

(No Model.)

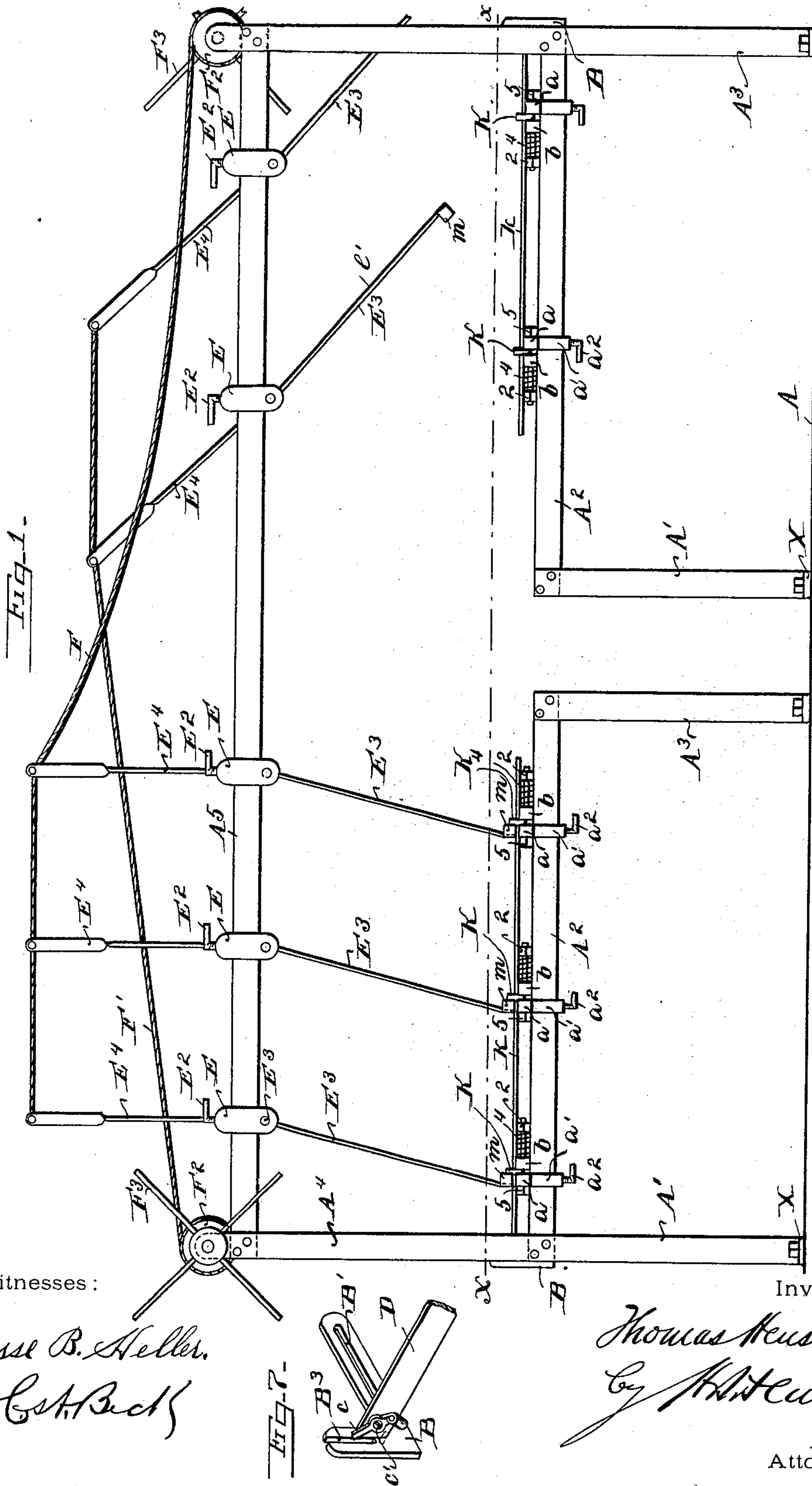
2 Sheets—Sheet 1.

T. HENSHAW.

PLUGGING BENCH FOR MAKING METALLIC FENCE RAILINGS.

No. 506,431.

Patented Oct. 10, 1893.



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FIG. 2.

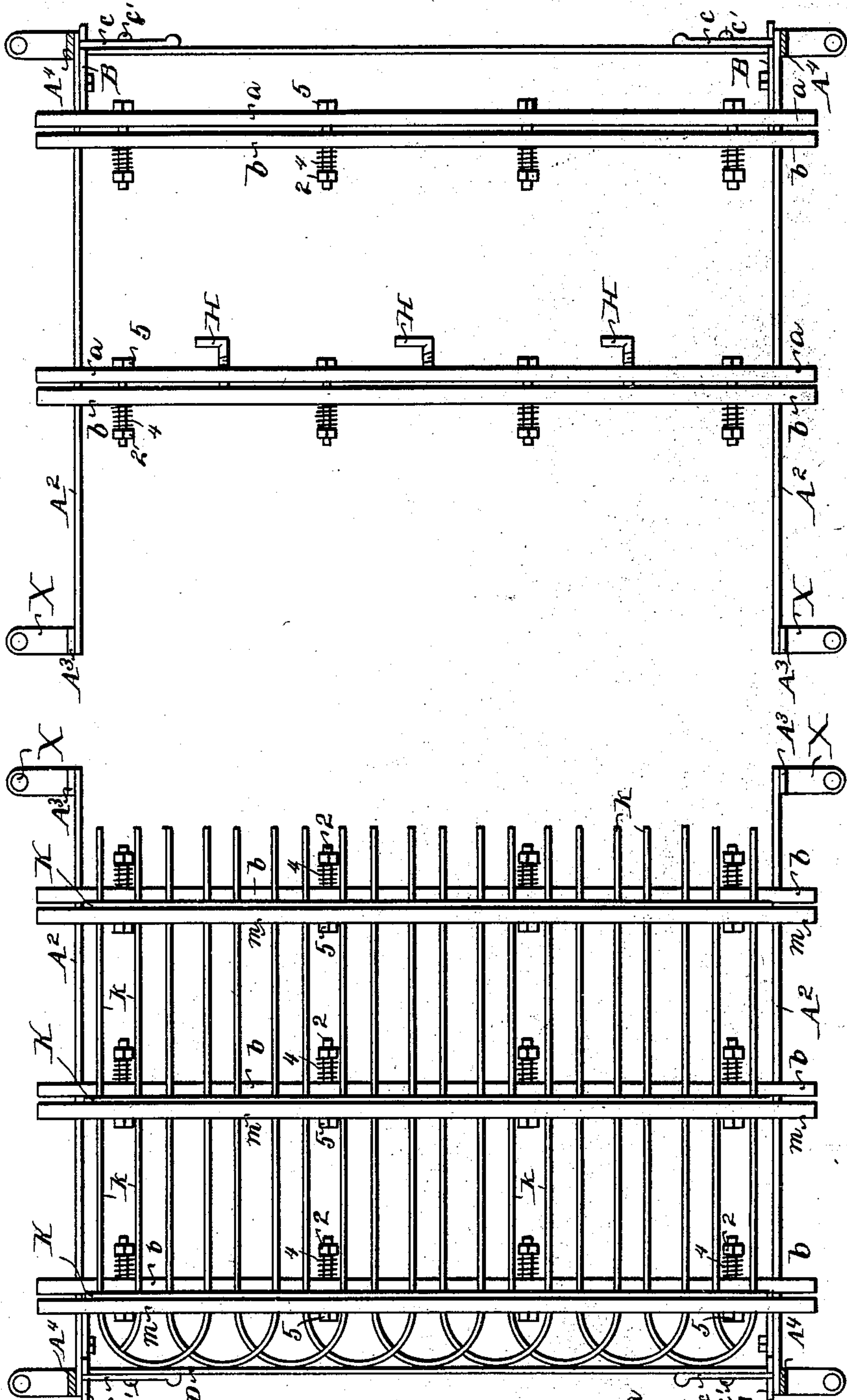
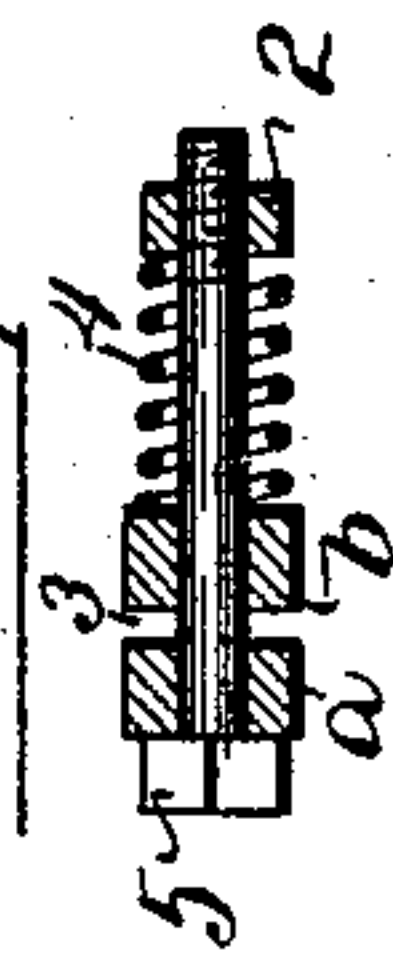


FIG. 3.



Witnesses:

Jesse B. Heller  
Est. Recd  
FIG. 4.

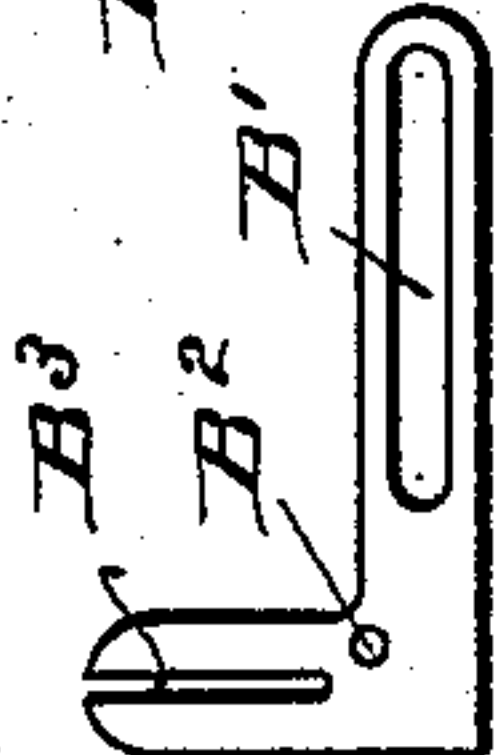


FIG. 4.

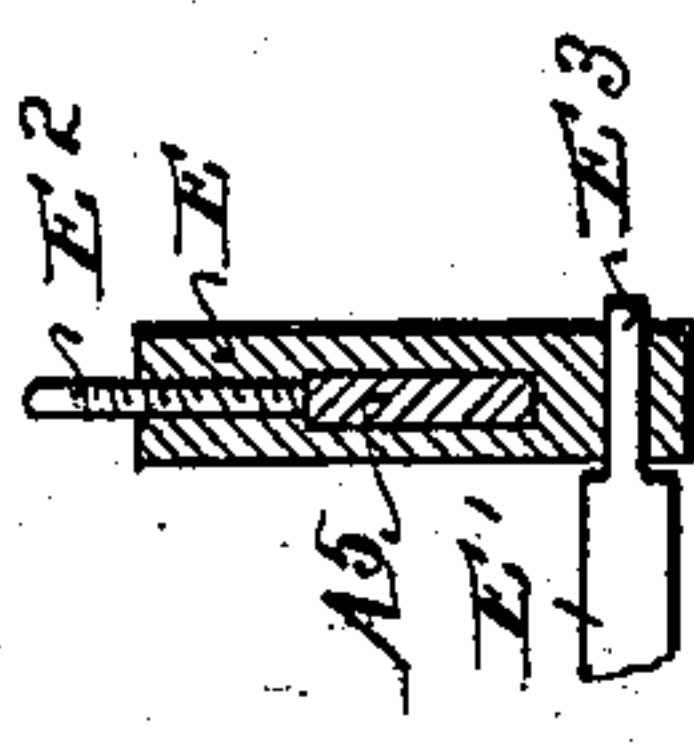
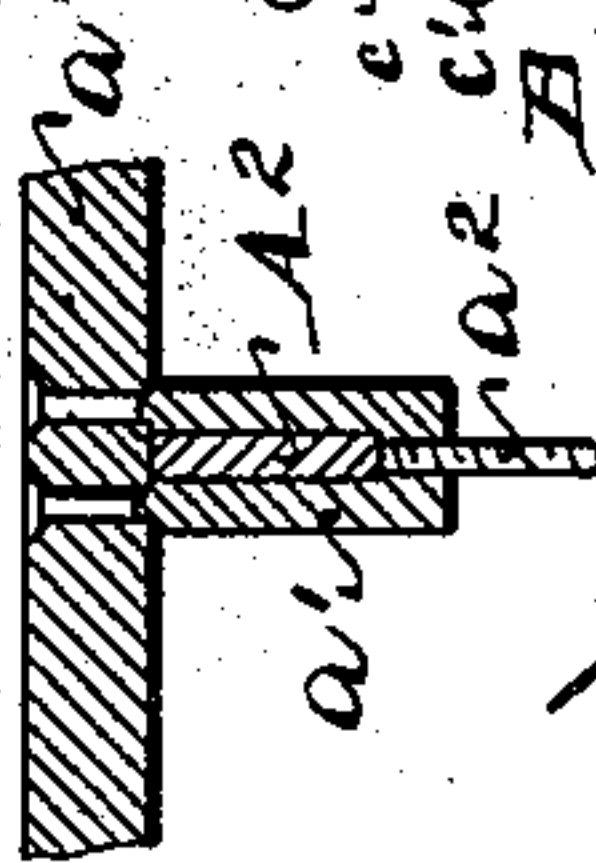


FIG. 5.



Inventor.

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# UNITED STATES PATENT OFFICE.

THOMAS HENSHAW, OF PHILADELPHIA, PENNSYLVANIA.

## PLUGGING-BENCH FOR MAKING METALLIC FENCE-RAILINGS.

SPECIFICATION forming part of Letters Patent No. 506,431, dated October 10, 1893.

Application filed May 15, 1893. Serial No. 474,205. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS HENSHAW, a subject of the Queen of Great Britain, residing in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Plugging-Benches for Making Metallic Fence-Railings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to mechanical apparatus for the construction of iron railings, that is, metallic rail fences. Such railings or fences consist of one or more horizontal bars, recessed or slotted, in which vertical bars or pickets are inserted and calked or plugged at the point of junction. Such railings or fences are now constructed usually by and with rude apparatus consisting of a flooring or bench upon which are nailed or fastened tight, two or more pairs of flat permanent vise irons, between which the horizontal recessed bars forming part of the fence or railing, are driven down by hammers so as to hold them steady while the pickets are inserted in the recesses and calked or plugged therein. My invention may therefore be denominated a plugging bench, and is designed to enable the operators to construct such fences or railings more expeditiously and more perfectly.

For these purposes, it consists, generally, in a frame upon which is mounted one or more pairs of vise irons, one of said irons of each pair being a fixed iron, that is to say, fixed upon the frame after being adjusted thereon; and the other of said vise irons of each pair being automatically adjusted upon the other by means of a spring bolt; the fixed irons of the vise bars being adjustable upon the frame, relatively to each other, to suit different sizes of iron fences to be manufactured.

My invention also consists in a vertical extension of the bench frame in which is mounted adjustable lateral bars carrying pivoted top vises, the same operating so as to be let down and bear against the upper lateral edge of the horizontal bar of the fence or railing while the pickets are being calked or plugged therein.

My invention also consists in the combination with the lower portion of the frame and

vise bars therein, of a rotatable guide bar at the end of the frame mounted in devices to adjust it, and with means to lock the said guide bar in position when desired, said guide bar operating to gage the height of the pickets uniformly and hold them in position, while the same are being calked or plugged in the horizontal recessed bars of the fence or railing.

My invention finally consists in minor details of the construction as hereinafter pointed out in the claims.

In the accompanying drawings illustrating my plugging bench for the construction of metallic fence railing, Figure 1 is a side elevation thereof. Fig. 2 is a plan view of the bench proper, below the line  $x-x$  of Fig. 1; and Figs. 3, 4, 5, 6 and 7 are views of several of the parts detached.

Referring to Fig. 1, A represents the flooring of the factory, or a special flooring or base, upon which is mounted the frame pieces  $A^1, A^2, A^3$  secured thereto by appropriate feet X or otherwise. Each of these frame pieces with its vise irons, is complete in itself, but they are preferably duplicated or built in pairs, as shown in the drawings, especially when the upper vise frame is added, because in the construction of iron fence railings, two operatives are employed, one to set the pickets, and the other to calk or plug them in the horizontal bars, and when the frame pieces with their vises of the plugging bench are duplicated or placed in sets or pairs, one operative can set the pickets on one frame, while the other is calking or plugging the pickets in the bars in the other frame, and vice versa, alternating between the two frames as the work of constructing the fence progresses.

Between the lateral cross bars  $A^2$  are arranged the horizontal vise irons  $a$  and  $b$ , one of each pair of which is fixed on the frame, and the other movable therein relatively to the fixed iron. The fixed iron  $a$  is mounted in a screw clamping frame  $a'$  embracing the frame piece  $A^2$ , with set screw  $a^2$  (see Fig. 5) whereby the vise iron  $a$  may be secured in a fixed position upon the frame  $A^2$  and thus these fixed irons  $a$  of the several pairs of vise irons, may be adjusted upon the frame at such distances apart from each other as may



be desired for the particular size of fence railing to be manufactured. The other vise iron *b* of each pair rests loosely upon the frame  $A^2$ , and is held normally in contact with the vise iron *a* by means of a bolt 3 passing through slots in the vise irons *a, b*; said bolt 3 being provided with a screw threaded end on which is fitted a nut 2 whereby to adjust the pressure of the spring hereinafter mentioned, whereby it is held in contact against the fixed vise iron *a*, said bolt having a head 5 and made fast thereto. A coil spring 4 encircles that part of the bolt which projects beyond the outer face of the movable vise iron *b* and is held thereon by the nut 2, (see Fig. 6.)

In order that the vise iron *b* may be moved relatively to the vise iron *a*, to allow the insertion between the vise irons, of the horizontal recessed bar of the fence railing, and against the pressure of the spring bolt 2, 3, 4, 5 (which holds it normally in position while the pickets are being calked or plugged therein) a set screw *H* is inserted in the fixed iron *a*, bearing against the face of the movable iron *b*. It is obvious, however, that the fixed and loose vise irons may be moved to or from each other by the usual vise screw, if desired, in lieu of, or in addition to, the spring bolt 2, 3, 4, 5 above described.

At the end of the frame on the inside of the bar  $A^2$  is arranged a slotted guide plate *B* (see Figs. 3 and 7). It is adjustably secured by means of the long slot  $B'$  to the inner face of the frame piece  $A^2$ , so that it may be adjustable laterally in the said frame. The guide bar *D* has pivot ends inserted at  $B^2$  (see Fig. 3) in this guide plate *B*, so that it may be partially rotatable; and it is provided with a latch *c* pivoted thereto at  $c'$ , so that when the bar *D* is swung upward in an arc of a circle and thus brought to the same height as the vise irons *a* and *b*, the latch *c* is dropped into the slot  $B^3$  of the guide plate *B* and holds it in position.

The second part of my invention consists of vertical extension pieces  $A^4$  to the frame pieces  $A'$  of the plugging bench, and these frame pieces  $A^4$  are connected by cross frame pieces  $A^5$ , between which are mounted reels  $F^2$  with operating spokes  $F^3$ .

On the cross pieces  $A^5$  are mounted in a screw clamping frame *E*, cross bars  $E'$  (see Figs. 1 and 4). This clamping frame embraces the cross pieces  $A^5$ , and is provided with a set screw  $E^2$ , whereby the cross pieces  $E'$  may be adjusted upon the frame piece  $A^5$ . The cross pieces  $E'$  are provided with a pivot bolt  $E^3$  entering the screw clamping frame *E*. Upon the arms  $E'$  thus pivoted are mounted rods, one end  $E^4$  of which rises vertically above the frame piece  $A^5$ , and the other end  $E^3$  extends below the frame piece  $A^5$ , and each carrying at its extreme end a vise iron *m*. A chain *F* or other analogous device connects each of these bars  $E^3$   $E^4$ , and the chain extends to the reel  $F^2$ . The normal position of these vise

irons *m* is raised, as shown on the right hand side of Fig. 1. When depressed, by swinging on their pivoted rods, they fall and rest upon the lower fixed vise iron *a*, and therefore act as an upper vise iron, or supporting iron, supporting the upper edge of the horizontal bar *K* in which the pickets *k* are to be calked or plugged. Their position relatively to fixed vise irons *a* and *b* and the horizontal bar *K* of the fence when performing their function, is shown on the left hand side of Fig. 1.

The operation of the device is as follows:— Referring to the left hand side of Fig. 2, when a fence is to be constructed such as therein shown, consisting of three horizontal recessed bars *K K K*, the set screws *H* are operated to separate the vise irons *a, b*, sufficiently far to admit the horizontal bars *K* between them to the line of the slots or recesses therein; the set screw *H* then being operated in a contrary direction, the spring bolt 2, 3, 4, 5 presses the movable vise iron *b* in a direction toward the fixed vise iron *a*, and clamps the horizontal bar *K* between them. Before this is done, however, the fixed vise irons *a* are adjusted upon the frame piece  $A^2$  at such distance apart from each other as it is desired that the horizontal bars *K* of the fence shall be apart from each other in the complete fence. The vertical pickets *k* are then inserted through the slots or recesses in the bars *K*, and in order to make the pickets uniform in height, the guide bar *D* is swung upward and the latch *c* dropped into the recess  $B^3$ . The guide bar *D* is thus in the same horizontal plane as the vise irons *a, b*. The pickets are then pushed upward until their rounded ends or heads meet the face of the guide bar *D*, as shown on the left hand side of Fig. 2. The operative then calks or plugs these pickets in the holes or recesses of the horizontal bars *K* in the usual manner, with a hammer or calking tool. The plugging or calking is always done on that side of the bar *K* which faces the fixed vise iron *a*.

So far as I have described the operation of the machine it is quite sufficient and perfect for the purpose of carrying out the main objects of my invention and of manufacturing metallic railing fences thereon. But I prefer to use in addition thereto, the other portion of my invention, namely the upper swinging vise iron or supporting irons, *m*. Hence, after the horizontal bars *K* are placed in the machine, the pickets placed therein and made uniform as to height by the guide bar *D*, the upper vise irons or supporting irons *m* are let down by releasing the chain *F* on the reel  $F^2$ , so that the vise irons *m* will bear against that portion of the horizontal bar *K* above the line of holes or recesses therein and above the pickets, passing through said holes, so as to support such upper part of the horizontal bar *K* while the plugging or calking of the pickets therein is performed.

Having thus described my invention, what



I claim as new, and desire to secure by Letters Patent, is—

1. The combination, constituting a machine for making metallic railings, of a supporting frame, a pair of vise irons *a* and *b* mounted thereon and constituting an anvil and a clamp respectively, the anvil iron *a* being provided with adjustable means to fix it immovably on the frame, and the clamping iron *b* being provided with means to cause it to contact, when desired, with the fixed anvil iron of the vise; substantially as described.

2. The combination, constituting a machine for making metallic railings, of a supporting frame, a pair of vise irons mounted thereon, and constituting an anvil and a clamp respectively, the former being provided with means to fix it immovably on the frame, and the latter provided with means to cause it to contact, when desired, with the fixed anvil iron of the vise; and a partially rotatable guide bar secured to the end of the frame, in the same plane with the vise irons, with means to lock it in a raised position; substantially as described.

3. In combination, a supporting frame, a vise iron *a*, the supporting and clamping frame *a'* with set screw *a*<sup>2</sup>, the vise iron *b*, the spring screw bolt 2, 3, 4 and the set screw H; substantially as described.

4. In combination, a supporting frame, a pair of vise irons mounted thereon, with means to cause the same to contact with each other, the guide bar D, the double slotted frame B in which the same is pivotally

mounted, and the locking latch *c c'* mounted on the bar D and adapted to enter the slot in the frame B, substantially as described.

5. A supporting frame in which is mounted the vise irons *a, b* constructed and operating substantially as set forth, in combination with a supplemental superincumbent supporting frame, an arm *E*<sup>3</sup> pivotally mounted in devices secured thereto, a vise iron *m* carried by said pivoted arm adapted to be lowered to and rest upon the lower vise iron *a*, with means to swing said arm *E* upon its pivotal bearing, substantially as described.

6. A supporting frame *A', A*<sup>2</sup> *A*<sup>3</sup> constructed in duplicate sets, vise irons *a* and *b*, mounted thereon and constructed and operating substantially as set forth, the guide bar D with means to raise and lower the same, a single supplemental superincumbent frame *A*<sup>4</sup> *A*<sup>4</sup> *A*<sup>5</sup> uniting the two lower frames and their vises in a single machine, arms *E*<sup>3</sup> pivotally mounted in devices adjustable upon the upper frame piece *A*<sup>5</sup>, said arm *E*<sup>3</sup> carrying a vise iron *m*, adapted to rest upon the lower vise iron *a* when lowered, with means to swing said arms *E*<sup>3</sup> upon their pivotal bearings; substantially as described.

In testimony whereof I have hereunto affixed my signature, this 12th day of May, A. D. 1893.

THOMAS HENSHAW.

Witnesses:

FRANK S. BUSSEY,  
M. F. ELLIS.