

(Model.)

2 Sheets—Sheet 1.

J. B. SUTCH.

MACHINE FOR BENDING NUT LOCKS.

No. 299,293.

Patented May 27, 1884.

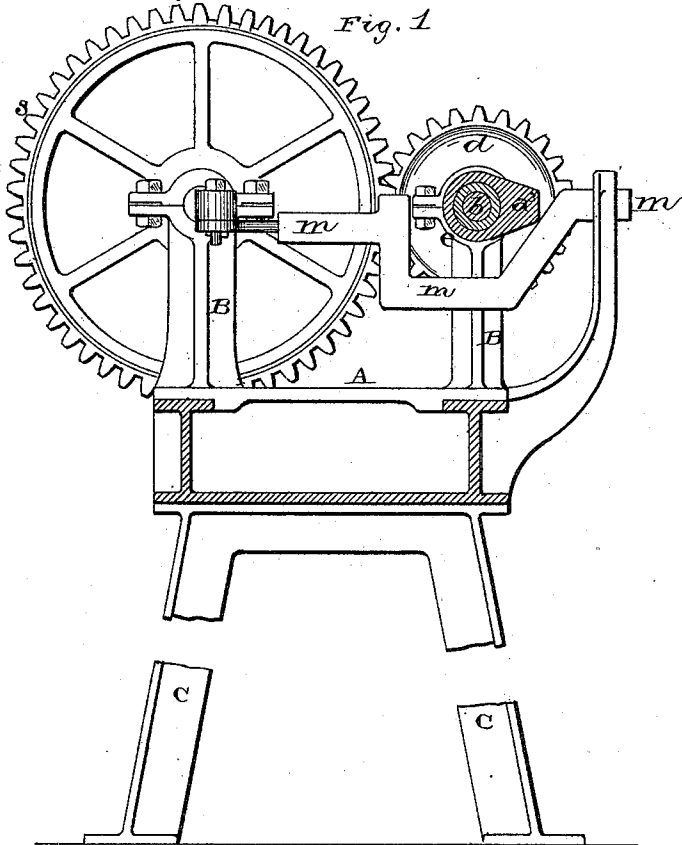
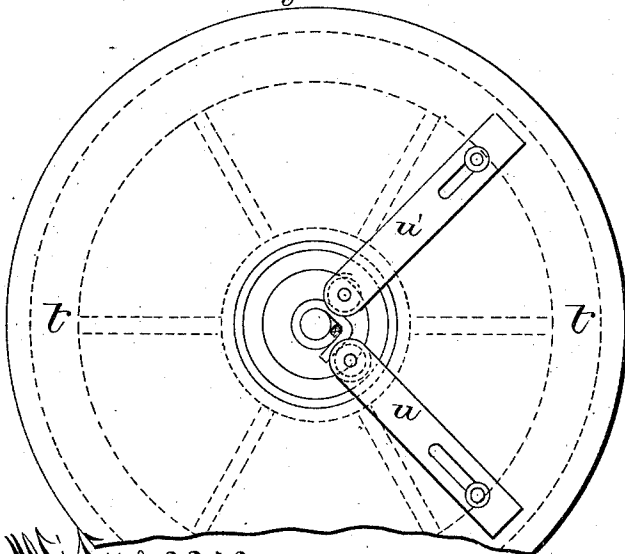


Fig. 3.



Wm. F. Messers.
Louis F. Chandler
W. C. Wolfe,

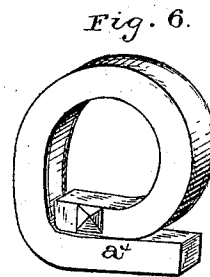
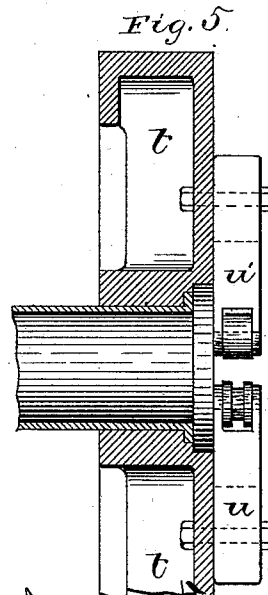


Fig. 6.



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(Model.)

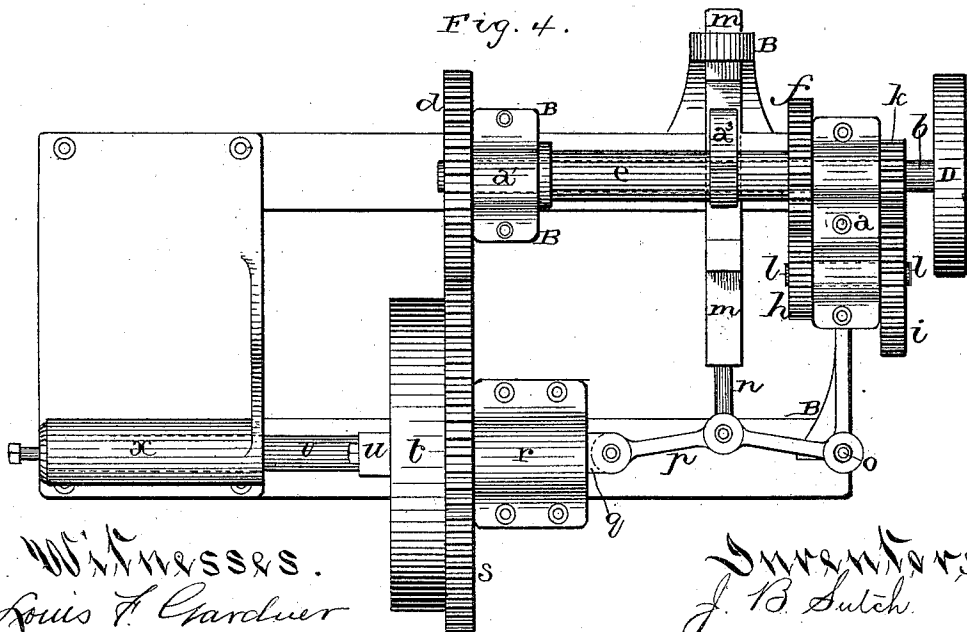
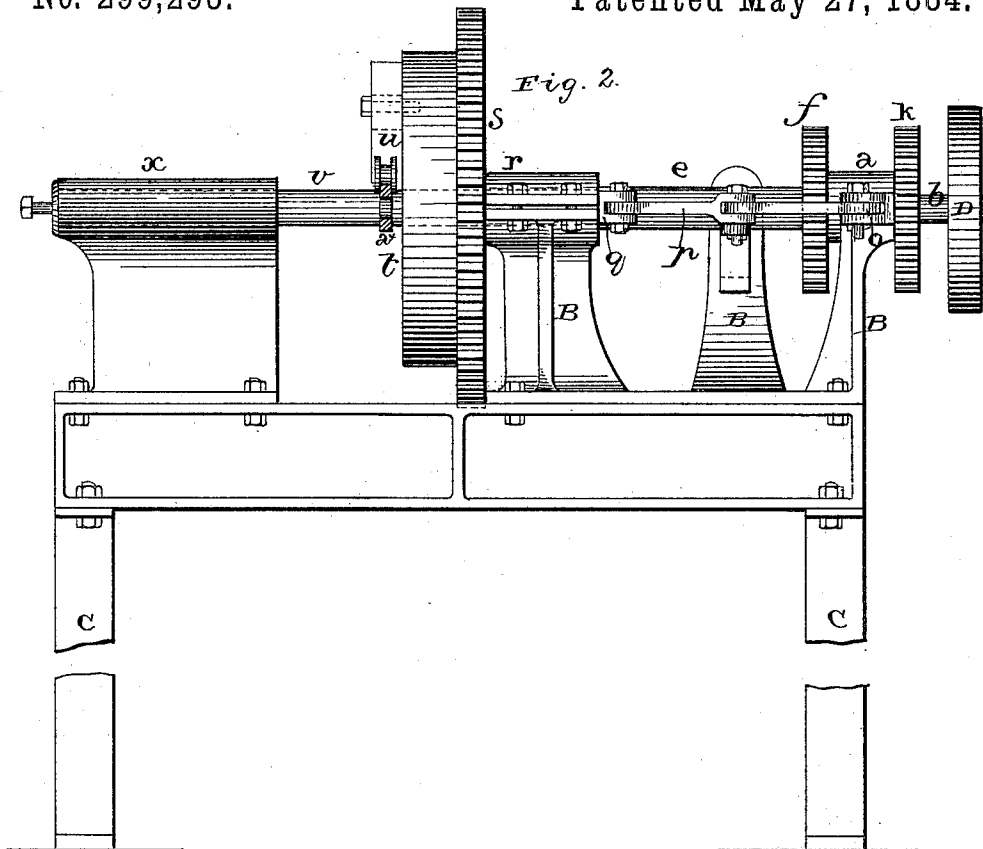
2 Sheets—Sheet 2.

J. B. SUTCH.

MACHINE FOR BENDING NUT LOCKS.

No. 299,293.

Patented May 27, 1884.



Witnesses.
Louis F. Cardner
W. C. Wolfe.

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UNITED STATES PATENT OFFICE.

JOHN B. SUTCH, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR BENDING NUT-LOCKS.

SPECIFICATION forming part of Letters Patent No. 299,293, dated May 27, 1884.

Application filed February 17, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOHN B. SUTCH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Bending Nut-Locks, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in machines for bending blanks for nut-locks such as described in Letters Patent No. 257,782, granted to me on May 9, 1883; and it consists in a combination of various details, hereinafter described.

The accompanying drawings represent my invention.

Figure 1 is a vertical cross-section of a machine embodying my invention. Fig. 2 is a side elevation, and Fig. 4 a plan view, of the same. Figs. 3, 5, 6, are detail views of the same.

At one side of the bed-plate A are supports for bearings *a* and *a'* of the driving-shaft *b*. On the front end of the shaft *b* is a driving-pulley, D, and on its rear end a cog-wheel, *d*. Between the bearings *a* and *a'* the shaft *b* is surrounded by a sleeve, *e*, and on this sleeve, adjoining the bearing *a*, is a cog-wheel, *f*, that turns the sleeve. The cog-wheel *f* gears with a smaller one, *h*, secured to the end of a short shaft, *l*, that runs parallel with the shaft *b*, and has on its other end a cog-wheel, *i*, that gears with a smaller one, *k*, on the driving-shaft *b*, placed between the pulley D and the bearing *a*. The wheels *k* and *h* have the same diameter, and also the wheels *f* and *i*, but the latter two are larger than the former.

On the sleeve *e* is a cam, *a*³, that when revolving moves a yoke or frame, *m*, shaped as shown in the drawings, Fig. 1. The form of the yoke is such as to move, when acted upon by the cam, with alternating speed during one revolution, and at a right angle with the shaft *b*.

To the yoke *m* is attached the rod *n*, to which a knuckle-joint, *p*, is pivoted, of which joint one arm is pivoted at *o*, and the other pivoted to a plunger, *q*, that is thereby drawn back and again pushed forward at every rotation of the sleeve. The plunger *q* slides in the hol-

low axle or shaft *r* of the cog-wheel *s*, that gears with the cog-wheel *d* at the end of the driving-shaft *b*. Attached to the wheel *s* is a disk, *t*, rotating with it, to the face of which are radially adjusted at a distance from each other the bars *u* and *u'*, that carry at their inner ends rollers, of which the one on the bar *u* is grooved and the other smooth on its circumference.

Opposite to the end of the plunger *q* is a dead-head, *x*, against which a mandrel on the plunger abuts, and from which it retires once during each rotation of the wheel *s* and disk *t*. The dead-head *x* is adjustable and its diameter equal to that of the plunger, and when the mandrel projecting from the end of the plunger is brought in contact with it a narrow open space, as wide as the blank to be inserted, is left around the mandrel between the plunger and the dead-head. The face of the dead-head against which the mandrel abuts is flat, but slightly raised at its upper edge to narrow at that place the space between it and the plunger. When the end of the blank having the point underneath is placed on its side into the open space over and around the mandrel between the dead-head and the plunger, it is held by the raised portion on the face of the dead-head and the plunger until the revolving disk has nearly made one rotation. The grooved roller at the inner end of the bar *u* being at a greater distance from the mandrel than that of the bar *u'*, which follows after it, first comes in contact with the blank at a short distance from the mandrel and begins to bend it loosely around the mandrel. The bar *u'*, with the smooth roller following the former, and being nearer to the mandrel, bears down on the loosely-bent shank and hugs it firmly, giving it a circular form, all but the end held between the dead-head and plunger, which, not being acted on, remains nearly straight. When the bar *u'* has made about two-thirds of a circle, the bar *u* has already passed beyond the inner end of the blank, and at this point, before the bar *u* has had time to press down the outer end of the blank, the plunger is drawn back, releasing the blank, causing it to drop from between the dead-head and the plunger. On examining the blank when finished the action of the rollers is plainly

visible, showing where their operation ceased. Beginning at the inner end, no curvature will be discovered until at a short distance from it a regular curve commences and continues to the point where the action of both rolls is stopped, the foremost being already beyond this point, leaving the outer end straight, because the blank has escaped before this bar has had time to bend it to a circular form.

10 Having thus described my invention, I claim—

1. In a machine for bending metal, the combination of the wheel *s*, and a suitable operating mechanism, with the disk which is attached to the wheel, the adjustable bars *u u'*, attached to the disk, the plunger *g*, and the mandrel *v*, substantially as shown.

2. The combination of the wheel *s* and a suitable operating mechanism therefor, the plunger *g* and the mechanism for reciprocating it,

with the disk *t*, the adjustable bar *u*, provided with a grooved roller at its inner end, the adjustable bar *u'*, provided with a smooth roller, and the mandrel *v*, substantially as described.

3. The combination of the driving-shaft *b*, having upon one end the pinion *d*, and the wheel *s*, which is driven by the pinion, and which carries the disk *t*, provided with the adjustable arms *u u'*, with the cam *a'*, which is operated by a mechanism of its own, a yoke, *m*, which operates the toggle-joint connected with the plunger *g*, and the mandrel *v*, the parts being constructed and arranged to operate substantially as specified.

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

JOHN B. SUTCH.

Witnesses:

W. C. MCELHENY,
T. F. LEHMANN.