L. E. RICE.

METAL SHEARS.

APPLICATION FILED MAY 23, 1908.

909,937. Patented Jan. 19, 1909.

3 SHEETS—SHEET 1.

Fig 1

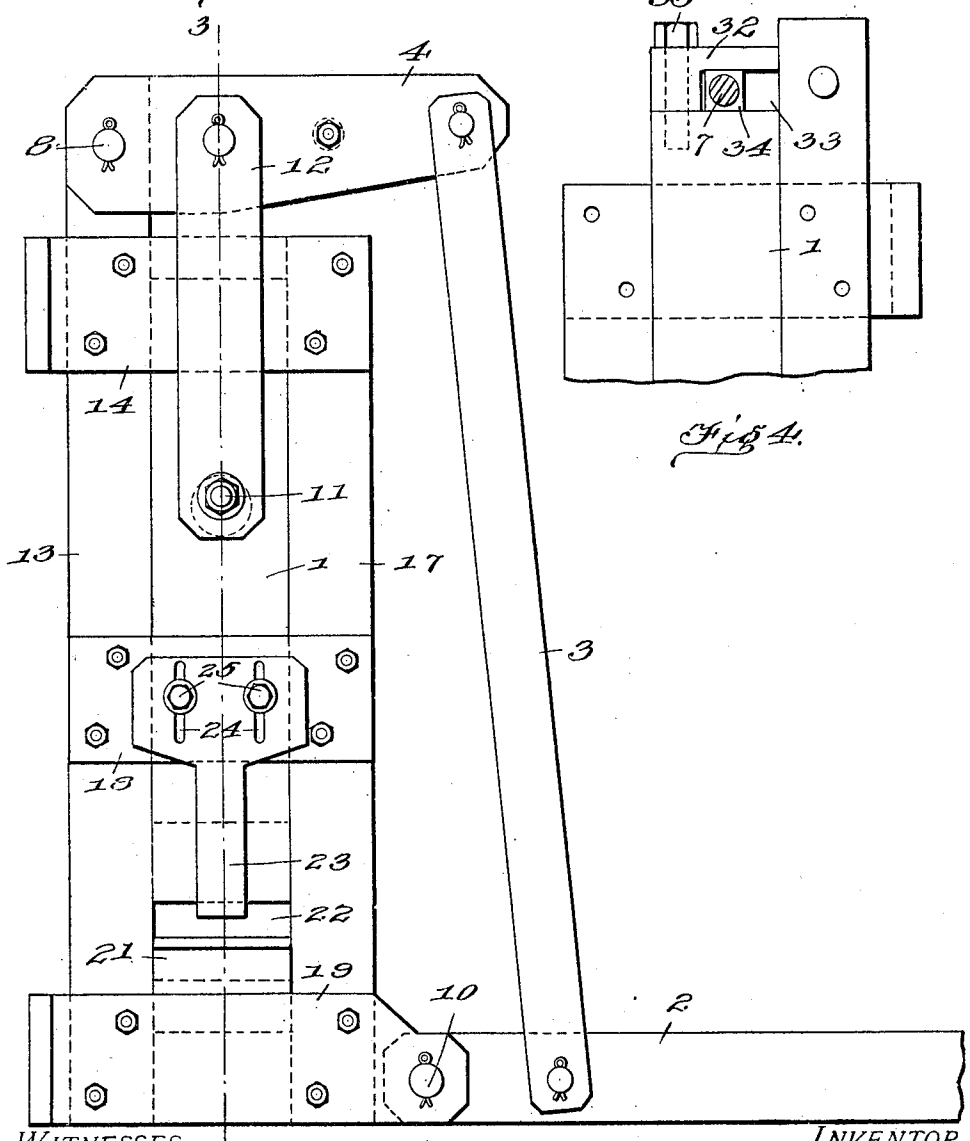


Fig 4.

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3 SHEETS—SHEET 2.

Fig. 3.

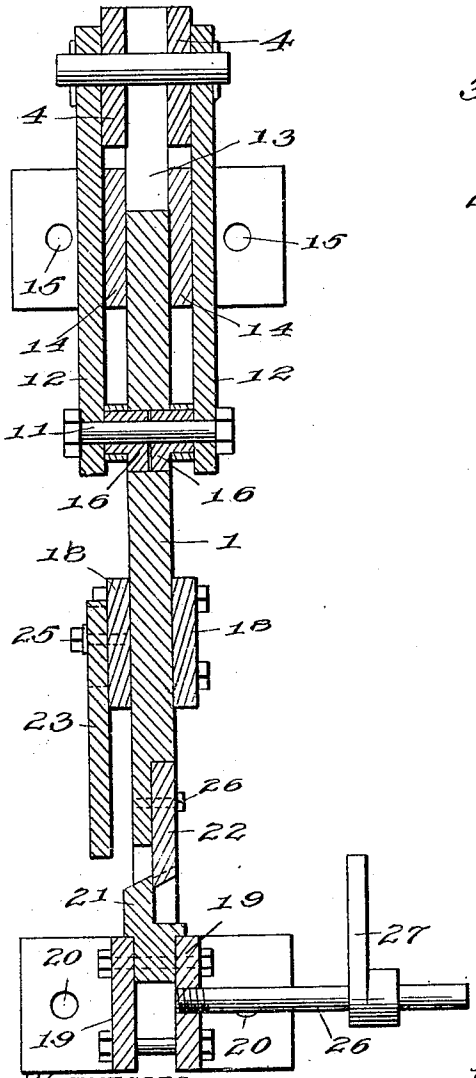
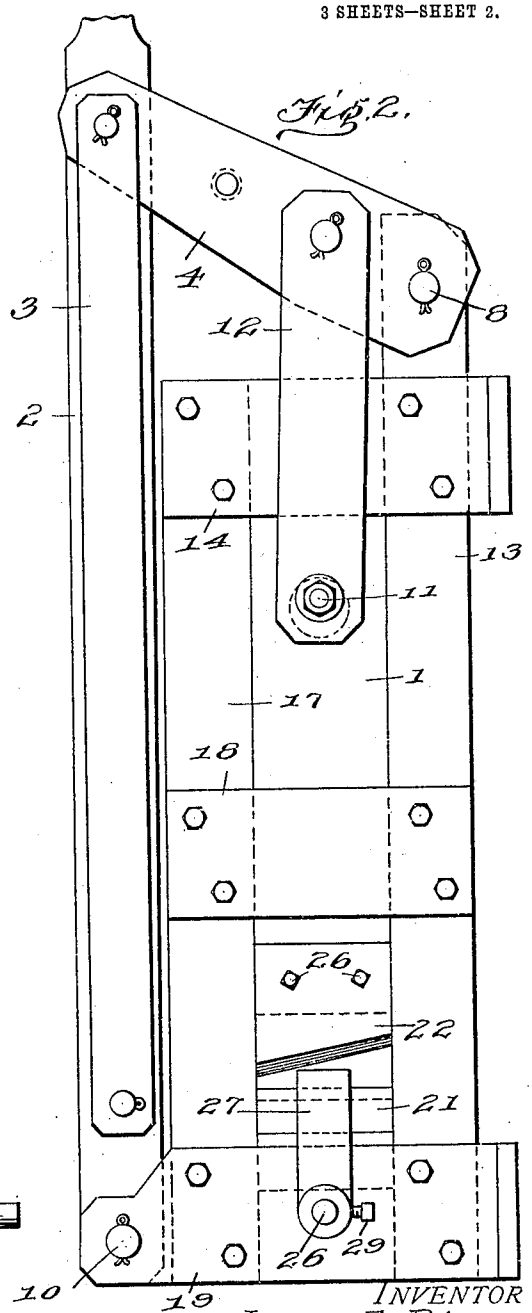


Fig. 2.



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3 SHEETS—SHEET 3.

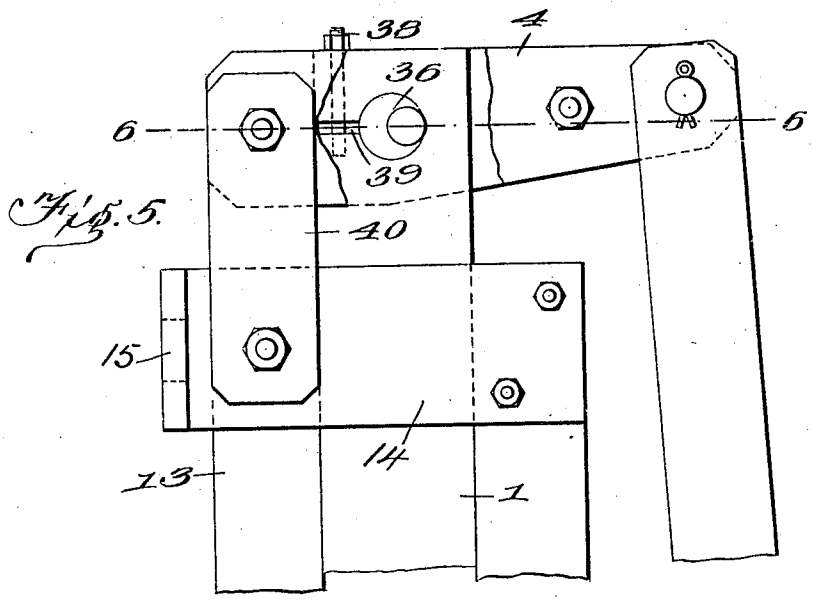


Fig. 5.

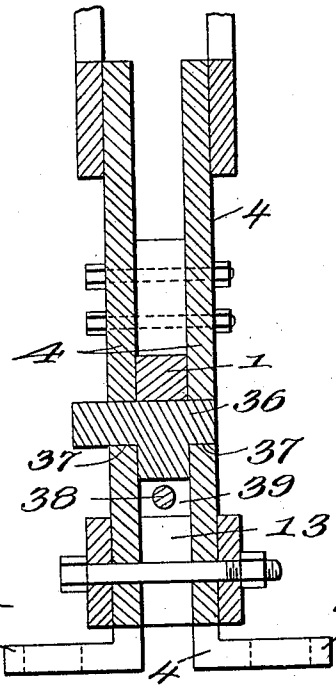


Fig. 6.

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UNITED STATES PATENT OFFICE.

LOUIS E. RICE, OF CLEVELAND, OHIO, ASSIGNOR TO THE COMMERCIAL MANUFACTURING COMPANY, A CORPORATION OF OHIO.

METAL-SHEARS.

No. 909,937. Specification of Letters Patent. Patented Jan. 19, 1909.

Application filed May 23, 1908. Serial No. 434,678.

To all whom it may concern:

Be it known that I, LOUIS E. RICE, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Metal-Shears, of which the following is a specification.

This invention relates to metal shears, and has for its principal object to provide improved means for applying power to the cutting blade.

Various other advantages and novelties of construction will appear from the following description.

In the drawings, Figure 1 is an elevation of one side of the machine, with the operating lever pressed down. Fig. 2 is an elevation of the other side of the machine with the operating lever up. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a detail of a modification. Fig. 5 is a partial side elevation of another modification. Fig. 6 is a section on the line 6—6 of Fig. 5.

The vertical bars 13 and 17 with the horizontal cross pieces 14, 18 and 19 form the frame of the machine, the bars being bolted between the pairs of cross pieces which are located at the top, middle and bottom of the bars respectively. This frame is fastened to a post or other support by means of bolts through holes 15 and 20 in the offset ends of the pieces 14 and 19 respectively. An operating lever 2 is pivoted at 10 between the extended front ends of the lower side or cross pieces 19, and said lever is connected by links 3 to the front end of a transmitting lever 4 formed of a pair of bars or pieces pivoted at 8 to the extended upper ends of the rear vertical bar 13. The lever 4 is connected by links 12 to the plunger 1 which slides up and down between the vertical pieces and the side pieces of the frame. The connection between the links 12 and the plunger 1 is formed by means of eccentric sleeves 16 around a bolt 11 which extends through the plunger and the lower ends of the links 12. The eccentrics fit in a socket or opening in the plunger. By loosening the bolt 11 the eccentrics may be turned so as to adjust the plunger higher or lower to regulate the distance of the knife 22 carried thereby from the lower shear plate 21.

The shearing knife is fastened to the lower end of the plunger 1 by bolts 26, and the lower shear 21 is mounted upon the cross pieces 19.

A depending piece or arm 23 is mounted on one of the cross pieces 18 by means of bolts 25 in slots 24 in the top of the arm, and the purpose of this arm is to prevent the piece of metal being sheared off from turning up or tilting out of horizontal position. The lower end of the arm 23 projects down in position directly behind the shearing knives so that the stock will rest thereunder and will not tilt up when the cutting pressure is applied. A gage 27 is adjustably fixed on a rod 26 and may be set at adjustment by a set screw 29.

In the modified form shown in Fig. 4 the links 12 and eccentrics 16 are omitted, and the plunger 1 extends up between the levers 4 and is fastened by a top piece 32 which is fixed to the top of the plunger by a stud bolt 35 leaving a space 33 through which the bolt 7 extends, said bolt having a square central part 34 which slides in the space 33 as the plunger is raised and lowered. The bolt 7 extends between the levers 4.

The metal strip to be cut is inserted between the knives and the lever 2 is then swung down, the leverage being compounded by the arrangement shown. By using a punch and die instead of the knives 21 and 22 the invention may be applied to a punching machine.

In the modification shown in Figs. 5 and 6 the transmitting lever 4 is connected to the rear vertical bar 13, the upper end of which is flush with the top of the cross piece 14, by links 40. The plunger 1 is extended up between the bars 4. An eccentric 36 fits in a circular hole in the plunger 1 and extends through holes in the levers 4, as shown at 37. A slot 39 extends from the eccentric hole in the plunger 1 to the rear side of the plunger, and by means of a bolt 38 the eccentric is tightened in the plunger. The eccentric can be adjusted by loosening the bolt 38 and turning the eccentric, thereby raising or lowering the plunger accordingly.

I claim:

1. The combination of a frame having opposite pairs of upright front and rear bars and cross pieces connecting the same on opposite sides thereof, a plunger slidable up and down in said frame, between said bars and cross pieces, a pair of transmitting levers fulcrumed on the upper end of the rear bar, a pair of links located outside the cross pieces and the plunger and the levers on opposite sides thereof, and an operating

lever fulcrumed on the lower end of the frame and connected to said levers.

2. The combination with a plunger for shears or punches, of a lever, a pair of opposite connecting links between the lever and the plunger, a bolt extending through the links and the plunger, and eccentric sleeves on the bolt and clamped between the links and in the plunger, and adapted to be turned to adjust the relative position of the plunger.

In testimony whereof I affix my signature, in presence of two witnesses.

LOUIS E. RICE.

Witnesses:

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