

(No Model.)

4 Sheets—Sheet 1.

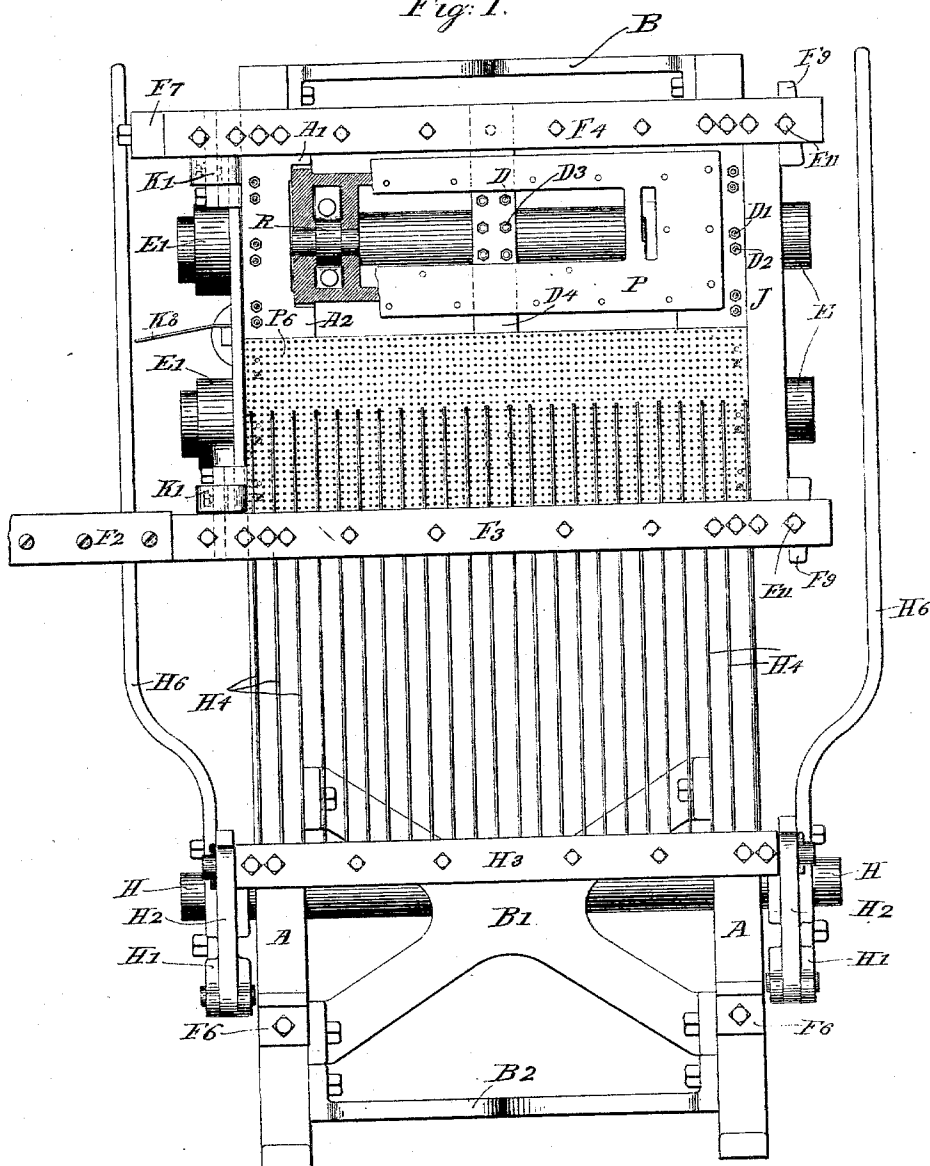
W. E. WILLIAMS.

MACHINE FOR PUNCHING MATCH STICKS FROM PLATES.

No. 562,687.

Patented June 23, 1896.

Fig. 1.



Witnesses:

Fred. Borg.
Frank Murphy.

Inventor

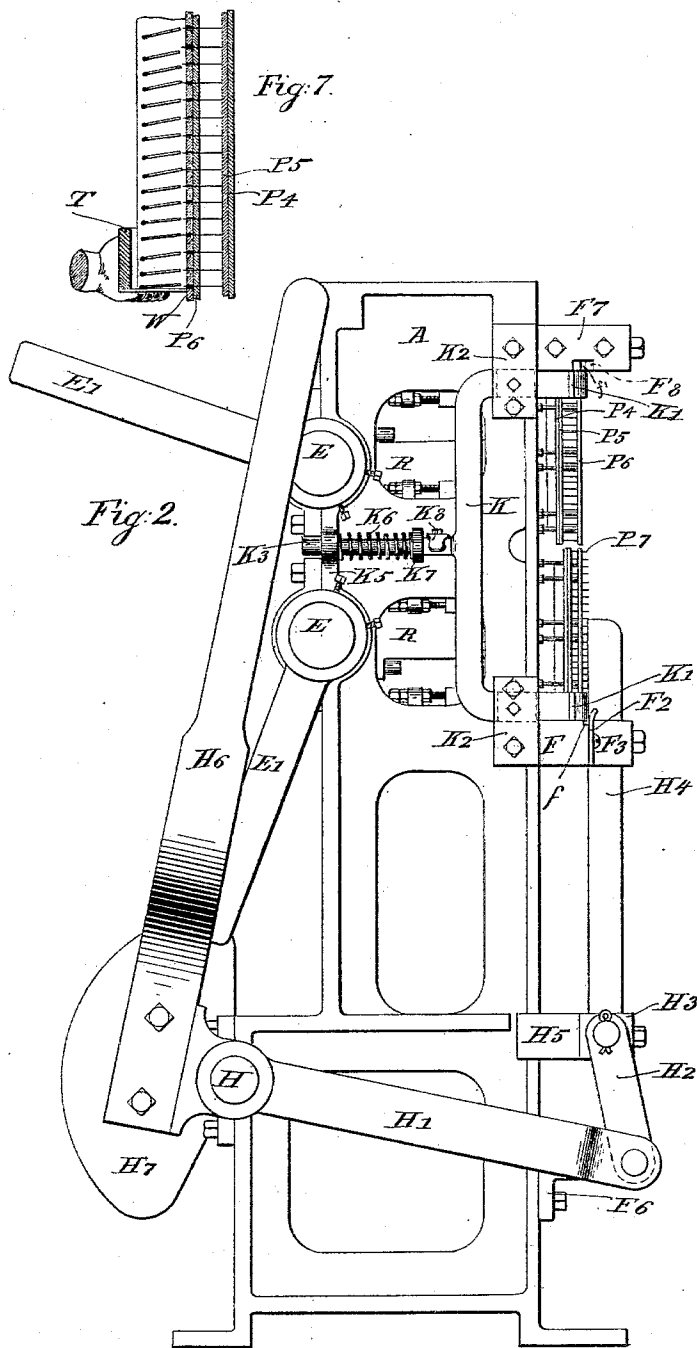
W. E. Williams

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MACHINE FOR PUNCHING MATCH STICKS FROM PLATES.

No. 562,687.

Patented June 23, 1896.



Witnesses:

Edw. J. Kelly
Frank Murphy

Inventor:

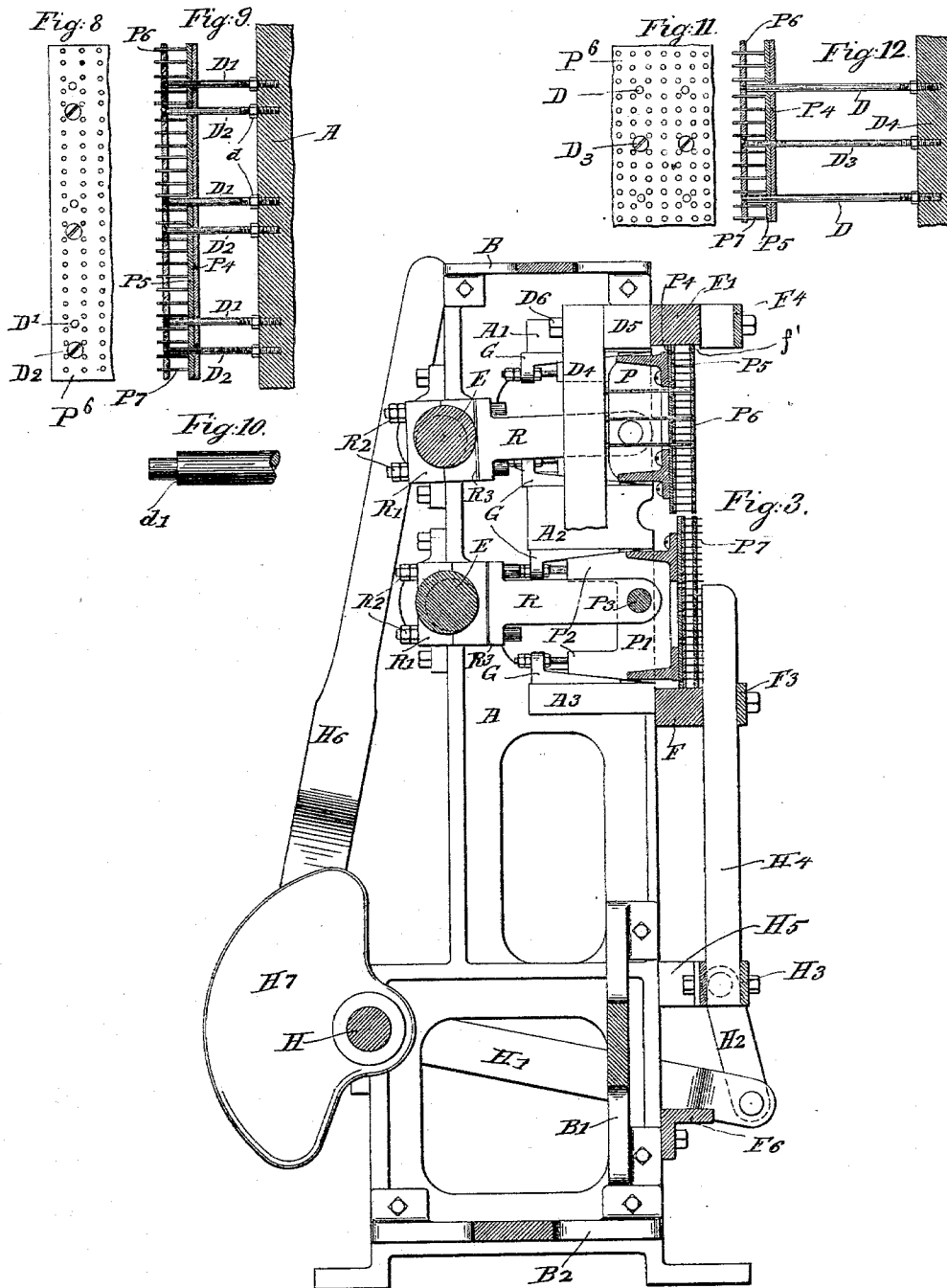
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Witnesses:

Fred. Borg
Frank Murphy

Inventor:

W. E. Williams

(No Model.)

4 Sheets—Sheet 4.

W. E. WILLIAMS.

MACHINE FOR PUNCHING MATCH STICKS FROM PLATES.

No. 562,687.

Patented June 23, 1896.

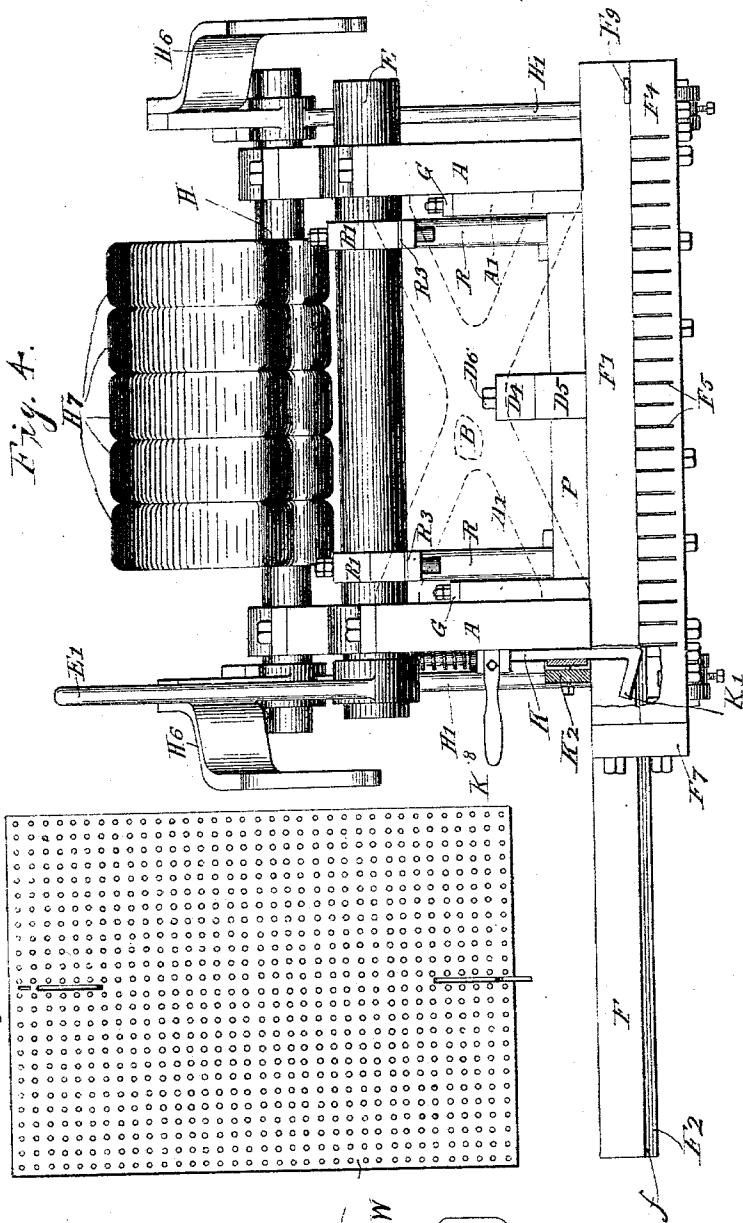


Fig. 5.

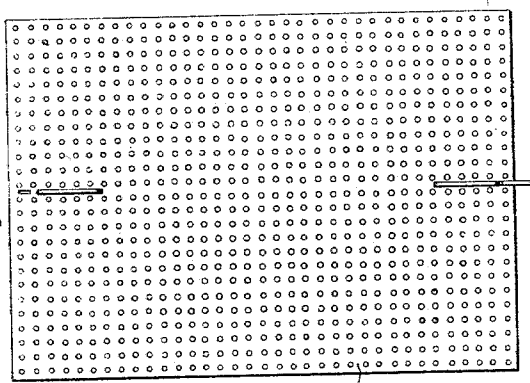


Fig. 6.



Witnesses:

Fred. Borg
Frank Murphy

Inventor:

W. E. Williams

UNITED STATES PATENT OFFICE.

WILLIAM ERASTUS WILLIAMS, OF CHICAGO, ILLINOIS.

MACHINE FOR PUNCHING MATCH-STICKS FROM PLATES.

SPECIFICATION forming part of Letters Patent No. 562,687, dated June 23, 1896.

Application filed March 26, 1895. Serial No. 543,274. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ERASTUS WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Machines for Punching Match-Sticks from Plates, of which the following is a specification.

My invention relates to a machine for unloading match-sticks from a metallic plate wherein the match-sticks are held when dipped by being forced into holes in the plate, which holes are slightly smaller than the end of the match-sticks stuck therein.

The object of my invention is to provide a machine having the general merits described herein; and the invention consists in the novel features set forth in the claims hereof.

Reference will be had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation thereof. Fig. 3 is a side sectional view. Fig. 4 is a plan view. Fig. 5 is a plan view of a match-plate with the splints stuck therein. Fig. 6 is a side view of Fig. 5. Fig. 7 is a side detail view showing manner of catching the matches. Figs. 8, 9, 10, 11, and 12 are detail views showing manner of holding the guide-plate for the punchers.

In the drawings, A designates the frame-castings of the machine, which are connected by the cross-braces B B' B². On the inner sides of the frame A are cast lugs A' A² A³, Figs. 1 and 3, which furnish ways upon which two platen-pieces P P' are guided, and the projections P² of the platen are provided with adjustable wedge-gibs G, whereby the position of the platen may be held to a nicety. The platens P are actuated, forward and back, by the connecting-rods R, pivoted at P³ to the platens and connected to bearing-boxes R' on eccentric-shafts E, carried in bearings on frame A and on which are actuating-levers E'. The bearing-boxes R' are connected to the rods R by bolts R², and a piece of packing R³ permits an adjustment of the length of the rods by a change of the thickness of the packing.

To the front face of the platens P are screwed the plates P⁴ and P⁵.

P⁵ are the plates holding the match-stick

punchers P⁷, and P⁴ are the backing-plates against which the ends of the punchers abut.

P⁶ are guide-plates for directing the outer ends of the punchers and are held in position partly by the punchers P⁷ and by the studs D D' D' and screws D² D² D³. (See Figs. 8, 9, 10, 11, and 12.) The studs D and screws D³ are screwed into the frame A and into the bar D⁴, which bar is fixed by blocks D⁵ and screws D⁶ to the cross-bars F F', extending across the frame. The studs D D' and screws D² D³ are locked by the jam-nuts d'. The studs D D' are provided with shoulders d', against which the body of the plates rest, and the screws D² D³ have countersunk heads set within the surface of the plate and they hold the plates against the shoulders d' of the studs D D'.

The bar F extends across the machine outward from the machine sufficiently to afford a rest for the plate that is to be entered into the machine, and in the bar there is a groove f, which, in conjunction with the plate F², forms a way for supporting and guiding the lower edge of the plate as it is pushed into the machine. The upper edge of the plate slides into a like groove f', Fig. 3, in the end portions of the bar F', which project below the upper edge of the plate P⁶. On the front face of the bars F F' are bolted the slotted bars F³ F⁴, which project within the edge of the plates P⁶ and serve as a retaining-flange for guiding the entering plate and for holding its edges at all times against outward thrusts.

On the rear of the frame, in suitable bearings, is the shaft H, on which are fixed the arms H', pivoted to links H², pivoted to a bar H³, carrying the separator-bars H⁴. The bar H³ is guided in its travel up and down the frame under the influence of the shaft H by the blocks H⁵, fitted to ways in the sides of the frame. The shaft H is actuated by the hand-levers H⁶, one on each end for convenience.

The weight of the arms H', bar H³, and connected parts is counterbalanced by the weight H⁷. The separator-bars H⁴ slide vertically in slots F⁵ in the bar F³, and when their free ends have descended to that bar the downward movement is arrested by stops F⁶, which lie in the path of the bar H³. When they are again thrown upward between the lines of matches in the plate, their free ends enter

slots F^5 in the bar F^4 and they are thus rigidly held at each end against lateral movement. While they are in this position they serve a double purpose, forming narrow channels in which the matches cannot turn as they fall into the match-tray T , and also supporting the plate in such manner that no part of it can spring outward materially under the strain applied by the match-ejecting punches.

On the end of bars F^7 and F^4 is bolted a block F^7 , in which is a flaring slot F^8 , aiding in entering the top edge of the plate into the groove f^7 .

As the plate slides into the machine it is arrested in exact position by a stop-bar J , which has its ends fitted into the grooves f^7 and which is laterally adjusted by wedges F^9 , the latter locked in position by set-screws F^{11} . Retracting movement of the plate is prevented by a latch, which is pushed aside by the entering plate and which returns, automatically, as soon as the plate's rear edge has passed it. The latch consists of a fork K , whose shaft K^3 and arms slide in bearings K^5 K^2 . The arms, which are laterally adjustable in their bearings, normally project across the path of the plate and their ends are bent to form inclines $K' K'$, against which the upper and lower portions of the plate's vertical edge impinge as the plate enters the machine. Thus the plate itself pushes the latch aside, but at the instant when the end of the plate meets the stop-bar J its rear vertical edge passes the latch-arms, which are instantly thrown out behind the plate by spring K^6 , coiled about the latch-shaft between the bearing K^5 and a collar K^7 . The plate thus locked exactly in position may be released by means of a hand-lever K^8 .

The operation of the machine is thus: The plate W , containing the matches, is entered as described when the bars H^4 are down, permitting the matches in the plate to pass laterally past the ends of the bars, and when the plate is in position the bars H^4 , lifted by the lever H^6 , pass upward between the rows of matches and enter the slots in the bar F^4 . The assistant operator inserts the tray T at the lower side of the match-plate, (see Fig. 7,) whereupon the operator actuates the lever E' of the lower platen, punching out the matches from the lower side of the plate first, whereupon the assistant lifts the tray T upward to suit the upper platen when it is actuated and all the matches are received on the tray and removed.

The arrangement of the independently-operated punching-platen permits the rows of match-sticks to be of uniform distance apart across the entire plate, whereas if the platen punched out the whole plate at once the falling distance of the upper rows of matches would be so great that they would not be removed in good order in the tray, and a tray cannot be inserted in between the rows of

match-sticks to catch the upper half simultaneously with the lower half. Hence the divided punching mechanism is a desideratum.

What I claim is—

1. The combination with devices for holding a match-plate in position, of a plurality of platens together approximately equaling the plate in width arranged one above the other and each provided with punches registering with the holes in the corresponding portions of a plate when the latter is in position, and means for advancing said platens in succession to push the matches out of successive sections of the plate, substantially as and for the purpose set forth.

2. The combination with means for holding a match-plate in position, of a platen mounted parallel to the plane of the plate and bearing punches registering with the holes therein, a guide-plate adjustably fixed in position between the plate and the platen by a series of longitudinally-adjustable studs resisting rearward movement of the plate and a series of screws arranged to draw the plate rearward, said plate being perforated for the passage of the punches, and means for actuating said platen.

3. The combination with a frame provided with ways to receive a match-plate, of an adjustable stop limiting the advance of such plate in said ways, a correspondingly-adjustable latch arranged to be pushed aside by the entering plate and to spring back and lock the plate when the latter is arrested by said stop and devices arranged to punch matches from the plate while so locked.

4. The combination with a suitable frame provided with devices for holding a match-plate in position, of a series of punches arranged to punch matches from the plate so held, and a series of vertical bars arranged to pass between the lines of matches and form channels in which the matches must fall as they are ejected from the plate.

5. The combination with the frame provided with the ways for receiving a match-plate, of means for locking such plate in said ways, the platens carrying punches registering with the holes in the plates so locked, means for actuating the plates in succession, a series of bars mounted to slide vertically across the face of the plate, means for sliding the bars, means for holding the bars against lateral displacement after they are advanced, and a counterweight arranged to balance the weight of the bars and the parts which accompany them in their advance.

In witness whereof I have hereunto subscribed my name, on this 22d day of March, A. D. 1895, in the presence of two subscribing witnesses.

WILLIAM ERASTUS WILLIAMS.

Witnesses:

BERTHA DUPPLER,
W. L. STEBBINGS.