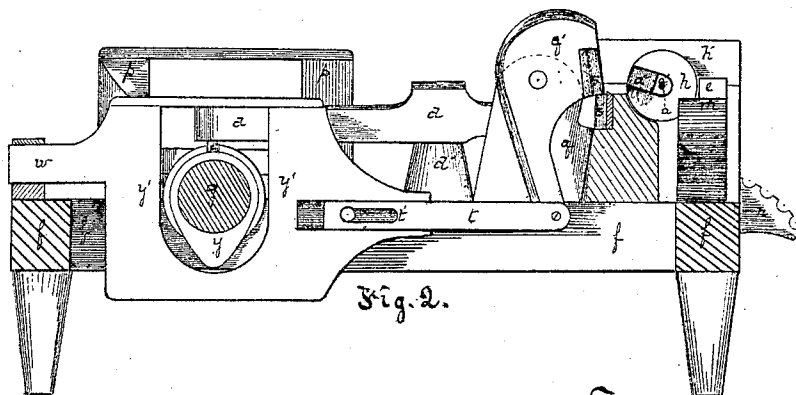
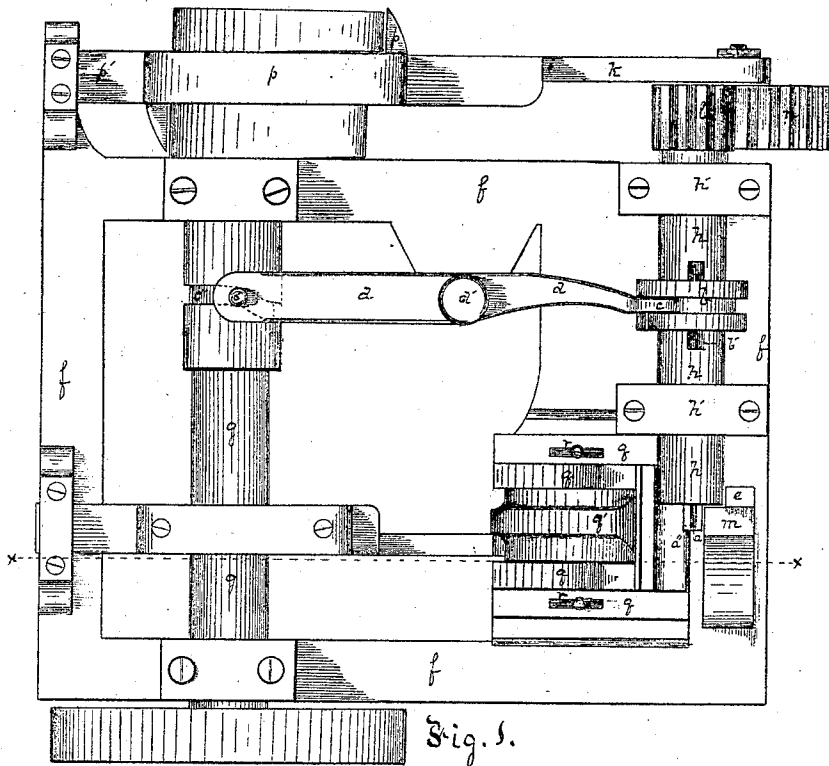


WILLIAM J. LEWIS.

Improvement in Machines for Making Strap-Hinges.

No. 114,019.

Patented April 25, 1871.



Witnesses:

R. C. Menckhoff
B. L. Wood Jr.

Inventor:

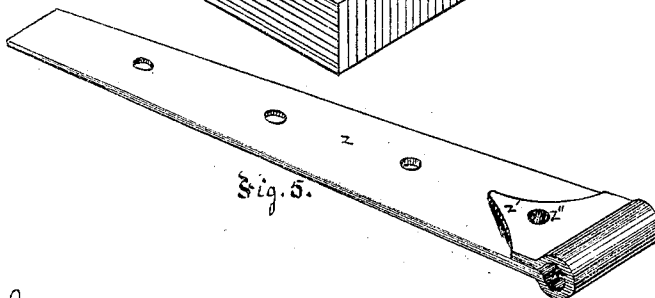
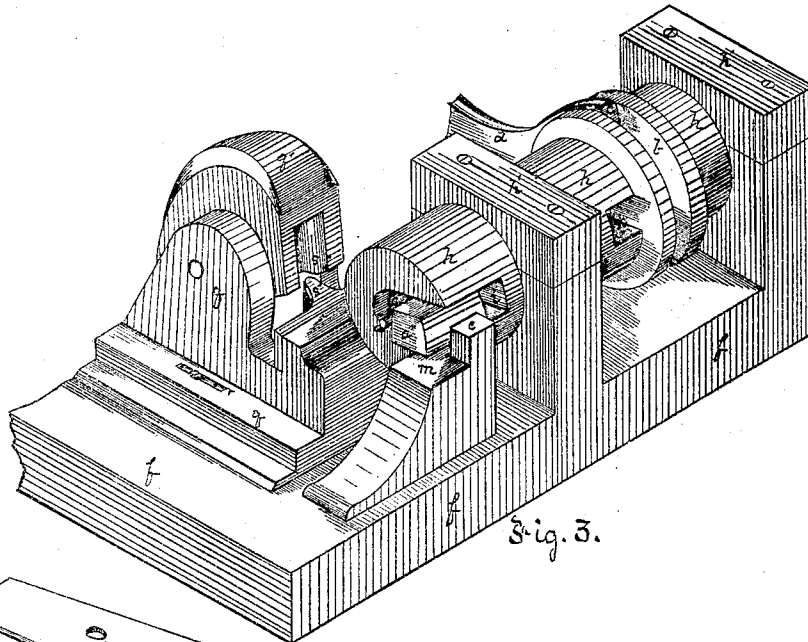
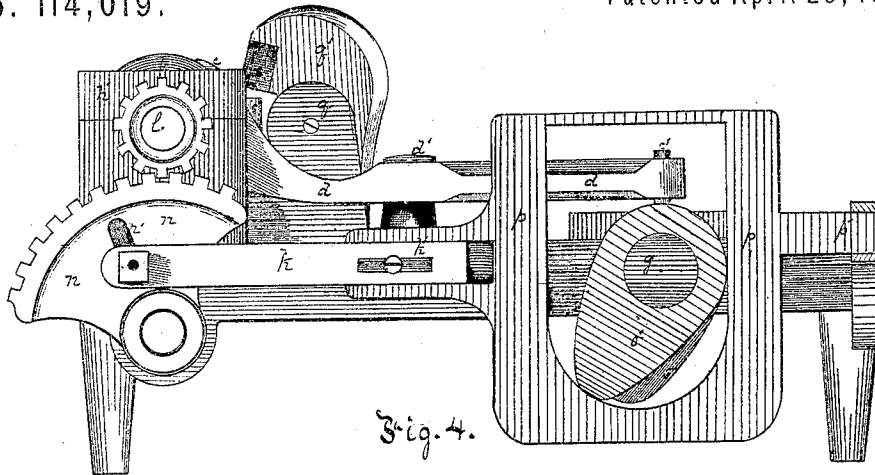
William J. Lewis,
by Bakewell & Knisly,
his Attys.

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Improvement in Machines for Making Strap-Hinges.

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Witnesses:

R. C. Wrenshall
B. E. Ward Jr.

Inventor:

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his Attys.

United States Patent Office.

WILLIAM J. LEWIS, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 114,019, dated April 25, 1871.

IMPROVEMENT IN MACHINES FOR MAKING STRAP-HINGES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM J. LEWIS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machine for Making Strap-Hinges; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of my machine;

Figure 2 is a sectional elevation in the line *x x*, fig. 1;

Figure 3 is a detached perspective view of the shears and bending devices;

Figure 4 is a side elevation of the rear or further side of the machine; and

Figure 5 is a perspective view of the hinge complete.

My invention relates to the construction of a machine for trimming and bending the female half of a strap-hinge, and consists in the combinations of devices hereinafter set forth and claimed.

The female or eye-half of strap-hinges have heretofore commonly been made by forging the end of a strap over a mandrel, and welding the ends so bent over down into the body of the strap by manual labor. This mode of manufacture is slow, laborious, and with it it is difficult to make the hinge of good finish, with a good weld, and without burning the iron.

By my improvement I obviate all these defects, make the hinges more rapidly with less labor, and produce a good and durable article.

To enable others skilled in the art to make and use my improvement, I will proceed to describe its construction and mode of operation.

The frame *f* may be of any suitable or convenient construction.

On it, by suitable bearings, I mount a driving and cam-shaft, *g*, to which power may be applied by a crank or in other known suitable way.

In suitable bearings *h'* in the opposite end of the machine is a bending-spindle, *h*, on one end of which is a pinion, *l*, and on its opposite end is an anvil or rest, *m*, the upper face of which latter is a little below and a little outside of the center of the spindle *h*.

This bending-spindle *h* is made hollow through a part of its length, and in such hollow part a mandrel-stem, *a'*, is arranged, with a connection to a grooved collar, *b*, which is arranged on the spindle *h*, the spindle being mortised, as at *b'*, so that room may be made for such connection and for the movement of the same in sliding the mandrel-stem *a'* in and out.

The mandrel-stem *a'* carries a mandrel, *a*, at its outer end of the size to be given to the eye of the hinge.

The outer end of the spindle *h* is also mortised, as at *i*, so as to make room for the bending and swaging-block *a''*, which is rigidly attached to the stem *a'*.

The reciprocating or out-and-in motion to be given to the stem *a'*, mandrel *a*, and block *a''* is secured by means of a lever, *d*, which is pivoted to a fixed fulcrum, *d'*, has a fork, *c*, at one end to enter the groove of the collar *b*, and at its other end a pin, *c'*, which enters a spiral groove, *c''*, in the driving-shaft *g*.

The spindle *h* is caused to rotate alternately each way by means of a segmental wheel, *n*, which is pivoted to some fixed support, and which meshes into the pinion *l*.

It is operated either way by a shaft, *k*, which leads from the cam-yoke *p*, in which yoke are arranged two cams *o o'*, so that, acting alternately against opposite faces of the yoke, they shall cause the desired motions to be imparted to the segmental wheel *n*.

The yoke *p* is supported by sliding ways *p'* or in other suitable manner.

The connections of the shaft *k* are adjustable at each end by means of the slot *n'* in the segmental wheel *n* and the slot *k'* in the opposite end of the shaft *k* where it joins the cam-yoke *p*, for purposes obvious to those skilled in the art.

On the side of the mandrel *a* opposite to the anvil *m* are arranged the shears *s s'*, with cutting-edges of the form to be given to that end of the hinge-strap which is to be bent or folded over.

The stationary knife or shear *s'* is set in a frame, *q*, which is adjustably, by means of slots *r*, attached to the frame *f*.

The other knife or shear *s* is set in a rocking head, *q'*, which latter is pivoted in the frame *q*, and to which the desired motions are imparted by the use of a shaft, *t*, leading from a cam-yoke, *y'*, in which operates the cam *y*.

This connection is also adjustable, as shown at *t'*.

The yoke *y'* is supported by the sliding way *w*.

On the anvil or rest *m*, flush with the end of the spindle *h*, is a stripper, *e*.

The operation is then as follows.

The devices being in the position shown in fig. 1, the blank *z* unbent is fed in along the face of the anvil *m*, between the mandrel *a* above and the block *a''* below, in between the shears any desired distance for trimming.

By the cam *y*, yoke *y'*, and shaft *t* the shears *s s'* are put in operation to trim the blank. Then, by the cam *o*, yoke *p*, shaft *k*, segmental wheel *n*, and pinion *l*, the spindle *h* is caused to revolve with a quick stroke, the result of which is that the block *a''* carries the end *z'* of the blank over, folds it around the mandrel *a*, and lays it down on the body of the blank back of the eye, and brings it to the form illustrated in fig.

5; the devices then being in the position shown in fig. 3. Then, by the spiral groove *c''* and lever *d*, a throw is given to the collar *b*, which carries back with it the stem *a'*, mandrel *a*, and block *a''*, and the hinge-eye is stripped off the mandrel by means of the stripper *c*.

By continuing the revolution of the driving-shaft *g* the devices described are all brought back to the original positions, their motions being reversed in every case.

The shears are opened; the spindle *h* is by the segmental wheel *n* revolved back, and the mandrel *a* and block *a''* are thrown out again, so as to be ready for a new feed. In this way the work goes on continuously and with great rapidity.

The object of the slot *n'* in the segmental wheel *n* is to vary the length of throw of the bending-block *a''*, which is important, so as to adapt the latter to bending straps of different thicknesses.

A bolt-hole, *z''*, is then, in addition to the holes usually made, punched through the folded end *z'*, and the half-hinge described is ready for sale or use; or the end *z'* may be welded down, if so preferred.

The same devices may be employed in bending the strap part of the male half of the hinge, in which case a pin may be inserted in the eye *v* and welded there. This obviously will make the male half of the hinge.

I also use the machine to bend the end of a blank to form a hinge-eye in that class of hinges in which the folded end *z'* is not required, but merely an eye at the end of the strap.

I also employ it for turning eyes on the ends of metallic straps generally.

It will be observed that the anvil *m* performs not only the function of a guide when the blank is being fed in, but also its proper function—that of an anvil, onto which the block *a''* swages or forces down the two folds or layers of the strap, so as to give a perfectly-shaped and well-formed eye.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of rotating spindle *h*, mandrel *a*, stem and block *a'* and *a''*, the anvil *m*, and mechanism for reciprocating said stem, substantially as and for the purposes set forth.

2. The devices of the previous claim, in combination with a stripper, *c*, substantially as described.

3. In combination with the devices set forth in first clause of claim, the shears *s s'*, substantially as and for the purposes set forth.

4. The segmental wheel *n*, slotted, as at *n'*, so as to be capable of a variable length of stroke, in combination with the spindle *h*, arranged substantially as described, for causing the latter to revolve alternately in opposite directions.

In testimony whereof I, the said WILLIAM J. LEWIS, have hereunto set my hand.

WILLIAM J. LEWIS.

Witnesses:

A. S. NICHOLSON,
G. H. CHRISTY.