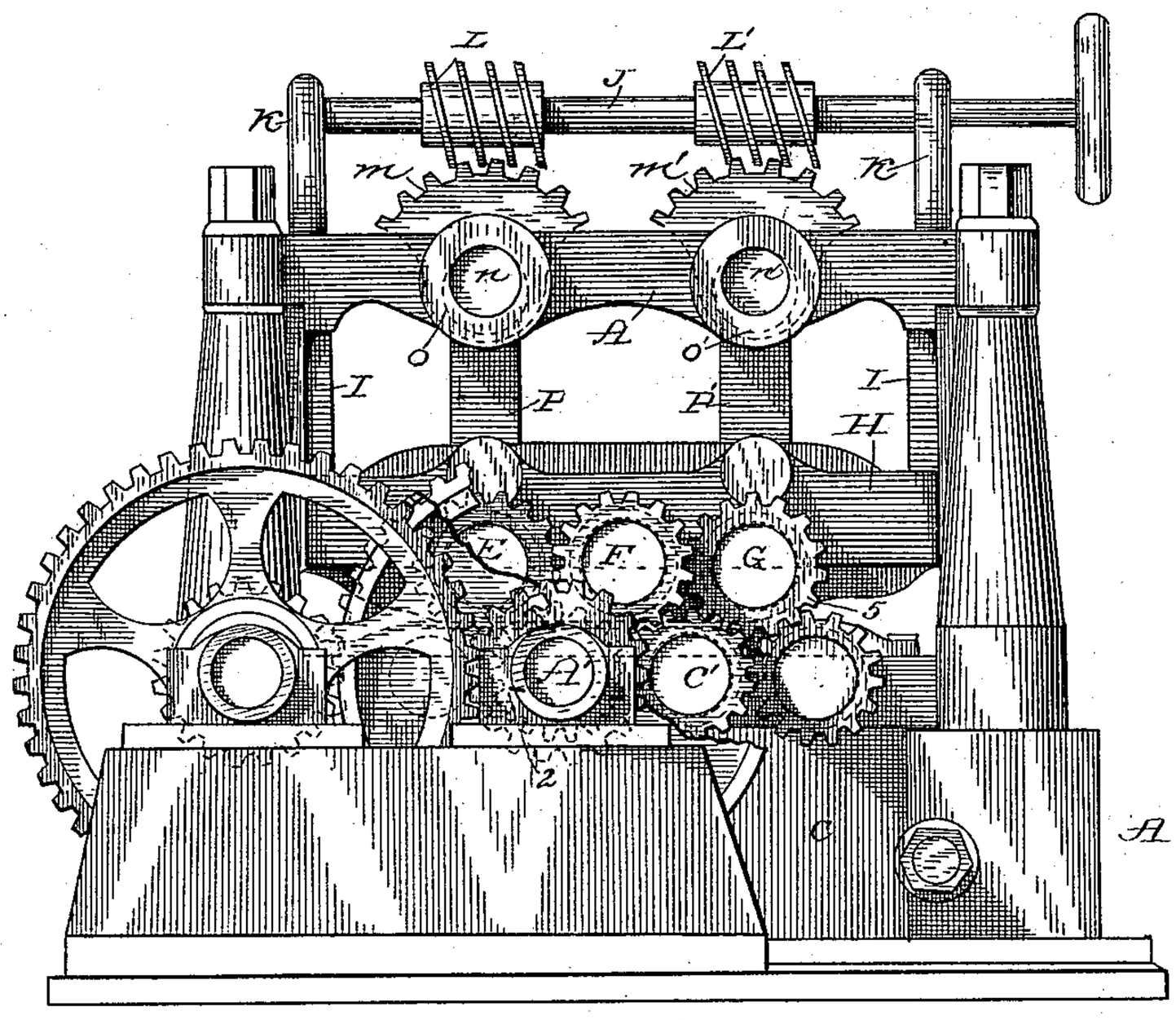
(No Model.) 3 Sheets—Sheet 1.

# A. WILKE.

## MACHINE FOR BENDING AND STRAIGHTENING METAL.

No. 256,260 Patented Apr. 11, 1882.

Fig. 1.




Attest
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Inventor
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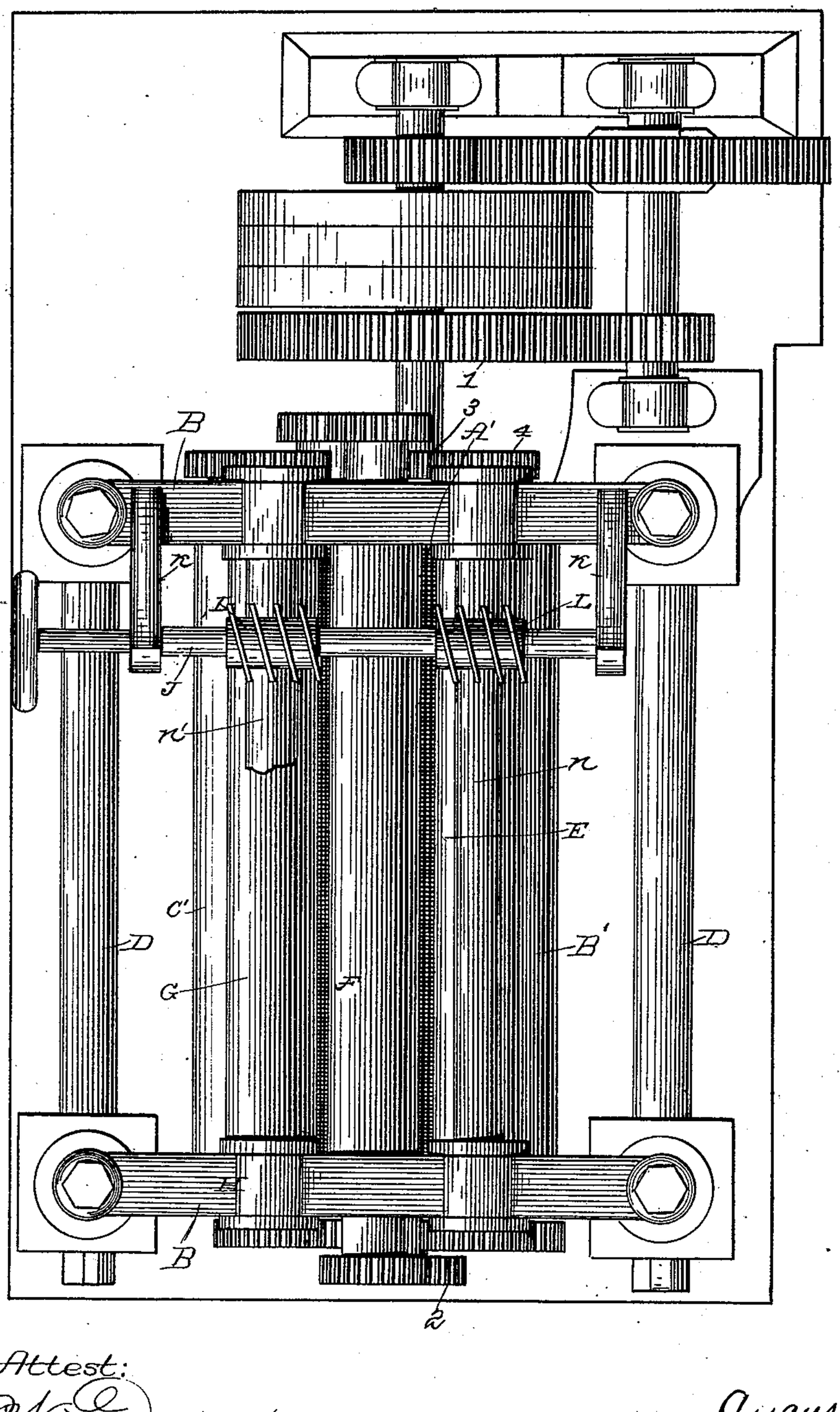
(No Model.) 3 Sheets—Sheet 2.

# A. WILKE.

## MACHINE FOR BENDING AND STRAIGHTENING METAL.

No. 256,260. Patented Apr. 11, 1882.

Fig. 2

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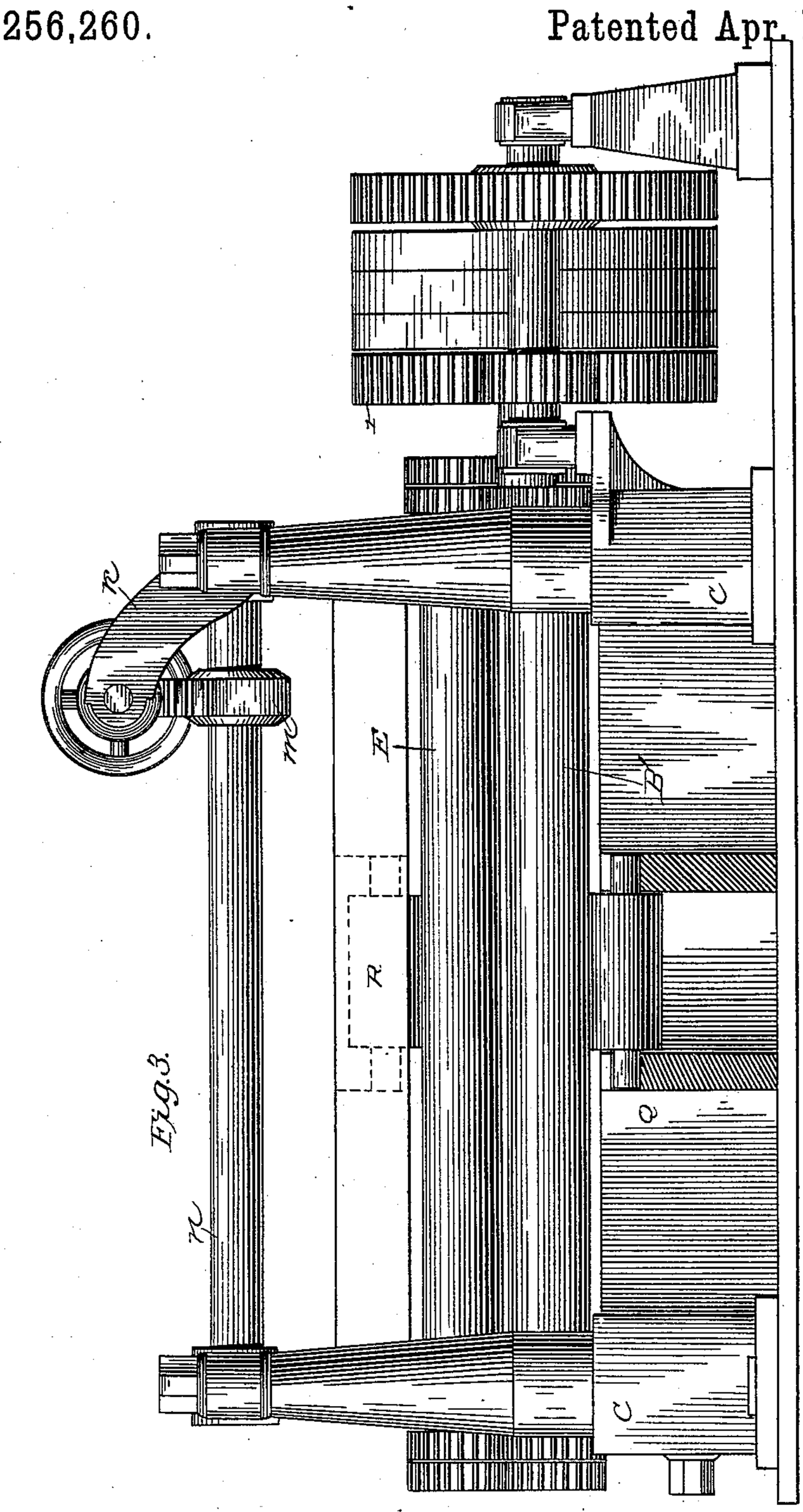
(No Model.) 3 Sheets—Sheet 3.

# A. WILKE.

## MACHINE FOR BENDING AND STRAIGHTENING METAL.

No. 256,260. Patented Apr. 11, 1882.

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Inventor
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# UNITED STATES PATENT OFFICE.

AUGUST WILKE, OF BRUNSWICK, GERMANY.

## MACHINE FOR BENDING AND STRAIGHTENING METAL.

SPECIFICATION forming part of Letters Patent No. 256,260, dated April 11, 1882.

Application filed December 22, 1881. (No model.) Patented in Austria December 19, 1876, in Germany July 14, 1877, in England July 28, 1877, in France September 26, 1879, and in Belgium April 30, 1880.

*To all whom it may concern:*

Be it known that I, AUGUST WILKE, of Brunswick, Germany, have invented a new and useful Improvement in Machines for Bending and Straightening Metal; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to provide for rolling thin sheets of plate metal; and it consists, first, in the means by which the upper as well as the lower system of rolls is given a positive motion, instead of adapting the upper rolls to be moved by the movement of the plate, as ordinarily done.

It consists, further, in the adjustment of the rolls to different thicknesses of metal.

It also consists in peculiar means for supporting the rolls when of greater than ordinary length, and generally in the novel arrangement and combinations of the parts comprising my invention.

In the drawings, Figure 1 is a side elevation; Fig. 2, a top view. Fig. 3 is an end view of the machine, showing the manner of supporting the rolls when of greater length than common.

In these drawings, A A represent frame-work intended to support the operating mechanism. This frame-work consists of corner-posts and cross-beams B B and two foundation-beams, C C, the whole being braced, as shown at D. In the foundation are formed bearings for the lower series of rolls, which are preferably four in number, as shown in Fig. 1. The rolls themselves are of the construction ordinarily used in plate-rolling machines, and each roll is provided with a spur-wheel, forming a train of gearing. The principal roll, A′, is provided at one end with a large spur-wheel, 1, and at the other with a small pinion, 2, and an intermediate pinion, 3, placed on the shaft of the said roll outside the frame. The pinion 3 operates the pinion 4, which is on the shaft of the roll E—one of the upper series. The other end of the shaft of the roll E gears with a pinion on the shaft of the roller B′ of the lower series and gives motion to such roll. The shaft of the roll A′, by means of the pinion 2, operates also the roll F of the upper series, such roll F giving motion to the roll C′ of the lower series, while the roll C′, through a pinion, 5, operates the last roll, G, of the upper series. It is thus evident that the motion is transmitted alternately from one roll to another from opposite ends or sides of the apparatus, the shaft of each roller being provided with a pinion at each end, excepting the rolls at the end of the lower series, which are furnished with a pinion on one end only, as obviously, being the end of the train, they cannot communicate motion any further. The upper series of rolls are journaled in a movable support, H, grooved at the ends and working in guides I I, formed on each of the corner-posts of the frame. This is intended to permit the upper series of rolls to be adjusted simultaneously to accommodate metallic plates of different thicknesses. This adjustment is accomplished by means of the shaft J, working in bearings K K, attached to the frame, and this shaft is provided with worms L L′, which gear respectively into segments M M′, keyed on shafts N N′, which shafts work in bearings in the upper cross-bars, B B. On the shafts N N′, and within the bearings last mentioned, is an eccentric O O′, which, when in proper position, force arms P P′ down upon the shafts of the end rolls, E G, of the upper series. The revolution of the counter-shafts N N′ is effected by means of a hand-wheel on the shaft J, by which such shafts and the worms carried by them are revolved, and thereby the segments and the shafts which carry the eccentrics operated.

It is evident that the loose frame carrying upper rolls may thus be adjusted downward to as great an extent as the shape of the eccentric will allow; and it is also evident that if pressure of the eccentric on the arms be relaxed the admission of a thicker grade of plate between the rolls will force such rolls and frame up to a position where the eccentric will bear upon them and prevent their further movement.

In case the machine is adapted for rolling unusually wide plates, it has been found necessary to support the upper and lower rolls, and for this purpose the device illustrated in Fig. 3 is employed. This consists of a series of four short rolls carried in bearings in a standard, Q, adapted to bear on the lower rolls

about midway of their length, and a similar set of three short rolls may be carried in bearings on a standard, R, supported in the upper part of the main frame, as shown in dotted lines in the same figure, for frictional contact with the upper set of rolls. It will be understood that the number of short rolls may be varied with the number of the large rolls.

Power may be applied to the device in any suitable manner by means of proper belts and pulleys, or, if by hand, through a large fly-wheel. (Not shown.)

In the operation each plate, after being first caught by the two outer rolls, is independently carried forward through the whole system. The sheets that have been passed two or three times through the system come out smooth, even, and free from all bulging, as well as from scales formed by heat, which latter are worked off in the many bendings which the plates have to undergo, since the upper series of rolls extends down between the two rolls of the lower series and forces the plate to bend in passing through between them.

Having thus described my invention, what I claim as new is—

The combination of the lower series of rolls, the upper series of rolls, the frame carrying such rolls and working in guides, as described, and the counter-shafts N N′, having the eccentrics and operated by the shaft and worm, as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

AUGUST WILKE.

Witnesses:
WILLIAMS C. FOX,
JOHS. KRACKE.