J. G. CLARK.

MACHINES FOR PUNCHING METALLIC LATH.

No. 186,109. Patented Jan. 9, 1877.

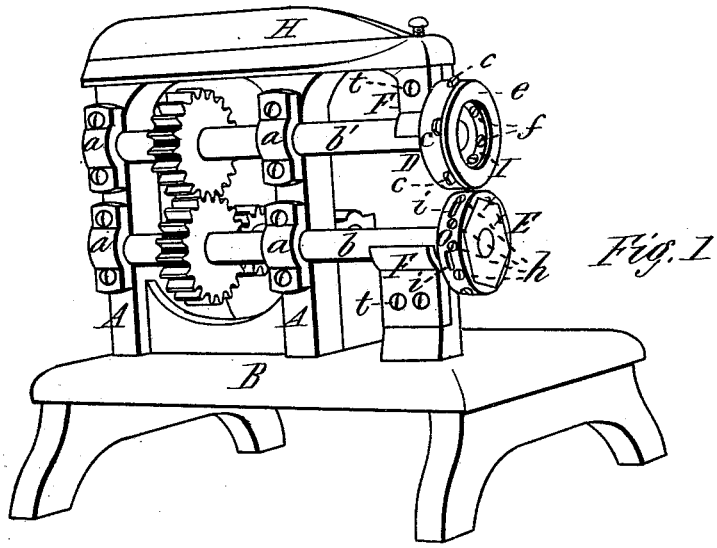

Fig. I

Fig. II

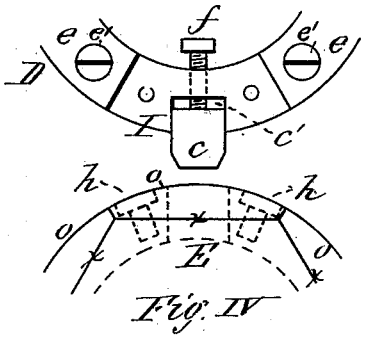

Fig. IV

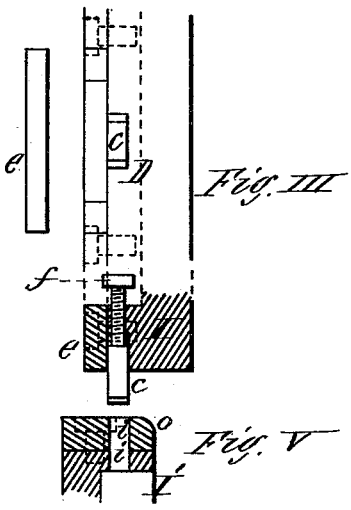

Fig. III

Fig. V

Witnesses,

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UNITED STATES PATENT OFFICE.

JULIUS G. CLARK, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO GEORGE DWIGHT, JR., & CO.

IMPROVEMENT IN MACHINES FOR PUNCHING METALLIC LATH.

Specification forming part of Letters Patent No. **186,109**, dated January 9, 1877; application filed March 28, 1876.

To all whom it may concern:

Be it known that I, JULIUS G. CLARK, of Springfield, in the State of Massachusetts, have invented a new and useful Machine for Punching Iron Lath; and that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification and description.

The object of my invention is to punch holes in sheets or strips of iron rapidly and at any desired distance apart; and to this end my invention consists of two wheels or disks, one provided with a series of punches operating in a rotary manner, and arranged to be adjusted to the desired length, and held in place by clamping-plates secured against their sides, the other disk being provided with dies or counters to fit said punches.

Figure I is a perspective view of my invention. Fig. II is a side view of a portion of the punch-wheel, showing the manner of adjusting the dies. Fig. III is a top view of the same with the rim in section at I. Fig. IV is a side view of a portion of the die-wheel, showing the manner of securing the dies. Fig. V is a top view of the same with the rim in section at I′.

In the drawing, B represents the base of the machine, having two standards, A, extending upward therefrom with a strengthening-piece, H, connecting them. The shafts *b* and *b′* have their bearings in these standards at *a*, and additional stay-bearings F are provided for the shafts, one upon the base below the lower shaft, and one upon the elongated part of the piece H above the upper shaft. Upon the end of the upper shaft is fixed a disk or wheel, D, having a series of recesses, *c′*, in the rim I, in each of which is fitted a punch, *c*, and this punch may be adjusted to project outward from the rim any desired distance by a screw, *f*, turned into the rim and against the inner end of the punch, as shown clearly in Fig. II, and each punch is held firmly in place by a clamp-plate, *e*, secured to the side of the rim, and against the side of the punch by bolts *e′*. Directly below this wheel D is another wheel, E, of the same size, and attached to the end of the lower shaft *b*, and the periphery of this wheel, instead of being circular, is composed of a series of plain flat sides, *x*, forming a polygonal-shaped wheel, and the rim I′ of this wheel projects, although in an opposite direction, from the rim of the other wheel, as shown in Fig. V, and a series of holes, *i*, extend through the rim I′. Fitted to each plane *x* is a die, *o*, secured by bolts *h*, and having a hole, *i*, corresponding in position with that through the rim I′, and the latter as well as the inner part of that in the die may be somewhat larger than the outer part, to permit the pieces punched out to drop through readily, and the exterior of each die *o* is circular, so that each die is of a segmental form, and when all are secured in place their combined exterior surfaces form a circular or cylindrical wheel, as shown clearly in Fig. IV. Each shaft has fixed thereon a toothed wheel, the teeth of which engage with each other, causing both shafts to revolve with equal velocity when motion is communicated to either, and one of said toothed wheels may be divided diametrically, one part being provided with slots, through which are inserted bolts, which secure the two parts together.

When the teeth of the wheels become so much worn as to occasion lost motion, the bolts are loosened and the two parts of the wheels are moved-in opposite directions as far as possible, while the teeth are engaged with those of the wheel below, and the bolts are then tightened again, and all lost motion is thereby taken up, and both shafts are caused to revolve with the same velocity, and the punches will operate more perfectly in the dies, and with less tendency to wear.

In practice I prefer to make the dies *o* of hardened steel, and the punches of soft steel, as in that case when the punches become worn from use their ends may be upset with a hammer and properly smoothed, and when inserted in place and adjusted properly the punch will be forced into the hardened die and the superfluous metal sheared off, and the punch made sharp and perfectly fitting the die. If the dies become worn they may be removed, softened, properly sharpened, and formed, and secured in place again, and as the punches become gradually worn off from con-

stant use, they may be set out farther by the screws *f* turned against their inner end.

In order that the wheels D and E may be firm one against the other, and the punches and dies thereon operate properly, a bearing, F, is arranged upon the base of the machine below the lower shaft, and one is also arranged upon the end of the piece H just above the upper shaft, and both may then be adjusted to fit the shafts by means of the screws or bolts *t*.

It will be seen that the holes *i* in the dies *o* are nearer to one edge of the wheel than the other, so that in punching the holes in corrugated strips, for lathing, the strips may be held at an angle of forty five degrees to the punches, the holes thereby being made, not the top or crown of the corrugations, but midway between, while the crown of the corrugation will rest upon the edge or corner of the lower wheel.

These rotary punches and dies may be run at a high rate of speed, sufficient to punch at least four thousand square feet of lath in a day by one man, whereas heretofore each hole has been punched by hand.

Having thus described my invention, what I claim as new is—

A series of punches operating in a rotary manner, arranged to be adjusted to the desired length by the screws *f* turned through the rim of the rotating disk or wheel, and held in place by means of the clamping-plates *e* secured against the side of the said disk, substantially as set forth.

JULIUS G. CLARK.

Witnesses:
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