2 Sheets--Sheet 1.

J. FLYNN.

Device for Bending Metal Timber Hangers.

No. 166,088. Patented July 27, 1875.

FIG. 1.

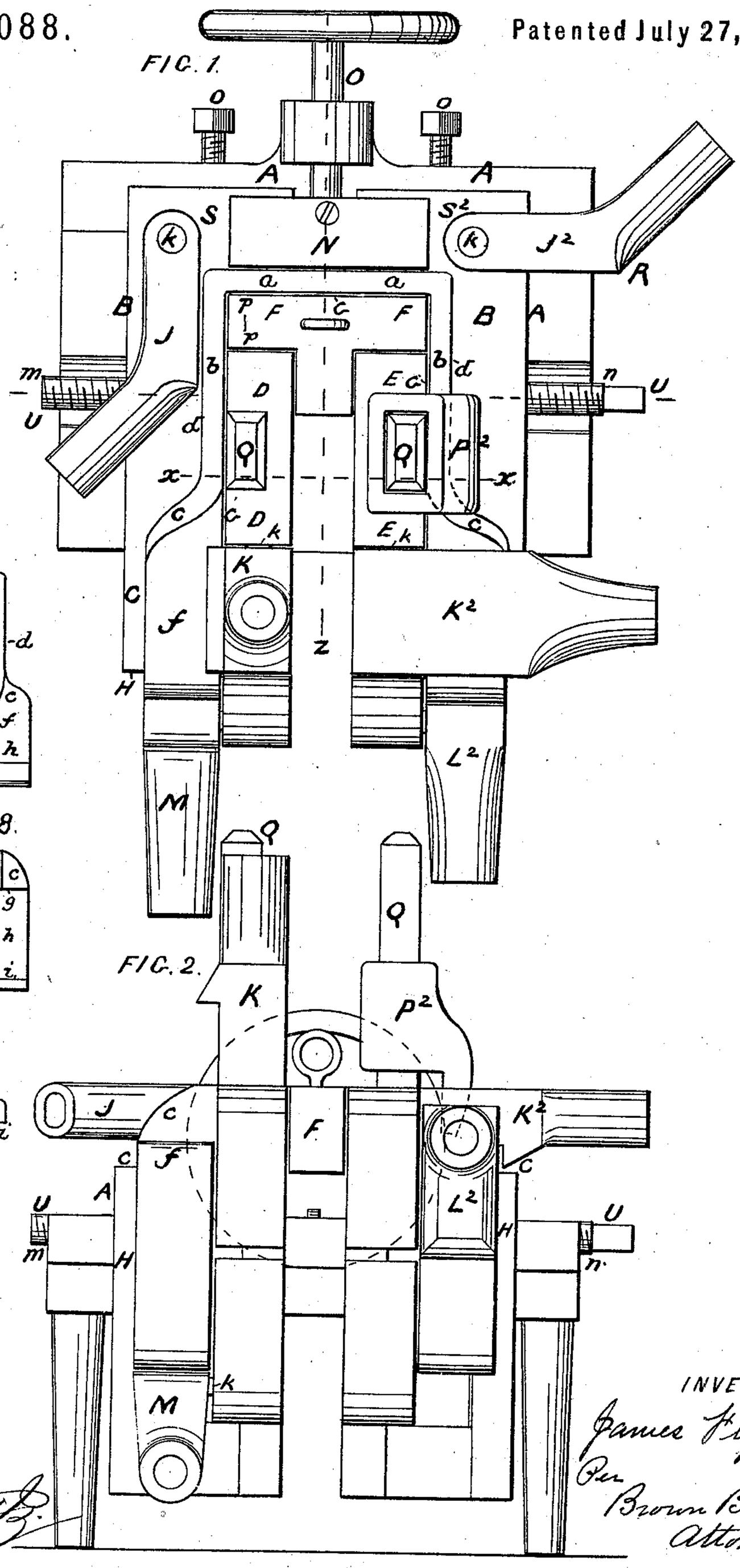

FIG. 7.

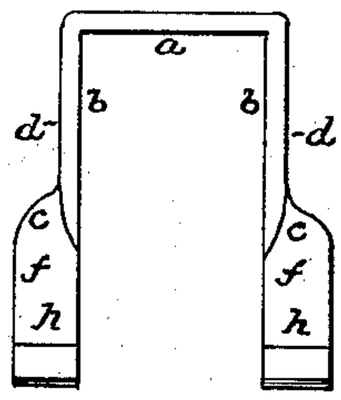

FIG. 8.

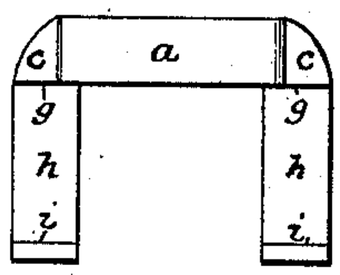

FIG. 9.

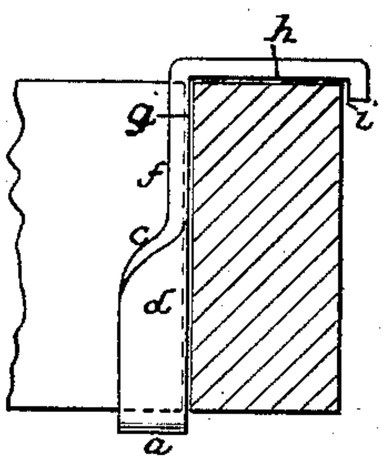

FIG. 2.

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2 Sheets--Sheet 2.

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FIG. 3.

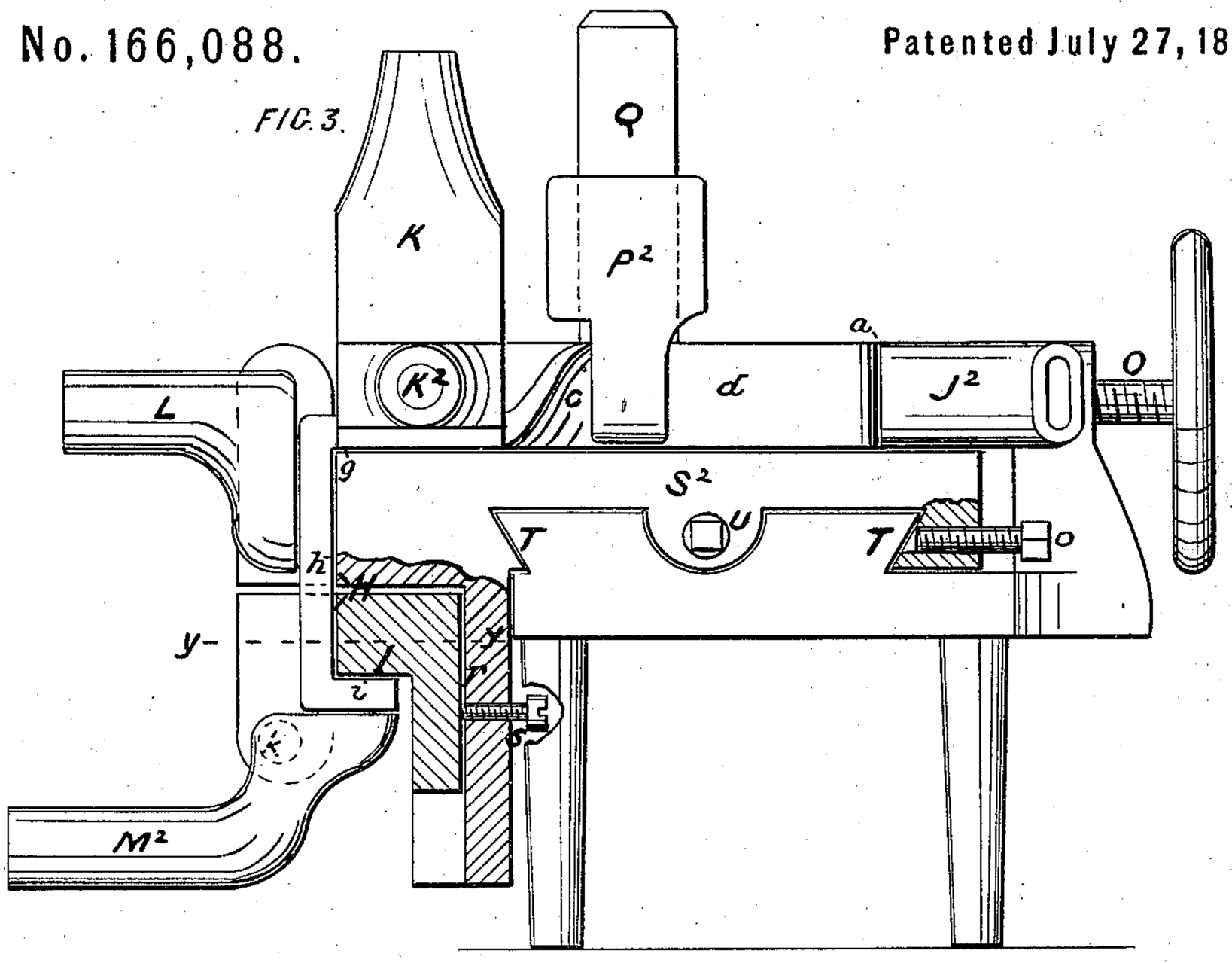


FIG. 5.

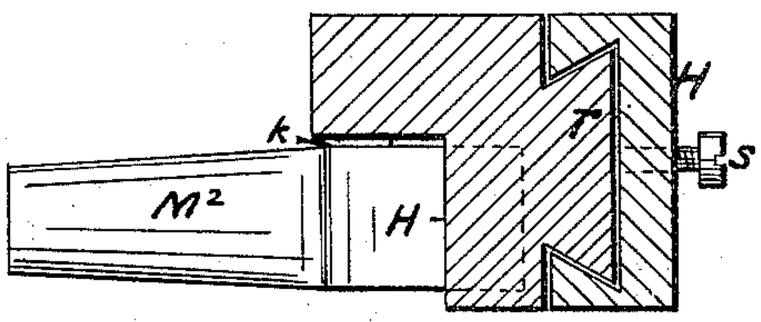


FIG. 4.

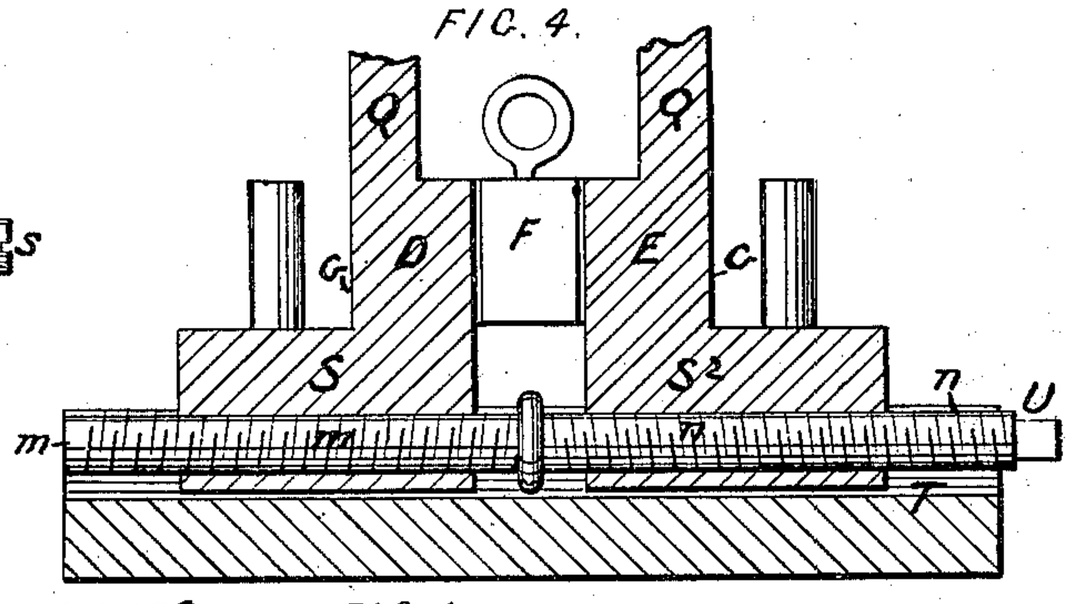
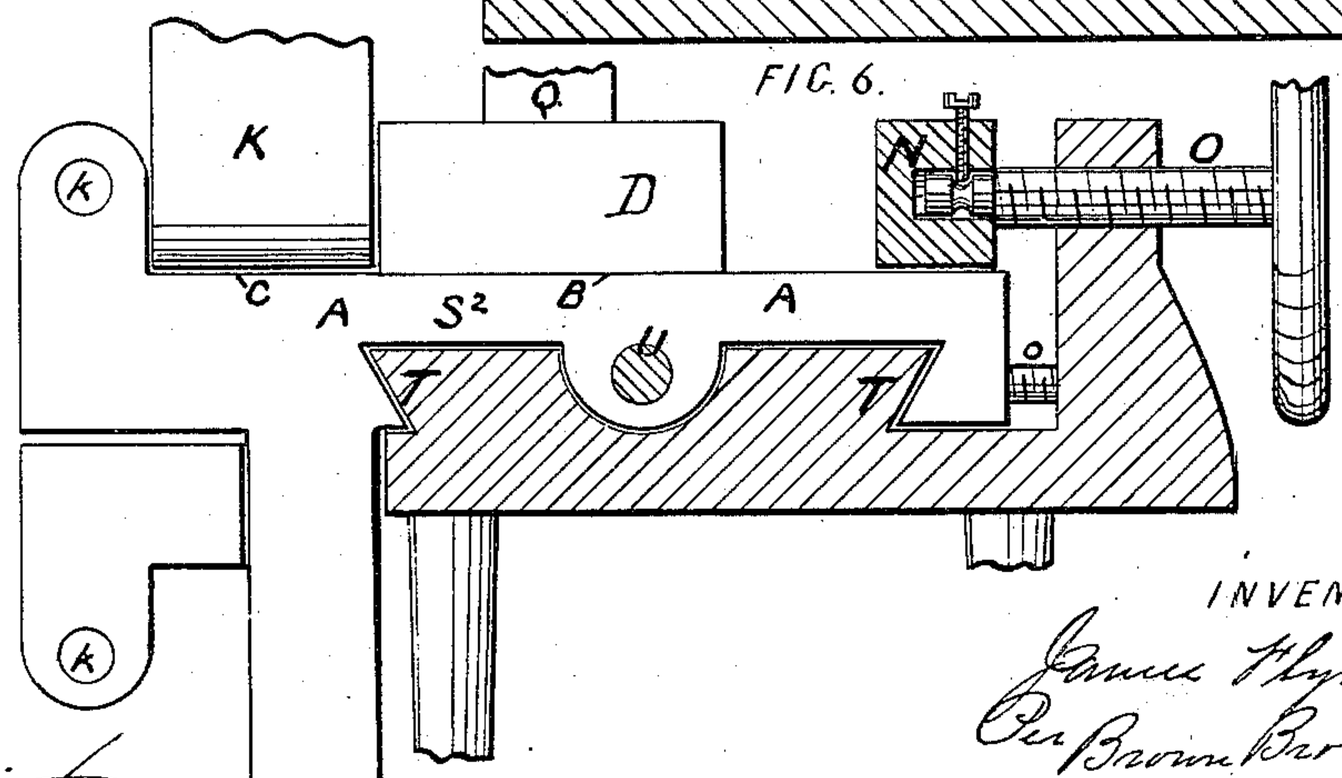


FIG. 6.



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IMPROVEMENT IN DEVICES FOR BENDING METAL TIMBER-HANGERS.

Specification forming part of Letters Patent No. **166,088**, dated July 27, 1875; application filed February 5, 1875.

To all whom it may concern:

Be it known that I, JAMES FLYNN, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Making Metal Timber-Hangers, of which the following is a specification:

This invention relates to a machine for making what are known as metal timber-hangers—that is, metal hangers, by which to suspend a beam, as, for instance, a flooring-beam to another beam in the erection of buildings, &c.

These hangers are made of a straight flat bar or strap of iron, which, in its length, is first bent in two lines across its width, to make it into a staple, having sides which are square with each other, and two legs of even length. The two legs to this square staple, and intermediately of their length, are then similarly twisted to bring the flat face of each leg beyond the twist, at right angles to the flat face between the twist and the square end of staple, after which the end of each leg is made into a hook of similar square sides for being suspended over the square edge of a timber. A hanger of this form, when suspended by its two square-sided hook ends over the edge of a timber, brings its square-staple portion against the upright face of the timber in position to receive and support within the square staple end a beam running at an angle to the beam from which the hanger is suspended.

Heretofore the bending of an iron bar or strap into the form above described, to make a timber-hanger, has been done by hand—that is, by hammering the bar on an anvil into the said shape, which obviously required much time and labor in their manufacture, making the hangers expensive, and, besides, it was impossible to obtain that regularity in their size and shape so important to their ready and convenient use for the purpose designed.

The object of this invention is to produce a machine in which the bending of an iron strap or bar into the said shape for a timber-hanger may be accomplished in a most convenient and ready manner, and with an absolute regularity in shape and size.

For the object above stated the invention consists of a machine in which are embraced, first, a "form" of suitable construction, about which to bend the bar or strap of iron to the said described shape for a timber-hanger, whereby regularity in shape and size thereof can be obtained; second, levers or other equivalent devices, arranged and disposed about the said form in such manner that they can be brought against the iron bar or strap from which a timber-hanger is to be made, to bend said bar or strap about said form, and thus produce from it a timber-hanger of the shape desired.

In this improved machine the form and bending-levers are constructed and arranged to be adjusted for the production, in and by one and the same machine, of hangers of different lengths from end to end, of different widths from side to side, and of different widths as to their hooks, by which to suspend them over the edge of a beam of a greater or less width or thickness, and each of these adjustable features is independent of the others.

The accompanying plates of drawings illustrate my improved machine.

In Plate 1, Figure 1 is a plan view, and Fig. 2 an end elevation, both showing a bar or strap of iron as bent therein into a timber-hanger of the said described shape, and both showing some of the bending-levers as against, and others as away from, the said bent iron bar or strap. In Plate 2, Fig. 3 is a side elevation of the machine as illustrated by both Figs. 1 and 2, Plate 1. Fig. 4 is a detail vertical section along line *x x*, Fig. 1, Plate 1. Fig. 5 is a detail horizontal section along line *y y*, Fig. 3. Fig. 6 is a vertical section in part along line *z z*, Fig. 1, Plate 1.

In the drawings, A represents a horizontal bed or platen of suitable strength, and supported in any suitable manner. The bed A is in two parts, S S^2, (see Figs. 1 and 4, more particularly,) and each part carries one of each of the several features of the form, and one of each kind of the series of levers, and one holding-jaw, all as hereinafter particularly described, and both parts are arranged upon a common dovetail guideway, T, running in a proper direction for them to be moved toward and away from each other. U, a screw-shaft, which has a right screw-thread, *m*, and a left screw-thread, *n*, and enters by one screw-thread one part and by the other screw-thread the other part of the two parts S S^2 of the platen

A, so that when the screw-thread is turned the two parts S S^2 will not only be moved simultaneously, but in such movement, according to the direction in which the screw is turned, made to approach or move away from each other for a purpose to be hereinafter referred to; *o*, a set-screw for fixing the platen-parts S S^2 against movement after the adjustment described; B, the working-surface of the platen A, which is provided with three upright walls D, E, and F. The two walls D and E are secured one to one part and the other to the other part of the two parts S S^2 of the platen A, and the wall F connects together one end of the two walls D and E, and is arranged in the platen A, as shown, to be removed and inserted at pleasure, or another one used in its place. G the working-face of the several walls D, E, and F. The working-faces of the two walls D and E are in vertical and parallel lines, and the working-face of the wall F is at a right angle to those of the walls D and E, the three working-faces in outline corresponding to the three contiguous sides of a parallelogram. The horizontal platen A in each part S S^2 extends, as at C, beyond the ends of the walls D and E, not joined, as described, by the wall F, and, there terminating, each of its parts S S^2 has a similar downward-projecting wall, H, each of which terminates at its lower end in a face, I, that is horizontal and at right angles to the wall H. The blocks which make the horizontal wall-faces I are each arranged on their respective upright walls H by a similar vertical dovetail groove and way, *r r*, to admit of their being raised or lowered thereon to change the vertical length of the walls H, and set-screws *s* are provided for fastening the wall-faces I in their adjusted position.

The construction of the bed A, above described, constitutes the form of my improved machine, about and on which to bend a bar or strap of iron to make from it a timber-hanger of the shape herein described. And, first, in this form, with the iron bar laid flat and upright against the wall F, by such wall, together with the walls D and E, is secured the bend of the iron bar into the shape of a staple, having a square end, as at *a*, and parallel legs of even length, as at *b b*, the wall F giving the width of the square end *a*, and the walls D and E the parallel direction of the two legs *b b*; secondly, in this form the extension C of platen A beyond walls D E adapts the form for the staple-legs thereat to be bent over upon the platen A by twisting them, as at *c c*, and this bending brings their flat faces *f f* at and beyond their twist *c c* at right angles to their flat faces *d d*, between their twist *c c* and the square flat-faced end *a* at platen-wall F; and, thirdly, in this form the upright wall H, at termination of platen-part C, together with the horizontal face or wall I at the lower end of said upright wall, adapts the form for the staple-legs beyond their twists *c c* to be bent into a hook shape, with square sides, as at *g*, *h*, and *i*. Thus the form in its three distinct characteristics, as above described, secures the making of a bar of iron into a timber-hanger of the shape described, the first shape—that is, the square end staple—being secured at the three walls, D, E, and F, of the form; the second shape—that is, the twist of the staple-legs, and the bringing of their flat faces at right angles to each other intermediately of their length—being secured at the platen-part C; and the third and last shape—that is, the square-sided hook ends to the staple-legs—being secured at the upright wall H and its horizontal face or end 1.

For bending the iron bar or strap about the form in its three successive stages hereinabove described, I have provided a system of levers, J J^2, K K^2, L L^2, and M M^2, and they constitute the second novel feature of the present improved machine.

These levers J J^2, K K^2, L L^2, and M M^2 are arranged in pairs, as shown—that is, first, the levers J J^2 are located for bending the iron bar after having set it, as stated, against the platen-wall F, about and against the parallel walls D E, the one lever J for bending it against the wall D, and the other lever J^2 for bending it against the wall E; secondly, the levers K K^2 are located for bending the iron after it has been bent by the levers J J^2, as above described, to produce the twist *c*, and to bring the flat face of the bar beyond such twist at right angles to the flat face of the bar between such twist and the square staple end *a* of the bar, the one lever K acting on one leg of the staple-bar, and the other lever K^2 on the other leg of the staple-bar; thirdly, the levers L L^2 are located for bending the iron bar, after it has been bent by the levers K K^2, as above described, over and against the upright wall H of the platen, the one lever L for the one leg of the bar, and the other L^2 for the other leg of the bar; and, fourthly, the levers M M^2 are located for bending the iron bar after it has been bent by the levers L L^2, as above described, over and against the horizontal wall or face I of the upright wall H, the one lever M for the one leg of the bar, and the other lever M^2 for the other leg of the bar, and these levers complete the several bending operations of the machine by the use of the said series of levers.

All of the levers above referred to are swung upon independent fulcrums *k*, and, with the exception of the levers J J^2, they all swing in vertical planes, the levers J J^2 swinging in horizontal planes. These levers are, furthermore, suitably shaped—as, for instance, as shown—for the work they have, respectively, to perform to bend the iron bar. They are all to be provided with handles for obtaining the greatest amount of leverage in bending the iron bar with them, as described, and the two pairs of levers L L^2 and M M^2 are to be free for attachment to and detachment from the machine, so that the levers will not interfere

with the bending of the iron bar by the levers J J^2 and K K^2, and so that the levers M M^2 will not interfere with the bending of the iron bar by the levers L L^2; N, a block, adapted by screw-rod O, screwing through platen A to be set against the iron bar when placed, as described, against the platen-wall F to hold said bar firm as the bending-levers J J^2 are brought against it to bend it against the side walls D E; P P^2, two jaws of similar form, and each arranged to slide up and down upon distinct fixed posts Q of the platen A. These posts Q are located in proper position for the jaws P P^2 to be set over the upright faces of the iron bar, which lie against the side walls D E of the platen A, so as to hold said bar—the one P against the side wall D, and the other P^2 against the side wall E, when, by the levers K K^2, the bar is being twisted, as at *c c*, for the purpose already described.

In using the machine above described, in addition to the manipulation of the series of levers J J^2, &c., holding-block N, and jaws P P^2, hereinbefore described, the levers J J^2 must be both swung back, as shown at R, Fig. 1, Plate 1, and the block N must be set back from the platen-wall F for the machine to receive the iron bar which is to be bent into shape; and, before bending the iron bar against the side walls D E with the levers J J^2, the block N should be set up, to make sure that the bar is held firmly to the action of the levers J J^2, and care must be taken that the jaws P P^2, as well as the levers K K^2 and L L^2 are properly disposed not to interfere with the bending of the bar under the action of the bending-levers J J^2.

To remove a bar bent in the machine, as aforesaid, it is necessary to lift the end wall F out of its seat in the platen A, to swing up the levers K K^2, and to detach the levers L L^2, and, besides, it is best, also, to swing away the levers J J^2, and to detach the levers M M^2, and, having thus manipulated the said several parts, then slide the bent bar forward on the platen A until its hook ends are released from the horizontal walls I, which leaves the bent bar free to be drawn and taken off of the form.

The arrangement herein described of the two parts S S^2 of the platen for adjusting them nearer to, or farther from, each other, obviously adapts the machine for the production of hangers of varying widths; and, furthermore, the arrangement herein described of the walls I for vertical adjustment again obviously adapts the machine for the production of hangers to suit varying thicknesses of beams.

Removing the wall F, and substituting another one for it of a greater or lesser thickness from *p* to *p*, obviously adapts the machine to make a hanger of a greater or lesser length.

The end wall F, as a separate wall from the ends of the side walls D and E, may be dispensed with, as the ends of the side walls D and E would be sufficient to make the square staple head or end of the hanger, but it is obviously best to use a separate wall, F.

With a form such as herein described obviously a timber-hanger may be made from a bar or a strap of iron by first placing the bar against the form, as described, and then bending it about the form with a hammer; and therefore I do not intend to limit myself to the combination of bending-levers with the faced form, although for quick and better work they are important.

It, of course, is obvious that the bar of iron from which a hanger is to be made, as herein fully described, is to be heated to the proper degree before it is placed in the machine; and practice has demonstrated that with a machine constructed substantially as herein described the bar in one heat can be bent in all the directions required; whereas, as heretofore practiced with a hammer and anvil, the bar had to be heated from time to time before its bend into shape was completed.

It may be well to here observe that in the use of the machine herein described more or less of the levers, as to pairs, may be connected for a joint operation; as also the jaws for holding the metal bar to the side walls D E of the form.

Figs. 7 and 8 of Plate 1 are, respectively, front and plan views of a hanger of the form herein described, but showing it as reversed from its position for use; and Fig. 9, Plate 1, shows the hanger as suspended on a beam, and supporting another beam.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A form for making timber-hangers, substantially such as herein described, constructed with faces or walls D, E, F, G, H, and I, which are arranged relatively to each other, substantially as described.

2. The combination, with a form constructed with faces or walls D, E, F, G, H, and I, which are arranged relatively to each other substantially as described, of a series of bending-levers, which are applied to and about said form for being operated substantially as described, for the purpose specified.

3. The combination, with a form made in two parts, S S^2, and otherwise constructed with walls and levers substantially as herein described, of the right and left adjusting screw-shaft U, arranged to enter the parts S S^2 of the form, and, when turned, to move them substantially as and for the purpose specified.

JAMES FLYNN.

Witnesses:
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