

J. Hornig,

Shearing Metal,

No. 46,237,

Patented Feb. 7, 1865.

Fig. 1.

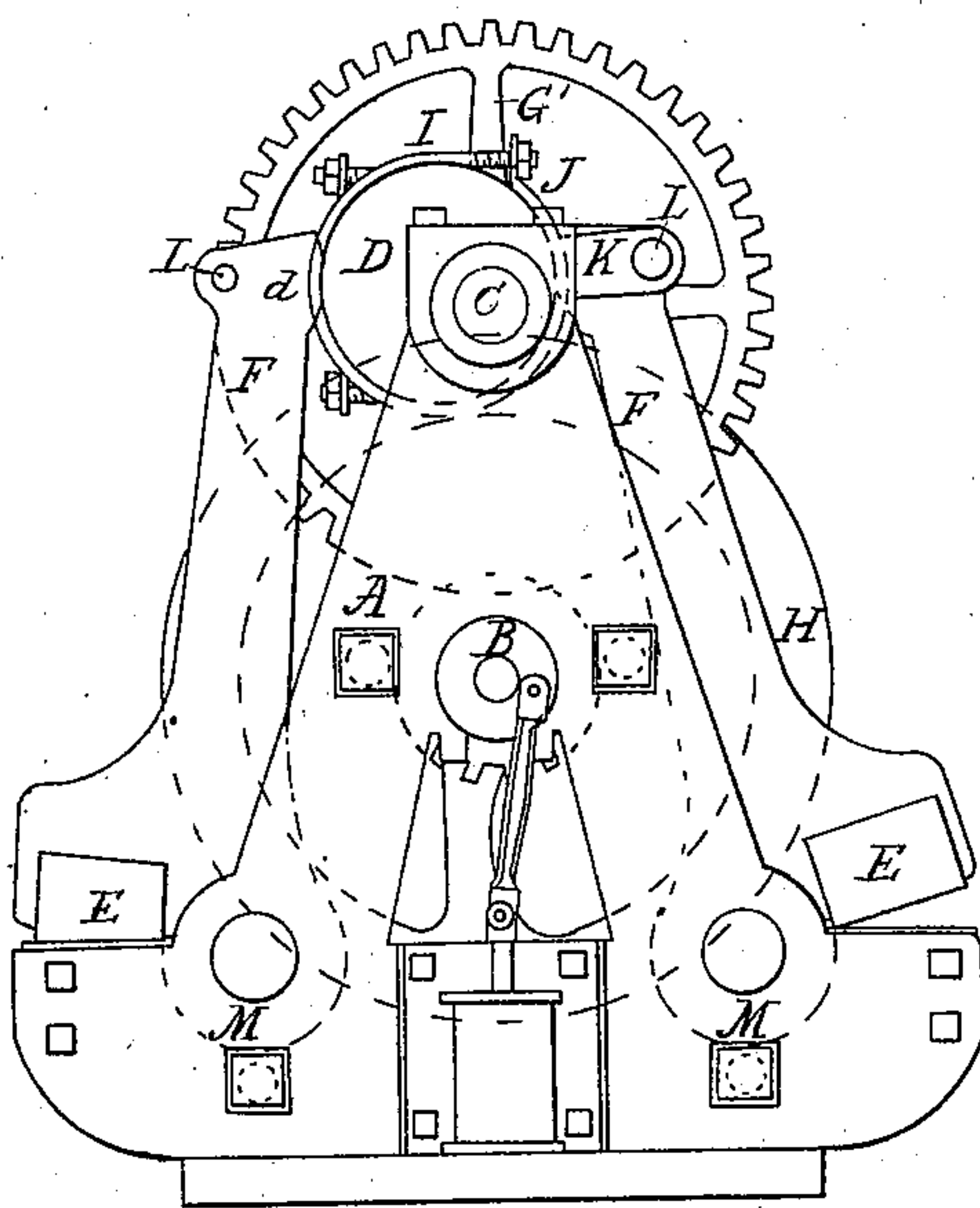


Fig. 2.

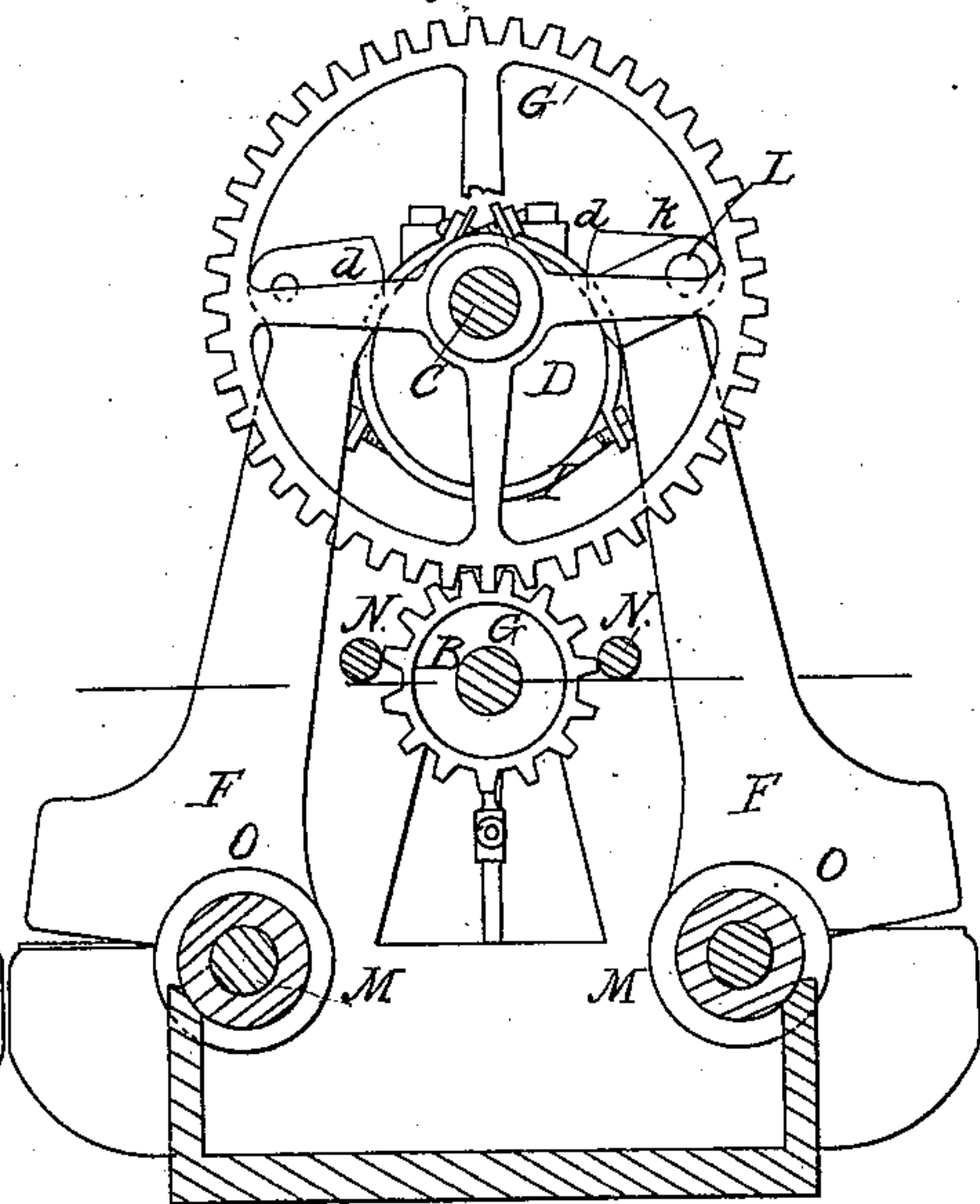


Fig. 3.

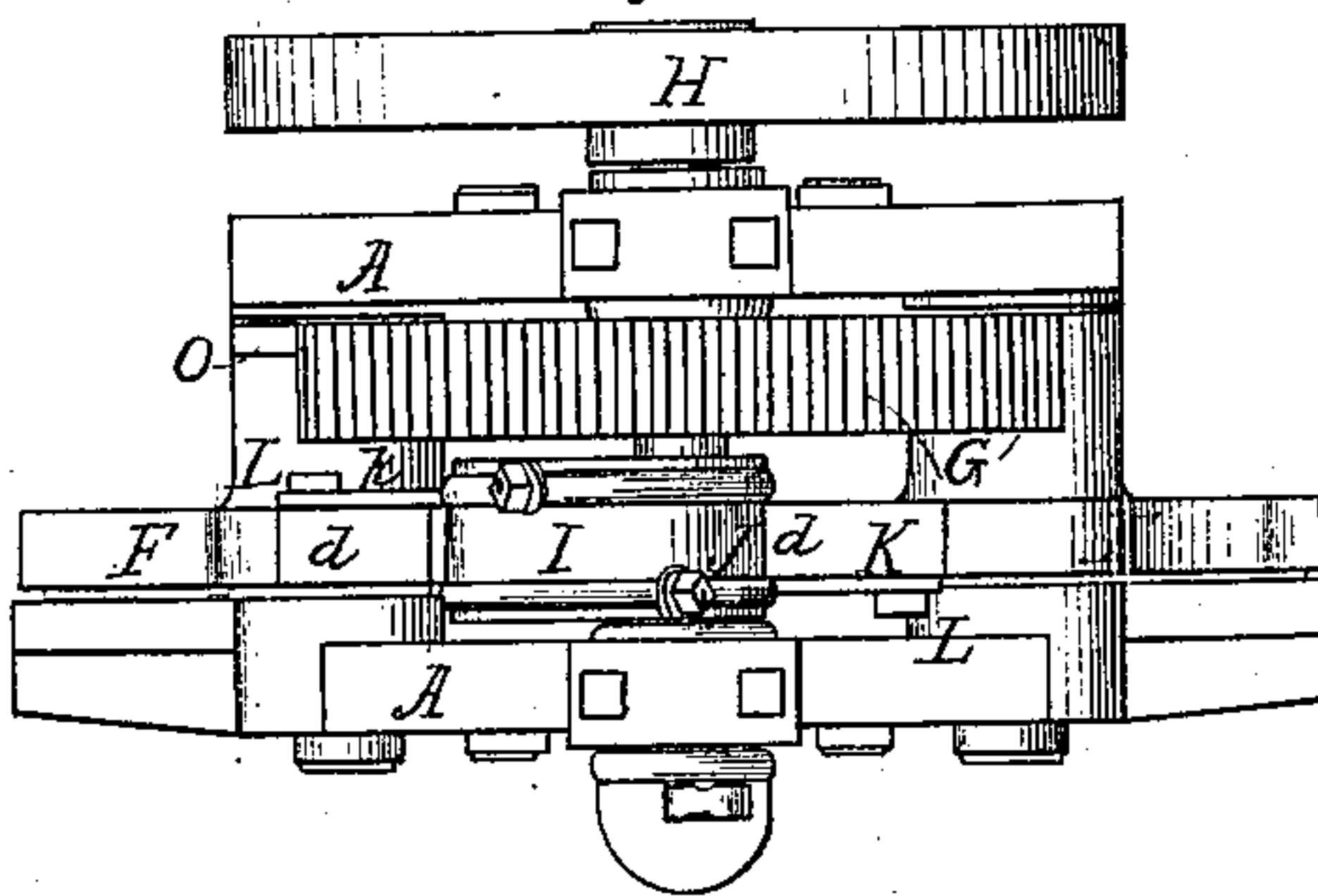
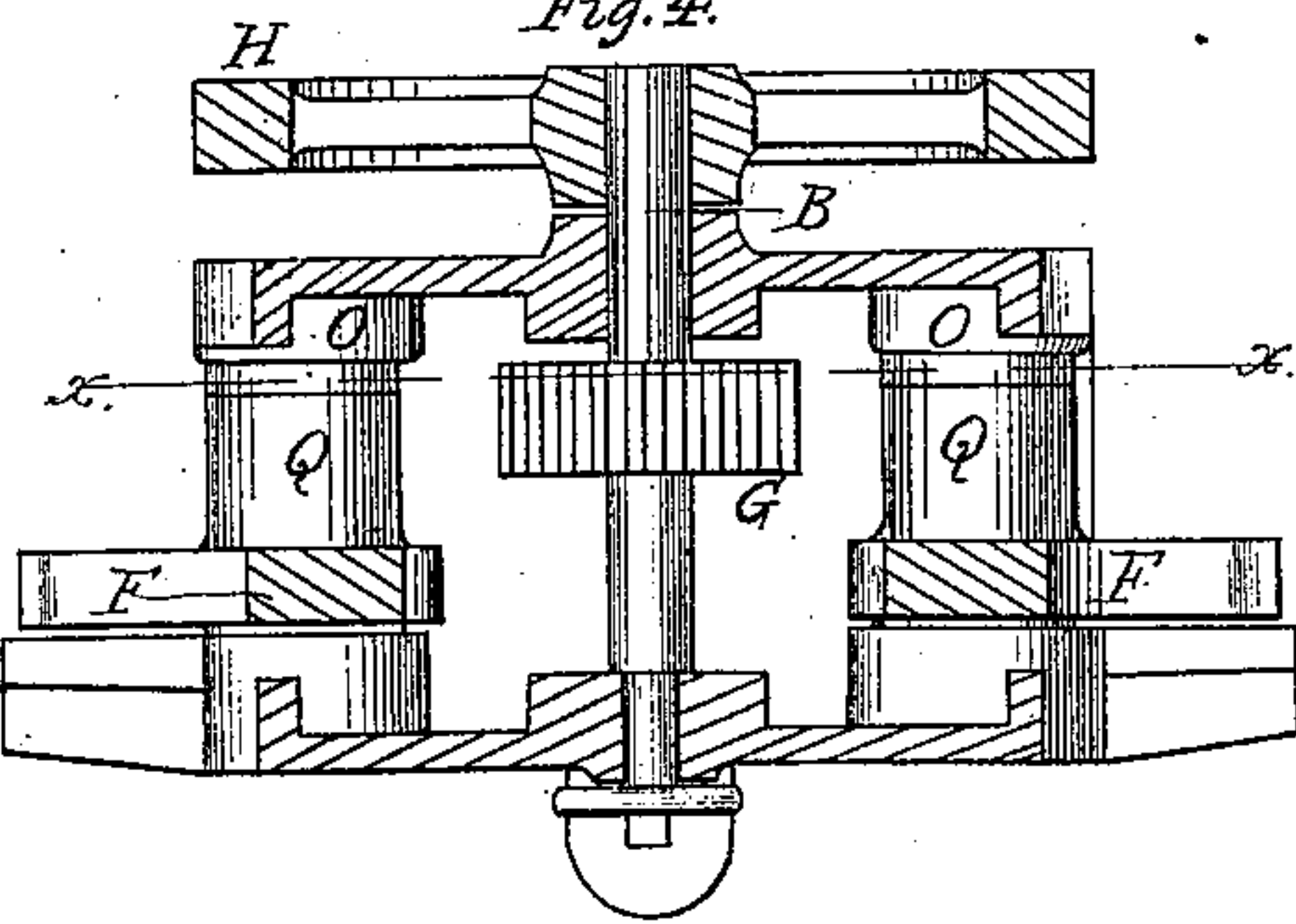


Fig. 4.



Witnesses.

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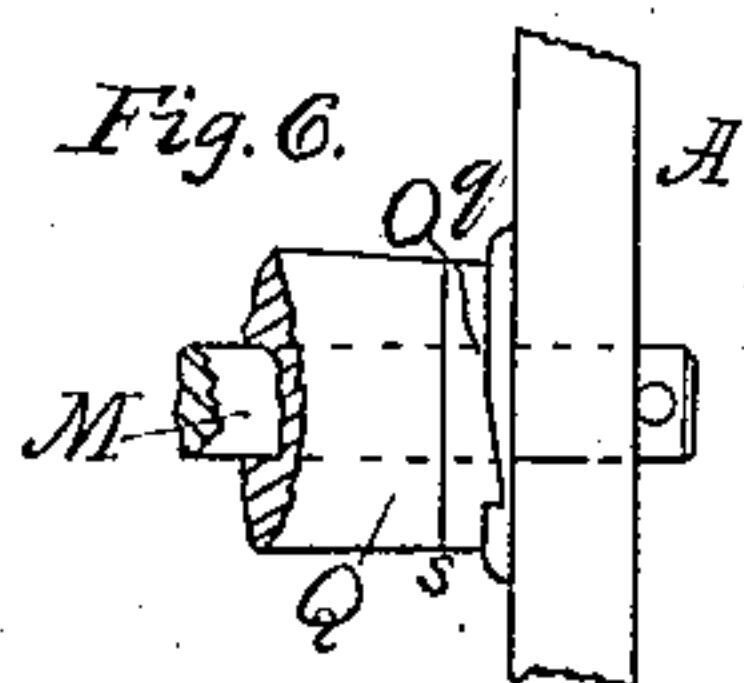
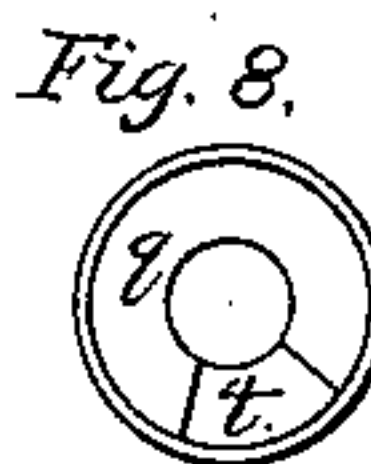
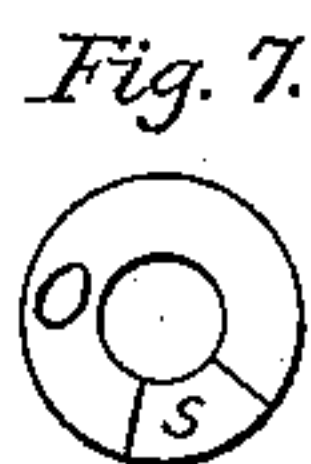
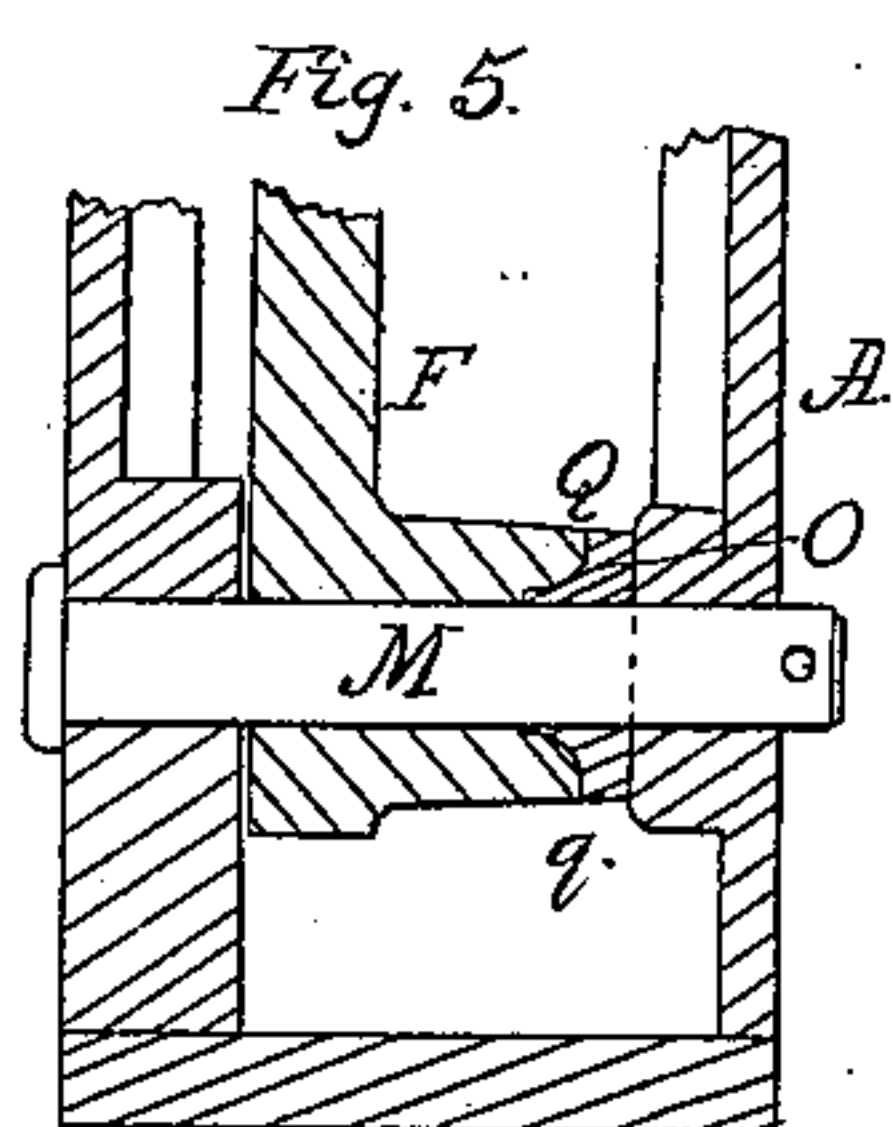
Sheet 2-2 Sheets.

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Witnesses

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# UNITED STATES PATENT OFFICE.

JULIUS HORNIG, OF OSWEGO, NEW YORK.

## SHEARS FOR CUTTING METAL.

Specification forming part of Letters Patent No. 46,237, dated February 7, 1865.

*To all whom it may concern:*

Be it known that I, JULIUS HORNIG, of Oswego, in the county of Oswego and State of New York, have invented new and useful Improvements in Metal-Shears; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a shears containing my improvements. Fig. 2 is a vertical section thereof, taken on the line *x* of Fig. 4. Fig. 3 is a plan view thereof. Fig. 4 is a horizontal section taken on the line *y* of Fig. 2. Figs. 5, 6, 7, and 8 are detailed views of one of the washers *o* and the adjacent parts.

Similar letters of reference indicate like parts.

This invention consists in a novel method of holding the free end of a lever of a shears up to or rather of connecting it with the eccentric which operates the shears, and also in the manner of making and applying a washer to the hub or trunnion of the shears.

A represents the frame which supports the shears and the gearing which operates them. I have shown a double shears in this illustration.

B is the driving-shaft, driven by a steam-engine or other means. Power is transmitted from the shaft B to the shaft C of the eccentric by means of a pinion G and gear-wheel G'. Both shafts are suitably supported in bearings provided in the frame.

D is an eccentric, fixed upon the shaft C within the frame.

M M are rock-shafts, which sustain the shear levers F F and on which they vibrate, the rock-shafts passing through hubs Q Q, formed on the lower end of these levers, and extending from the inner sides of the levers nearly to the back frame.

E E are the shears, set in the faces of the levers and moving against the faces of the lower dies, as usual. The upper ends of the shear-levers F are enlarged, their circular faces *d* resting against the periphery of the eccentric on either side. These faces are described about centers, L, which latter also

designate pins that project at those points from the side of each lever to receive radial plates K, which are firmly secured to sections of rings J, which fit in circular grooves turned in each end of the eccentric. The ends of the sections J are turned up and screw-tapped, to receive the ends of straps I, which are secured thereto by means of nuts, in the usual manner. The straps I also lie in the grooves of the eccentric, being in the same plane with the sections J. The faces *d* of the upper enlarged end of the levers are thereby kept up against the periphery of the eccentric.

Q Q are hollow trunnions, formed upon the lower ends of the shear-levers, through which are passed the rock-shaft M, upon which the levers vibrate.

The side of the back frame, A, is strengthened at the point where the rock-shaft passes through it by a protuberance, *q*, which projects in a line with the trunnion Q. A washer, of brass or other suitable material, is fitted to the end of each trunnion Q, and around the rock-shaft, as seen in Fig. 5, a shoulder, *s*, being cut on its face so as to form a clutch, with a like shoulder, *t*, on the face of the projections *q*, thus preventing the washer from rotating during the vibrations of the lever. The washers may be held up against the shoulders of the projections *q* by pawls or set-screws or other mechanical devices.

It will be seen that my method of connecting the upper ends of the levers to the eccentric enables me to employ a double shears, the lever of each being held by a strap running in a separate groove in the eccentric, and that the radial arms hold the faces of the levers always snugly to the face of the eccentric, thereby preventing loss of motion or much variation in leverage or in the direction in which power is applied to the levers through the eccentric.

I claim as new and desire to secure by Letters Patent—

1. In metal-shears, connecting the shear-lever to the eccentric by means of a strap guided in a groove on the eccentric, in combination with a radial arm secured to the lever by means of a pin, L, on which it is free to vibrate, substantially as above described.

2. The curved face *d* of the upper end of the shear-lever, in combination with an eccentric against whose face it moves and against which it is held by means of a radial vibrating arm, K, substantially as described.

3. Forming shoulders *s* on the faces of the washers *o*, and shoulders *t* on the faces of the

bosses or projections *q*, in order to prevent the rotation of the washers during the vibrations of the lever, substantially as described.

JULIUS HORNIG.

Witnesses:

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LEONARD AMES, Jr.