

No. 697,541.

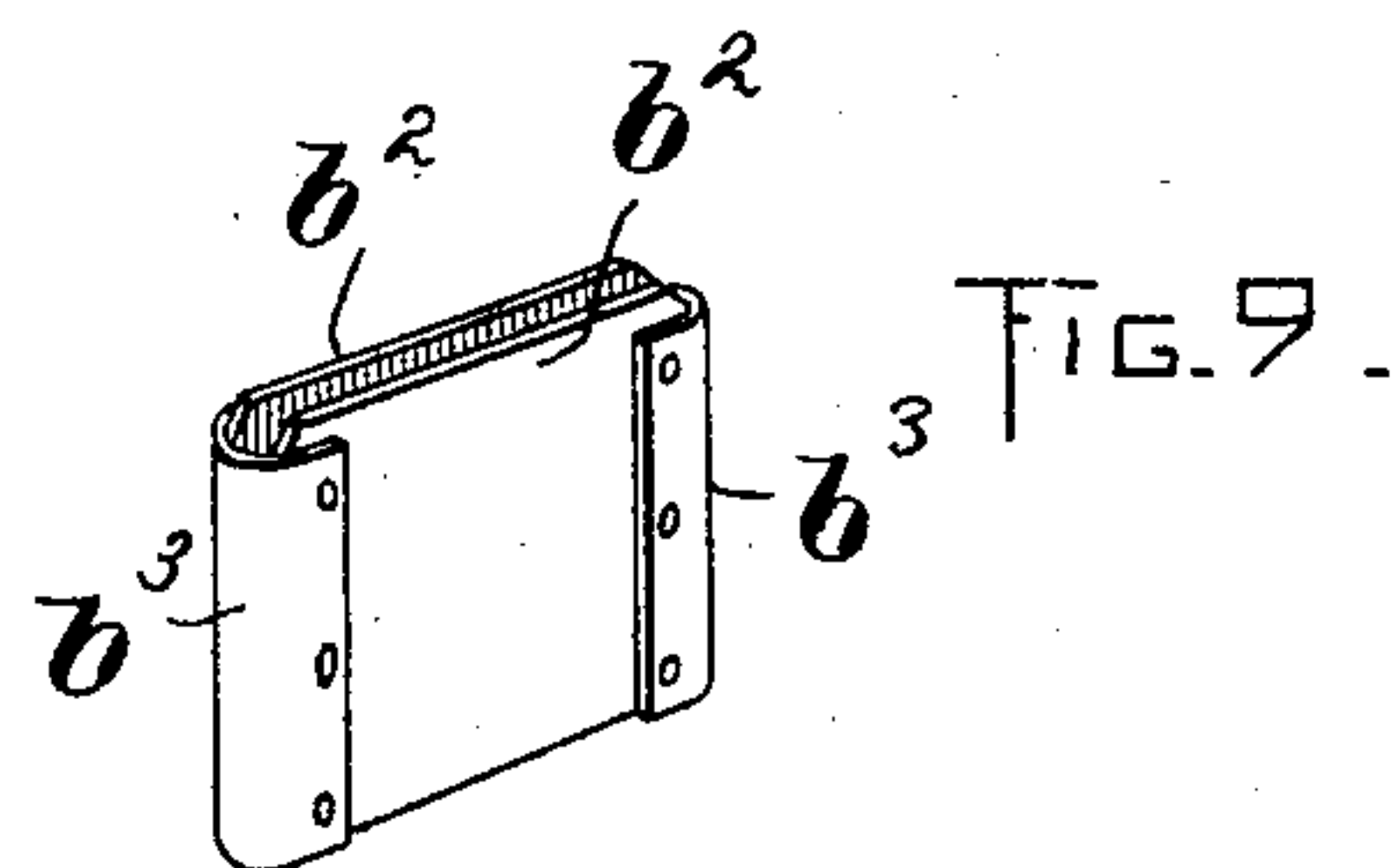
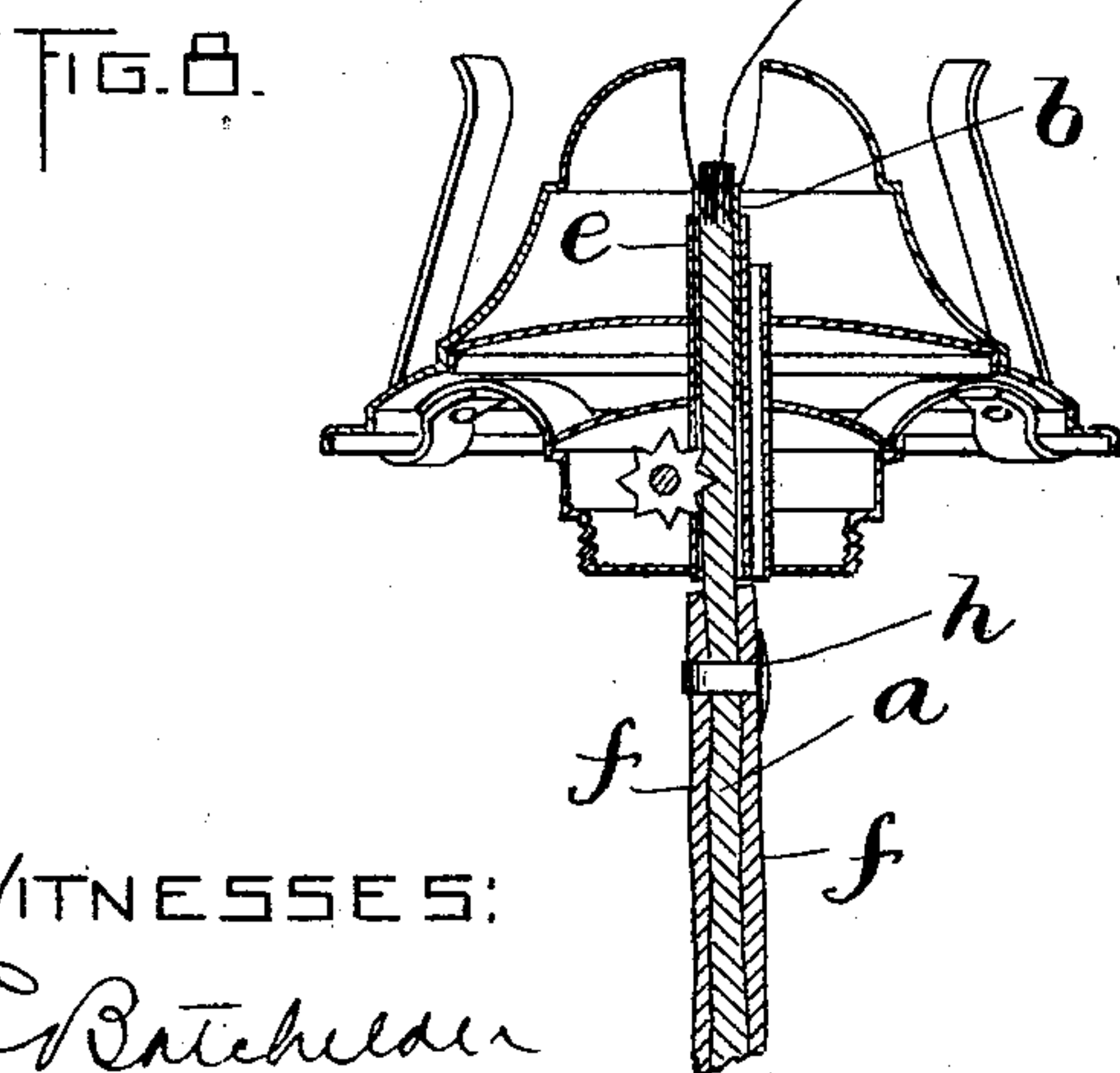
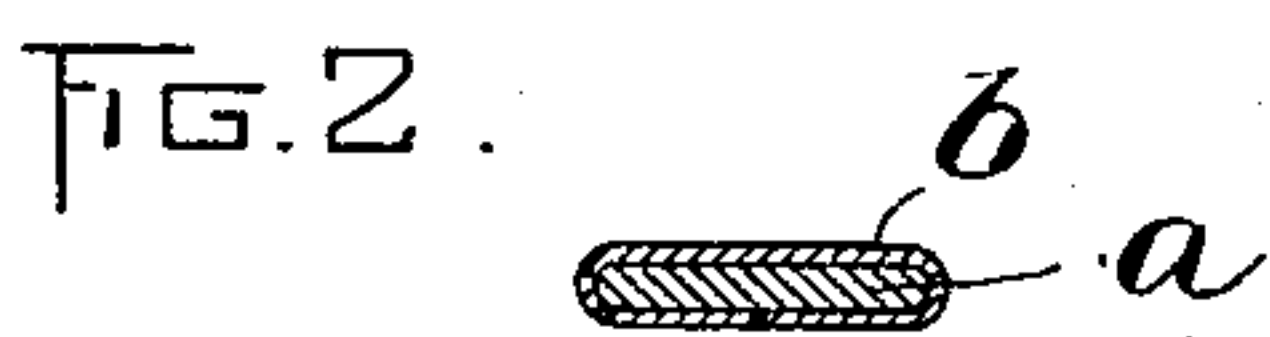
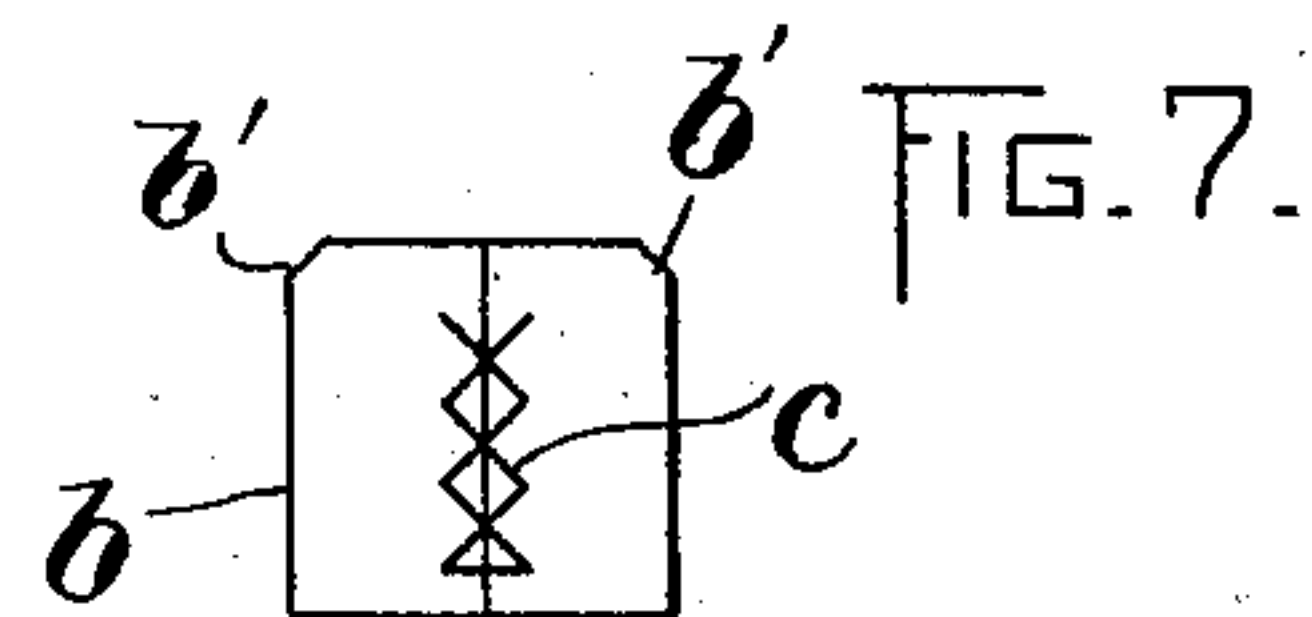
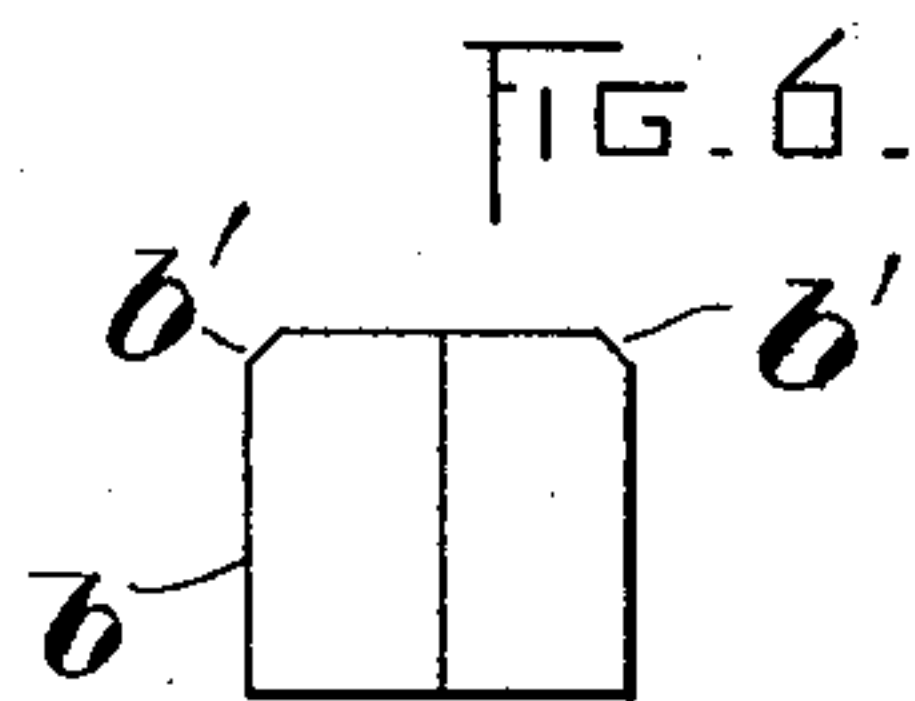
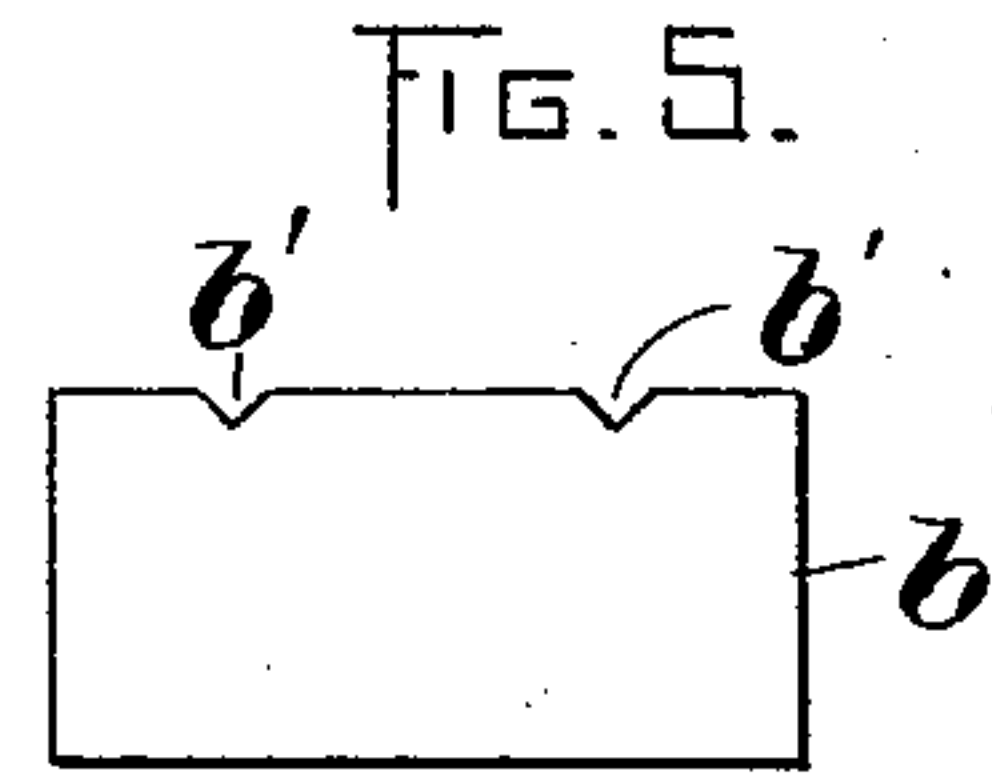
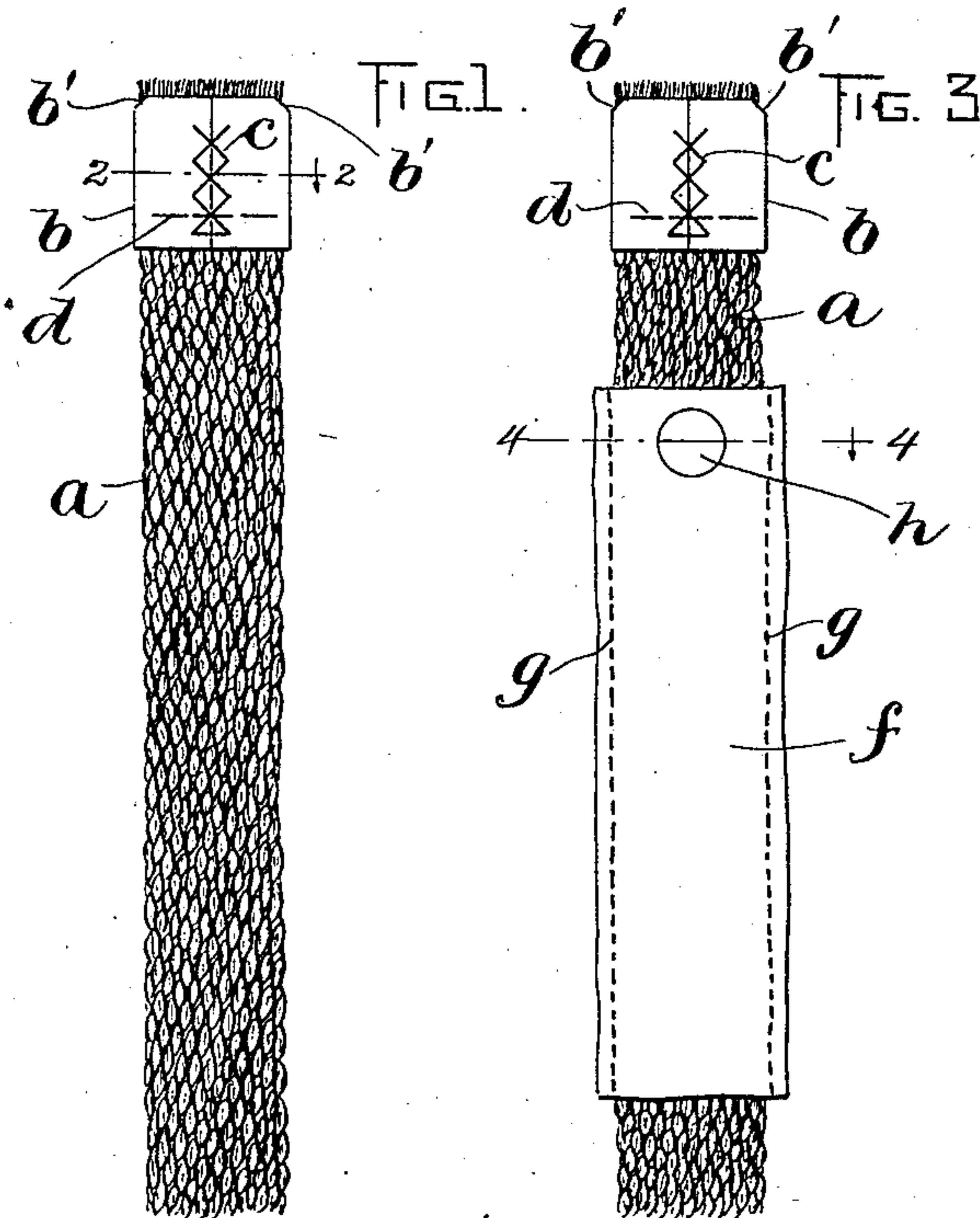
Patented Apr. 15, 1902.

W. READ.

WICK FOR HYDROCARBON BURNERS.

(Application filed June 17, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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WICK FOR HYDROCARBON-BURNERS.

SPECIFICATION forming part of Letters Patent No. 697,541, dated April 15, 1902.

Application filed June 17, 1901. Serial No. 64,819. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM READ, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Wicks for Hydrocarbon-Burners, of which the following is a specification.

This invention relates to wicks for burners using a kerosene or other hydrocarbon oil; and it has for its object to provide a wick having suitable capillary properties and provided with means for supporting and protecting, and thus making permanent, the portion of the wick which is carbonized by heat in the ordinary use of the burner, so that the carbonized portion instead of being removed from time to time, exposing the uncarbonized material of the wick, constitutes a permanent tip or terminal in which the oil is vaporized by the heat and at the end of which the hydrocarbon is burned in the form of gas, emitting a clear smokeless flame suitable for illuminating and heating purposes.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side view of my improved wick, showing the protector or holder for the carbonized burner in place on the wick. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a view similar to Fig. 1, showing also an auxiliary or oil-feeding wick secured to the main wick below the carbon-protecting collar. Fig. 4 represents a section on line 4 4 of Fig. 3. Fig. 5 represents the blank from which the carbon-protecting collar is made. Fig. 6 represents a side view showing said blank bent to form the collar. Fig. 7 represents a view similar to Fig. 6, showing the ends of the blank stitched together. Fig. 8 represents a sectional view of a burner equipped with my improved wick. Fig. 9 represents a modification.

The same reference characters indicate the same parts in all the figures.

In carrying out my invention I take a wick *a* of textile material, such as the ordinary woven wick used for lamp-burners, and apply to the upper portion thereof a collar *b* of re-

fractory material. In making this collar I prefer to use sheet-asbestos, a blank of this material of the general form shown in Fig. 5 being folded to form a flattened tube adapted to encircle the wick, the ends of the blank being abutted together and connected by stitches *c* or otherwise, as shown in Fig. 7. The collar *c* is formed to closely fit the cross-section of the wick and is adjusted thereon so that the upper end of the wick projects a short distance above the upper end of the collar, as shown in Figs. 1, 3, and 8. The collar is suitably secured to the wick, preferably by means of horizontal stitches *d*, as shown in Figs. 1 and 3. The collar should be so proportioned that it will enter the wick-tube *e* of a lamp-burner, as indicated in Fig. 8.

When the described wick is in place in a burner and saturated with oil, the combustion of the oil at the upper end of the wick in a short time carbonizes the projecting end of the wick above the collar, the carbonization also extending downwardly a short distance into the collar, as indicated by the shaded portion *a'* in Fig. 8. This carbonized portion is protected, supported, and made permanent by the collar *b*, and therefore becomes a practically indestructible refractory tip or terminal for the wick, which tip or terminal constitutes a gas or vapor generator, the oil passing to it through the uncarbonized portion of the wick being vaporized and burning at the end of the wick in the form of gas. The carbonized tip requires no trimming; but should it require evening or leveling this may be effected by a slight pressure of a finger upon its upper end.

f represents an auxiliary wick or feeder which is attached to the main wick *a* below the collar *d* and may be made of felt or other textile material having suitable capillary properties. I prefer to make the auxiliary wick *f* in the form of a tube, surrounding the main wick *a*, by connecting two strips of felt by vertical stitches *g*, as indicated in Fig. 3. This auxiliary wick may be secured to the main wick *a* in any suitable manner. I prefer to secure it detachably by means of an ordinary paper-fastener *h* or other like device. The auxiliary wick by increasing the capillary conductivity of the main wick en-

ables an adequate supply of oil to be furnished to the carbonized end thereof.

This improved wick when used in a lamp-burner emits a clear smokeless flame of great
5 brilliancy. The wick may be advantageously used in a burner for heating purposes, the flame caused by the combustion of the vaporized hydrocarbon in the carbonized end of the wick having a high degree of heat. A
10 burner having a plurality of wick-tubes and equipped with wicks embodying my invention may be advantageously used as a steam-generator for automobile vehicles and for furnishing heat for other purposes.

15 So far as I am aware asbestos is the best possible material for the refractory collar or protector *b*, not only because it is refractory, but also because it is porous, so that the flame is emitted not alone from the surface of the
20 wick that is exposed between and above the sides of the collar, but also from the portions of the sides and ends of the collar that project above the wick-tube *e*. Hence the collar forms, in effect, a part of the carbonized tip
25 of the wick and at the same time constitutes a protector for the fragile carbonized material.

I find it advantageous to bevel or cut away the end portions of the asbestos collar, as shown at *b' b'*, this form causing the flame to
30 spread into a fan shape and insuring level edge at the top of the flame or, in other words, preventing the end portions of the flame from projecting above the central portion. Owing to the collar being in contact
35 with both sides of the wick it provides a mineral socket, in which all the carbon formed by burning the end of the wick is retained. When the cotton of the wick carbonizes when
40 first lighted, it contracts downward into the socket and fills the upper portion thereof,

but cannot escape therefrom, owing to the texture of the asbestos. The carbonized portion then protects the cotton wick below it and at the same time permits of the passage of the vaporized hydrocarbon to feed the
45 flame.

I do not limit myself to a refractory collar or protector composed wholly of asbestos, as a collar composed of two side pieces of asbestos bearing against the sides of the wick and
50 metallic end pieces or clips connecting the side pieces and extending across the edges of the wick would be a modification of my invention. In Fig. 9 I show such modification,
55 *b² b²* being the asbestos sides and *b³ b³* the metallic end pieces or clips, which may be riveted or otherwise secured to the sides *b² b²*. In any case I consider it important that covering-pieces of porous refractory material,
60 such as sheet-asbestos, be held against the sides of the wick in close proximity to the end where combustion takes place.

I claim—

1. A flat textile wick having its upper end provided with an asbestos collar in contact
65 with both sides thereof and adapted to form a socket to retain the carbon formed by burning the end of the wick.

2. A flat textile wick having its upper end provided with an inclosing asbestos collar,
70 the material of the collar at the two edges of the wick being cut away or beveled for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM READ.

Witnesses:

C. F. BROWN,
E. BATCHELDER.