

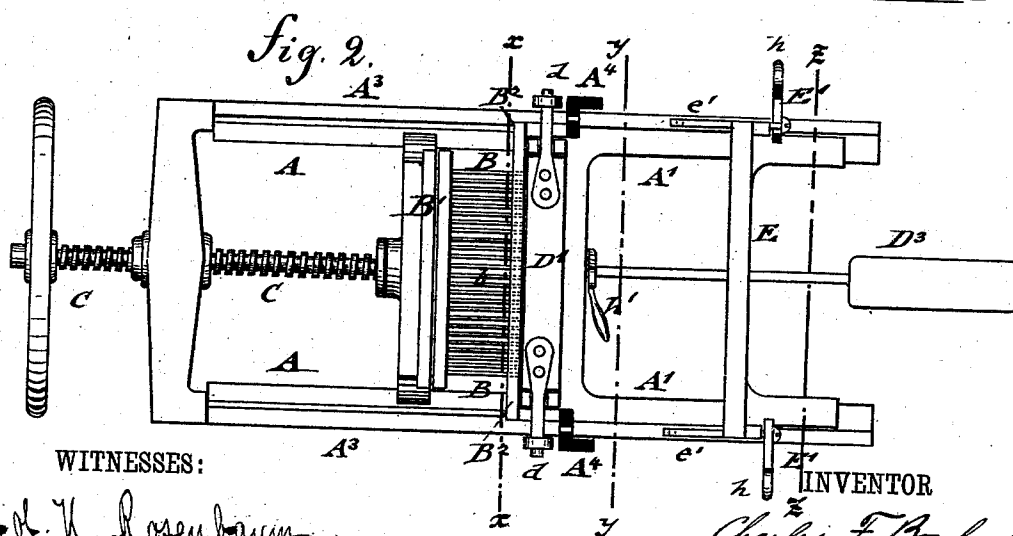
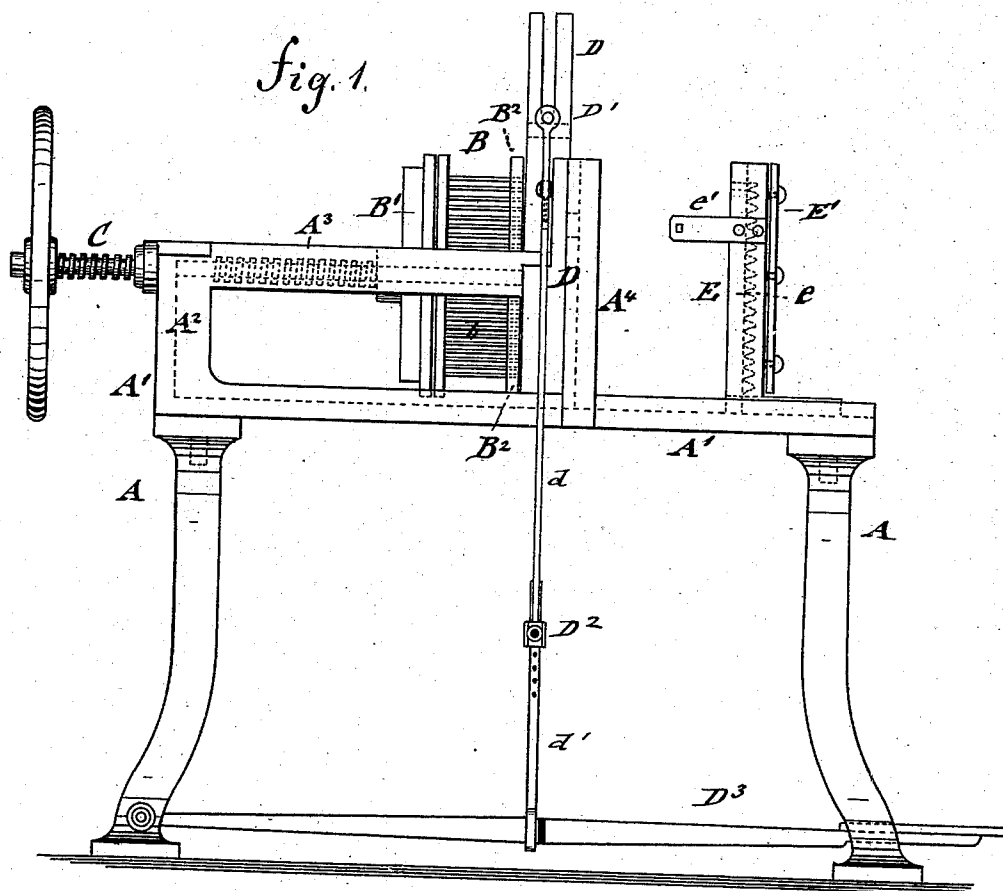
(No Model.)

2 Sheets—Sheet 1.

C. F. BONHACK.
MACHINE FOR SETTING MATCH SPLINTS.

No. 268,451.

Patented Dec. 5, 1882.



WITNESSES:

J. H. Rosenbaum.
Otto Risch.

INVENTOR

Charles F. Bonhack

BY

Paul Groppe

ATTORNEY

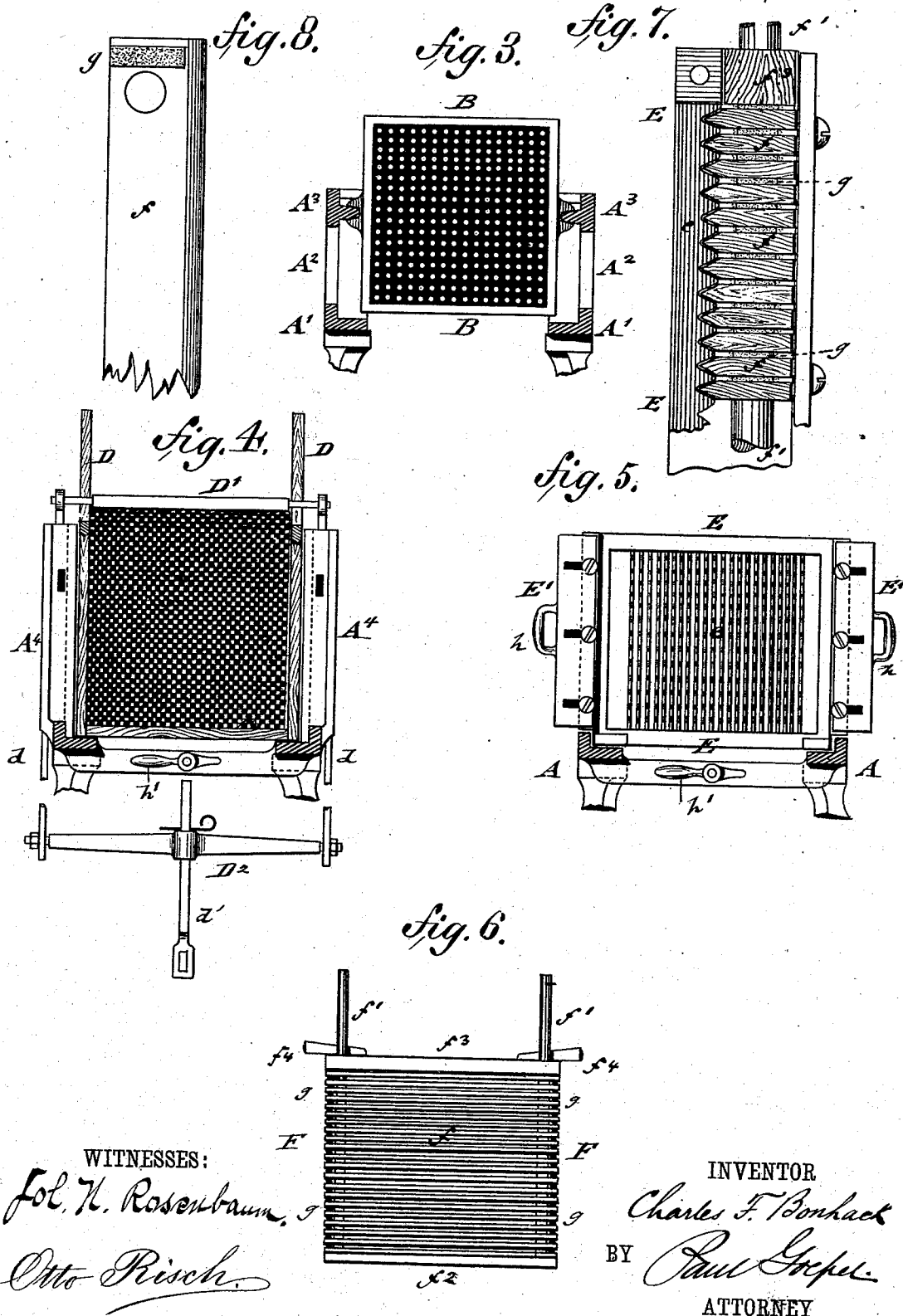
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UNITED STATES PATENT OFFICE.

CHARLES F. BONHACK, OF NEW YORK, N. Y.

MACHINE FOR SETTING MATCH-SPLINTS.

SPECIFICATION forming part of Letters Patent No. 268,451, dated December 5, 1882.

Application filed September 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. BONHACK, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Setting Match-Splints, of which the following is a specification.

This invention has reference to certain improvements in the machine for setting match-splints for which Letters Patent have been heretofore granted to me, numbered 254,192, and dated February 28, 1882, so that the operation of setting the splints for dipping them is accomplished in a more reliable and effective manner; and the invention consists of a movable setter having a series of equidistant push-pins, which are forced by suitable mechanism through a compact bunch of splints held together by a square wooden clamping frame or trough in front of the perforated guide-plate of the setter. The push-pins force a number of match-splints from the trough into a compound frame, formed of a frame with vertical guide-strips, and of a removable clamping-frame having horizontal strips, which latter are closely fitted to the vertical guide-strips. The clamping-frame is locked to the vertical guide-frame while the splints are pushed into the same, and is then detached therefrom and removed from the machine for dipping the splints and forming the heads of the matches in the usual manner.

In the accompanying drawings, Figure 1 represents a side elevation of my improved machine for setting match-splints. Fig. 2 is a plan of the same, partly in section. Figs. 3, 4, and 5 are vertical transverse sections of the machine on lines *x x*, *y y*, and *z z*, showing respectively the setter, the trough for holding the match-splints, and the vertical guide-frame of the splints forced out of the same. Fig. 6 is a detail view of the removable clamping-frame for the match-splints. Fig. 7 is a detail vertical transverse section of the guiding and clamping frames for the splints, and Fig. 8 is a detail top view of one of the strips of the clamping-frame.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the supporting-frame of my improved machine for setting match-splints, which frame consists of

a horizontal bed-plate, A', supported on strong legs, and vertical side standards, A², having horizontal guide-rails A³ for the head B' of the setter B. The head B' is guided along the guide-rails A³ of the frame A, and operated by a screw, lever, or other mechanism, C, operated by hand or power, as desired. The setter B is arranged vertically, and is provided with a series of equidistant push-pins, *b b*, which are applied rigidly by a fastening-plate to the follower. The push-pins *b* pass through a perforated guide-plate, B², (shown in Figs. 1 and 2,) when the setter B is moved forward. The guide-plate B² is fixed while in use, but capable of adjustment on frame A, so as to be set for single or double length of splints, according to the method of manufacture adopted.

In front of the guide-plate B² is supported a removable splint-holding frame or so-called "trough," D, which is made of wood, and of rectangular shape, and of a width equal in length to the match-splints. The trough D is first filled with splints and then placed into the machine in front of the guide-plate B², the splints being firmly clamped in the trough by a transverse top piece, D', which is guided in the slotted ends of the side pieces of the trough D, and connected by rods *d d* to a cross-piece, D², below the bed-frame, the latter being connected by an adjustable connecting-rod, *d'*, to a treadle, D³, as shown clearly in Figs. 1 and 4. When the match-splints are thus tightly pressed together by the clamping action of the treadle mechanism the setter is moved forward, so that the push-pins force as many splints, or nearly so, out of the bunch as there are push-pins. The pushed out match-splints are guided into the spaces formed by the intersection of the vertical strips *e* of a guide-frame, E, and the horizontal strips *f* of a splint-clamping frame, F, and then tightly clamped by the latter frame. The vertical frame E is guided by bottom plates on the guide-rails of the bed-frame A, and locked, when moved up to the trough D, by the fixed side pieces, *e'*, to fixed slotted side standards, A⁴, of the frame A, which side standards also serve to retain the trough D.

The guide-strips *e* of the guide-frame E are transversely grooved or serrated, as shown clearly in Figs. 5 and 7, for the purpose of

forming an intimate contact with the horizontal strips *f* of the splint-clamping frame F, which strips are made beveled or tapering at their ends facing the strips *e* of the guide-frame E, so as to fit into the same. They are also perfectly smooth at the upper and lower sides, without being grooved for the splints, whereby the splints, after they are dipped and dried, are more readily dropped or unloaded from the frame F.

The construction of the splint-clamping frame is otherwise similar to that of the splint-holding frames heretofore in general use in the manufacture of matches. The horizontal wooden strips *f* are guided on vertical rounds *f'* of a bottom piece, *f*², and clamped tightly together by a top piece, *f*³, and wedge-shaped keys *f*⁴, the latter being passed through recesses of the rounds *f'*, as shown in Fig. 6. The clamping-strips *f* are provided outside of the rounds *f'* with intermediate layers, *g*, of rubber, felt, or other elastic material, which admit compression when the strips are clamped together for firmly holding the splints after they are forced out of the trough by the setter. Before receiving the splints the frame F is locked firmly to frame E by the laterally-guided retaining-plates *E'* of frame E, said retaining-plates having handles *h* for being pushed inwardly, and for moving both frames E and F forward and back on the main frame A, the clamping-frame F being secured to the trough by the latch *h'*, Figs. 4 and 5.

The splints are tightly clamped between the horizontal strips *f* on tightening the wedges *f*⁴, after which the frames E and F are moved back by taking hold of the handles *h* of the retaining-plates *E'*, which latter are then moved sidewise, so as to admit the removal of the clamping-frame with the series of match-splints held firmly between the strips of the same. The splints are now dipped in the usual manner, so as to form the match-heads, and dried while remaining in the frame. When the matches are dried they are unloaded from the frame F by removing the keys and dropping the matches, which are then ready for packing. The clamping-frame F is now replaced in position back of the guide-frame E and moved forward again against the trough D. The splints in the trough are set close to each other by simply lifting and dropping the trough once or twice in the frame, whereby all the interstices are closed again. They are then tightly pressed together during the forward motion of the setter by the action of the treadle. The splints are pushed out of the trough and clamped and then dipped and dried, as before.

The advantages of my improved match-splint-setting machine are that by it more splints can be set in a given time and at less expense than by the methods and appliances heretofore in use; that the working of the same can be quickly understood and acquired, while it takes a considerable time to learn the setting

of matches with the appliances heretofore in use.

As compared with the machine heretofore patented by me, the improved machine does not require the removal of the setter from the machine when dipping the splints, which is performed by the clamping-frame; and that the grating heretofore used in my former machine is substituted by the guide-frame E and clamping-frame F, which produces more accurate work, as the spaces formed by the inter-sections of said frames are more accurately defined and not as liable to catch the splints as the wire grating.

Another advantage, compared to my former machine, is that the bunch of match-splints, which was retained by an elastic band, is dispensed with and the trough and its mechanism substituted therefor.

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

1. In a match-splint-setting machine, the combination of a reciprocating setter having a series of fixed equidistant push-pins, a fixed perforated guide-plate, a removable trough for the bunch of match-splints, a reciprocating splint-guiding frame having vertical strips, and a removable splint-clamping frame having horizontal strips, all substantially as and for the purpose set forth.

2. In a match-splint-setting machine, the combination of a reciprocating setter having a series of fixed equidistant push-pins, a fixed perforated guide-plate, a removable trough containing the match-splints in front of the guide-plate, means for clamping the splints in the trough, and a compound splint-holding frame formed of a reciprocating guide-frame having vertical strips and a detachable clamping-frame having horizontal strips, and means for locking the compound frame rigidly in front of the trough, substantially as and for the purpose specified.

3. In a match-splint-setting machine, a compound frame for receiving the splints, consisting of a fixed frame having vertical serrated strips, and of a removable splint-clamping frame having horizontal strips, beveled at the edges and fitting closely to the vertical strips, and means for locking the frames together, substantially as set forth.

4. In a match-splint-setting machine, a splint-clamping frame consisting of horizontal clamping-strips beveled at their inner edges and separated at the ends by intermediate layers of elastic fabric, and of means for clamping the strips or releasing the same, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHAS. F. BONHACK.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.