

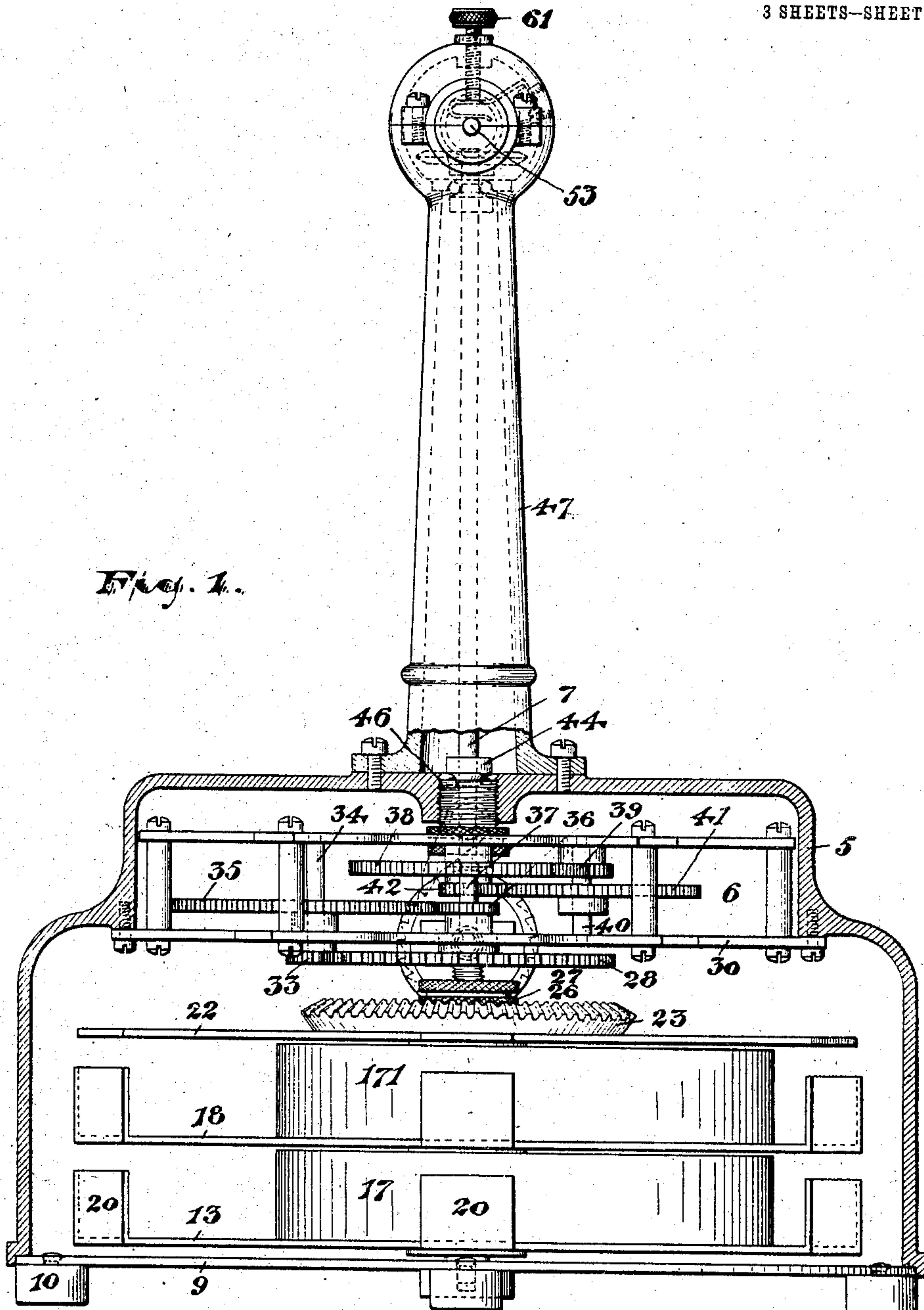
No. 840,231.

PATENTED JAN 1, 1907.

L. MYERS.
SPRING OPERATED FAN MOTOR.

APPLICATION FILED OCT. 24, 1904.

3 SHEETS—SHEET 1.



WITNESSES:

Ralph Lancaster

Russell M. Everett

Louis Myers

INVENTOR

BY

Charles H. Bell

ATTORNEY.

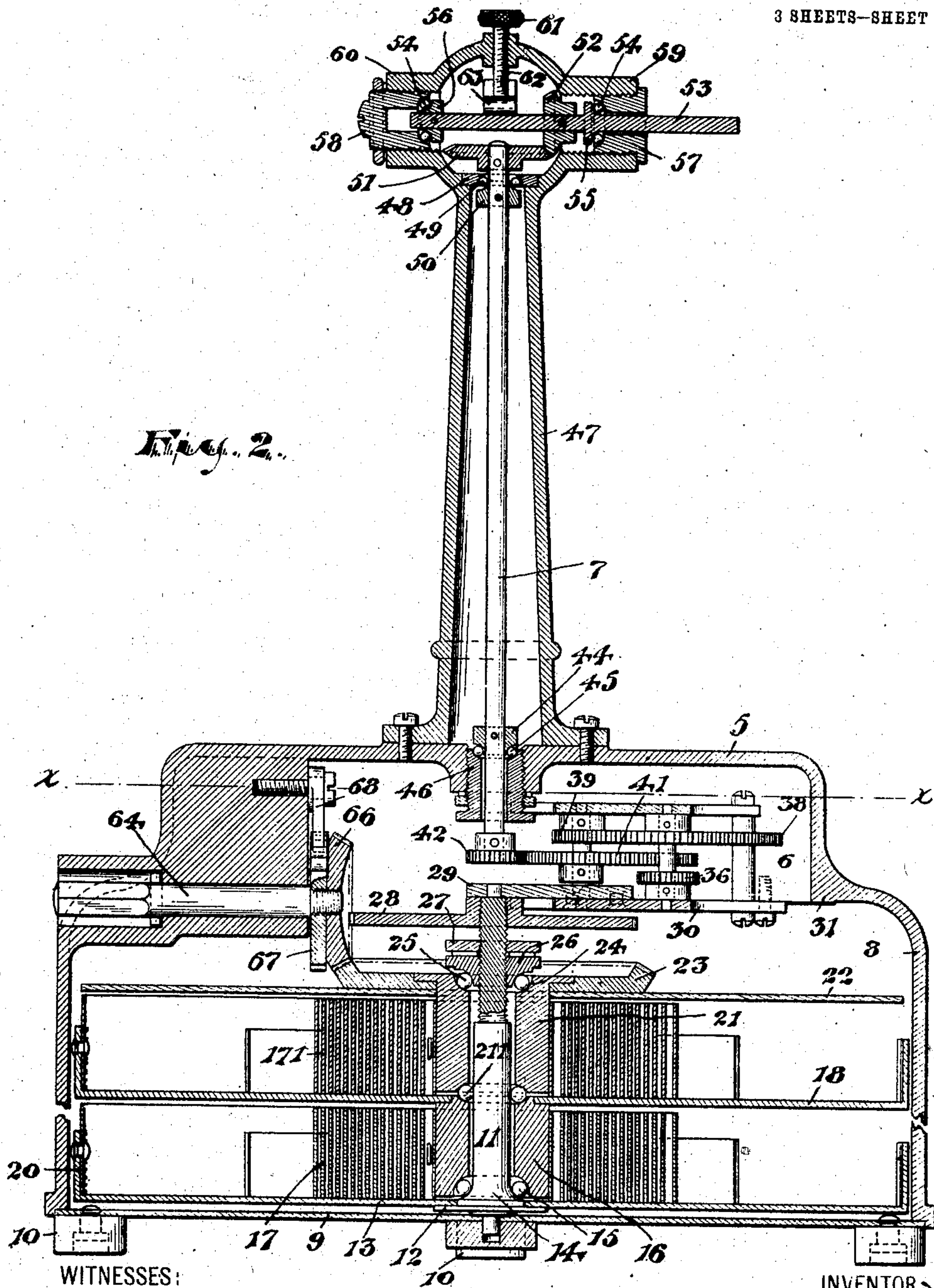
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3 SHEETS—SHEET 3.

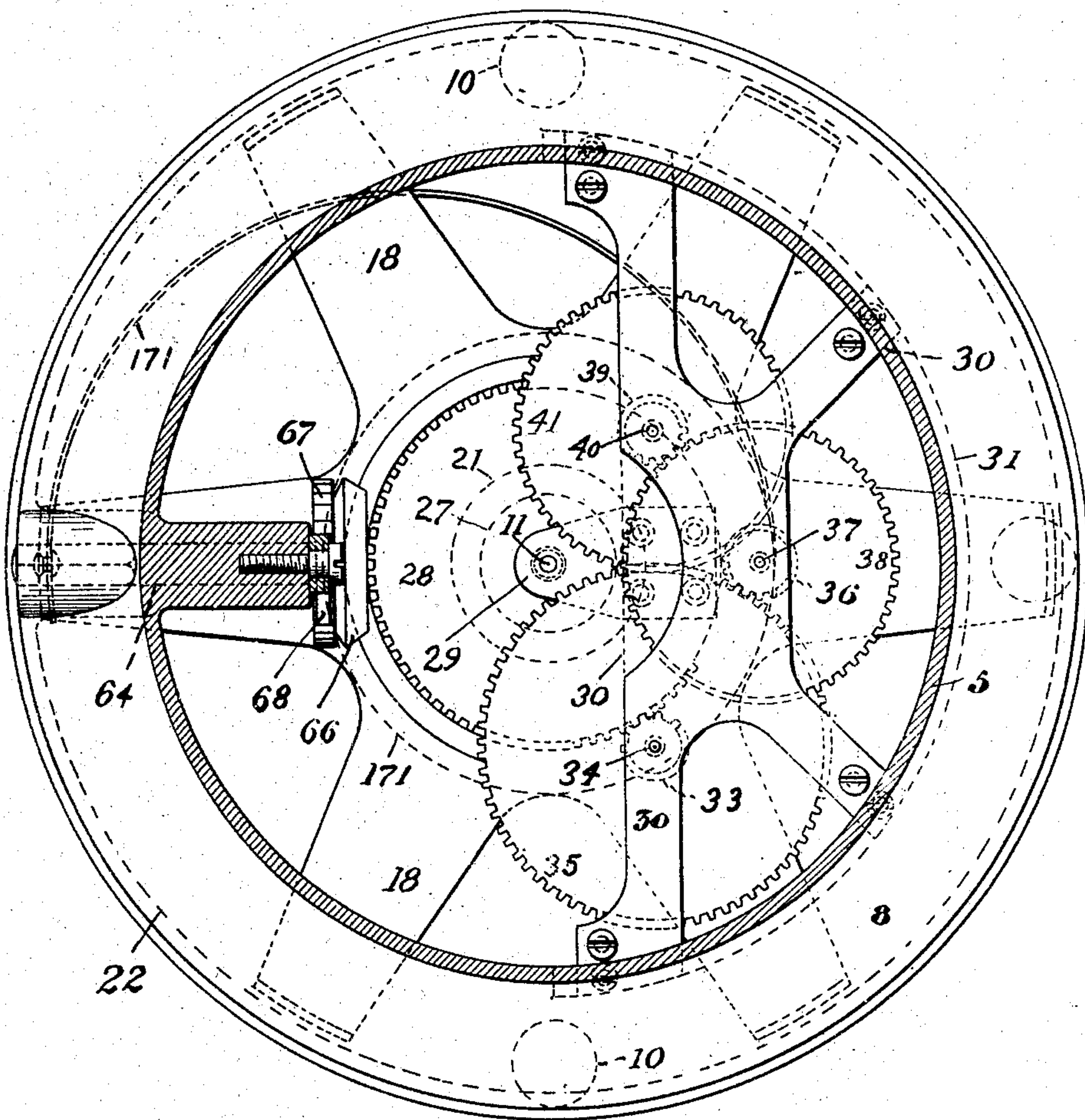


Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS MYERS, OF NEWARK, NEW JERSEY.

SPRING-OPERATED FAN-MOTOR.

No. 840,231.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed October 24, 1904. Serial No. 229,753.

To all whom it may concern:

Be it known that I, LOUIS MYERS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Spring-Operated Fan-Motors; 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, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

The objects of this invention are to provide a spring-operated fan which will be more compact in its construction and more regular in its movements and will have a period of movement of greater duration; to enable additional springs to be employed where greater duration is desired without materially changing the transmitting means for transferring the movements from the springs to the fan; to secure a more simple construction and one inexpensive to manufacture, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved spring-operated fan, the motor thereof, and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like figures of reference indicate corresponding parts in each of the views, Figure 1 is an elevation of the improved motor, parts of the casing at the base of the device being broken away to show in section and disclose the interior parts more clearly. Fig. 2 is a central vertical section of the same, and Fig. 3 is a horizontal section taken at line x.

In said drawings, 5 indicates the base-casting, which is preferably a single integral casting open on the under side and having at its upper part a small chamber 6 to receive clockwork by means of which the power is transmitted from the springs and their immediate connections to a power-shaft 7, extending vertically above said base-casting, as indicated in Fig. 2.

The lower part of the base-casting is preferably made wider, as at 8, than the upper part containing the clockwork to receive the springs and their attached parts. The bot-

tom-opening permits the said springs to be withdrawn through the said bottom, and the exposed parts of the casing are not marred in appearance by such opening and means for closing the same. The said bottom-opening is closed by the bottom-plate 9, which is fastened at its edges by means of screws, lugs, or any other suitable fastenings. (Not shown.) To the under side of said bottom-plate 9 are secured rubber legs 10, by means of which the device may be seated upon a table or other piece of furniture without injury to the said furniture, and the vibration of the moving machinery within the device is thus deadened and objectionable sound prevented. The said bottom plate 9 at its center provides a bearing for a center shaft 11, which stands erect on said bottom-plate and at its lower end is provided with a flange 12, upon which a spring-carrying plate 13 is secured by brazing, rivets, or other suitable means. Above the said flange the said center shaft is preferably provided with a cone or runway 14 for balls 15, and on said balls is arranged a loose hub 16 of a second spring-carrying plate 18. The said hub 16 is provided at its lower end with a suitable annular groove to receive said balls 15 and permit of a running of the same. The said spring-carrying plate 13 is furnished with and supports a coiled spring 17, one end of which is fastened to said plate near its periphery.

At the periphery of the spring-carrying plate 13 the same is preferably turned upward, as at 20, to provide a bearing against which the spring may be riveted, as indicated in Fig. 2. The said spring-carrying plate is preferably in the form of a star-wheel to secure lightness and reduce friction at the edges of the spring, the radial arms of the said star-wheel being turned up at their extremities to provide the bearings 20, above referred to.

The inner end of the spring 17 is fastened to the hub 16, and thus the tension of the spring is transmitted from the said hub 16 to the carrying-plate 13 and thence to the center shaft 11. Power is received by the hub 16 from the second spring-carrying plate 18, fastened thereto, which second plate is similar in construction to the spring-carrying plate 13, and the spring 17 therein is in like manner fastened at the periphery of the plate 18 and to the hub 21 of a top plate 22. The said top plate 22 may be a third spring-carrying plate if I desire a longer movement of the parts; but as a minimum two springs are

ordinarily desired. It will be, thus understood that I arrange the supported springs in a vertical series, and said springs and their plates may be increased or diminished in number as circumstances will demand. The directions of coiling the successive springs of the series are all the same, or they are all wound the same way.

To the top plate 22 is fastened the gear-wheel 23 and the said hub 21, the parts being secured permanently together in any suitable manner. The hub 21 is grooved at its lower end to receive the balls 211, lying intermediate of the hubs, and at its upper end is grooved, as at 24, to receive the balls 25 for a cone-nut 26, which latter is preferably locked in position by a suitable lock-nut 27. The center shaft 11 at its upper end is threaded to receive the cone-nut and lock-nut and also to receive a first gear-wheel 28 of the clockwork. Said shaft 11 at its upper extremity bears directly in or upon, but is removable from, a bracket 29, removably fastened in turn to a plate 30, rigidly but removably secured to the under side of a shoulder 31, cast or formed in connection with the base-casing 5. The movement effected by the springs 17 171 and center shaft 11 is transmitted from the said first gear-wheel 28 through the series of wheels, as follows: From the said wheel 28 the power is transmitted to the pinion 33, shaft 34, large cog-wheel 35, small pinion 36, shaft 37, cog-wheel 38, small pinion 39, shaft 40, cog-wheel 41, and so to pinion 42 on the vertical power-shaft 7, the movement of the center shaft 11 being greatly increased or quickened by the cog-wheels and pinions to produce a very rapid movement of the said shaft 7.

Near the lower end of the shaft 7, above the top of the base-casing 5, the same is provided with a cone-collar 44, which rests upon balls 45, arranged in runways at the upper end of an adjustable support, preferably a hollow screw 46, removably secured within threaded bearings at the center of the top of the casing 5. At said center of the casing 5 is secured a hollow vertical post or top casing 47, through which the power-shaft 7 extends, and near the top of said post 47 is an interior bearing plate or disk 48, having runways for balls 49, and at the top of said shaft 7, adjacent to the bearing-disk, is a cone 50, which provides similar cooperating runways for the balls 49. At the upper extremity of the shaft 7, above said plate 48, is fixed a beveled gear-wheel 51, which engages with the second beveled gear-wheel 52 on a horizontal shaft 53, adapted to carry a fan, (not shown,) or said horizontal shaft may have other connections than the blades of a fan. The said shaft 53 is preferably arranged on ball-bearings 54, the said ball-bearings being in engagement with cones 55 and 56 on said shaft and cooperating with hollow adjustable bear-

ing-nuts 57 and 58, disposed horizontally in alinement within the threaded arms or extensions 59 and 60 of the post 47. At the top of the said post 47, above the horizontal shaft 53, is preferably arranged an adjustable brake 61, preferably comprising a thumb-screw 62, which engages a doubled-spring brake-shoe 63 to press the said brake-shoe down upon the periphery of the shaft 53, and thereby produce a friction adapted to stop the rotation of said shaft.

To wind the springs 17 171, I have provided a winding-arbor 64, having bearings within the casing 5 and having at its inner end a beveled gear-wheel 66, which engages the gear-wheel 23 of the hub 21 or the uppermost hub of the vertical series, so that power is transmitted from a winding-crank (not shown) through the said arbor 64, gear-wheels 66 and 23 to the spring 171, from whence it is transmitted to the spring-carrying plate 18, hub 16, spring 17, and lower spring-carrying plate 13 to the shaft 11. Back motion is prevented by means of a ratchet-wheel 67 and pawl 68, in any suitable manner.

In operating the device power is stored in the springs by winding the shaft 64 and its connections, and such power is transmitted from the springs through the clockwork and power-shaft to the vertical shaft, which is free to expend such power, except when held by the friction-shoe 63.

It is manifest that the form and construction of the hollow post 47, as shown in Figs. 1 and 2, with an enlarged spherical head to contain the gearing which transmits rotation from the vertical shaft 7 to horizontal shaft 53 and with lateral extensions 59 60 to receive the tubular bearing-sleeves 57 58 adapt the hollow post to serve to the best advantage as a handle in manipulating the device and carrying it from place to place. This is a matter of practical importance in such a fan-motor having a massive and heavy base to impart stability.

I am aware that various detail changes may be made in the construction of my device without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new is—

1. In a motor apparatus of the character described, a casing comprising a massive hollow base open at bottom to give access to the interior, a hollow post secured on top of the said casing having an enlarged head to receive transmitting-gearing and horizontal extensions threaded internally to receive bearings for a horizontal shaft; in combination with a motor contained in a lower chamber of the base, transmitting-gearing contained in an upper chamber of the same, a vertical shaft contained in the hollow post and driven by the transmitting-gearing,

bevel-gearing contained in the enlarged head, threaded tubular bearings mounted adjust-
ably in the horizontal extensions of the head
and a horizontal shaft running in said bear-
ing and driven from the vertical shaft
through the medium of the said bevel-gear-
ing.

2. In a spring-motor, the combination of a casing open at bottom, a removable bot-
tom-plate therefor, carrying a step-bearing, a
power-shaft running in said step-bearing, a
spring-supporting plate secured to said
power-shaft, a hub surrounding the power-
shaft and supported thereon by a bearing
permitting relative rotation, a power-spring
secured at its periphery to the spring-support
ing plate and at its interior to the said hub,
means for applying winding movement to the
hub and a bracket constituting a bearing for
the upper end of the power-shaft, secured re-
movably within the casing permitting the re-
moval bodily through the bottom of the cas-
ing of the power-spring and shaft and the
spring-supporting plate and hub, substan-
tially as described.

3. In a spring-motor, the combination of a casing open at bottom, a removable bot-
tom-plate therefor, having a central step-
bearing, a power-shaft running in the step-
bearing on said bottom-plate, a spring-sup-
porting-plate secured to said power-shaft, a
hub surrounding the power-shaft and sup-
ported thereon by a bearing permitting rela-
tive rotation, a power-spring secured at its
periphery to the spring-supporting plate and
at its interior to the said hub, means for ap-
plying winding movement to the hub, a gear-
wheel fixed to the top of the power-shaft, a
train of gearing within the top of the casing
driven by said power-shaft gear-wheel, and a
plate and bracket fastened securely and re-
movably within the top of the casing furnish-
ing support for the train of gearing and a
bearing for the top of the power-shaft, where-
by the power-spring, shaft, gearing and the
spring-supporting plate and hub may be re-
moved bodily through the bottom of the cas-
ing after removal of the bottom-plate there-
of, substantially as described.

4. The combination of the hollow base-
casing 5 formed with an open bottom, the re-
movable plate 9 closing the said open bottom
and carrying a central step-bearing, the mo-
tor-shaft 11 running in the step-bearing on
said bottom-plate, the spring-supporting
plate 13 secured to the shaft 11 to drive the
same, a motor-spring 17 fixed at its outside
to the periphery of the plate 13, a hub 16
fixed to the interior of the spring 17, bearing-
collar 14 formed on shaft 11, balls 15 support-
ing said hub on the bearing-collar 14 and per-
mitting rotation of one on the other, the
bracket 29 and plate 30 removably secured
beneath the top of the casing and constitut-
ing a bearing for the top of the shaft 11, a

gear-wheel 28 secured to the top of the shaft
11, a suitable train of gearing driven from
the wheel 28, a vertical shaft driven through
the medium of said train from the wheel 28, a
hollow post 47 in which the shaft 7 is con-
tained, mounted on top of the casing, and
bearings 46, 48 in the top of the casing and in
the hollow post for the bottom and top of the
shaft 7, substantially as described.

5. The combination of the hollow base-cas-
ing 5 formed with an open bottom, the re-
movable plate 9 closing the said open bottom,
the motor-shaft 11 running in a step-bearing
on said bottom-plate, the spring-supporting
plate 13 secured to the shaft 11 to drive the
same, a motor-spring 17 fixed at its outside
to the periphery of the plate 13, a hub 16
fixed to the interior of the spring 17, bearings
14, 15 supporting said hub on the shaft 11 and
permitting rotation of one on the other, the
plate 30 and bracket 29 removably secured
beneath the top of the casing and constitut-
ing a bearing for the top of the shaft 11, a
gear-wheel 28 secured to the top of the shaft
11, a suitable train of gearing driven from
the wheel 28, a hollow post 47 mounted on
top of the casing 5 and having an enlarged
hollow head and lateral tubular extensions
for the reception of transmitting-gear and
bearings for a horizontal shaft, a vertical
shaft 7, bearings 44, 45, 46 in the top of the
casing and bearings 48, 49, 50 in the top of
the hollow post for the bottom and top of the
shaft 7, a horizontal shaft 53 running in bear-
ings in the lateral tubular extensions of the
hollow post and gearing contained in the en-
larged head of said hollow post transmit-
ting rotation from the vertical shaft 7 to the
horizontal shaft 53, substantially as described.

6. In a spring-motor, the combination of a
base-casing 5, having a bottom-opening
closed by a removable plate 9, a hollow post
47 mounted removably on top of said casing
and formed with an enlarged head and inter-
nally-threaded lateral extensions 59, 60, a
power-shaft 11 running in a step-bearing on
said plate 9, a spring-supporting plate 13
fixed to the shaft 11 to drive the same, a
power-spring 17 attached at its outer end to
the plate 13, a hub 16 attached to the inner
end of the spring 17, means for applying
winding power to said hub and thereby to
the power-spring, a plate and bracket 30, 29
secured removably within the top of the
casing and providing a bearing for the upper
end of the power-shaft, a train of gearing
supported on said removable plate and
driven by the shaft 11, a vertical shaft 7
within the hollow post 47, bearings 46 and
48 therefor in the top of the casing and in the
hollow post 47, the horizontal shaft 53 hav-
ing conical collars 55, 56, externally-threaded
sleeves 57, 58 screwing into the internally-
threaded post extensions 59, 60, loosely sur-
rounding the shaft 53 and having concave

ends to operate in conjunction with the collars 55, 56 in confining antifriction bearing-balls 54, and bevel-gears 51, 52 inclosed in the enlarged head of the hollow post, and
5 fixed respectively on the vertical shaft 7 and horizontal shaft 53 for transmitting rotation from one to the other as described.

7. In a fan-motor, the combination of a base-casing, a hollow post mounted centrally on said casing and having an enlarged hollow head and internally-threaded lateral extensions, power-springs, power-shaft and transmitting-gearing mounted within the base-casing, a vertical shaft inclosed in the
15 hollow post, projecting down therefrom into the base-casing and driven by means of the said transmitting-gearing from the power-shaft, bearings for the vertical shaft in the top of the casing and in the hollow post, a horizontal shaft running in bearings in the lateral extensions in top of the hollow post, bevel-gearing contained in the enlarged head of the post, transmitting rotation from the vertical shaft to the horizontal shaft, and a
25 friction-brake consisting of a reflexed spring 63 mounted within the enlarged head of the post and bearing on the horizontal shaft, and a thumb-screw 62 threaded in the top of the hollow post and acting on the spring 63, substantially as described.
30

8. In a spring-motor, the combination of a base-casing having a closed top and open bottom, a removable plate closing the bottom-opening and supporting the spring-motor within the casing, a central power-shaft stepped at its lower end in the remov-

able bottom-plate and running at top in a removable bearing secured within the closed top of the casing, a spring-carrying plate attached at its center to a supporting-flange
40 near the lower end of the said shaft, a loose hub resting through the medium of antifriction-balls on a conical bearing formed on the shaft near its lower end, a second spring-carrying plate attached to said hub, a second
45 hub resting on the first through the medium of antifriction balls and runways, power-springs each attached by its outside to its spring-carrying plate and its inside to the hub above said plate, means for applying
50 winding power to the upper hub of the series, a train of transmitting-gears mounted removably within the top of the casing and driven by the said power-shaft, a vertical shaft driven by the transmitting-gear, a
55 hollow post inclosing said vertical shaft mounted centrally on top of the casing and having an enlarged hollow head and lateral extensions, bearings for the vertical shaft in top of the casing and in the hollow post, a
60 horizontal shaft mounted in bearings in said lateral extensions, and bevel-gears inclosed in the enlarged head of the post, transmitting rotation from the vertical to the horizontal shaft, substantially as described.
65

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of October, 1904.

LOUIS MYERS.

Witnesses:

CHARLES H. PELL,
RUSSELL M. EVERETT.