N. P. BOWSHER.

SPEED INDICATOR.

No. 77,864. Patented May 12, 1868.

Fig: 1.

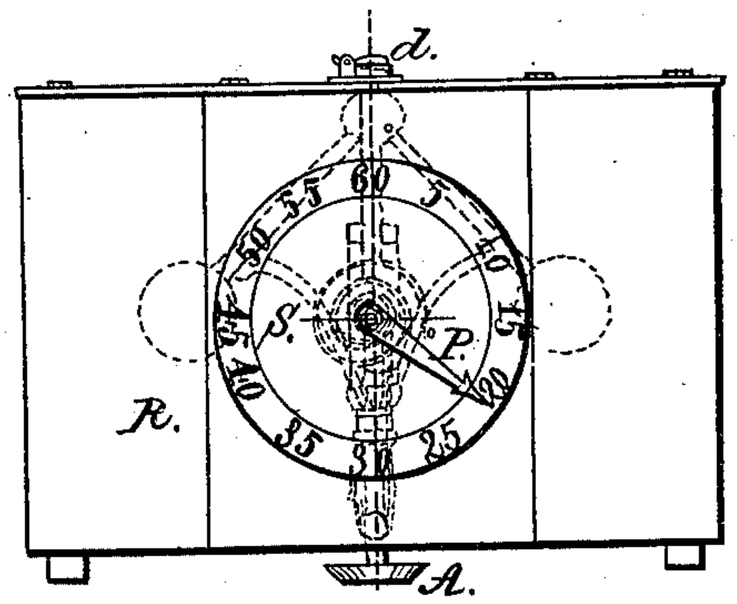


Fig: 5.

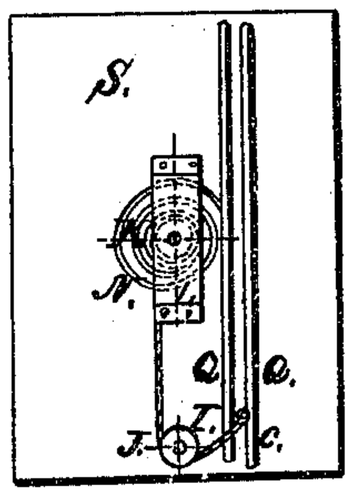


Fig: 2.

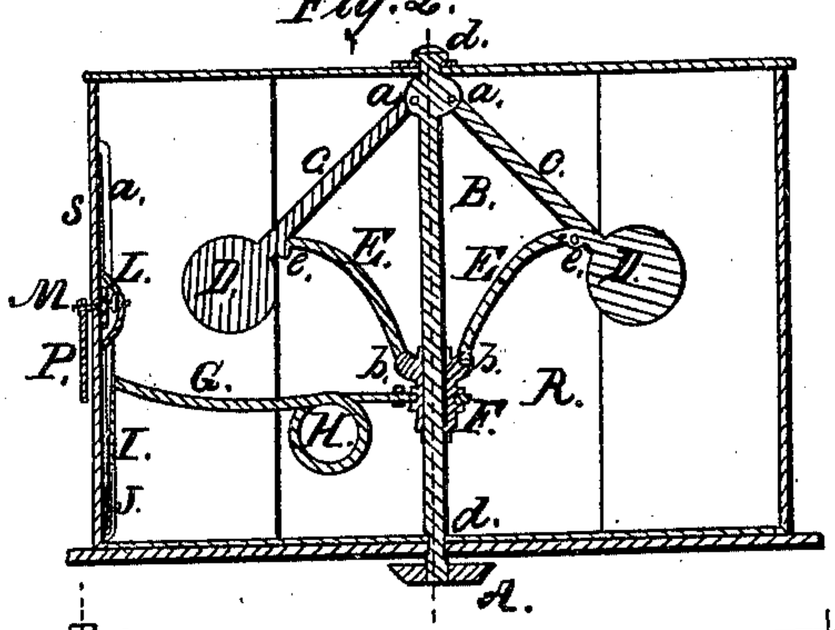


Fig: 3.

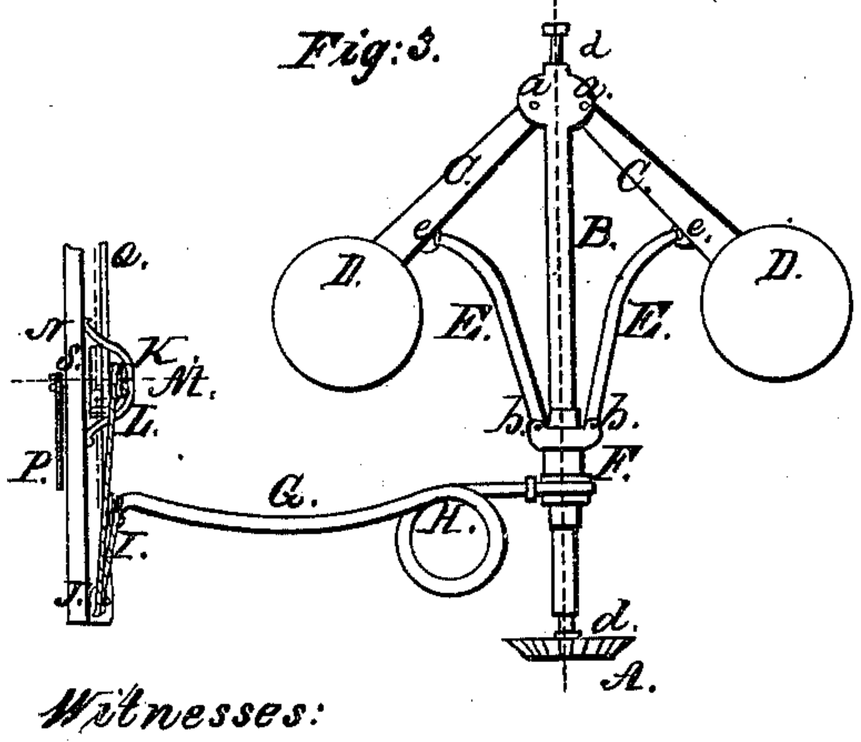
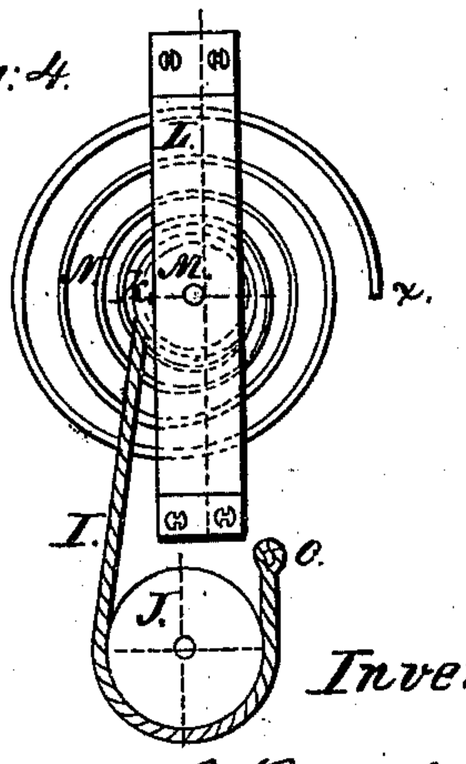


Fig: 4.



Witnesses:

Rush K. Abbott.

Ed. A. Dubois.

Inventor

Nelson P. Bowsher

By Jos. Abbott & Atty.

United States Patent Office.

NELSON P. BOWSHER, OF LIGONIER, INDIANA.

Letters Patent No. 77,864, *dated May* 12, 1868.

IMPROVEMENT IN POWER-INDICATORS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, NELSON P. BOWSHER, of Ligonier, in the county of Noble, and State of Indiana, have invented a new and useful Power-Indicator; and I do hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon, of which drawings—

Figure 1 is front view of my power-indicator.

Figure 2 is a sectional view of the same, showing a section made by plane passing through the axis of the governor, and the centre of dial-face.

Figure 3 is a detail view of the mechanism of the machine, with box removed.

Figure 4 is a detail view of the spring, pulleys, and cords.

Figure 5 is a detail view of the inside face of the dial-plate.

The nature of my invention consists in the peculiar attachment of a dial and pointer to the common form of ball-governor, by which I indicate each different position of the governor, and as the different positions of the governor are caused by the different stages in the amount of power, I have an index of the power, which is very useful in many cases where a given power is to be used, as in the case of grain-separators, where too great a power causes too great blast, which would blow the grain out with the chaff, while too little power would not effect a thorough cleaning of the grain.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

R is the outside box, made in octagonal form, as shown.

In the centre of this box is arranged the ball-governor, which has the shaft, B, which runs in boxes, *d d*, in the top and bottom of the box R.

The arms C C are connected to the shaft B by axial bolts, *a a*, and have the heavy balls, D D, on their ends.

The connecting-links E E are attached to the arms C C by axial bolts *e e*, and to the sliding collar F by axial bolts *b b*.

This sliding collar F is arranged so as to slide up and down on the shaft B, and has attached to it the arm G.

This arm is made with a spring-coil, H, near the middle, and is attached to the cord I by means of a hook on its end, which hooks into the loop *c* on the end of said cord I.

The guide-wires Q Q are arranged in the back of dial-plate or face S, and the end of the arm G moves up and down between them, thus insuring a correct vertical motion to the end of said arm.

The pointer P is fastened on the end of the shaft M, as shown, and said shaft extends back through the dial-face S into the iron, L, which carries the end of said shaft, the other bearing being in the dial-plate.

A pulley, K, is secured on the shaft M, and one end of a coiled spring, N, is also attached to said shaft, the other end, X, of said spring being fastened to the dial-plate S.

The cord I is attached to the face of pulley K, and, after being wound around said pulley one or more times, passes around a pulley-wheel, J, arranged on a bolt near the lower part of the inside of the dial-face, and thence up to the end of arm G.

This arrangement is fully shown in detail drawings.

The dial-face is made as shown in fig. 1, having numbers arranged as shown, or in any other suitable manner.

It is readily seen from this description, that when the power is applied to the shaft B of the governor by means of the bevel-gear wheel A, or in any other suitable manner, and said shaft is made to rotate, the balls D D will move out from the shaft B, from the action of centrifugal force, and that the amount of this motion will depend on the speed with which the shaft B rotates, which will depend upon the power applied to it. As the balls D D move out, the links E E draw the collar F up on the shaft B. This raises the arm G, which draws the cord I, which acts over the pulley K, and causes the spring N to tighten, and the pointer P to move around the dial. As the balls D D come back to the shaft B, the collar F, and consequently the arm G, move down, and the cord I is slackened, when the spring N causes the pointer P to turn back on the dial.

The coil H in the arm G serves to prevent any sudden jerks of the balls D D being transmitted to the pointer P.

It is easily seen that any form of governor, having a sliding collar, or its equivalent, might be used instead of the ball-governor D, B, D, and the variations of the power which operated the governer would be indicated in a similar manner.

When this indicator is used in connection with a grain-separator, it is attached to the separator in front and a little to the left of the feeder, and may be geared either to the beater or fan. When in this position, it is easily seen by the driver or feeder, who soon sees what speed is requisite to the cleansing of the grain, and notes what number is shown by the pointer on the dial of the indicator, when the separator is running at the proper speed, and then regulates the power and feed so as to keep the pointer at the correct place.

Having thus fully described the construction and operation of my indicator, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The peculiar arrangement and combination of the dial S, pointer P, shaft M, coiled spring N, pulley K, cord I, pulley J, arm G, and sliding collar F, of the ball-governor D, E, B, E, D, the several parts being arranged in the manner and for the purpose specified.

2. The combination of the power-indicator with a grain-separator, substantially as and for the purpose herein specified.

As evidence that I claim the foregoing, I have hereunto set my hand in presence of two witnesses, this 3d day of February, 1868.

NELSON P. BOWSHER.

Witnesses:

W. W. SKILLEN,

E. W. KNEPPER.