

(No Model.)

H. A. BARNARD.

ROLLER MILL.

No. 376,023.

Patented Jan. 3, 1888.

Fig. 1.

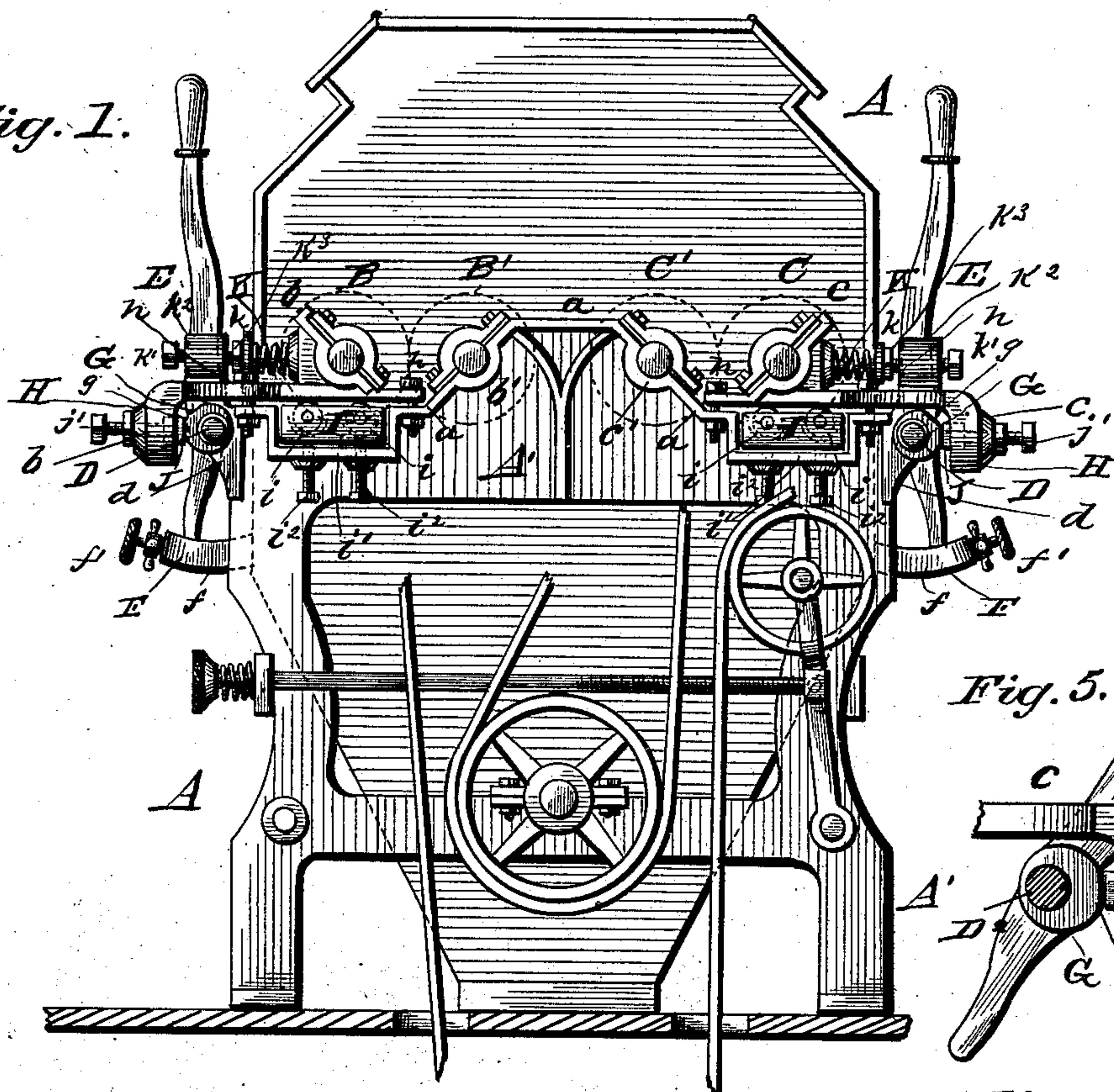


Fig. 5.

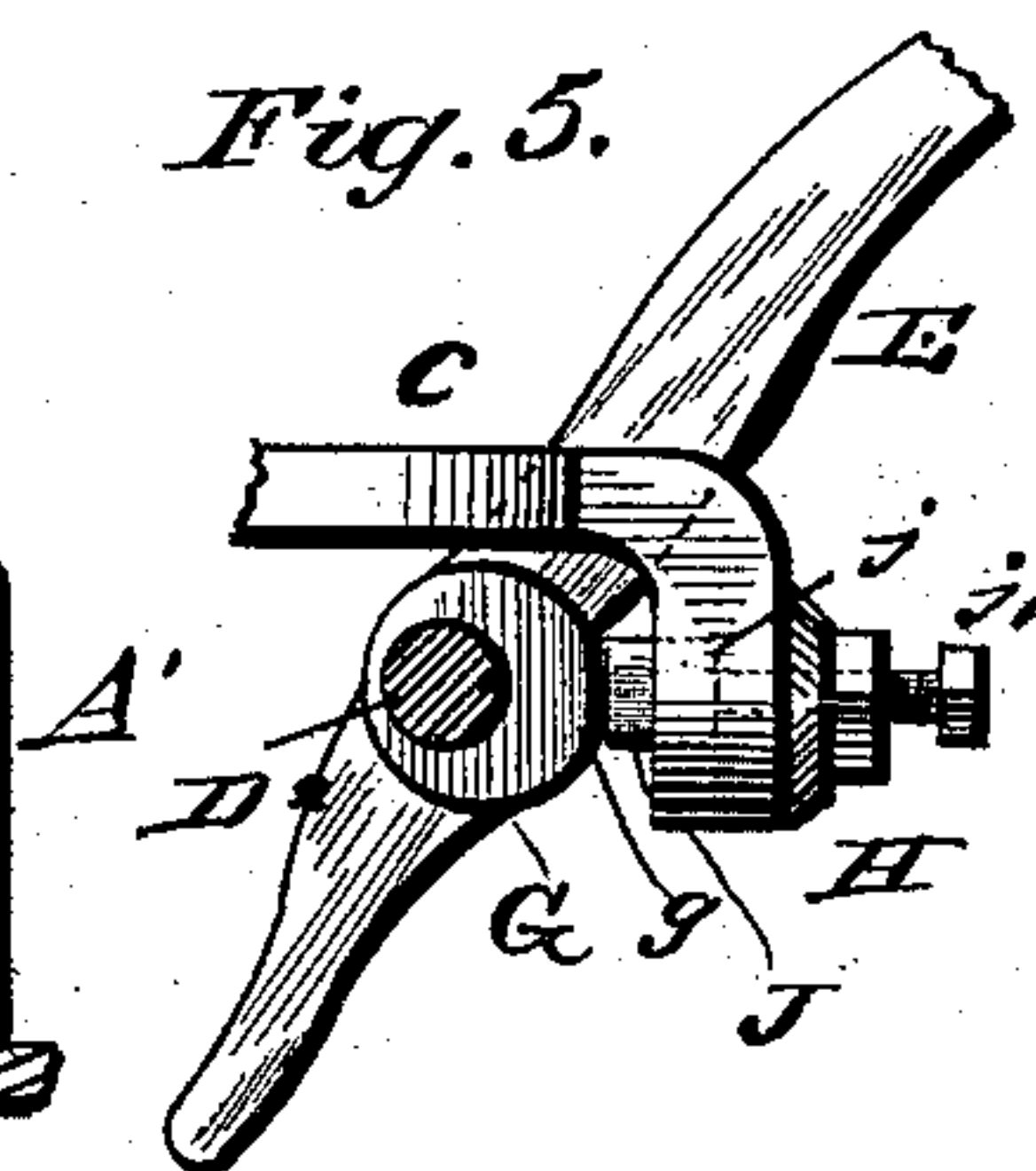


Fig. 4.

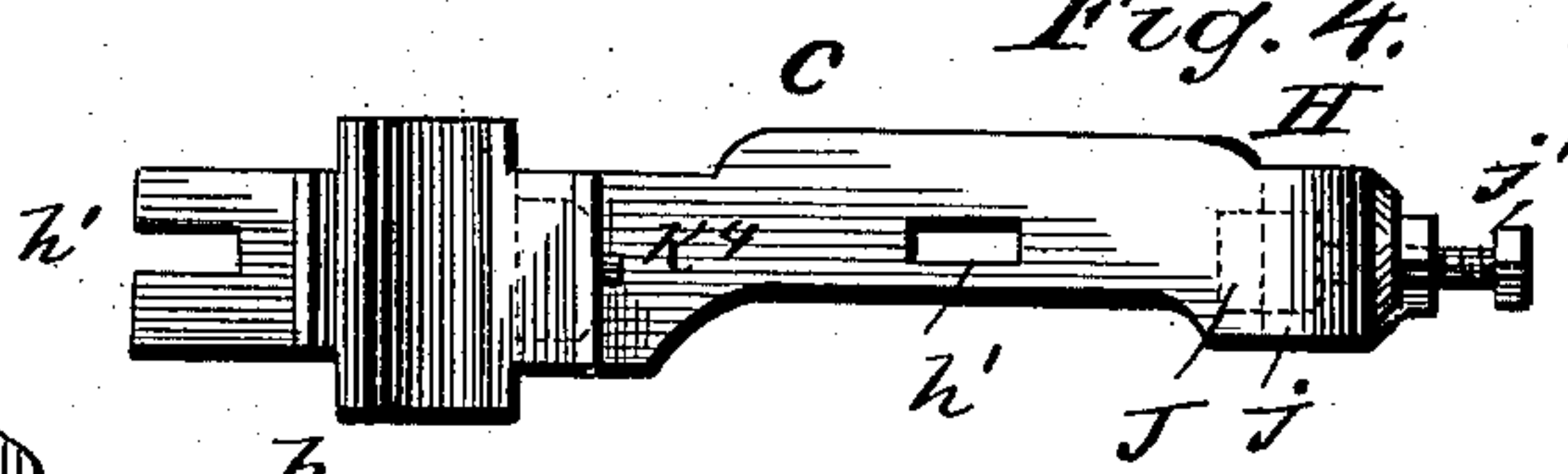


Fig. 2.

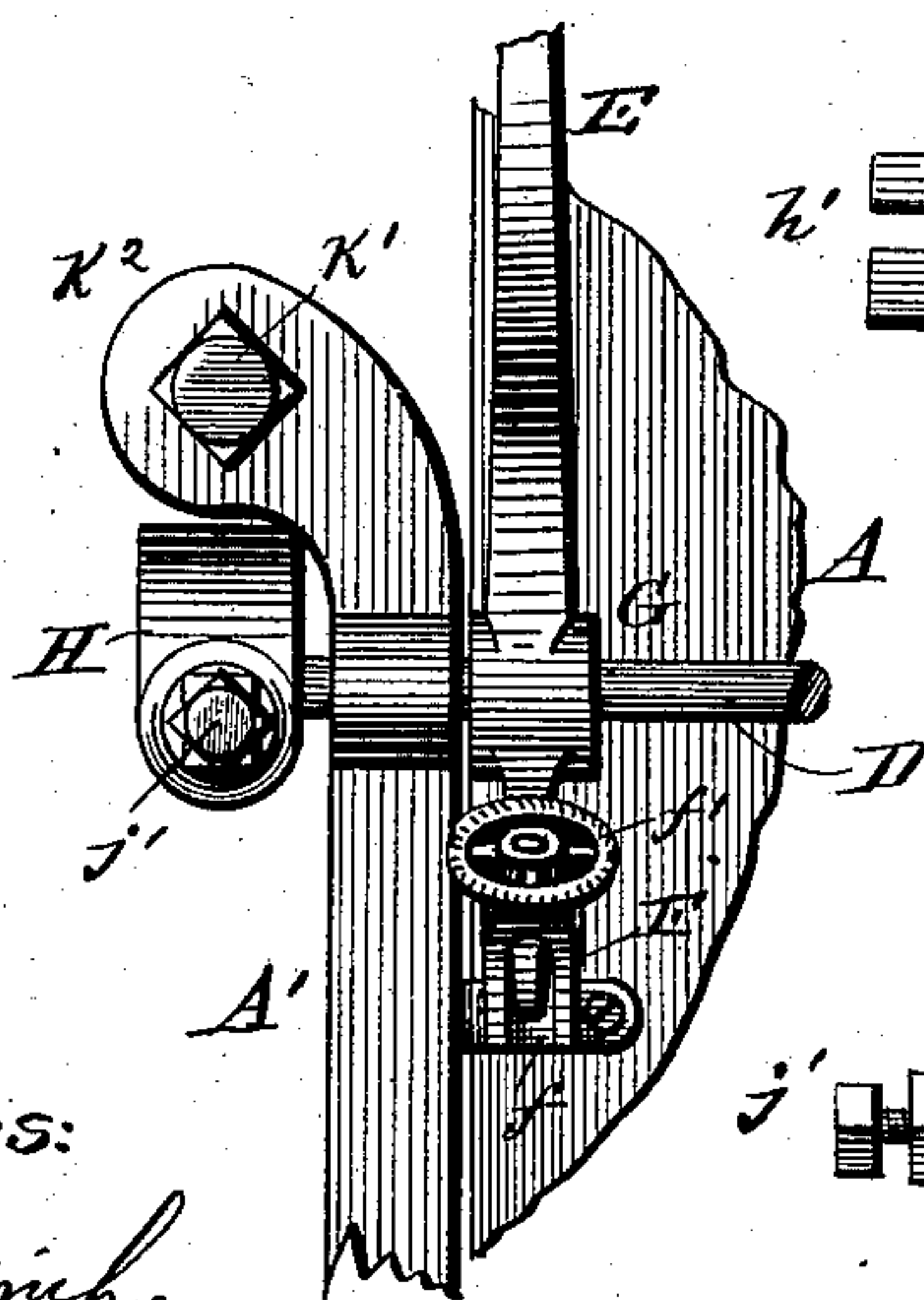
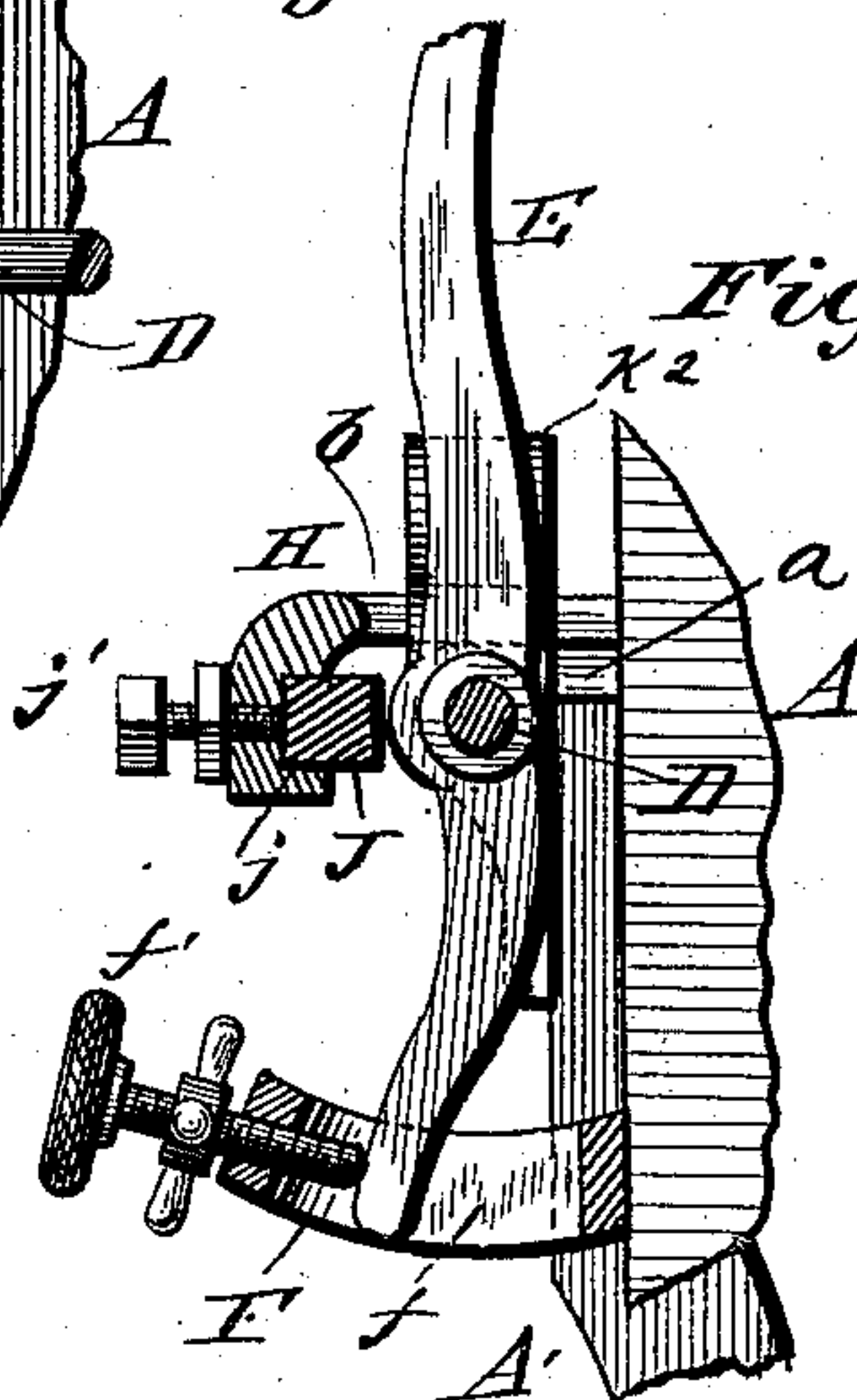


Fig. 3.



Witnesses:

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ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 376,023, dated January 3, 1888.

Application filed October 2, 1886. Serial No. 215,130. (No model.)

To all whom it may concern:

Be it known that I, HEMAN A. BARNARD, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Roller-Mills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 represents a side view of a roller-mill with the invention attached thereto. Fig. 2 is a partial end view showing a portion of the improvement. Fig. 3 is a detail side view of the same. Fig. 4 is a plan view of the sliding journal-block. Fig. 5 is a detail side view, partly in section, of the lever and one eccentric.

The invention relates to improvements in roller-mills, and has special reference to the mechanism by means of which the bearings of the outer rolls are aligned and adjusted, both horizontally and vertically; and it consists in the novel construction and combination of parts, hereinafter described, illustrated in the drawings, and pointed out in the claims hereto appended.

Referring to the accompanying drawings, A designates a roller-mill, the upper edges of the main frame A' of which are provided with the outstanding flanges a a.

B B' and C C' are two pairs of grinding-rolls, one on each side of the center of the machine. The bearings b' c' of the journals of the rolls B' C' are preferably made in one piece with the flanges a of the main frame, and are inclined downwardly and outwardly, the said rolls being non-adjustable. The outer rolls, B and C, of each pair are the adjustable rolls and are each operated by similar mechanisms, the description of which for the roll B is as follows, premising that the roll C is operated by mechanism identical in construction and having its corresponding parts marked with the same letters of reference.

D is a transverse shaft having its ends journaled in similar brackets, d d, secured to the sides of the main frame at one end thereof, and E is a lever secured to said shaft, with its upper arm formed into a handle and with the

end of its lower arm entering a longitudinal slot, f, in the curved bracket F, secured to the main frame at a suitable point.

f' is a thumb-screw passing through a threaded opening in the bracket F and impinging against the lower arm of the lever.

G G are similar and corresponding eccentric-disks on the shafts D, each having a flat part, g, on its periphery where the latter is farthest from the shaft D. The journal-box b or c inclines downwardly and inwardly and is made in one piece with or firmly secured to the sliding journal-block H, which is held to the flange a by the screws h and proper nuts, as shown in Fig. 1. The said screws pass through the slots h' h' in the sliding journal-block, so as not to interfere with its longitudinal movement. The sliding journal-block is supported by and moves upon the friction-rollers i i, journaled in a recess in the upper surface of the rectangular block I, which rests in a recess or chamber, i', made upon the flange a, as shown in Fig. 1.

i² i² are adjusting-screws, which pass through threaded openings in the floor of said recess and impinge upon the bottom of the block I, so that the latter, and consequently the sliding journal-block and the journal-box, can be vertically adjusted thereby. The outer end of the sliding journal-block H is bent vertically downward, and in its inner surface is a recess, j, within which is a small metal cushion-block, J, the inner end of which rests against the periphery of the eccentric-disk G.

j' is an adjusting and aligning screw, which passes through a threaded opening in the downward extension of the journal-block and impinges against the outer end of the block J.

K is a coiled spring between the outer surface of the journal-box b or c and the washer k on the inner end of screw k', which passes through a threaded opening in the ear or projection k², extending from the main frame, as shown in Figs. 1 and 2. k³ is a nut on the inner end of said screw, outside of and adjacent to the washer. The said spring serves to force the outer roll against the corresponding inner roll, but will give when any lumpy or hard material passes between the rolls, and thus prevent injury thereto. The point or finger k⁴ on the outer surface of the sliding journal-

block enters one end of the coiled spring, and the point of the screw k' enters the other end of the same, so that both ends are supported and kept in position.

5 There is but one lever, E, on each shaft D, and it is situated at the most convenient point for use. To disengage the outer adjustable roll from the inner fixed roll of the same pair, the lever E is pulled outward, so that the eccentric-disks G drive the blocks J, and consequently the sliding journal-blocks, outward. When the flat parts g of the peripheries of the said disks rest against the said blocks, the rolls are held apart automatically. To whatever distance the lever E may be pulled out, it can be held in that position by turning the screw f' till the point of the same impinges against the lower arm of said lever E. By pushing the said lever inward the outer roll is brought up to the inner roll by means of the screw k' , washer k , and coiled spring K. The outer roll, B or C, may be aligned so as to be parallel with the corresponding inner roll by means of the adjusting-screws $j' j'$ on each end of the machine.

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

1. In a roller-mill, the combination of the sliding journal-block H, a journal-box mounted thereon, and the block J, mounted in the ends of said block and provided with an adjusting-screw, with the movable roll and shaft journaled in said box, and the shafts and eccentric-disks thereon engaging block J, and adapted to adjust block H horizontally, substantially as specified.

2. The combination of the sliding journal-block H, the cushion-block J, secured therein, the friction-rollers supporting said block, the shaft mounted in said journal-boxes, and the movable roll secured on said shaft with the main frame, the transverse oscillating shaft journaled in bearings in said frame, the operating-lever, and the eccentric-disks secured to said shafts, whereby the movable roll is horizontally adjusted, substantially as and for the purpose specified.

3. The combination, with the adjustable journal-blocks forming bearings for the adjustable rolls, of the oscillating shaft and operating-lever, the eccentric-disks having flat peripheral surfaces, and the cushion-blocks against which said disks impinge, substantially as and for the purpose specified.

4. The combination, with the journal-blocks H and the horizontally-adjustable cushion-blocks J and adjusting-screws therefor mounted in said journal-blocks, of the shafts journaled in bearings on the main frame, the eccentric-disks secured to said shafts engaging the blocks, the hand-levers whereby the shafts are operated, and the adjusting-screws bearing against said levers and adapted to limit their throw, substantially as described.

5. The combination, in a roller-mill, of horizontally-adjustable journal-blocks, and

the vertically-adjustable blocks supporting the same, with the horizontal shafts and their eccentric-disks, and levers for horizontally adjusting the journal-blocks, all constructed and arranged to operate substantially as and for the purpose set forth.

6. The combination, with the movable and yielding roll, of a horizontally-adjustable journal-block, a journal-box supported thereon, a vertically-adjustable block provided with friction-rollers on its upper face, the horizontal shaft journaled in the main frame and having an eccentric-disk, means for engaging the extended end of the journal-block with said disk, the lever secured to said shaft, the set-screw for engaging the lower ends of the levers, and the spring for holding the movable to the rigid roll with yielding pressure, all substantially as and for the purpose specified.

7. In a roller-mill, the combination of the main frame provided with recesses in its upper edges, the stationary roll, the bearings therefor, and the yielding roll, the vertically-adjustable blocks mounted in the recesses of the frame, and the journal-blocks for the yielding roll, substantially as specified.

8. In a roller-mill, the combination of the main frame provided with recesses in the upper edges, and the blocks mounted in said recesses, with the horizontally-adjustable blocks and journal-boxes, the yielding rolls journaled in said boxes, and set-screws for limiting the vertical movement of both blocks, substantially as and for the purpose set forth.

9. In a roller-mill, the combination of the main frame provided with recesses in its upper edges, the vertically-adjustable blocks I, mounted in said recesses, the journal-blocks H, the yielding rolls and the fixed rolls, with the springs K, the adjusting bolts and nuts for holding the yielding rolls to the fixed rolls with yielding pressure, and the bolts for limiting the vertical adjustment of the blocks, all substantially as and for the purpose specified.

10. The combination, in a roller-mill, of the main frame A, having recesses below the journals of the yielding rolls, with vertically-adjustable blocks mounted in these recesses, the friction-rollers in their upper surfaces, the horizontally-adjustable blocks H, mounted upon the blocks I, the journal-boxes for the yielding rolls, bolts h for limiting the vertical adjustment of the blocks H, and spring K for regulating the grinding-pressure of the yielding rolls against the rigid rolls, all substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HEMAN A. BARNARD.

Witnesses:

J. S. GILLMORE,
W. H. HILLHOUSE.