

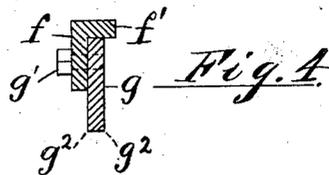
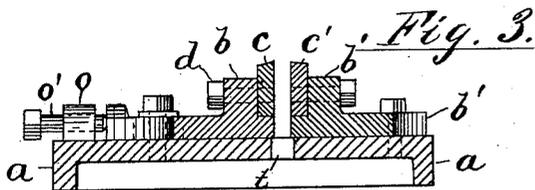
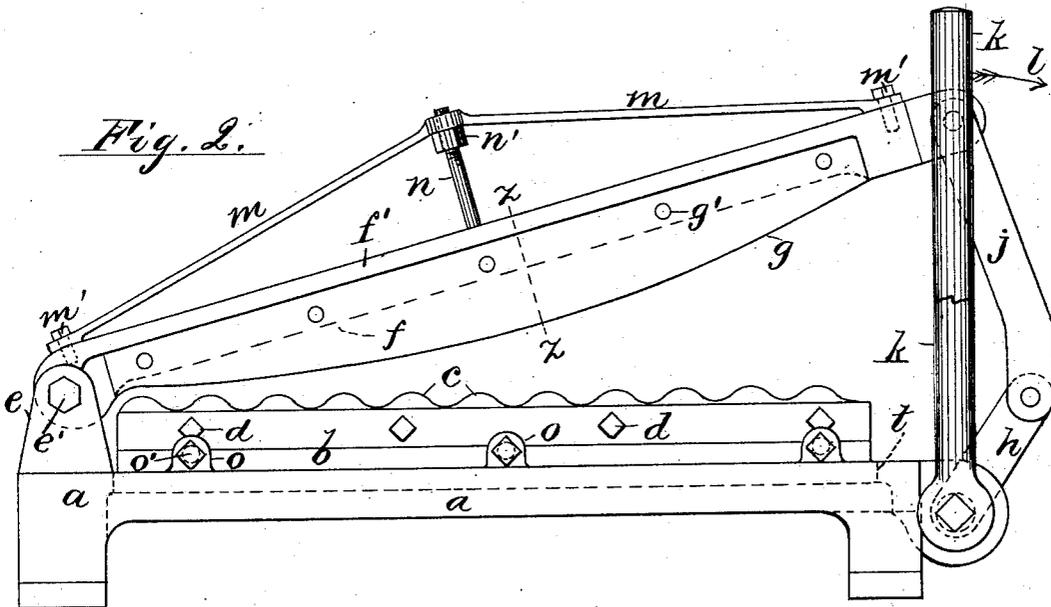
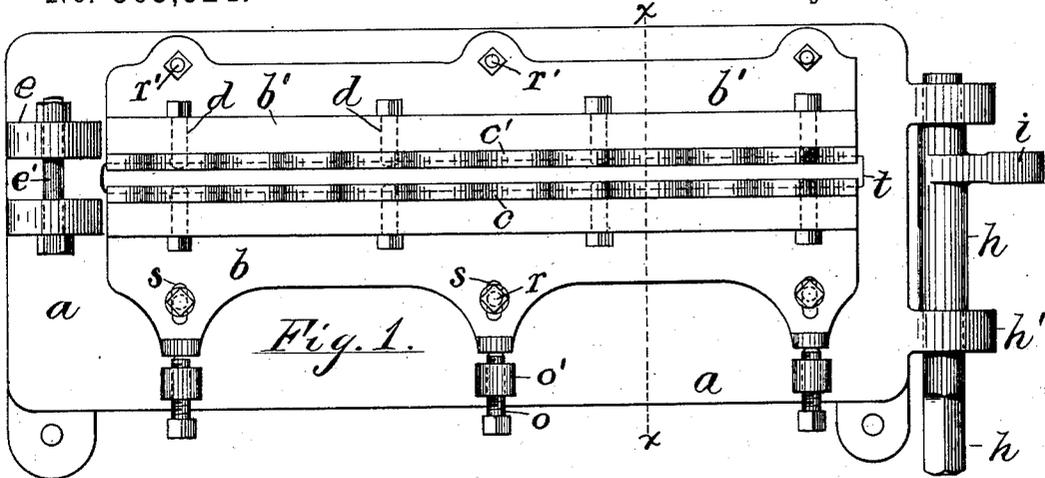
(No Model.)

E. D. LIBBEY.

CORRUGATED SHEET METAL CUTTER.

No. 363,524.

Patented May 24, 1887.



Attest:
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Crane & Miller, Atty.

UNITED STATES PATENT OFFICE.

ELIAS D. LIBBEY, OF ST. PAUL, MINNESOTA, ASSIGNOR TO THE SCRIBNER-LIBBEY COMPANY.

CORRUGATED-SHEET-METAL CUTTER.

SPECIFICATION forming part of Letters Patent No. 363,524, dated May 24, 1887.

Application filed September 28, 1886. Serial No. 214,763. (No model.)

To all whom it may concern:

Be it known that I, ELIAS D. LIBBEY, a citizen of the United States, residing at St. Paul, Minnesota, have invented certain new and useful Improvements in Corrugated-Sheet-Metal Cutters, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to cut sheets of corrugated metal without deforming the shape of the ribs and grooves upon the same; and it consists, partly, in the combination, with two stationary cutters notched to fit the ribs upon the sheet metal, of a movable cutting-blade adapted to fit between said stationary cutters and to shear the sheet metal by its contact with both of said cutters, partly in the construction of the two stationary cutters adjustable toward one another, partly in means for applying various cutters to the same bed, and partly in means for bracing the movable cutter-arm.

The construction is provided with a bed-plate, upon which the two stationary cutters are secured so that they may be detached and replaced by others with different notches, and the cutter-arm is hinged at one end of such bed and vibrates up and down between the inner edges of the stationary notched cutters when in action, and is lifted above said cutters when placing the sheet metal thereon. The supporting of the corrugated sheet metal upon two cutters, with a narrow opening between them, holds it firmly during the cutting operation and prevents the bending of the metal, while the action of the shearing-blade upon its opposite edges, in contact at the same time with the opposed stationary cutters, obviates any tendency in the shearing-blade to press away from the stationary cutter, and thus enables it to cut more smoothly and to retain its edge more durably.

In the drawings, Figure 1 is a plan of the bed, the stationary cutters, and the crank-shaft. Fig. 2 is a side elevation of the entire machine, with a hand-lever applied to the crank-shaft, the lever being broken to shorten its projection upon the drawings. Fig. 3 is a transverse section of the bed and cutters on line xx in Fig. 1; and Fig. 4 is a transverse

section of the movable cutter arm on line zz in Fig. 2.

a is the bed-plate, which may be secured upon any suitable table or work-bench, or provided with legs, if desired.

$b b'$ are the lower cutter-seats, and $c c'$ the lower cutters, formed of shear-steel, and secured thereto by screws d .

e are pivot-lugs formed at one end of the bed to carry the joint-bolt e' , upon which the cutter-arm f is hinged, and g is the upper cutter or shear-blade, secured to such arm by bolts g' . At the opposite end of the bed a crank or toggle-shaft, h , is journaled in bearings h' , and is provided with an arm, i , which is attached by a link, j , to the outer end of the cutter-arm.

The end of the crank shaft is shown squared, with a lever, k , fitted thereto, in Fig. 2 for turning the shaft in the direction of the arrow l , and thus pressing the shear-blade g down between the cutters $c c'$. The cutter-arm is shown in Fig. 2 braced with a truss-rod, m , secured near the opposite ends of the arm f by bolts m' , and provided in the middle with a straining bolt or stud, n , and nut n' . The cutters $c c'$ are adjusted to fit against the opposite sides of the blade g by depressing the latter and securing the cutter seats $b b'$ upon the bed-plate, with the cutters in contact with such blade. When thus adjusted an oscillating movement of the lever k operates to vibrate the shear-blade up and down, the blade penetrating between the cutters in its lower position and being elevated sufficiently above the same to introduce the sheet metal when raised, as shown in Fig. 2.

To compensate for wear after the cutters have been adjusted, or to prevent the shearing operation from pressing them sidewise upon the bed, one or both of the cutter-seats may be provided with set-screws o , inserted through lugs o' upon the bed-plate and abutting against the edge of the seat, as shown in Figs. 1 and 3. Such screws are shown in the drawings applied to the seat b , which is secured upon the bed by screws r , inserted through slots s , and the seat b' is shown secured to the bed by bolts r' .

The slotted seat, and one or more set-screws

to adjust the same, may be applied to both of the stationary cutters, if desired.

The upper surface of the cutters $c c'$ is shown in Fig. 2 formed with notches adapted to receive and fit the ribs upon the corrugated iron, and such cutters are therefore only adapted to cut sheet-iron with corrugations of a certain size,

By unscrewing the bolts $r r'$ the seats and cutters may be removed from the bed and replaced by other seats provided with differently-notched cutters; or the cutters themselves may be changed without displacing the seats, by removing the bolts d , and thus liberating the cutters from the seats.

A pair of cutters adapted to any particular form of corrugated iron may then be secured in the same seats, and the machine be thus adapted for immediate use in cutting differently-corrugated iron.

The stationary cutters are necessarily made long enough to include the entire width of the corrugated sheet, and as the lower edges of the shear-blade g (shown in Fig. 4 at g'') are made to shear simultaneously against the inner edges of the cutters $c c'$, the cutting operation severs a narrow strip from the corrugated sheet equal in width to the thickness of the shearing-blade, and an opening, t , is therefore made through the bed a to permit such severed strips to fall through and be discharged from the lower cutters.

The cutter-arm f requires very little lateral stiffness, as it is supported on both sides by contact with the lower cutters when in operation, and a rib, f' , at right angles with that flange of the arm upon which the blade g is secured, serves effectually to brace it in a lateral direction.

The lateral stiffening of the shear-blade by its operation between two lower cutters, in conjunction with the brace or truss rod m , permits the arm to be made of great lightness, whatever its length, and thus renders the machine cheaper in construction and more convenient to transport.

Having thus set forth the nature and operation of my invention, what I claim is—

1. In a corrugated-sheet-metal cutter, the combination, with two stationary notched cutters, of a movable shearing-blade fitted be-

tween the same and adapted to cut by both of its opposite edges in contact with the inner faces of such cutters, substantially as herein set forth.

2. In a corrugated-sheet-metal cutter, the combination, with a bed having a shearing-blade hinged at one end thereof and movable up and down, as described, of two notched cutters adjusted to contact with the sides of said blade when depressed and removably attached to the bed, substantially as herein set forth.

3. In a corrugated sheet-metal cutter, the combination, with a bed having a shearing-blade hinged at one end thereof and movable up and down, as described, of two notched cutters detachably secured to the bed, and means for adjusting such cutters toward one another, as and for the purpose set forth.

4. In a corrugated-sheet-metal cutter, the combination, with a bed having a shearing-blade hinged at one end thereof and movable up and down, as described, of the seats $b b'$, detachably secured to the bed, and the notched cutters $c c'$, attached removably to the seats, as and for the purpose set forth.

5. In a corrugated-sheet-metal cutter, the combination, with the bed and two notched cutters, $c c'$, secured thereon, with space for an intermediate shearing-blade, of the cutter-arm f , hinged at one end of the bed and formed with the lateral rib f' and provided with the blade g , having opposite cutting-edges g'' , adapted to operate with the cutters $c c'$, as and for the purpose set forth.

6. In a corrugated-sheet-metal cutter, the combination, with the bed and two notched cutters, $c c'$, secured thereon, with space for an intermediate shearing-blade, of the cutter-arm f , hinged at one end of the bed and provided with the shearing-blade g , the brace-rod m , attached to the arm at opposite ends, and the stud n , adapted to stay the said rod in the middle, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ELIAS D. LIBBEY.

Witnesses:

SAM L. SEWALL,
J. A. GREGG.