2 Sheets—Sheet 1.

J. S. ATKINSON.

MACHINES FOR SLITTING METALLIC PLATES.

No. 186,030. Patented Jan. 9, 1877.

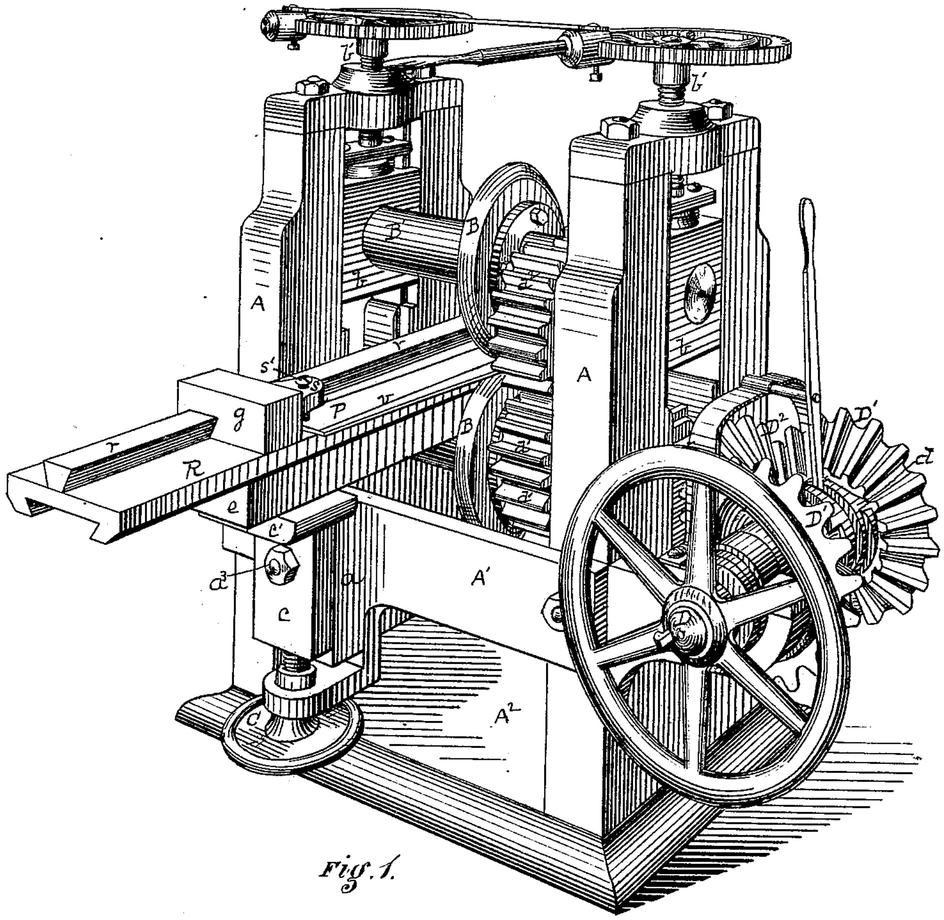

Fig. 1.

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Inventor: James S. Atkinson,
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his Atty.

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2 Sheets—Sheet 2.

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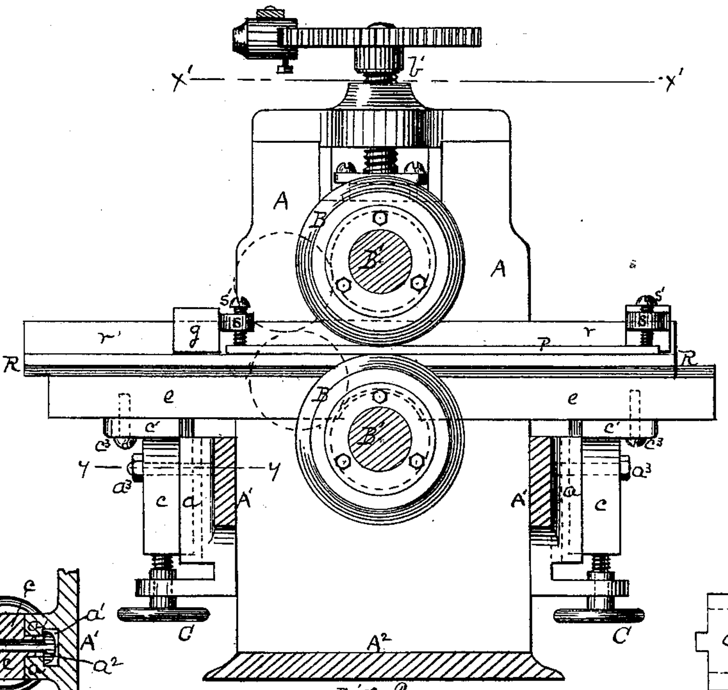

Fig. 2.

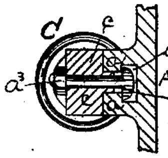

Fig. 4.

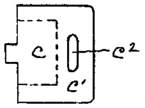

Fig. 5.

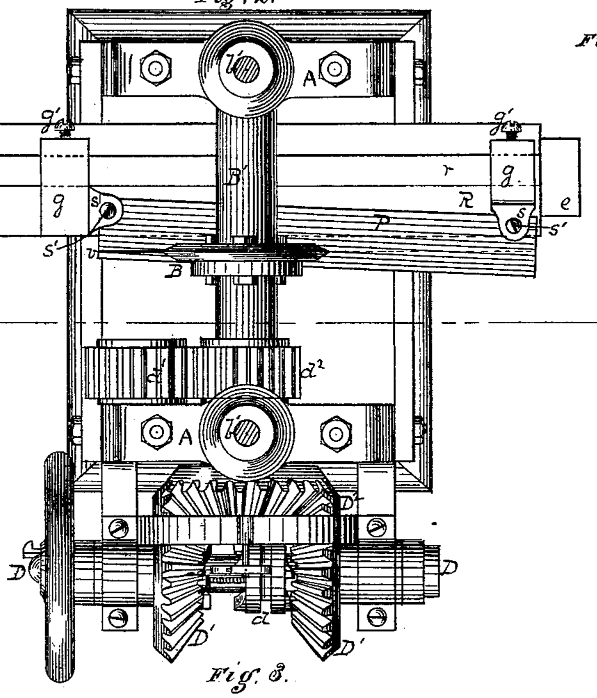

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES S. ATKINSON, OF PITTSBURG, ASSIGNOR TO BENJAMIN F. JONES,
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IMPROVEMENT IN MACHINES FOR SLITTING METALLIC PLATES.

Specification forming part of Letters Patent No. **186,030**, dated January 9, 1877; application filed September 29, 1876.

To all whom it may concern:

Be it known that I, JAMES S. ATKINSON, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Machine for Slitting Metallic Plates; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, in two sheets, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved machine. Fig. 2 is a transverse vertical section in a plane a little to the right of the cutters of Fig. 1, and in the line *x x* of Fig. 3. Fig. 3 is a plan sectional view in the line x' x' of Fig. 2. Fig. 4 is a sectional view in the line *y y* of Fig. 2, and Fig. 5 is a top-end view of the vertically-sliding standard.

My improvement relates to a machine for the cutting or slitting, as distinguished from shearing, of metallic bars and plates by the use of a pair of bevel-edged revolving cutting-disks, working with their edges in the same plane on opposite sides of the bar or plate to be cut, along with a reciprocable guide or feed-table, arranged, when reciprocated, to move with the bar or plate; and while my improved machine is adapted for other uses in the arts, I design it especially for use in slitting "cold-rolled" plates, by a diagonal or oblique cut, into finger-bars.

The frame of the machine is of any suitable construction, and, as shown, consists of a pair of housings, A, longitudinal bars A^1, and foundation A^2. By means of any convenient bearing-blocks *b*, I provide for the operation of cutter-shafts B', on which I securely fix the bevel-edged steel cutting-disks B, with their cutting-edges in the same plane, or nearly so, and at a little distance apart, so as to be made simultaneously operative on opposite sides of the same bar or plate. One set of bearing-blocks is made adjustable by screws b', or in other suitable way. Motion is imparted to the cutting-disks B through shaft D, carrying a double-moving clutch, *d*, which alternately interlocks with the loose bevel-wheels D^1, which latter mesh into a like wheel, D^2, on one of the cutter-shafts, and from it motion is conveyed to the other cutter-shaft by gearing d^1 d^2, though other desired arrangement or construction of driving-gear producing a like operation may be substituted for that shown.

On each of the longitudinal bars A^1, and in or near the line of feed, is a vertically-slotted rib, *a*, having a T-slot, a^1, Fig. 4, in which plays the head of a T-bolt, a^2, the shank of which latter passes through a vertically-sliding standard, *c*, which is secured at any desired point of adjustment, up or down, by a nut, a^3. This adjustment is effected by a set-screw, C. The upper end of this standard terminates in a table, c^1, in the projecting flange of which is a slot, c^2. On the table thus formed, by the use of tightening-screws c^3, passing through the slots c^2, I adjust and secure a bed-plate, *e*, such bed-plate extending through between the cutter-shafts a little to one side of the cutters, and having the general direction of the line of feed. The top of this bed-plate has the male part of a dovetail-slide joint, the female part being made in the under side of a reciprocable bed or feed-table, R. The top of this bed has a flat part for receiving the bar or plate, P, to be cut or slitted, (the latter projecting between the cutters B for that purpose,) and also a rib, *r*, to which latter the holding-blocks *g* are adjustably affixed, the setting and adjusting being effected by set-screws g', Fig. 3. On the holding-blocks *g* are lugs *s*, through which pass the set-screws s', which latter, being turned down, hold the bar or plate P in the position in which it may be set, so that its projecting edge may pass between and be operated on by the cutters B.

The bar or plate P being thus placed in position, the line of feed in the horizontal plane thereof may be varied by the tightening-screws c^3, and the vertical adjustment of either or both ends of the bed-plate by the set-screws C. But for most purposes a sufficient range of adjustment in the horizontal plane of feed may be effected on the reciprocable bed R, the breadth of its surface being sufficient therefor. The plate P represents an iron or steel plate to be cut by a diagonal or oblique slit, *v*. For this purpose the plate P is adjusted so that when passing through between the cutters the latter will (being properly adjusted) act on both faces of the bar in the vertical plane of this line. If the iron is cold, the cut made by the first pass will be very light. The cutters are then set a little closer together, the machine is reversed, the plate run back, and a cut slightly deeper is made in the same path. This operation is continued till the two bars fall apart in the vertical plane of cut, or are broken apart by a light blow, or by the hand of the workman.

This machine may be applied to the cutting or slitting of iron, steel, and other metals generally, and particularly such as require to be cut cold, or either cold or hot, in a diagonal or oblique line. The mechanical construction may be varied so far as relates to adjusting devices, to driving-gear, to tongues and grooves on the guides, and to the shape of the bearing-surface of the reciprocable bed or feed-table.

In the use of this machine the depth of cut before complete separation is effected will be greater with softer metals or qualities of metals, and in some it will have to be made almost entirely through. So far as the method of operation described, as applied to the severing of plates, sheets, or bars of cold-rolled malleable metals, or the effect of such operation on such material, may constitute or involve invention or discovery, no claim is made herein, and the same is included in, and is intended to form, the subject-matter of a separate application.

In describing a bar or plate as being slit or severed by successive passes through between the cutters, I do not wish to be understood as making any particular number of passes an essential element of the invention, as any number of passes may be employed which will accomplish the result, and such number of passes necessary may be considerably lessened by increasing the strength of the machinery or applying driving power to the feed-table, or both.

In describing the plate-holding table as reciprocable, I mean that it is capable of being reciprocated by a back-and-forward motion, as described.

I claim herein as my invention—

1. A pair of bevel-edged revolving cutters, arranged to operate in the same plane on a bar or plate passing between, in combination with a reciprocable bed, which, when reciprocated, shall hold and guide the bar or plate in its motion between the cutters, substantially as set forth.

2. A reciprocable feed-table, constructed and arranged to hold and guide a bar or plate secured thereto in other than a line parallel with its edge, in combination with a pair of bevel-edged cutting disks, working in the same plane and on opposite sides of the bar or plate, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES S. ATKINSON.

Witnesses:
J. J. McCormick,
George H. Christy.