

C. E. KENNEDY.
Machine for Shearing Sheet-Metal.

No. 219,271.

Fig. 1. Patented Sept. 2, 1879.

Fig. 1.

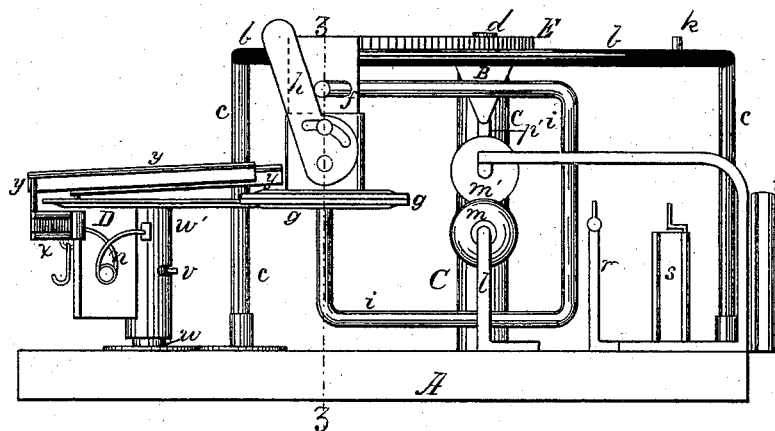
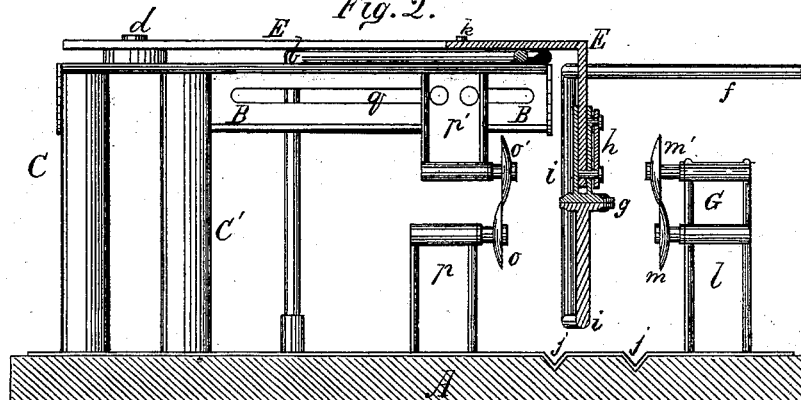


Fig. 2.



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Inventor:
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Fig. 3.

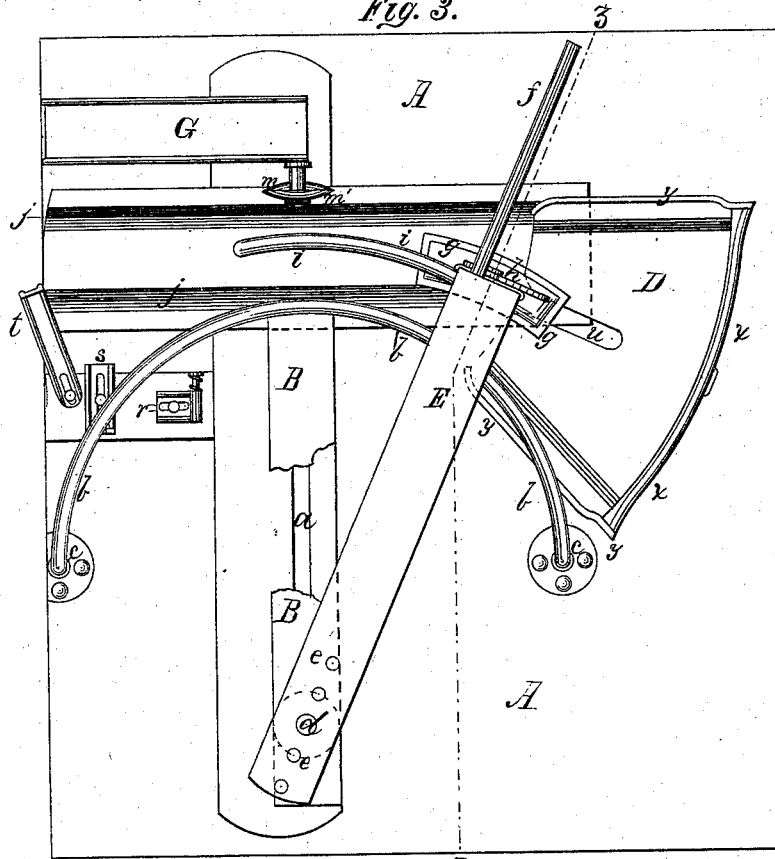
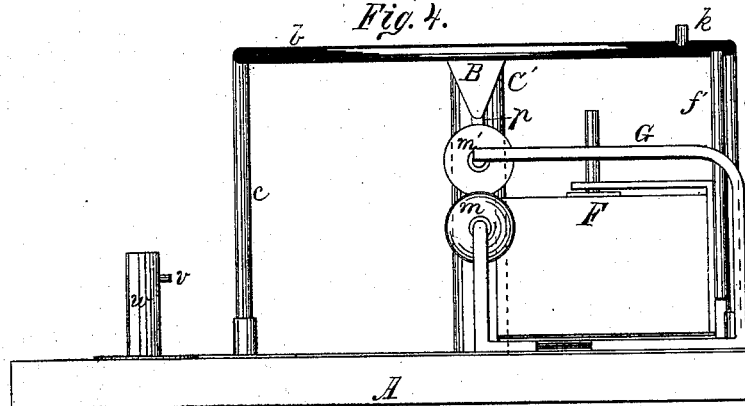


Fig. 4.



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UNITED STATES PATENT OFFICE

CHARLES E. KENNEDY, OF HATLEY, QUEBEC, CANADA.

IMPROVEMENT IN MACHINES FOR SHEARING SHEET METAL.

Specification forming part of Letters Patent No. **219,271**, dated September 2, 1879; application filed March 18, 1879.

To all whom it may concern:

Be it known that I, CHARLES EDGAR KENNEDY, of the town of Hatley, in the county of Stanstead and Province of Quebec, Canada, have invented certain new and useful Improvements in Machines for Shearing Sheet Metal; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a compact and simple arrangement of a radius-arm having an adjustable axis, and carrying at its free end clamping-plates and operating-handles, with two pairs of cutting-disks, the inner pair being made adjustable in such a manner that sheets of metal may be cut into segments of circles of various widths, which, before being released, are carried to an adjustable table provided with knives or shears so shaped and arranged as to trim to the desired form those edges of the sheet not previously operated on, and producing a sheet of the proper pattern for immediate forming into cups, dip-pers, pans, &c., according as the machine is set for such products.

My invention also provides for the removal of the radius-arm and the substitution of a carriage therefor, the carriage moving in a right line, and provided with clamps for holding sheet metal to be cut in parallel strips.

Figure 1 is a front elevation of a machine embodying my invention. Fig. 2 is a vertical transverse section of the same, taken on the plane of the line *z z*, Figs. 1 and 3. Fig. 3 is a plan of the same. Fig. 4 is a front elevation, showing the parallel cutting attachment as in use, the radius-arm and clipping-table being removed.

A is the base; B, the upper guideway; C C', the standards; D, the clipping-table; E, the radius-arm; F, the parallel cutter-carriage.

The base A is made in one piece, and is provided with a slotted guideway, *a*, Fig. 3. At right angles with this is a track, *j*, used only when the carriage F is used. Two vertical standards spring from the base A, and carry at their summits the guideway B. The other

extremity of the said guideway is supported by a semicircular guide-rest, *b*, supported at either end by uprights *c*, reaching to the base A. The radius-arm E is pivoted at *d* to the top of the guideway B, Fig. 3, in one of the holes *e e*. The opposite end of said radius-arm carries a handle, *f*. Below this are clamps *g*, operated by a cam, *h*.

Referring to Figs. 1 and 3, it will be seen that the radius-arm also carries on the left-hand side a rectangularly-bent piece, *i*, which serves to support the lower plate of the clamps *g*, which is placed at the proper level with the cutting-disks *m m' o o'* to cut without raising or lowering the edges of the sheet being operated on.

The frame G springs from the front right-hand corner of the base A, and at the proper height extends horizontally to the left, at the end of which is mounted the upper plano-convex cutting-disk, *m'*, its convex side facing the radius-arm E. Immediately below the disk *m'* is the one, *m*, made in the same shape, but having its convex side opposite the one, *m'*, the peripheries of the plane sides being contiguous, and slightly overlapping in the manner in common practice with this class of cutters. The disk *m* is mounted on a vertical stud, *l*, secured to the base A.

The cutting-disks *o o'* are arranged in the same manner as those *m m'* described, with the exception that the convex sides of the disks *o m* and *o' m'* are reversed respectively. Disk *o* is journaled to the sliding standard *p*, the upper one, *o'*, being similarly supported by the hanger *p'*, working in the horizontal slot *q* in the guideway B. The base of the standard *p* slides in a slot in the base A, Fig. 3. The standard *p* and hanger *p'* being horizontally adjustable in a line with the guideway B enables the distance between the disks *m m'* and *o o'* to be increased or decreased when desired. The radius-arm E is also adjustable, there being holes *e e* in the said radius-arm, and corresponding holes in the guideway B, one hole of each being pivoted together by the pin *d*, affording means for enlarging or reducing the circle described by the clamps *g*.

Adjustable stops *r s t* determine the position of the sheet to be cut when placed in the clamps *g*, which are carried toward the said stops un-

til arrested by the pin *k* coming in contact with the radius-arm *E*. A sheet of metal having been placed in the clamps *g* in the proper position for trimming and securely clamped, the stop *t* is set to touch one end of the sheet, those *s* *r* being similarly adjusted to engage with one edge of the same, and there secured, thus insuring a like position in the clamps *g* of every subsequent sheet operated on.

The stop *r*, being at a point where projections on the sheets would strike, is pivoted with a finger which maintains its vertical position by means of a coiled spring, thus permitting said finger to yield.

A sheet having been placed in the said clamps and fastened by the cam *h*, when they are at the right hand of the cutters *m* *m'* and *o* *o'* the free end of the radius-arm *E* is carried to the left by means of the handle *f*, during which operation two opposite edges of the sheet, coming in contact with aforesaid cutting-disks, are trimmed to circles determined by the position of the pivot *d* and the distance of the disks *o* *o'* from the disks *m* *m'*. A pin, *k*, on the semicircular guide-rest *b*, insures a like adjustment of every sheet, which, having been trimmed in the manner described, is carried by the said clamps to the clipping-table *D*, passing beneath the knives *y*. At the same time the clipping-table is partially revolved by the lower clamp-support, *i*, entering a slot, *u*, in the said table.

A portion of the sleeve *w'* is cut away at a point to correspond with the position of the pin *v* in the post *w*, being cut away in such a manner that the ends of this cut portion of the sleeve strike pin *v* when the table *D* (which is secured to said sleeve) is made to partially revolve by the clamp-support *i* entering or leaving the slot *u* in the table *D*. The rotation of the cam-support *i*, slot *u*, and pin *v* is such that the slotted edge of the table *D*, when turned as far to the left as the pin *v* will permit, will always be in the proper position for the cam-support *i* to enter the slot *u*. This relation is also such that the table *D*, by means of the clamp-support *i* and slot *u*, may be turned to the right until arrested in that direction by the said pin *v*, when lines parallel with the shear-edges of table *D* will cross each other on the longitudinal line running through the center of motion of table *D* from the circle described by the outer edge of the sheet being operated on in its transit from the shears *m* *m'* to the said table.

A foot-lever or other convenient device, connected with the vertically-sliding bar *x*, causes the cutting-edges of the knives *y* to descend below the plane of the top of the table *D*, clipping off the ends and corners not before operated on.

The bar *x* slides on guides attached to the sleeve *w'*, as shown, and is returned to its original position by means of a spring, *n*.

Different-sized clipping-tables *D* and knives *y* are used for different-sized sheets.

When it is desired to cut sheets having parallel edges, the radius arm *E* is removed, and the carriage *F* placed on the track *j*, the said carriage being constructed to fit the said track and move truly thereon. The top of the carriage is provided with clamps *g'*, similar to those *g* on the radius-arm *E*.

By means of the handle *f* the carriage is propelled forward, when the edges of the sheet which has previously been clamped thereon are trimmed by the disks *m* *m'*, or by those and *o* *o'* simultaneously.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the adjustable radius-arm *E*, adjustable clamp *g*, cam *h*, and frame *i*, as set forth.

2. The combination of frame *B* *C* *C'*, an adjustable radius-arm, *E*, frame *i*, clamps *g*, and semicircular guide-rest *b*, substantially as set forth.

3. The combination of the radius-arm *E* with the semicircular guide-rest *b* and adjustable cutters *o* *o'*, the former in the guideway *B* and the latter in the base *A*, substantially as set forth.

4. The combination and arrangement of the adjustable stops *r* *s* *t* with the radius arm *E* and clamps *g*, substantially as set forth.

5. The combination of the partially-revolving slotted table *D*, clamps *g*, and support *i*, substantially as shown and described.

6. In combination with a radius-arm, *E*, the clipping-table *D*, knives *y*, and bar *x*, operating substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES EDGAR KENNEDY.

Witnesses:

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F. A. WISWELL.