

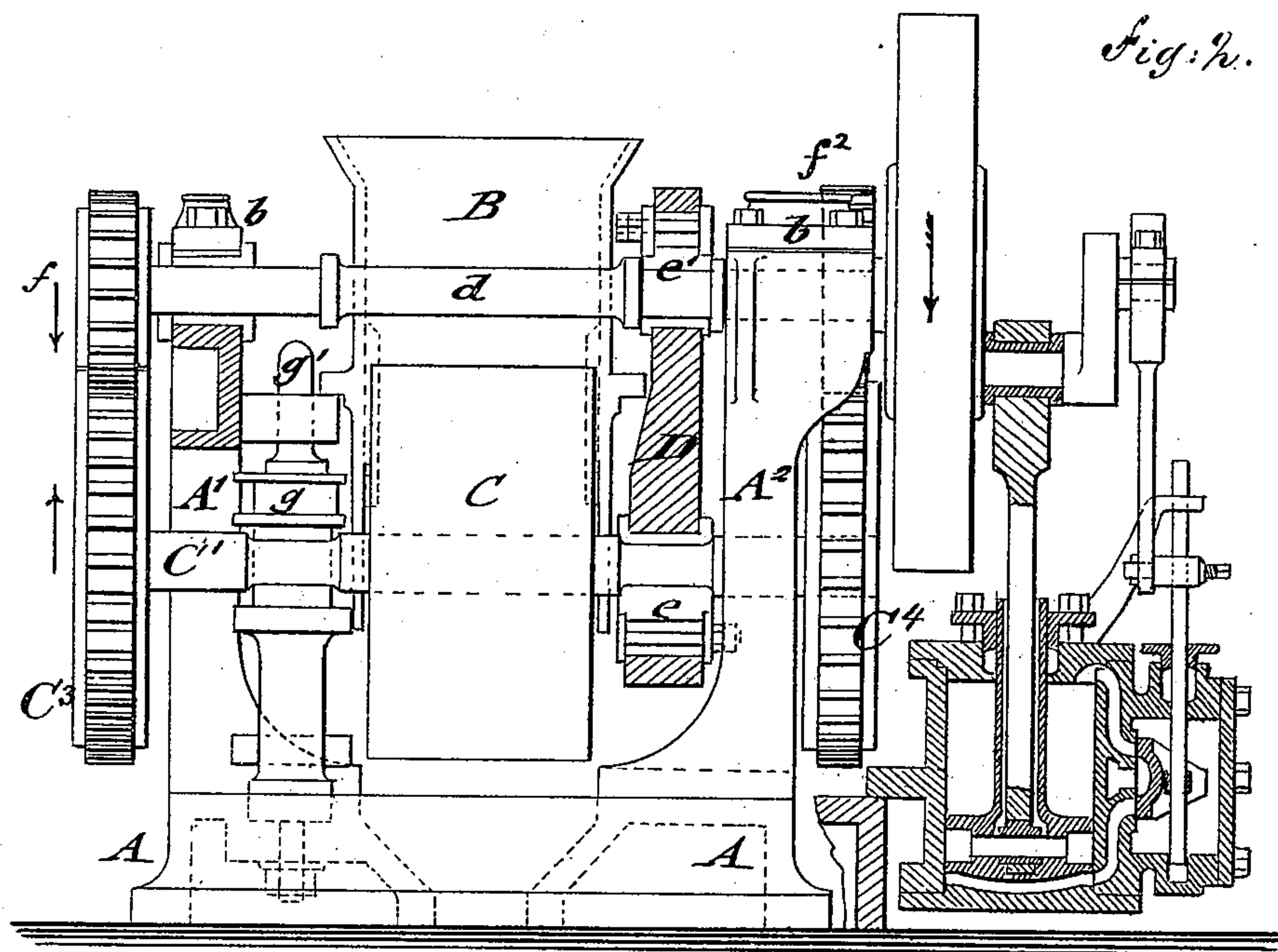
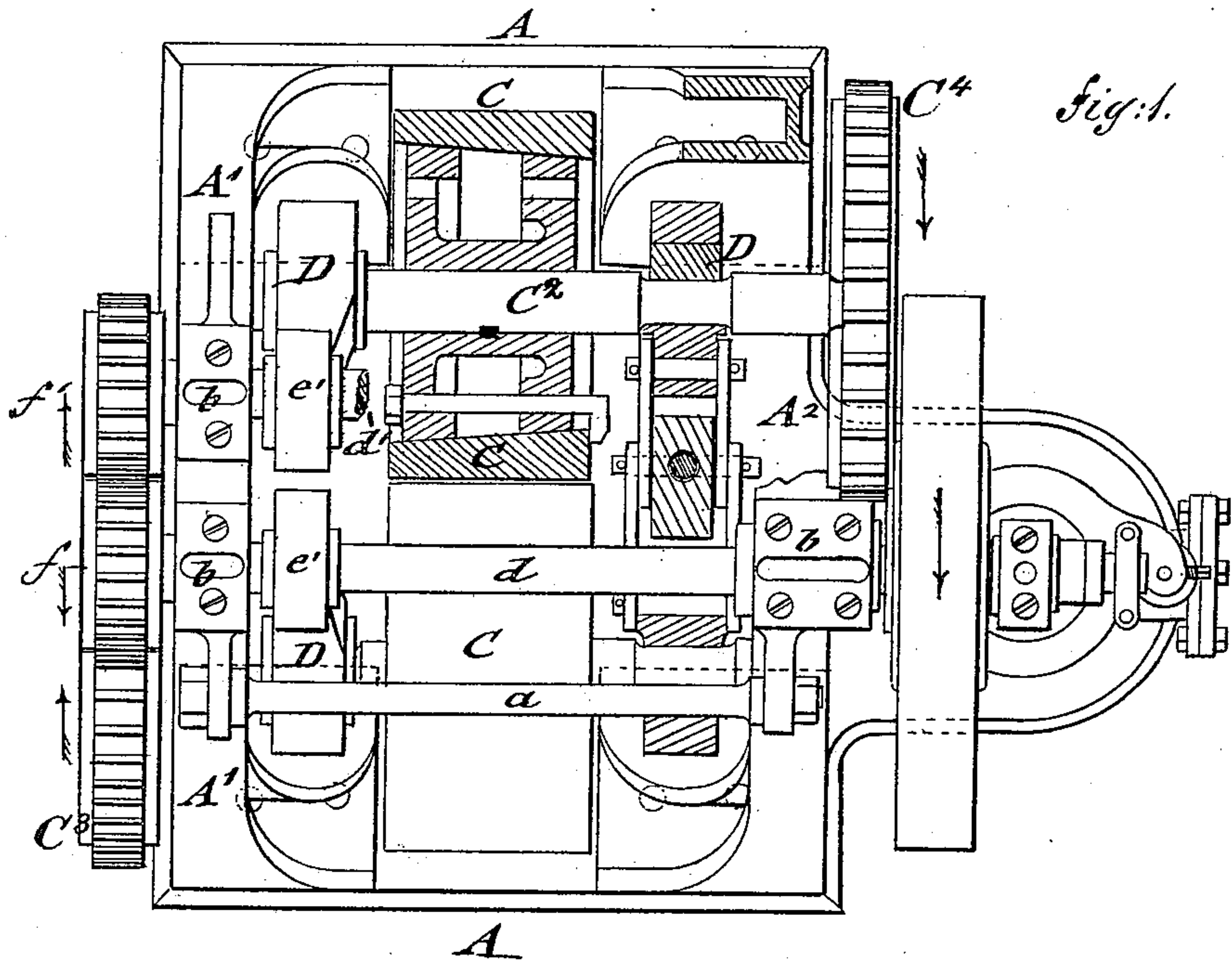
(No Model.)

2 Sheets—Sheet 1.

A. F. WENDT.  
CRUSHING ROLL MILL.

No. 246,434.

Patented Aug. 30, 1881.



WITNESSES:

Carl Karp  
Otto Risch

INVENTOR:

Arthur F. Wendt  
BY Paul Goepel  
ATTORNEY.

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*fig: 3.*

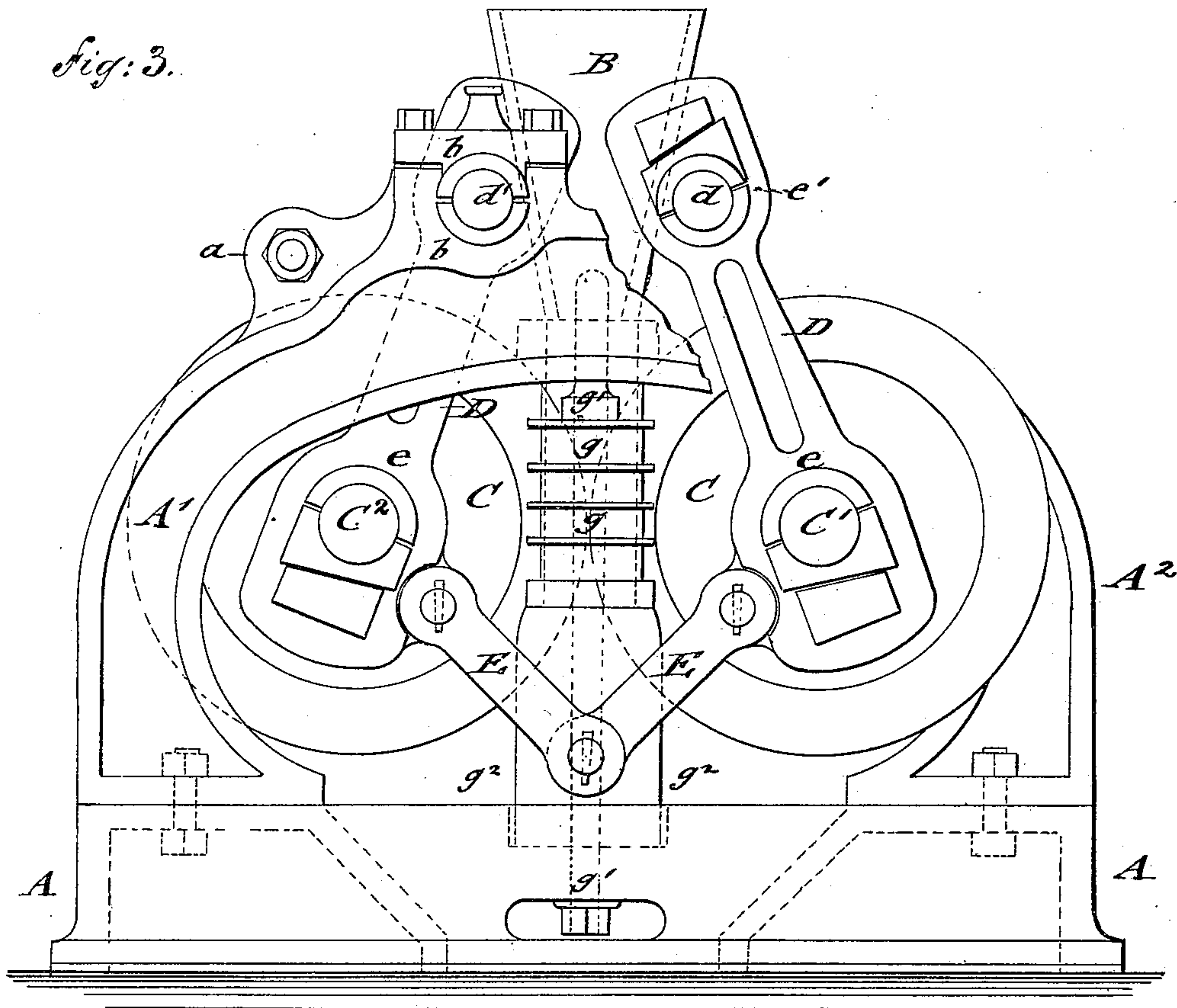
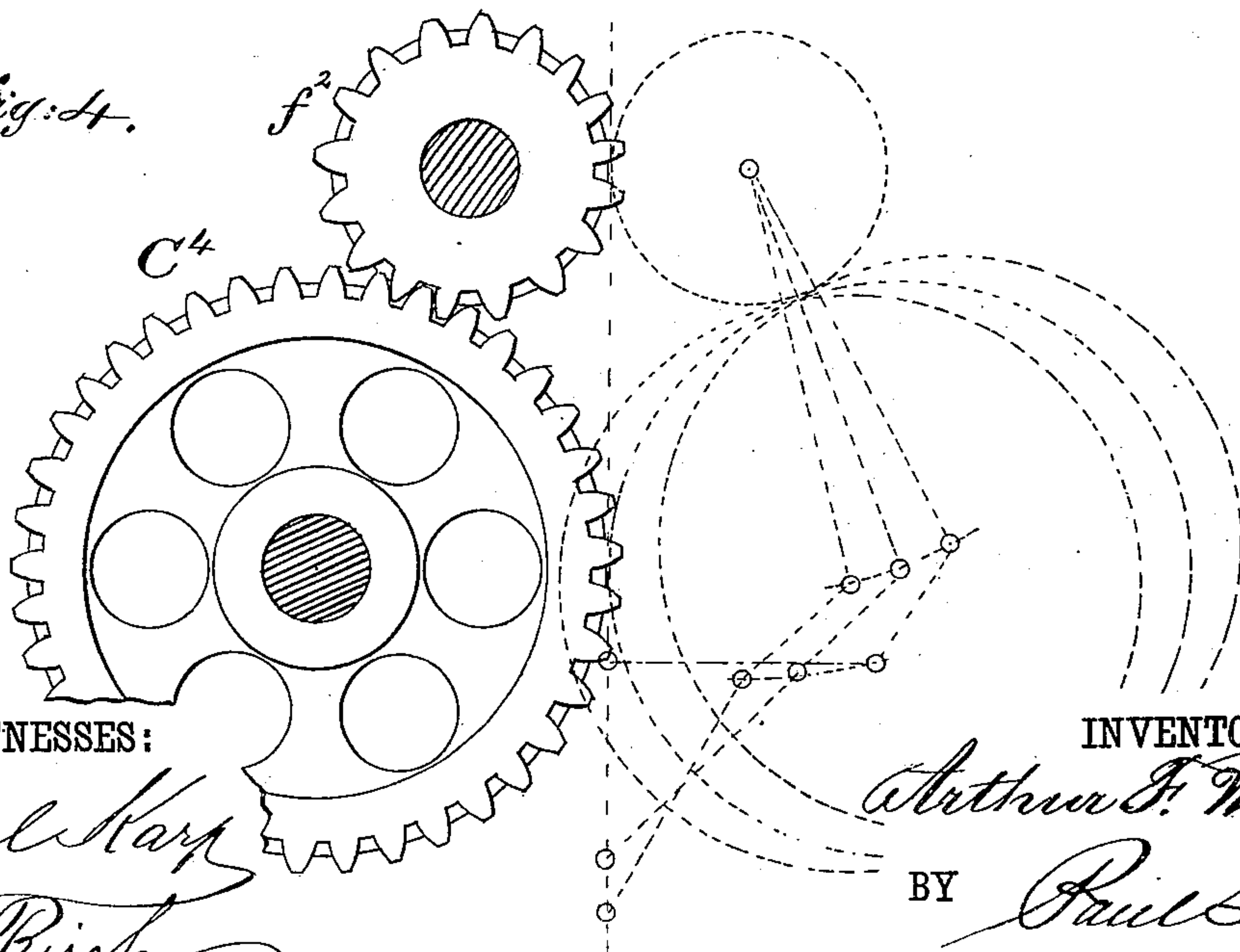


Fig: 4.



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# UNITED STATES PATENT OFFICE.

ARTHUR F. WENDT, OF NEW YORK, N. Y.

## CRUSHING-ROLL MILL.

SPECIFICATION forming part of Letters Patent No. 246,434, dated August 30, 1881.

Application filed January 5, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR F. WENDT, of the city, county, and State of New York, have invented certain new and useful Improvements in Crushing-Roll Mills, of which the following is a specification.

This invention has reference to improvements in crushing-rolls for ores, coal, bones, and other substances, the crushing-rolls being constructed of considerable strength to withstand the strain exerted thereon, but in such a manner that even larger bodies may pass through the rolls without injuring or breaking them and without throwing the motion-transmitting pinions and gear-wheels out of gear, whatever be the distance between the rolls.

In the accompanying drawings, Figure 1 represents a top view, partly in horizontal section, of my improved crushing-rolls. Fig. 2 is an end elevation, partly in vertical transverse section; Fig. 3, a side elevation, with part of the frame or housing broken away; and Fig. 4 is a diagram showing the arrangement of the transmitting-pinions and gear-wheels of the rolls by which the latter are kept in continuous gear with the pinions.

Similar letters of reference indicate corresponding parts.

A in the drawings represents a cast-iron bed-plate, which is secured firmly to a foundation of timber or other suitable material.

A' A<sup>2</sup> are vertical side frames or housings, which are securely fastened to the bed-plate A and transversely braced by stay-rods *aa*. The housings A' A<sup>2</sup> are arranged at their upper parts with bearings *b* for two driving-shafts, *d d'*. Intermediately between these shafts *d d'* is arranged a supply-hopper, B, through which the ore or other material to be crushed is fed downward to the crushing-rolls C C. The crushing-rolls are supported on strong shafts C' C<sup>2</sup>, which are hung to bearings *e* at the lower end of oscillating hangers D, the upper ends of which are hung by bearings *e'* to the driving-shafts *d d'*, as shown clearly in Figs. 1, 2, and 3. One of the driving-shafts *d* of the machine receives motion either by means of a pulley actuated by a belt from a counter-shaft overhead or directly from a steam-engine or other motor secured to the bed-plate A, as shown in Figs. 1 and 2. The driving-shaft *d* carries at its oppo-

site end a strong pinion, *f*, which meshes with a gear-wheel, C<sup>3</sup>, at the outer end of the shaft C' of one of the crushing-rolls, and also with a second pinion, *f'*, at the end of the second driving-shaft, *d'*. A pinion, *f*<sup>2</sup>, on the opposite end of the second driving-shaft, *d'*, engages the gear-wheel C<sup>4</sup> at the outer end of the shaft of the second crushing-roll, C. The two rolls are, by the transmitting-gearing described, turned toward each other with an even, continuous, and steady motion, so as to take up and crush the ores fed to the same from the hopper B. The rolls revolve close together or at some distance from each other, according to the coarseness of the ores. By means of their oscillating hangers they are enabled to move apart, the spreading motion being resisted by a series of rubber or other springs, *g*, held in place by vertical guide-posts *g'*, and by connecting pivot-links E, which extend from the lower part of the oscillating hangers D to enlarged base-sleeves *g*<sup>2</sup> of the vertical guide-posts *g'*, as shown in Fig. 3. The spreading apart of the rolls produces the compression of the cushioning-springs, which latter, however, cause the instant approach of the crushing-rolls as soon as the larger portions or other disturbing bodies have passed between the same.

It is obvious that the amount of compression, and hence resistance, of the springs, becomes greater in an increasing ratio as the rolls are forced farther apart.

By the use of the cushioning-springs and oscillating hangers the crushing-rolls adjust themselves whenever the obstruction is removed, so that the machine can be exposed to extraordinary strain without causing any breakage or any interruption in the working of the same.

By raising the cushioned sleeves *g*<sup>2</sup>, by means of collars or otherwise, the rolls can be adjusted to work at any desired distance from each other.

The crushing-rolls are constructed in any approved manner, that shown in the drawings being generally in use, and composed of an interior tapering core, to which the surface-ring, which is tapering at its inner side, is applied and retained in any suitable manner. The surface-ring can be replaced when worn out.

Owing to the supporting of the crushing-



rolls by means of oscillating hangers from the shafts of the transmitting-pinions at the upper part of the machine the gear-wheels of the rolls will always retain their proper position to the transmitting-pinions, as the shafts of the rolls move in a circle concentric to the shafts of the transmitting-pinions, as shown clearly in dotted lines in Fig. 4. This is the important feature of my crushing-machine, as thereby the continuous and steady motion of the rolls can be kept up whatever be their distance from each other. The transmitting-pinions and gear-wheels of the rolls are always fully intermeshing without any sliding of the cogs of the pinions on those of the gear-wheels, and without any danger of breakage of teeth by the partial intermeshing of the same, which forms an objectionable feature of the rolls heretofore in use. Another advantage of this construction consists in having the transmitting-pinions above the crushing-rolls, so that the entire working mechanism of the machine is always within view, readily accessible, and not only easier put up, but also repaired with greater convenience.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the crushing-rolls, the oscillating hangers supporting said rolls, the transverse driving-shafts supporting the hangers, the spring-cushioned guide-sleeves, and the pivot-links connecting said hangers and guide-sleeves, substantially as described.

2. In a crushing-machine, the combination of the transverse driving-shafts, provided with

transmitting-pinions, the oscillating arms or hangers depending from said shafts, and a pair of crushing-rolls arranged in a horizontal plane, the shafts of said rolls being provided with gear-wheels at opposite ends of the rolls, and having their bearings in the oscillating hangers, whereby the rolls are adapted to swing in arcs of circles concentric with the driving-shafts as they move apart, and the gear-wheels retained in full mesh with the transmitting-pinions whatever be the distance between the rolls, substantially as described.

3. In a crushing-machine, the combination of the transverse driving-shafts provided with transmitting-pinions, the oscillating arms or hangers depending from said shafts, the cushioned guide-sleeves, the links connecting the hangers and guide-sleeves, and a pair of crushing-rolls arranged in a horizontal plane, the shafts of said rolls being provided with gear-wheels, and having their bearings in the oscillating hangers, whereby the rolls are adapted to swing in arcs of circles concentric with the driving-shafts as they move apart and the gear-wheels retained in full mesh with the transmitting-pinions whatever be the distance between the rolls, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of December, 1880.

ARTHUR F. WENDT.

Witnesses:

PAUL GOEPEL,  
CARL KARP: