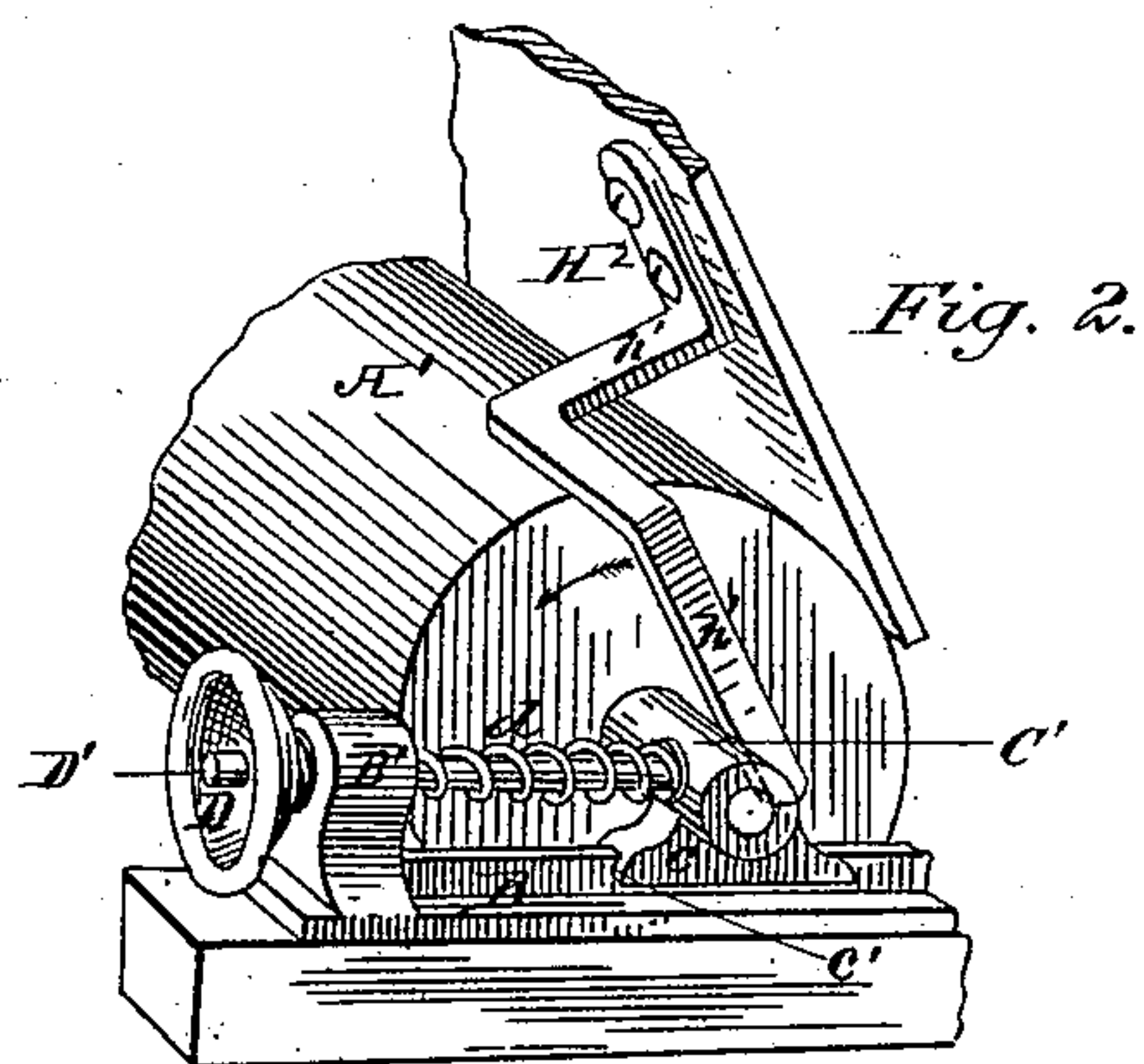
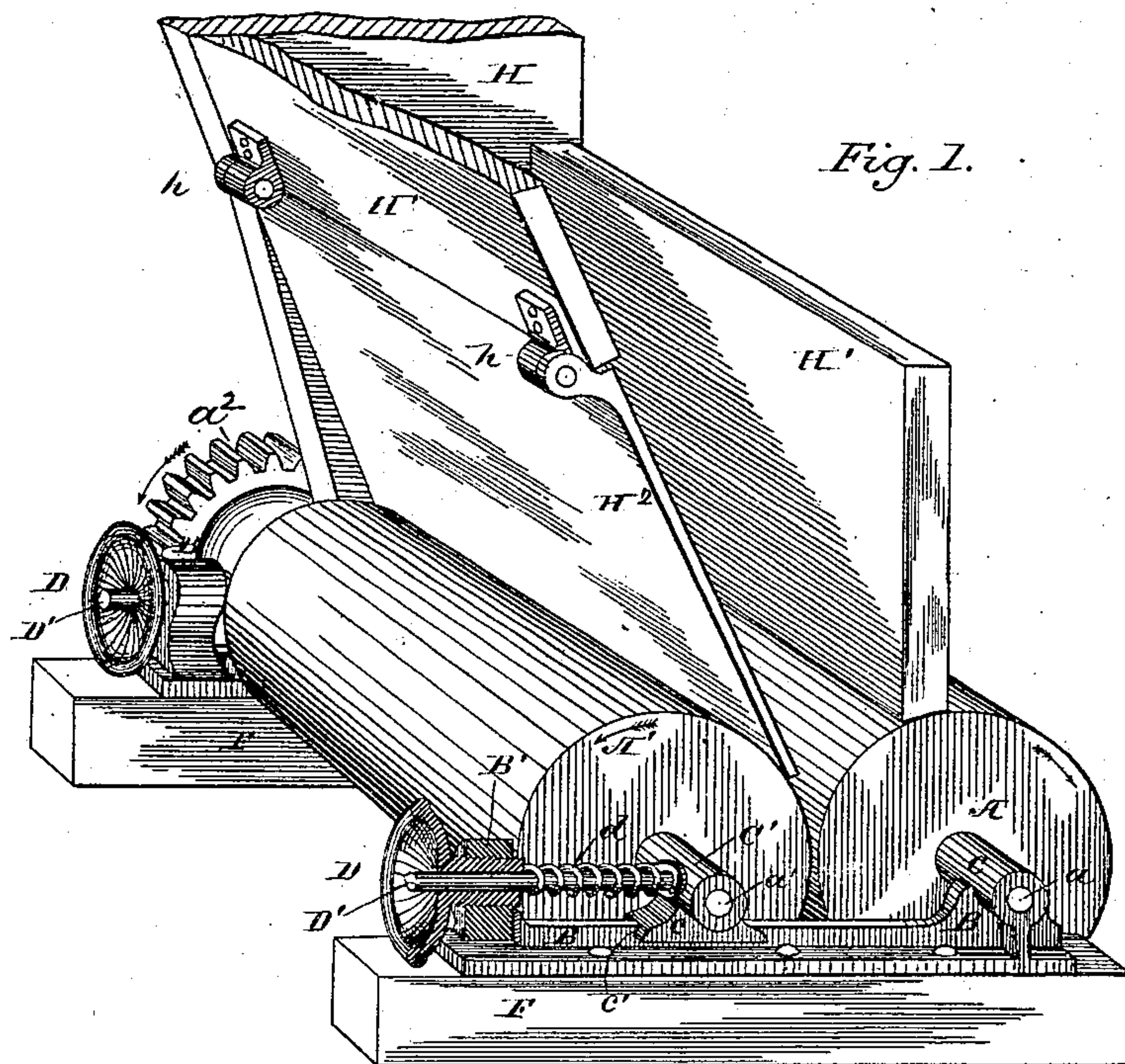


(No Model.)

W. O. GUNCKEL.
ROLLER FEED MECHANISM.

No. 282,720.

Patented Aug. 7, 1883.



WITNESSES
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WINFIELD O. GUNCKEL, OF TERRE HAUTE, INDIANA, ASSIGNOR OF TWO-THIRDS TO H. CLAY MCKEEN AND JOHN D. KEFUSS, OF SAME PLACE.

ROLLER-FEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 282,720, dated August 7, 1883.

Application filed December 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD O. GUNCKEL, of Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Roller-Feed Mechanisms; 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 a part of this specification.

This invention relates to roller-feeding devices—such as are used for grain in flouring-mills and similar purposes—and has for its object such a construction as will afford an automatic regulation of the feed-rolls in accordance with the quantity of grain or other material in the hopper which supplies the grain to said rolls.

To this end the invention consists, primarily, in a pair of feed-rolls, one of which is mounted in stationary bearings, and the other of which is mounted in movable bearings, combined with means by which the pressure of the superposed grain may operate to force the movable roll outward, and thereby widen the space between the said feed-rolls as the quantity of grain in the hopper is increased, and means for automatically opposing the weight of the grain, and thereby closing the space between the rolls as the quantity of grain in the hopper is diminished.

The invention consists, further, in the combination, with the regulating devices mentioned, of means for rotating the said feed-rollers, so as to produce an upward and outward movement of their adjacent surfaces, as will be further explained.

Figure 1 of the drawings illustrates my invention by a perspective view of the rolls, a fragmentary view of the hopper thereto attached, and a sectional view of a part of the devices by which the movements of the movable feed-roll are controlled. Fig. 2 is a fragmentary view, showing an alternative construction by which the movable part of the hopper bears on the bearings of the movable roll instead of on the roll itself.

A and A' are parallel feed-rolls mounted upon any structure to which said rolls are required to be attached, which structure may

be represented by the frame-pieces F F of the drawings. The roll A is stationary, and has its spindles *a* fitted in stationary bearings C. The roll A' is movable, and has its spindles *a'* fitted in movable bearings C'. Said movable bearings are provided with broad bases *c*, grooved at *c'* on their under side in a direction transverse to the axis of the roll, so as to ride upon the horizontal guideways B, fitted to the groove *c'* and secured to the frame-pieces F F. At the outer end of the ways B are vertical posts B', into which the hollow screws D are horizontally threaded. Through each of said hollow screws works a cylindric bar, D', either attached to or provided with a head, and arranged to bear against the movable box C'. About said bar, and between its head or the box C' and the inner end of the screw D, is placed a coiled expanding-spring *d*. By running in the screws D at both ends of the roll, therefore, a greater inward pressure is given to the roll A', and by retracting said screws such inward pressure of the movable roll is diminished. The hopper is shown with its near end piece removed. H' H' are stationary side pieces of the hopper, one of which extends into close proximity with the stationary roll A, and the other of which terminates some distance above the movable roll A'. To the part of the hopper last mentioned an inclined board or plate, H², is hinged at *h h*, having its lower edge arranged to bear outwardly against the inner surface of the movable roll A'. The grain present in the hopper, therefore, operates by its weight to bear outwardly against the plate or board H² and against the movable roll, and as the quantity or weight of said grain increases it serves to more widely open the space between the said movable roll and the stationary roll A, subject to the opposition of the springs *d*.

In the use of this device the adjusting-screws D and springs *d* will ordinarily be set to close the space between the feed-rolls in the absence of grain in the hopper, and to allow them to open only when there is sufficient grain in the hopper to distribute itself throughout the length of the feed-rolls, so that in all cases the feed-rolls will deliver grain to the machinery to which the feeding devices are applied uniformly throughout the length of

the rolls. Whenever the quantity of grain in the hopper is increased it operates, as stated, by its increased weight bearing upon the hinged plate H^2 , to throw the movable roll A' outward, so that by the combined action of such weight and of the opposing springs d the delivering capacity of the rolls is made automatically variable in accordance with the quantity of material supplied to the hopper H .

It is manifest that the hinged part H^2 of the hopper, instead of bearing upon the periphery of the roller A' , may be made to act, through the medium of outwardly-projecting arms h' secured thereto, so as to press upon the bearing-boxes C' , and thus avoid the friction that would attend contact of said hinged part with the periphery of the roller. Such a construction is indicated in Fig. 2 of the drawings.

The shafts a and a' of the rollers A and A' are provided with intermeshing pinions (one of which is seen at a^2 , Fig. 1) constructed to allow the adjustment above described, and actuated by any suitable means to carry the adjacent surfaces of the rolls upwardly and outwardly, as indicated by the arrows. In this movement of the rolls said rolls feed solely by the space between them, and not at all by their surface contact with the material being fed.

The automatic adjusting devices for the movable roller may be employed in a single roller-feeding device, in which case A may stand for the stationary part of the hopper.

I claim as my invention—

1. In a roller-feeding mechanism, the combination, with the hopper, of a laterally-movable roller, and means, subject to the weight of the material in the hopper, for varying the position of the roller, and thereby varying the feed, substantially as described.

2. In a roller-feed mechanism, the combination, with the hopper and a movable roller, of a hinged board, H^2 , forming a movable portion of the hopper, and arranged to bear on the roller under the gravity of the material in

the hopper, and a spring or springs arranged to oppose the pressure of the said board, substantially as described.

3. In a roller-feed mechanism, the combination, with the hopper and hinged part H^2 thereof, of a movable roller, sliding bearing-boxes for said roller, springs arranged to bear upon said boxes in opposition to the board H^2 , and means for adjusting the force of said springs, substantially as described.

4. The combination, in a roller-feeding mechanism, of a hopper, a stationary and a movable roller, means for rotating said rollers so that their adjacent faces travel upwardly and outwardly, means, acting by gravity of the grain in the hopper, for automatically forcing the movable roller outward, and means for yieldingly opposing this outward movement of said roller, substantially as described.

5. The combination, in a roller-feeding mechanism, of the stationary roller, A , the movable roller A' , the hinged plate H^2 of the hopper, whereby the weight of the superposed grain may tend to force the movable roll outward, and adjustable spring devices arranged to bear the movable roll inwardly, substantially as described.

6. In combination with the hopper and its movable part H^2 , the stationary roller A , arranged in proximity to a stationary part of the hopper, an opposing movable roller, A' , journal-boxes C' for said movable roller, guide-ways B , supporting the boxes C' , stationary posts B' , screws D , threaded through said posts, springs d , interposed between the screws D and the boxes C' , and bars d within said springs, substantially as described.

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

WINFIELD O. GUNCKEL.

Witnesses:

H. CLAY McKEEN,
JOHN D. KEFUSS.