

(No Model.)

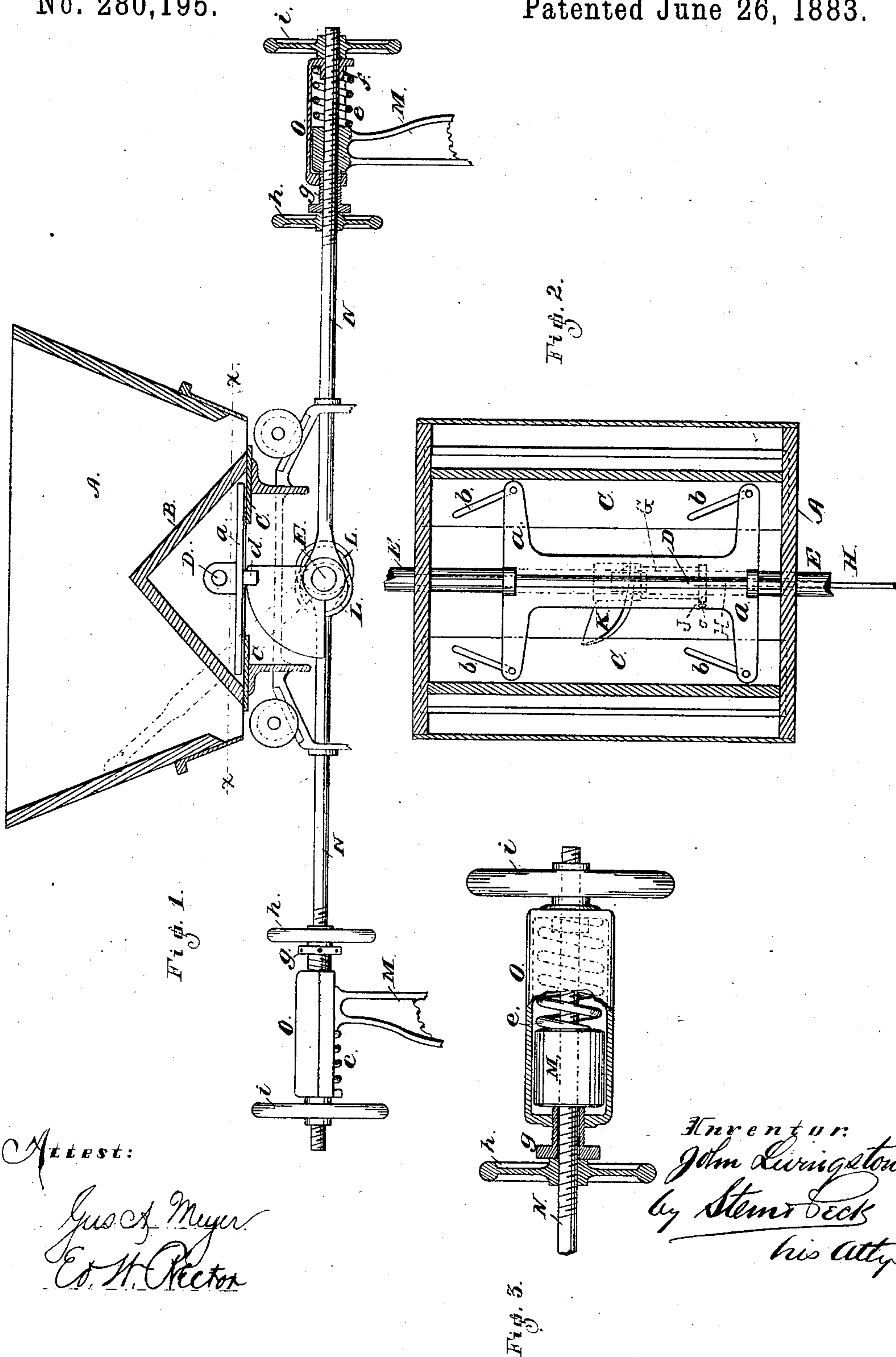
2 Sheets—Sheet 1.

J. LIVINGSTON.

ROLLER MILL.

No. 280,195.

Patented June 26, 1883.



Attest:

*Gus. J. Meyer*  
*Co. H. Pector*

Inventor:  
*John Livingston*  
by *Stearns & Beck*  
his Attys

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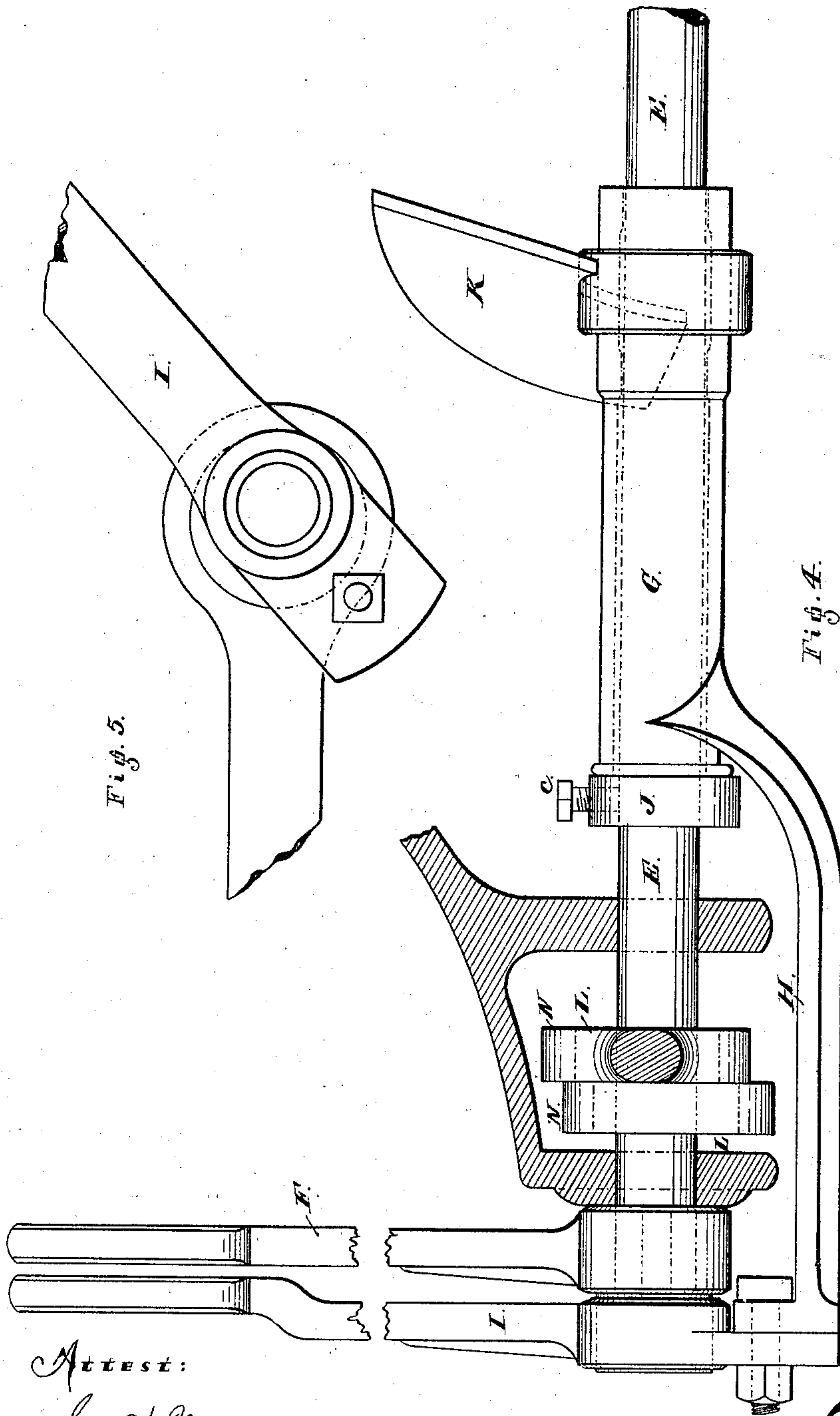
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# UNITED STATES PATENT OFFICE.

JOHN LIVINGSTON, OF DAYTON, OHIO, ASSIGNOR TO STOUT, MILLS &  
TEMPLE, OF SAME PLACE.

## ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 280,195, dated June 26, 1883.

Application filed March 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LIVINGSTON, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Roller-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification.

My invention relates to that class of roller-mills for making flour known as "gradual-reduction mills," in which the grain or middlings is fed from a hopper to one or more pairs of differentially-running grinding or crushing rolls, usually having a corrugated dress; and it is an improvement or modification of the construction contained in my roller-mill for which, on the 29th day of May, 1882, I filed an application for Letters Patent in the United States Patent Office. In said former application the swinging roll-supports and the gate mechanism were operated simultaneously by the movement of a single lever keyed upon the through-shaft. In the present application, while I have retained the general construction and appearance of the mill, I have modified some of the details, among which are the employment of separate levers arranged side by side, so as to be operated together, if desired, or independently, the one for the gate mechanism and the other for the rolls.

The novelty consists in the construction and combination of the parts, as will be hereinafter set forth and specifically claimed.

In the accompanying drawings, Figure 1, Sheet 1, is a sectional view, in side elevation, through the upper part and hopper of the machine, showing so much thereof as is necessary to illustrate my present invention. Fig. 2, Sheet 1, is a sectional plan view, through the line *xx* of Fig. 1, of the hopper-bottom. Fig. 3, Sheet 1, is an enlarged plan view, with portions broken away, of the head of one of the swinging roll-arms and spring-casing applied thereto. Fig. 4, Sheet 2, is an enlarged detailed view, in rear elevation, of a portion of the through-shaft and its encompassing-sleeve, together with the operating-levers.

Fig. 5, Sheet 2, is an enlarged front view of

the lower part of the outer or gate-operating lever and connections.

The same letters of reference are used to indicate like parts in all the figures.

Without going into a description of the details of the whole machine, which is given in my former application above referred to, and to which reference is here made, I would thus describe my present invention:

A is the hopper of the machine, having a raised bottom, B, sloping each way from the center, with discharge-outlets for the grain on each side and extending the entire width of the hopper. These outlets are opened and closed to admit, regulate, or cut off the flow of grain by means of horizontally-sliding gates C, which are simultaneously operated by a superimposed horizontally-sliding frame or spider, *a*, hung upon a central guide-rod, D, and provided with pins confined in oblique slots *b* in the gates, as shown. Running under the hopper from side to side, and suitably journaled in the frame-work, is a through-shaft, E, capable of oscillation by means of a lever, F, keyed or fastened near its outer end on one side of the machine. Upon this through-shaft, under the hopper, is journaled a sleeve, G, so as to be capable of oscillation independent of the shaft E, and extending from and integral with said sleeve, if desired, is an arm, H, which extends out and under the shaft E, as seen in Fig. 4, Sheet 2.

Pivoted loosely upon the outer end of the shaft E, and side by side with the lever F, is a second hand-lever, I, whose lower end is bolted or otherwise securely attached to the outer end of the arm H in such manner that the swinging of the lever I will cause the oscillation of the sleeve G, as will be readily understood. In addition to its attachment to the lever I, the sleeve G is held from sliding upon the shaft E by means of a collar, J, bearing against its outer end, and secured to said shaft by a set-screw, *c*. Upon the sleeve G is a screw-pitched quadrant or wing, K, whose outer edge or periphery is confined between lugs *d* on the under side of the sliding frame or spider *a*.

From the above construction it will be readily seen that by turning the lever I the sleeve



G will be oscillated, the spider *a* caused to slide on its rod by means of the quadrant-wing, and the gates simultaneously operated for any purpose required, whether to open, close, or  
5 adjust them, and this without the necessity of moving the lever F or oscillating the shaft E.

As in my former application, to which reference has been made, the shaft E has on each side of the machine double diametrically-opposite  
10 cams or eccentrics L, upon which are loosely fitted the eyes of the inner ends of the rods N, extending to and operating the swinging roll supports or arms M. These rods N extend out through apertures in the heads of  
15 the roll-supporting arms M, and are secured thereto in the following manner: Over each head is fitted a housing-cap, O, Fig. 3, Sheet 1, opened on its under side, and containing a coiled spring, *e*, which is confined between the  
20 outer side of the head and the outer end of the housing, which, on its inner side, is provided with a retaining-boss, *f*, as shown. The rods N likewise pass through the ends of the housing O. The inner head of each housing has  
25 tapped into it a female nut, *g*, bearing against the inner side of the head, and through which the rod N loosely passes, and just on the inner side of the female nut *g*, upon the threaded end of the rod N, is a jam-nut or wheel, *h*. Upon  
30 the threaded outer end of each of the rods N is an adjusting nut or wheel, *i*.

From this description it will be readily seen that by means of the female nut *g* and wheel *i* the adjustment of the roll-supporting arms M  
35 and the initial tension of the springs *e* can be regulated to a nicety for the purpose of adjusting the rolls of each pair to each other and regulating their yielding point.

The above construction of spring-housing  
40 which I have given is the invention of Henry J. Gilbert, and will form the subject of an application to be made and filed simultaneously with this and for the benefit of our assignees, Messrs. STOUT, MILLS & TEMPLE.

45 While I prefer the employment of the above-described spring-connections, yet it is evident that my lever-operating mechanism could be employed with other forms of spring-connec-

tions, and consequently I do not propose to limit myself to the construction of such spring-connections nor their arrangement. 50

I have not shown the manner of mounting the arms M, as this is fully described in my former application, together with the other well-known parts of the machine. 55

From the description I have given it will be seen that by operating the lever F the arms M, carrying the outer rolls, will be thrown apart or brought together, as desired, so as to spread the rolls apart or bring them into working  
60 position, and by moving the lever I the gates will be operated, or owing to the fact that the handles of both levers may be grasped and operated at once to spread the rolls apart or cut off the flow of grain, or vice versa, by a  
65 single movement.

Having thus fully described my invention, I claim—

1. In a roller grinding-mill, the combination, with the co-operating grinding-rollers, the upright pivoted journal-arms, the roller-adjusting shafts or rods, adjustable spring-connections, hopper-gate mechanism, a through-shaft, and sleeve journaled thereon, of two independent levers and connecting mechanism, whereby upon operating one of said levers the rolls can be thrown apart, or vice versa, and upon operating the other of said levers the hopper-gates will be operated, and whereby both of said levers can be grasped and operated simultaneously, substantially as described. 70 75 80

2. In a roller-mill, the combination, with the connecting-rods and an oscillating through-shaft provided with a lever for operating the outer roll supports or journals, of a sleeve journaled upon said through-shaft, and provided with a quadrant-wing, the hopper-gates, the sliding frame, and a lever pivoted upon the through-shaft, whereby the hopper-gate mechanism can be operated without oscillating the through-shaft, and vice versa, substantially as described. 85 90

JOHN LIVINGSTON.

Witnesses:

QUINCY CORWIN,  
JOSEPH A. WORTMAN.