

(No Model.)

2 Sheets—Sheet 1.

F. O. LINDHEIMER.  
MILL.

No. 426,598.

Patented Apr. 29, 1890.

FIG. 1.

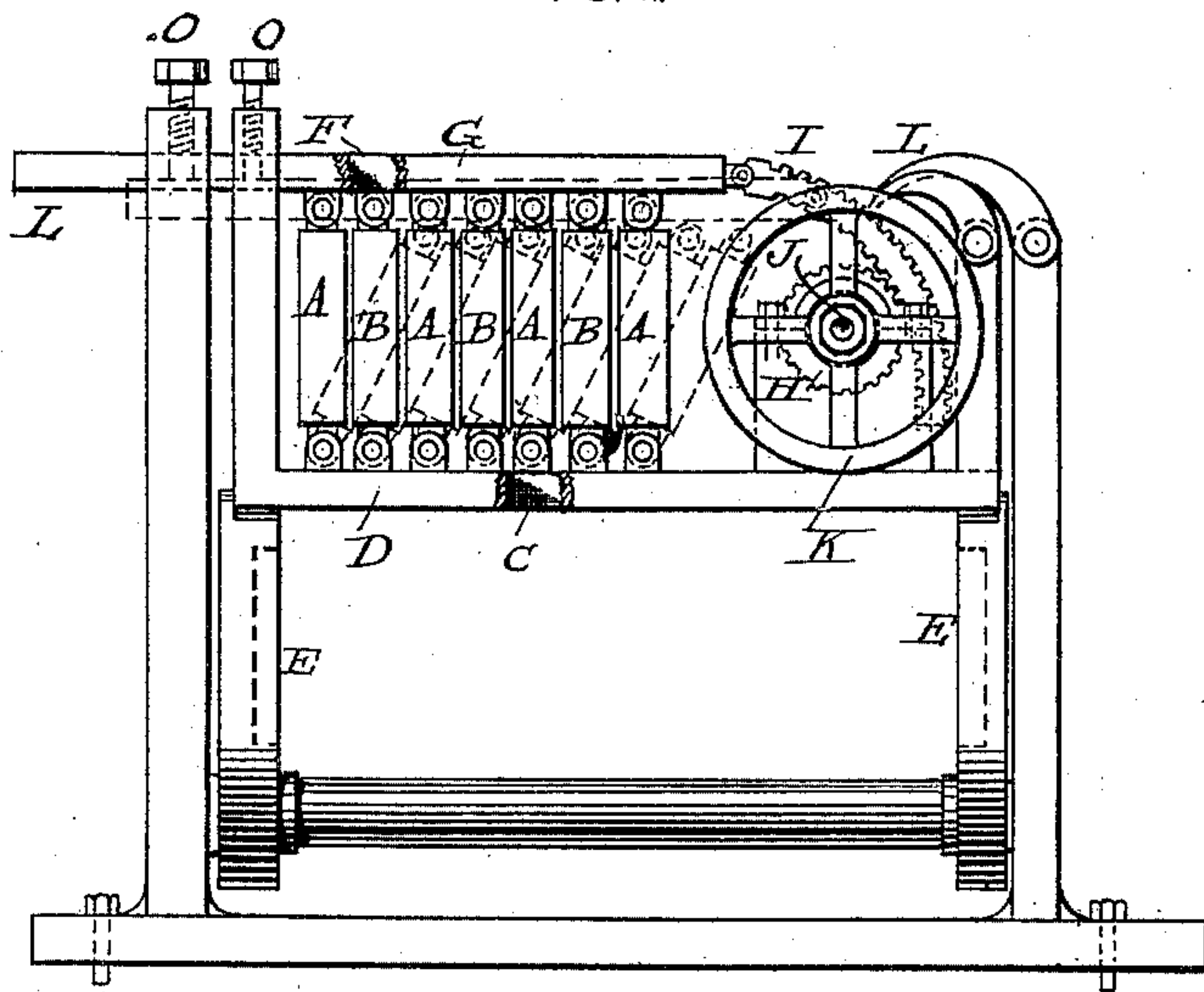
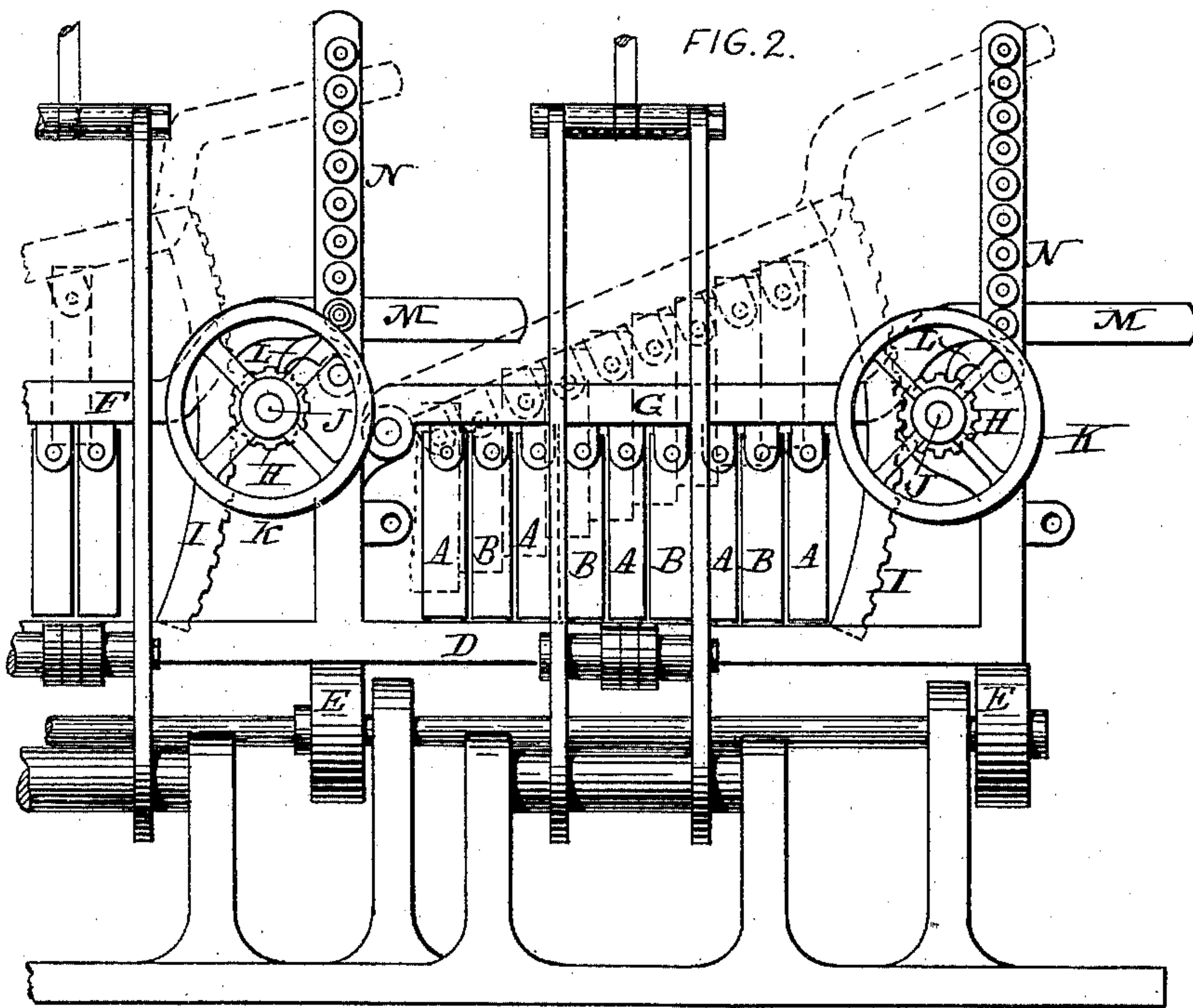


FIG. 2.



Witnesses:  
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Horace A. Dodge.

Inventor:  
F. O. Lindheimer,  
By Dodge & Sons,  
Attys.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

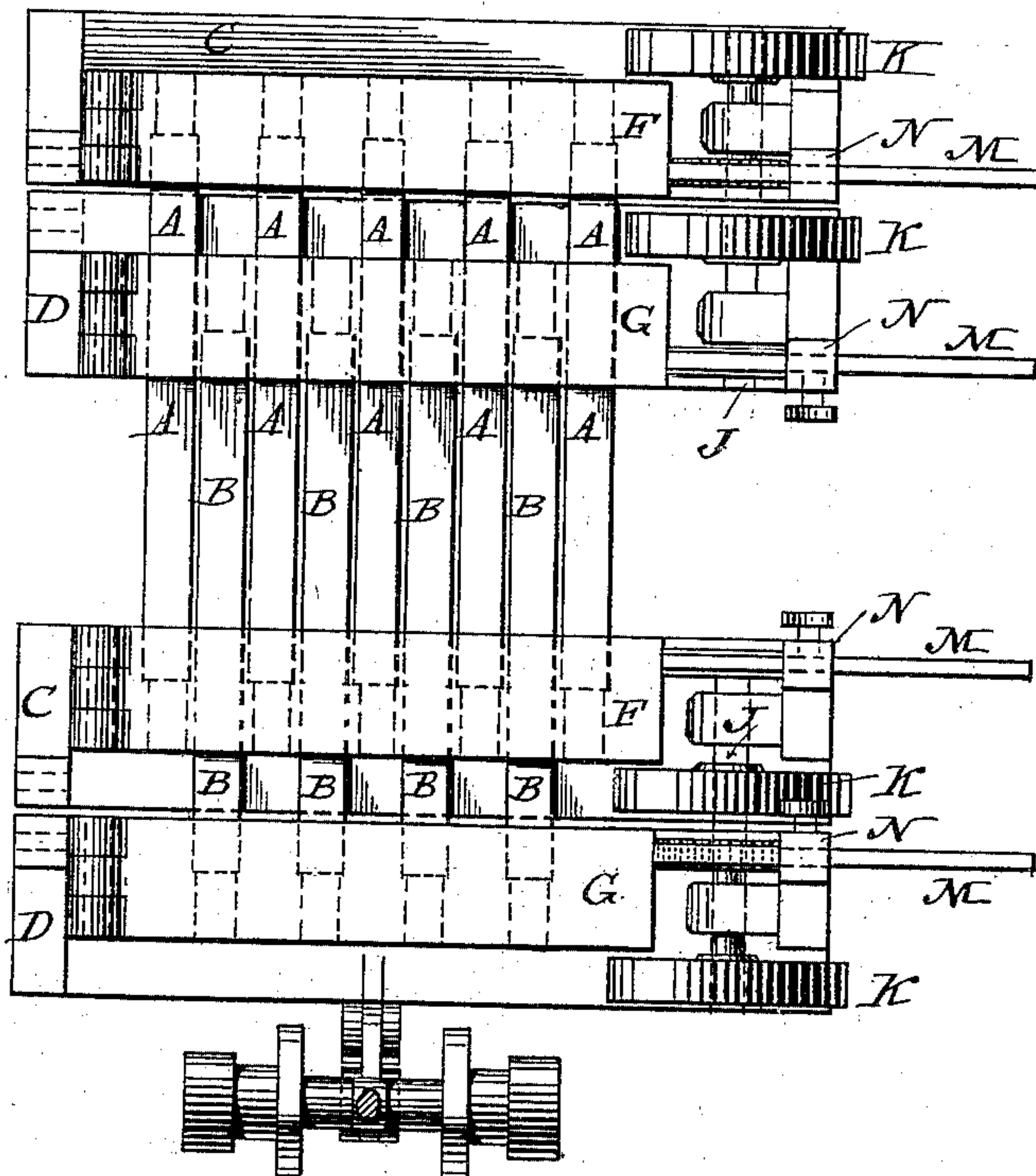
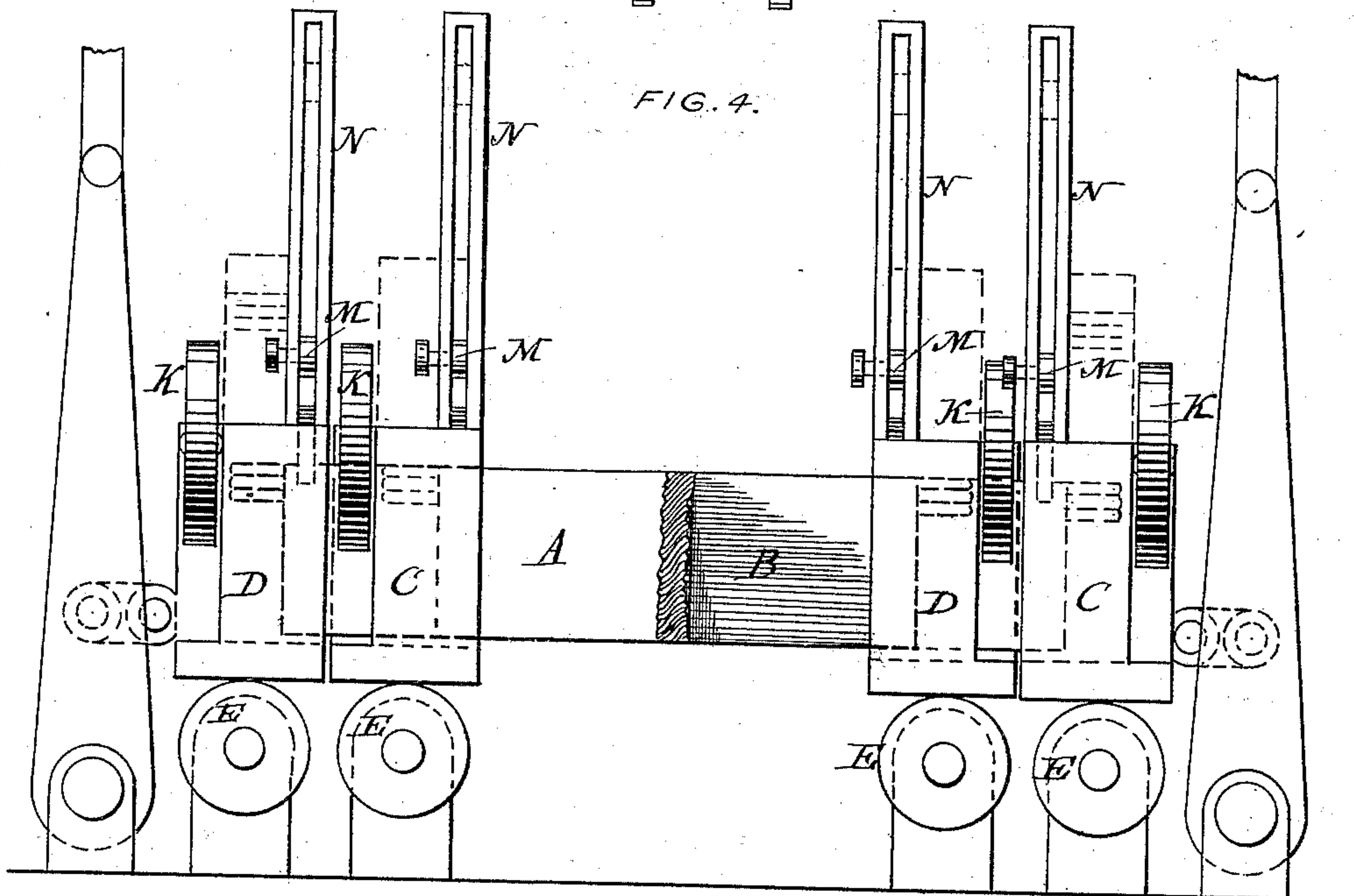


FIG. 4.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

FRIEDRICH OTTO LINDHEIMER, OF FRANKFORT-ON-THE-MAIN, PRUSSIA,  
GERMANY.

## MILL.

SPECIFICATION forming part of Letters Patent No. 426,598, dated April 29, 1890.

Application filed April 30, 1888. Serial No. 272,512. (No model.) Patented in Belgium December 15, 1887, No. 79,645, and January 31, 1888, No. 80,322; in Germany January 13, 1888, No. 45,681; in France February 10, 1888, No. 187,499, and in England April 24, 1888, No. 6,101.

*To all whom it may concern:*

Be it known that I, FRIEDRICH OTTO LINDHEIMER, of Frankfort-on-the-Main, in the Kingdom of Prussia and German Empire, have invented new and useful Improvements in Mills for Crushing, Grinding, or Comminuting Ores, Grain, or other Produce or Materials, (improvements of the application Serial No. 257,272, filed December 8, 1887,) of which the following is a specification, reference being and therein to the accompanying drawings, no patents being obtained by me anywhere for this invention, save in France, No. 187,499, dated February 10, 1888; Belgium, No. 79,645, December 15, 1887, and No. 80,322, dated January 31, 1888; in Germany, January 13, 1888, No. 45,681, and in Great Britain, April 24, 1888, No. 6,101.

My invention relates to that class of grinding-mills in which the grinding-surfaces are composed of flat-faced blocks or plates, and are reciprocated, relatively, to each other, the invention consisting in a novel means whereby the adjustment of the grinding-surfaces is effected.

In the drawings, Figure 1 is a face view of my improved grinding-mill; Fig. 2, a similar view illustrating a slightly-different arrangement; Fig. 3, a top plan view of the machine represented in Fig. 2, and Fig. 4 a side elevation of the same.

A and B indicate the grinding blocks or plates, which are arranged with their flat faces close together. The blocks A are supported at their ends upon or by a transverse frame C, while the blocks or plates B are supported at their opposite ends by the frame D, as clearly shown in Fig. 1. These frames C and D are mounted upon or supported by wheels E or in any other suitable or equivalent manner, in order that they may receive a reciprocating motion in the direction of the length of the blocks or plates, the frames moving back and forth alternately in opposite directions.

In the construction shown in Fig. 2, the grinding-blocks A are shown as hinged or pivoted at their upper edges at each end to a bar F, while the blocks B are similarly hinged or

connected to a bar G, the bars F and E being attached, respectively, to the frames C and D, so as to move therewith during the reciprocation of the said frames. The bars F G in this arrangement are hinged or pivoted to the respective frames C D, and each is adapted to be raised and lowered by means of a pinion H, engaging a curved rack-bar I, secured to the bars, the pinion being secured to a shaft J, having a hand-wheel K, and prevented from turning backward accidentally by means of a pawl L. There are four of the bars F G, one at each end of the blocks A and one at each end of the blocks B whereby both ends of each set of blocks will be raised and lowered uniformly. Now when the blocks are in the position represented by the full lines in Fig. 2 they will be found to be separated the maximum distance; but when the bar F (or G) is raised, as indicated by the dotted lines in Fig. 2, the blocks will gradually approach one another, the regulation or adjustment of the grinding-surfaces being controlled by the raising and lowering of the bar. Each of the bars F G is provided with an extension M, which is adapted to be clamped or otherwise secured to a perforated upright N, formed upon the frames C D, in order that the adjustment may not be varied accidentally during the reciprocation of the frames carrying the grinding blocks or plates.

In the construction illustrated in Fig. 1, the blocks A and B are pivoted not only at their upper ends to the adjusting-bars F G, but are likewise secured at their lower edges to the frames C D, so that instead of lifting the adjusting-bars F G said bars will be moved longitudinally. This movement of the bars produces the same variations in adjustment as are secured by the pivoted bars, and in order that this adjustment may not be changed during the operation of the machine, set-screws O O are employed to bear upon and clamp the bars.

Either of the frames C D may be fixed and the other reciprocated, or, if desired, both of the frames C and D may be reciprocated alternately in opposite directions. As the frame or frames reciprocate in the direction of the



length of the grinding blocks or plates, the latter will move with the frames and grind the material fed in between them.

The present invention relates only to means  
5 for adjusting the grinding-surfaces toward and from one another, and as these means may obviously be varied considerably in construction and arrangement without in any manner departing from the spirit of my in-  
10 vention, I wish it understood that I do not limit myself to the precise construction and arrangement of the adjusting-bar herein shown.

Having thus described my invention, what  
15 I claim is—

1. In combination with two frames and means for reciprocating one (or both) of them, a bar or plate carried by each frame, a series  
20 of grinding-blocks hinged or pivoted to each of the bars and arranged with their flat faces close together, and means, substantially such as shown, for varying the position of the bar, whereby the blocks of the two sets of grinding-surfaces may be adjusted toward and  
25 from each other.

2. In combination with two frames and means for reciprocating one (or both) of them relatively to the other, two series of grinding-blocks, one hinged or pivoted at their  
30 lower ends to one frame and the second series similarly hinged or pivoted to the other frame,

a bar for each series of blocks pivotally connected with the upper ends of the latter, and means, substantially such as shown, for moving the respective bars, whereby the grinding  
35 adjustment may be varied.

3. In combination with two reciprocating frames, grinding-blocks mounted on each of said frames, a bar connected with one end of the blocks and provided with a rack-bar, and  
40 a shaft provided with a hand wheel and pinion.

4. In combination with the reciprocating-frames having an upright, the grinding-blocks; the adjusting-bar arranged and operating  
45 substantially as shown, and provided with an extension, and means for locking the extension of the bar to the upright.

5. In combination with two reciprocating frames, blocks supported at their ends upon their respective frames, a pair of bars for each  
50 frame, to which the upper ends of the grinding-blocks are pivoted or hinged, secured to the frames and moving therewith, and means, substantially such as shown, for adjusting the bars and varying the space between the  
55 grinding-blocks.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

FRIEDRICH OTTO LINDHEIMER.

Witnesses:

ALVESTO P. HOGUE,  
JEAN GRUND.