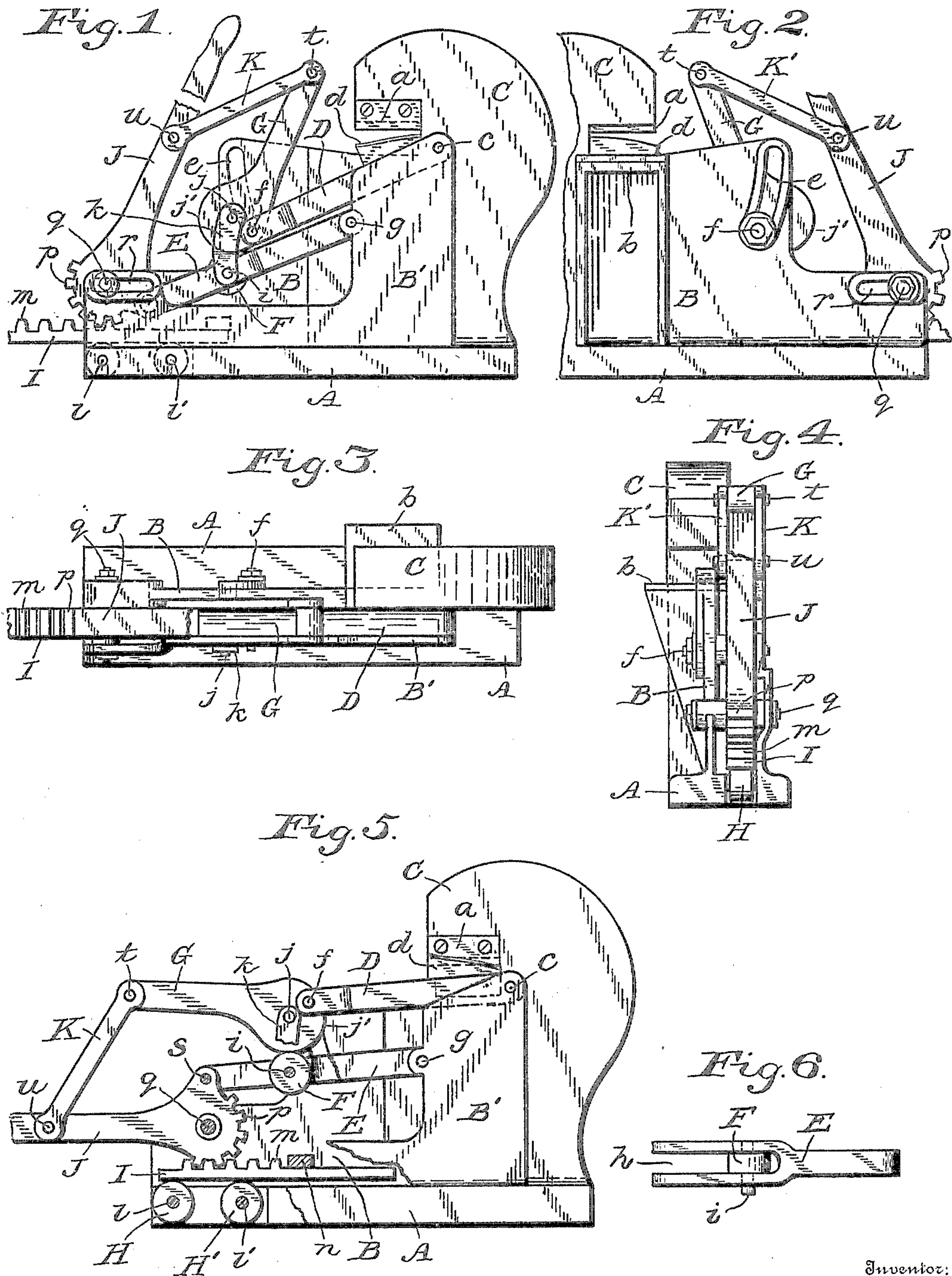


J. C. BURGESS.
SHEARS FOR CUTTING METALS.
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Witnesses

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UNITED STATES PATENT OFFICE.

JAMES C. BURGESS, OF SULLIVAN, INDIANA.

SHEARS FOR CUTTING METALS.

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To all whom it may concern:

Be it known that I, JAMES C. BURGESS, a citizen of the United States, residing at Sullivan, in the county of Sullivan and State of Indiana, have invented new and useful Improvements in Shears for Cutting Metals; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to hand-power shears for cutting metals, especially cold iron, and refers more particularly to shears that are adapted to be used in blacksmith shops and various factories and also in iron warehouses.

Objects of the invention are to provide powerful shears for cutting metals, to provide shears that will be suitable to be constructed in small sizes for use in small shops which may be portable, and to provide shears that may be constructed at relatively small cost and be durable and economical in use.

With the above-mentioned and minor objects in view the invention consists in cutting-shears having a pair of arms, one of which carries a cutting-blade, and a pair of connected levers coöperating with both of the arms to operate the cutting-blade, and the invention consists, further, in the novel elements and in the combinations and arrangements of parts, as hereinafter particularly described and claimed.

Referring to the drawings, Figure 1 is a side elevation of the shears; Fig. 2, a fragmentary side elevation thereof, showing the side opposite to that seen in Fig. 1; Fig. 3, a top plan thereof; Fig. 4, an end elevation; Fig. 5, a side elevation partially broken away and showing the parts of the shears as they would appear after making a cut, and Fig. 6 a top plan of one of the arms detached from the machine.

Like reference characters in the drawings designate like parts or features.

In construction the machine embodying the invention comprises a base A, on which is erected upright frame members B and B', the upper portion of the member B having a shear-head C attached thereto, to which is secured a shear-blade *a*, and a table *b* is attached to the member B. A cutter-arm D is pivoted to the frame members by a pivot *c*, and it carries a shear-blade *d*, that is secured thereto, so as to coöperate with the shear-blade *a*. The frame member B has a curved slot *e* therein, in which is arranged a guide-bolt *f*, that is

connected to the movable end of the arm D. Somewhat below the cutter-arm D an arm E is connected by a pivot *g* to the frame members, the pivot *g* being in different vertical and horizontal planes than the pivot *c*, as indicated particularly in Figs. 1 and 5. The movable end of the arm E has an opening *h*, in which a roller-bearing F is mounted on a pivot *i*.

A secondary lever G is connected pivotally to the guide-bolt *f*, and thereby to the cutter-arm D, and the lever is connected by a pivot *j* to a link *k*, the fulcrum end of the lever having a semicircular bearing-face *j'*, that rides on the roller F of the lever E, the link *k* being connected also to the pivot *i* to hold the face *j'* to the roller.

In a recess of the base A two rollers H and H' are mounted on pivots *l* and *l'*, and a bearing-shoe I, having rack-teeth *m* on the top thereof, is mounted movably in the recess upon the rollers H and H', there being a fixed guide *n* under which the shoe moves to prevent the inner end of the shoe from tilting upwardly when the shoe is moved outwardly.

A main lever J has a semicircular fulcrum end provided with gear-teeth *p*, that mesh with the teeth *m*, the fulcrum end having its bearing on the shoe I, and a guide-pin *q* is connected to the lever and extends into a guide-slot *r* in the frame member B, the lever J being connected by a pivot-pin *s* to the movable end of the arm E.

Two link-bars K and K' are connected, by a pivot *t*, to the movable end of the lever G and by a pivot *u* to the body portion of the lever J.

In practical use the lever J is to be moved to an upright position, as in Figs. 1, 2, 3, and 4, the lever G being also in upright position, when the shear-blades will be open, so that the metal that is to be cut may be placed between them. Then the lever J is to be moved downwardly, the lever G being also drawn downwardly, so that the shoe will move inwardly, the arm E will rise and carry with it the fulcrum end of the lever G, which will at the same time raise the end of the cutter-arm D and cause the shears to operate, after which the lever J is to be again moved uprightly for another operation.

Having thus described the invention, what is claimed as new is—

1. Shears including a base and a frame thereon having a shear-blade, a pair of rollers mounted in the base, a shoe movable on

the rollers, a main lever mounted on the shoe and provided with a guide, an arm pivoted to the frame and also to the main lever, a secondary lever mounted on the arm and connected with the main lever, a cutter-arm pivoted to the frame and also to the secondary lever, a guide for the cutter-arm, and a shear-blade attached to the cutter-arm.

2. Shears comprising a base, a pair of rollers mounted in the base, a shoe mounted movably on the rollers and having rack-teeth thereon, a main lever provided with a guide and having gear-teeth meshing with the rack-teeth of the shoe, a frame having a shear-head thereon, a shear-blade attached to the shear-head, an arm pivoted to the frame and also to the main lever and provided with a bearing-roller, a secondary lever mounted on the bearing-roller, a link connecting the secondary lever with the arm, a pair of link-bars connecting the end of the secondary lever with the body portion of the main lever, a cutter-arm pivoted to the frame and also to the secondary lever, and a shear-blade attached to the cutter-arm.

3. Shears comprising a base, a pair of rollers mounted in the base, a shoe mounted movably on the rollers and having rack-teeth

thereon, a frame on the base and having a horizontal guide-slot and also a vertical curved guide-slot, a main lever having guide-teeth meshing with the rack-teeth of the shoe and provided with a guide extending into the horizontal guide-slot, a shear-head attached to the frame, a shear-blade attached to the shear-head, an arm pivoted to the frame and having a slot therein in which a bearing-roller is mounted, a pivot connecting the arm to the main lever, a secondary lever mounted on the bearing-roller, a link connecting the secondary lever with the arm, a pair of link-bars pivoted to the end of the secondary lever and also to the body portion of the main lever, a fixed guide in contact with the top of the shoe, a cutter-arm pivoted to the frame and also to the secondary lever, a guide-bolt carried by the cutter-arm and extending through the vertical curved guide-slot, and a shear-blade attached to the cutter-arm.

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

JAMES C. BURGESS.

Witnesses:

A. C. OWENS,
MATTIE HAYS.