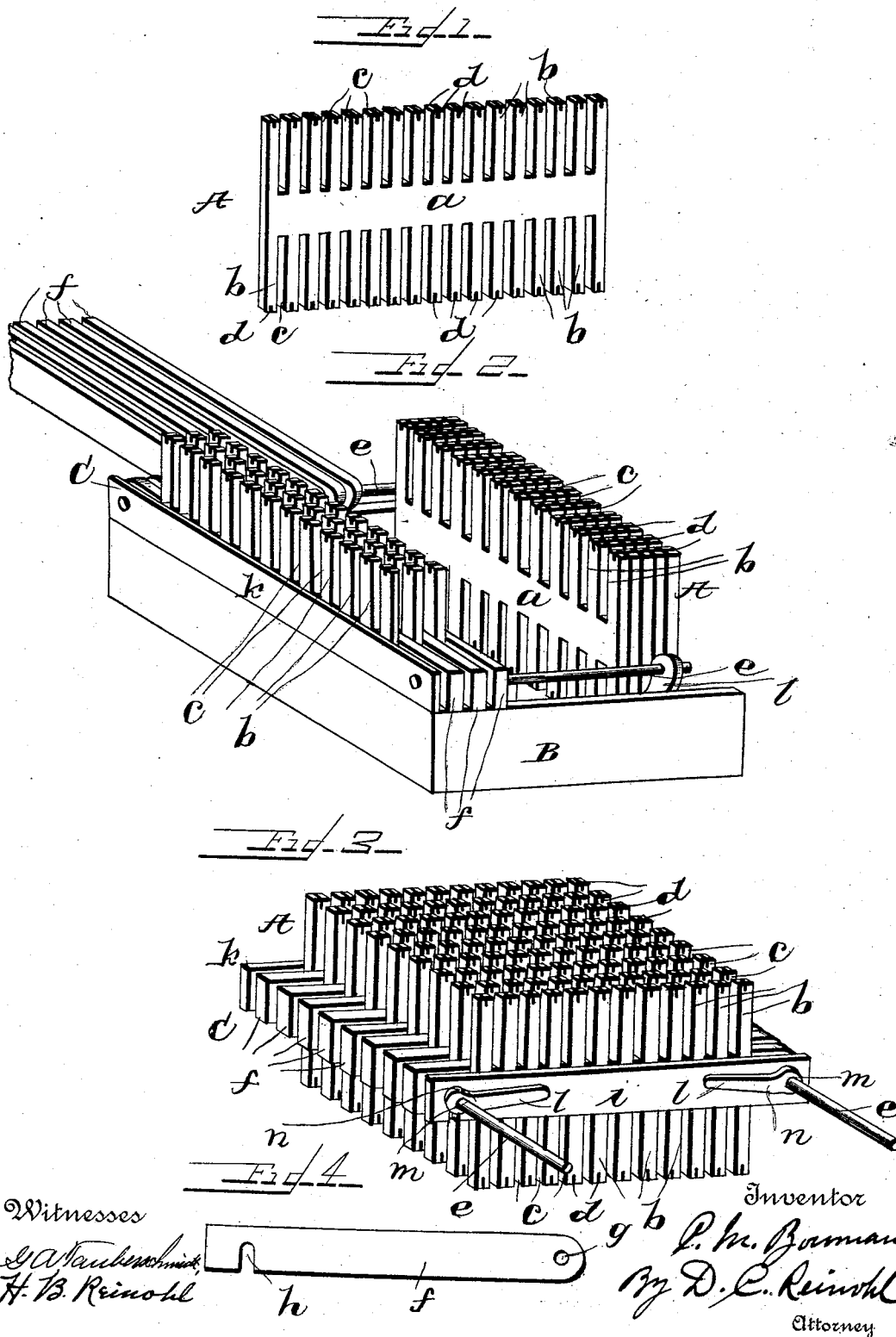


(No Model.)

C. M. BOWMAN.
METHOD OF AND DEVICE FOR MAKING MATCHES.

No. 491,205.

Patented Feb. 7, 1893.



UNITED STATES PATENT OFFICE.

CHARLES M. BOWMAN, OF LEBANON, PENNSYLVANIA.

METHOD OF AND DEVICE FOR MAKING MATCHES.

SPECIFICATION forming part of Letters Patent No. 491,205, dated February 7, 1893.

Application filed September 14, 1892. Serial No. 445,870. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. BOWMAN, a citizen of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Methods of and Means for Making Matches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to the manufacture of matches and has for its object certain improvements in the method of and means for making matches.

In the prevailing practice of making matches splints are used in lengths to make one or two matches and these have been wrapped in a roll of webbing, and then treated with paraffine and dipped in fulminate. One of the greatest disadvantages attending this practice is the number of imperfect and slivered matches that are produced, and another is the number of matches that come out of the fulminate bath with two heads joined by the fulminate, and as a consequence great waste of material attends this practice.

Another practice of treating the splints is to place individual splints in cells in a holder, this is slow and tedious, and consequently expensive.

In the practice using the roll of webbing the double splints must be removed from the roll and severed before the fulminate becomes dry to prevent ignition due to the friction produced by the heads of the matches rubbing against each other as they are being handled to pass them against a knife, which frequently cuts the matches of different lengths.

It is my purpose to obviate the difficulties attending these several practices and manufacture matches with the minimum of loss and at a greatly increased rate of speed as compared with said practices.

To this end my invention will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1, is a perspective of a card of match splints. Fig. 2, a

like view of part of a tray for assembling cards of matches, and a match-card holder in position to be filled. Fig. 3, a like view of a match-card holder filled with match-cards, and Fig. 4, a side elevation of one of the separating bars of the card holder.

Reference being had to the drawings and the letters thereon A indicates a match-card on both sides of the body *a* of which are match-splints *b* separated by spaces *c*, and from the outer end of each splint a portion of the material is removed and the slot *d* formed. The blanks *b* are separated and the material removed from the end of the splint by means of circular saws properly assembled and operating upon the card.

B indicates part of a tray which is of a width corresponding with the width of the match-card holder and of a depth equal to the length of the splints *b* on the card, so that the body *a* or uncut portion of the card will be about even with the top of the tray when the cards are in a vertical position. The tray may be made of any desired and convenient length to accommodate a number of card holders.

C indicates a match-card-holder, and for the purpose of illustration consists of two parallel rods *e e* upon which are supported a number of bars *f* for separating the cards to prevent the fulminate joining the heads of the matches. The bars are preferably made with an aperture *g* in one end which passes over one of the rods *e* and upon which it swings freely, and the opposite end provided with a vertical slot *h* in its under side which passes over the opposite rod *e* and upon which said end of the bar rests. It is obvious that both ends of the bars may be provided with slots *h* if desired. The latter end of the bars extends beyond the side of the tray to afford means for raising them from between the cards, and they may all be raised at once, or separately.

At one end of the rods *e* is secured a plate of thin metal, and at the opposite end is a plate or bar *k* which slides freely on the rods and forms a clamping plate which may be secured by the ordinary means of a screw threaded portion of the rods and a nut (not shown) or preferably by a tension device *l* on each

rod *e*. The tension devices are provided with an aperture *m* at one end which engages the rod *e* and are slightly curved at *n*.

The operation is as follows: The cards having been prepared in the manner described they are assembled in a vertical position in a box or tray so that the body or uncut portion of the card projects above the tray. The card holder is placed on top of the tray with the lower edge of the holder resting on the upper edge of the tray, the cards are then separated laterally and the bars of the holder dropped between each two adjacent cards until all the bars have been dropped and the holder filled. The cards thus separated are then clamped in the holder and placed upon a heating table to prepare them for the paraffine bath. After heating the tips on one end and having dipped them in paraffine, the holder is inverted and the tips on the opposite end of the cards heated and treated in like manner. The card holder with the cards is then passed to the dipper who dips the tips in a suitable fulminate in the usual way. The holder with the cards is then set aside and the fulminate permitted to dry, after which the cards of matches are released and removed from the holder and passed through a pair of saws and both sets of matches severed from the body or uncut portion of the card, simultaneously when they are packed in boxes ready for use.

The match produced forms subject matter

of another application for a patent Serial No. 432,257.

Having thus fully described my invention, what I claim is:—

1. The method of making matches, which consists in forming cards of match-splints, cutting slots in the outer ends of the splints, and applying paraffine and fulminate to entirely envelop the tips of the splints.

2. The method of making matches, which consists in forming match-cards with an uncut portion or body and match splints on both sides of said body integral therewith, cutting slots in the outer ends of the splints, assembling the cards in a suitable tray, separating the cards and securing them in a separated position in a holder at the uncut portion of the card, and treating the tips with paraffine and fulminate.

3. A match card holder consisting of parallel rods, bars engaging one of said rods at one end to swing thereon, and provided with a slot on the underside of the opposite end to engage the opposite bar of the holder, a clamping plate and means for applying tension thereto.

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

CHARLES M. BOWMAN.

Witnesses:

D. C. REINOHL,
H. B. REINOHL.