H. W. OLIVER, Jr.

MACHINES FOR MAKING TIE BUCKLES FOR BALE BANDS.

No. 182,531. Patented Sept. 26, 1876.

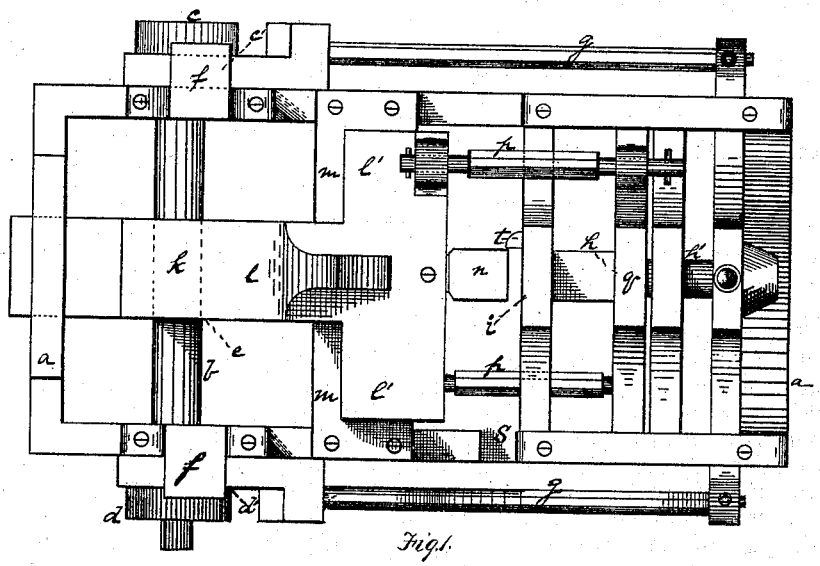

Fig.1.

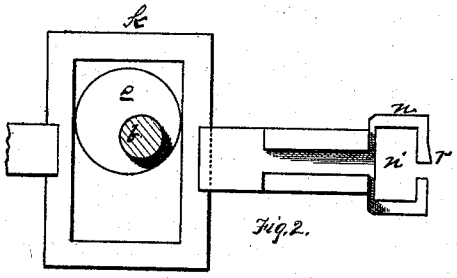

Fig.2.

Fig.3.

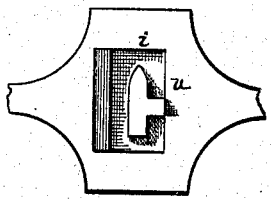

Fig4

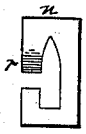

Fig.5.

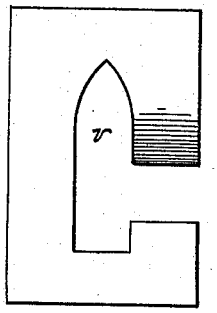

Fig.6.

Fig.7.

Witnesses.

James Smith

James J. Kay

Inventor.

Henry W. Oliver Jr.

by Bakewell & Kerr

Attorneys

UNITED STATES PATENT OFFICE.

HENRY W. OLIVER, JR., OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR MAKING TIE-BUCKLES FOR BALE-BANDS.

Specification forming part of Letters Patent No. **182,531**, dated September 26, 1876; application filed April 24, 1876.

To all whom it may concern:

Be it known that I, HENRY W. OLIVER, Jr., of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for the Manufacture of Tie-Buckles; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a plan view of the machine. Figs. 2, 3, 4, and 5 are views of the dies and punch. Figs. 6 and 7 are side and edge views of a tie-buckle made on my machine.

Like letters indicate like parts in each.

In the manufacture of that class of tie-buckles for use in baling cotton and other articles, having a set-up lip to permit the easy insertion of the bale-band, it has been customary to put the buckle through two distinct manipulations: first, the iron was punched cold to form the slot; and, second, the lip was set up by a stamp while cold. This method, which has been regarded as necessary in making these articles, required the use of a very high quality of iron, because the great strain to which the thin plate or blank was put would either break off the lip when being bent, or weaken it greatly, so that it was liable to break at any time.

My invention enables me to dispense with one of these machines, obviates the necessity of the second operation, and permits me to use, with a better result, an inferior and much cheaper quality of iron, thereby saving time, labor, and expense.

It consists in a machine for making the buckle and setting up the lip while hot at one operation, by the use of suitable improved dies.

The machine has a frame, *a*, upon which the working parts are mounted. At one end is a shaft, *b*, carrying two double cams, *c c' d d'*, and an eccentric, *e*. The double cams operate in the yokes *f f*, and cause cams *c* and *d* to advance, and cams *c'* and *d'* to retract, the sliding frame *g*, which carries and operates the punch *h* and female die *i*. The eccentric *e* works in the yoke *k*, and thereby moves the reciprocating slide *l*, which, being chambered in the part *l'*, moves over the part *m* as a bed and guide. The slide *l'* operates die *n*, and, by means of the rods *p p*, the stripping-plate *q*. The die *n* has an open chamber, *n'*, in the rear for the discharge of the punchings. One of the lips of the die *n* is raised, as shown at *r*, while the corresponding portion of the die *i* is sunken. This is to effect the setting up of the lips of the buckle.

The operation of the machine is as follows: A bar of suitable shape, being properly heated, is fed into the machine, through the opening *s*, against the stop *t*. The die *n* then advances and forces it against the die *i*, and into the surrounding die-box *u*, against the edge of which the blank is cut off from the bar. Then, while it is held between the two dies, the punch *h* advances, working through die *i*, and punches the slot or opening *v*. During the last part of the advance of the punch the die *i*, being caught by an enlargement or key on the punch-shaft *h'*, is caused to advance also, and to compress the blank between the dies, and to set up the lip *v'*. The further rotation of the shaft *b* causes the retraction of the dies and the punch, while the stripper-plate *q*, being drawn with the slide *l'*, encounters the die *i*, which is moving back, and carries it forward, thereby stripping the buckle off the punch and permitting it to fall to the floor.

By this means I am enabled to combine the heretofore separate operations of punching the buckle and setting up the lip in one operation, thereby avoiding the use and expense of a second machine and operation.

In addition to a large saving of time, labor, and expense of machinery, I get a more uniform and better product. In the previous method, although a much better quality of iron was necessarily used, the buckles were often broken by the setting up of the lip, and often, after being attached to the band, were broken when used, entailing a great hardship on the user, who thereby loses the entire bale-band also. This is entirely obviated by my improvement, as the iron, being in a fractory condition, submits to the operations of punching and setting up without being unduly strained, instead of the violent strain which was formerly put on it in both of the two operations. For this reason I am enabled to use, with better and more satisfactory result to both manufacturer and user, a much inferior

grade of metal. I find by experience that I can use, with the above result, iron of at least twenty per cent. lower grade than that formerly used in the manufacture of these articles. This is a large and constant saving resulting from my invention.

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

1. The combination of the punch *h* and the dies *i* and *n*, one having a projection and the other a corresponding depression, for the purpose of forming, in the operation of punching the buckle, the free lip, and of setting up the same, as described.

2. In combination with the hollow die *n*, having a projection, *r*, the die *i*, having a corresponding depression, the die-box *u*, and punch *h*, operating substantially as and for the purposes set forth.

In testimony whereof I, the said HENRY W. OLIVER, Jr., have hereunto set my hand.

HENRY W. OLIVER, JR.

Witnesses:
JAMES SMITH,
JAMES I. KAY.