

J. A. E. CRISWELL.
MATCH.
APPLICATION FILED JUNE 13, 1905.

988,249.

Patented Mar. 28, 1911.

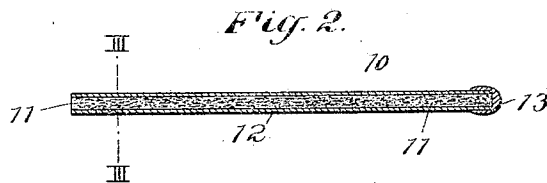
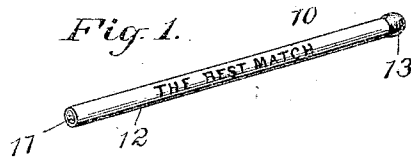


Fig. 3.

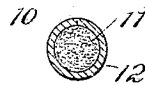


Fig. 4.

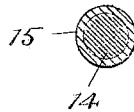


Fig. 5.

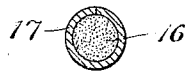
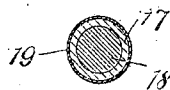


Fig. 6.



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MATCH.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES A. EKIN CRISWELL, of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Matches, of which the following is a full, clear, and exact description.

This invention relates to composite matches of the character disclosed in my pending application Sr. No. 40,548 filed December 20, 1900, and Sr. No. 241,234, filed January 16, 1905.

The primary object of the invention is to provide cheap and inexpensive matches manufactured from materials that are inexpensive, or in many instances are burned or destroyed for lack of means for using the same, and are so combined and utilized that a very strong and efficient match of uniform quality is produced.

A further object of the invention is to provide matches which may be distinctive in character, and made in various colors, and on which may be placed suitable advertising matter.

With this and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a perspective view of one form of match embodying the invention. Fig. 2 is an enlarged longitudinal section through the match. Fig. 3 is a transverse section, on a much larger scale, taken on the line III—III of Fig. 2; and Figs. 4 to 6 are enlarged transverse sections of other composite matches.

The match stem or body portion 10 of the match has an inner core 11 made preferably of cheap material reduced to paper-making pulp, or pulp made from old newspapers, paper scraps, wood pulp and the like, mixed together or separate, and with which may be combined when desired short fibrous material, as cotton in very fine particles, or other short fibrous material. A binder of glue, flour or starch, to which may be added copperas if desired, may be combined with the paper-making pulp and short fibrous material, to cause them to unite more freely, and to form a more compact and strong core for the matches. On the outer surface of the core is a covering of paper or other

inflammable material 12 which holds the core from disintegrating while the match is burning. The cores of the matches may be made from the paper pulp while in a plastic condition and by any suitable means, and the paper covering or casing 12 may be applied thereto when wet or dry and in any suitable way secured to the core so as to provide a substantially homogeneous match body or stem. On the paper covering of the match body is the igniting head 13 of the usual or any preferred substance, and if desired an igniting head may be arranged on both ends of the match body.

In Fig. 4 the short fibrous material of the core 14 is dispensed with, and the paper-making pulp either alone or in combination with suitable hardening material, as copperas, plaster of Paris or other earthy material forms the core 14, and inclosing the core is a cover or casing of paper 15 or other material.

Fig. 5 shows the core 16 of the match body as made of wood pulp which is first reduced to a plastic condition and which may be united or mixed with rosin, paraffin, or other glutinous or resinous substances, and inclosing the core of wood pulp is a paper covering 17.

In Fig. 6, the core 18 and cover 17 may be the same as shown in Fig. 4 or may be similar to the other figures. The whole body or match stem is passed through paraffin, stearin or like material to form a coating and provide a cheap and inexpensive wax match.

It will be seen from the foregoing that a very cheap, strong and effective match is produced on which advertising matter may be placed, which may be made distinctive in character, which may be of various shapes or forms in cross-section, and in which waste materials may be utilized for the entire or greater part of the match bodies.

It will be understood that various combinations of materials may be used, and that the materials as well as the proportions thereof may be changed as thought most convenient; and where the matches are of such a character that they are apt to hold the flame and glow after being burned, the match bodies may be impregnated with phosphate of ammonia, phosphoric acid, or other chemicals to prevent glowing.

By the term "paper" as applied to the cover or casing, it is understood that it is

used in its broadest sense, and "paper-making pulp" is intended to include any of the materials from which paper may be made, but which is applied in a pulpy condition.

- 5 It is to be further understood that the matches may be in the form of match cards or in any other desirable form.

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

- 10 1. A match having its stem composed of a solid core of paper-making pulp mixed with unpulped cotton fibers, and a tubular cover

of relatively strong paper adapted to secure the necessary stiffness inclosing and adhering to said core. 15

2. A match having its stem composed of a solid core of paper-making pulp mixed with unpulped vegetable fibers, and a tubular cover of relatively strong paper adapted to secure the necessary stiffness inclosing and adhering to said core. 20

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