(No Model.)

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J. M. FINCH.

ROLLER MILL.

No. 313,816. Patented Mar. 10, 1885.

Fig. 1.

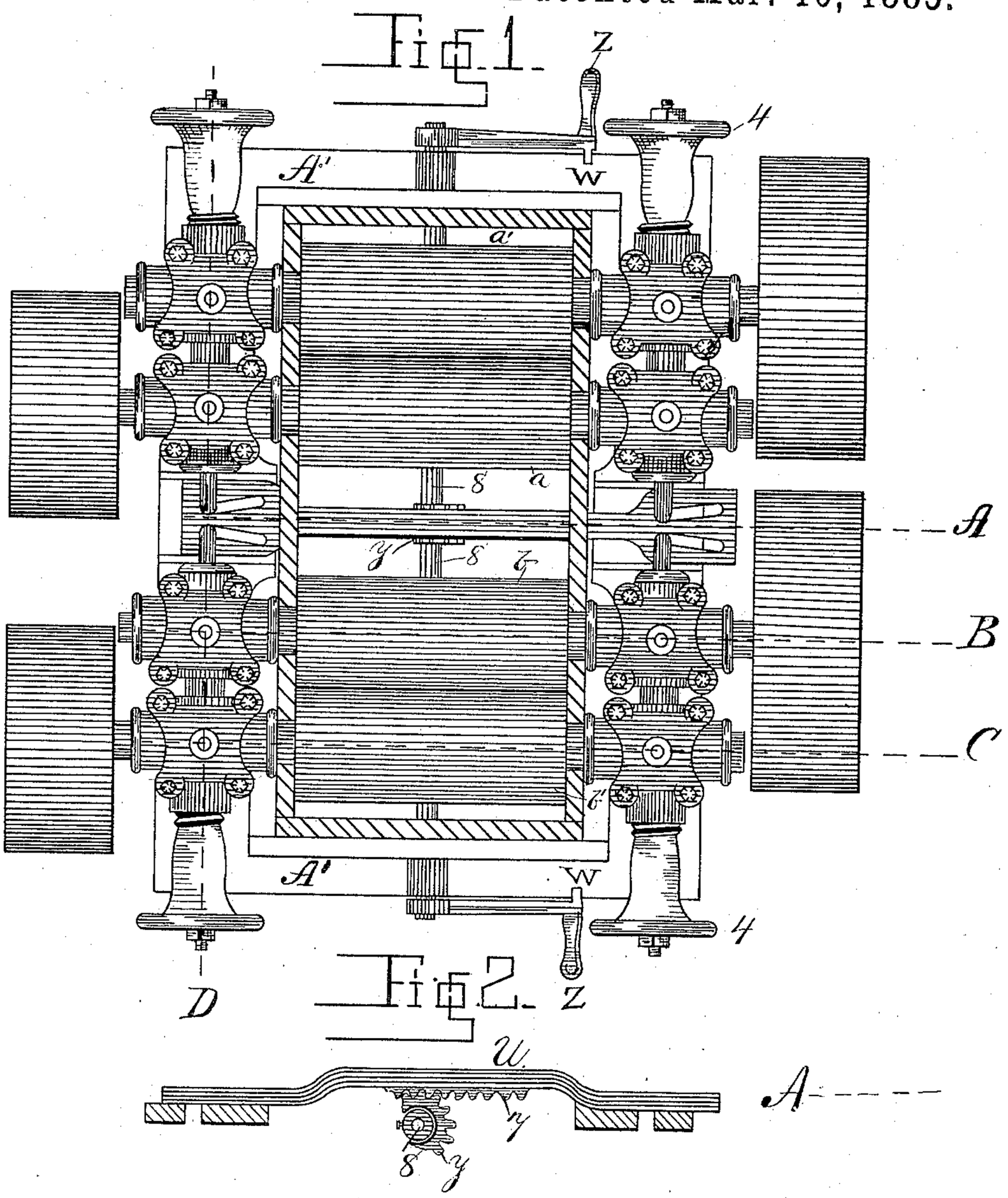
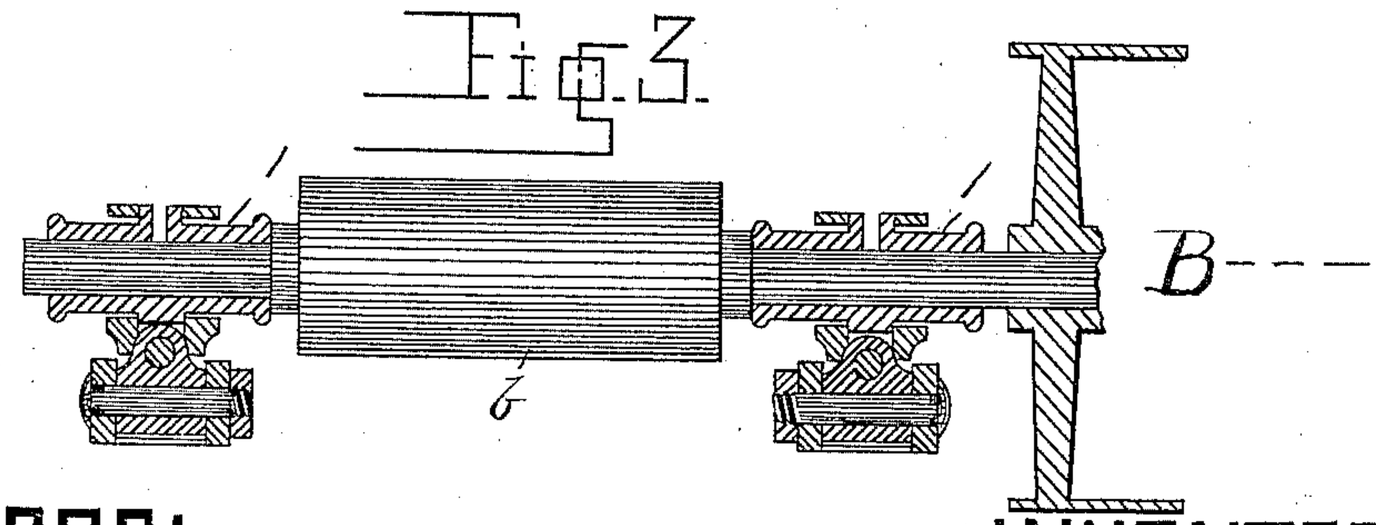


Fig. 2.

Fig. 3.



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R. G. DuBois

INVENTOR;
John M. Finch
by M. A. Doolittle

(No Model.)

3 Sheets—Sheet 2.

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Fig. 4.

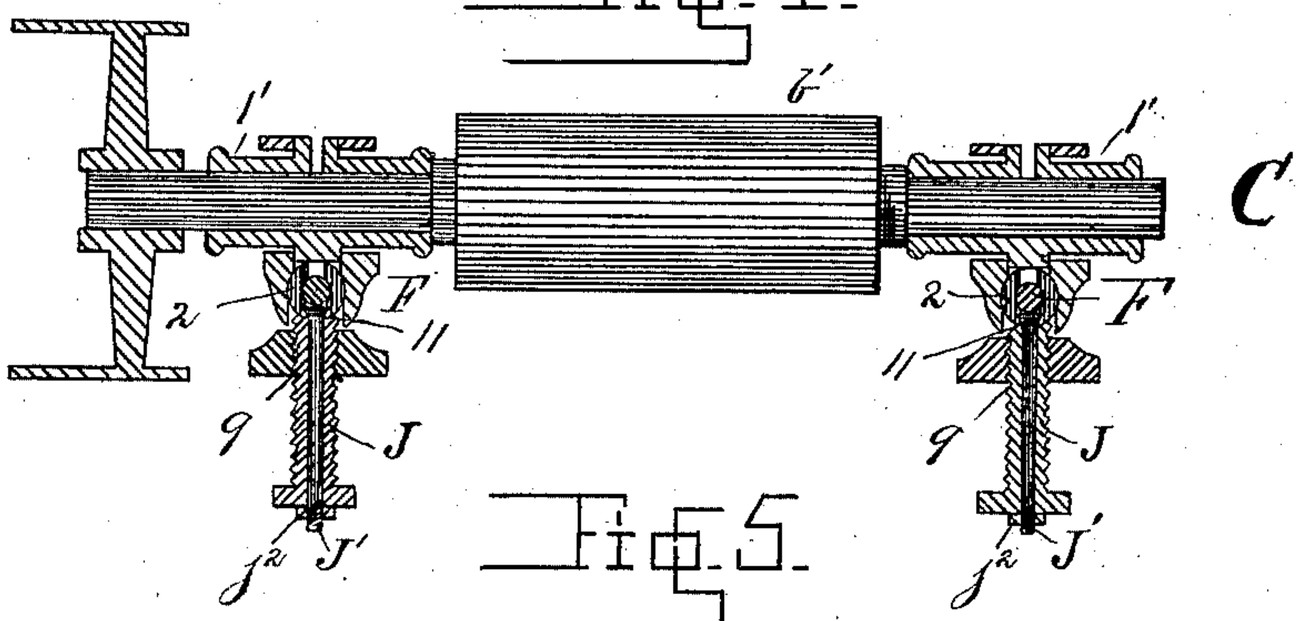


Fig. 5.

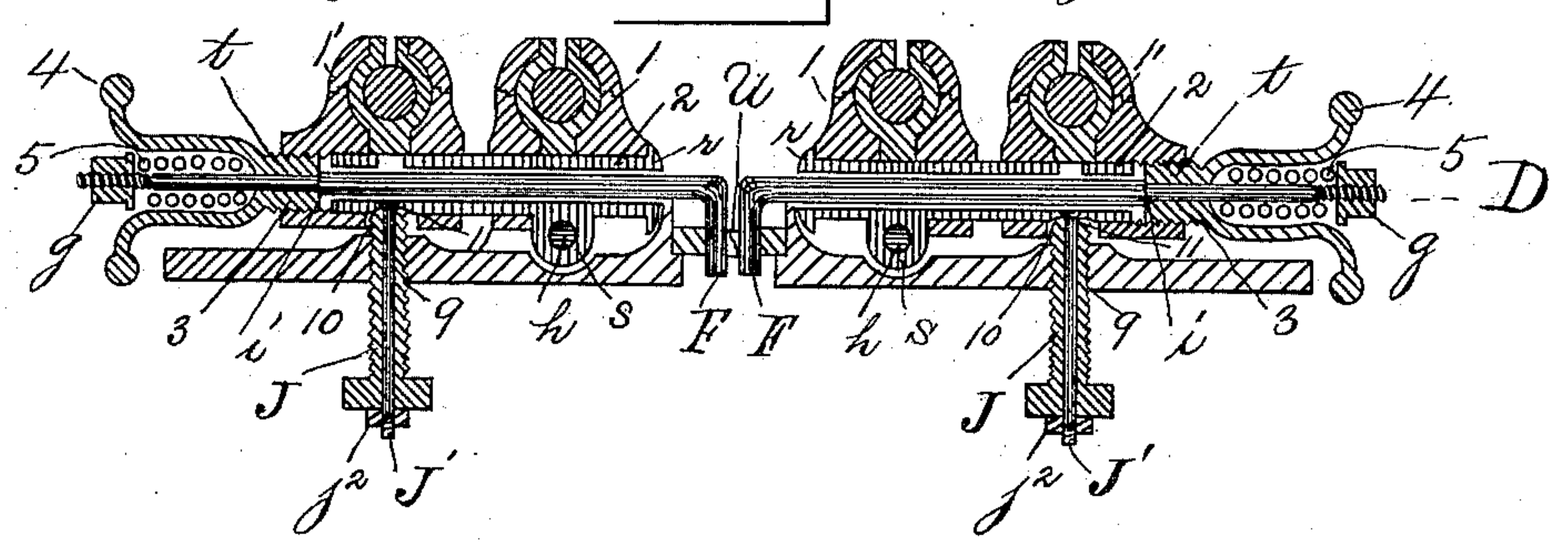


Fig. 9.

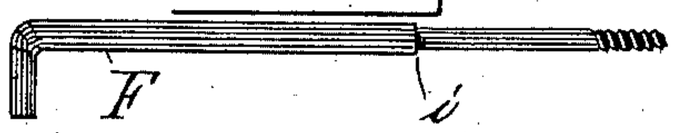


Fig. 8.

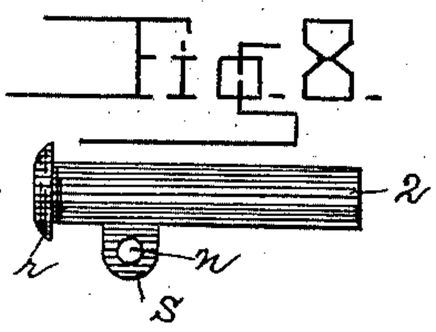
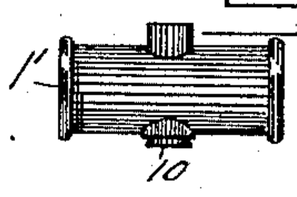


Fig. 12.



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3 Sheets—Sheet 3.

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ROLLER MILL.

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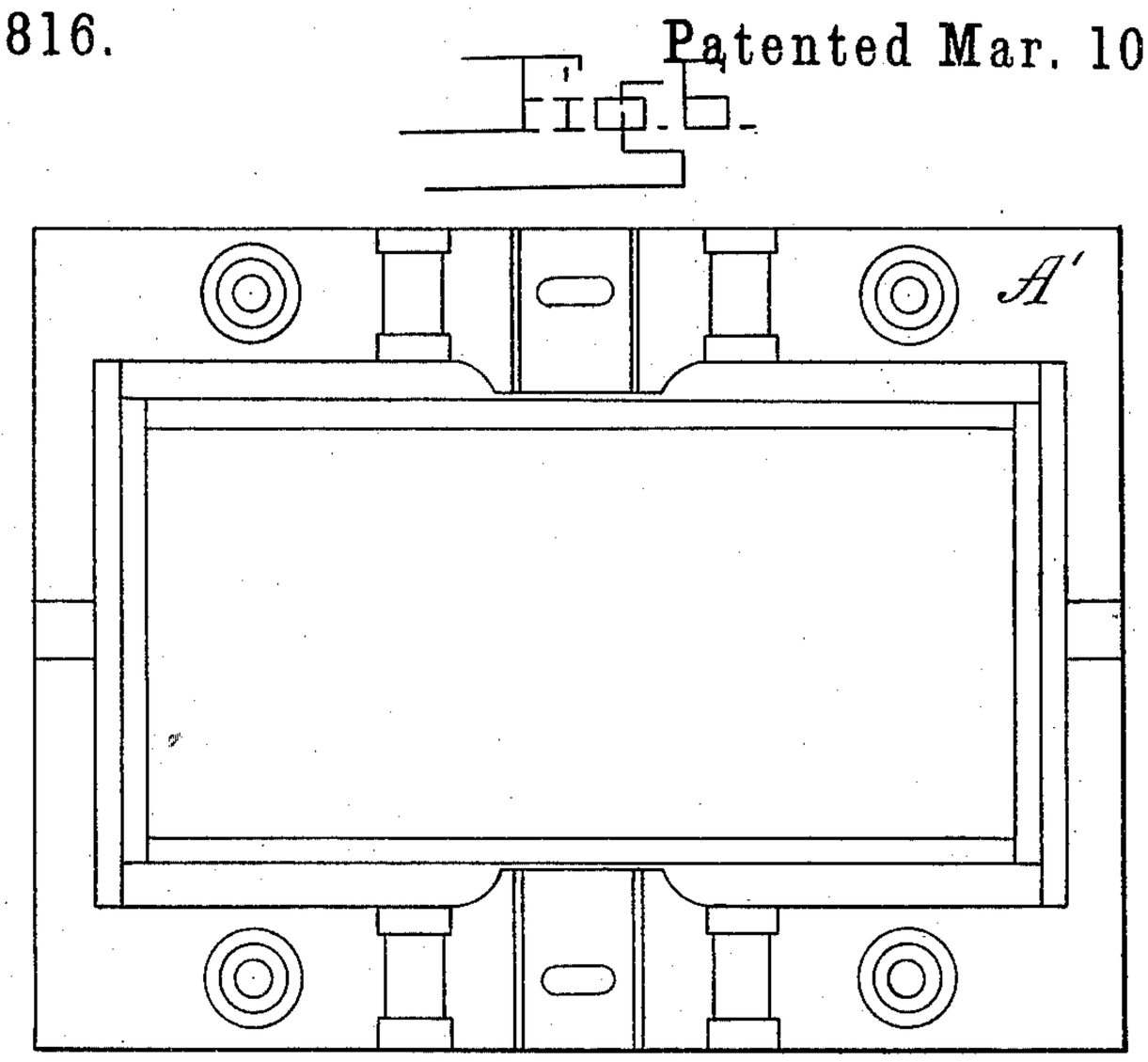

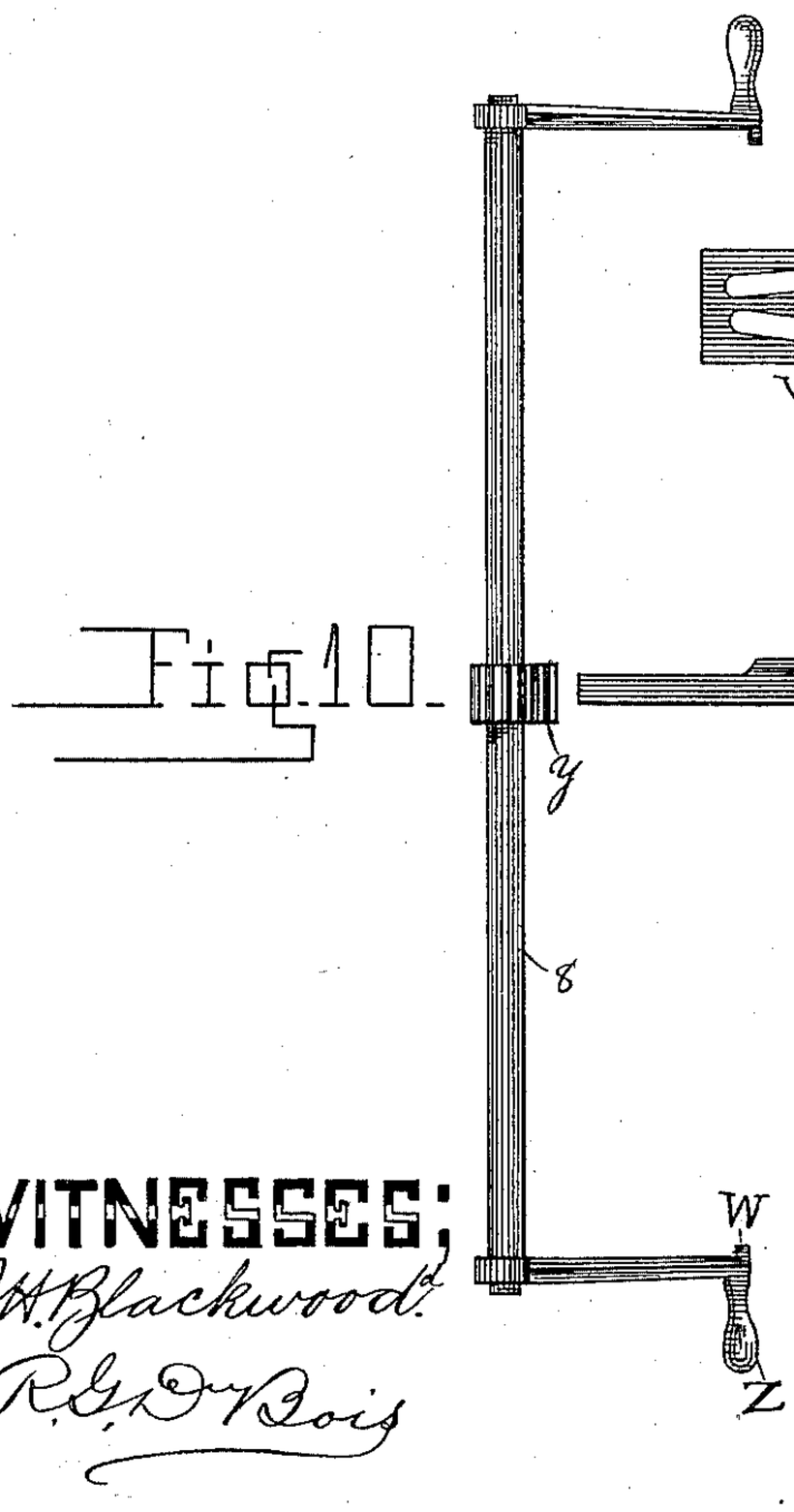

Fig. 7.

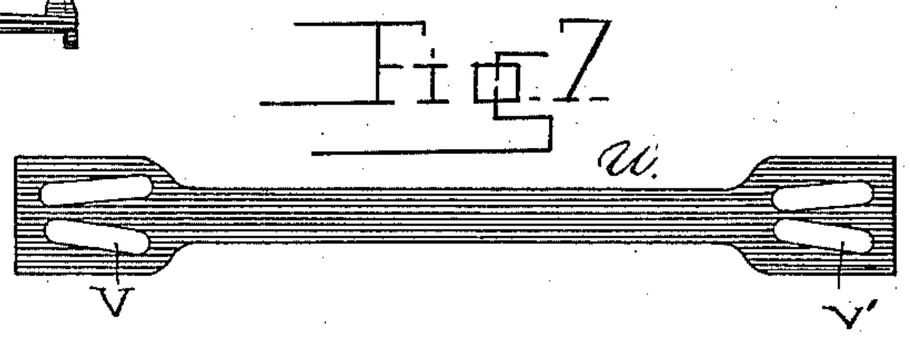

Fig. 11.

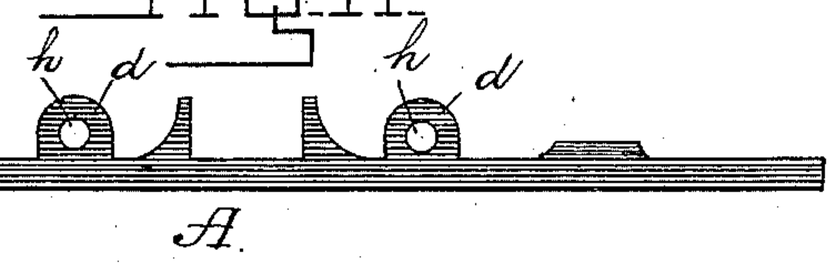

Fig. 10.

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UNITED STATES PATENT OFFICE.

JOHN M. FINCH, OF JACKSON, MICHIGAN.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 313,816, dated March 10, 1885.

Application filed May 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. FINCH, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Roller-Mills; and I do hereby 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.

This invention relates to roller-mills such as are used for grinding wheat and other grains, middlings, and all the products of new-process milling.

My invention consists in improved means for adjusting a movable roll to and from a stationary roll, for simultaneously separating both of the movable rolls from the stationary rolls, for leveling the rolls, and for rendering the bearings of the rolls self-adjusting, more particularly as hereinafter described and claimed.

My improvements are illustrated in the accompanying drawings, in which Figure 1 is a plan view; Figs. 2, 3, 4, and 5, sectional views on lines A, B, C, and D, respectively, of Fig. 1; Fig. 6, a plan view of the frame supporting the rolls; and Figs. 7, 8, 9, 10, 11, and 12, views of separate parts of the machine.

In the drawings, A′ is the frame for supporting the rolls, plan views of which are shown in Figs. 1 and 6. The rolls are arranged on this frame in pairs, *a a′ b b′*, *a b* being stationary and *a′ b′* the adjustable rolls, and are supported in bearings 1 and 1′. These bearings below the journal-rests and at right angles therewith are bored out for the purpose of receiving sleeves 2, which are provided with a head, *r*, and a lug, *s*, having a pin-hole, *n*. When the sleeve is inserted in the bearings, the lug *s* is passed through a slot in the bottom of the bearings 1 and secured and pivoted to the frame by means of a bolt, *h*, passing through upwardly-projecting lugs, *d*, on the frame A, as indicated in Fig. 11. Fig. 8 is a detached view of this sleeve. The bearings 1 of the stationary rolls *a b* of the respective pairs of rolls rest against the heads *r* of these sleeves, as shown. The movable rolls *a′ b′*, having the bearings 1′, may be separately adjusted to and from the stationary rolls by sliding their bearings on the sleeves 2 by means about to be described. When necessary to be moved, the stationary rolls *a b* can also be slid upon the sleeves 2.

F is a rod bent at one end, the opposite portion being reduced in size, forming a shoulder at *i*, and at this end screw-threaded to receive a nut, *g*. This rod is placed in sleeve 2, its bent end engaged with slotted bar U, (the functions of which will be hereinafter fully described,) and its opposite smaller end extending through the hub 3 of a hand-wheel, 4. The inner ends of the hubs of these wheels are provided with a screw-thread, *t*, which engages with the journal-bearings 1′ of the rolls *b′*, which bearings are internally threaded to receive said hubs. Within the hub of this wheel is placed a coiled spring, 5, one end of which bears against the inner end of the hub, and the opposite end against the nut *g*.

When it is desired to set either of the rolls *a′ b′* nearer to either of the stationary rolls *a* or *b*, hand-wheel 4 is turned to the left, unscrewing the hub, which movement compresses the spring against the nut *g*, and the reactionary force of the spring carries the journal-bearing 1′ of the roll *b′* forward the desired distance.

For simultaneously separating both of the movable rolls *a′ b′* from the stationary rolls *a b* when it is desired to stop the machine, or to set said rolls at an equal distance from the stationary rolls at any time, the following means are employed: U, a bar, (shown in Fig. 7,) with its ends terminating in broad heads, and having formed in each of said heads two inclined slots, *v v′*, the slots in the respective heads diverging, so as to form a wedge-shaped part of the bar between them, is placed across the machine between the stationary rolls *a b*. The bar U is provided on its under surface with a rack, 7, as shown in Fig. 2, with which engages a pinion, *y*, on a shaft, 8, running at right angles with the bar U, and supported in suitable bearings in the frame. The shaft 8 is provided at each end with a crank, Z, which has a suitable handle, and the cranks are each provided with a slot, W. Into the slots *v* of the bar U are placed the bent ends of the rods F. By means of the cranks Z the shaft 8 may be rotated and the bar U reciprocated. By

moving the bar U in one direction the wedge-shaped portion of the bar between the slots is forced farther between the bent ends of rods F, thus carrying the said rods backward. The rods F having shoulders at *i*, against which the hubs *t* of wheels 4 abut, and said hubs being screwed into the bearings 1′ of a movable roll, as before described, this backward action of the rod F serves also to carry back the bearings of the movable roll on the sleeve 2. The original position of the rolls and their point of closest contact, as shown in Fig. 1, is obtained by the rotation of shaft 8 in an opposite direction until the stops W on cranks Z rest upon the roller-frame.

For the purpose of leveling the rolls or setting their surfaces in the same horizontal plane, I have devised the following means: J is a hollow bolt with its outer surface threaded, which is passed up through a threaded opening in the frame at 9, Fig. 5, and through a transverse slot, 10, in the bottom of bearing 1′, with its upper end resting in a seat, 11, formed in the under surface of the hollow bar 2, as shown in Figs. 4 and 5. The size and length of slot 10, through which the bolt J is passed, are sufficient to permit the free endwise movement of the bearing 1′ of the movable roll upon the sleeve 2, as above described. A bolt, J′, passes through the bolt J, and is provided with a head, which is countersunk in the sleeve 2. The end of the movable roll *a′* or *b′* is adjusted vertically up or down by turning bolt J as the bearing 1′ is carried by sleeve 2, and sleeve 2 is pivoted by bolt *h* to the frame, as already described. When the roll is adjusted to the position required, it may be rigidly secured in place by turning up nut *j*² on outer end of bolt J′, which forces the seat 11 in the sleeve 2 down upon the upper end of bolt J.

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

1. In a roller-mill, in combination with the rolls and their bearings, the sleeves placed within said bearings, rods within said sleeves, the hand-wheels, and the springs within said wheels, whereby a movable roll is adjusted to and from a stationary roll, substantially as described.

2. In a roller-mill, the slotted bar, in combination with a rack, pinion, and shaft, the rods connected with said slotted bar, the bearings of the rolls, and sleeves for said bearings to slide upon, whereby the movable rolls of separate pairs are adjusted to and from the stationary rolls, substantially as described.

3. In a roller-mill, the combination of the roll-bearings, the sleeves extending through said bearings, and the adjusting-screws, whereby the rolls are leveled, substantially as described.

4. In a roller-mill, the movable rolls, in combination with the sleeves on which they slide, the rods within said sleeves, the springs, and the wheels containing said springs, whereby the said rolls are rendered self-adjusting, substantially as described.

5. In a roller-mill, the frame A, adapted to support in pairs the rolls *a a′ b b′*, in combination with the bearings of said rolls, and the sleeves 2, pivoted to said frames, substantially as described.

6. In a roller-mill, the combination of the movable rolls and bearings, the slotted bar U, the means for reciprocating said bar, consisting of the rack, pinion, and shaft, and rods which at one end engage with said bar, and at their opposite ends are connected with the bearings of said rolls, substantially as described.

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

JOHN M. FINCH.

Witnesses:
N. C. LOWE,
S. B. RICKERSON.