(No Model.)

G. W. COMBS.

ROLLER MILL.

No. 342,498. Patented May 25, 1886.

Fig. 1.

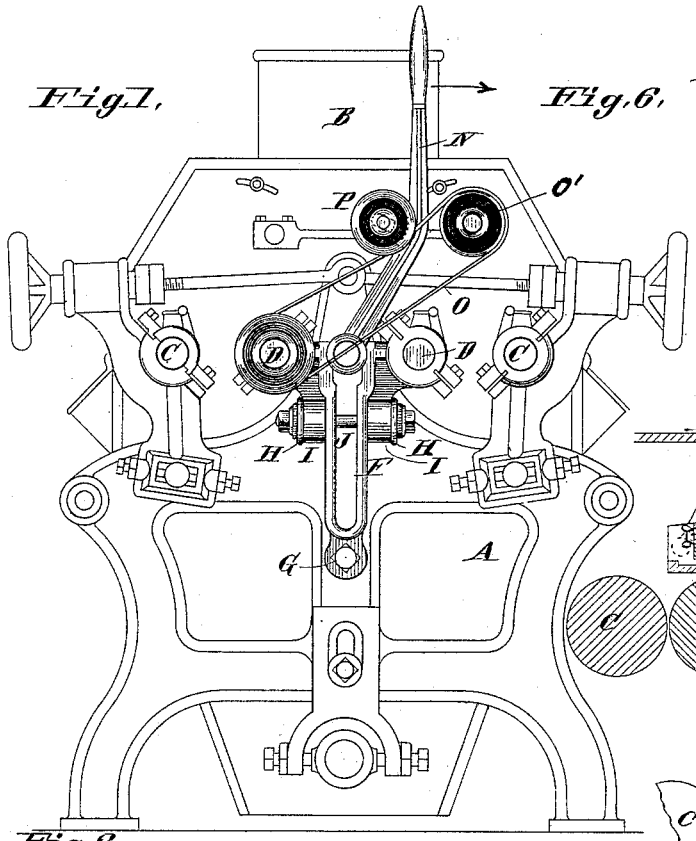


Fig. 6.

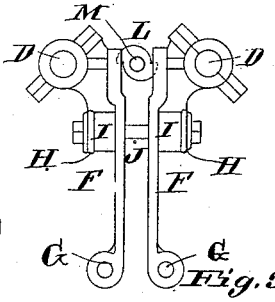


Fig. 3.

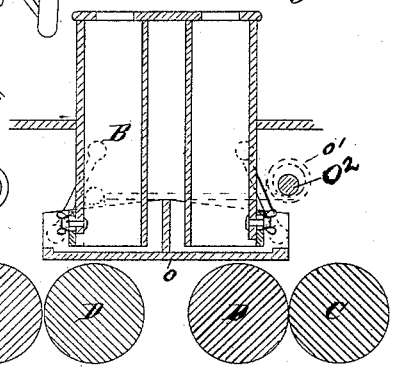


Fig. 4.

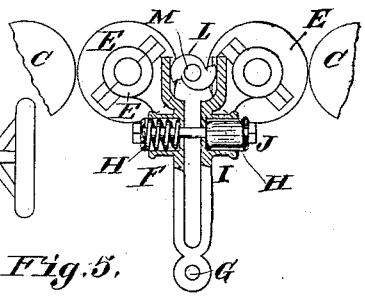


Fig. 2.

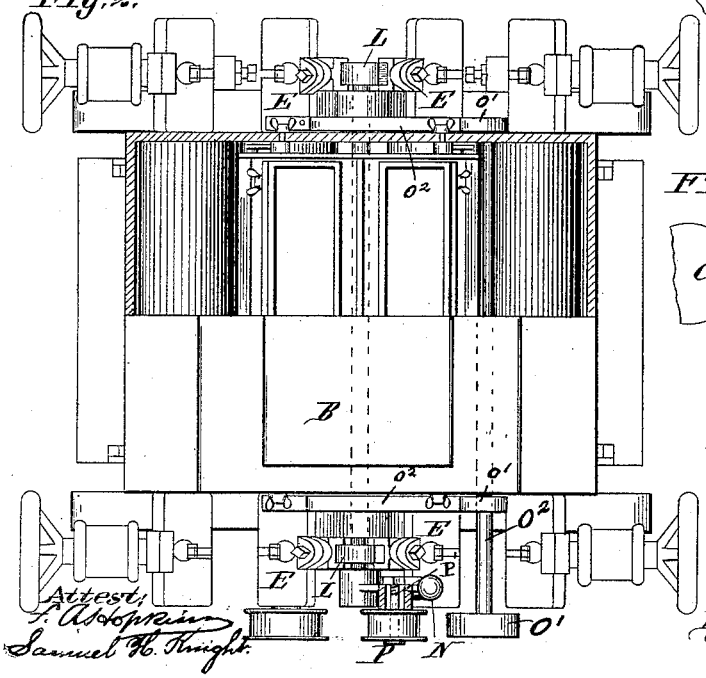
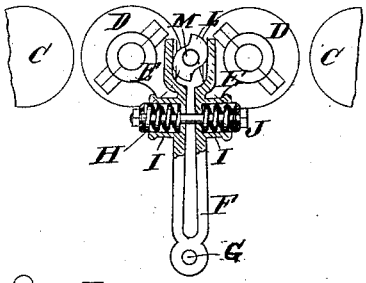


Fig. 5.



Inventor;
Geo. W. Combs
By Knight Bros
Attys

Attest;
J. Ashbridge
Samuel H. Knight.

UNITED STATES PATENT OFFICE.

GEORGE WILLIAM COMBS, OF LEAVENWORTH, KANSAS.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 342,498, dated May 25, 1886.

Application filed December 5, 1885. Serial No. 184,785. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WILLIAM COMBS, of the city and county of Leavenworth, in the State of Kansas, have invented a certain new and useful Improvement in Roller-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side elevation of a roller-mill having my improvement applied. Fig. 2 is a top view part in horizontal section. Fig. 3 is a detail vertical section through the hopper and rolls. Figs. 4 and 5 are detail views illustrating the manner of adjusting the rolls; and Fig. 6 is an elevation showing my improved arrangement of springs for forcing the inner rolls together and the cam for separating them applied to hangers, formed separately, according to the usual custom.

My invention relates to an improvement in flour roller-mills; and it consists in features of novelty, hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the frame of the mill provided with a hopper, B, outer grinding-rolls, C, and inner grinding-rolls, D. The inner rollers are journaled in boxes E, secured to the hangers F, which are pivoted at G to each end of the frame of the machine. These double hangers I cast in one piece, as shown in Figs. 4 and 5, and provide them with means for spreading them, so that the inner rolls may be forced to or from the outer rolls, instead of adjusting the outer rolls toward the inner ones, as has been the usual but not exclusive practice in these mills. When the rolls are not in working position, these hangers are contracted by means of springs H, located in sockets I—one on each side of the hanger—and connected by a bolt, J, as shown in Figs. 4 and 5. The springs may be of any elastic material, such as rubber or spiral metal. I have shown one of each in Fig. 4. The tendency of these springs when the hangers are not spread apart is to contract the hangers and move the inner rolls toward each other, thus moving them away from the outer rolls; and when it is desired to move the inner rolls, D, toward the outer rolls it is done by spreading these hangers from the position shown in Fig. 5 to that shown in Fig. 4. I prefer to accomplish this by means of double cams L on each end of a shaft, M, provided with a lever, N. It will thus be seen that the inner rolls can be forced apart at will into working position, and by moving the cams back the springs will automatically contract the rolls, moving them out of working position.

In Fig. 6 I have shown the above-described arrangement of springs for forcing the inner rolls together and the cams for forcing them asunder applied to hangers, formed of separate pieces and oscillating upon separate centers. This is the usual method of arranging the hangers, and I do not claim such as my invention. This figure merely serves to illustrate the application of my improved arrangement of springs and expanding device to hangers which are not formed in one piece.

The feeder *o* may be of any desired construction, suspended in any desired manner, and connected by any suitable means with the shaft O^2, whereby it is shaken. I have shown the shaft provided with eccentric *o'*, acting upon connecting-rods o^2; but my invention has nothing to do with the means whereby the rotary motion of the shaft is converted into a reciprocating motion and transmitted to the feeder-box. As a means of tightening this belt, I have shown a grooved pulley, P, journaled to the lever N, so that when the lever is pulled in the direction indicated by the arrow, to force the rolls D toward the rolls C, it also tightens the belt O and starts the feed. I make this pulley grooved or flanged, so that there is no possibility of the belt slipping off of it. I prefer to make the pulley adjustable on the lever by means of a stem, P', thereon, fitting in a slot in an extension of the lever, (shown in dotted lines, Fig. 1, and in section in Fig. 2,) and by placing a nut on the inner end of the stem, by which the pulley is held to any adjustment. By adjusting the pulley toward the feed-belt any slack therein can be taken up.

I claim as my invention—

1. In a roller-mill, the combination of the outer rolls, movable or adjustable inner rolls, and one-piece hangers supporting the movable rolls, substantially as set forth.

2. The combination of the rolls of a flour-

mill and hangers formed in one piece and supporting the movable inner rolls, with means for spreading them, substantially as set forth.

3. In combination with the outer and inner rolls, one-piece hangers supporting the ends of the inner rolls, means for spreading the rolls apart, and means for drawing them together, substantially as set forth.

4. The combination of the outer and inner rolls, one-piece hangers, springs for contracting the hangers, bolts passing through the hangers, and cams for expanding the hangers, substantially as set forth.

5. In a roller-mill, hangers made in one piece and adapted to give support to the inner rolls, in combination with cams and a lever for expanding the hangers, as set forth.

6. In a roller-mill, the combination of the adjustable inner rolls, cams for forcing the rolls apart, a shaft to which the cams are secured, a slotted lever for operating the shaft, a pulley on the shaft of one of the rolls, a feeder, a shaft for shaking said feeder, a pulley on the operating-shaft, a belt passing over said pulleys, and an idle flanged pulley secured adjustably to said lever, substantially as set forth.

7. The combination, with the movable inner rolls and one-piece hangers supporting them, of springs forcing said inner rolls toward each other and cams for forcing them asunder, substantially as set forth.

GEO. WM. COMBS.

In presence of—
SAML. H. WILSON,
NEVIL WHITESIDES.