

(No Model.)

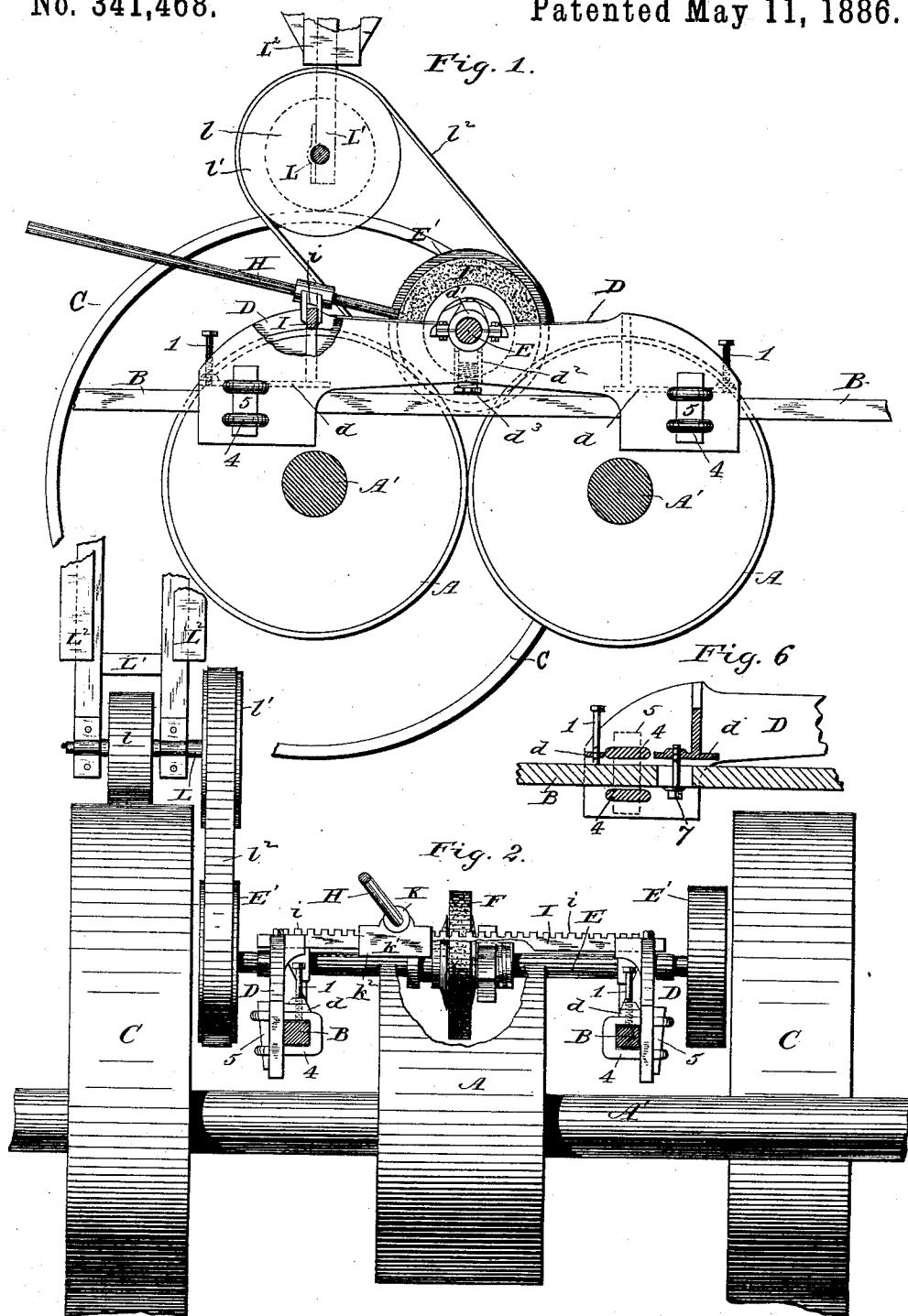
2 Sheets—Sheet 1.

W. M. FERRY.

ROLL DRESSING MACHINE.

No. 341,468.

Patented May 11, 1886.



Witnesses:

H. N. Low
C. E. Dryden

Inventor:

William M. Ferry
by J. N. Houghton,
attor.

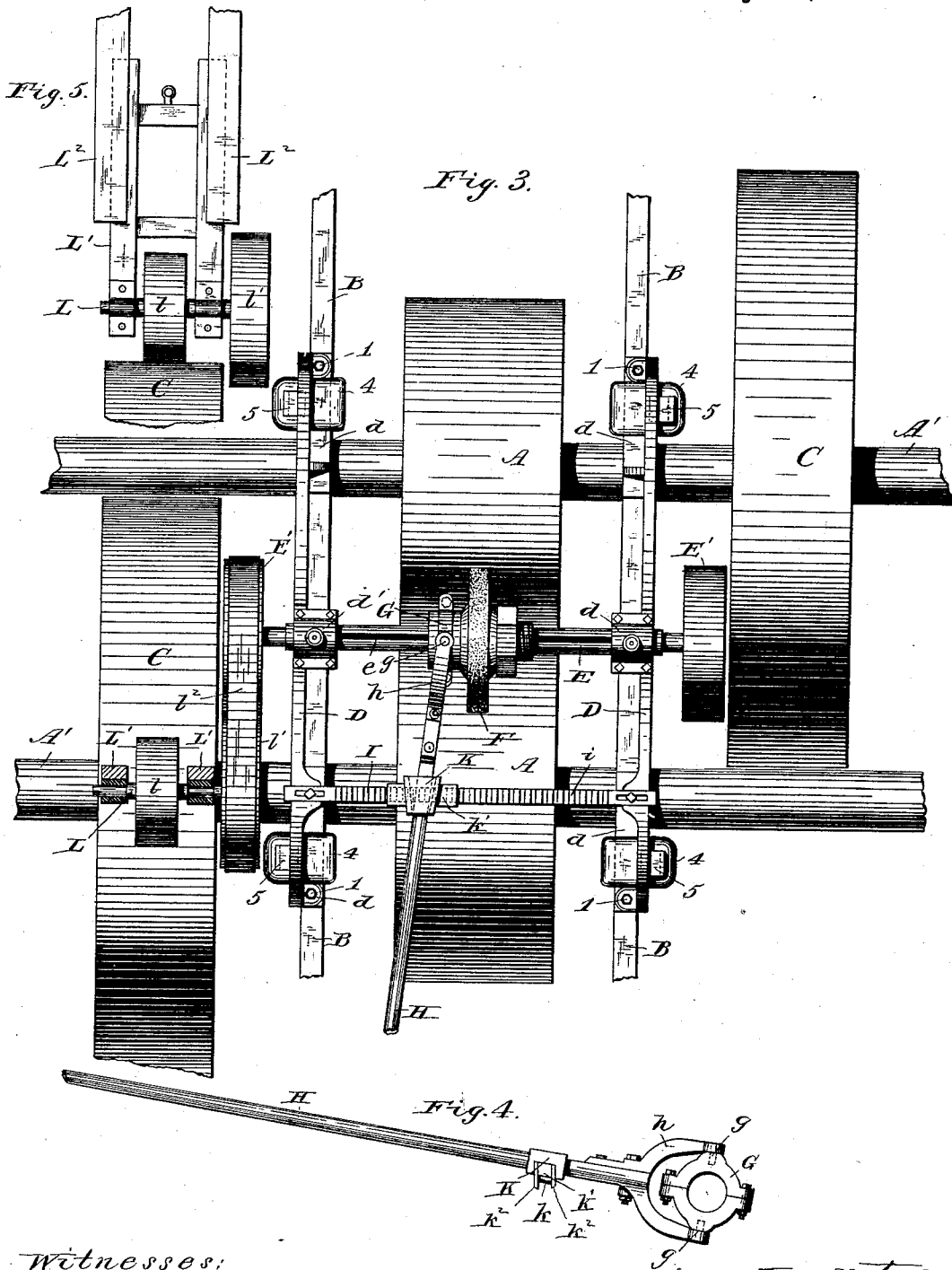
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UNITED STATES PATENT OFFICE.

WILLIAM MONTAGUE FERRY, OF PARK CITY, UTAH TERRITORY.

ROLL-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 341,463, dated May 11, 1886.

Application filed February 23, 1886. Serial No. 192,891. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MONTAGUE FERRY, a citizen of the United States, residing at Park City, in the county of Summit and Territory of Utah, have invented certain new and useful Improvements in Roll-Dressing 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 and figures of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a means for facing or re-dressing to a true face the surfaces of ore-crushing or similar rolls which have by use become worn and creased in ridges or otherwise deprived of that exact cylindrical shape which is essential to the smooth working of the machine and even crushing of the ore.

My present invention comprises a cutting-wheel, preferably an emery-wheel, a frame for supporting and adjusting it in proper relation to the crushing roll or rolls to be re-dressed, devices for imparting a rapid rotary motion to the cutting-wheel, and means for conveniently moving the wheel, while in operation, longitudinally of the rolls, the whole being adapted to be applied at will to the frame of an ore-crusher.

By this dressing apparatus any roll or pair of rolls may be trued without removing them from the crusher or stopping the motion of the latter.

My invention can best be understood by reference to the accompanying drawings, in which I have shown a means for carrying it into effect.

In said drawings, Figure 1 is a side elevation of a pair of crushing-rolls and a part of their supporting-frame and driving mechanism, showing also a device embodying my invention applied to the rolls in position for dressing them. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view. Fig. 4 is a view of the lever for shifting the cutting-wheel. Fig. 5 is a front elevation of the supporting devices for the counter-shaft. Fig. 6 is a view in longitudinal section of a part of the supporting-frame, showing additional clamping-bolts which may be used.

Referring to the drawings, A A represent

the ore-crushing rolls; A' A', the shafts of the same; B B, the extension or side bars of their supporting-frame, and C the driving-pulleys of the rolls.

D D represent two brackets, adapted to rest by flanges *d* upon the bars B B, and having bearings *d'* for the arbor E of the cutting-wheel F.

To secure an accurate parallelism between the arbor E and the axis of the roll to be dressed, the brackets D are first adjusted longitudinally upon the bars B to the proper points. Then by set-screws 1, engaging with the flanges *d* and bearing upon the bars B, or by wedges or other means, the brackets are adjusted vertically till the desired parallelism is attained. When the set-screws 1 are used, wedges may be tapped under the flanges *d* to re-enforce said screws, if desired. The brackets D, having been adjusted accurately, are then securely clamped to the frame-work of the crushing-rolls, preferably by grips 4, which clasp the bars B and draw the brackets thereto by the action of wedges 5.

The arbor E is provided with a groove, *e*, with which the hubs of the cutting-wheel engage in a well-known manner, so that while receiving rotatory motion from the shaft the wheel may be moved longitudinally thereon from one end of the crushing-roll to the other.

The means which I have devised for enabling the cutting-wheel to be held to its work with the necessary pressure and moved for the entire length of the roll to be dressed is very simple and effective.

G represents a two-part collar adapted to engage with a groove in the hub of the wheel F.

H is a hand-lever engaging with or hinged to the collar G. This engagement is preferably effected by forking the lever at one end, one of the arms *h* of the fork being removable, as shown, and both arms having a pivotal connection with the collar G at *g*.

The fulcrum of the lever H should be near the weight—that is, near the wheel F—in order that sufficient power may be applied laterally to the wheel by hand. In such event, with an ordinary fixed fulcrum for the lever, the scope of the lateral movement of the wheel would be much confined. I have therefore combined with the lever and wheel a fulcrum which is laterally adjustable with great readiness.

I is a bar extending from one bracket, D, to

the other, substantially parallel with the arbor E. It has a bolt and slot or similar adjustable connection with the brackets D, to admit of their adjustment to different widths of rolls, and is adapted to be engaged by the lever H at various points of its length. This engagement may be effected in various ways. A convenient means, which is that illustrated, is to provide the bar I with a series of teeth, i , beveled downward, as shown in Fig. 1, if desired, with which the lever H engages directly or through the medium of corresponding teeth, k , formed upon a slide, k' , which latter carries a sleeve or bearing, K, for the lever.

The sleeve K may be pivoted to the slide k' , or flared, as shown in Fig. 3, to permit of the oscillation of the lever H, which fits loosely and is capable of longitudinal movement therein. The slide k' engages laterally with the bar I by means of flanges k^2 , which keep the slide in line with the bar when the former is raised by the lever and carried to a new position on the bar. During this latter momentary operation the pivots at g constitute the fulcrum of the lever, which thus becomes alternately of the first and second class.

The arbor E is driven by pulleys E' E', one of which is situated at each end of the arbor. That pulley is used to which power may be most conveniently applied. The power is preferably derived immediately from the roll-driving mechanism, the roll which is being dressed, it will be understood, being in motion as well as the cutting-wheel. A convenient means for this purpose consists of the counter-shaft L, which may be connected to the arbor E, and which is supported so that it may be moved toward or from the roll-driving pulley C. By the former movement the friction-pulley l may be caused to engage with and be rapidly rotated by the driving-belt of the pulley C. Thus, through the shaft L, belt-pulley l' , belt l^2 , and pulley E', power is imparted to the arbor and the cutting-wheel. The latter, having been adjusted to the desired depth of cut, is by the lever H moved toward one end of the rolls, where it dresses one or both, according to its adjustment, it being held to its work and gradually moved to the other end of the roll by the said lever. The fulcrum of the lever is from time to time changed, as already explained. To drive the arbor in the opposite direction, the counter-shaft L will be moved, and power will be taken from the driving-pulley of the other roll.

As an additional support to the arbor E, to prevent vibration thereof and to re-enforce the brackets D, the latter are provided, immediately under the bearings d' , with screw-threaded sockets d^2 , which strengthen the brackets, and with which engage stout screws d^3 . By screwing the latter downwardly their heads are caused to bear against the bars B with the above-mentioned effect.

It will be understood that the supporting and clamping devices of the brackets D will be modified in the construction of my apparatus to fit the frames of the various classes of machines for which it is intended.

If desired, suitable grips or bolts, as shown at 7 in Fig. 6, may be used to draw the brackets D downward against the bars B. Such grips would be tightened after the adjustment of the bolts d^3 .

As shown in Fig. 5, the counter-shaft L may be supported in a vertically-sliding frame, L', which may be raised or lowered in fixed ways L², to separate or engage the wheels l and C.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a roll-dressing machine, the combination of an adjustable frame, an arbor and cutting-wheel having a spline-and-groove connection supported thereby, and an adjustable counter-shaft having a friction and belt pulley, whereby power may be derived from the roll-driving mechanism, substantially as set forth.

2. In a roll-dressing machine, the combination of an adjustable frame, an arbor and cutting-wheel having a spline-and-groove connection supported thereby, power devices for driving the arbor, and a hand-lever engaging with the cutting-wheel and having an adjustable fulcrum on a cross-bar of the frame, substantially as set forth.

3. In a roll-dressing machine, the combination, with the arbor and cutting-wheel, of the brackets D, having bearings for the arbor, said brackets being provided with the flanges d , adjusting-screws l , and clamps for pressing said brackets laterally against the bars of the roll-supporting frame, substantially as set forth.

4. In a roll-dressing machine, the combination, with the arbor and cutting-wheel, of the brackets D, having bearings for the arbor, and adjusting-screws and clamps, as described, said brackets also being provided with the supporting-screws d^3 , situated beneath the arbor-bearings and adapted to bear upon the roll-supporting frame, substantially as and for the purposes described.

5. In a roll-dressing machine, the combination of an adjustable frame, an arbor and cutting-wheel having a spline-and-groove connection supported thereby, power devices for driving the arbor, and a hand-lever engaging with the cutting-wheel and having an adjustable fulcrum on a cross-bar of the frame through the medium of the slide k' and sleeve K, substantially as set forth.

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

WILLIAM MONTAGUE FERRY.

Witnesses:

JOS. M. COHEN,
JAMES MOFFAT.