(No Model.)

E. T. HORNER.

METAL ROLLING MACHINE.

No. 494,567. Patented Apr. 4, 1893.

Fig. 1.

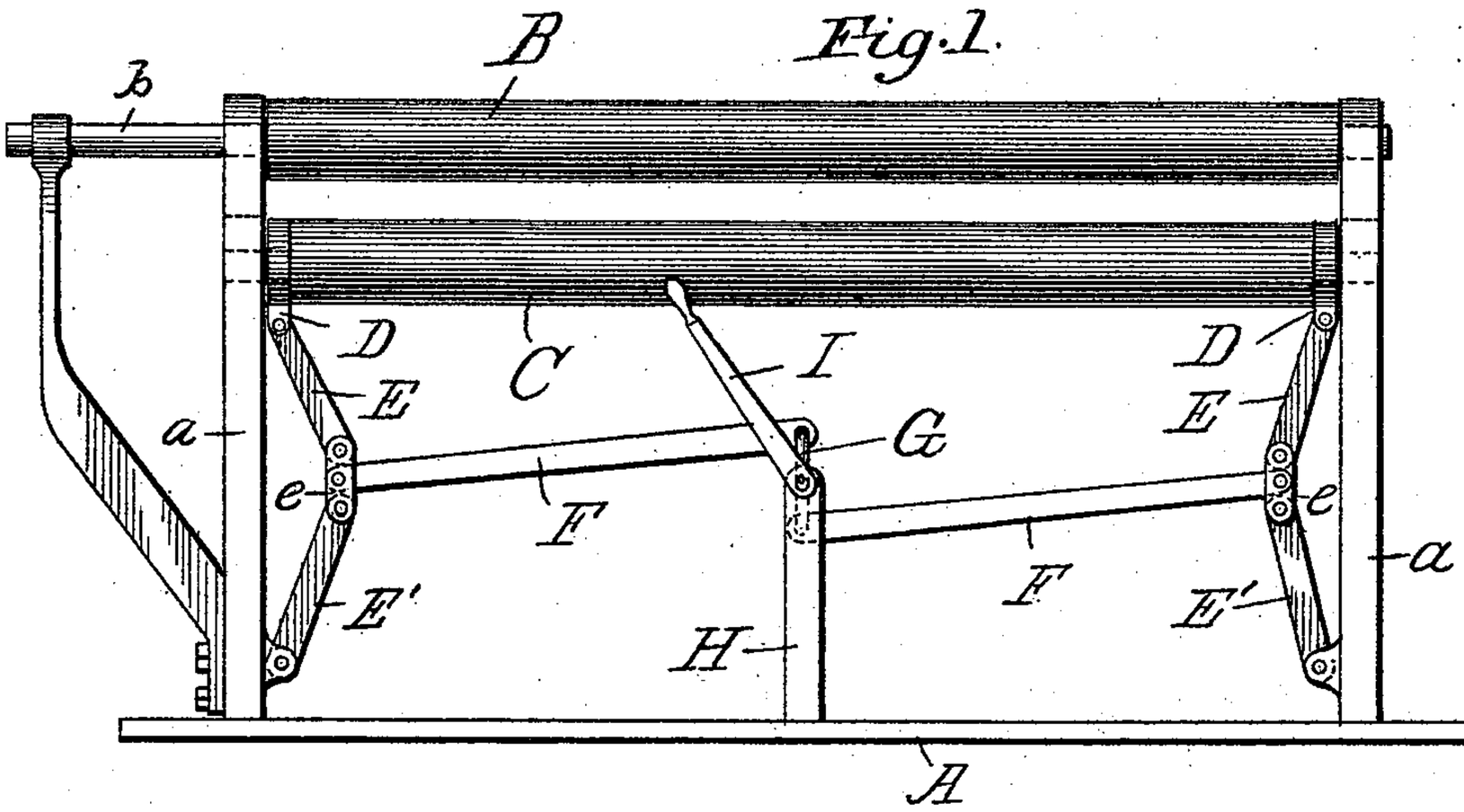
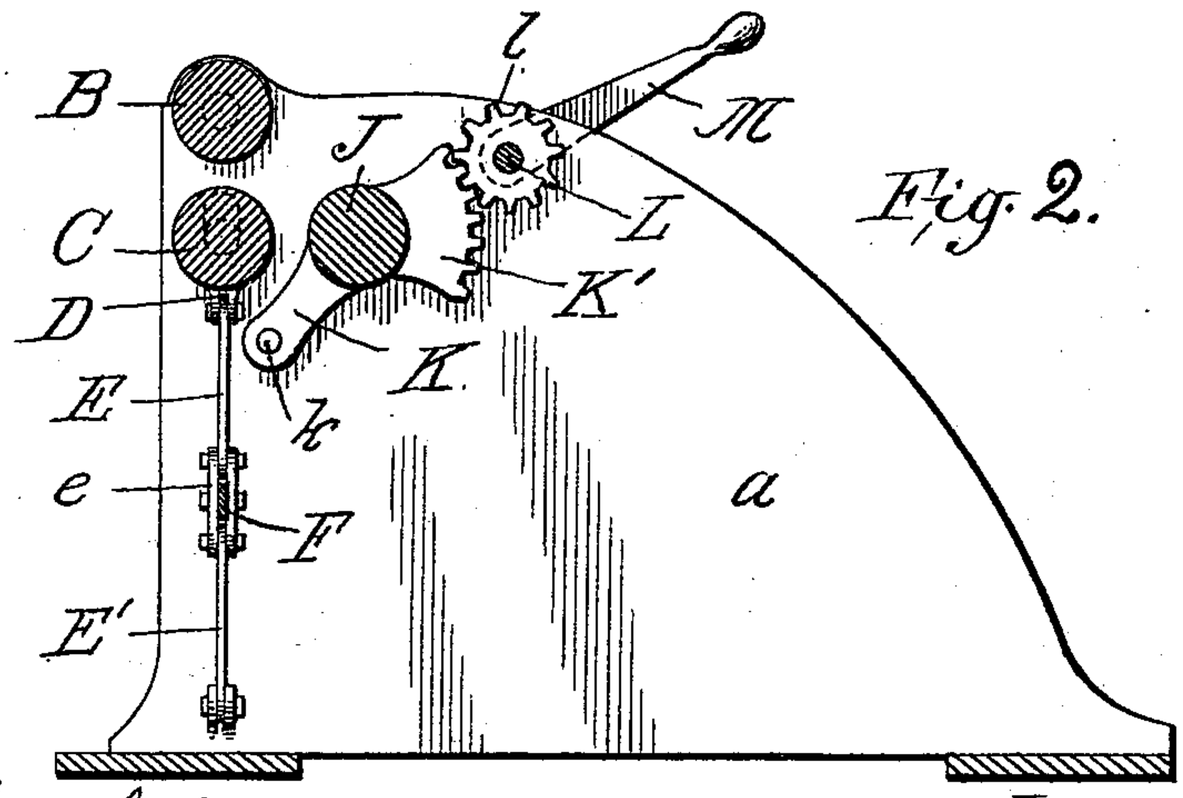


Fig. 2.



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ELWOOD T. HORNER, OF CAMBRIDGE CITY, INDIANA, ASSIGNOR TO THE CAMBRIDGE CITY PUNCH, SHEAR AND ROLL COMPANY, OF SAME PLACE.

METAL-ROLLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,567, dated April 4, 1893.

Application filed July 16, 1892. Serial No. 440,197. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD T. HORNER, a citizen of the United States, residing at Cambridge City, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Metal-Rolling Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in metal rolls for curving or straightening sheet metal, or for forming metal of any kind into curved shapes or for straightening the same, and relates particularly to improved means for effecting the adjustment of the rolls relatively to one another.

To this end my invention consists in the novel construction and arrangement of parts hereinafter fully described and afterward definitely pointed out in the claims, due reference being had to the accompanying drawings forming part of this specification, wherein,—

Figure 1 represents a front elevation of my improved machine; Fig. 2 a vertical section thereof.

Referring to the drawings the letter A indicates the base of the machine from which arise the end frames *a*, *a*. In said frames is journaled a roll B the shaft *b* of which is extended at one end and adapted to have mounted thereon a drive pulley (not shown) by means of which the roll may be rotated.

C indicates a roll, preferably of the same diameter as roll B, which is journaled in elongated bearings formed in the end frames *a*, *a*, immediately below the roll B. Upon the opposite ends of the roll C are loosely fitted collars D, D for the purpose hereinafter described.

E, E′, indicate toggle levers pivotally connected together at the center by means of links *e*, the lower ends of the levers E′ being pivoted to the end frames, *a*, *a*, and the upper ends of the levers E are pivoted to the collars D, D, fitting over the ends of the roll C. To the links *e* are pivotally connected the outer ends of the two pitmen F, which at their inner or adjacent ends are connected with the opposite arms of a double crank G supported in a suitable bearing in a standard H secured to the base A of the machine. To the crank G is rigidly secured a hand lever I. As thus constructed by turning the crank G in the proper direction the pitmen F are thrust from each other in opposite directions causing the toggle levers E, E′, to straighten out, thus raising the roll C, for the purpose hereinafter described, said roll dropping down again, when the crank is released, by gravity.

J indicates a roll which is arranged directly in the rear of the roll C. Said roll is journaled at each end in an arm K, pivoted at its lower end as at *k*, to the end frame *a*, and provided at its other end with a toothed segment K′.

L indicates a shaft extending from side to side of the machine and journaled in the end frames *a*, *a*, and has keyed thereto near each end a small gear wheel *l* which mesh with the toothed segments K′ formed upon the ends of the arms K in which is journaled the roll J. The shaft L is provided with a hand lever M by means of which said shaft may be turned to cause the gear wheels *l* to engage the segments K′ to raise and lower the arm K carrying the roll J, for the purpose hereinafter made apparent.

As thus constructed the operation of the machine is as follows: When a sheet of metal is to be curved the same is introduced between the rolls B and C and the roll C raised by means above described until it firmly presses the sheet against the roll B. The roll J is next raised and caused to swing forward toward the rolls B and C by oscillating the arms K, as before described. Power is now applied to rotate the roll B and as the rolls B and C roll the sheet between them the proper or desired bend or curvature is communicated to the sheet by adjusting the roll J up or down and to and from the rolls B and C. To straighten the sheet the roll J is lowered and the sheet passed directly between the rolls B and C.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination with the frame and a fixed roll journaled therein, of a vertically movable roll, toggle levers loosely connected at one end to each end of the vertically movable roll, and at their other ends to the frame of the machine, means for simultaneously operating said toggle levers to raise and depress the roll, and a roll journaled in oscillating arms pivoted in the rear of said fixed and vertically movable rolls, substantially as described and for the purpose specified.

2. In a machine of the character described, the combination with the frame and a fixed roll journaled therein, of a vertically movable roll journaled in elongated bearings in said frame, toggle levers loosely connected at one end to each end of said roll and pivoted at their other ends to the frame, pitmen connected with said toggle levers and with a double crank connected to both and operating to straighten out the toggle levers and raise the roll, and a roll journaled in oscillating arms pivoted in the rear of said fixed and vertically movable rolls, substantially as described and for the purpose specified.

3. In combination with the frame and fixed roll B journaled therein, of the roll C journaled in vertically elongated bearings in said frame, collars D loosely fitted to the opposite ends of the roll C, toggle levers E, E′, pivoted to said collars and to the frame of the machine, pitmen F connected at their outer ends to said toggle levers, a double crank G connected to the inner ends of said pitmen, and a roll J journaled in oscillating arms pivoted in the rear of said fixed and vertically movable rolls, substantially as described and for the purpose specified.

4. In a machine of the character described, the combination with the frame, the fixed roll journaled therein, and the vertically movable roll, of the arms K pivoted to each side of the machine and provided with toothed segments *k′*, the roll J journaled in said arms, a shaft L journaled in each side of the machine, and gears *l* keyed to each end of said shaft and meshing with said toothed segments, substantially as described and for the purpose specified.

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

ELWOOD T. HORNER.

Witnesses:

B. F. DRISCHEL,

M. L. YOUNG.