

No. 661,156.

Patented Nov. 6, 1900.

F. A. RATHBUN.
FLEXIBLE MATCH STRIP.

(Application filed Feb. 16, 1900.)

(No Model.)

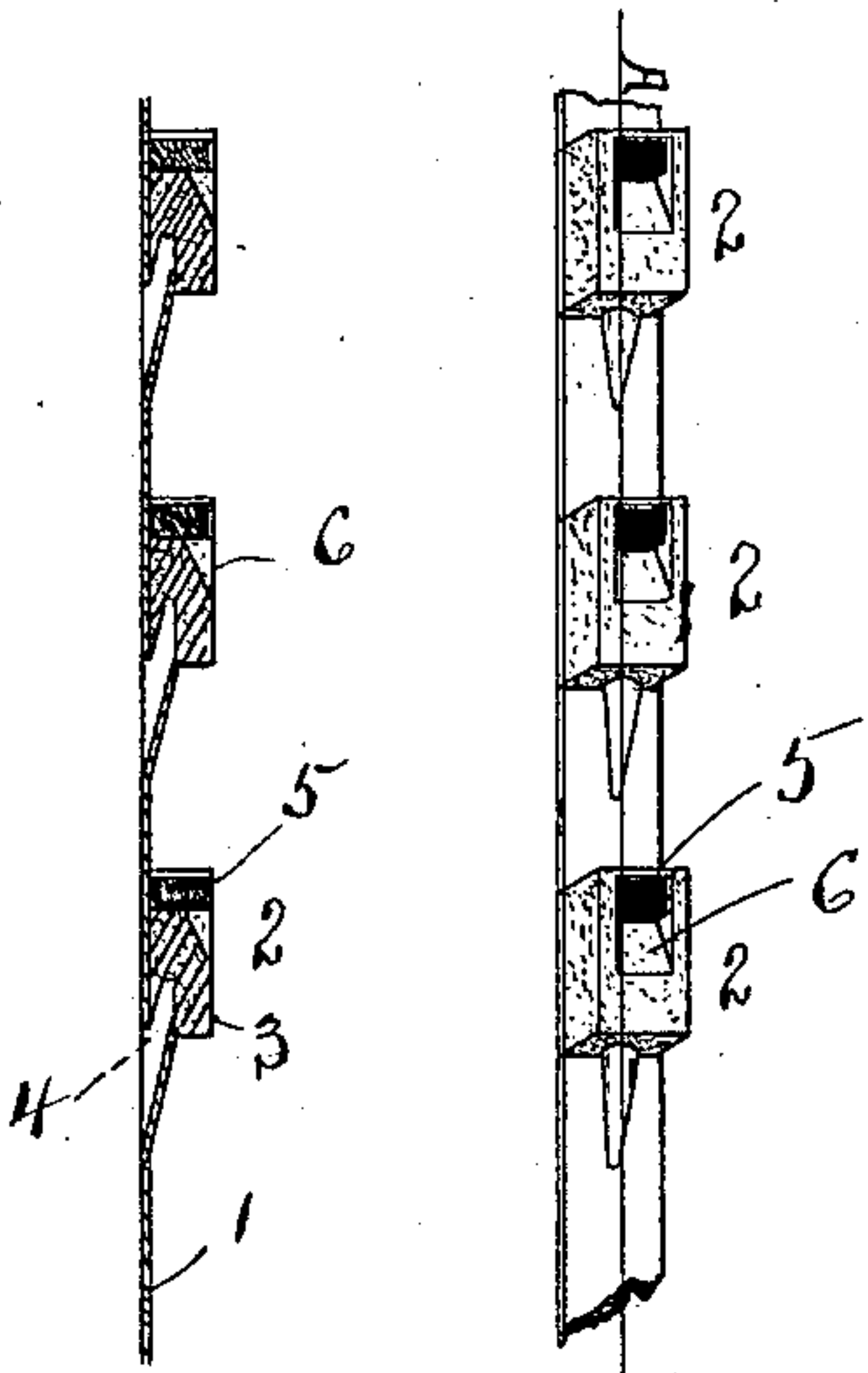


Fig 1

Fig 2

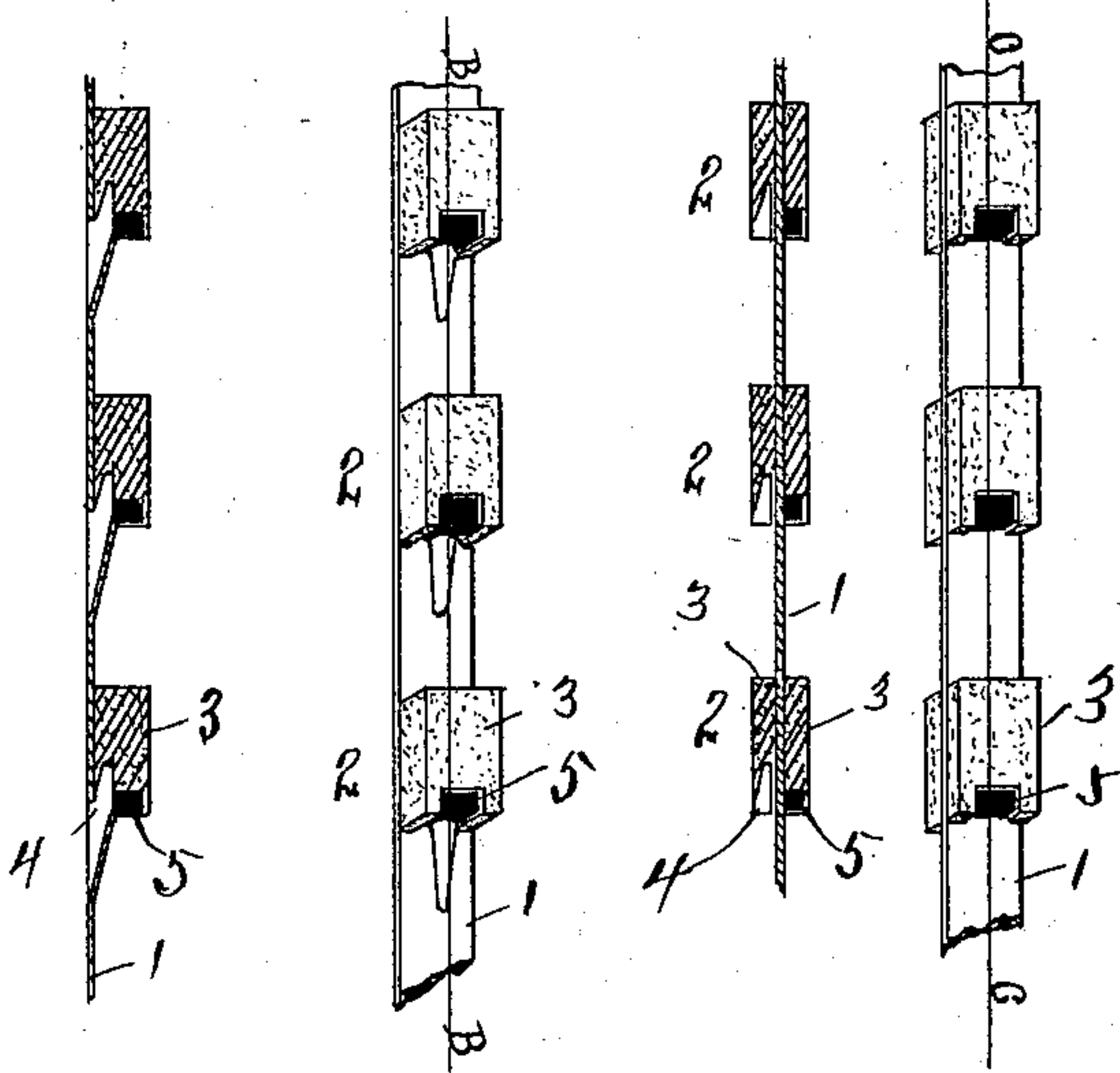


Fig 5

Fig 6

Fig 7

Fig 8

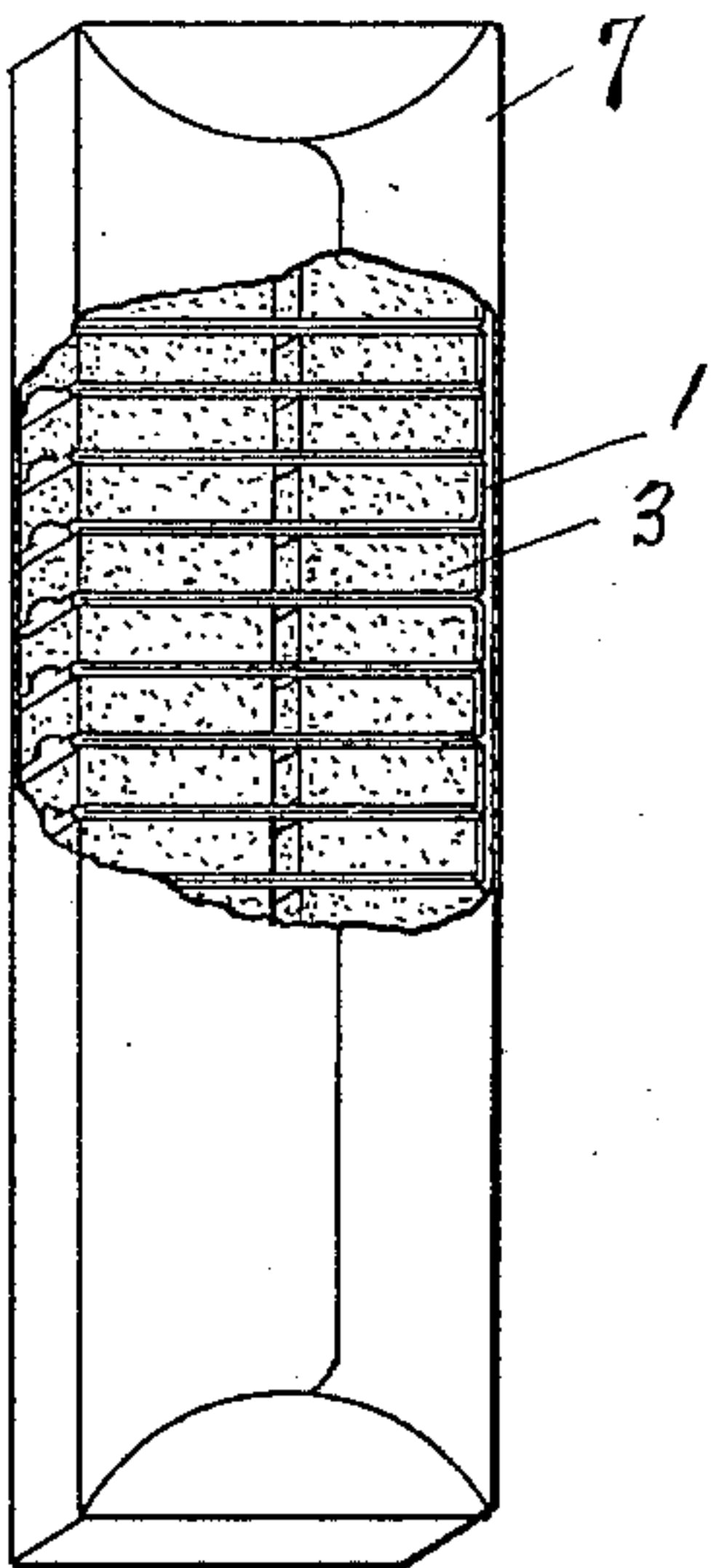


Fig 3.

WITNESSES:

Edna B. Johnson
Ira D. Perry

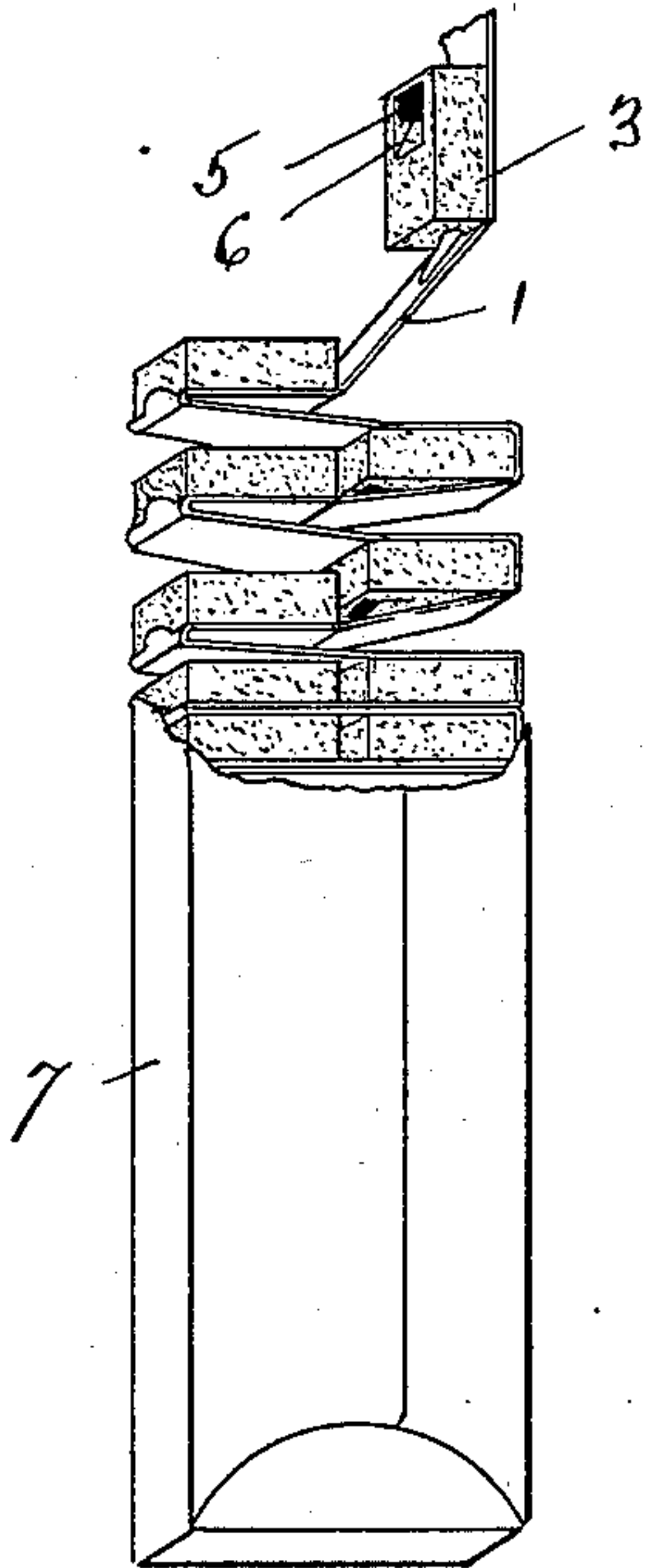


Fig 4.

INVENTOR

Frank A. Rathbun

BY Cecily H. Hopkin

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK A. RATHBUN, OF INDIANAPOLIS, INDIANA.

FLEXIBLE MATCH-STRIP.

SPECIFICATION forming part of Letters Patent No. 661,156, dated November 6, 1900.

Application filed February 16, 1900. Serial No. 5,416. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. RATHBUN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Matches for Automatic Lighters, of which the following is a full, clear, and exact specification.

My invention relates to automatic lighters, and more particularly to that class of lighters in which the match-heads are employed in the form of a continuous strip and ignited as they are ejected from the lighter one at a time—such, for instance, as the form of lighter shown and claimed in my application for United States Letters Patent, Serial No. 740,164, filed December 13, 1899, in which there is provided an ejector having a pointed end adapted to engage in a cavity in the back of the match-head.

My invention has for its primary object to provide an appropriate form of match for use in igniters of this class which may be stored in the igniter in a compact form and may be readily ejected therefrom one at a time and automatically ignited without danger of igniting the entire supply and without danger of the burning match becoming disconnected or falling off prematurely.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a longitudinal sectional view of several of the match-heads in a continuous strip, taken on the line *a a*, Fig. 2. Fig. 2 is a perspective view thereof. Fig. 3 is a package of the matches in readiness to be inserted into the receptacle of the automatic lighter, a portion of the wrapper being torn away. Fig. 4 is a similar view showing the end of the match-strip drawn out. Fig. 5 is a view similar to Fig. 1, showing a modification consisting in placing the fulminate at the lower end of the match-head instead of the upper end, as in Figs. 1 and 2. Fig. 6 is a perspective view of said modified form. Fig. 7 is a longitudinal

sectional view of a still further modification in which the flexible strip passes through the match-head instead of to one side, and Fig. 8 is a perspective view thereof.

In carrying out my invention I employ a flexible strip 1, composed of paper or any other suitable flexible material, but which is preferably combustible, and upon this strip I secure the match-heads 2, the strip being of indefinite length and the match-heads 2 being arranged at the proper distance apart for enabling the ejector of the automatic lighter to force out one of them at a time. Each of these match-heads is composed of a body portion 3, in the back of which is formed a cavity or notch 4, in which engages the point of the ejector, as before explained, thus enabling the ejector to not only engage the match-head for forcing it from the casing of the lighter and pulling up another one of the heads into position to be engaged by the ejector at its next stroke, but also to hold the head in position while it is burning and being used. These cavities or notches 4, it will also be seen, are formed at the lower end of the match-body, so as to insure the engagement therein of the ejector, which would be liable to miss the cavity or notch 4 if the same were formed at an intermediate point. The match-head 2 also comprises a particle of fulminate 5, which in the form shown in Figs. 1 and 2 is secured to the upper end of the head. It is understood that devices for igniting matches of this character have an igniter which operates by pressing against the fulminate 5 while the match-head is passing it and ignites the fulminate in the act of slipping off the edge thereof. In order that this may be readily accomplished with the fulminate arranged at the upper end of the match-head, the latter is provided with a cavity or notch 6, just below the fulminate, so that as the match-head slips upwardly past the igniter the latter in springing into the notch 6 from the lower edge of the fulminate will cause the latter to ignite and set fire to the body portion 3 of the match, which is composed of combustible material, as will be presently described. These particles of fulminate 5 are seated in suitable cavities in the body portion 3 entirely below the surface of the latter, both at the end and the exposed side or face, so that the fulminate

will be protected on all sides from frictional contact against other match-heads when folded together, the only exposed surface of the fulminate being that which is presented on the side in which the notch 6 is formed and which is turned toward the igniter, so that the igniter may engage therein; but larger surfaces will be held from frictional contact with the fulminate. In manufacturing a continuous match-strip of this form the match-heads are cemented, glued, or otherwise secured to the paper strip 1, and the cavities 4 are formed by means of any sharp-pointed instrument inserted through the paper and into the body portion of the match-head. The body portion of the match-head may be composed of any suitable material well known in the art for this purpose. A desirable composition for indoor use, where the wind or strong drafts have not to be guarded against, consists of felt saturated with paraffin, and for a wind-proof match glue, eight parts; shellac, eight parts; chlorate of potassium, eight parts; paraffin, four parts; nitrate of strontium, twenty-four parts. All should be thoroughly mixed over a water-bath, with water enough to produce a thick homogeneous mass, from which the match-bodies are molded and then glued or otherwise fastened to the flexible connecting-strip, any of the well-known fulminates being inserted in the match-body, as before described. The matches thus made may be folded together in a compact form in the manner best illustrated in Fig. 3 and enclosed in any suitable wrapper 7, so as to be in a convenient form for insertion in the receptacle of the automatic lighter, the end of the wrapper being torn off in the manner illustrated in Fig. 4 after it is inserted for permitting the ejector to engage the first match-head on the strip.

In the form of my invention shown in Figs. 5 and 6 I have placed the fulminate 5 at the

lower end instead of the upper end of the match-body, thus avoiding the use of the notch 6.

In the form of the invention shown in Figs. 7 and 8 the construction does not differ from that illustrated in Figs. 5 and 6, excepting that the flexible strip 1 passes through the body portion 3 instead of to one side thereof, or, in other words, the body portion is divided into two parts and one part secured to each side of the strip 1, one part being provided with the fulminate 5 and the other with the notch or cavity 4.

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

1. As a new and useful article of manufacture a match-strip for the purpose described having in combination a flexible combustible strip and match-heads secured thereto and consisting of a combustible body portion and a fulminate embedded therein, said body portion having a notch below said fulminate on one side and a cavity for the engagement of an ejector formed through said flexible strip on the other side, substantially as set forth.

2. As a new and useful article of manufacture a match-strip for the purpose described having in combination a flexible combustible strip and match-heads secured thereto and consisting of a combustible body portion and a fulminate portion embedded in said body portion and having its entire outer surface at least as deep in the body portion as the sides and face of the body portion whereby the surfaces of the fulminate will be protected from friction against surfaces with which the sides and face of the body portion may come in contact, substantially as set forth.

FRANK A. RATHBUN.

Witnesses:

CHAS. W. MCFARLAND,
E. S. FOLSOM.