(No Model.) 2 Sheets—Sheet 1.

A. O. KITTREDGE & F. M. LEAVITT.

SHEET METAL SCROLL CUTTER.

No. 364,763. Patented June 14, 1887.

Fig. 1.

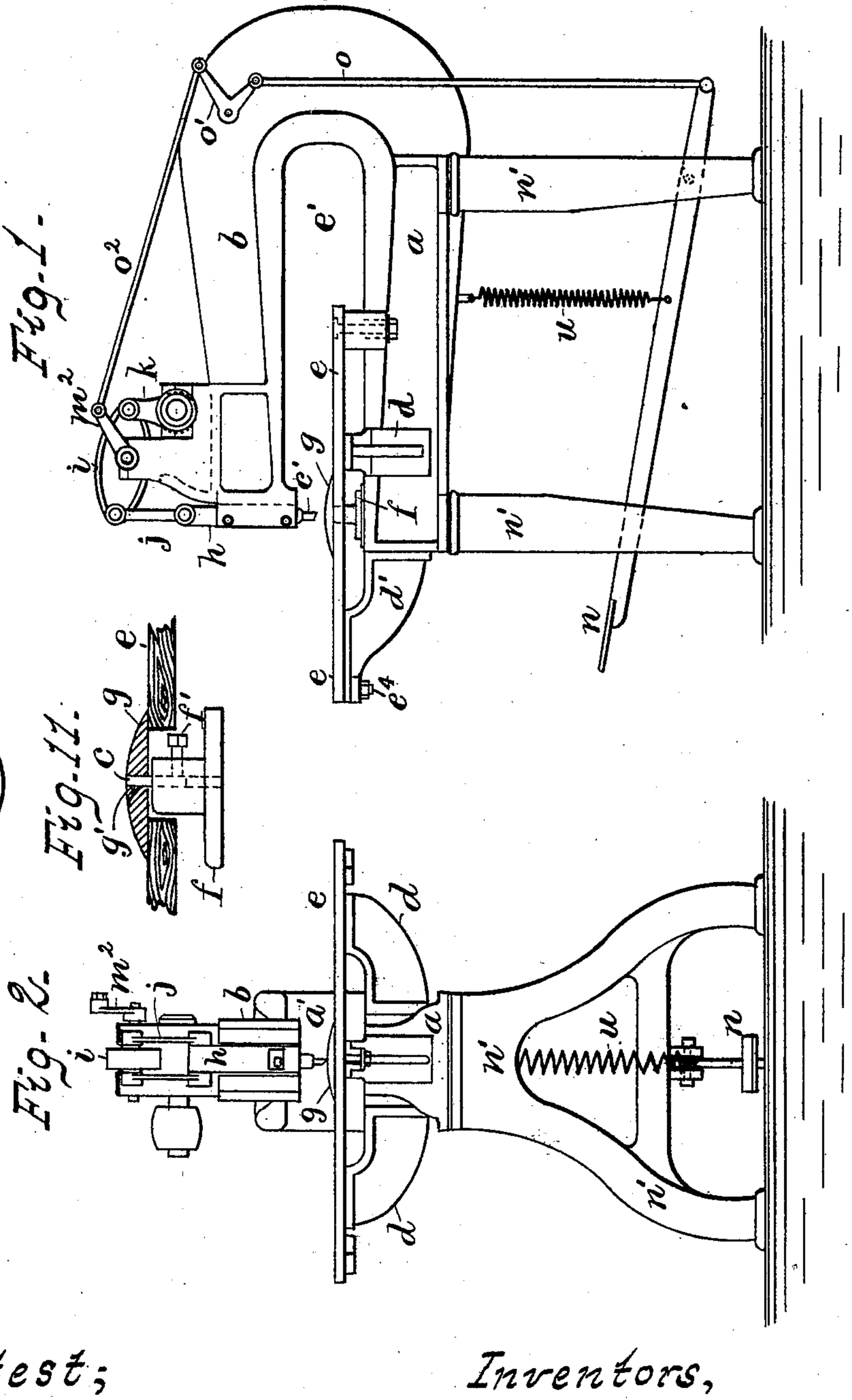

Fig. 10.

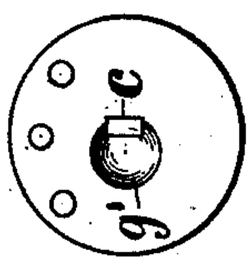

Fig. 11.

Fig. 2.

Attest;
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Henry J. Thebeath,

Inventors,
A. O. Kittredge and F. M. Leavitt
per Crane & Miller, attys.

(No Model.) 2 Sheets—Sheet 2.

A. O. KITTREDGE & F. M. LEAVITT.

SHEET METAL SCROLL CUTTER.

No. 364,763. Patented June 14, 1887.

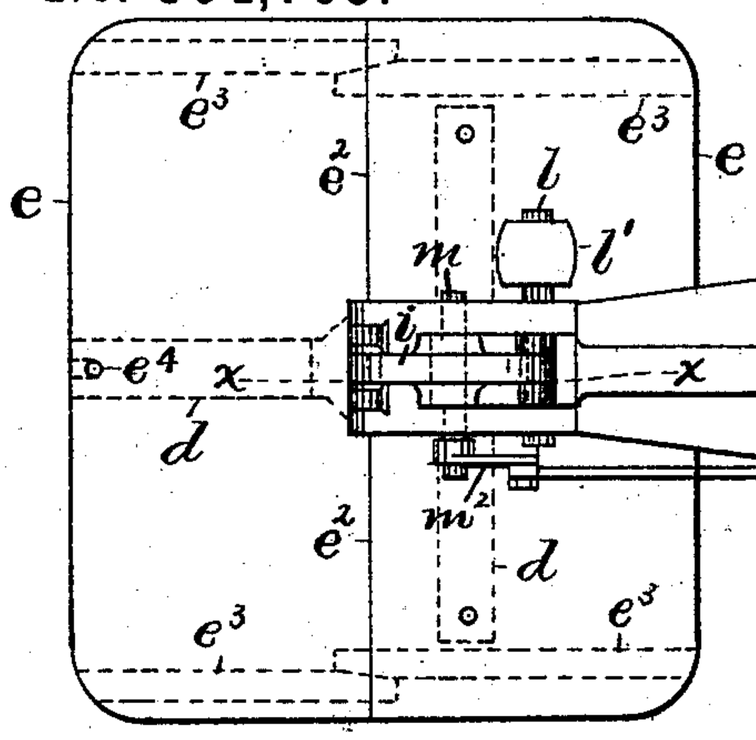

Fig. 3.

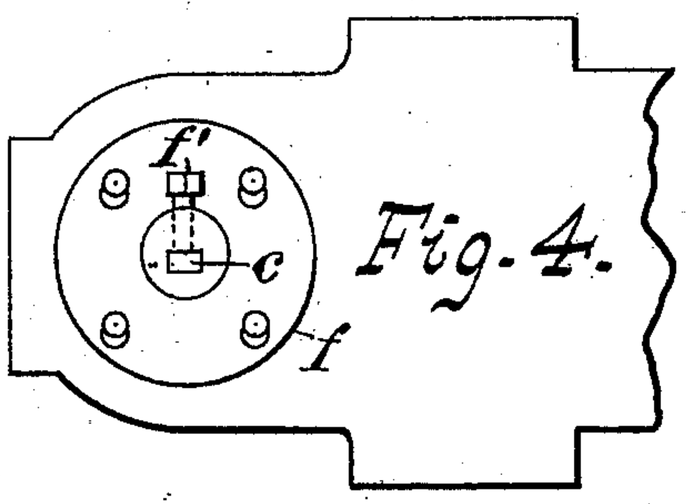

Fig. 4.

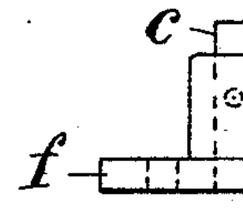

Fig. 5.

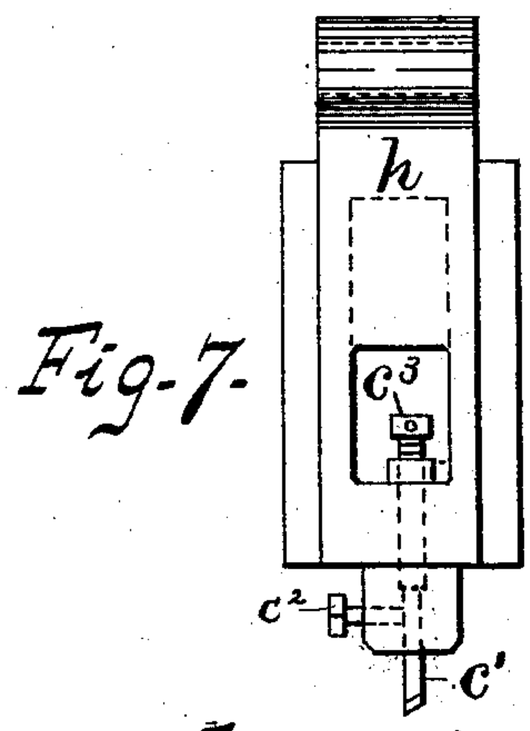

Fig. 7.

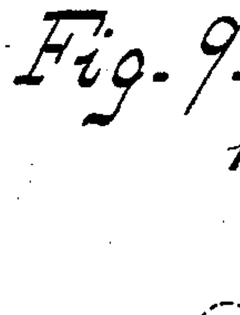

Fig. 9.

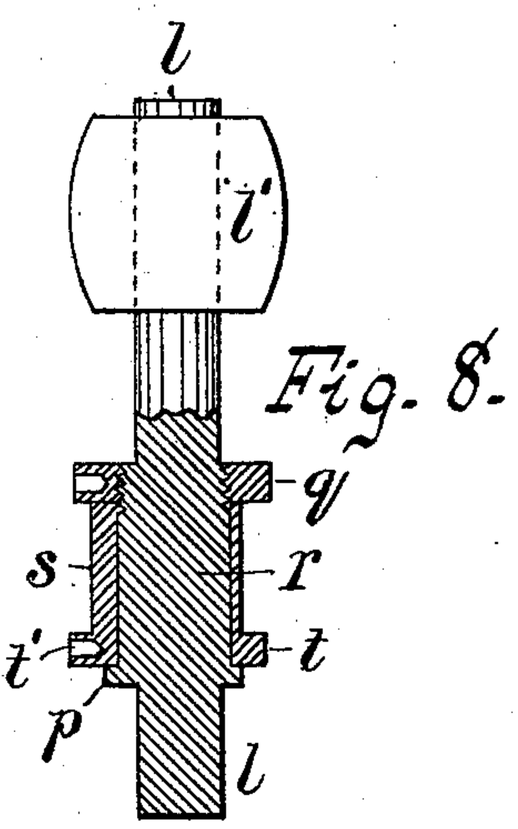

Fig. 8.

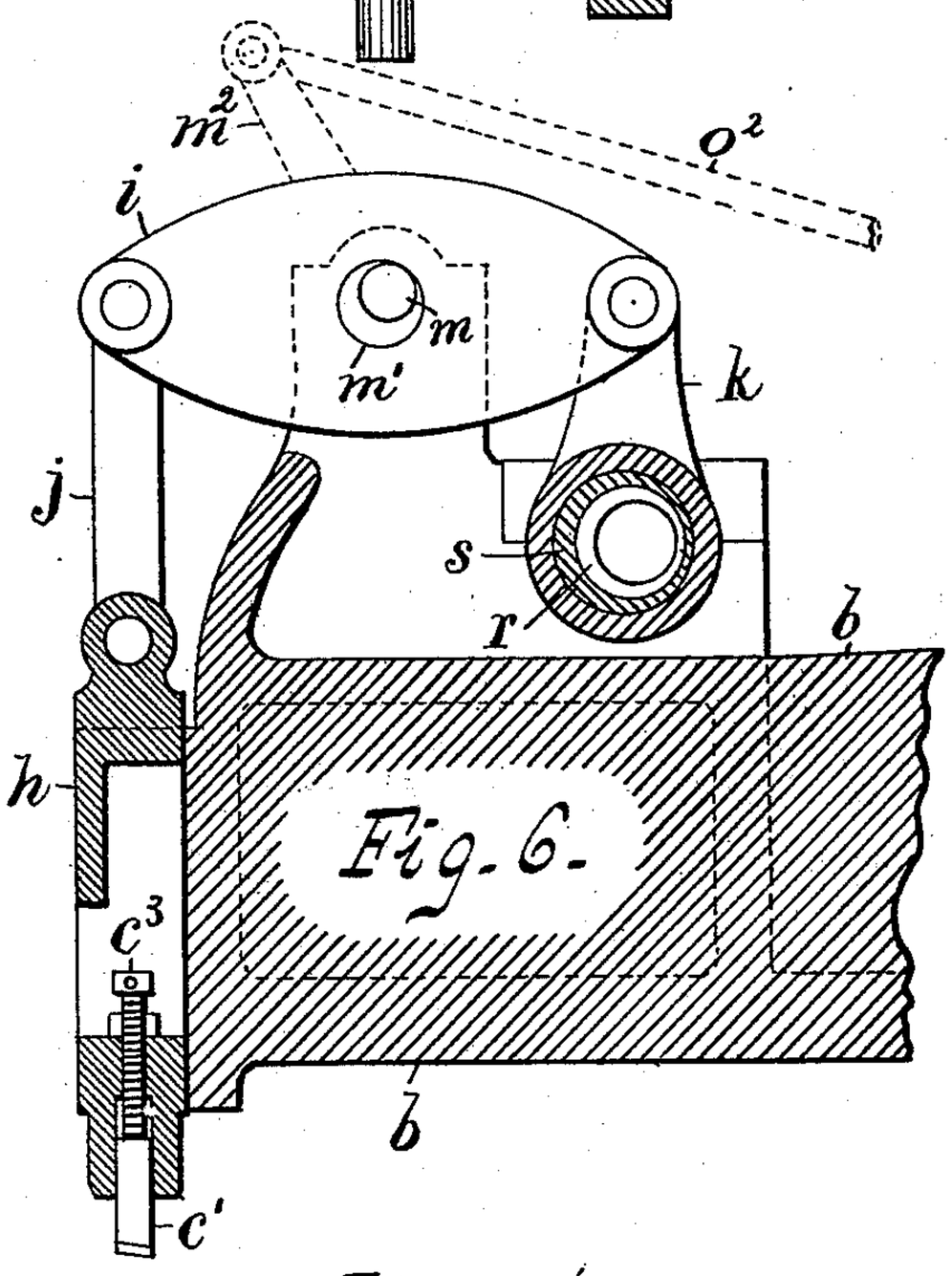

Fig. 6.

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per Crane & Miller, Attys.

UNITED STATES PATENT OFFICE.

ANSON O. KITTREDGE, OF SLATE HILL, AND FRANK M. LEAVITT, OF BROOKLYN, NEW YORK.

SHEET-METAL-SCROLL CUTTER.

SPECIFICATION forming part of Letters Patent No. 364,763, dated June 14, 1887.

Application filed January 19, 1886. Serial No. 189,055. (No model.)

To all whom it may concern:

Be it known that we, ANSON O. KITTREDGE and FRANK M. LEAVITT, citizens of the United States, residing, respectively, at Slate Hill, Orange county, New York, and Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Vibrating Scroll-Cutters, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improved means for sustaining, adjusting, and operating the cutters, and for supporting the sheet metal; and it consists, partly, in combining a pair of narrow shearing-cutters, severally, with a bed supporting a work-table, and a goose-neck extended over the same and provided at its forward end with a rotary eccentric or crank to operate the cutter, partly in the means for sustaining and adjusting the cutters in their holders, partly in the means for separating the cutters to apply the sheet metal between them, and partly in the means for varying the throw of the movable cutter.

In the drawings, Figure 1 is a side elevation of a machine embodying our improvements. Fig. 2 is a front elevation of the same; Fig. 3, a plan of the same; Fig. 4, a plan of the front end of the bed with the lower cutter and its holder; Fig. 5, a side view of the lower cutter and holder; Fig. 6, a section on line *x x* in Fig. 3; Fig. 7, a front view of the vibrating carrier detached; Fig. 8, a plan of the variable eccentric and its shaft, partly in section at its center line. Fig. 9 is a plan of the eccentric fulcrum for the vibrating beam. Fig. 10 is a plan of the boss around the lower cutter, and Fig. 11 is a section of such boss and a side view of the cutter. Figs. 4 to 11, inclusive, are upon a scale three times as large as Figs. 1 to 3, and the arm m^2 and link o^2, which appear in Fig. 1, are indicated in an opposite position by dotted lines in Fig. 6.

The body of the machine consists, essentially, of the casting forming a bed, *a*, connected by a bend, *a'*, with a goose-neck, *b*, the bed being provided with side brackets, *d*, and front bracket, *d'*, to sustain a work-table, *e*. The arch *e'* under the goose-neck thus affords space for the table and for the introduction of large sheets of metal, which may thus be applied to the cutter and turned around into various positions for cutting the same into brackets and scroll-work of any desired form. Upon the bed is located a holder, *f*, for the fixed cutter *c*, the cutter projecting somewhat above the table and being surrounded by a boss, *g*, which sustains the sheet metal somewhat above the table to permit the application of the operator's fingers to its edges more readily, the boss serving also to guide the sheet metal to the level of the cutter and to strip the metal from the cutting-edges by reason of a sloping depression, *g'*, formed in the boss beneath the movable cutter *c'*. The table is divided, on the line e^2 in Fig. 3, adjacent to the cutter, and is held in place at such line by cleats e^3, secured to the two parts of the table, and by a bolt, e^4, applied to the front bracket. The bracket is slotted, so that when the bolt is slackened the movable part of the table may be withdrawn from the rear fixed part and the holder *f* be exposed to adjust the cutter *c*. The foot of the holder is shown in Fig. 4 as slotted where it is bolted to the bed, and the cutter is clamped in the holder by a screw, *f'*, thus permitting the adjustment of the cutter vertically or sidewise.

The movable cutter *c'* is secured in the lower end of the carrier *h* by a set-screw, c^2, and push-screw c^3, Fig. 7, the latter serving to adjust it vertically, and the carrier is actuated by a connection to a vibrating beam, *i*, which is mounted upon a rotary eccentric fulcrum, which affords the means to raise the beam while in operation, so as to separate the cutters for inserting the sheet metal between them to cut at any point within the edge of the same. The connection from the beam to the carrier is formed by links *j*, and the opposite end of the beam is vibrated by a link, *k*, which is fitted at its lower end to a variable eccentric to modify the throw of the cutters when required. The eccentric-shaft *l* is provided with a pulley, *l'*, to which a belt is applied to vibrate the cutter at a high speed, and the variable eccentric, as shown in Figs. 6 and 8, consists in an eccentric hub, *r*, formed upon the shaft *l*, and an eccentric shell, *s*, fitted outside the said hub and adjustable thereon. The shell is clamped upon the hub between a shoulder, *p*, and a nut, *q*, and is provided with a

collar, *t*, in which holes *t'* are formed for turning it upon the hub by the application of a rod to the holes, the nut being slackened during such adjustment and tightened to grip the shell against the shoulder *p* when properly adjusted. The shell and hub having equal or nearly equal degrees of eccentricity, it is obvious that by turning their highest sides in opposite directions the eccentricity would be neutralized and the exterior of the shell would be concentric with the shaft *l*, but that the eccentricity of the two may be conjoined by turning their highest sides in the same direction as in Fig. 6, and that any intermediate degree of eccentricity can be obtained by securing the shell in an intermediate position. The eccentric fulcrum for the vibrating beam is shown in Figs. 6 and 9, and consists in a shaft, *m*, provided at its middle with an eccentric, *m'*, fitted to the eye of the beam, and having at its outer end an arm, m^2, which is connected with a treadle, *n*, beneath the bed. The treadle is pivoted to a frame, *n'*, which serves to support the bed, and is connected by a link, *o*, with a bell-crank, *o'*, which is pivoted upon the rear end of the goose-neck and coupled to the arm m^2, as by a link, o^2. A spring, *u*, is provided to normally elevate the treadle, and thus rotate the eccentric fulcrum and lift the beam to separate the cutters, as shown in Fig. 1; but the depression of the treadle when the machine is either at rest or in motion serves to shift the arm m^2 to the position shown in dotted lines in Fig. 6, and to turn the eccentric *n'* downward to bring the cutters in contact, as shown in Fig. 2.

The cutter *c'* is formed with an inclined cutting-edge to produce a shear cut in contact with the side of the flat-topped cutter *c*, and the length of the cut is therefore increased or diminished by the approximation of the upper cutter to the lower when in motion. The vibration of the upper cutter need not exceed a tenth of an inch, and its point is intended, when in operation, to remain in vibratory contact with the fixed cutter. When cutting straight lines, the operator may therefore depress the treadle to its fullest extent and produce a greater lap of one cutter upon the other, and thus complete the cut more rapidly, while in cutting curves, especially those of short radius, the upper cutter may be lifted so that only its extreme point engages with the lower cutter, and a smaller extent of the sheet metal is thus held in contact with the cutters, and it can therefore be turned more readily as the cutting progresses. It is obvious that the same result would be secured by adjusting or moving the lower cutter to and from the upper one while the latter was in motion, as shown in other patent applications we are about to file, so as to be pending herewith. It is, therefore, immaterial whether the upper or the lower cutter be shifted to separate the cutting-edges, and we have made a generic claim thereto in our present application, and reserve the right to claim various specific means for adjusting or shifting the lower cutter to introduce the sheet metal and to modify the lap of the cutters upon one another and the extent of their cut.

By the construction described the utmost convenience is afforded to the operator for applying the sheet metal to the cutter and guiding it by hand with any given line or pattern in contact with the cutting-edges, and as the cutters may be separated while in motion by the use of the treadle *n* it is obvious that large or small openings at any part of the sheet can be cut out without extending the cut to the edges of the sheet.

We are aware that a goose-neck and bed are commonly used to support opposed cutters in shearing-machines, and we do not therefore claim such elements as our invention. We are not, however, aware that in any machine a goose-neck has been provided at its front end with a reciprocating cutter and with the necessary mechanism, as a crank or eccentric shaft, for continuously moving such cutter. By this construction we secure a wide arch in which to turn and move the sheet metal upon the lower cutter and avoid the use of long links, shafts, or beams to transmit motion to the upper cutter through the entire length of the goose-neck, as in the power-presses heretofore made. We therefore disclaim the goose-neck for sustaining the upper cutter, except in combination with the means at the forward end of the same for reciprocating the latter continuously when desired.

We are also aware that a vibrating beam extending to the rear of the goose-neck has been used to move the upper cutter through the agency of a treadle. We therefore disclaim such beam, except in combination with a rotating eccentric, or an equivalent crank mounted upon the goose-neck and rotated by power.

We have not claimed herein certain features of our invention, broadly, as we have already so claimed in a co-pending application, No. 181,311, but have restricted our present application to the construction features herein specifically set forth and designated in the annexed claims.

What we do claim herein is—

1. In a sheet-metal-cutting machine, the combination, with a bed sustaining the lower of two narrow shearing-cutters, of a goose-neck sustaining the upper cutter movably, a continuously-rotating eccentric to reciprocate the upper cutter, and means independent of such eccentric for separating the cutters to apply the sheet metal, substantially as herein set forth.

2. In a sheet-metal-cutting machine, the combination, with a bed sustaining the lower of two narrow shearing-cutters, of a goose-neck sustaining the upper cutter movably, a continuously-rotating eccentric to reciprocate the upper cutter, and means, independent of

such eccentric and sustained by the goose-neck, for separating the cutters to apply the sheet metal, substantially as herein set forth.

3. In a sheet-metal-cutting machine, the combination, with a bed sustaining a fixed cutter, and a goose-neck sustaining a movable cutter, and a rotating eccentric to reciprocate the same, of a table sustained upon the bed about the fixed cutter to support the sheet metal during the cutting operation.

4. In a sheet-metal-cutting machine, the combination, with a bed sustaining a fixed cutter, and a goose-neck sustaining a movable cutter, of a table sustained upon the bed below the level of the fixed cutter, and a boss upon the table adjacent to the cutter to guide and to strip the sheet metal from the cutter, substantially as herein set forth.

5. In a sheet-metal-cutting machine, the combination, with a bed sustaining a fixed cutter, and a goose-neck sustaining a movable cutter, of a table supported by the bed and divided adjacent to the cutter, and having one part movable to expose the holder of the lower cutter, as and for the purpose set forth.

6. The combination, with the movable cutter, of a reciprocating carrier for the same, a vibrating beam linked to the carrier at one end, and connected at the opposite end with a rotating eccentric, the beam having a fulcrum adjustable to vary the position of the carrier, as and for the purpose set forth.

7. The combination, with a bed sustaining a fixed cutter, and a frame sustaining a treadle beneath the bed, of a goose-neck sustaining a reciprocating cutter and carrier, a vibrating beam connected to the carrier, an eccentric fulcrum for the beam, and a connection from the treadle to rotate such fulcrum to vary the position of the carrier while in motion, as and for the purpose set forth.

8. The combination, with the upper cutter and its movable carrier, of a pivoted beam connected to the carrier at one end, and a rotary variable eccentric connected to the opposite end of the beam to reciprocate the beam and cutter, as and for the purpose set forth.

9. In a vibrating scroll-cutter, the combination, with a vibrating beam having the cutter-carrier connected thereto, of a link pivoted to said beam and to an eccentric formed with eccentric hub r and adjustable shell s, as and for the purpose set forth.

10. The vibrating scroll-cutter constructed as shown and described, with bed a, sustaining cutter c and table e, the frame n', sustaining treadle n, the goose-neck b, sustaining the carrier h, the vibrating beam i, the eccentric r s, and connections from the beam to the carrier and to the eccentric, as described, the eccentric fulcrum m', the arm m^2, attached thereto, the bell-crank pivoted at the rear of the goose-neck, and the links connecting the bell-crank, respectively, with the treadle and with the arm m^2, the whole arranged and operated substantially as shown and described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

ANSON O. KITTREDGE.
FRANK M. LEAVITT.

Witnesses:
JACOB G. CARPENTER,
NEVILLE MCEVOY.