C. DE W. WAGNER.

SHEET METAL SHEARS.

APPLICATION FILED MAY 9, 1917.

1,241,313. Patented Sept. 25, 1917.

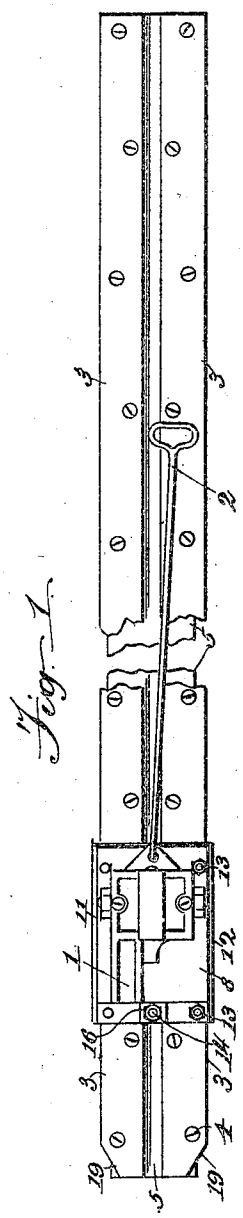


Fig. 1.

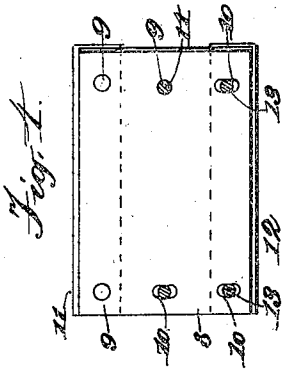


Fig. 4.

Fig. 2.

Fig. 3.

Witnesses

Hazel Larson

L. A. St. John.

Inventor

Clinton De Witt Wagner

By J. M. St. John.

Atty.

UNITED STATES PATENT OFFICE.

CLINTON DE WITT WAGNER, OF CEDAR RAPIDS, IOWA.

SHEET-METAL SHEARS.

1,241,313. Specification of Letters Patent. Patented Sept. 25, 1917.

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To all whom it may concern:

Be it known that I, CLINTON DE WITT WAGNER, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Sheet-Metal Shears; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to shears for cutting sheet metal, and more particularly the type of shears described in Patents No. 801,697 and 935,072, issued to me on October 10th, 1905, and Sept. 28th, 1909, respectively.

The object of this invention is to improve the construction of the shears and track so as the better to adapt the shears to the cutting of long, straight strips of sheet metal.

The nature of the invention is fully disclosed in the description and claims following, reference being had to the accompanying drawing, in which;—

Figure 1 is a plan view of a device embodying my improvements. Fig. 2 is a front elevation of the same. Fig. 3 is a side view, partly sectional. Fig. 4 is a plan view of the shear guide detached.

In the drawing, the numeral 1 denotes the rotary slitting shear referred to in said former patents, and which need not be herein particularly described. This is adapted to be drawn across a sheet of metal by a pull-rod 2, the shear being guided in its course by a suitable track. This invention relates mainly to the track and the mounting of the shears thereon.

Referring to Fig. 1 the track may be first described. This, as now improved, is composed of two strips of flat steel (preferably cold-rolled stock) 3, with the outer edges very carefully and accurately straight-edged. A single strip would of course serve the same purpose, if its edges were perfectly straight and parallel. This could only be done by planing and careful fitting, and in practice it is found to be much less expensive to use two strips, truing one edge of each, and setting them to parallelism, which is very easily done. It is, furthermore, desirable to have a gap in the middle of the track, as will appear presently. The strips are attached by screws 4 to a wooden bar 5, and this may be fastened directly to a bench 6, or other suitable support, or by an intermediate bar 7, the latter being preferred. This makes a simple and inexpensive track, which is also light for shipment to the purchaser. Any slight shrinking or swelling of the wood that would tend to narrow or widen the track may be easily compensated for by an adjustment of the shear-guide fitted to the track.

In the other figures of the drawing the shear-guide is clearly illustrated. This is best formed of three pieces of heavy sheet steel. One of these is a broad, flat plate, 8, pierced for rivets or bolts at 9 and 10, the latter holes being slotted. To this plate is rigidly secured a folded side-plate 11. A similar side-plate 12 is attached at the other side by bolts 13 passing through the slotted holes in the main plate. By this means it is always possible to adjust the side-plates very nicely to the track, which overlaps the bar 5, as shown in Fig. 2.

The shear-guide is fastened at the front and rear to the shear. The front fastening is a simple screw 14, passing through a space-block 15 and into the lower stock of the shear. At the rear the connection is by a bracket 16, rigidly secured to the shear stock, but adjustably on the main-plate by the slotted hole therein and a bolt 17 passing through it and the bracket. The proper action of the shear depends mainly on this adjustment, and the adjustment itself is governed by unaccountable peculiarities of the shears, however accurately they may be duplicated. The only practicable way to secure such proper action, that is to say, the disposition of the shear to run in a straight line, without swerving and buckling, is to attach the guide in front, fasten it at the rear so it can slip, not too easily, and try it on the track in actual slitting, securing it at the rear when the shear inclines to run perfectly straight.

In my Patent No. 935,072 a vertical track was provided, with rollers mounted below the shear and straddling the track. This was a practical and satisfactory construction for most work, and in the hands of careful workmen. But for heavy, straight slitting, and especially if the workman was not careful to pull the shear in line with the work, there was a tendency on the part of the shear to tip, and then creep sidewise a little, spoiling the accuracy of the slitting line. In the case of the improved device herein described the shear is at all times

held perfectly true to the metal sheet, with no twisting or crawling action, even though drawn from off the line of slitting, as indicated by the pull-rod in Fig. 1.

By reference to Fig. 2 it will be seen that the gap in the middle of the track leaves plenty of room for the heads of the small bolts which fasten the guide-plates to the shear.

After slitting a sheet, the shear may be run straight back to the starting point, the left end of Fig. 1. This of course makes a little wear on the shear, and many operators prefer to carry the shear back and reenter it on the track for each cut. Accordingly provision is made for doing this with the least possible trouble and delay. A part of this consists in beveling the tracks at the entering end, as shown at 19, and a part in giving the guide a bell-mouthed opening 20 at its front end. I further provide forwardly extending lips 21 to catch the top of the entering end of the track when the shear is brought down to position. The shear may now be brought to an approximately true position with respect to the track, and quickly drawn on the track, with practically no loss of time.

As will be evident, the projecting structure at the left in Fig 2 is the gage, which need not be described.

Having thus described my invention, I claim:

1. In a metal-slitting shear of the designated type, the combination of a track having parallel sides and a tapered entering end, and a shear-guide embracing the sides of the track at the top, bottom and edges, and provided with a vertically flared mouth to readily admit the entering end of the track.

2. Combined with a track having tapered sides at the entering end, a shear-guide embracing the track at each side on the top, bottom and edge, and having its top portion extended forward of the sides and bottom portions, whereby the guide may be rested on the end of the track before entering, substantially as described.

3. A shear-guide composed of a top-plate and a pair of folded lower-plates, one permanently attached to the top-plate, as by rivets through the plate and the upper fold of the lower-plate, and the other lower-plate attached by bolts through its upper fold and through the top plate, the holes for said bolts being slotted to allow for lateral adjustment.

4. The combination with a metal slitting shear of the type herein designated, of a guide, comprising a track, a guide-plate adapted to slide thereon, means adapted to secure the guide-plate adjustably to the under side of the shear at the rear, and a pivotal connection of the guide-plate and said shear at the front, whereby the shear may be alined for work by fastening somewhat loosely at both connections, drawing the shear along its track until it finds its own alinement for clean cutting, and then securing the guide-plate tightly at the front and rear.

In testimony whereof I affix my signature in presence of two witnesses.

CLINTON DE WITT WAGNER.

Witnesses:

E. W. WINTER,

J. M. ST. JOHN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."