April 19, 1932. S. HEIER 1,855,169

GOVERNOR FOR THRESHING MACHINES

Filed April 22, 1929

Fig. 1

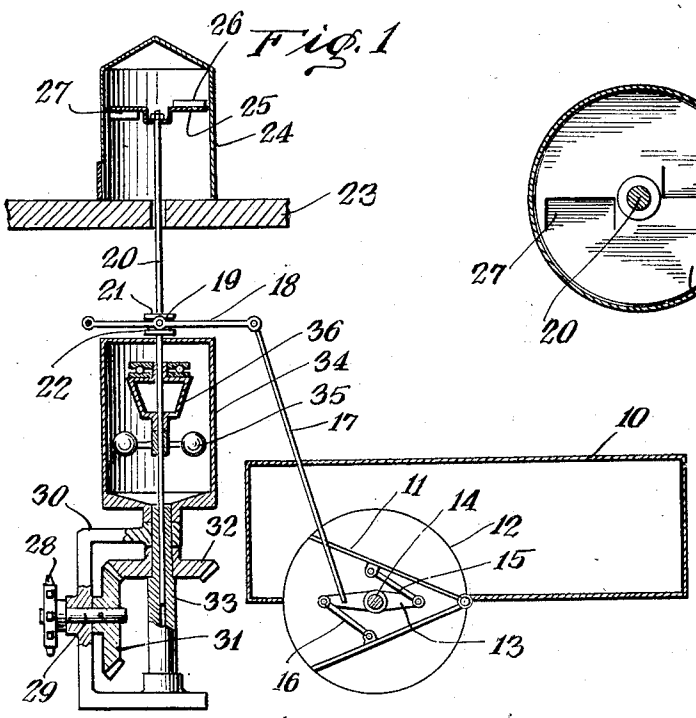



Fig. 3




Fig. 2

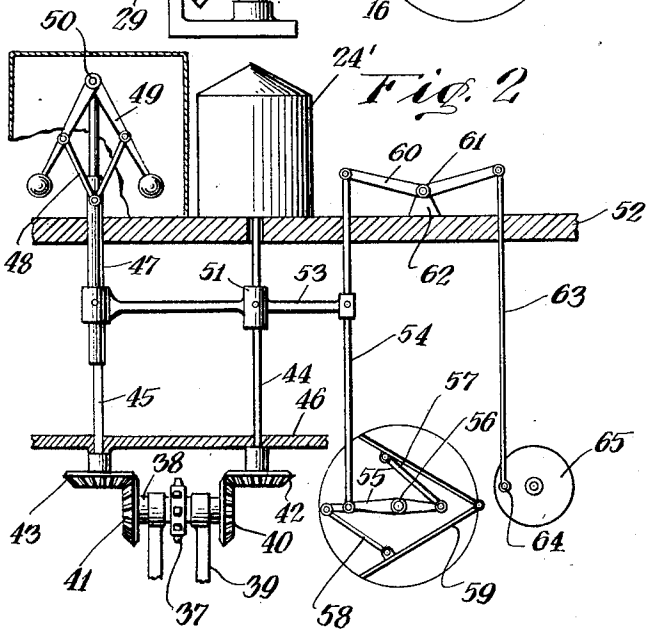
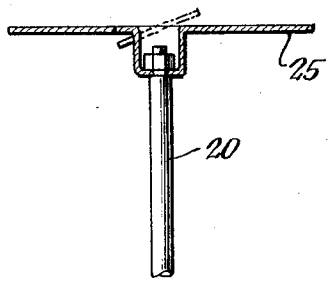



Fig. 4




Inventor

Samuel Heier

By His Attorney

Marion Adams

Patented Apr. 19, 1932 1,855,169

# UNITED STATES PATENT OFFICE

SAMUEL HEIER, OF AKASKA, SOUTH DAKOTA

## GOVERNOR FOR THRESHING MACHINES

Application filed April 22, 1929. Serial No. 357,215.

This invention relates to improvements in regulating devices, particularly to a device for regulating the fan or bellows operation of threshing machines or the like, and it is the principal object of my invention to provide a governor for the regulation of the speed of the fan or bellows in order to produce a uniform operation throughout during the operation of the machine under changing loads.

Another object of my invention is the provision of a governor for the speed of the fans or bellows of threshing machines or the like of simple and inexpensive construction, yet durable and efficient in its operation.

A further object of my invention is the provision of a governor device for regulating the bellows operation of threshing machines or the like providing a double acting governor device and capable of ready installment in any of the machines at present in use without materially changing the construction thereof.

These and other objects and advantages of my invention will become more fully known as the description thereof proceeds, and will then be specifically defined in the appended claim.

In the accompanying drawings, forming a material part of this disclosure:

Fig. 1 is a sectional front elevation of a governor or regulating device constructed according to my invention.

Fig. 2 is a similar view of a modified form thereof.

Fig. 3 is a detail bottom plan view of a governor plate.

Fig. 4 shows in sectional detail view its connection to the governor shaft.

As illustrated, the blower box 10 of a threshing machine contains the fan of a conventional type within its cylindrical casing. The box has an opening directed towards the blower adapted to be closed, when the ball governor governing the blower is running with a speed in excess to its normal speed, by the following mechanism: a plate or door 11 adapted to close the opening is hinged at its inner end to the end of the box-wall to which is also hinged the inner end of a door 11'. Both doors have pivotally attached to their inner faces the outer ends of links 15, 16 the inner ends of which are pivotally attached to the ends of a member 13 on a rotary shaft 14.

To member 13 is attached near one end thereof the lower end of a rod 17 to the upper end of which is pivotally attached the end of a link 18, pivotally secured intermediate its ends, as at 19, to the shaft 20 of a governor device between collars 21, 22.

The upper end of shaft 20 extends through a plate 23 into a stuffing box or housing 24 and carries therein a plate or piston 25 having to both sides of the shaft doors 26, 27, opening towards opposite sides of the plate or piston 25.

A sprocket wheel 28 is mounted on a shaft 29 journaled in a suitable bearing bracket 30, and carries at its opposite end a bevel gear 31 in mesh with a bevel gear 32 on a vertical shaft 33, in which the lower end of governor shaft 20 is guided.

Shaft 33 carries also a casing 34 in which a ball governor 35 is mounted on a casing 36 on shaft 20, so that upon the flying of the balls apart under the centrifugal force the shaft 20 will be lifted or lowered.

This device operates as follows:

A changing in the loads during the operation of the machine will operate the governor and raise shaft 20 to regulate the operation of the fan or bellows in accord with the change in the load so that if the load falls below a predetermined limit it will raise by means of rod 17 one end of link 13 to close the blower opening by means of door 11' while on the other hand if the load exceeds a predetermined limit, it will carry rod 17 down to close the opening of the blower by means of door 11, so that in this manner the blower will always work with the desired intensity, and an additional regulation will take place within housing 24 acting as a dash pot damper to check the vibration and rapid movement of the rods 20 of the governor, because one of the wings of plate 25 will rise while the other will remain in its original position or vice versa according to the movements of the governor rods. It will be clear that an upward movement of the rod 17 and a change in the load will bring the doors

11, 11′, together while a downward movement of the rod 17 will spread the doors 11 for normal operation.

In the modified form of my invention illustrated in Figure 2, the sprocket wheel 37 on shaft 38 journaled in suitable bearings 39 is driven from the machine.

The shaft 38 carries at both of its ends bevel gears 40, and 41 respectively in mesh with bevel gears 42, 43 respectively on the lower ends of shafts 44, 45, guided through machine frame 46.

Shaft 45 works in a sleeve 47 to the upper end of which links 48 of a ball governor 49 are pivotally secured, while the governor shaft is pivoted, as at 50 to the upper end of shaft 45.

The shaft 44 carries a socket 51 and enters through a plate 52 of the machine frame into the housing 24′ constructed as described above with respect to the preferred form 24 thereof.

Sleeve 47 and socket 51 are connected by means of a rod 53 with the operating rod 54 connected to the operating lever 55 on shaft 56 to one side of the same.

To the outer ends of lever 55 are pivotally secured the ends of links 57, 58 of the bellows 59.

The upper end of rod 54 has pivotally attached thereto one arm of a bell-crank lever 60 pivoted at its fulcrum, as at 61 to a lug 62 on plate 52, while an operating rod 63 is pivotally attached to the other arm of lever 60. The lower end of rod 63 is eccentrically attached, as at 63, to a disc 65.

This device operates as follows: If changes in the load takes place, the governor device 49 on shafts 47 and that on shaft 44 in housing 24′ will regulate and transfer the same as a uniform motion to the bellows so that the same will at all times work with the required speed.

It will be evident that I have described and shown the preferred form of my device only as some of the examples to practically construct my governor device, and that I may make such changes in its construction as come within the scope of the appended claims without departure from the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

In a device of the class described including a blower box in threshing machines for separating the chaff from the seeds, having an opening, a pair of angularly disposed doors hingedly connected at their inner ends to said box, links pivotally attached at their outer ends to said doors, a rotary shaft, a member on said shaft to the outer ends of which the inner ends of said links are pivotally attached; a governor and its rods and a connection between the governor and said member and a dash pot into which the rods of said governor extend for checking the vibrations and rapid movement of said rods, said connections between dash pot, governor and link so arranged as to close the opening in the blower box upon an upward movement of the governor rod under a change in the load and to spread the doors upon a downward movement of the governor rod when the machine is operating normally.

In witness whereof I have signed my name to this specification.

SAMUEL HEIER.