J. ZENGEL.

Apparatus for Transmitting and Regulating Motion.

No. 165,144. Patented June 29, 1875.

Fig. 1.

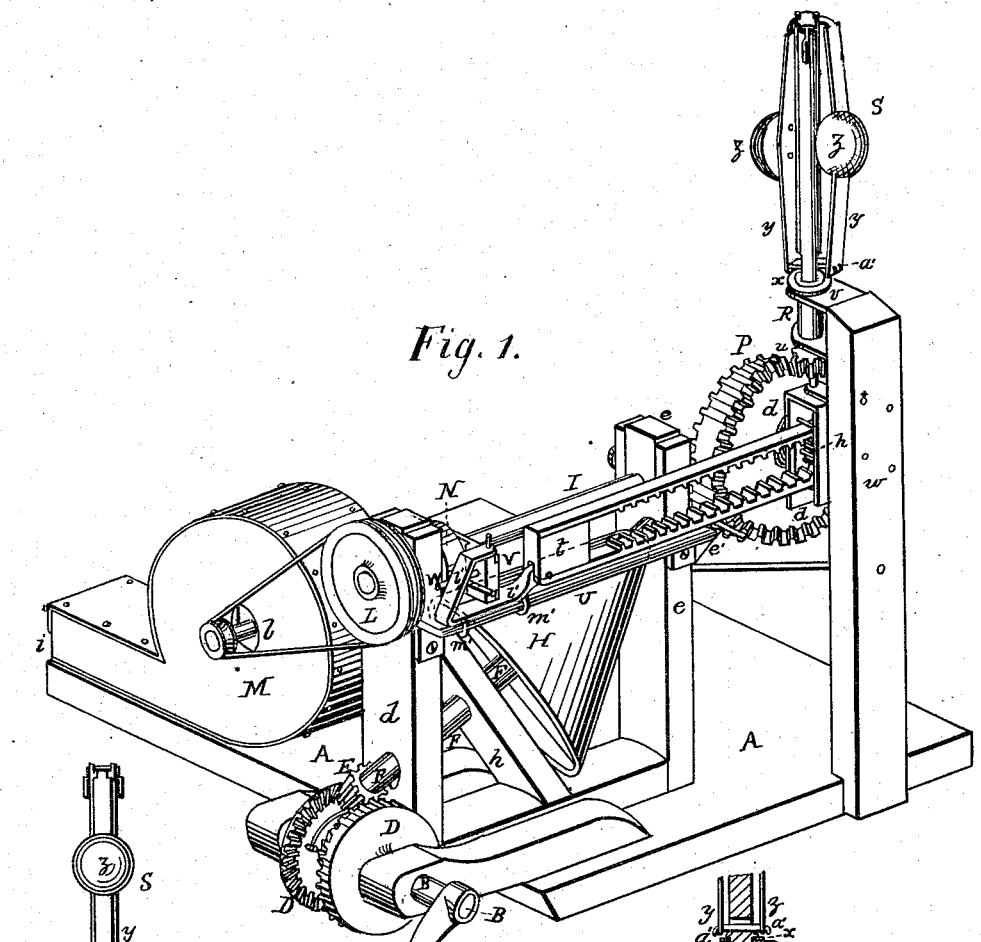


Fig. 2.

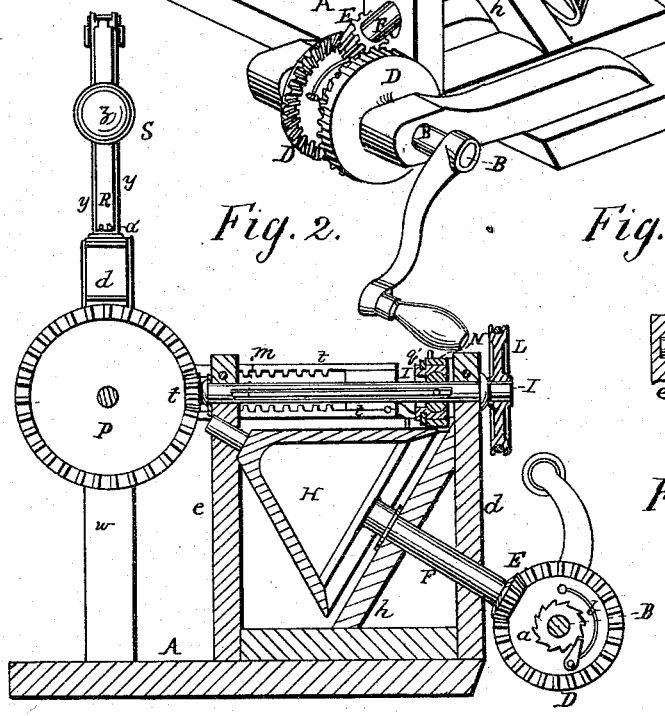


Fig. 3.

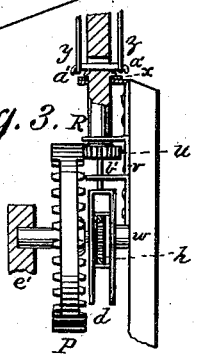
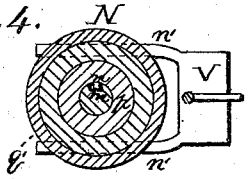


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH ZENGEL, OF QUINCY, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR TRANSMITTING AND REGULATING MOTION.

Specification forming part of Letters Patent No. **165,144**, dated June 29, 1875; application filed April 6, 1875.

To all whom it may concern:

Be it known that I, JOSEPH ZENGEL, of Quincy, Illinois, have invented certain new and useful Improvements in Machines for Regulating and Transmitting Motion, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in machines for regulating and transmitting motion, and is exhibited in the present instance as applied to a fan for supplying railway-cars with fresh air, as more particularly detailed hereinafter.

Figure 1 is a perspective view of a device embodying the elements of the invention. Fig. 2 is a vertical central sectional view of same. Figs. 3 and 4 are detached views of parts of same.

A in the accompanying drawings represents a platform placed in proper relation to the car-axle B, to which are rigidly secured the bevel-gear wheels D, provided at their center with the circular ratchet *a*, upon which operates the spring-pawl *b*. By this arrangement the device is operated when the car moves either way. The wheels D engage the bevel-pinion E at the lower end of the shaft F, which inclines upward, as shown, having bearings in standards *d e* and brace *h*, and secured fixedly at the axial center of the cone H, so that the surface of the cone that is uppermost is always parallel to the shaft I, which works in bearings near the top of the standards *d e*, through both of which it projects, being at one end supplied with the grooved pulley-wheel L, over which passes the belt, connecting with a wheel on the end of the shaft of the fan M, which is secured to the platform A, and provided with the conduit *i* to deliver, and the apertures *l* to receive, the air, the latter being covered with gauze or other suitable means to prevent the entrance of dust or cinders into the fan, which, being operated by the belt, supplies the car with air. The shaft I is provided between its bearings with the groove *m*, to receive the feather *n* on the ball-joint *p*, placed at the center of the friction-wheel N, the periphery of which impinges upon the cone H. Thus the wheel can rotate vertically or transversely upon the shaft I, the other end of which is furnished with the pinion *t*, which engages the teeth on the outer side of the double crown-gear P, the opposite teeth whereof actuate the pinion *u* at the lower end of the hollow vertical shaft R, which works in bearings in the plate *v*, secured near the top of the standard *w*, and is sustained by the collar *x*, above which is placed the governor S, formed of two spring-bars, *y*, provided at their centers with the weights *z*, and having their lower extremities connected with the plate *a'*, to the center of which is secured the upper end of the rod *b'*, which extends downward, having its lower end secured to the strap *d'*. Thus, as the governor is operated the strap is elevated or lowered. The shaft carrying the wheel P works in bearings in the standard *w* and arm *e'*, and is provided between the wheel and standard with the fixed pinion *h'*, operating the internally-toothed traveling rack T, which moves through the strap *d'*, which also incloses the pinion *h'*. The end of the rack adjacent the wheel N is provided with a bar, *l'*, having the loops *m'*, working upon the guide-rod U. The plate V is journaled at each end in bar *l'*, and provided above and below with the arms *n'*, which extend over and upon opposite sides of the collar *q'* on the wheel N. The fork W extends from the plate V, as shown, to prevent the wheel coming in contact with the bar *l'*.

The operation of this invention is as follows: Motion being communicated to the axle B, it is thence transmitted to the shaft F, which actuates the cone H, rotating the wheel N and shaft I, thus operating fan M; also, through the intermediate attachments, to the governor S. The initial position of the friction-wheel N being at the base or greatest circumference of the cone, and the upper teeth of the rack T in contact with the pinion *h'*, as the speed of the axle B increases the rack T is elevated, its lower teeth engaging the pinion, and is drawn forward, which causes the arms *n'* of the plate V to deflect the wheel N toward the crown-gear P, in which position it moves toward the apex of the cone until the maximum speed is reached, when the wheel stands still.

As the speed slackens the governor contracts. The rack falls until its upper teeth engage the pinion h', which reverses the movement of the rack and the position of the wheel N when it rides down the cone H.

Thus it is obvious that the movement of the shaft I must be uniform, since the proportion of the surface of the cone actuating the wheel N is in proportion to the movement of the axle B, a regularly-decreasing amount of surface being presented as the speed increases.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The wheel N, provided with the ball and socket p, in combination with the shaft I and cone H, substantially as set forth.

2. The traveling rack T, provided with the bar l', having the arms n', in combination with the wheel N and cone H, substantially as specified.

3. The combination of the cone H, wheel N, governor S, and rack T, substantially as shown and described.

In testimony that I claim the foregoing improvements in machines for regulating and transmitting motion, as above described, I have hereunto set my hand and seal this 18th day of March, 1875.

JOSEPH ZENGEL. [L. S.]

Witnesses:

FRANZ KIEFER,

WILHELM FOLKWEID.