(No Model.) 2 Sheets—Sheet 1.

J. KOEHLER.

MACHINE FOR CUTTING I-BEAMS OR CHANNEL BARS.

No. 438,252. Patented Oct. 14, 1890.

Fig. 1.

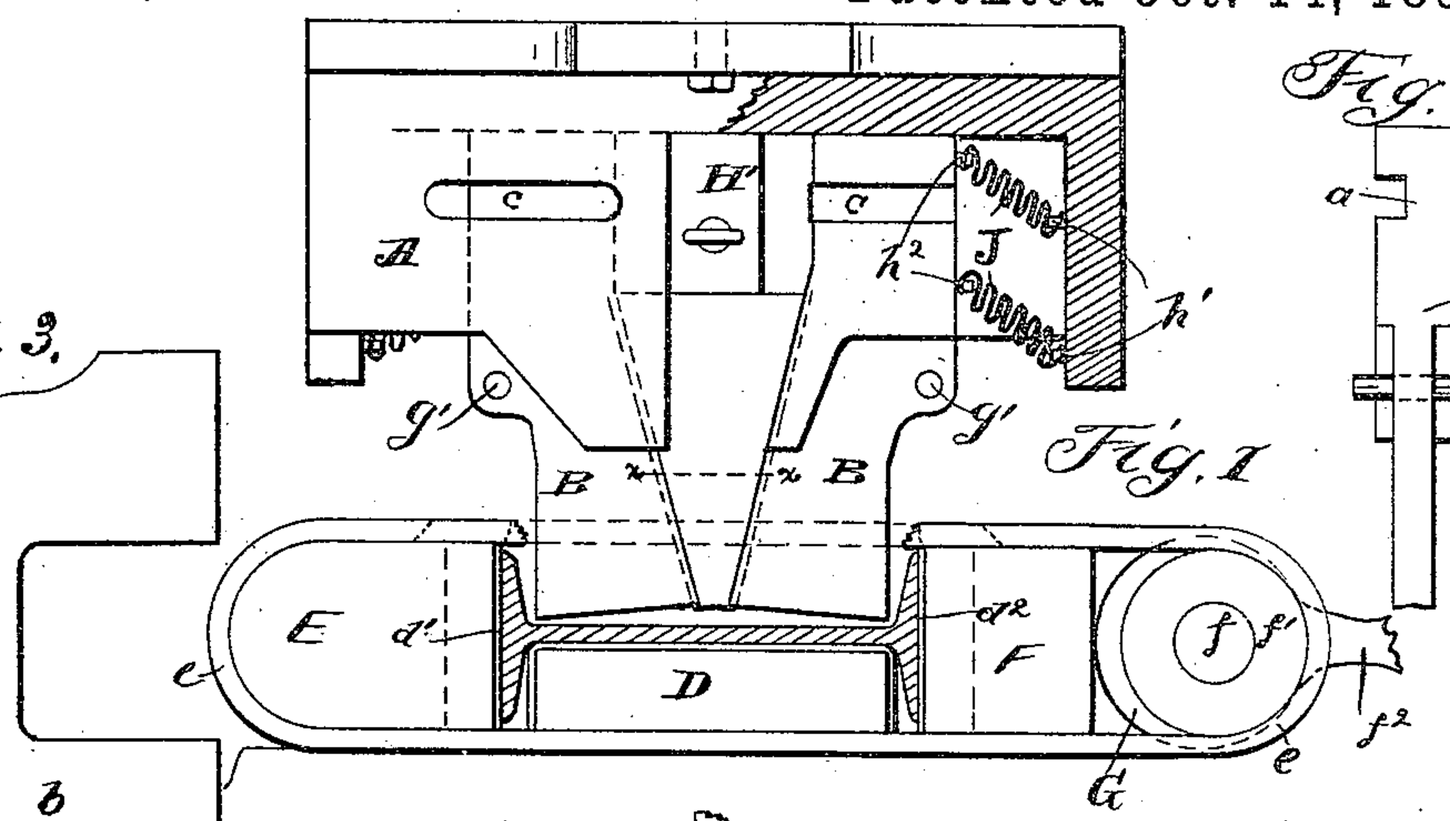


Fig. 2.

Fig. 3.

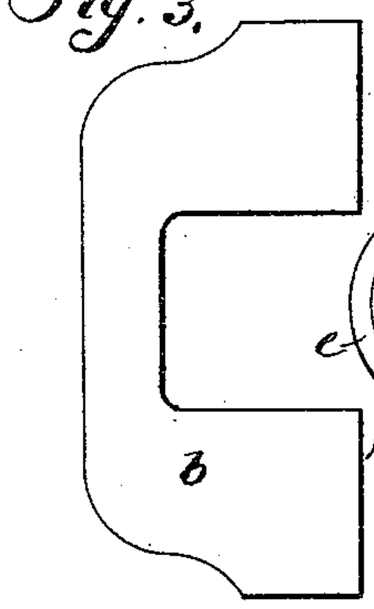


Fig. 4

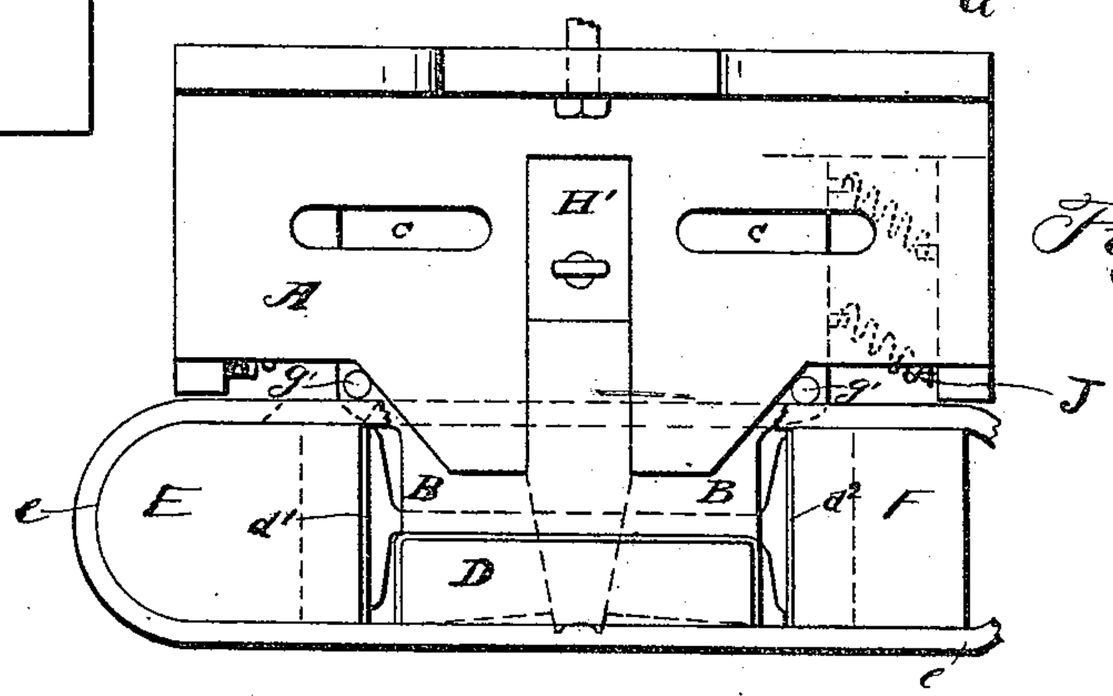


Fig. 6.

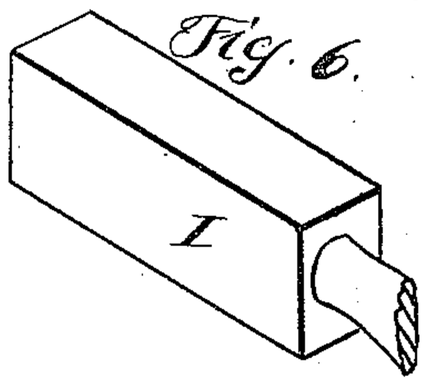
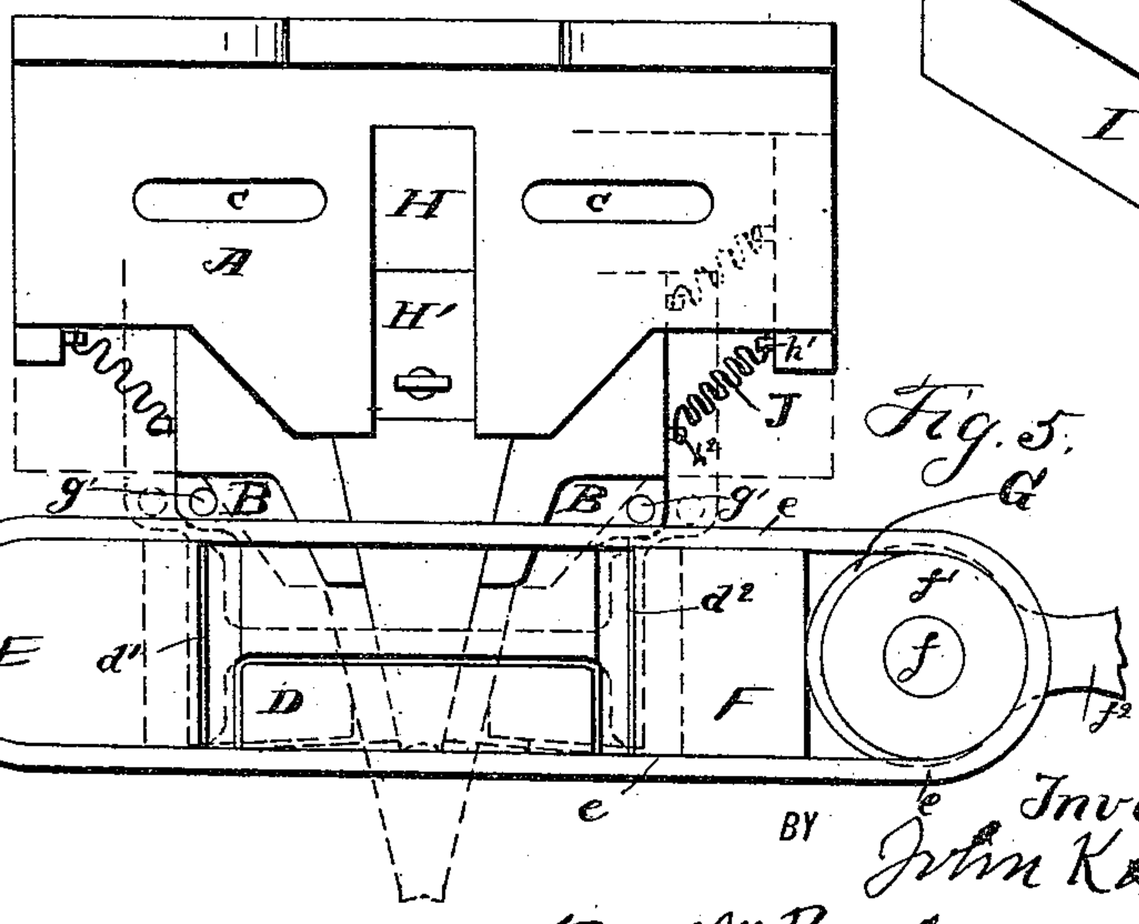


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

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MACHINE FOR CUTTING I-BEAMS OR CHANNEL BARS.

No. 438,252. Patented Oct. 14, 1890.

Fig. 8.

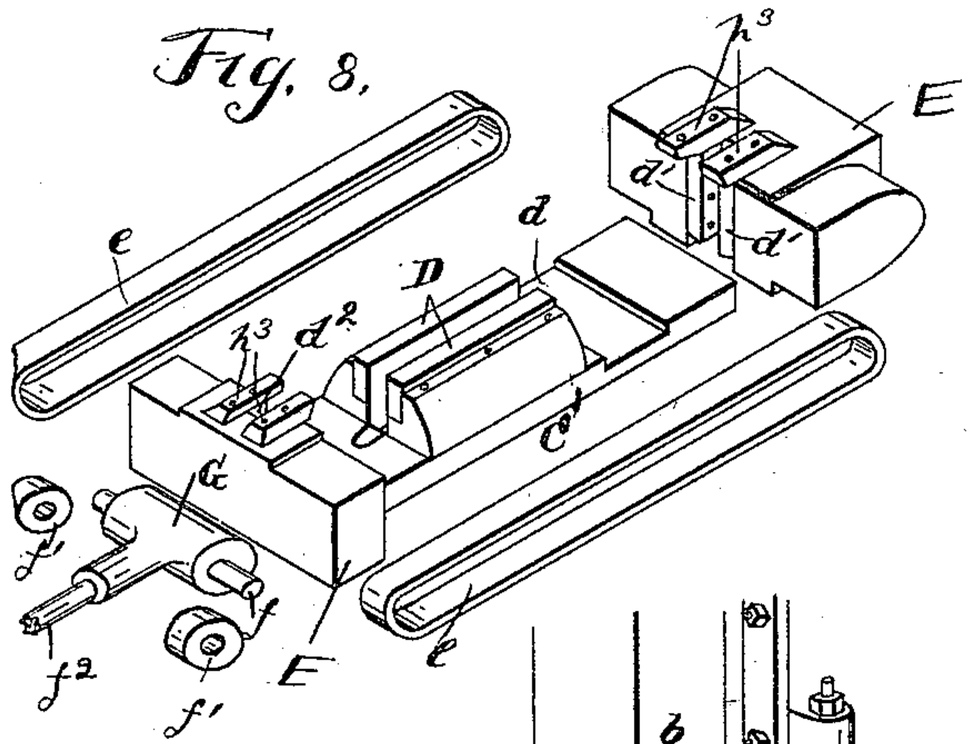


Fig. 9.

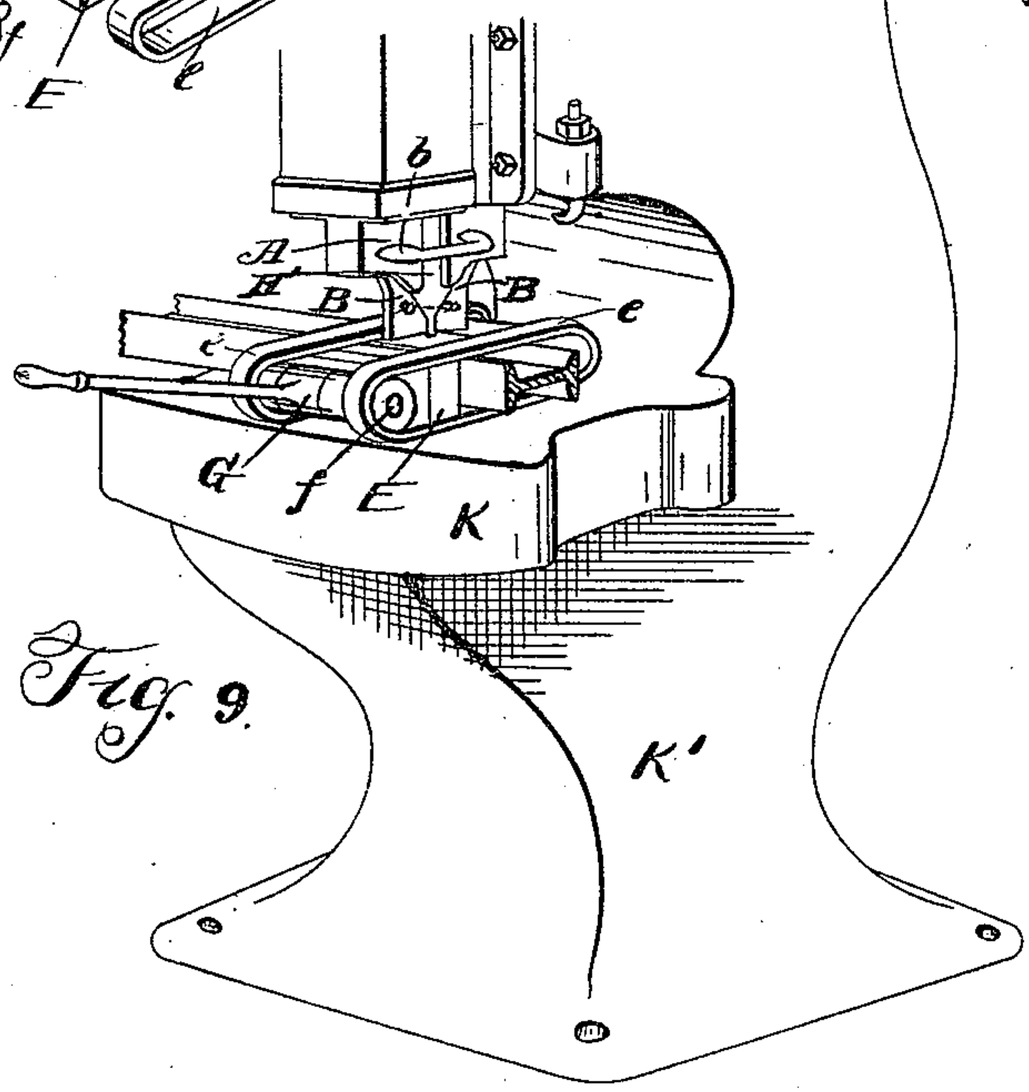
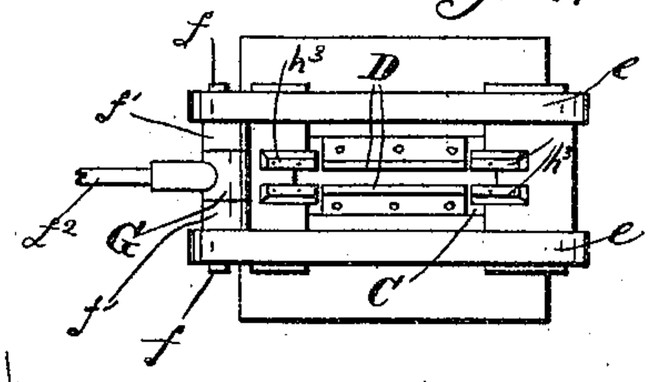


Fig. 7.



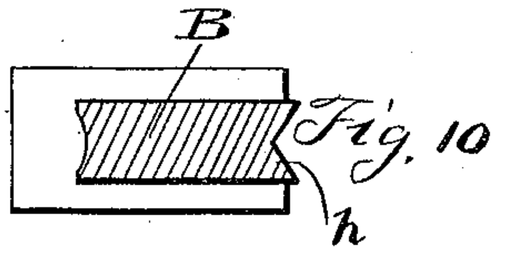


Fig. 10

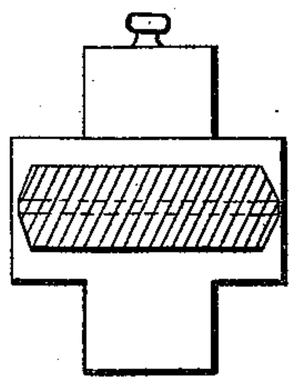
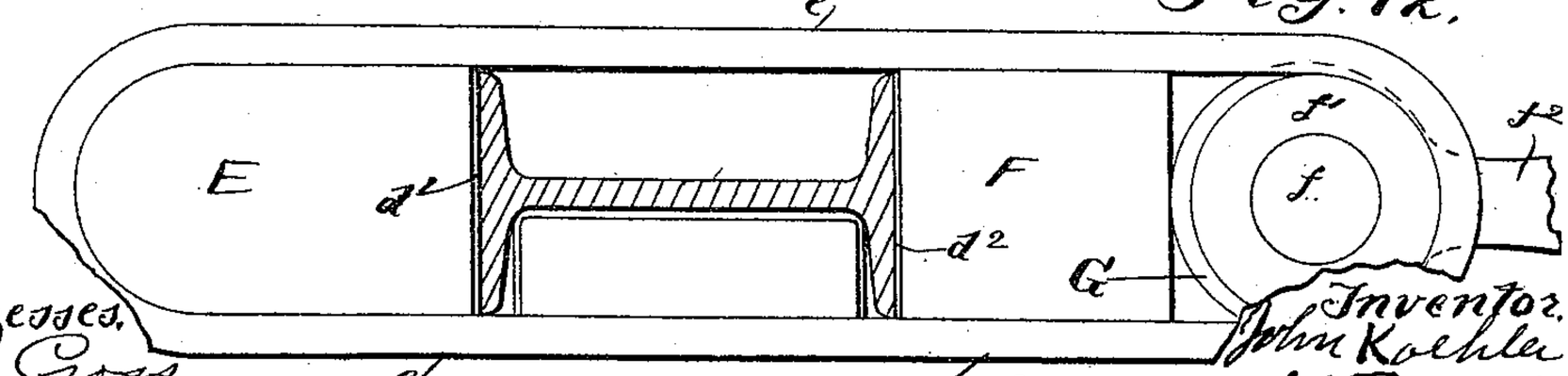


Fig. 11

Fig. 12.



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UNITED STATES PATENT OFFICE.

JOHN KOEHLER, OF CANTON, OHIO.

MACHINE FOR CUTTING I-BEAMS OR CHANNEL-BARS.

SPECIFICATION forming part of Letters Patent No. 438,252, dated October 14, 1890.

Application filed August 25, 1890. Serial No. 363,022. (No model.)

To all whom it may concern:

Be it known that I, JOHN KOEHLER, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Machines for Cutting I-Beams or Channel-Bars or other Difficult Shapes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a view of the blade-holding head, showing the same properly located and the blades in position to cut the web of an I-beam or channel-bar, and also showing an I-beam properly located. Fig. 2 is an edge view of one of the cutting-blades. Fig. 3 is a detached view of the blade-holding link or key. Fig. 4 is a view illustrating the cutting-blades passed through the web of an I-beam, said parts being shown in dotted lines. Fig. 5 is a view showing the parting-wedge down in position to part the cutting-blades, also showing the cutting-blades parted to cut the flanges of an I-beam or channel-bar. Fig. 6 is a detached view of the wedge-block. Fig. 7 is a top view of the bed-plate, showing the fixed or under dies properly located thereon and the same securely clamped. Fig. 8 is a view showing the fixed of under dies together with their different attachments detached. Fig. 9 is a view showing an I-beam properly clamped and placed upon the bed-plate, and the cutting-blades locked to the sliding head. Fig. 10 is a transverse section of one of the cutting-blades, showing the top or upper part of the blades full. Fig. 11 is a section through line *x x*, Fig. 1. Fig. 12 is an edge view of one of the clamping-links, showing the eccentric properly attached thereto.

The present invention has relation to machines calculated and designed to cut I-beams or channel-bars by means of dies; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, A represents the blade-holding head, which is designed and calculated to be moved up and down by a plunger operated by means of an eccentric or other mechanism commonly used to operate a reciprocating plunger in die-presses.

Within the head A are located the top or upper portions of the cutting-blades B. These cutting-blades are each provided with the notch or groove *a*, which are for the purpose of receiving the ends of the key *b*, and when it is desired to have the cutting-blades B follow the movement of the head A the key *b* is placed in the position illustrated in Fig. 9, thereby locking the blades B to the head A.

For the purpose of providing a means to extend the key *b* into the notches or grooves *a* the openings *c* are provided.

To the bar C are attached the bottom or lower web-dies D, which dies are so located and adjusted that they will come directly under or beneath the web of an I-beam or channel-bar. These dies D are set far enough apart to allow the cutting-blade B to pass down between said dies D.

To one end of the lower dies D is located the head E, which head is fixed to the bar C by means of seating a portion of said head E into the groove *d*, or in any other well-known and convenient manner.

To the head E are securely attached the flange-dies *d'*.

To the opposite ends of the dies D is located the movable head F, which head is provided with the flange-dies d^2.

For the purpose of securely clamping an I-beam or channel-bar between the heads E and F the links *e* are provided, which links receive the die-heads E and F, substantially as illustrated in Figs. 7 and 12, and for the purpose of binding the die-heads E and F against the outer faces of the flanges designed to be cut the eccentric G is provided, which eccentric is held to the links *e* by means of the bar *f* and the collars *f'*.

For the purpose of operating the eccentric G the handle f^2 is provided.

It will be understood that other means may be employed for clamping the die-heads E and F; but I prefer to use the eccentric, as shown.

It will be understood that the die-head E

should be set far enough away from the ends of the dies D to allow the flanges of the I-beam or channel-bar to be received between the die-head E and the ends of the dies D.

In use the beam designed to be cut is placed in the position illustrated in Fig. 9, at which time the sliding head A is forced downward until the blades B have passed through the web of the I-beam or channel-bar and extended to the bottom of the side flanges of the I-beam or channel-bar, at which time the key *b* is removed from the head A, thereby disengaging the cutting-blades B from the sliding head A, at which time the sliding head A is again elevated, thereby forming the opening H directly above the top or upper end of the parting-wedge H′. The block or bar I is placed through the opening H and on the top of the parting-wedge H′ and the sliding head A again forced downward, carrying with it the parting-wedge H′, and thereby expanding the cutting-blades B, as illustrated by the dotted lines, Fig. 5, which cause the cutting-blades B to pass through the flanges of the I-beam or channel-bar, after which the cutting-blades B and the parting-wedge H′ are again placed in the position illustrated in Fig. 1 and the key *b* placed in the position illustrated in Fig. 9.

For the purpose of providing stops for the cutting-blades B the rollers *g* are provided, which rollers are placed through the apertures *g′* and roll or slide on the die-heads E and F, when the blades B are expanded by means of the parting-wedge H′.

It will be understood that the inner edges of the cutting-blades B should be provided with a V-shaped groove *h*, which are for the purpose of receiving a V-shaped ridge upon the edges of the parting-wedge H′, thereby preventing any accidental lateral displacement of the parting-wedge H′.

For the purpose of assisting in holding and elevating the cutting-blades B the helical springs J are provided and are attached in any well known and convenient manner to the pins *h′* and *h²* or their equivalents.

In the drawings, K represents the bed-plate, which is attached to the press-frame K′ in the ordinary manner.

It will be understood that other means may be used for parting the cutting-blades B without departing from the nature of my invention.

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

1. The sliding heads A, having located therein the cutting-blades B, the parting-wedge H′, the fixed dies D, and the flange-dies *d′* and *d²*, substantially as and for the purpose specified.

2. The combination of the heads A, the cutting-blades B, provided with the notch or groove *a*, the key *d*, and the parting-wedge H′, substantially as and for the purpose specified.

3. The combination of the head A, having located therein and carrying the cutting-blades B, the dies D, *d′*, and *d²*, and means for parting the cutting-blades B, substantially as and for the purpose set forth.

4. The head A, having located therein the cutting-blades B, the parting-wedge H′, located between the cutting-blades B, and the block or bar I, substantially as and for the purpose set forth.

5. The combination of the bar C, having attached thereto the dies D, the die-head E, fixed to the bar C, the movable head F, the links *e*, and the eccentric G, substantially as and for the purpose set forth.

6. The combination of the head A, the cutting-blades B, the stop-rollers *g*, the dies D, *d′*, and *d²*, and means for clamping an I-beam or channel-bar, substantially as and for the purpose specified.

7. A device for cutting I-beams, channel-bars, or other difficult shapes in which the central portion is first removed by the blades B operating against the die D, and the outer portions then removed by blades B, operated against the lateral blocks E and F at or nearly at right angles to the direction of motion in making first cut by means of the wedge H′, or other equivalent device, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN KOEHLER.

Witnesses:
E. A. C. SMITH,
F. W. BOND.