

(No Model.)

V. E. EDWARDS.

SHEARS FOR CUTTING METAL BARS WHILE IN MOTION.

No. 587,362.

Patented Aug. 3, 1897.

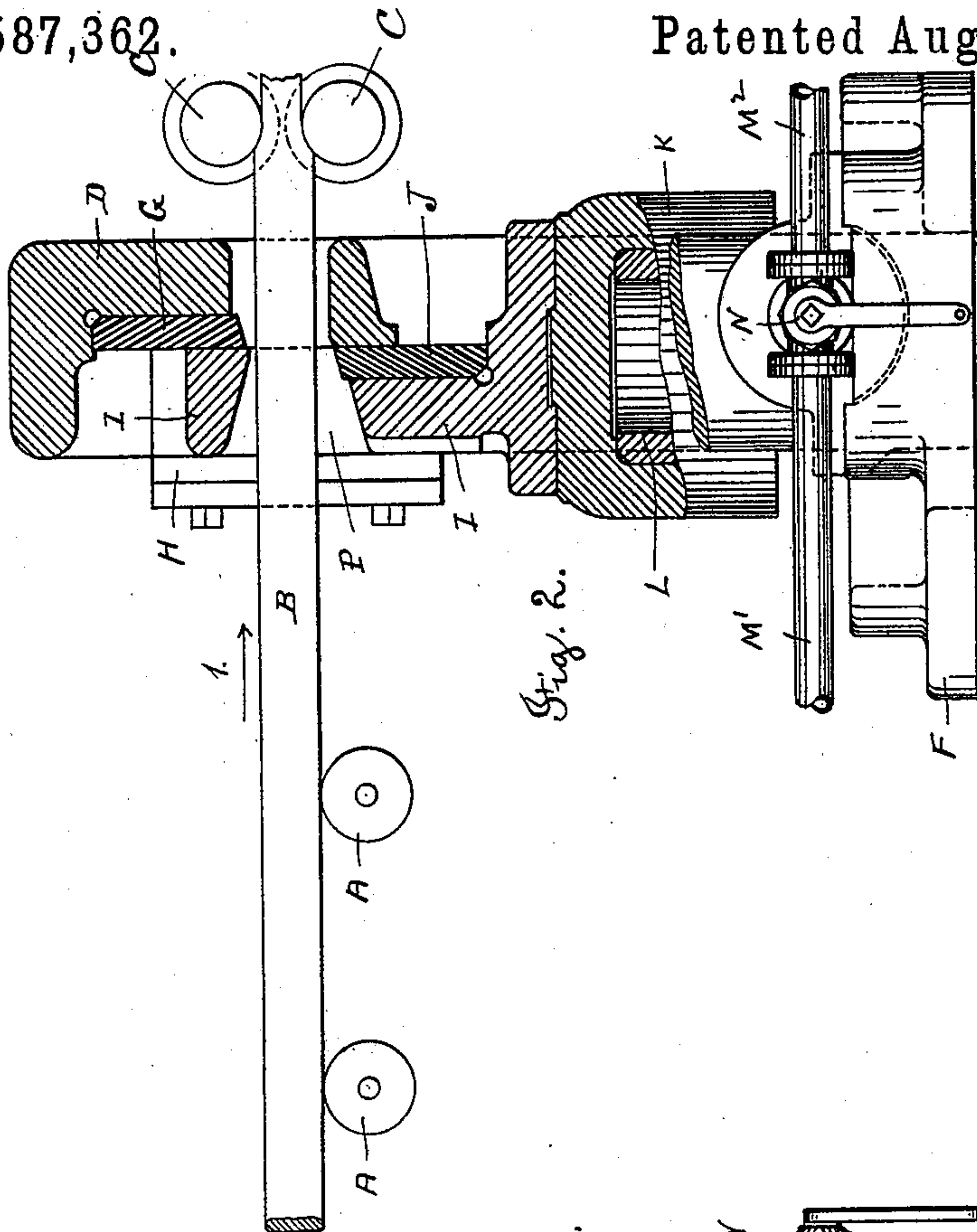


Fig. 2.

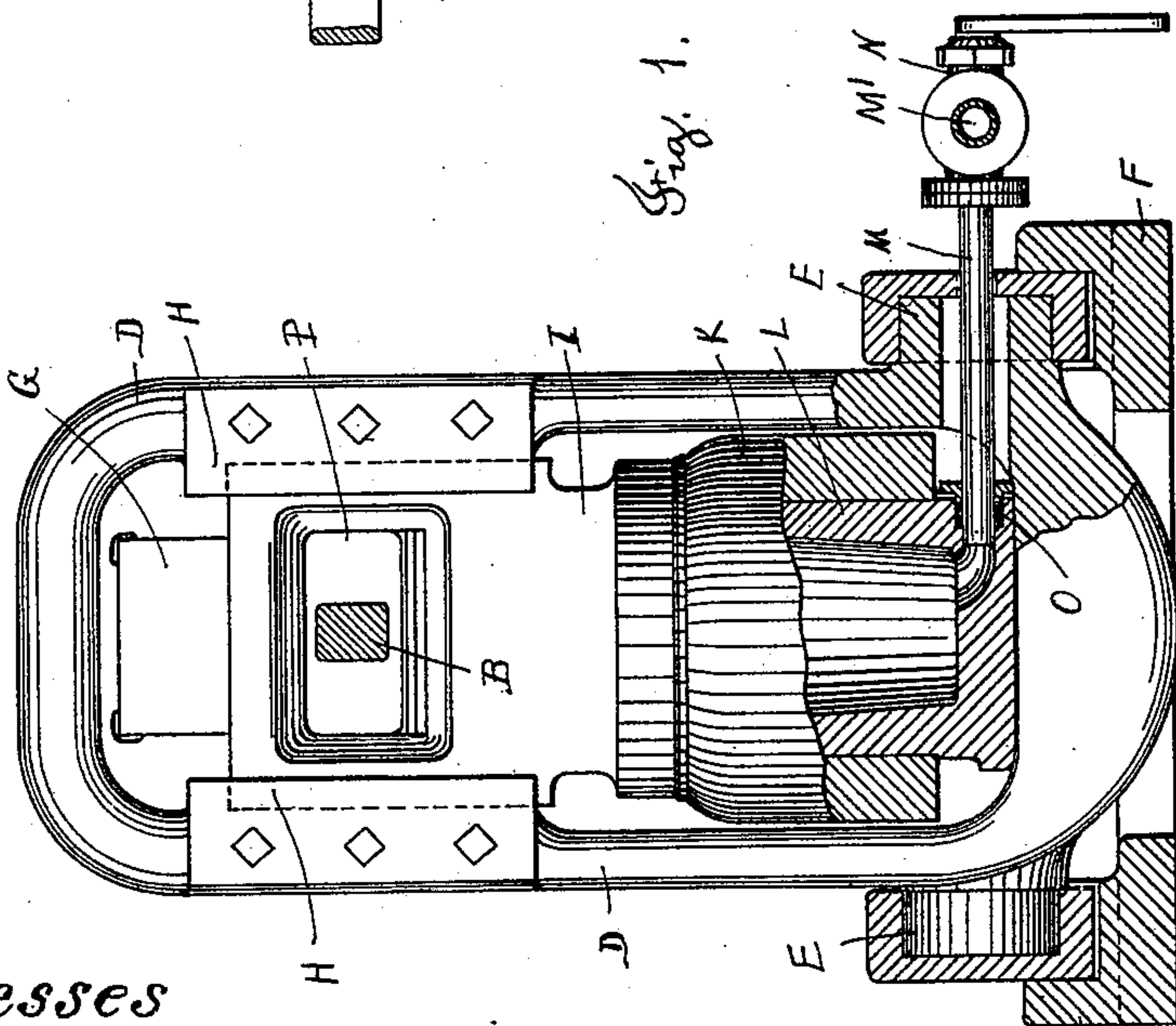


Fig. 1.

Witnesses  
Emma Kester.  
Henry W. Fowler.

Inventor  
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By his attorney  
Rufus B. Fowler



# UNITED STATES PATENT OFFICE.

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## SHEARS FOR CUTTING METAL BARS WHILE IN MOTION.

SPECIFICATION forming part of Letters Patent No. 587,362, dated August 3, 1897.

Application filed July 13, 1895. Serial No. 555,896. (No model.)

*To all whom it may concern:*

Be it known that I, VICTOR E. EDWARDS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Shears for Cutting Metal Bars While in Motion, of which the following is a specification, accompanied by drawings, forming a part of the same, in which—

Figure 1 represents a front elevation of a shear embodying my invention, a portion of the lower half being shown in central vertical sectional view; and Fig. 2 represents a side view of my improved shear, the upper half being shown in central vertical sectional view.

Similar letters refer to similar parts in both figures.

My invention relates to that class of shears adapted to sever a metal bar or rod while the same is in motion, the operation of the shear in cutting the bar going on simultaneously with the longitudinal movement of the bar through the shear, and my improved shear is designed to be used in connection with the rolls of a rolling-mill plant for the purpose of cutting a metal bar without interruption to the movement of the bar through the rolls of the mill.

Referring to the accompanying drawings, A A denote rolls upon which a metal bar is supported, and B denotes a metal bar moving in the direction of the arrow 1 drawn by the rolls C C, which represent a pair of reducing-rolls of a rolling-mill. The shearing mechanism which embodies my present invention comprises an upright frame D, provided at its lower end with trunnions E E, which are journaled in horizontal bearings and supported upon a bed F, thereby permitting a rocking movement to the frame D about the axis of the trunnions E E. To the upper portion of the rocking frame D, I attach a steel plate, which forms the upper cutting-blade G of the shear.

The upright frame D is provided with ways H H for a sliding plate I, to which is attached a steel plate, forming the lower cutting-blade J of the shear. Attached to the sliding plate I is a cylinder K, open at its lower end and in-

closing a cylinder L, attached to the rocking frame D. The inner cylinder L is open at its upper end and is provided at its lower end with a pipe M, held concentrically in and extending through one of the trunnions E to pipes M' M<sup>2</sup>, with which it is connected by the three-way cock N.

A joint is formed between the pipe M and the inner cylinder L by means of a packing O, which allows the cylinder to turn upon the inner end of the pipe as the frame D is rocked upon its trunnions.

The pipe M' is a feed-pipe leading from some reservoir or supply of fluid under pressure—such, for example, as a steam-boiler, hydraulic pump, or air-condenser—allowing fluid under pressure to be admitted to the cylinder L and beneath the end wall of the outer cylinder K, causing the cylinder K, sliding plate I, and cutting-blade J to be raised in the ways H H. As the lower cutting-blade J of the shear is moved upward the bar B will be caught between the cutting edges of the blades G and J and the engagement of the blades G and J with the bar will cause the movement of the bar to be imparted to the frame D, giving it a slight rocking motion upon the trunnions E E, the rocking motion of the frame D continuing during the period of the shearing action of the cutting-blades. By closing the pipe M to the supply-pipe M' and opening it to the exhaust-pipe M<sup>2</sup> the pressure within the cylinder L is released and the cutting-blade J and connected parts descend into the position shown in sectional view in Fig. 2 of the drawings, opening the cutting-blades to the admission of a metal bar. The metal in the frame D is so disposed as to cause the angular motion of the frame D to be reversed by gravity, when the moving bar is released by the cutting-blades G and J, or any known means can be employed for reversing its movement.

The sliding plate I is provided with a flaring opening P to facilitate the admission of the metal bar to the space between the cutting edges of the blades G and J.

I do not claim, broadly, a shear adapted for cutting a bar while in motion, as such a shear



was made the subject of Letters Patent of the United States No. 505,512, issued to me on the 26th day of September, 1893; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a shear for cutting metal bars while in motion, the combination of a rocking frame D pivoted at one end and provided with ways, of a sliding plate I, a cutting-blade attached to said rocking frame, a cutting-blade attached to said sliding plate, a cylinder L attached to said rocking frame and open at its upper end, and a cylinder K attached to said sliding plate and open at its lower end, said cylinder K inclosing said cylinder L and means for admitting fluid under pressure to said cylinder L, substantially as described.

2. The combination with a pair of rolls of a rolling-mill, whereby a metal bar is moved longitudinally, of a rocking frame pivoted at one end and provided with ways, a cutting-blade attached to said rocking frame, a sliding cutting-blade, sliding on said rocking frame, said cutting-blade being limited to a movement parallel with its plane of contact with said blade and attached to said rocking frame

whereby the engagement of said cutting-blades with a metal bar, as moved by said rolls, will rock said rocking frame, and a hydraulic cylinder carried by said rocking frame and operatively connected with said sliding blade, substantially as described.

3. In a shear for cutting metal bars while in motion, the combination of rocking frame D having trunnions E, E, bed F, in which said trunnions are journaled, cutting-blade G attached to said frame D, plate I having a sliding motion on said frame D, cutting-blade J attached to said plate, cylinder L carried by said frame D, cylinder K carried by said sliding plate and inclosing said cylinder L, a pipe M held concentrically in one of said trunnions and communicating with said cylinder L and feed and exhaust pipes M' and M<sup>2</sup>, and means for controlling the passage-ways in said pipes, substantially as described.

Dated this 9th day of July, 1895.

VICTOR E. EDWARDS.

Witnesses:

RUFUS B. FOWLER,  
EMMA KESTER.