

A. B. JOHNSON.
SPEED INDICATOR.
APPLICATION FILED AUG. 18, 1909.

980,531.

Patented Jan. 3, 1911.

2 SHEETS-SHEET 1.

FIG. 1

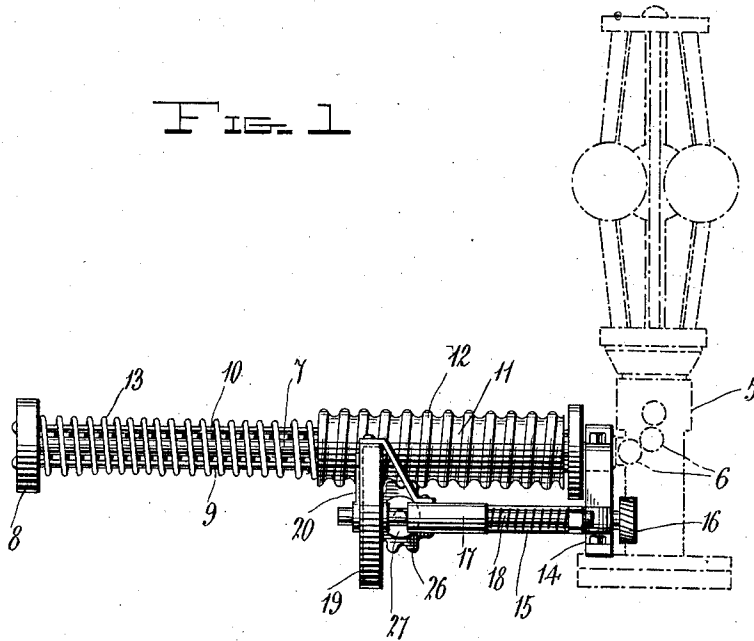
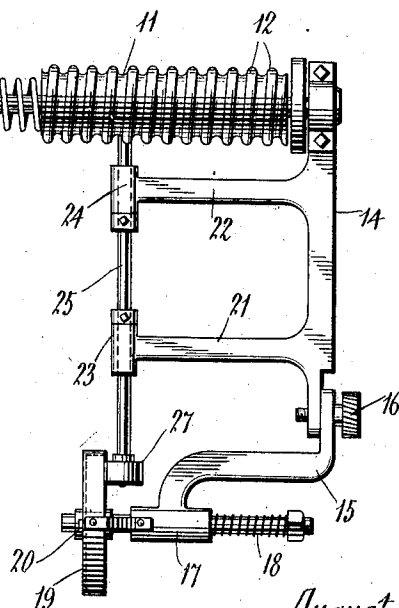


FIG. 2



Witnesses

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FIG. 3

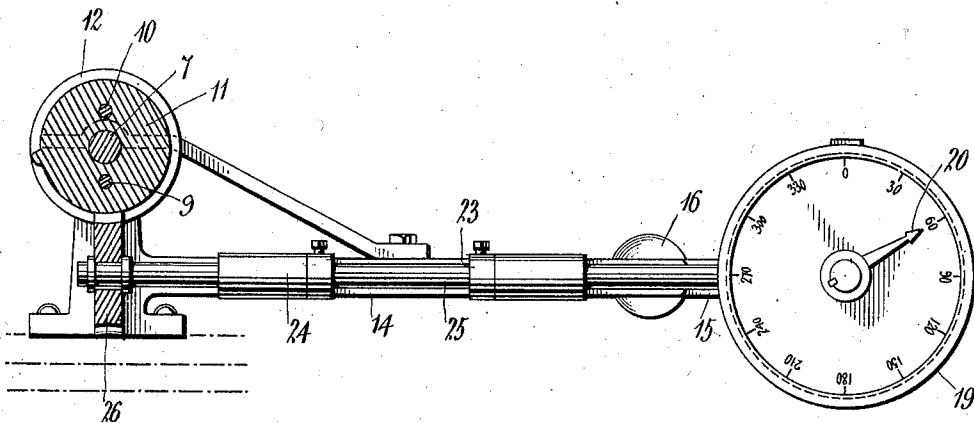
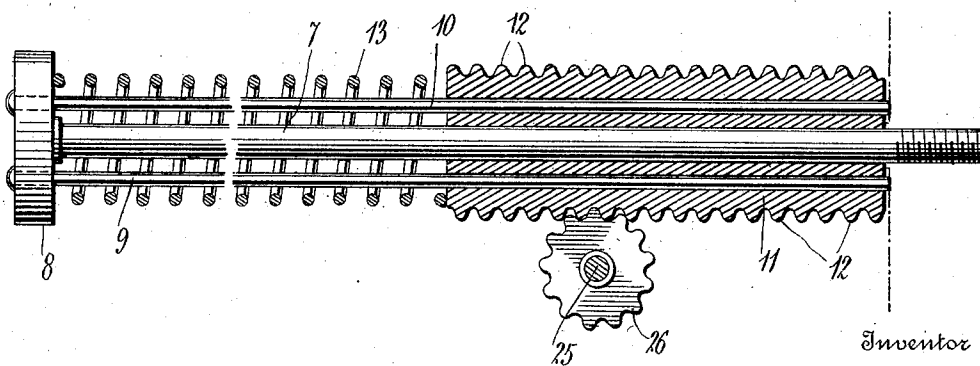


FIG. 4



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AUGUST B. JOHNSON, OF RED WING, MINNESOTA.

SPEED-INDICATOR.

980,531.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed August 18, 1909. Serial No. 513,430.

To all whom it may concern:

Be it known that I, AUGUST B. JOHNSON, a citizen of the United States, residing at Red Wing, in the county of Goodhue, State of Minnesota, have invented certain new and useful Improvements in Speed-Indicators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in speed governors and has particular reference to the governors employed with traction engines which are used for operating harvesting machines.

The principal object of the invention is the provision of a means for regulating the centrifugal governors according to use to which the engine is to be put. That is to say that the governors may be adjusted to a position, when the engine is employed to transport the device from place to place, different to what would be necessary when the engine is employed to operate a threshing machine.

Another object is the provision of an indicator which is adapted to show the maximum speed the engine is to make when threshing and when driving the device from place to place.

With these and other objects in view as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claim; it being understood that various changes in the form, proportion, size and minor details of the device may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of the specifications:—Figure 1 is a side elevation of the device. Fig. 2 is a plan view thereof. Fig. 3 is a front elevation of the device showing the adjusting shaft in cross section. Fig. 4 is a longitudinal sectional view on the adjusting shaft.

Similar numerals of reference are employed to designate corresponding parts throughout.

As before stated, the device is intended primarily for use with that type of traction engines used for driving threshing machines. The form of governor shown is of the centrifugal type and is adapted to operate the cut-off valve by a downward pressure. The lower end of the bearing shaft of this governor enters a casing designated by the numeral 5, the said casing having a central bore extending for a portion of the length of the casing and terminating in a lateral extension, the whole forming a somewhat curved chamber in which is disposed a plurality of balls 6, which are of a size to nicely fit within the casing and bear one upon the other. The lower end of the governor bearing shaft bears on the upper-most of these balls and it is evident by forcing the said balls upwardly by a mechanism about to be described that the governor head will be spaced from the valve stem so that the speed of the engine may be considerably increased before the governor head bears on the valve stem to cut off the steam to the engine cylinder and conversely when the balls are lowered and the governor head brought nearer the valve stem the engine will make a less number of revolutions per minute before the valve operates to cut off the steam from the cylinder. Since this type of governor forms no part of the present invention a further description of the same need not be given.

The lateral terminal of the bore of the casing 5 is screw threaded and receives the threaded end of a regulating shaft 7, the opposite or free end of which is provided with a hand or turning wheel 8. Extending longitudinally of the shaft and spaced from the opposite sides thereof are a pair of rods 9 and 10. These members are secured at one end to the inner face of the hand wheel 8 and terminate at a point adjacent the opposite or threaded terminal of the shaft 7.

A sleeve is designated in general by the numeral 11. This member is considerably less in length than the length of the shaft 7 and on its outer face is provided with a spiral 12, constituting a worm gear. The

sleeve 11 is provided with a central opening to loosely receive the shaft 7 and on either side of the said central opening is provided with openings to receive the rods 9 and 10.

With this construction it is obvious that the sleeve will rotate with the shaft but is capable of longitudinal movement thereon. Surrounding that portion of the shaft 7 between one end of the sleeve and hand wheel 8 is a helical compression spring 13, the function of which is to yieldingly hold the sleeve toward the opposite end of the shaft. With the construction thus far described it is evident when necessary to raise the bearing shaft of the governor that the same can be done by turning the shaft to the right, this will cause its threaded end to enter farther into the lateral extension of the bore and press on the lower-most ball, whereby the bearing shaft of the governor will rise. It will be observed that during the inward movement of the shaft the sleeve 11 will be likewise rotated but owing to one of its ends bearing on the outer edge of the lateral extension of the bore, it will, as the shaft 7 moves inwardly remain stationary with respect to the longitudinal movement of the shaft, whereby the spring 13 will be compressed.

It is evident when the operator adjusts the governor for the purpose before described that a means should be provided to indicate the number of revolutions the fly wheel of the engine will make at maximum speed after the adjustment has been accomplished and in order to carry out this construction the following arrangement is employed:—By referring now to Fig. 2 it will be seen that projecting laterally from the boiler of the engine or suitably secured to any portion of the latter and extending in a horizontal plane and at right-angles to the governor is a bracket designated in general by the numeral 14. This member is arranged adjacent the casing 5 and below the shaft 7 and extends outwardly for a suitable distance and terminates in a movable arm 15. The arm 15 is adjustably secured to the free end of the bracket by means of a set screw 16 and is arranged at right angles to the arm and parallel with the boiler (not shown). The arm 15 is provided with a bearing sleeve 16 extending in a horizontal plane and which receives a shaft 18. That terminal of the shaft extending in advance of the free end of the arm 15 has journaled thereon an indicator disk 19. The opposite faces of this disk are perfectly flat and the front face is provided with suitable indicia indicating the number of revolutions the engine is capable of producing after the governor has been adjusted to its several positions as clearly

shown in Fig. 3. An indicator hand 20 is held suspended over that face of the indicator provided with the indicia. It is evident that this hand is stationary so that when the indicator disk is turned the markings under-lying the indicator hand will show the number of revolutions the engine is capable of making in its adjusted position. Extending laterally from the bracket arm 14 are a pair of supports 21 and 22. These supports are parallel with the boiler and arm 15 and terminate in bearing sleeves 23 and 24, which are disposed at right angles to the supports and bearing sleeves 17. Journaled in the bearing sleeves 23 and 24 is a shaft 25, one terminal of which is provided with a worm, the teeth of which mesh with the worm gear 12 on the sleeve 11. The opposite end of the shaft 25 terminates at a point adjacent the indicator disk 19 and is provided with a friction pulley 27, which bears on the inner face of the indicator disk 19. It is obvious with this construction when the shaft 7 is turned by means of the hand wheel to adjust the governor in the manner before described that the indicator disk by virtue of its connection with the worm gear 11 will be likewise turned. It is to be understood that the gearing between the worm gear and disk is so proportioned that a turn of the shaft 7 which would be sufficient to adjust the governor to permit the engine to make fifty more revolutions per minute will advance the indicator disk so that the numeral on the latter under-lying the indicating hand will indicate the amount of revolutions the engine is capable of making with the new adjustment.

This device will be found very advantageous by traction engine operators since it is well known that different speeds are required for the different kinds of grain to be threshed. It can be further seen that the device is exceedingly simple in structure and comparatively inexpensive to manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

What is claimed as new, is:—

The combination with a governor having a threaded opening in one side of its shell, a series of governor valve stem regulating balls leading to said opening, and an extension forming a stop adjacent to said opening, of a shaft having one end threaded in said opening and bearing on said balls, a hand wheel on the opposite end of said shaft for advancing and retracting the shaft whereby to move said balls, a plurality of fingers secured to said hand wheel, a worm having orifices loosely receiving said shaft and fingers whereby the worm is mounted for combined revoluble and sliding move-

ment on said shaft, a spring interposed between said hand wheel and worm and holding the worm in abutting contact with said stop, a bracket engageable with said governor, a dial on said bracket, and an operative connection between said worm and said dial.

In testimony whereof, I affix my signature, in presence of two witnesses.

AUGUST B. JOHNSON.

Witnesses:

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JOHN F. MERRILL.