3 Sheets--Sheet 1.

W. H. & W. J. CLABK, & A. O. KITTREDGE.

Sheet-Metal Shearing-Machine.

No. 166,588. Patented Aug. 10, 1875.

FIG. 1.

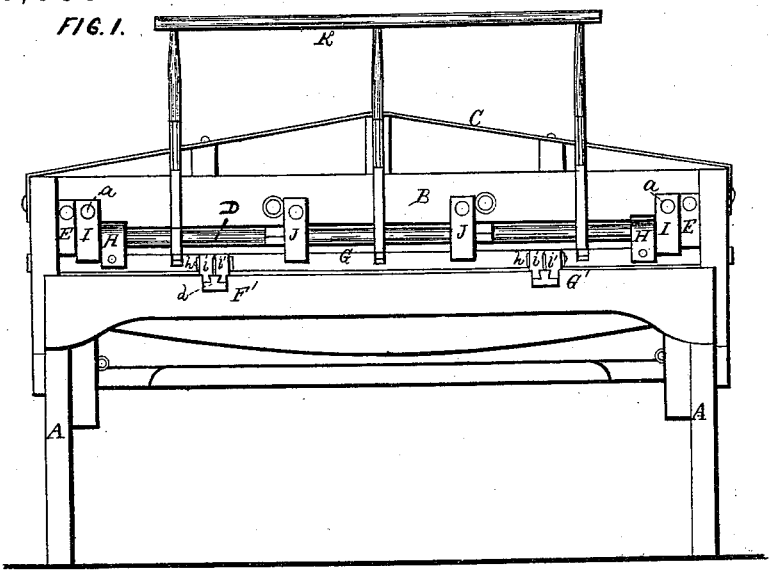
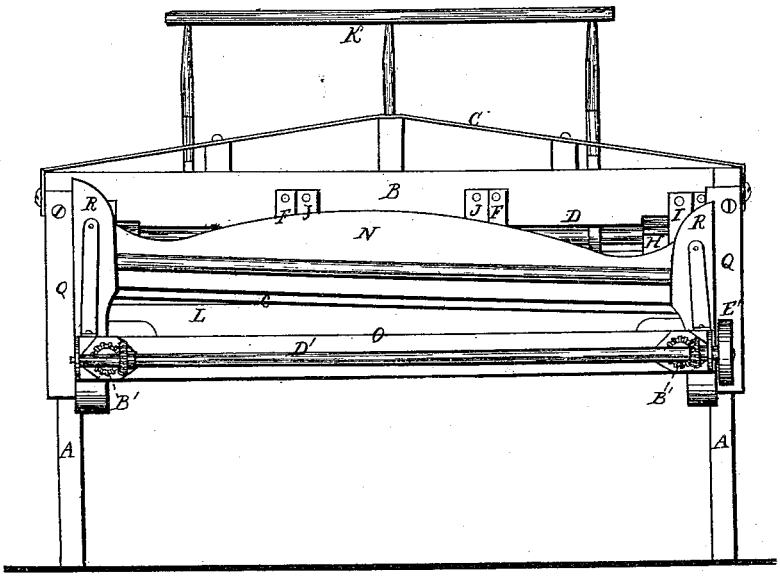


FIG. 2.



WITNESSES.

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3 Sheets--Sheet 2.

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FIG. 3.

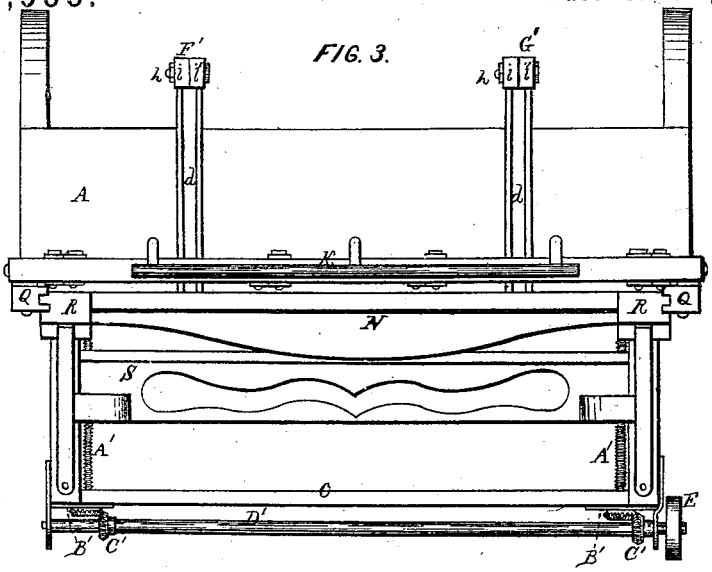
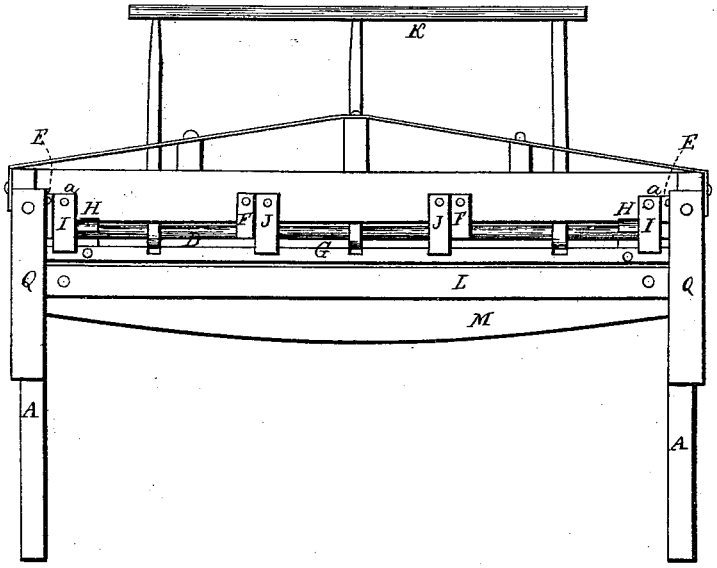


FIG. 4.



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3 Sheets--Sheet 3.

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FIG. 5.

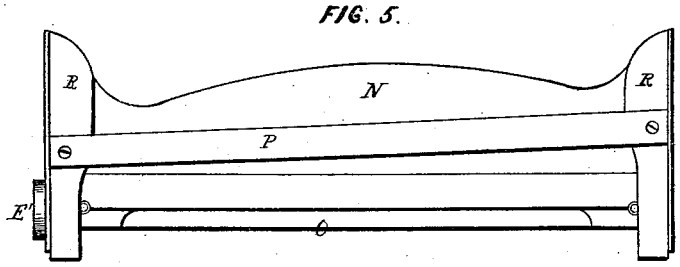

FIG. 7.

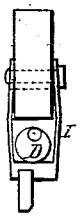

FIG. 8.

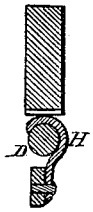

FIG. 6.

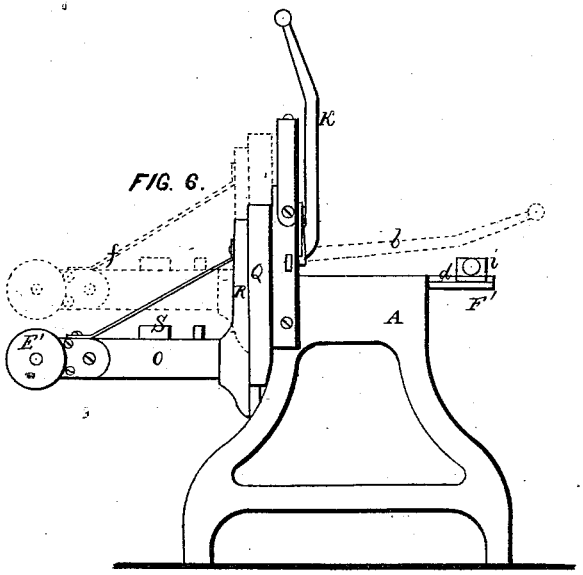

FIG. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM H. CLARK, WILLIAM J. CLARK, AND ANSON O. KITTREDGE, OF SALEM, OHIO, ASSIGNORS TO KITTREDGE CORNICE AND ORNAMENT COMPANY, OF SAME PLACE.

IMPROVEMENT IN SHEET-METAL-SHEARING MACHINES.

Specification forming part of Letters Patent No. **166,588**, dated August 10, 1875; application filed June 7, 1875.

To all whom it may concern:

Be it known that we, WM. H. CLARK, WM. J. CLARK, and ANSON O. KITTREDGE, of Salem, in the county of Columbiana and State of Ohio, have invented a certain new and Improved Squaring-Shears, of which the following is a full and complete description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of the shears. Fig. 2 is a rear elevation of the same. Fig. 3 is a plan view. Figs. 4, 5, 6, 7, and 8 are sectional views.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to improvements on shears for cutting up sheet metal for cornices, ornamental work, &c.; and the object thereof is to cut said metal true and square for the work for which it is to be used, and, furthermore, to do the cutting easily and expeditiously; also, the improvements consist of a clamping device for holding firmly and conveniently the sheet of metal while being cut, and certain devices for gaging the same, all of which are constructed substantially in the following manner:

In the drawings, A indicates a table, whereon is mounted a beam, B, braced by a stringer, C. Along the lower edge of the beam is arranged a shaft, D, Figs. 1 and 4, having its end-bearings in the boxes E E, Fig. 1, and its middle bearings in the boxes F, Fig. 4, and whereby it is attached to the beam. A detached view of the shaft is shown in Fig. 9, in which it will be seen that the axial line of the journals *e* of the shaft is eccentric to the main line of the shaft, thereby forming an eccentric for operating the clamping device referred to, and whereof it forms a part. G is the clamping-bar. Said bar is attached to the shaft by the hangers or hooks H lapping over the upper side thereof, as shown in Figs. 4 and 8. At each end of the shaft is a yoke, I, Fig. 4, through which the ends of the shaft loosely pass. The upper end of the yoke is attached to the beam by bolts *a* fitting tightly in the yoke, but loosely in the beam, in vertical slots, to admit of a vertical reciprocating movement of the clamping-bar, held by the lower end of the yokes, as will be seen in Fig. 7. It will be seen on examination of said Fig. 7 that the lower side of the shaft is in contact with the bottom of the yoke, whereas the upper side of the shaft is in contact with the hanger or hook H, as will be seen in Fig. 8, hence the shaft will revolve between them, and in close but free contact therewith. J J are also yokes, substantially the same as the yoke I, and for the same purpose. To the shaft is secured the handle *k*, for operating the same. Thus the position of the handle, as shown in the drawings, is such as when the clamping-bar is raised above the face of the table, whereon is laid the sheet of metal to be pushed under it and clamped thereby. On depressing the handle to the position indicated by the dotted lines *b*, Fig. 6, the shaft will be turned, and in turning the full or eccentric side thereof will press upon the bottom of the yokes, thereby forcing them down, and with them the clamping-bar, upon the sheet lying under it. Now, on lifting the handle to the position shown in the drawings, the eccentric side of the shaft will come upward, thereby forcing up the hangers or hooks H, and thus lift the clamping-bar from the sheet of metal before clamped by the downward movement of the handle forcing the eccentric side of the shaft upon the bottom of the yokes, thereby depressing the clamping-bar, as above said.

The inner edge of the table is faced by a plate of steel, L, Fig. 4, having a sharp cutting-edge. Said edge of the table is strengthened by an arch, M. The blade acting in concert with the edge for cutting the metal is fixed to the side N of the frame O, Fig. 3, as will be seen at P, Fig. 5, which represents a detached view of the frame and blade. Said frame is attached to the table by means of grooved standards or ways Q, Fig. 2, secured to the ends of the table. In said grooves is fitted, so as to slide therein, the corner posts R of the frame, as will be seen in Figs. 2 and 3. It will be observed that the side N of the frame is not arranged horizontally therewith, but at an angle, so that the blade P may have

a shearing running cut. The connection of the blade with the frame is shown in Fig. 5.

Within the frame *o* referred to is arranged a parallel gage, S, operated at each end by a screw, A′, Fig. 3. Said screws are actuated simultaneously by the miter-wheel B′ engaging the wheel C′ on the shaft D′. Said shaft, in turn, is operated by the hand-wheel E′, the purpose of which will presently be shown. The table is provided with a pair of gages, F′ G′, the construction of which is as follows: In the table is sunk, level with the surface thereof, a rail, *d*, Figs. 1 and 3, the midrib of which is dovetailed, as will be seen in Fig. 1. To said midrib is fitted a clamp consisting of two sections, *i i′*, which are secured to each other and to the midrib of the rail by a bolt, *h*. The clamp and rail together form a gage, the clamp being adjustable on the rail by means of the screw or bolt, whereby it is confined to the rail or rails.

By means of the above-described shear the uneven edges of a wide sheet of metal can be trimmed off and the sheet left square and true to be worked up. The sheet, for this purpose, is laid upon the table and the rough and uneven edge pushed under the clamping-bar G, to and under the edge of the blade P. The frame in which the blade is fastened is raised up to the position indicated by the dotted lines *f*, Fig. 6, to admit of the sheet being pushed under it. The lifting up of the frame and blade for the purpose of bringing it above the sheet is or may be done by a rope and weight attached to the frame, or by an arrangement of levers which may be so disposed as to raise and lower the frame for cutting the metal. The particular manner for accomplishing this end is not a matter of much importance, as many devices may be employed for that purpose.

The sheet, when properly adjusted under the blade or shear, is held firmly down upon the table by the clamping-bar G, which is brought down upon it by means of the handle K, as above described.

Should it be required to cut the sheet up into pieces of certain width, the table-gages may be used to obtain the required width, or the parallel gage S on the opposite side, as the nature of the work or other circumstances may render it expedient or desirable. The table-gages F′ G′, constructed as above described, leave the entire surface of the table free and unobstructed for laying thereon the sheet of metal, and, as the lower edges of the adjustable blocks or clamps are below the surface of the table, the edge of the sheet of metal cannot catch or slip under them, as it is very liable to do when the ordinary thumb-screw gages are used, which requires much watchful care to prevent, for, should the edge of the sheet get under one of the gages and simply close against the other, the cutting of the sheet would not be true; hence the work could not be squarely and perfectly done. This event, however, cannot occur by the use of the gages herein described.

In using the parallel gage S it is important that both ends of the gage should move at the same time and parallel with the cutting blade or shear. To accomplish this end is the purpose of the screws and gearing whereby the gage is operated. It will be obvious that by them both ends of the gage will advance or recede from the shear equally and simultaneously, and in so doing preserve their parallel integrity with the cutting device; hence the sheets gaged and cut in accordance with them will be square and true to be worked up.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination with the herein-described squaring-shears, the adjusting-screws A′ A′, miter-gear B′, gear C′, shaft D′, hand-wheel E′, gage S, and frame O, substantially in the manner as and for the purpose specified.

2. The rails *d* of the clamps F, when sunk in the surface of the table A, so that said rails shall be level or flush therewith, clamps *i i* fitted to said rails, so that the lower part of the clamp shall be below the surface of the table, and secured to the rails by bolts *h*, to admit of their being adjusted on said rails for the purpose specified, in combination with the squaring-shears herein described, in the manner substantially as set forth.

3. The shaft D, having eccentric journals *e* and handle K, in combination with the bar G connected therewith by the yokes J and hangers H, operating and co-operating in combination with a squaring-shear, P, as set forth and for the purpose specified.

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ANSON O. KITTREDGE.

Witnesses:
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R. J. THOMSON.