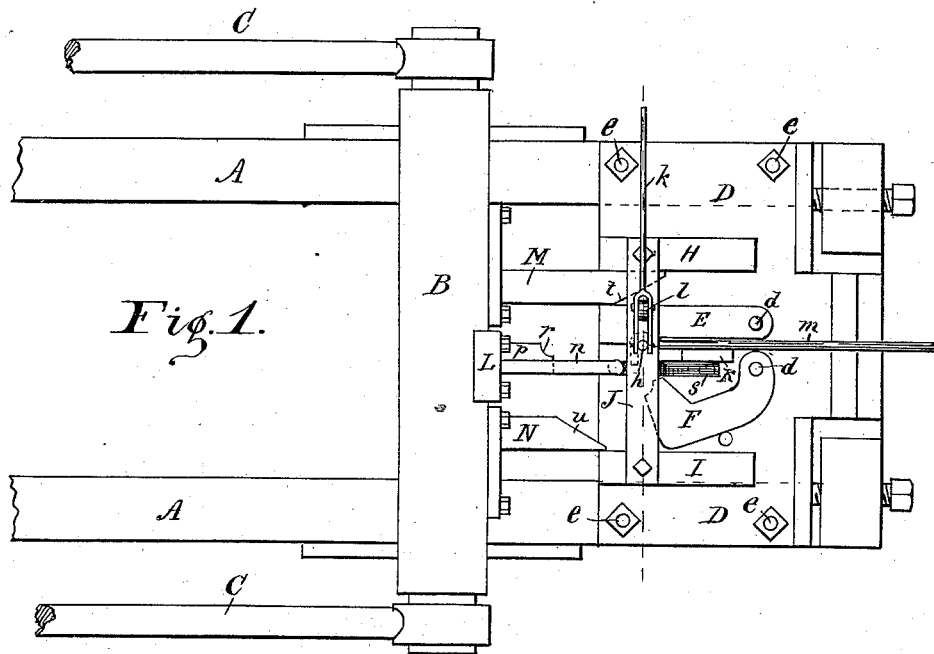


C. O. WILDER.

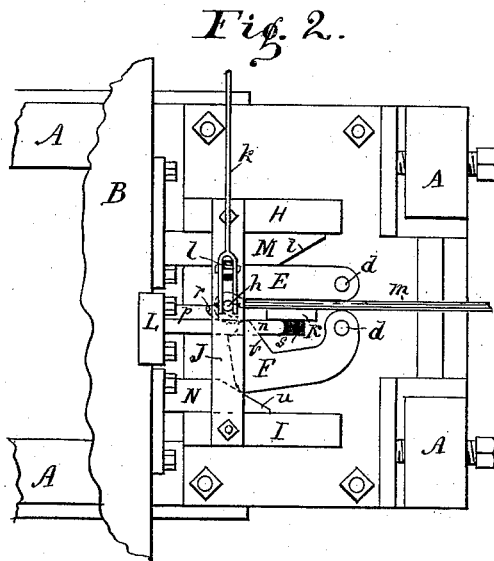
MACHINE FOR FORMING EYES ON RODS.

No. 383,084.

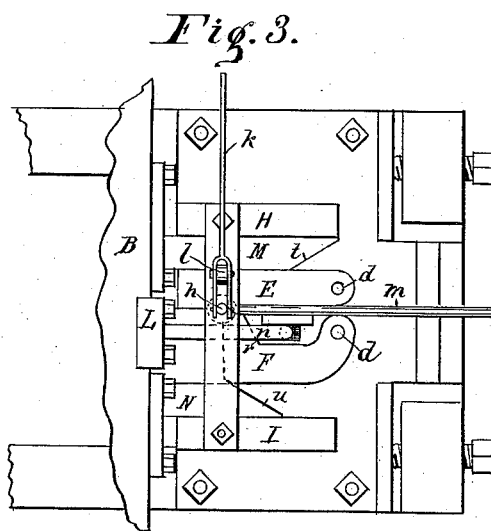
Patented May 15, 1888.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

Witnesses  
A. M. Hood,  
C. H. Hood.

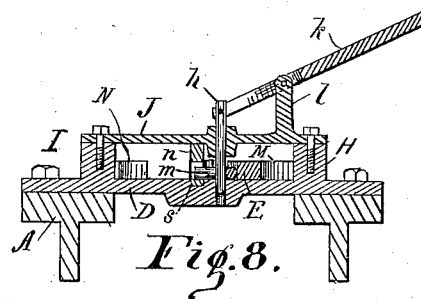
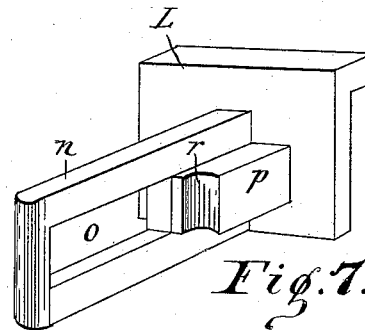
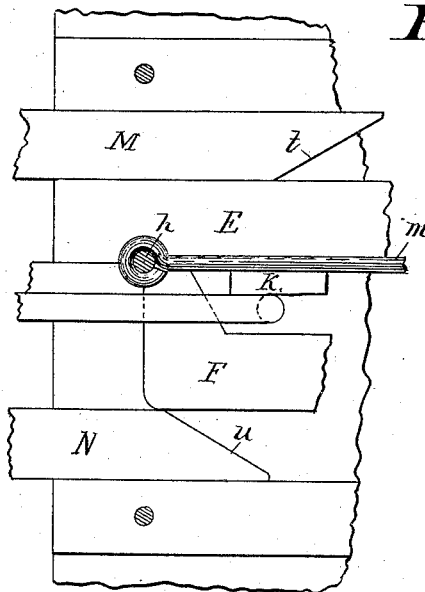
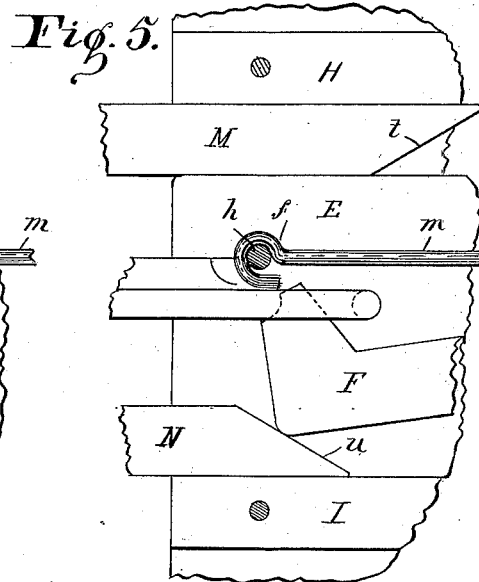
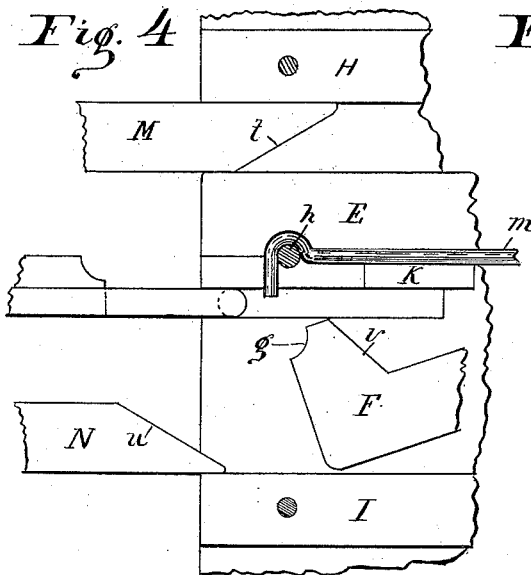
Inventor  
Charles C. Wilder  
By His Attorney  
H. P. Hood.

C. O. WILDER.

MACHINE FOR FORMING EYES ON RODS.

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Witnesses:  
A. M. Hood.  
C. K. Hood.

Inventor.  
Charles O. Wilder.  
By His Attorney  
H. P. Hood.

# UNITED STATES PATENT OFFICE.

CHARLES O. WILDER, OF SOUTH BEND, INDIANA, ASSIGNOR TO WILLIAMS,  
WHITE & CO., OF MOLINE, ILLINOIS.

## MACHINE FOR FORMING EYES ON RODS.

SPECIFICATION forming part of Letters Patent No. 383,084, dated May 15, 1888.

Application filed September 12, 1887. Serial No. 249,463. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES O. WILDER, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented a new and useful Improvement in Machines for Forming Eyes on Rods, of which the following is a specification.

My invention relates to an improved machine for forming eyes on rods, as in car-coupling pins, eyebolts, and like devices.

The object of my improvement is to form an eye on the end of a rod by means of a machine having a reciprocating head arranged to move on a fixed bed-frame, and suitable dies secured to said bed-frame and reciprocating head, the dies being so formed and arranged that a complete eye may be formed at each movement of the reciprocating head, all as hereinafter fully described.

The accompanying drawings illustrate my invention.

Figure 1 is a plan showing the position of the parts when the first bend has been made. Fig. 2 is a similar plan showing the position of the parts when the second bend has been made. Fig. 3 is a similar plan, showing the position of the parts when the eye is completed. Figs. 4, 5, and 6 are views, on an enlarged scale, of the dies when in the position shown in Figs. 1, 2, and 3, respectively. Fig. 7 is a perspective view of one of the dies. Fig. 8 is a vertical section at *a*, Fig. 1.

My improvement is adapted to be used on any of that well-known class of machines having a bed-frame to which the main portion of the dies may be secured, and a reciprocating head, to which the remainder of the operating parts may be secured. As such machines are well known, I do not here illustrate the machine in full, but only such parts as are necessary to illustrate my improvement.

A is the bed-frame, on which the cross head B is reciprocated by means of the connecting-rods C C, which are attached to suitable driving mechanism. (Not shown.)

D is a heavy cast-iron plate having a pair of swinging jaws, E F, pivoted thereto at *d d*, the plate being rigidly secured to the bed-frame by bolts *e e*. Jaw E is provided with a

semicircular notch, *f*, corresponding to one-half of the exterior circumference of the eye to be formed. Jaw F is provided with a notch, *g*, corresponding to one-fourth of the exterior circumference of the eye to be formed.

Projecting upward from plate D are a pair of parallel guide-bars, H and I. A cross-bar, J, is secured at each end to the upper edges of the guide-bars, and a cylindrical pin, *h*, is mounted centrally in the bar J, so as to slide vertically therein. Pin *h* is raised and lowered by means of the lever *k*, which is pivoted to the pin and to a standard, *l*, erected on bar J.

K is a straight-edged block projecting upward from the surface of plate D, and arranged to support one side of the rod *m*, on which the eye is turned.

L is a die having a projecting portion, *n*, Fig. 7, in which is a transverse mortise, *o*, and having also a solid portion, *p*, in which is a notch, *r*, corresponding to one-fourth of the exterior circumference of the eye to be formed. Die L is rigidly secured to the reciprocating cross-head B and is arranged to slide in a groove, *s*, in the surface of plate D.

M and N are projecting studs secured to the cross-head B and arranged to slide against the inner opposed surfaces of the guide-bars H and I. The ends of studs M and N are provided with oppositely-inclined surfaces, *t* and *u*.

The operation is as follows: The cross-head B being drawn back to the full extent of its movement and the jaw E being open, the straight bar *m* is placed between the jaw E and the pin *h*, the end of the bar projecting beyond the pin sufficiently to form three-fourths of the eye. As the cross-head B moves forward, carrying the studs M and N and the die L, the inclined face *t* of the stud M first comes in contact with jaw E and passes between the jaw and the guide-bar H, thus forcing the jaw against the rod *m* and bending it partly around the pin, as seen in Figs. 1 and 4. The end of the projecting portion *n* of die L now comes in contact with the rod, bending the rod as the die moves forward farther around the pin, as seen in Figs. 2 and 5. The inclined face *u* of the stud N then comes in contact with the jaw F, and, passing between the jaw and guide-bar I, forces the jaw through the mortise *o* in die

L and against the bent end of the rod *m*, thus completing the eye, as seen in Figs. 3 and 6. As the cross-head returns, the end of the mortise *o* engages an inclined surface, *v*, on the jaw F, and thereby throws the jaw back. At the same time the operator raises the pin *h* by means of the lever *k*, thus withdrawing the pin from the eye and releasing the rod.

I claim as my invention—

- 10 1. In an eye-forming machine, the fixed plate D, having guide-bars H and I, jaws E and F pivoted to said plate, pin *h*, mounted in fixed bearings between the jaws, the reciprocating cross head B, die L, secured to said reciprocating head, stud M, having inclined face *t*, and stud N, having inclined face *u*, said studs being also secured to the reciprocating head, all being arranged to co-operate, substantially as and for the purpose specified.

2. In an eye-forming machine, the die L, having the projecting portion *n*, mortise *o*, solid portion *p*, and notch *r*.

CHARLES O. WILDER.

Witnesses:

HENRY E. SMITH,  
JAMES T. FULTON.