

W. VAN ANDEN.

MACHINERY FOR WORKING SHOULDERS ON AXLES, &c.

No. 11,590.

Patented Aug. 22, 1854.

Fig. 4.

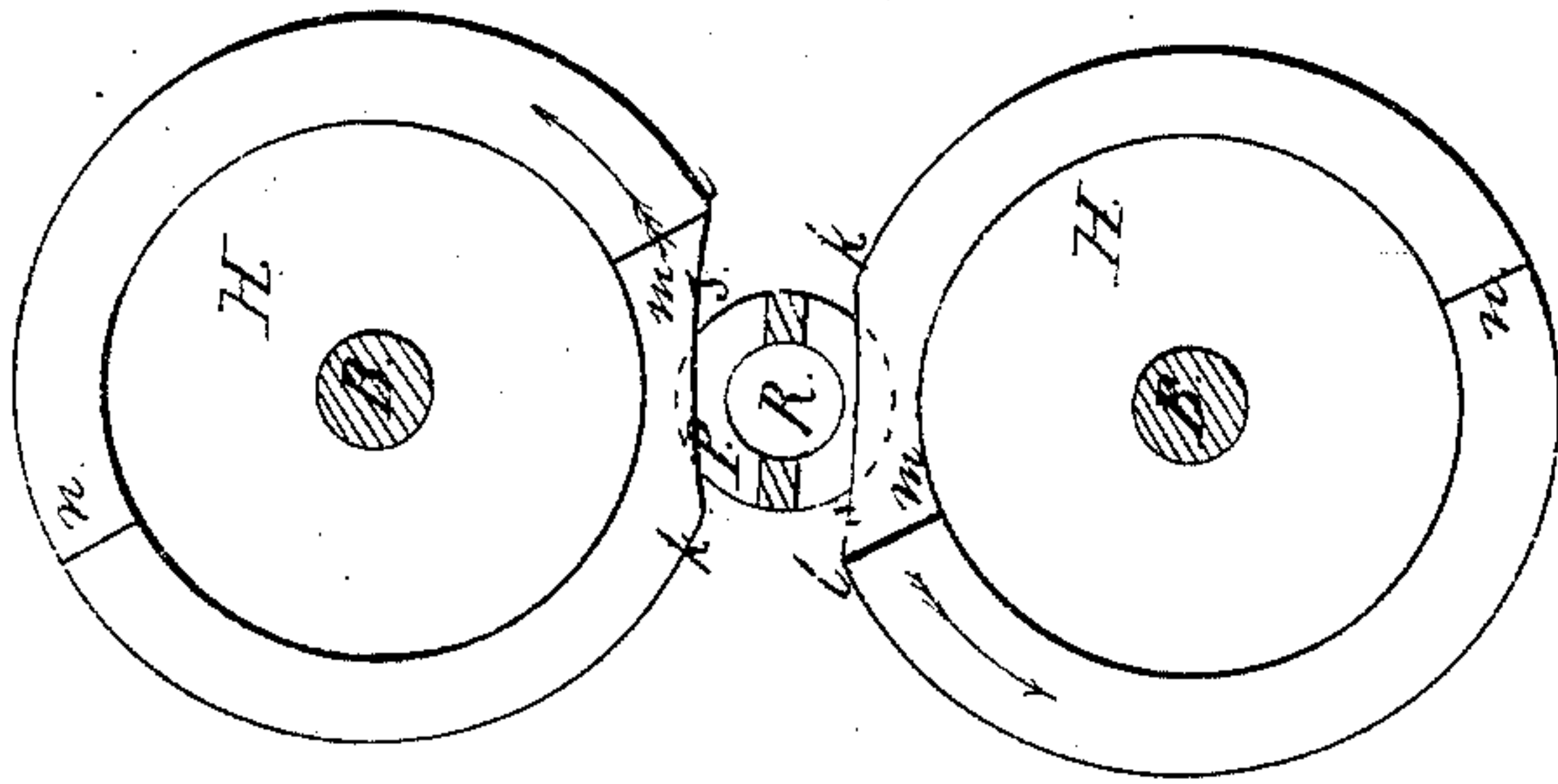
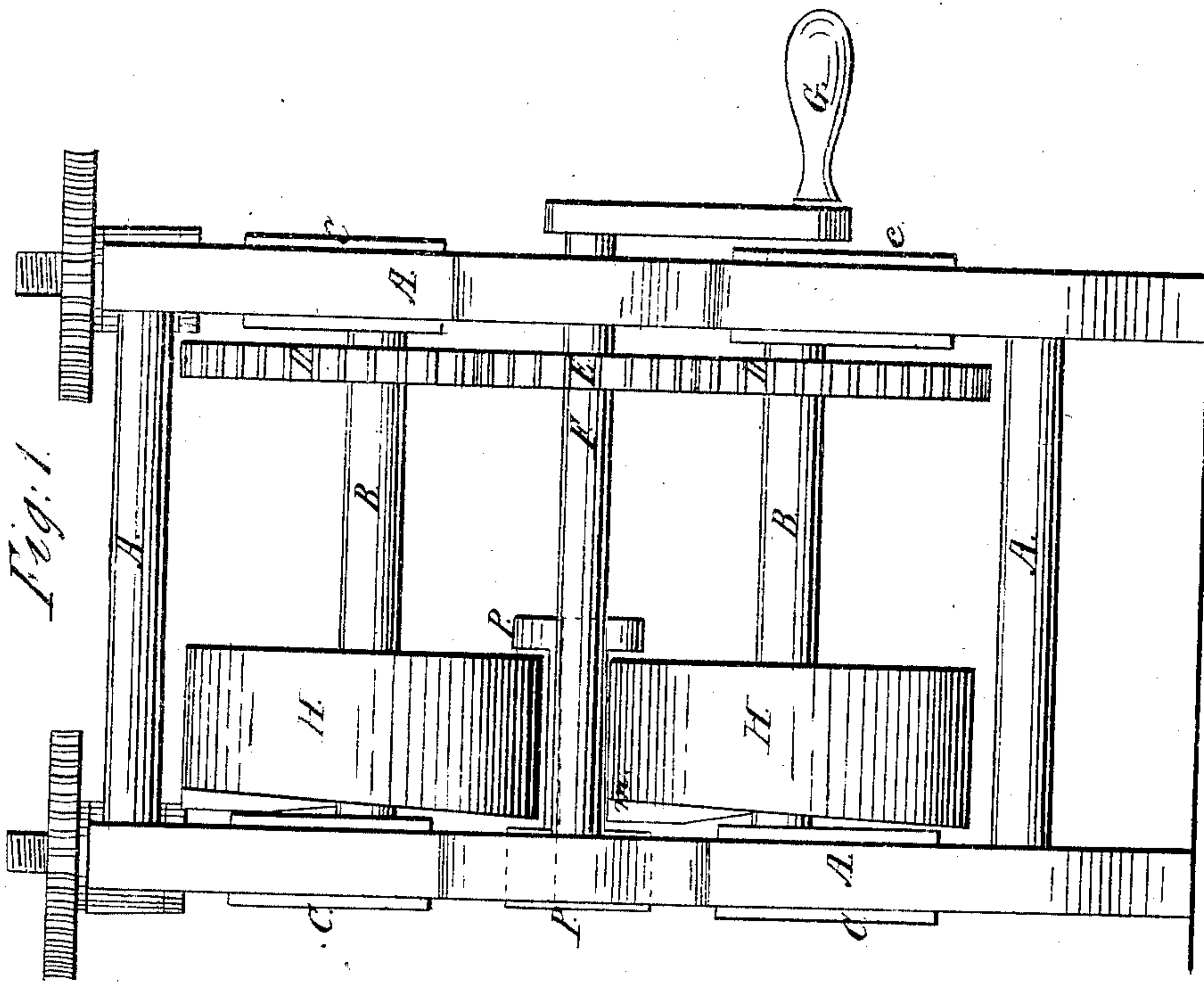


Fig. 1.

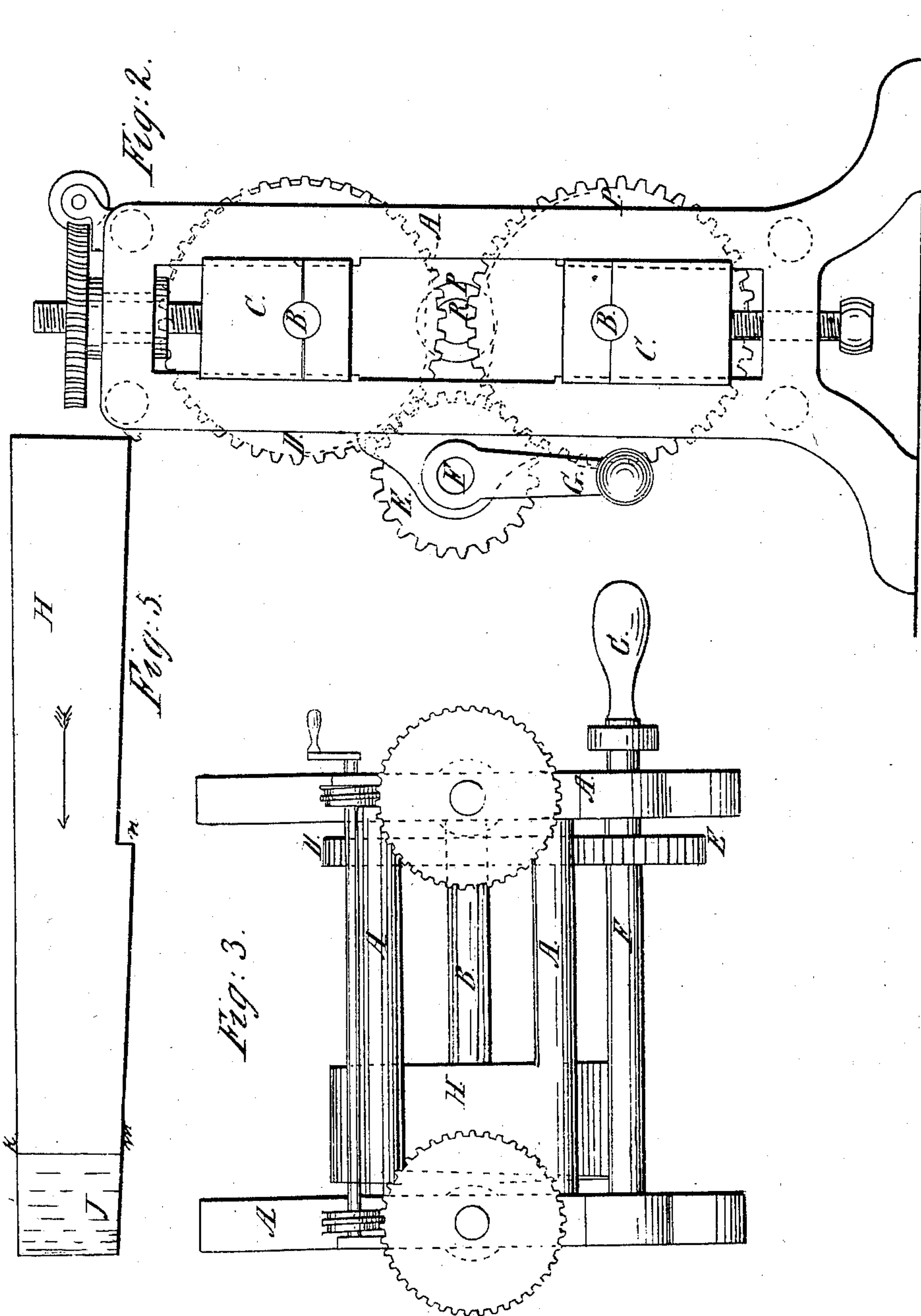


W. VAN ANDEN.

MACHINERY FOR WORKING SHOULDERS ON AXLES, &c.

No. 11,590.

Patented Aug. 22, 1854





# UNITED STATES PATENT OFFICE.

WM. VAN ANDEN, OF POUGHKEEPSIE, NEW YORK.

## MACHINE FOR ROLLING SHOULDERS ON AXLES.

Specification of Letters Patent No. 11,590, dated August 22, 1854.

*To all whom it may concern:*

Be it known that I, WILLIAM VAN ANDEN, of Poughkeepsie, Dutchess county, and State of New York, have invented certain new and useful Improvements in Machinery for Reducing Iron and Rolling Shoulders on Axles, Shifting, and for other Purposes, and I do hereby declare the following to be a full description of the same.

10 The nature of my invention consists in rolling shoulders on axles by means of the arrangement of a pair of cam rollers, having reduced surfaces for the introduction of a bar of iron endways between them, with a guide and feeding box, through the hollow of which the bar of iron is inserted to be operated upon by the cams as they rotate, to form the shoulders on the axle without displacing the forming rollers or cams, or holding or feeding box.

20 But to describe my invention more particularly I will refer to the accompanying drawings forming a part of this schedule, the same letters of reference wherever they occur referring to the same parts.

25 Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation of the machine. Fig. 3 is a plan view of the machine. Fig. 4 is an end view of the cams and box and bar. Fig. 5 is a view of one of the cams as stretched out or opened.

30 Letter A, is the frame of the machine and B, B, are two shafts, extending across the frame and having thin ends secured in adjustable boxes *c, c*, arranged between ports of the machine. On these shafts are secured two cog wheels D, D, which gear into a small driving cog wheel E, secured on the driving shaft F. This driving shaft extends across the frame of the machine, and has its ends secured in boxes attached to the frame. On the end of it is arranged a crank G, or other suitable device for connecting with the propelling power. Arranged on the shafts B, 45 B, are also two cams H, H. These cams are duplicates of each other. At the point J, J, the faces of the cams are cut away. The object of this is to admit the entering of the bar of iron that is to be operated upon, and the reduced parts J, J, are therefore always brought opposite each other, as shown in Fig. 4, when starting the machine.

50 From the point *k*, to the heel *l* of the cams there is a gradual increase of diameter, which as their greatest diameters roll toward each other, causes the bar of iron between

them to be reduced in diameter to the axis required. At the points *m*, and *n*, on the outer side faces of the cams, parts of them are cut away, that is, commencing at (*m*,) 60 of the reduced peripheries J, J, the side face is cut away about one sixth, (or more or less as may be desired) the thickness of the cam, and then gradually increases in thickness to the point *n*, about half the circumference of the cam, when it ends in the full thickness of the cam. At *n*, the face is cut away in the same manner as just described and gradually increases in thickness for the other half of the circumference of the cam till it is flush 65 with the full thickness at the starting point (*m*). The object of this peculiarity of formation of the faces of the cams is important. First, the parts represented as cut away at J, J, are material for the admission of the bar of iron to be operated upon. Second, as the bar of iron is being reduced it necessarily elongates it, consequently, to make a square shoulder on the shaft it requires the thickness of the cams or rollers to be less at the point of starting, than at the finishing of the shoulder. When the 1st shoulder is finished, the second is made in the same way, by commencing at a less thickness of the cams or rollers. It will be obvious that the space on the axis, between the first and second 70 shoulder, will be governed entirely by the amount cut away at the point (*n*.) It will be obvious also, from this description of the cams that simple rollers, having their side faces cut away as at (*m, n*) and arranged in boxes so that the rollers may converge toward the bar of iron, will accomplish the same result as the cams.

75 Letter P, is a box secured to the frame of the machine. Through the center of this box, is a hollow axis R, into which the bar of iron to be operated upon is placed. From the upper and lower sides of the box, between the cams or rollers, part of the box is cut away, leaving the arms of the box of less thickness than the diameter of the bar of iron to be operated upon by the cams or rollers; the object of this is to allow the cams or rollers full and free pressure on the bar of iron to form the shoulders thereon and at the same time to rotate it by the rolling action of the cams or rollers.

80 The operation of my invention is that when the bar of iron is properly heated I place the end on which I want to work the shoulders in the hollow core of the box. The 110



cams are then arranged or set as represented in Fig. 4, the outer end of the bar being held by the operation. Power is then applied to the machine, giving to the cams a  
5 rotatory motion in the direction of the arrows, which commencing at nothing or no pressure on the bar of iron, gradually increases its action on the bar by rotating and reducing it, and as it elongates in conse-  
10 quence of the reduction of it, the increasing thickness of the cams takes it up, and keeps the edges of the shoulder square, or at right angles to the axis of the bar of iron. When the bar has been rotated once, the first  
15 shoulder is formed on it. At this point the second shoulder is commenced and formed by the second revolution of the bar, and the last half of the cams, which are kept in contact with it by adjusting screws secured to  
20 the boxes holding the axis of the cams, to complete the formation of the second shoulder. The application of this principle for the working of shoulders on shafting, axles and other articles may be varied.

Should the cams be stretched out, and made 25 to operate by a reciprocating motion by suitable and well known mechanical devices the same effect would be produced; but as the rotating motion is the easiest for all mechanical purposes where it is practicable to 30 use it I prefer to use the cams or rollers.

Having now described my invention and its operation I will proceed to state what I claim and desire to secure by Letters Patent 35 of the United States—

The arrangement of the cam rollers, having the reduced surfaces J, J, with the guide and feeding tube or box P, through the hollow space R, of which, I am enabled to put in the blank bar of iron, and withdraw the 40 finished axle, without displacing the forming rollers or cams, or feeding tube or box, substantially as hereinbefore set forth.

WM. VAN ANDEN.

Witnesses present:

CHARLES L. BARRITT,  
EDWARD A. VANDERHOFF.