(No Model.)

F. FERRIER.

ROLLER MILL.

No. 312,623. Patented Feb. 24, 1885.

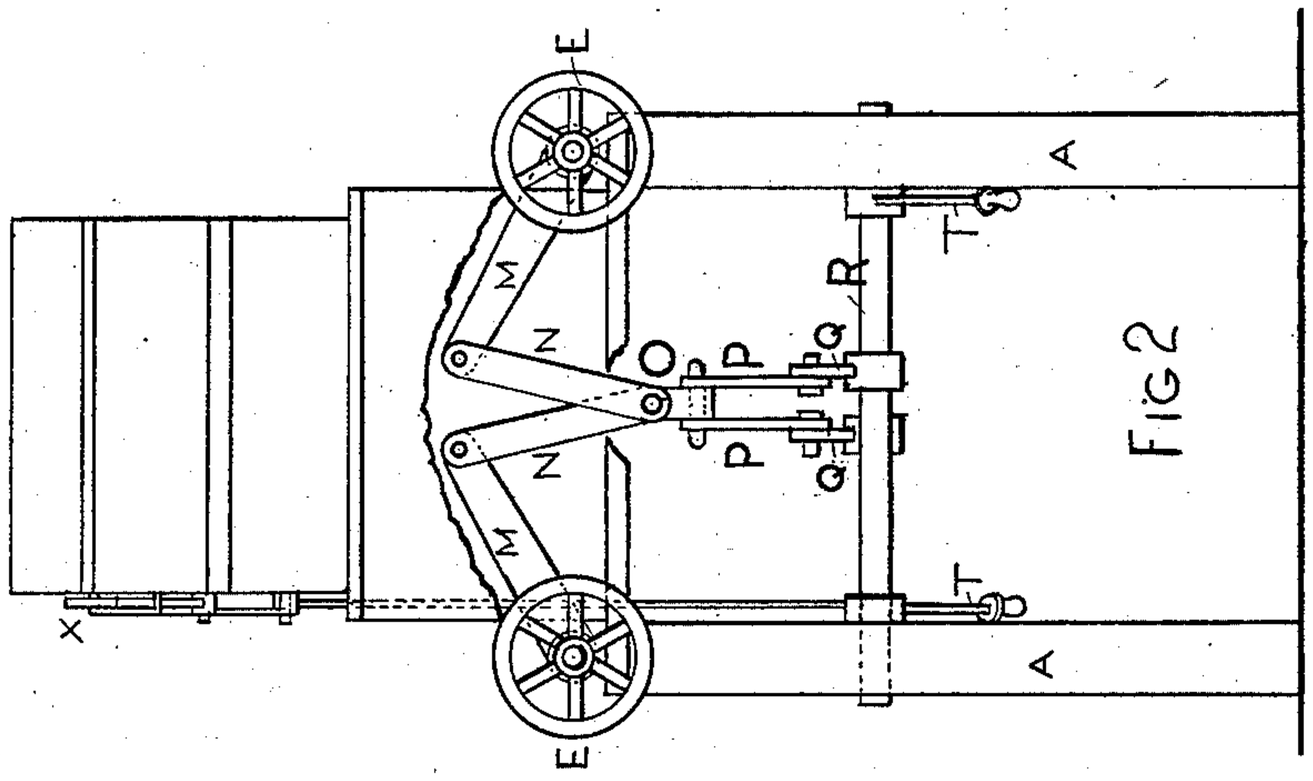

FIG 2

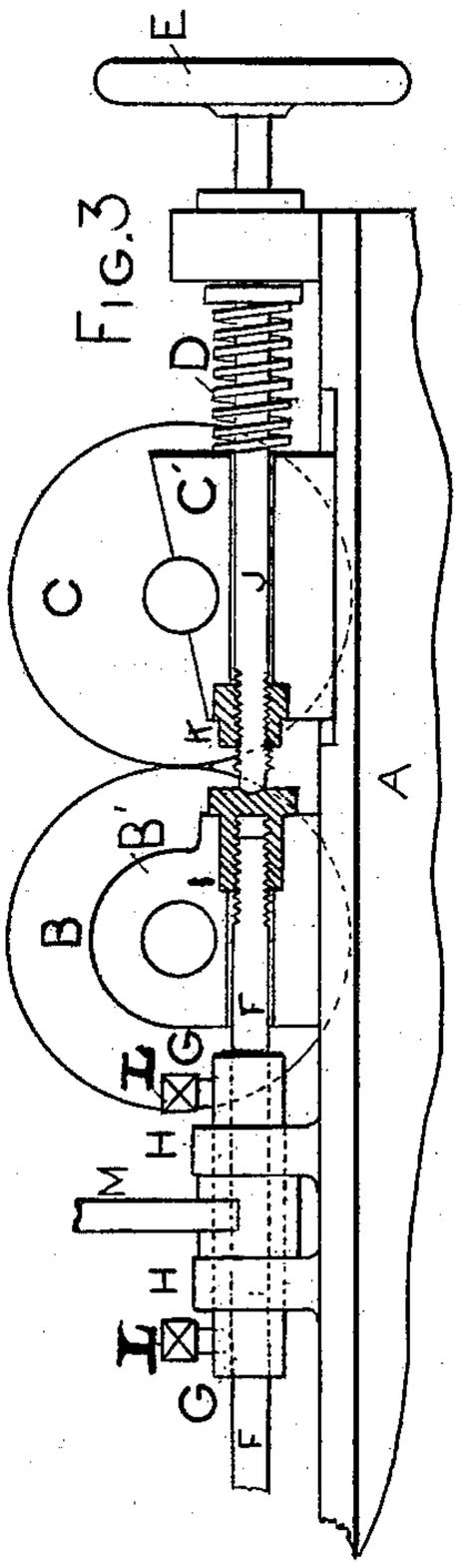

FIG. 3

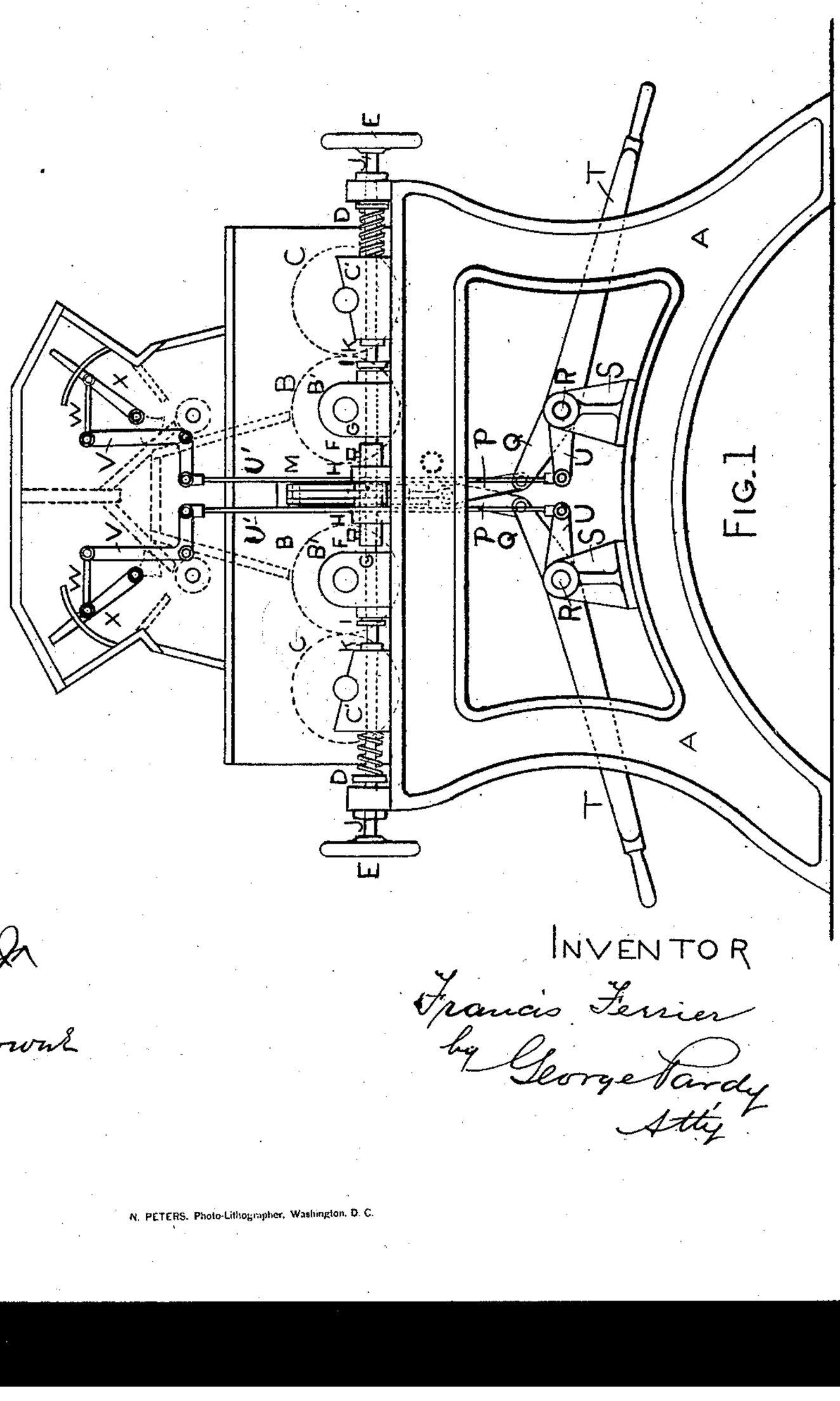

FIG. 1

WITNESSES

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FRANCIS FERRIER, OF VALLEJO, CALIFORNIA.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 312,623, dated February 24, 1885.

Application filed March 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS FERRIER, a citizen of the United States, residing at Vallejo, Solano county, State of California, have invented certain new and useful improvements in roller-mills for simultaneously moving the movable rolls from the fixed rolls and shutting the feed-gates, of which the following is a specification.

My invention relates to that class of roller-mills employing two pairs of rolls, but by obvious mechanical change is applicable to other forms of roller-mills.

In the accompanying drawings, forming a part of this specification, I have shown enough of the parts of a double roller-mill to illustrate the embodiment of my invention.

Figure 1 is a side view of a double roller-mill with my devices applied thereto. Fig. 2 is an end view of the same. Fig. 3 is a side view, partly in section, of one half of my spreading device on a larger scale than the other figures, omitting the parts below the top of the frame.

In all the figures like letters of reference refer to like parts.

A is the frame of the mill.

B B are the fixed rollers, having their journals supported in the immovable boxes B′ B′.

C C are the movable rollers, their journals being supported in the sliding boxes C′ C′.

D D are spiral springs behind the sliding boxes, which in expanding press the sliding boxes forward to force the movable rollers toward the fixed rollers. The springs are made adjustable as to their tension; but as my invention is independent of this matter I will not enter into a description of the tension-adjusting devices further than the drawings show.

My spreading device consists of four short rods, F, two on each side of the machine, projecting out of short sleeves G, which are rotated about the fourth of a circle in the bearings H H, the outer ends of each pair of the rods passing through the bearings B′ B′ into screw-nuts I, which, as the rods are turned, move horizontally back and forth on the axis of revolution, they themselves being prevented from turning by being held in square or hexagonal holes in the fixed bearings B′ B′, so that when the rods are turned in one direction the screw-nuts are pushed out to bear against the spindles J, to push them back a distance equal to the pitch of the thread of the screw on the end of each rod divided by the number representing the measured part of the circle the rod has rotated, as, if the rod has turned a fourth part of a circle, and the pitch of the screw be one-quarter of an inch, then the spread will be one-sixteenth of an inch. The spindle J screws into the nut K, which rests in a hexagonal-sided seat in the sliding box C′, so that when the spindles are pushed back the boxes and rollers retire with them. The rods F are firmly held in the sleeves G by set-screws L, and the rods may be made to project more or less from the sleeves in adjusting the device as to exact distances between the nuts I and ends of spindles J.

On the sleeves G are firmly secured the levers M, which, as shown in Fig. 2, extend toward the center of the machine. From pins on the extremities of these levers two connecting-rods, N, depend to connect with the pins standing longitudinally of the coupling O. From the transverse pins of the same coupling the links P depend to connect with the pins on the short levers Q, which are secured on the shafts R. These shafts R are supported in the bearings S S, cast on or bolted to the frame.

T are hand-levers, which are also secured one on each shaft R where convenient. On the shaft R are the short levers U, which connect by connecting-rods U′ to the bell-cranks V. These connect with short links W W to handles X X of the feed-gates.

The operation is simple and as follows: When the machine is working, both levers T are down, and when it is desired to turn off the feed and spread the rollers one of the levers T, whichever is most convenient, is pulled up. Through the intermediate connections the feed-gates are closed and the outside rollers of each pair spread apart. In starting up again, one of the hand-levers T is pushed down, the rollers come together, and the feed-gates open.

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

1. In combination with the rolls and their boxes, the roller-spreading mechanism comprising the lever T, transverse shaft R, lever

Q, link P, coupling O, rods N, levers M, sleeves G, screw-rods F, nuts I, and spindles J, substantially as described.

2. In combination with the rolls and their boxes, the roller-spreading mechanism comprising spindles J, stationary screw-nuts I, rods F, sleeves G and their set-screws, bearings H, and suitable mechanism for rotating the said sleeves and rods, substantially as described.

3. In a double roller-mill, the combination, with suitable roller-spreading mechanism, of the feed-controlling mechanism consisting of the gates having handles X, links W, bell-cranks V, connecting-rods U′, levers U, and the rock-shaft R, substantially as described.

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Witnesses:
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