H. WATERS.

Machine for Rolling Metal.

No. 52,630. Patented Feb. 13, 1866.

Fig. 3

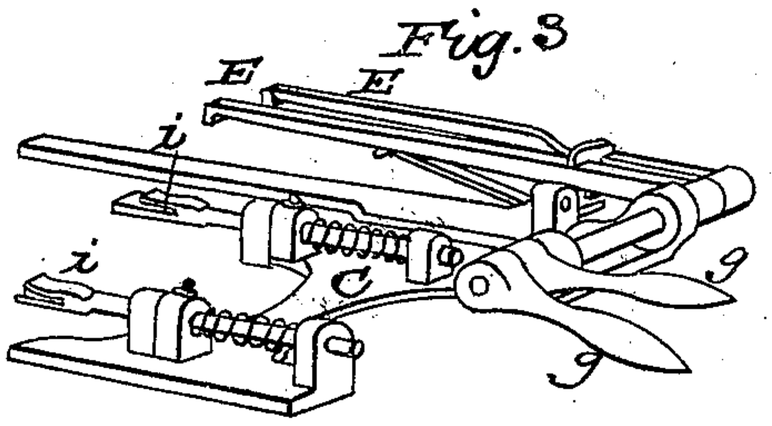


Fig. 2

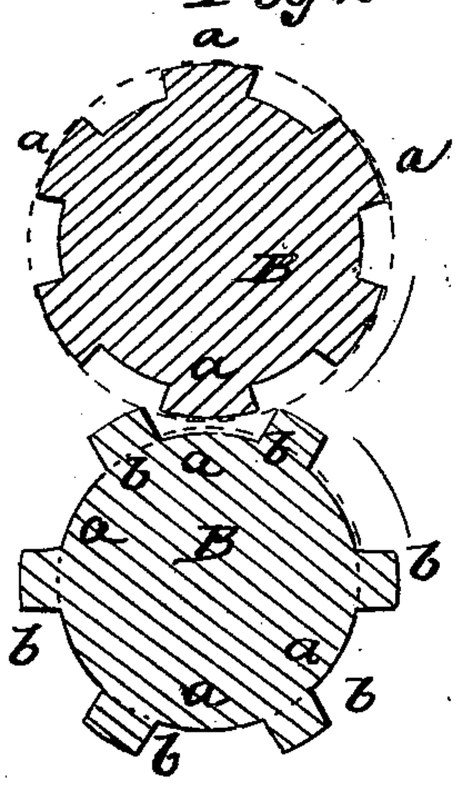
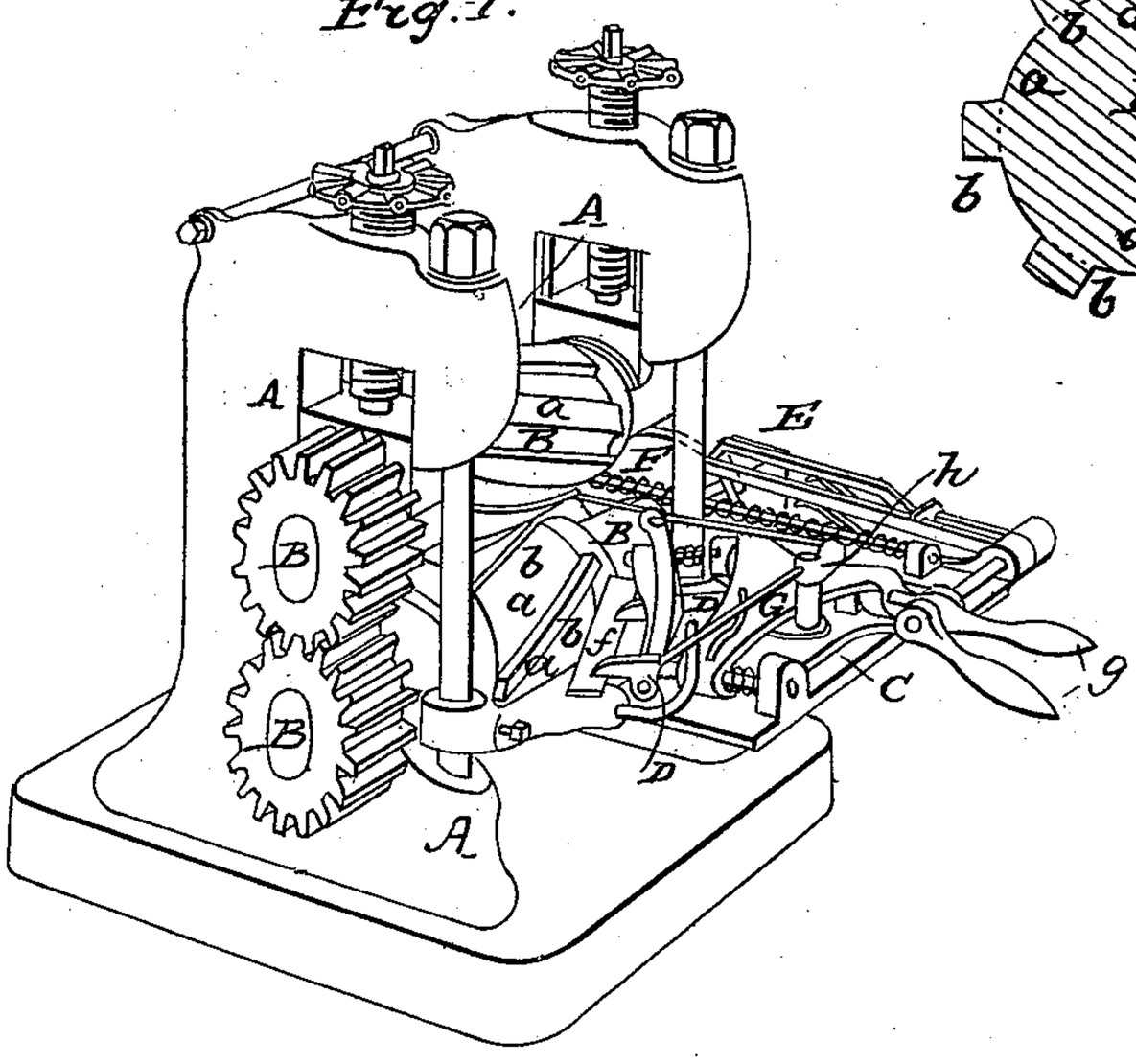


Fig. 1.



WITNESSES

W B Crosby

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INVENTOR

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UNITED STATES PATENT OFFICE.

HERVEY WATERS, OF NORTHBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR ROLLING METALS.

Specification forming part of Letters Patent No. **52,630**, dated February 13, 1866.

To all whom it may concern:

Be it known that I, HERVEY WATERS, of Northbridge, in the county of Worcester and State of Massachusetts, have invented an Improved Machine for Rolling Metal; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

Figure 1 is a perspective view of the machine; Fig. 2, a sectional drawing of the rolls, and Fig. 3 a perspective view of the sliding carriage of the machine with modified holders.

By my invention blades of knives and other articles may be plated by means of rolls with greater facility and accuracy than had been before accomplished, the action of the rolls upon their work being such that the blades may be reduced very much thinner toward their edges than toward their backs without essentially curving or crooking the same edgewise, while at the same time the bearing or bite of the rolls upon the same shall not be too much increased.

My invention consists in a pair of rolls having dies upon them, integral therewith or otherwise, arranged in the form of a long helix and conversely to each other, so that when geared and matched in one part of their revolution they shall match in all other parts of the revolution, these dies being furnished with a sort of fence, to act in conjunction therewith, to insure the proper position of the blank from which the blade is being formed, while the dies act to produce the blade. And, further, my invention consists in a carriage having upon it a grasping holder for the blank, so arranged and operated, in connection with the rolls and fence, that the blank may, at the will of the operator, be introduced at a certain place in the dies, as desired.

At Fig. 1 A A are the stands or housings of the machine; B B, the rolls, geared together and having upon them the helical dies *a a*. *b* is the fence or guide upon the lower roll, and revolving with it. These dies may be made upon the rolls in any convenient manner, and their working surfaces are shaped to give the desired form to the blade to be produced, as indicated in cross-section at Fig. 2, and such cross-section may vary in form, as desired, from end to end of the helical dies.

At C, Fig. 1, is the carriage, having upon it the holder D, in which the blank *f* is grasped to be introduced to the rolls and then liberated from the holder, as will be hereinafter described. This carriage is fitted to slide in ways mounted upon the housings of the rolls, and so adjusted that when operated it shall present the blank in proper line. Upon this carriage are the connecting-hooks E E, with their handles *g g*, and upon the bottom rolls is the cam or tappet-ring F, furnished with suitable tappets for actuating the hooks, as will be hereinafter described. These tappets should have a motion a little in excess of the motion of the periphery of the rolls, as will be readily understood when I come to describe the operation of the machine.

The holder consists of a sort of tongs, one jaw of which is connected by a toggle arrangement with the swinging lever *h*, so that when the lever is swung in one direction it will close the tongs, and will open them when swung in the other. The other jaw is, of course, pivoted to the first named, and has attached to it the pivot upon which swings the lever *h*. Moreover, this other jaw is mounted adjustably upon a secondary carriage, G, fitted to slide upon the primary carriage C upon rods serving as ways, and so furnished with springs and stops as to keep it in proper position, but allow of the self-adjustment of the blank against the fence, as will be hereinafter described.

The connecting-hooks, with their handles, are mounted by journals upon the carriage C, and furnished with springs and stops, or weights and stops, so that when in their normal position they shall not be worked by the tappet upon the rolls, but so that the operator may, by means of its handles, bring one or other of the hooks to a position to be actuated by its respective tappet as it revolves with the rolls.

To operate this machine the operator, by means of any convenient mark upon the blanks, places them uniformly, one after another, in the holder, and fastens them there by means of the lever. He then depresses the desired hook to bring the work to the die desired, and as the tappet revolves with the roll it impinges upon the hook and carries forward the carriage C, with the holder and blank, until the blank is, by the greater motion of the

tappet, brought against the fence or guide upon the bottom roll, which should be about at, but a little before, the time when the upper roll will come upon it, the blank. Soon after the blank is seized by the rolls a stationary trip properly placed opens the tongs by swinging back the closing-lever *h*, and the tappet disengages the hook by means of its own revolution. It will be observed that after the blank comes to its position against the fence, and until the tappet disengages itself from the hook, the carriage C travels faster than the supplementary carriage G, which it is enabled to do by cramping the springs on the ways of G upon C, and that after the disengaging of the hooks the carriage C may be returned, by hand or by any convenient means, to its normal position, and the carriage G upon it will be brought to its normal position upon C by means of its springs and stops.

At Fig. 3 is represented the carriage for introducing the blank to the rolls, with the holder somewhat modified.

C is the carriage with the hooks and handles just as before, but having, instead of tongs proper, spring-nippers, as seen at *i i*, fitted to slide in the carriage C, and furnished with springs and stops for facilitating the adjustment of the blank against the fence, the same as before described when using the tongs. Into these spring-nippers the operator places uniformly, as before, the blanks to be rolled, and they are withdrawn from them by the direct action of the rolls.

I claim—

1. The rolls, with their spiral dies, and fence or guide, when constructed and operated substantially as described.

2. The carriage and grasping-holder, when constructed and operated in combination with rollers, substantially as described, whether the dies upon said rollers be spiral or otherwise.

In witness whereof I have hereunto set my hand this 10th day of July, A. D. 1865.

HERVEY WATERS.

Witnesses:

J. B. CROSBY,

F. GOULD.