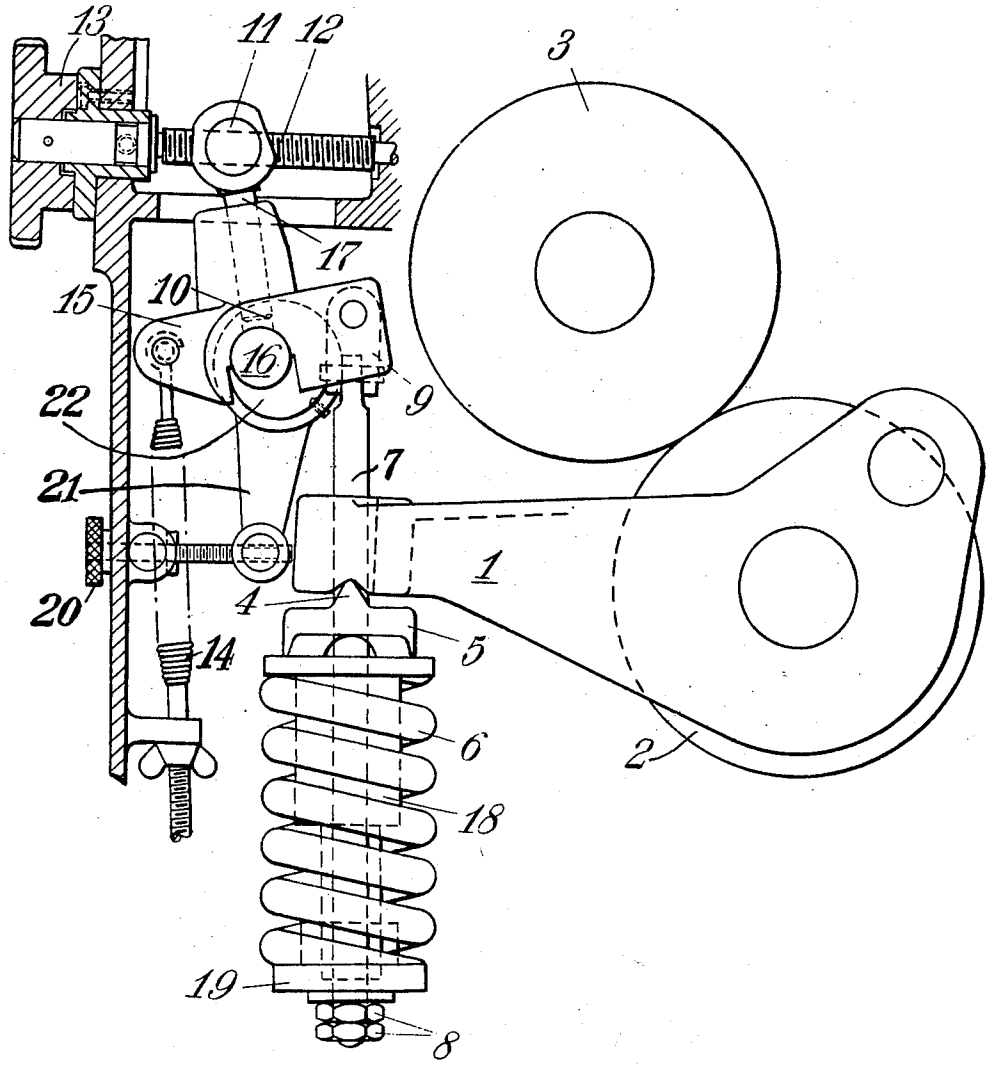
March 9, 1954 F. FIELDEN 2,671,616

COUNTERBALANCED ROLL POSITIONING STRUCTURE

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COUNTERBALANCED ROLL POSITIONING STRUCTURE

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1 Claim. (Cl. 241—233)

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This invention relates to roller mills for cereal grain and is concerned with the means by which the adjustable roll is supported in adjustable relationship to the fixed roll. The adjustment is usually made by a coarse adjustment means comprising a cross shaft with eccentric ends and means for turning the shaft and by a fine adjustment means at each end of the roll.

The object of the present invention is to provide an improved arrangement of the fine adjustment mechanism which permits the latter to be arranged inside the frame of the machine with a hand wheel outside the machine without it being necessary to provide an open gap or slot in the machine frame (through which dust would gain access to the inside of the machine). A further object of my invention is to provide an arrangement which can be readily dismantled when it is desired to remove the adjustable roll from the machine for inspection or renewal purposes.

According to the invention, each supporting arm by which an adjustable roll is adjusted relatively to a fixed roller rests on a spring unit carried by a rod, and the rod is suspended from a lever adapted to be adjusted by a screw and nut device, and provided with a spring or weight to counterbalance wholly or partly the stress applied to the lever by the rod.

The accompanying drawing shows an arrangement in accordance with the invention.

Each supporting arm 1 by which the adjustable roll 2 is adjusted relatively to the fixed roll 3, rests upon knife edges 4 on a cap 5 on a compression coil spring 6, a rod 7 through such spring, which has nuts 8 thereon to support the lower end of the spring 6, passing through the arm 1.

The upper end of the rod 7 is connected by a universal joint 9 to one arm of a lever 10, another arm of which carries a nut 11 running on a screw 12 which passes through the machine frame and carries a hand wheel 13, whereby by turning the screw 12 the position of the nut 11 is varied and the rod 7 is raised or lowered to adjust the roll-supporting arm 1. In order to reduce the pressure on the nut 11, a spring 14 or weight is arranged to act on the lever 10 so as to counter-balance partly or wholly the stress caused by the rod 7. Such spring 14 may be attached to either of the above-mentioned lever arms and to a corresponding part of the machine frame, or a spring or weight may be attached as shown to a third arm 15 of the lever opposite to the arm connected to the rod 7, the lever being T-shaped. With this arrangement

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the effort required to effect an adjustment by means of the screw and nut is greatly reduced.

The lever 10 is fulcrumed on the eccentric 16 which effects the coarse adjustment, being turned by an adjusting screw 20 acting through a lever 21 fixed to the eccentric shaft 22, and the nut 11 is pivotally mounted in a plunger 17 sliding in the lever arm, so that the eccentric can raise or lower the lever while the screw and nut remain stationary.

A sleeve 18 beneath the cap 5, in conjunction with a collar 19 resting on the nuts 8, limits the compression of the spring 6.

When it is desired to remove an adjustable roller for inspection or removal purposes, the nuts 8 on the bottom of each rod 7 beneath the compression coil spring 6 around the rod 7 are removed, allowing the spring units to be lowered on the rod to release the roll-supporting arm without disturbing the adjusting means.

What I claim is:

In a roller mill for cereal grain, a counterbalanced roll positioning structure comprising a fixed roll, an adjustable roll, a pair of pivoted arms for supporting the ends of the adjustable roll, a substantially vertical rod for supporting each pivoted arm, a pair of spring units whereby the arms are suspended on the rods, a pair of levers each having three integral arms, each rod being pivotally attached to an arm of one of the levers, an adjustable element carrying fulcrums for the levers, a pair of springs each pivotally attached to an arm of one of the three-armed levers opposed to that to which a rod is attached, for counter-balancing at least in part the stresses applied to the levers by the rods, the spring units and springs being substantially parallel axially and the fulcrums being adjustable in a direction substantially parallel to these axes, and screw-and-nut means engaging the third arm of the levers for fine adjustment of the positions of the levers.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
334,389	Keyser	Jan. 12, 1886
434,707	Graham	Aug. 19, 1890

FOREIGN PATENTS

Number	Country	Date
218,319	Great Britain	Apr. 16, 1925