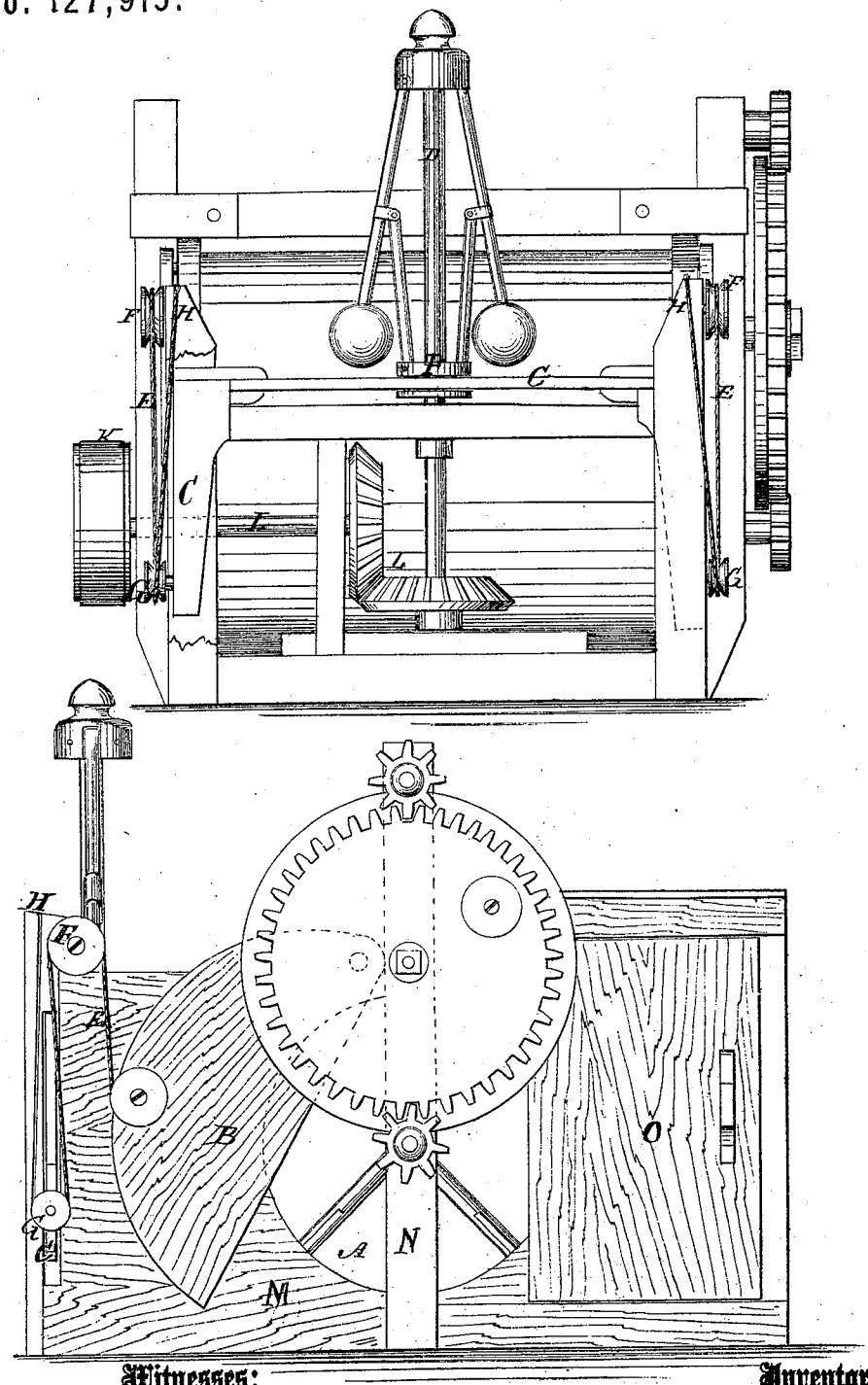
G. S. & H. NUTTER.

Improvement in Grain-Separators.

No. 127,915. Patented June 11, 1872.



Witnesses:

Chas Nida.

Wm. H. C. Smith.

Inventors:

S. S. Nutter.

H. Nutter.

Per Munn & Co

Attorneys.

UNITED STATES PATENT OFFICE.

GRAFTON S. NUTTER AND HARRISON NUTTER, OF BUNKER HILL, ILLINOIS, ASSIGNORS OF ONE-THIRD OF THEIR RIGHT TO CHARLES H. NUTTER, OF SAME PLACE.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 127,915, dated June 11, 1872.

To all whom it may concern:

Be it known that we, GRAFTON S. NUTTER and HARRISON NUTTER, both of Bunker Hill, in the county of Macoupin and State of Illinois, have invented a new and Improved Blast-Regulator for Grain-Separators; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is an end elevation of part of a grain-separator, showing the application of our improved blast-regulator; and Fig. 2, a side elevation of the same.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

The grain-separators commonly employed upon thrashing-machines and fanning-mills are unprovided with means for properly regulating the blast of the fan; and, as a consequence, when the speed of the machine is high the fan-blast is so strong as to blow over much good grain with the chaff, and when the speed is low the blast is correspondingly decreased and permits the chaff to fall with the wheat.

Various means have been resorted to in order to overcome these defects, and among others a ball-governor has been employed connected by levers and cords to the slides at each end of the fan. The cords are arranged to connect the levers with the slides and pass over different pulleys mounted upon fixed shafts to a point below the slides, where they are provided with weights, so that as the speed of the machine increases the governor-balls are thrown out by centrifugal force, depressing the outer ends of the levers and permitting the weighted cords to partially close the slides, and thereby diminish the air-passages to the fans. Under a low rate of speed the falling of the governor-balls raises the ends of the levers, so that the cords shall open the slides and admit a larger volume of air to the fans. This method, however, is defective for the following reasons—to wit: First, because the arrangement of the levers and cords is such that the slides cannot be closed and opened uniformly. Secondly, because of the large space occupied by the suspended weight. Thirdly, because the position of the cords and pulleys is such that they are liable to be obstructed by the accumulation of chaff and dirt, and rendered practically inoperative. Fourthly, because the slides are limited in their outward movements by the guide-pulleys.

Our invention has for its object to overcome these defects; and to this end it consists in mounting upon the governor-shaft between the sides of the machine a sliding frame, whose arms, projecting laterally through slots in the sides, are provided with pulleys which fit each into the bight of a cord secured at one end to the frame of the machine, and at the other end to one of the slides, the bight itself being formed by an upper guide and friction-pulley. By this arrangement both ends of the sliding frame move simultaneously and uniformly to close and open the slides as the governor-balls rise and fall. The slides close by their own gravity, and are sensitive to the slightest variation in the governor because of the traveling pulleys. In effect the slides are balanced upon the guide-pulleys by the frame, and any movement of the latter induced by the governor destroys the equipoise and opens or closes the slides.

In the accompanying drawing M, is the frame of the separator, constructed in the usual or in any suitable form, and provided with the ordinary side passages A to admit the air to the fan. Each passage is divided by the center standard N into two parts, one of which may be closed or opened by a common slide, O. B is a gate pivoted to the side of the frame, so as to swing down by its gravity when permitted to do so, and close the other part of the air-passage. C is a cross-bar connected to the rising-and-falling collar P of an ordinary ball-governor arranged between the sides of the machine at the ends thereof. The ends of the cross-bar are provided with pendent arms, whose lower ends carry grooved pulleys G upon the outside of the machine. The cross-bar and its arms constitute a sliding frame, moved up and down by the governor and guided in its movements by the shafts of the pulleys G working in vertical slots formed in the sides of the machine, as shown. Each side of the machine is provided with a swinging gate,

B, to which one end of a cord or belt, E, is secured, the opposite end being attached at H to the top of the machine. F is a pulley placed above each slide upon a fixed stud, and over this pulley the cord passes direct from the slide. Between the pulleys F and points H a loop or bight is formed in each cord, which receives the grooved pulleys G of the sliding frame. The governor is driven in any suitable manner, but we have shown in this instance a shaft, I, geared with the fan-shaft by a belt, K, and gearing with the governor-shaft D by the wheel L.

By our improved arrangement the sliding frame rises and falls with positive movements as the governor rotates, both ends moving simultaneously to slacken or tighten the bights of the cords. When the machine is driven at a high rate of speed the sliding frame is moved up, the tendency being to slacken the cords E which slack is taken up by the falling of the slides to close or partially close the air-passages. Under a low rate of speed the gravity of the sliding frame in the bight of the cords opens the slide, as will be easily understood.

By employing the traveling pulleys G the frame moves with but little friction upon the cords, and the slides are therefore rendered sensitive to the slightest variations of the governor.

Having thus described our invention, what we claim is—

In a grain-separator, whose fan-slides are operated by a "governor," we claim the sliding frame C, pulleys F G, connecting-cords E, and swinging gates B, combined and arranged in the manner described and shown, for regulating the blast of the fan uniformly irrespective of the varying speed of the fan.

GRAFTON S. NUTTER.
HARRISON NUTTER.

Witnesses:
OLIVER GEORGE,
GEORGE J. SMITH.