

(No Model.)

3 Sheets—Sheet 1.

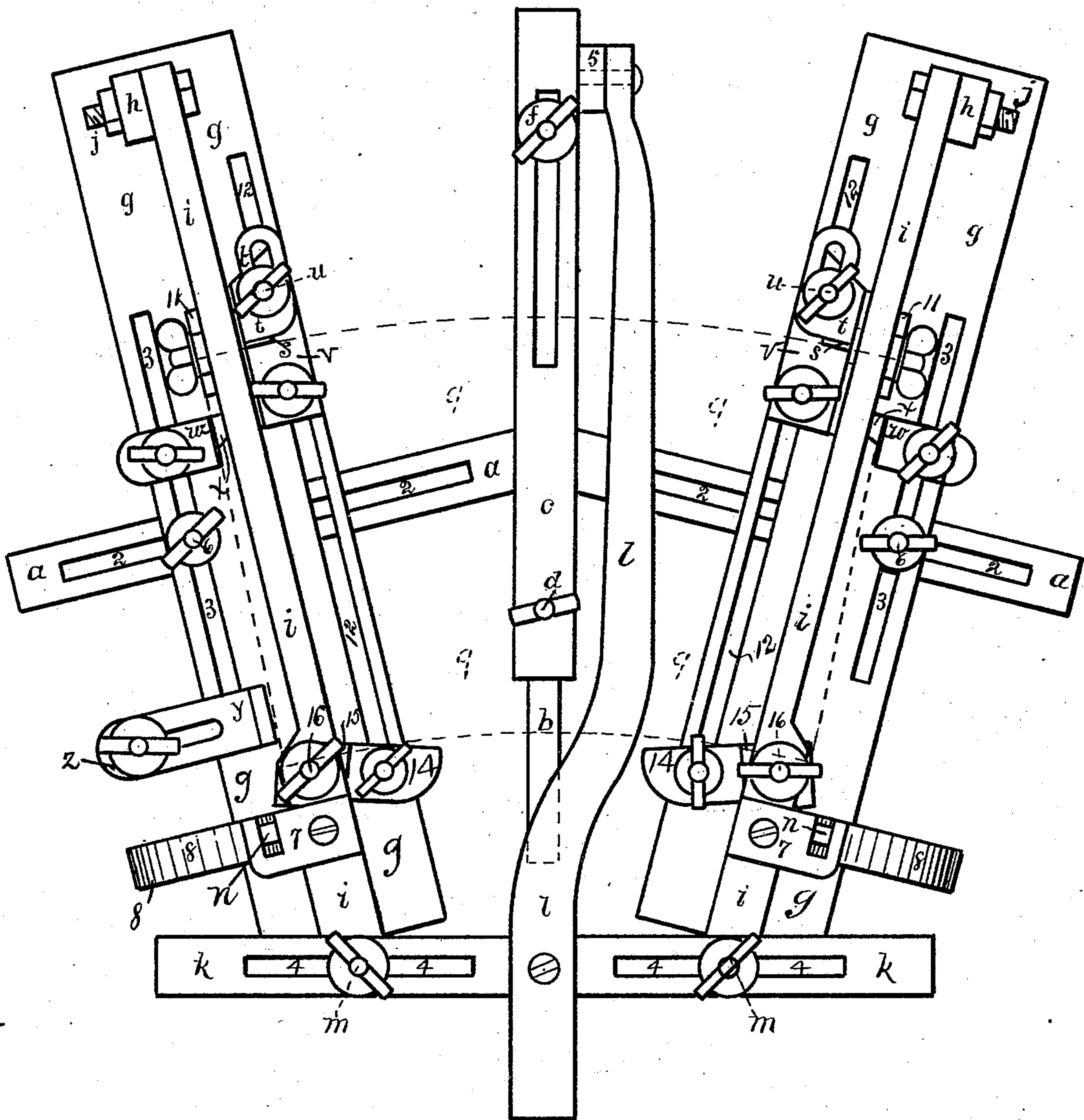
E. M. WILBOR.

MACHINE FOR CUTTING SHEET METAL.

No. 285,091.

Patented Sept. 18, 1883.

Fig. 1.



Witnesses:

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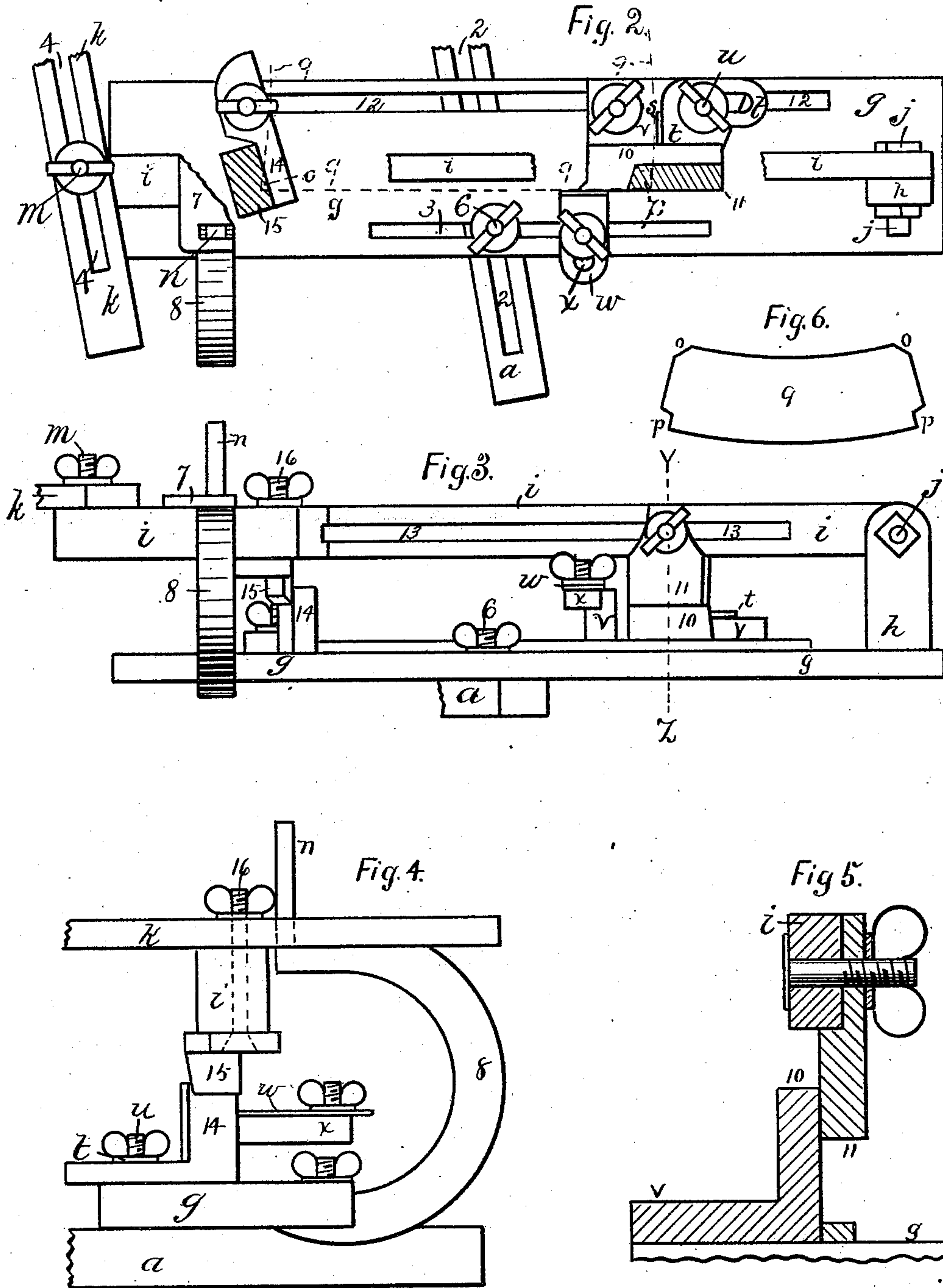
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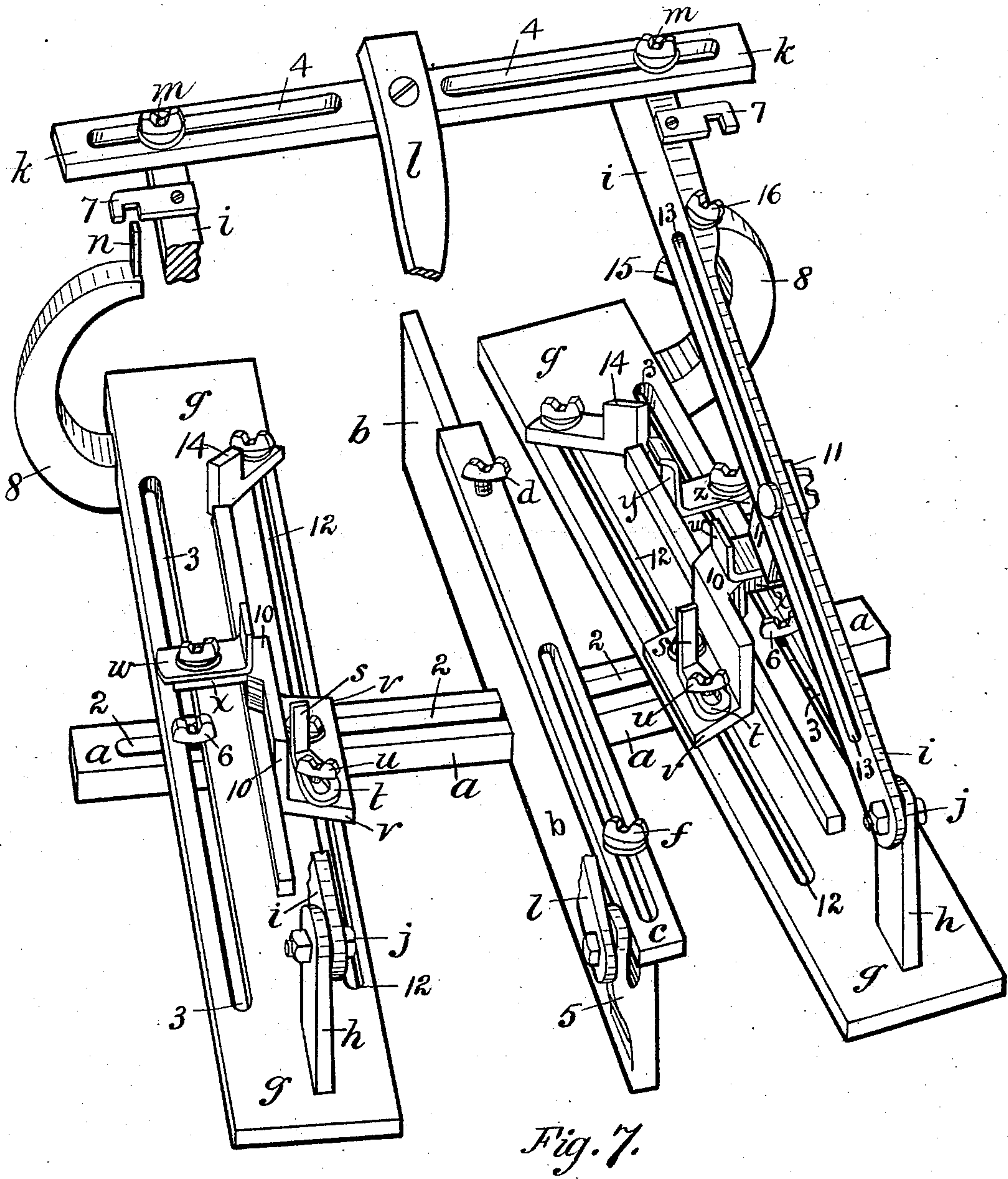
3 Sheets—Sheet 3.

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Patented Sept. 18, 1883.



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UNITED STATES PATENT OFFICE.

ELIJAH M. WILBOR, OF TAUNTON, MASSACHUSETTS.

MACHINE FOR CUTTING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 285,091, dated September 18, 1883.

Application filed May 16, 1881. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH M. WILBOR, of Taunton, State of Massachusetts, have invented a Machine for Cutting Sheet Metal, of which the following is a specification.

This invention relates to that class of metal-cutting machines which sever the metal by a shearing action, and it is especially designed and adapted for notching and clipping the corners of pan-sections after the same have been cut upon both their curved and end lines for the purpose of facilitating the "wiring" of the upper or convex line and the turning of the seaming-line at the concave edge, all as will, by the aid of the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

Figure 1 is a top or plan view of my machine complete for use, the pan-section 9 being shown by dotted lines in position in the machine to be notched and clipped as it appears in Fig. 6. Fig. 2 is a detached plan view of that portion of the machine which is shown in Fig. 1 to the right of the actuating-lever *l*, but with a portion of the die or cutter-lever *i* broken away, in order to show the cutters which are arranged beneath it, a part of the pan-section 9 being shown by dotted lines in position to be notched by cutters 10 and 11 at the intersection of its convex and end lines, and to be clipped by cutters 14 and 15 at the intersection of its concave and end lines, said cutters 10 and 14 being shown in plan, and the cutters 11 and 15 being shown in horizontal section. Fig. 3 is a side elevation, taken as viewed from the right in Fig. 1, but omitting the lever *l*. Fig. 4 is a detached front elevation taken as viewed from the left in Fig. 2, and showing that portion of the machine which is shown in said Fig. 2. Fig. 5 is a vertical transverse section, taken as on line Y Z, Fig. 3. Fig. 6 is a diminished plan view of a pan-section as notched and clipped in my said machine. Fig. 7 is a perspective view of my machine, a portion of the central or actuating lever, *l*, and of the near cutter-lever *i* being broken away, the latter to show the other parts, the cutter-bars *i i*, and their cutters being exactly duplicated at the two sides of the machine.

In said figure, *a* represents a bed-piece, each half of which is at an obtuse angle to a line passing through its transverse center, as shown

in Fig. 1. In each of such halves is formed a longitudinal vertical slot, 2, for the purpose of adjustably securing in position the die-plates *g* by means of the clamping screw-bolts 6, which pass through slots 2 in bed-piece *a* and slots 3 in plates *g*. A central bed or bar, *b*, is secured transversely and centrally to bed *a*, as shown in Fig. 1, and upon the bar *b* is secured by screw-bolt *f* the binding-bar *c*, between which and said bar *b* the thin sections of metal are placed to be cut, they being clamped in position by the screw *d*, which is threaded in bar *c* and arranged to exert the requisite force upon the sections when placed beneath it upon bed or bar *b*.

In each of the beds *g* is a low standard, *h*, to which are respectively pivoted the die-levers *i i*, so as to allow a rising and falling movement of the front ends thereof, said levers being secured to the front bar, *k*, by bolts *m m*, which pass through holes in the die-levers and through slot 4 in said bar *k*. A hand-lever, *l*, is at its front end secured to the center of bar *k*, while at its rear end it is secured to standard 5, which rises from bed *b*. Thus the die-levers *i i* and hand-lever *l* are respectively pivoted at their rear ends, while at their front ends they are each secured to bar *k*. Therefore, by vertically actuating the front end of said hand-lever *l* the motion thereof will be imparted to levers *i* through bar *k*, the slotted guiding-plates 7 7, secured on levers *i* and engaging the guiding-studs *n n*, respectively secured in the curved supports 8, serving to insure a direct vertical movement of levers *i*, in order that the dies thereon shall coincide with their coacting dies, as will be herein described.

In Fig. 6 a notched and clipped pan-section is shown, (marked 9,) the clipped corners being at the intersection of the end lines with the concave lines, and marked *o*, while the notched corners *p* are at the intersection of the convex line with said end lines. The object of my machine is to cut said notches *p* and to clip the corners at *o* at one motion or operation after the pan-section has been cut into form with full corners. To so clip and notch the corners the section 9 is placed upon bed *b*, beneath bar *c*, as before stated, with its convex line resting against the vertical stops *s s*, which rise from their slotted plates *t t*, that are secured by bolts *u u* upon die-blocks *v v*, as shown. At the same

time the ends of said section 9 bear against the vertical ends of gages *w w*, which are bolted to an arm, *x*, of die-blocks *v*, as shown in Fig. 3. A gage and keeper or lock-down, *y*, slotted and adjustable upon a projecting arm, *z*, is shown at the left hand in Fig. 1 as so arranged as to secure the pan-section 9 near the point where corners *o* are clipped, and such gage may be arranged at both the right and left hand sides of the machine, if necessary. For the purpose of cutting said notches *p*, I provide the lower angle-die, 10, (shown in plan in Fig. 2 and in enlarged transverse section in Fig. 5,) said die being secured to bed *g* by screw-bolt *w*, inserted in slot 12 in said bed, and also securing gage-plate *v*, as before described. An auxiliary bolt may also be employed for securing said die-block in place, as shown in Figs. 1, 2, in order that said gage may be adjusted without release or displacement of the die-block.

A coacting-die, 11, (shown in vertical section in Fig. 5 and in horizontal section in Fig. 2,) is attached to the lever *i* by a screw-bolt passing through slot 13 in said lever, as shown in Fig. 3.

For the purpose of cutting the angles *o* upon said sections 9, I employ a die, 14, which is pivotally secured to bed *g* by a bolt passing through slot 12 therein, as shown, and a coacting upper cutter, 15, is secured to lever *i* by bolt 16, as shown in Figs. 1, 3, and 4.

By means of beds *g* being secured to bar *a* by bolts inserted in slot 2 therein, while levers *i*, which are always parallel with beds *g*, are secured to bar *k* by bolts inserted in slots 4, the cutters 10, and 11, and 14, and 15, respectively secured to said beds and levers, can be adjusted to conform to any degree of obliquity of the ends of section 9, as said beds *g* may be arranged parallel with each other or at such divergence, as may be necessary; and by means of the slots in beds *g*, wherein the holding-bolts of the cutting-dies are secured, the said dies in each bed may be arranged at such distance apart as the width of section 9 may render necessary. The dies 14 15 being each pivoted upon their respective securing-bolt, they may be adjusted

to clip the corner *o* at the desired angle relatively to the end and concave lines of section 9. The notches *p* in said section are cut of such depth relatively to the end line as the seaming together of the sections may render necessary, and the depth of such cut relatively to the convex line is such as will be necessary to cover the strengthening-wire which is rolled in at the edge of the vessel in which the sections are incorporated, and the amount cut away at *o* is such as may be necessary for forming the seam by which the sections are connected with the bottom of the pan.

I claim as my invention—

1. The combination of the slotted transverse bed *a* and the slotted side beds, *g*, thereto adjustably secured, the levers *i i* and means for vertically vibrating the same, and the dies 10, 11, 14, and 15, respectively secured to said beds and levers, as shown and described, and formed and adapted to clip and notch the respective corners of the sections 9, as specified.

2. In a metal-cutting machine, the combination of the back gages or stops, *s s*, the end gages or stops, *w w*, the notching-dies 10 11, and the clipping-dies 14 15, all substantially as specified.

3. In a metal-cutting machine, the combination of side bars, *g g*, and the levers *i i*, pivotally mounted thereon and arranged to vibrate in a fixed plane relatively to the bars to which they are respectively pivoted, the said bars being laterally adjustable both in their distance from and obliquity to each other, the cutting-dies 10 and 11, respectively secured to said bars and levers and adjustable thereon in their distance from dies 14 15, and arranged and secured in fixed planes both in relation to each other and to the bed or bar to which they are respectively secured, and the said dies 14 15, respectively secured in said bars and levers and arranged to be pivotally adjusted, so as to clip sections 9 at *o* to the required angle, substantially as specified.

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Witnesses:

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