2 Sheets--Sheet 1.

A. H. CAMPBELL.

Machine for Bending Bars of Metal.

No. 168,450. Patented Oct. 5, 1875.

Fig. 1.

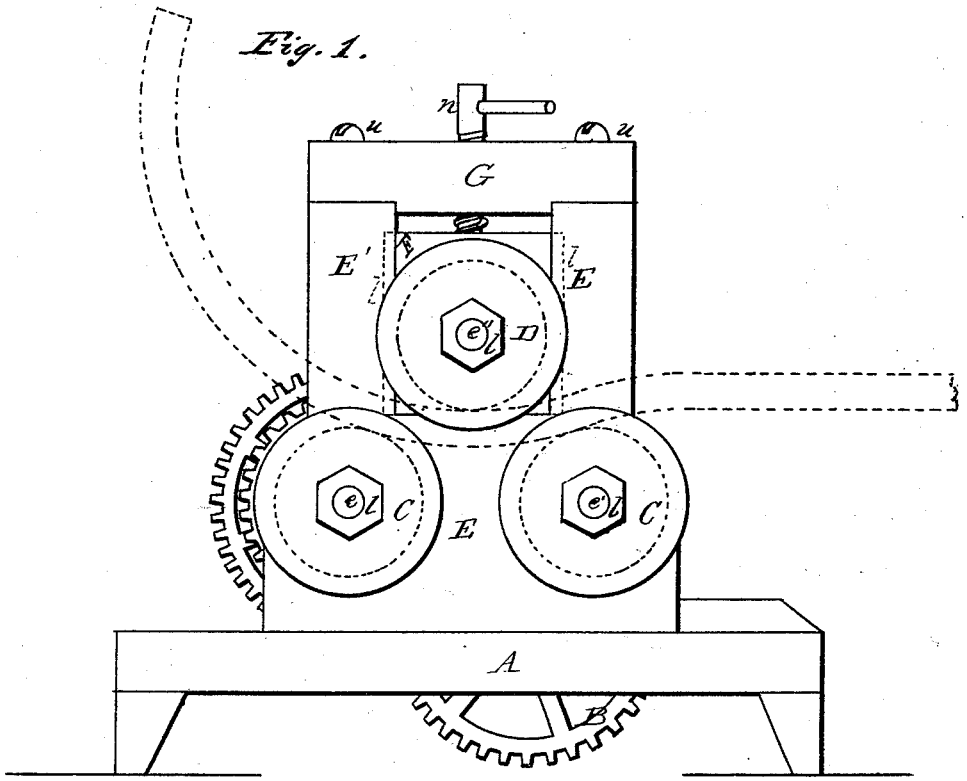
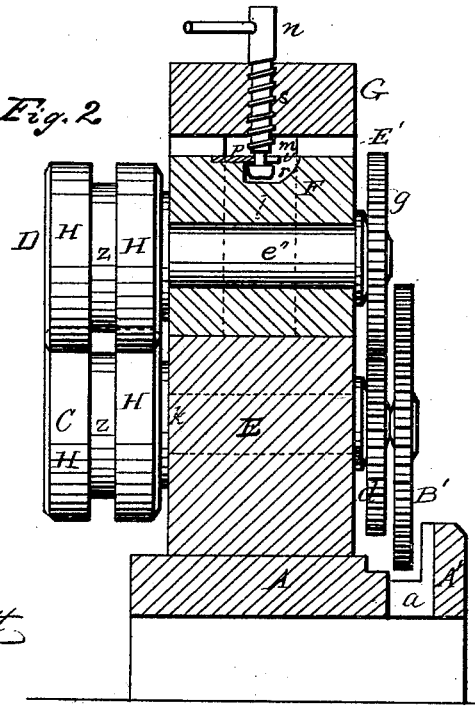


Fig. 2.



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2 Sheets--Sheet 2.

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Fig. 3.

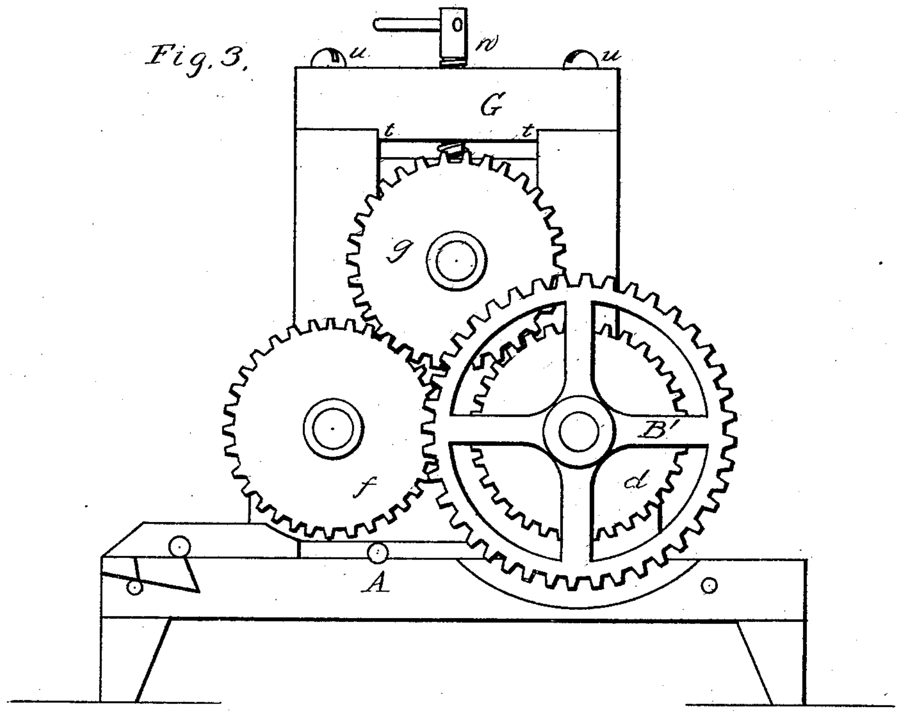
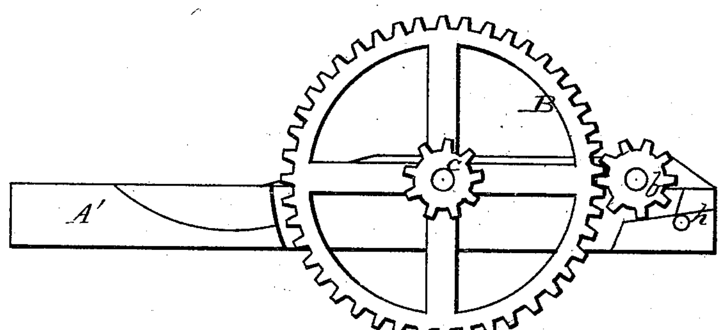


Fig. 4.



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UNITED STATES PATENT OFFICE.

ANDREW H. CAMPBELL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR BENDING BARS OF METAL.

Specification forming part of Letters Patent No. **168,450**, dated October 5, 1875; application filed June 26, 1875.

To all whom it may concern:

Be it known that I, ANDREW H. CAMPBELL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and valuable Improvement in Bending-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front elevation of my bending-machine, and Fig. 2 is a transverse vertical sectional view of the same. Fig. 3 is a rear view thereof, and Fig. 4 a detail view.

This invention has relation mainly to means for bending fifth-wheels, wagon-tires, gas-pipe, and other articles of similar character; and it consists in the construction and novel arrangement of the frame, gearing, stationary lower rolls, and adjustable upper roll, as hereinafter fully shown and described.

In the accompanying drawings, the letter A designates the base or bed-plate of the machine, slotted at *a* for the reception of the crank-pinion *b* and the two large toothed wheels B B′, whereof the former engages with said crank-pinion, and the latter engages with the small pinion *c* attached to the former, and carries the gear-wheel *d*. The wheels B′ and *d* are secured to the shaft *e* of one of the lower rolls C C, the other lower roll being provided with a toothed wheel, *f*, which is designed to engage with the gear-wheel *g* of the upper or adjustable roll D, said gear-wheel *g* being in engagement with the wheel *d*. These wheels are so arranged that their points of engagement will be in line with those points of the working rolls which are in immediate contact with the tire or other article to be bent. The bed-plate is formed of two pieces, the smaller A′ resting on the sills, and provided with a projecting part, *h*, designed to enter a corresponding recess in the main portion of the bed-plate, and serving to connect this section A′ in a secure manner, so that the leverage of the crank or power wheel cannot displace it. This section A′ forms the outer wall of the slot *a*, and is provided with bearings for the reception of the outer journals of the pinion *b* and wheel B. E designates the pedestal or body of the machine. This is bolted to the base-plate and extends upward, being provided in its lower portion with transverse parallel journal-seats, through which the shafts *e e′* of the rolls C C extend. On the rear ends of these shafts are secured the gear-wheels *d* and *f*, and on their front ends, on the opposite side of the pedestal, are secured the rolls C C. On these shafts are shoulders *k*, against which the rolls are pressed by the nuts *l*, which are screwed on the threaded extremities of the shafts. The upper portion of the pedestal has a space between its two branches E′ E′, into which is received the block F, in which is made the journal-seat for the shaft or journal *e″* of the adjustable roll D. This sliding block is provided with longitudinal tenons or ribs *l*, which fit into longitudinal grooves *m* in the branches, and serve to brace the box against the strain of the work. The top of the box or block is recessed to receive the end of the adjusting-screw *n*, which is provided with a neck, whereby it may engage with the notch *v* of the plate *p*, which is secured over the recess *r* to the top of the block. The side of the recess is cut away in the direction of the notch, in order that a ready engagement or disengagement may be effected. The adjusting-screw *n* works through a female screw, *s*, in the cap G, which is rabbeted at *t* to engage with the inside edges of the upper ends of the branches of the pedestal, whereby it is braced against the twisting action of the screw. The cap is secured to the upper ends of the branches of the pedestal by means of bolts *u u*. The roll D is secured to its shaft *e″* in a similar manner to that in which the rolls C C are secured.

Each roll is made of steel, and is built up of three portions: two exterior or flange disks, H H, and the middle or bearing-disk *z*, the three being securely pressed together by the nut *l*.

By this construction a rectangular groove is formed between the flanged disks H H, having for its base the disk *z*, in which groove the iron bar or blank, out of which the fifth-wheel or tire, to be formed, is received, the groove preventing the iron from spreading, while by constructing the roll in removable parts the

outer one can readily be taken off its journal, and the fifth-wheel or tire removed. By this construction of the roll, also, if one of the disks is worn or broken, it can readily be removed, and its place supplied by another, or disks of varying thicknesses may be employed to vary the width of the rectangular groove between the disks H H.

This machine is adapted to exert great force between the rolls with the exercise of comparatively little power, and it is built in such a manner, as above described, that it will successfully withstand the strain during the bending operation. The machine may be adapted to the bend required by adjusting the middle roll toward or from the stationary rolls.

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

In a bending-machine, the combination, with the stationary flanged rolls C C, and the adjustable flanged roll D, of the gear-wheels B B′ *d f g* and pinions *b c*, constructed and arranged to operate substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ANDREW H. CAMPBELL.

Witnesses:

ALLEN H. GANGEWER,

JNO. J. NOLAN.