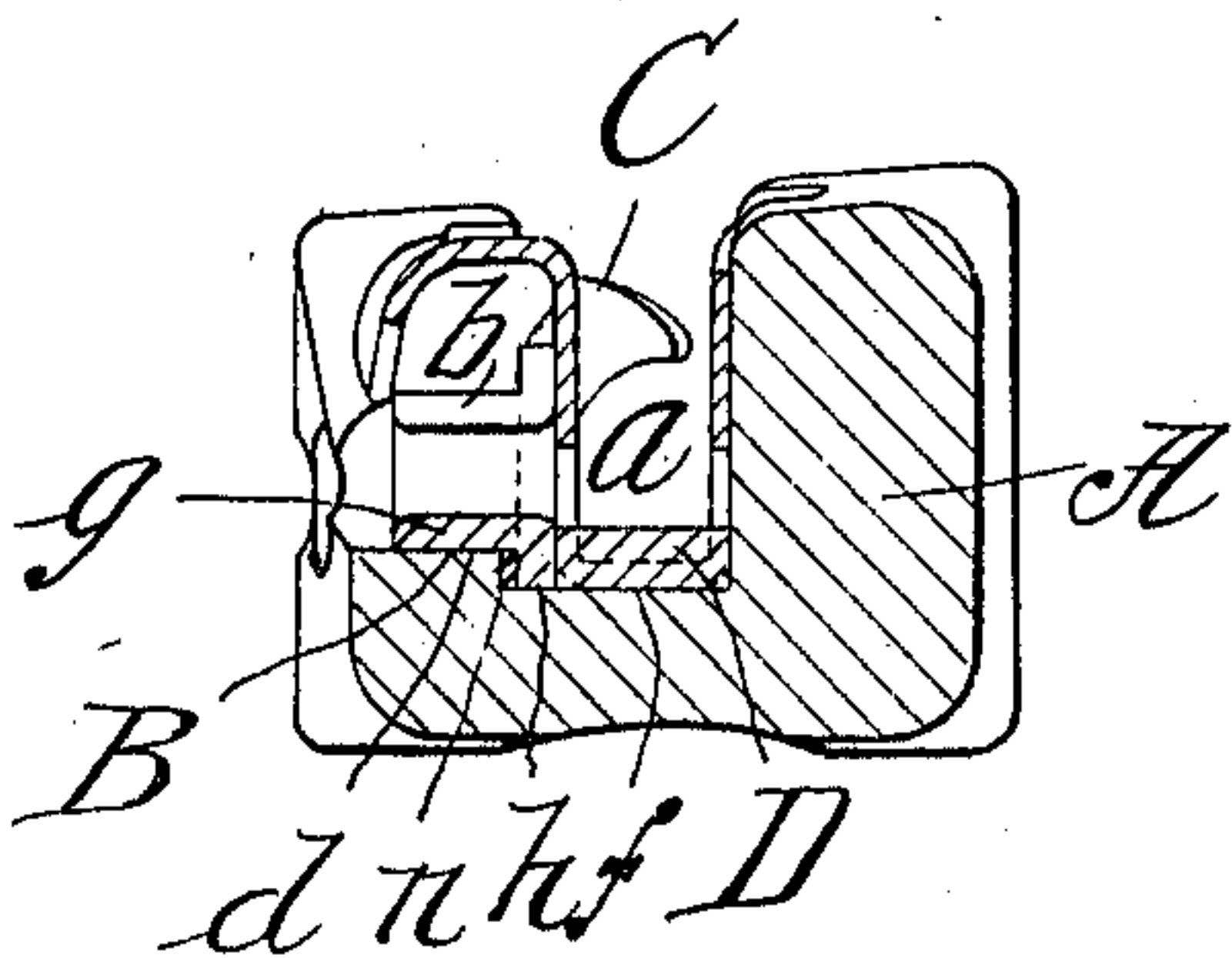
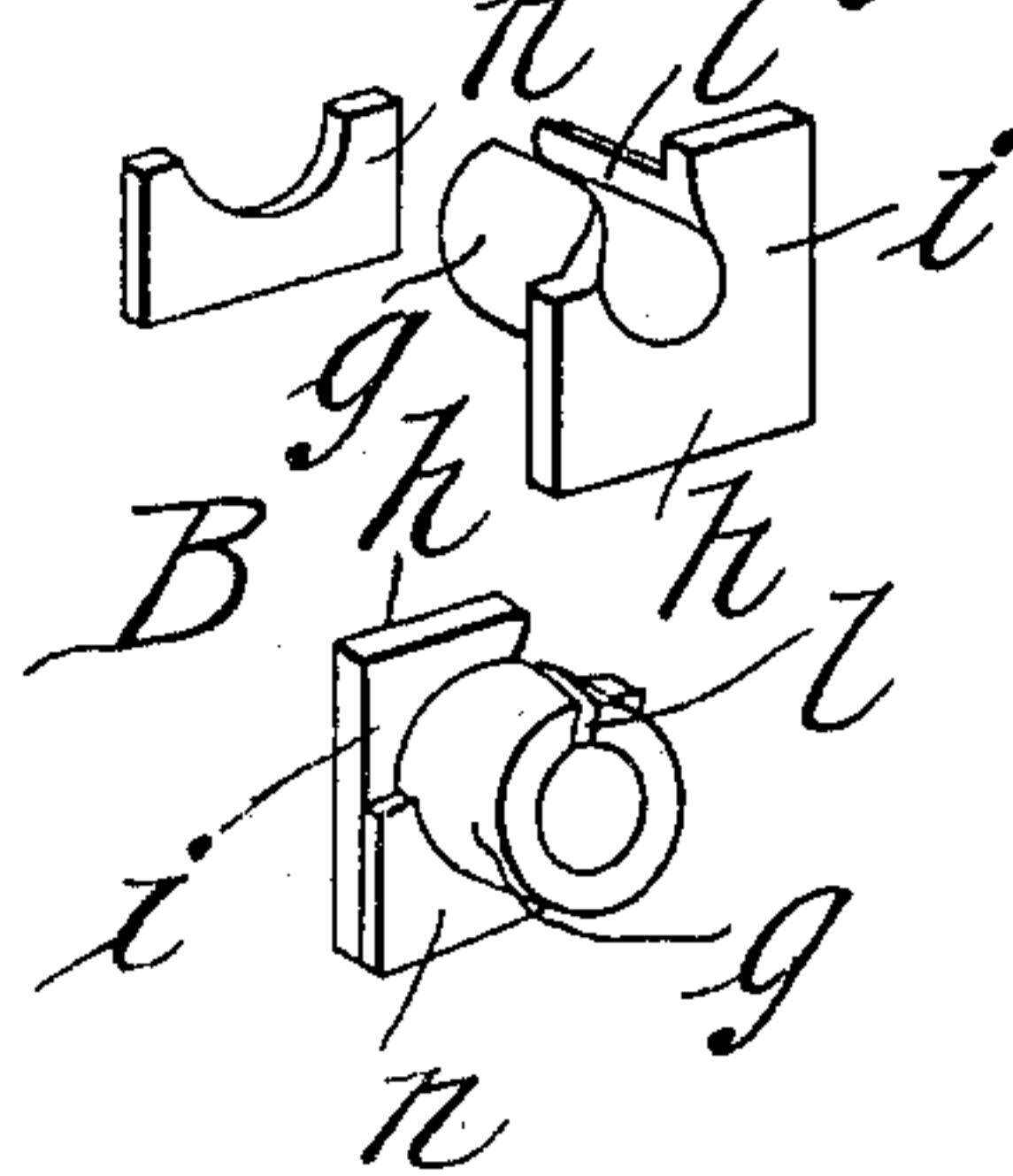


Fig. 4.



WITNESSES:

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SHUTTLE.

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To all whom it may concern:

Be it known that I, WILLARD W. STEARNS, a citizen of the United States of America, and resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Shuttles, of which the following is a full, clear, and exact description.

This invention relates to parts comprised in and pertaining to the eye member of a self threading shuttle for looms.

For the weaving, especially of worsted goods, the bobbin thread or yarn which is of a rough character has the effect of cutting through the wall of the eye in a short time, making the frequent replacement of the eye member a necessity.

An eye member composed of a vitreous substance, such as porcelain, has been found to withstand the destructive cutting effect of the bobbin thread delivered through the eye, but owing to the frangible character of the porcelain, such eye member is one which is liable to be quickly broken as the result of the shocks and strain to which the shuttle is subjected.

The principal object of this invention is to provide an eye member for a self threading loom shuttle which is so constructed and formed as to comprise means for reinforcement against the breakage by shocks on the shuttle. And a further object of the invention is to so construct the eye member and combine the same in a recess in the shuttle therefor that it may be easily inserted, reliably retained in its place during use, and easily replaced as occasion therefor at infrequent intervals may require.

The invention is described in conjunction with the accompanying drawings and is set forth in the claims.

In the drawings:—Figure 1 is a side elevation of the end portion of a loom shuttle in which the improved eye member is provided. Fig. 2 is a horizontal sectional view through the same on line 2—2, Fig. 1. Fig. 3 is a cross section on line 3—3, Fig. 2. Fig. 4 is a perspective view of the eye member as seen at opposite ends.

In the drawings, A represents the body of a loom shuttle having a longitudinally extending thread passage *a* therein which is in communication with the delivery opening through the eye member B which has its location as usual in the side of the shuttle and in relation to the cut or cleft *b* in the upper

portion of which is a metallic threading device C comprising prongs, tongues or projections formed from a single blank of sheet metal and effective for securing the guidance of the thread from the bobbin to its engagement into the delivery eye,—such threading device constituting no part of the present invention but the one so far as here shown being that which is very extensively used in the well known Draper loom shuttle.

The side wall of the thread passage is provided with a recess *d* therethrough slightly above the base *f* of such passage, and the inner side of the wall of the thread passage is made with a recess *f*.

The integrally formed eye member is understood as composed of a vitreous substance such as porcelain comprising an annular portion *g* having the opening *b* aforementioned, at its top and leading through the wall of the eye to the delivery passage thereof, such annular portion being engaged with a comparatively tight fit in the said recess *d*.

The eye member has at its inner end an integrally formed downwardly extending reinforcing flange *h*, the location of which is diametrically opposite the thread entrance opening *b* and where the liability of breakage is ordinarily the greatest. The said eye member, moreover, is provided with sidewise extensions or flanges *i i* which have positions and a reinforcing support for the eye member in the aforementioned recess *f* at the internal wall of the thread passage, against the surface of which a layer of cloth or the like is provided.

The eye member may be inserted and engaged in its place as represented in the drawings by being dropped down into the thread passage at a time when the skeleton like thread guide C is temporarily removed and then forced outwardly into the through recess *d* and with its flanges *i i* to a close fit in the internal recess *f* while the reinforcing flange *h* at the bottom engages the internal surface of the wall of the thread passage below the recess *d*.

As manifest, the flanges *h* and *i* serve to prevent outward displacement of the eye member and also prevent any rotative action of the latter which might result in improperly altering the location of the thread entrance opening *b* for the certain guidance therethrough of the bobbin thread; and inward displacement of the eye member is pre-

vented by a small rectangular block or section D which may advantageously be composed of leather, and which is fitted, removably, in a space for its accommodation in the base of the thread passage at the end thereof farthest from the bobbin.

Attention is here, again, particularly called to the layer n of a more or less yielding or compressible material such as textile fabric or electric tape employed between the face of the flange extension of the eye member and the inner surface of the side wall of the thread passage, so that the flange comprising portion of the eye member is between and in close relation to what is in effect cushioning materials at both the inner and outer sides thereof; and the provision of such slight yielding or compressible material,—that is the aforesaid small leather block D and the cloth or tape layer n ,—is effective to relieve the fracturing strain which would otherwise be brought against the eye member at the times of the contraction of the shuttle body which is produced thereon when the shuttle enters, and is pinched by, the shuttle box.

The layer n of fabric or other suitable compressible material is preferably cemented to the face of the flange portion of the eye member so as to be carried with and as a part of the eye member, making care unnecessary in the insertion of the eye member in its place that the cushioning layer is brought to its proper interposition. This eye member, as usage thereof has proven, is serviceable for use in loom shuttles especially carrying thread for worsted weaving, withstanding the sawing or severing effect

of the comparatively rough thread delivered therethrough and is not subject to fracture with anywhere near the frequency of eyes made of porcelain not having the structural features shown and particularly pointed out.

I claim:—

1. A shuttle having a thread passage in the end portion thereof, the side wall of which is provided with a recess leading therethrough above the base of said thread passage, and an eye member composed of vitreous material comprising an annular portion having an opening at its top leading to the passage of the eye and adapted to be fitted in said recess and having at its inner end an integrally formed reinforcing flange to lie within the wall of the thread passage, a layer of cushioning material between said flange and the thread passage wall and a piece of compressible material removably fitted in the base of the thread passage, and engaging the flange of the eye member.

2. An eye member for a self threading shuttle composed of vitreous material comprising an annular portion having an opening through its surrounding wall leading to the passage of the eye and having at its inner end an integrally formed, radially extending reinforcing flange and having a layer of compressible material provided on the surface of said flange.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

WILLARD W. STEARNS.

Witnesses:

G. R. DRISCOLL,
WM. S. BELLOWES.