

VAN R. POWELL.
Manufacture of Friction Matches.

No. 49,002.

Patented July 25, 1865.

FIG. 1.

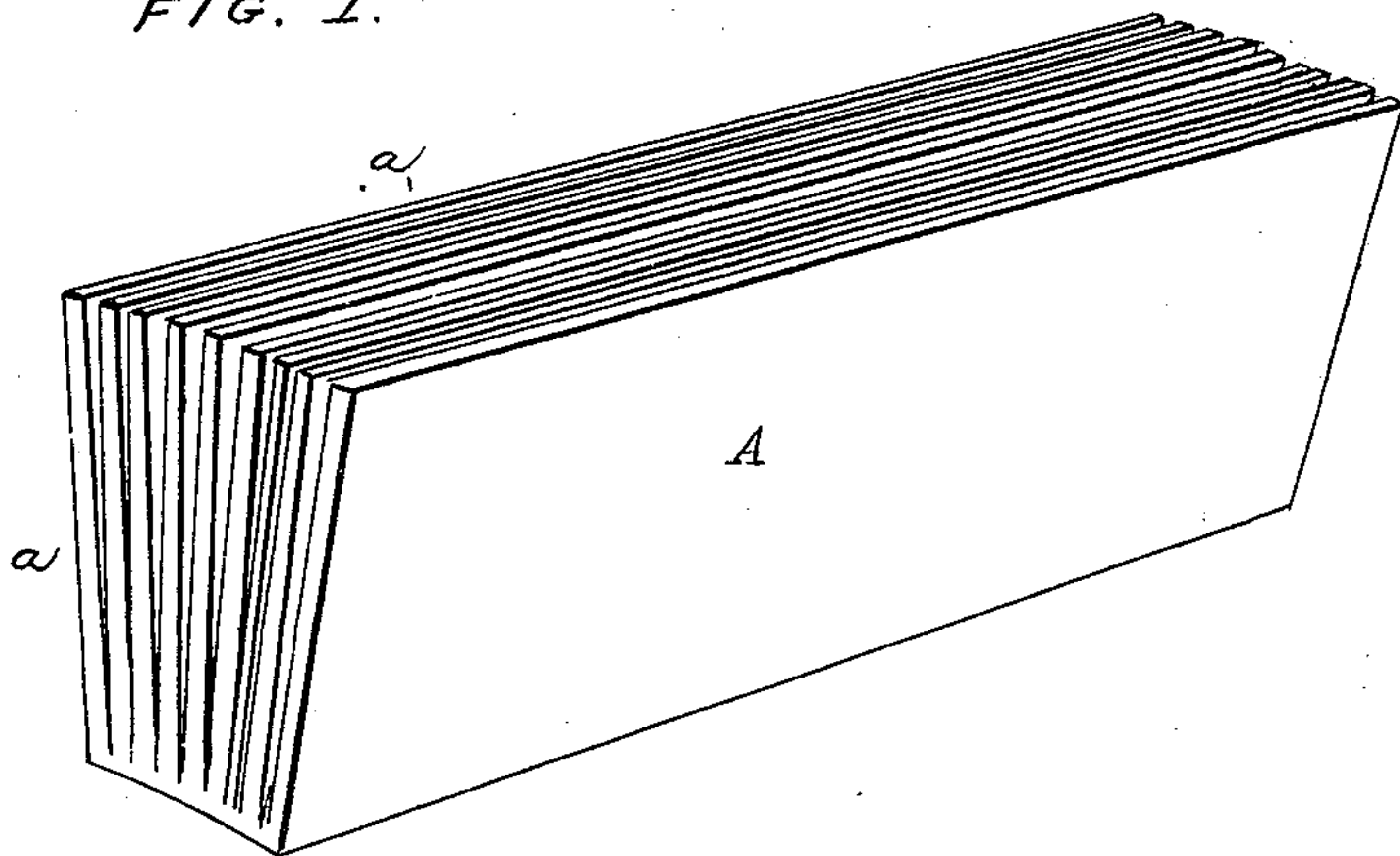


FIG. 2.

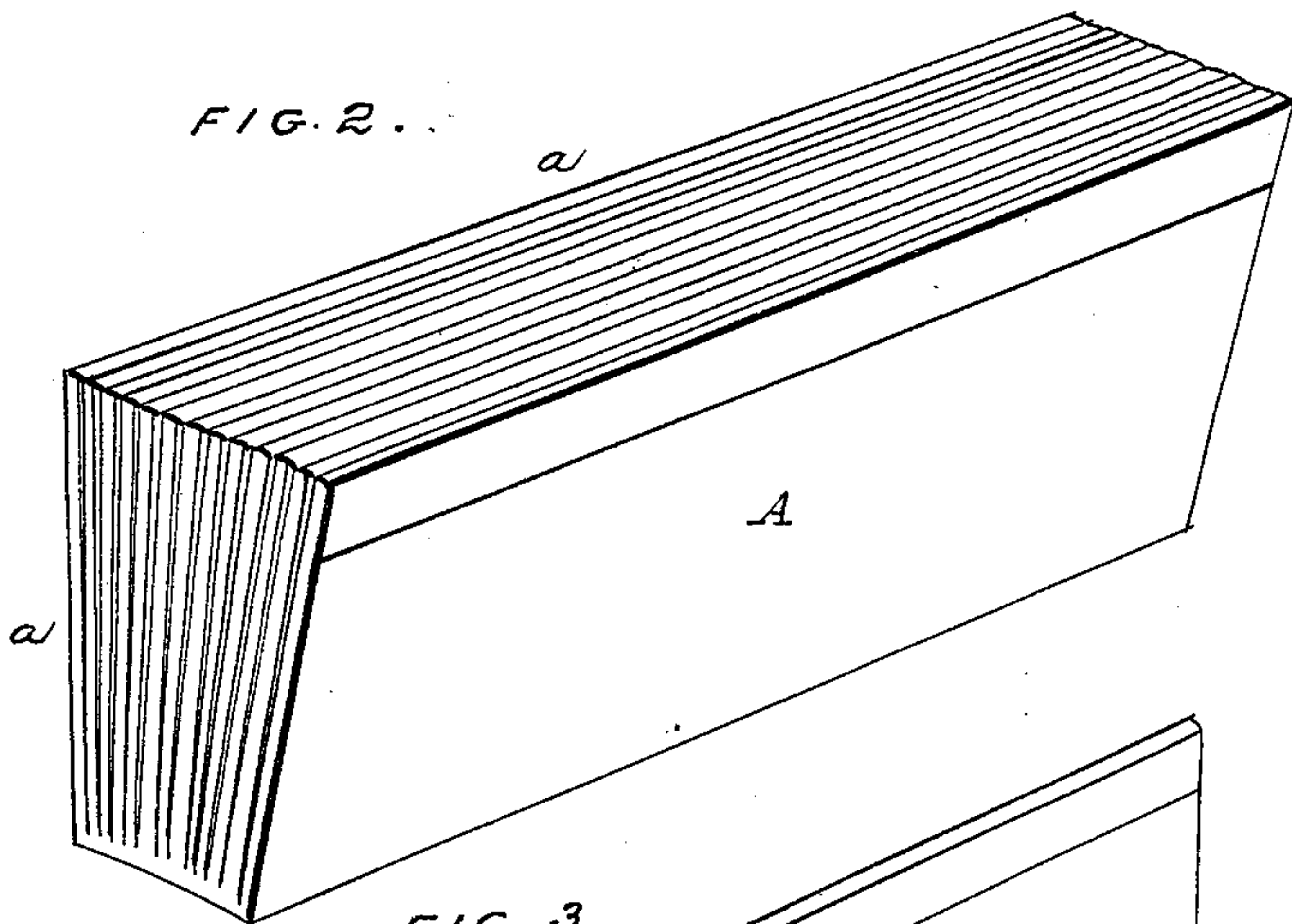


FIG. 3.

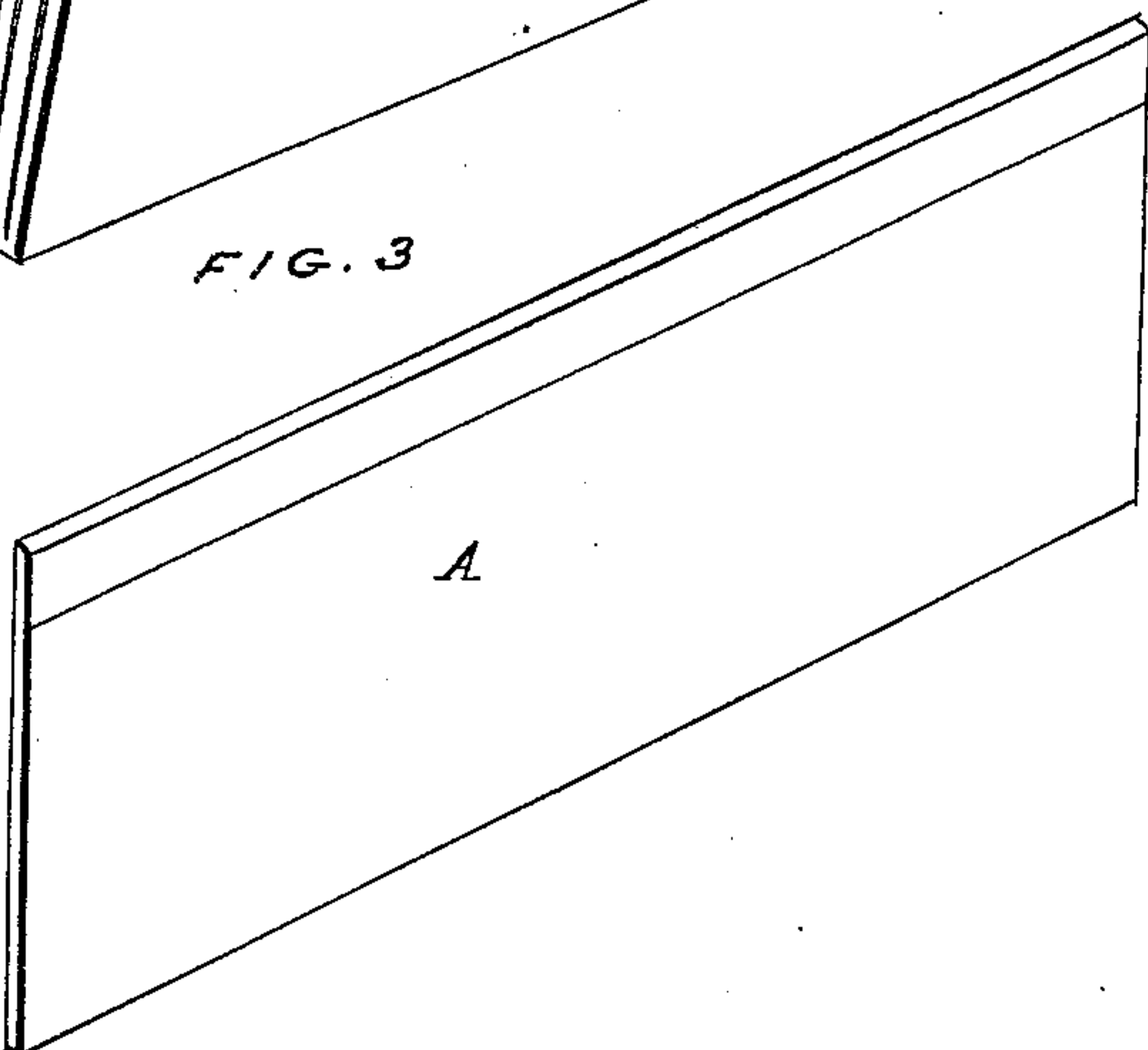


FIG. 4.



WITNESSES:
J. J. Farage
J. D. Barney

INVENTOR.
Van Rensselaer Powell

UNITED STATES PATENT OFFICE.

VAN RENSSELAER POWELL, OF TROY, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF FRICTION-MATCHES.

Specification forming part of Letters Patent No. 49,002, dated July 25, 1865.

To all whom it may concern:

Be it known that I, VAN RENSSELAER POWELL, of Troy, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in the Manner of Manufacturing Friction-Matches; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 represents a block of match-strips as in the preliminary stage of manufacture. Fig. 2 represents the same block after having been dipped and capped in the usual chemical compositions used for that purpose. Fig. 3 represents a match-strip as separated from the block preparatory to being split into loose matches to put in proper packages for transportation and sale, and Fig. 4 represents a finished friction-match.

The same letters have reference to like parts in each of the figures.

The object and nature of my improved manner of manufacturing friction-matches is to produce a cheaper and equally as good an article of matches, those having the essential qualities of ready ignition when used, withstanding well the injurious effects of atmospheric dampness, having less danger of accidental ignition of packages of the same when in transportation or laid in store, and also obtain greater economy in the expense of manufacturing the same from the reduced quantity of sulphur, phosphorus, and other ingredients required and used in preparing the ends or edges of said matches or match-strips for frictional ignition, and likewise reduce the amount of manipulation required in preparing the same for and in passing them through the several stages of the process of manufacture, substantially in the manner as hereinafter fully described.

To enable others skilled in the art to use my improved manner of manufacturing friction-matches, I will proceed to fully describe the same, first, however, giving a brief description of the usual or present method of manufacturing friction-matches.

The usual method of manufacturing split matches is to saw the blocks of proper length, and before being split prepare the blocks in

such a manner that when split the match-sticks will be held together at one end, so as to secure them in proper shape for dipping. For effecting such purpose a coat of glue is generally applied; but in my usual method of manufacture I effect the same purpose by means of a machine called a "matter," by which one end of the blocks is matted—that is to say, the fibers of the wood are compressed in such a manner that the blocks may be split into separate pieces nearly through and still be held together at one end. After having been prepared in the manner as above set forth, the blocks are then split into thin slips or strips, and then again split transversely, whereby they are converted into small splints, held together at one end. The box of match-splints are then dipped in fluid sulphur and their ends coated with the same on all sides. They are next capped by dipping them in the fluid ignitable compound used for that purpose, and then, in order to make what are commonly called "loose" or "box" matches separated or picked apart by hand, for they cannot be practically separated by sawing, owing to the warped concave surface of the blocks, and when attempts have been made to separate them by such means the vibrations communicated to the matches by the running of the saw causes their ends to ignite, as it is very difficult to hold the splint form of match-blocks perfectly steady while being sawed.

My improved manner of manufacturing is as follows, viz: A, Fig. 1, represents one of the blocks of match-stuff, which are from six to ten inches long, or thereabout, and have a width equal to the width of the stuff from which they are sawed, and also being a little deeper than the finished length of the match-strips and matches. The back ends of these blocks are now matted in the usual manner in the matting-machines used for that purpose, and then split by the splitting-machine into match-strips *a a a*, lengthwise with the blocks, the cross or transverse splitting in the old method of operation being omitted, not being necessary at this stage of process in this improved manner of manufacturing matches. The blocks, being thus split into match-strips, are still held together by the matting at the back sides or ends, and are now ready to be dipped into the melted sulphur, the coating of sulphur extending, in

general, about one-half inch down from the ends or edges of the match-strips. After coating with sulphur, the next process is to cap these match-strips with the ignitable compound used for that purpose, which is done by dipping them into a fluid preparation of the same and in the usual way. The dipped and capped match-strips are now to be separated from the blocks or each other, which is done by splitting them apart by hand; or the better and more expeditious way is to remove the matted ends from said blocks by means of a fine rotary saw, and thus separate the blocks of match-strips into distinct strips, as seen in Fig. 3. The next and final process is to separate or split these match-strips into individual or loose matches, which may be done by hand; or the better, more expeditious, and labor-saving method is to split them by machinery, which is done thus: About twenty (more or less) of these match-strips are taken, and in order to protect the ignitable ends or edges of said strips from accidental ignition while being split into loose matches they are placed upon a leathern belt or endless apron, with the edges having the ignitable compound resting upon said belt, the face side of which has the same relative speed as the periphery of the splitting-wheel. Consequently the match-strips ride along in contact with the splitting-wheel, and are split into loose matches without danger of frictional ignition of the match-strips in said process of splitting.

Fig. 4 represents one of the loose matches as made by my improved manner of manufacturing.

It will be seen from the foregoing description that there are two principal points of novelty in my improved manner of manufacturing friction-matches which distinguish it from the old manner of manufacturing—viz., dipping and capping with the ignitable composition—the blocks of match-stuff while in the form of match-strips instead of in the old form of match-splints, and also in the manner of separating those strips from each other by

means of sawing, as described, and then splitting the same into loose matches by machinery, in the manner substantially as above set forth.

It will also be seen that this improved manner of manufacturing friction-matches obtains the advantages of reducing by nearly one-half the quantity of chemical ingredients used in preparing the matches for frictional ignition, from the fact that the coating of sulphur and other ingredients is applied only on two sides of the ends of the match, instead of on four sides, as is necessarily done in the old mode of manufacturing, and also the amount of manipulation required in passing the match-strips through the several processes of manufacture until completed in the form of loose matches is much reduced, from the fact that the several processes are performed mainly by machinery, instead of by hand, thereby effecting a material saving in the expense of manufacturing.

Having fully described my improved manner of manufacturing friction-matches, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The manner of coating and capping friction-matches with the ignitable compound while said matches are still in the form of strips, substantially in the manner as herein described, whereby a material saving in the quantity required of said compound is effected, as set forth.

2. The manner of separating said match-strips from each other and dividing the same into loose matches by the means substantially as herein specified, whereby a saving of labor is gained.

3. The combined use of the within-described improved modes of manufacturing friction-matches, as constituting an improved manner of manufacturing the same, substantially as herein described.

VAN RENSSELAER POWELL.

Witnesses:

J. J. SAVAGE,
I. L. BARNEY.