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PATENTED MAY 19, 1908.

L. M. & H. F. KERNS.

SPRING MOTOR.

APPLICATION FILED JULY 17, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

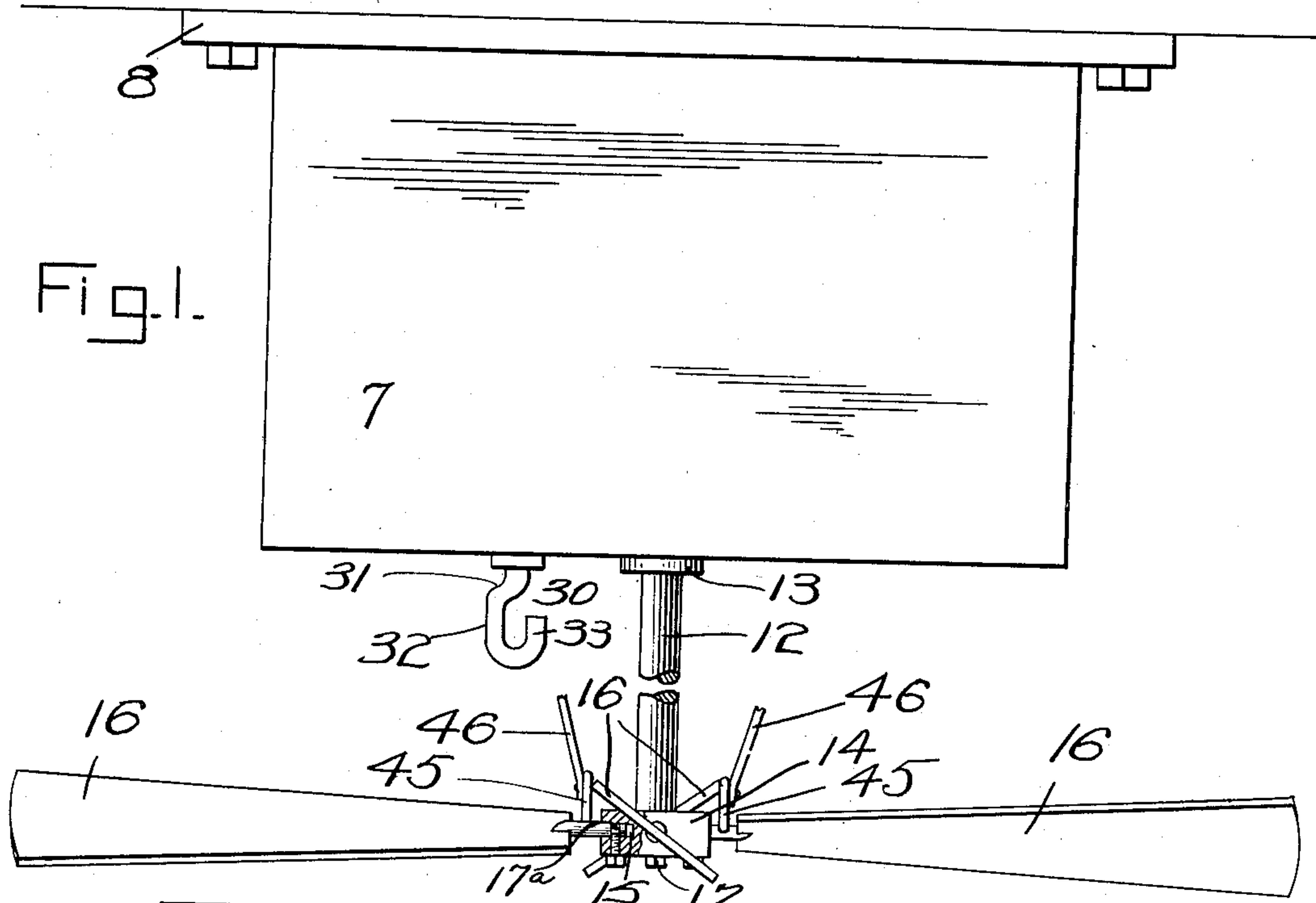
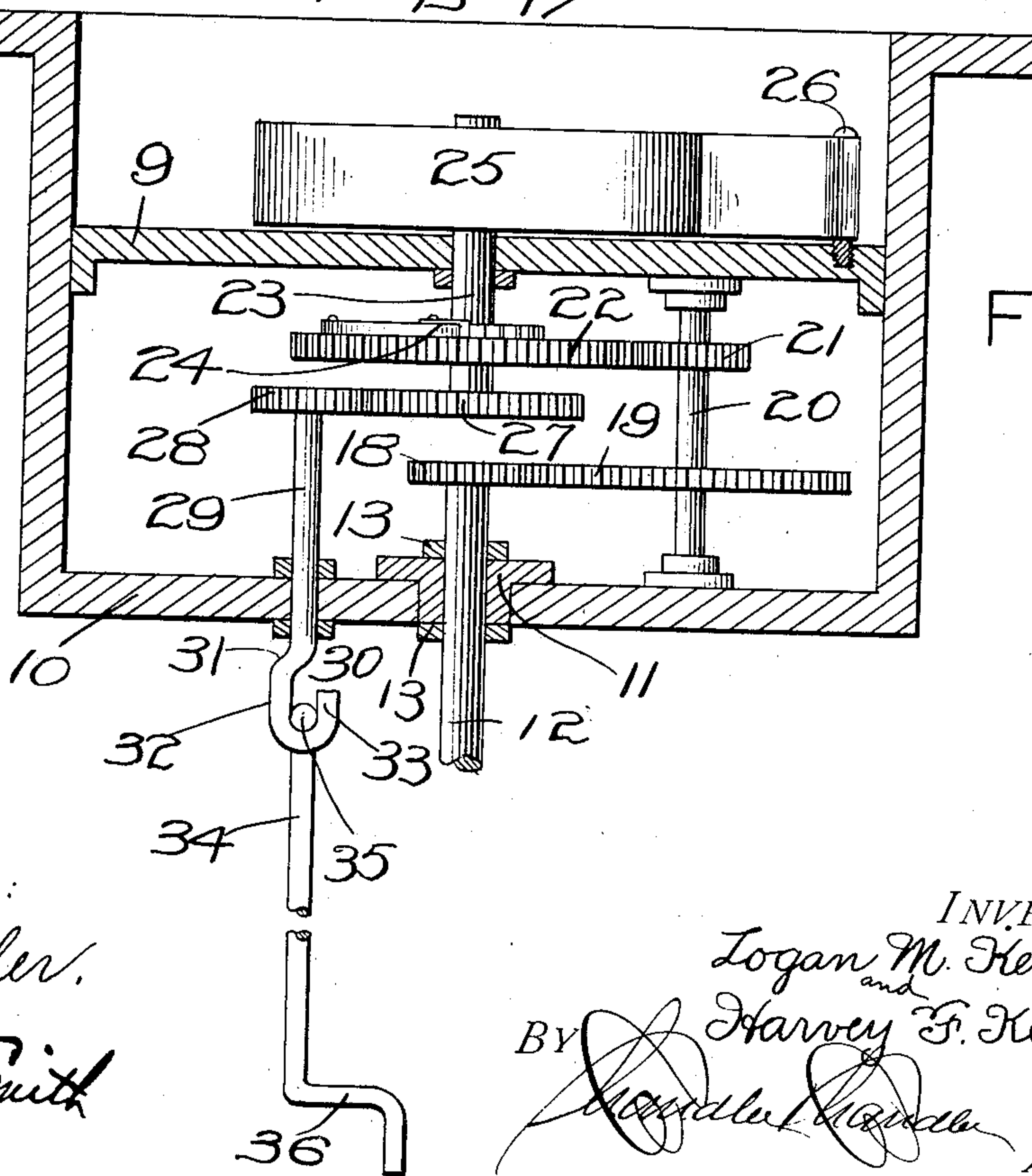


Fig. 2.



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2 SHEETS—SHEET 2.

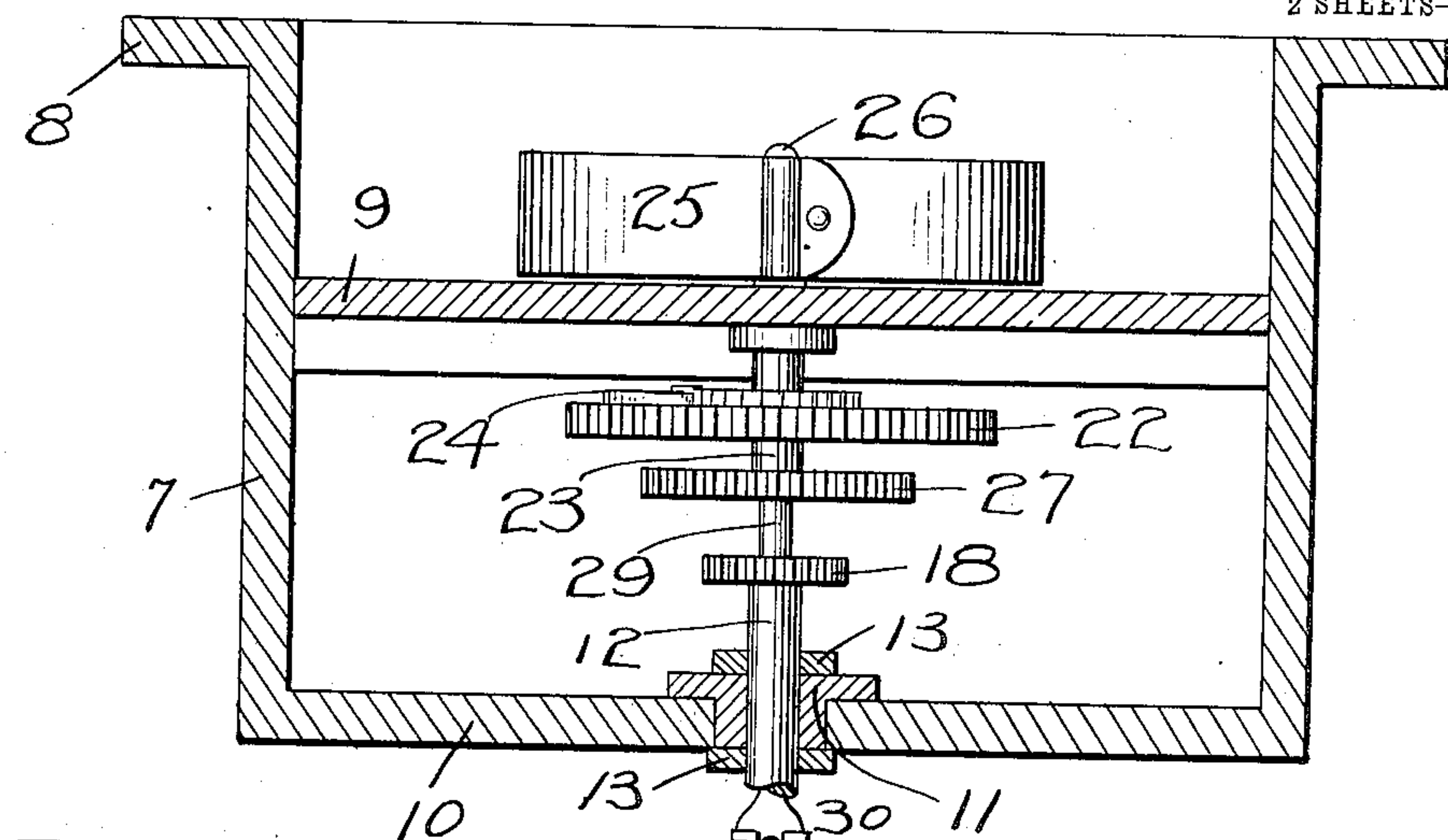


Fig. 3.

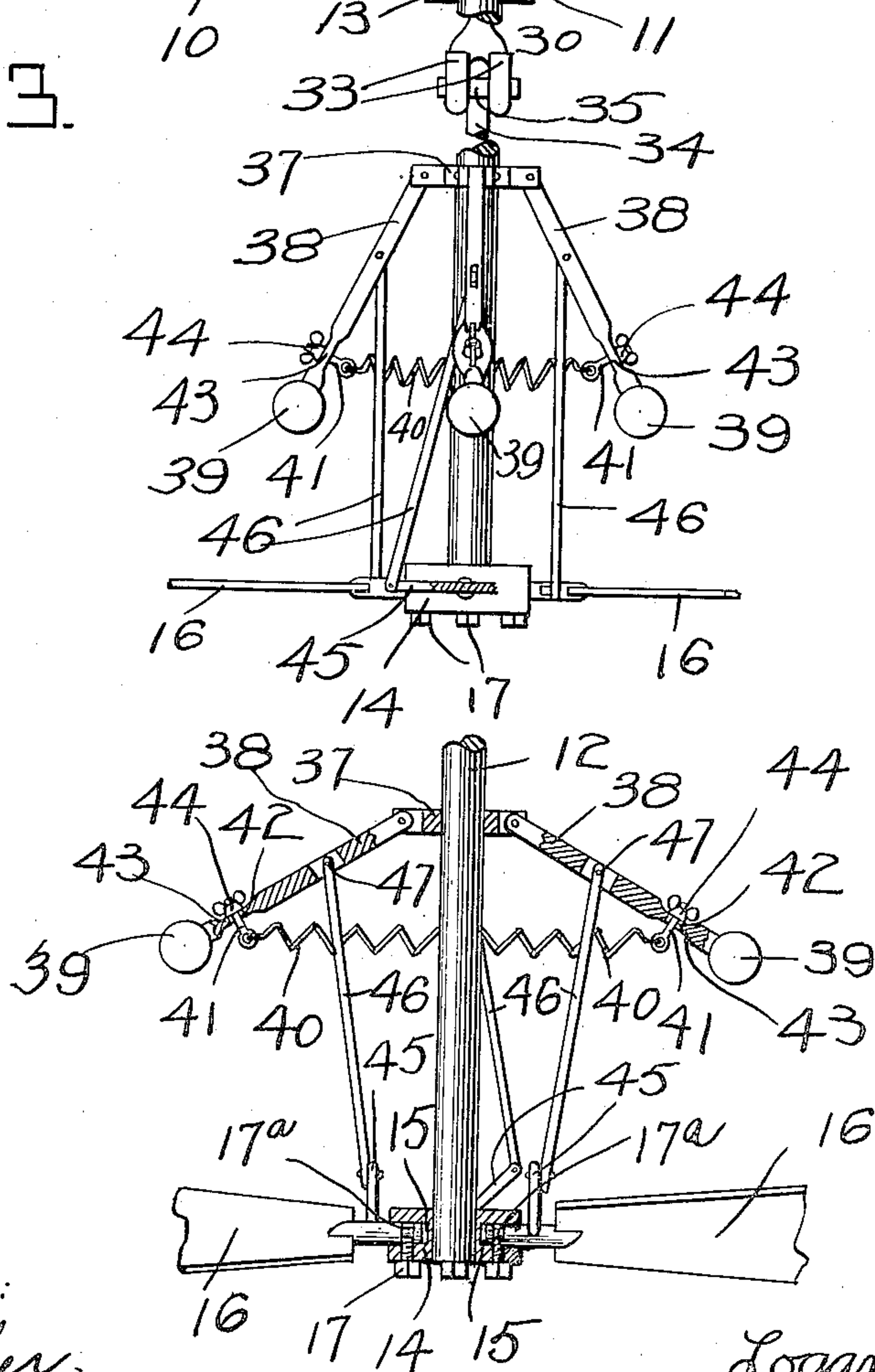


Fig. 4.

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UNITED STATES PATENT OFFICE.

LOGAN M. KERNS AND HARVEY F. KERNS, OF HEMPLE, MISSOURI.

SPRING-MOTOR.

No. 887,946.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed July 17, 1907. Serial No. 384,148.

To all whom it may concern:

Be it known that we, LOGAN M. KERNS and HARVEY F. KERNS, citizens of the United States, residing at Hemple, in the county of Clinton, State of Missouri, have invented certain new and useful Improvements in Spring-Motors; and we 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 fan motors and more particularly to spring motors for fans.

The primary object of the invention is to provide a motor of this class which is simple in construction, and which may be readily wound although it is designed for attachment to the ceiling of a room.

As a matter of fact one of the novel features of the invention resides in the provision of means whereby the motor may be wound, as stated.

In the drawings, Figure 1 is a side elevation of the motor as mounted for use. Fig. 2 is a vertical sectional view taken there-through at the middle thereof. Fig. 3 is a similar view but taken in a plane at right-angles to the plane of Fig. 2, and, Fig. 4 is a detail vertical sectional view through the fan shaft and the governor for the blades.

As shown in the drawings, the motor comprises a casing 7 which is open at its top and is provided at its upper edges with flanges 8, through which screws may be engaged for the purpose of attaching the motor to the ceiling of a room. For a purpose to be presently explained, there is provided within the casing adjacent the top, a partition 9.

The bottom of the casing is indicated by the numeral 10, and formed centrally thereof is an opening in which is arranged a bearing or bushing 11. A shaft 12 is journaled for rotation in this bearing, and upon the shaft above and below the bearing are fixed collars 13, which serve to hold the shaft against displacement. This shaft is the fan shaft and formed at the lower end of the shaft is a head 14, which is provided with a plurality of sockets 15 for the reception of the shank ends of fan blades 16, the said blades being held in the sockets by means of set-nuts 17, which are engaged through the head and project into grooves 17^a in the said blade shanks. At its upper end, and within the casing, the shaft 12 is provided with a pinion 18, which is in mesh with a pinion 19, which latter

pinion is fixed upon a shaft 20 journaled at its ends in bearings upon the bottom of the casing and the partition therein. This shaft also carries a pinion 21, which meshes with a pinion 22, loosely mounted upon the spring shaft 23 of the motor, it being understood that the pinion has, however, a pawl and ratchet connection with the spring shaft, the said pawl and ratchet being indicated by the numeral 24.

The spring shaft of the motor extends through the partition 9, and fixed to the shaft above the said partition is one end of a spring 25, the other end of said spring being connected with a stud 26 upon the said partition. Fixed upon the lower end of the spring shaft is a pinion 27, which meshes with a pinion 28 upon a shaft 29, journaled in the bottom of the casing. This shaft 29 is the winding shaft for the motor and it extends below the bottom of the casing, as clearly shown in the drawings.

The lower end of the winding shaft is of yoke formation and the arms 30 of the yoke are diverged and bent rearwardly, as at 31, and thence downwardly, as at 32. The lower ends of the arms are then bent in the form of hooks 33 to extend parallel with their downwardly bent portions. In order that the winding shaft may be rotated, we have provided a rod, which is indicated by the numeral 34, and which is provided at its upper end with a T-shaped head 35, the upper end of the rod being receivable between the hooked portions of the arms of the yoke and the arms of the T being receivable in the hooked ends of the said yoke arms. This rod is provided at its lower end with a crank portion 36, by means of which it may be turned when so engaged with the yoke end of the shaft.

We have embodied in our invention a governor which will now be described. As heretofore stated, the fan blades 16 are held in their sockets in the head at the lower end of the fan shaft 12 by means of set screws 17 which project at their inner ends into grooves 17^a formed in the said shanks adjacent the inner ends thereof. The fan blades may by reason of this construction have a turning movement as will be readily understood. Fixed upon the fan shaft 12 at a point considerably above the fan blades is a collar 37 and pivoted at their upper ends to this collar are the arms 38 of a governor which arms carry at their outer ends the usual balls 39.

A spring 40 is connected at each of its ends to threaded rods 41 and these rods are passed loosely through openings 42 formed in the flattened portions 43 of the corresponding arms 38. Set screws 44 are engaged upon the threaded rods 41 and it will be understood that by turning these set screws the tension of the spring 40 may be adjusted to any desired degree and also that the spring serves to hold the arm normally in lowered or depending position. Formed upon each of the blade shanks is a crank arm 45 and pivoted at their lower ends to these crank arms are rods 46, the rods being pivotally connected at their upper ends as at 47 to the corresponding governor arms 38.

Normally the fan blades are positioned approximately in a horizontal plane but when the motor is started and the fan shaft is rotated, the governor arms will gradually rise by centrifugal force and will exert a pull upon the rods 46 thereby turning the fan blades through oblique planes so as to bring them into approximately vertical planes, whereby the speed of rotation of the shaft will be decreased.

What is claimed is—

1. The combination with a driven fan shaft, of a head fixed at the lower end of the shaft, fan blades supported radially from said head and arranged for turning movement, arms carried by the shanks of the blades, a head fixed upon the shaft, arms

pivoted to the head, rods connecting the arms to the crank arms upon the fan blade shanks, and springs connecting opposite ones of the last mentioned arms.

2. The combination with a driven fan shaft, of a head fixed at the lower end of the shaft, fan blades including shanks engaged in said head for turning movement, governor arms pivoted to the shaft above the fan blades, crank arms carried by the blade shanks, and rods pivoted to the crank arms and to the respective governor arms whereby when the fan shaft is rotated and the governor arms swung upwardly by centrifugal force, the fan blades will be turned.

3. The combination with a driven fan shaft, of a head fixed at the lower end of the shaft, fan blades supported radially from said head and arranged for turning movement, arms carried by the shanks of the blades, a head fixed upon the shaft, arms pivoted to the head, rods connecting the arms to the crank arms upon the fan blade shanks, springs connecting opposite ones of the last mentioned arms, and means for adjusting the tension of said springs.

In testimony whereof, we affix our signatures in presence of two witnesses.

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Witnesses:

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