(No Model.)

# B. T. STEBER.

## MATCH SPLINT CLAMP.

No. 303,677. Patented Aug. 19, 1884.

Fig 1.

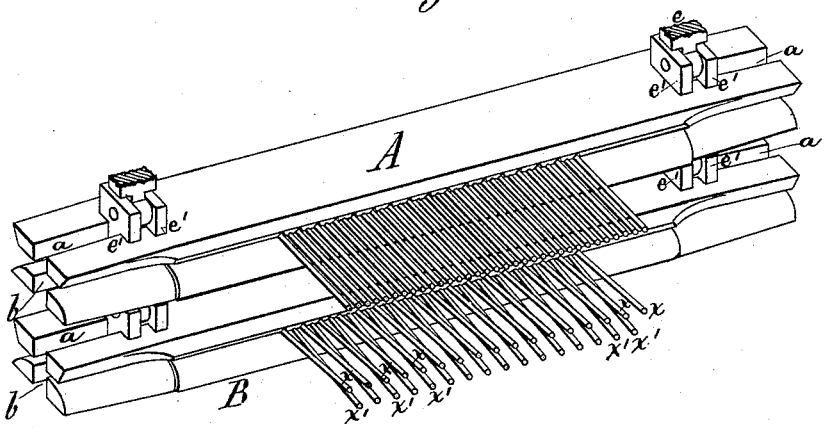



Fig 2.

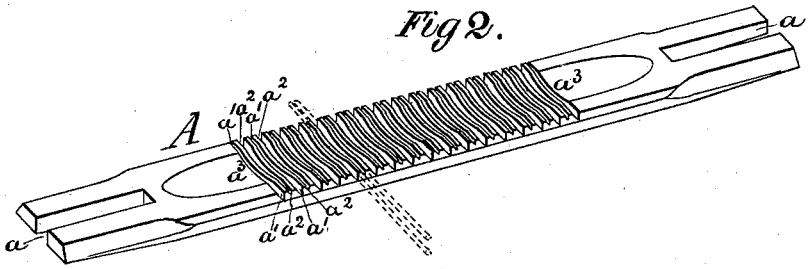



Fig 3.

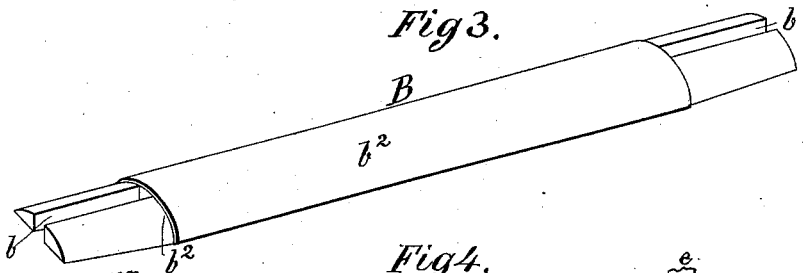



Fig 4.

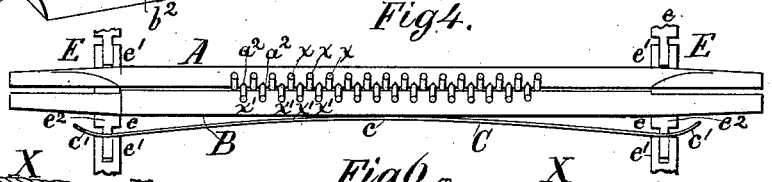



Fig 5.

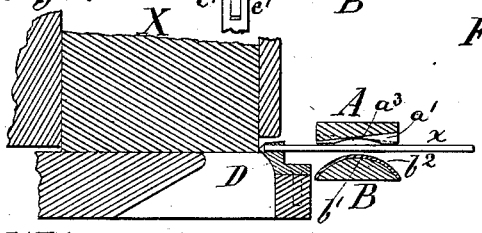
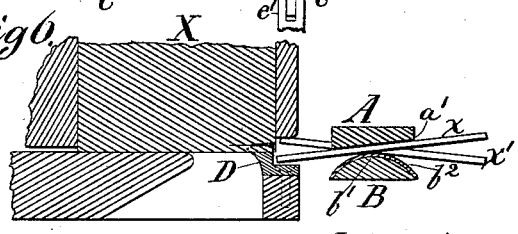



Fig 6.

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# UNITED STATES PATENT OFFICE.

BERNARD T. STEBER, OF UTICA, NEW YORK.

## MATCH-SPLINT CLAMP.

SPECIFICATION forming part of Letters Patent No. 303,677, dated August 19, 1884.

Application filed February 13, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, BERNARD T. STEBER, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented a new and useful Improvement in Match-Splint Machines and Devices for Clamping, Adjusting, and Carrying Match-Splints for Dipping, of which the following is a specification.

My invention relates, first, to a novel construction of the clamping-slats of a match-splint chain or frame, whereby the splints, whether taken directly from the usual reciprocating cutting-die or supplied in any other known proper manner, are received in a straight row (either horizontal or vertical) between the slats of the clamp while the slats are held slightly apart, then are clamped and adjusted when the slats are forced together, so that alternate match-splints stand diagonal to or at any angle with respect to other alternate match-splints, and thus the dipping ends of all the splints so spaced that they are sufficiently far apart to insure proper dipping, while their dipped ends are kept from being joined or pasted together by the dipping material; second, to the combination of the peculiar match-splint adjusting and carrying clamp-slats, chains, or equivalent supporting and opening devices, and a reciprocating cutting-die, as will be hereinafter described.

The object of my invention is to produce a match-splint "adjuster," "spacer," or "separator," which can, without liability of breaking the splints, effect a perfect separation or adjustment of the splints while they are between the clamp-slats of the slat-chain or slat-frame of match-splint machines; and thus when the dipping material forming the "heads" is put upon the splints it will be done completely, and without liability of the mass of matches being stuck together at their heads in a manner to render their use and sale dangerous. Another object is to effect the placing of the match splints or sticks in the smallest possible space, so that when an endless slat-chain is employed the slats or other clamping devices may be much shorter and stiffer than when separators similar to my Patent No. 271,376, or similar to the Gates & Harwood construction with widely-spaced parallel grooves, or to the old-fashioned hand dipping-frame, which employs straight parallel splint-holding grooves far enough apart to avoid having their dipped ends stuck together. The aforesaid objects I attain with my peculiar clamping device, for with the same the splints can be placed very close together, as close nearly as they can practically be packed as finished matches, this result being accomplished by providing either grooves alternately inclined in reverse directions or alternate grooves which are inclined or run diagonal with respect to alternate horizontal grooves.

My invention will be understood from the following description and claims, having reference to the accompanying drawings, in which—

Figure 1 is a perspective view of two clamps of an ordinary match-splint chain, one of which is in the act of receiving the match-splints from the splint-cutter in a horizontal row, and the other in the act of clamping and adjusting the match-splints in position ready for dipping. Fig. 2 is a perspective bottom view of the upper slat of one of the clamps shown in Fig. 1, and Fig. 3 is a perspective view of the lower slat of the same. Fig. 4 is a front view of the lower clamp, as shown in Fig. 1; and Figs. 5 and 6 are two sectional diagrams of clamps, splint-cutters, splints, and splint-blocks, representing the two stages of operation shown in Fig. 1, as will be presently described.

A in the said drawings represents the upper clamping-slat, B the lower clamping-slat and C the spring, of my improved clamp. D is a splint-cutter; X, a splint-block, and *x x'* splints cut from the block. The slats A and B are shown, as one mode of use, hung between two endless chains, E, of ordinary construction, the links of said chains being fitted in end slots, *a* and *b*, of the slats. The spring C bears with its bowed portion *c* on the lower slat, B, and with its slotted ends *c'* upon the knuckle-joints *e'* of the chains E, as shown, or as in my Patent No. 273,908, or in any other suitable manner. The upper slat, A, is on its bottom or under surface provided with transverse angular or V-shaped grooves *a' a²*, bounded or separated by thin-edged ridges, and these grooves are inclined downwardly in alternate order in reverse directions, or so that at either edge of the slat A there is a number of high and low terminations of said grooves

in alternate order, and each groove has a flaring or tapering form from end to end, those inclining downward and backward flaring backward, while those inclining forward and downward flare toward the front edge of the slat. These backward and forward tapers of the grooves might be dispensed with and the grooves be parallel on their side walls or ridges; but I prefer the taper form. Said grooves are all of similar shape and depth, with the highest parts of their side walls or ridges on a straight line or flush with the straight face of the slat A. The intermediate portion, $a^3$, of the grooved surface of the slat A is made with a concave or gutter form down to, or nearly so, the base of the grooves $a'$ $a^2$, as seen in Figs. 1 and 5, in order to facilitate the adjusting operation of the lower clamp-slat, B, as will be presently described. The clamp-slat B, by means of its end slots, $b$, is allowed to slide along the straight shanks $e^2$ of the chain-links $e$, in order to open or close the clamp. The clamping-surface $b'$ of the slat B is curved in correspondence with the shape of the depression $a^3$, and is provided with a cloth or other elastic cover, $b^2$. The slats A B are operated in the ordinary manner, or as in my aforesaid patent, they being caused to descend in front of the splint-cutter until they are in line with the splints, whereupon the slats are parted and the advancing splint-cutter, bearing a row of splints, passes the said splints between the slats A and B. The slats are then caused to close upon the match-splints, which stand out in a straight row as long as their rear ends are yet in the cutter D. As the cutter again enters the splint-block X, the splints $x$ $x'$ are pushed out of it, and are then pressed into the grooves $a'$ $a^2$ (see Figs. 1, 4, and 6) by the curved portion $b'$ of the slat B, as shown, whereby match-splints are alternately inclined in reverse directions, as shown in Figs. 1 and 6. The cloth or other suitable covering, $b^2$, of the slat B, by reason of its elasticity, causes the slat B to make a sufficiently strong grip upon all the match-splints, notwithstanding there may be incidental variations in the thickness of the splints.

From the foregoing it will be seen that the ends of the match-splints are prepared for dipping without special mechanism outside the receiving and carrying match-chain.

It is evident that my improved means for arranging the matches between the clamp-slats for dipping is not confined to slats operated between an endless chain, as above described. The said match-splint clamp-slats may be secured in frames similar to those illustrated in my Patent No. 281,206, or in any other suitable sustaining device.

It is also evident that if alternate grooves for the match-splints were horizontal, while alternate ones are inclined toward the discharging-edges of the clamps, the dipping ends of the splints could be set apart, but not to such an extent as when the grooves are all constructed as herein described and shown.

In illustrating and describing my clamp I have shown it as receiving the splints horizontally; but as many match-machines supply the splints in vertical rows my invention is not to be regarded as limited to machines which supply the splints in horizontal rows, as it is applicable to both descriptions of machines without changing its principle.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A match-splint device for receiving, clamping, and adjusting or preparing the splints for dipping, comprising clamping-slats of a slat chain or frame, one of which has a convex surface and the other a surface having alternately-inclined grooves, whereby the splints, although quite close together before being clamped, are caused to stand apart at their dipping ends when they are clamped in position between the slats, substantially as described.

2. A match-splint device for receiving, clamping, and adjusting or preparing the splints for dipping, comprising clamping-slats of a slat chain or frame, one of which has a convex surface and the other a surface with grooves, some of which incline toward the dipping ends of the splints, substantially as and for the purpose described.

3. The slat B of a splint-clamp of a slat chain or frame, provided with a convex surface, in combination with the slat A of said clamp of the slat chain or frame, provided with an inclined grooved surface which is of gutter or concave form, substantially as and for the purpose described.

4. In combination with a cutter-die carrying a straight row of match-splints, a clamp, A B, of a slat chain or frame, the slat A of which is provided with a series of reversely-inclined grooves separated by ridges having upper edges horizontal near each end and concave between said ends, substantially as described.

5. The combination of the slat A of a clamp of a slat chain or frame, having flaring V-shaped grooves $a'$ $a^2$, inclined alternately in reverse directions, and the spring-slat B, having a yielding covering, $b^2$, substantially as and for the purpose described.

6. The combination of the slat A of the clamp of a slat chain or frame, having grooves $a'$ $a^2$ and a central depression, $a^3$, and the spring-slat, B, having a curved clamping-surface, $b'$, and an elastic covering, $b^2$, substantially as and for the purpose described.

7. The combination of the splint-clamping and separating or adjusting slats A and B, adapted for being opened and closed, suitable movable means—such as a traveling slat-chain or slat-frame—for supporting said slats, and the splint-cutting die of a match-splint machine, substantially as and for the purpose described.

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