

(No Model.)

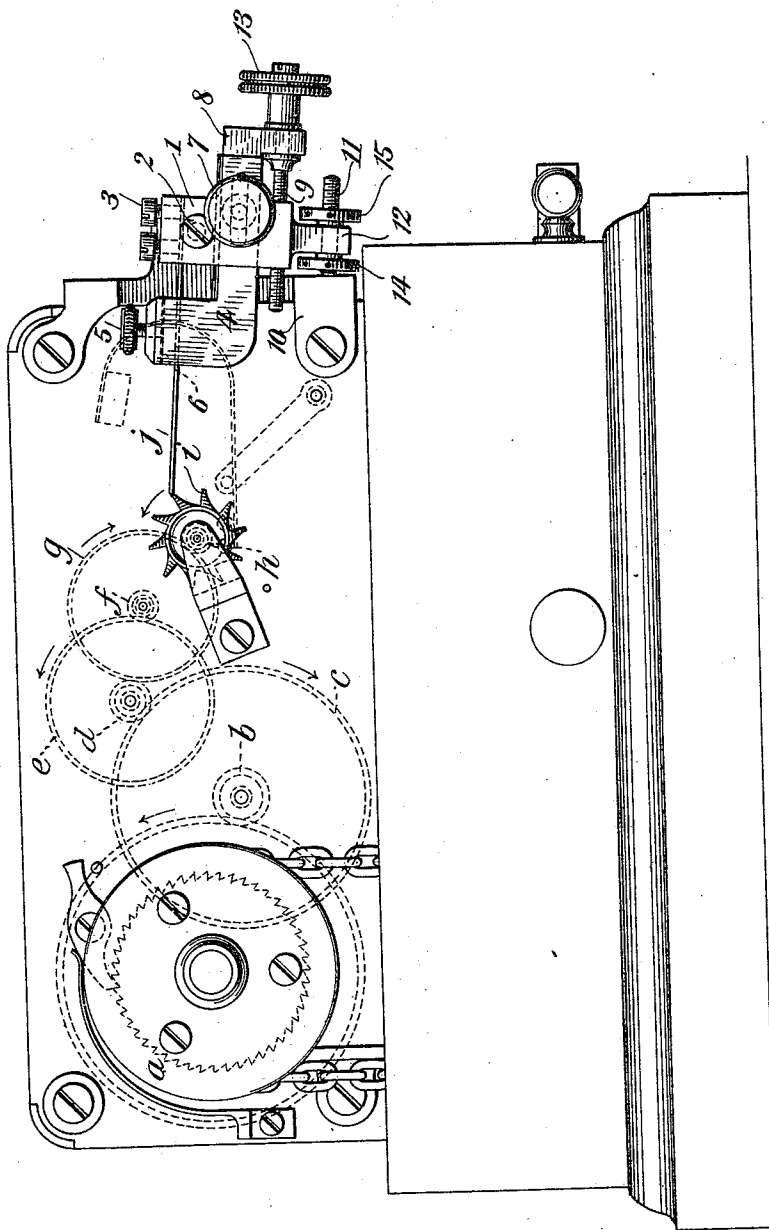
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C. L. BUCKINGHAM & J. GARDAM.
TELEGRAPH TRANSMITTER.

No. 579,633.

Patented Mar. 30, 1897.

Fig. 1.



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H. W. Lloyd

INVENTORS:

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(No Model.)

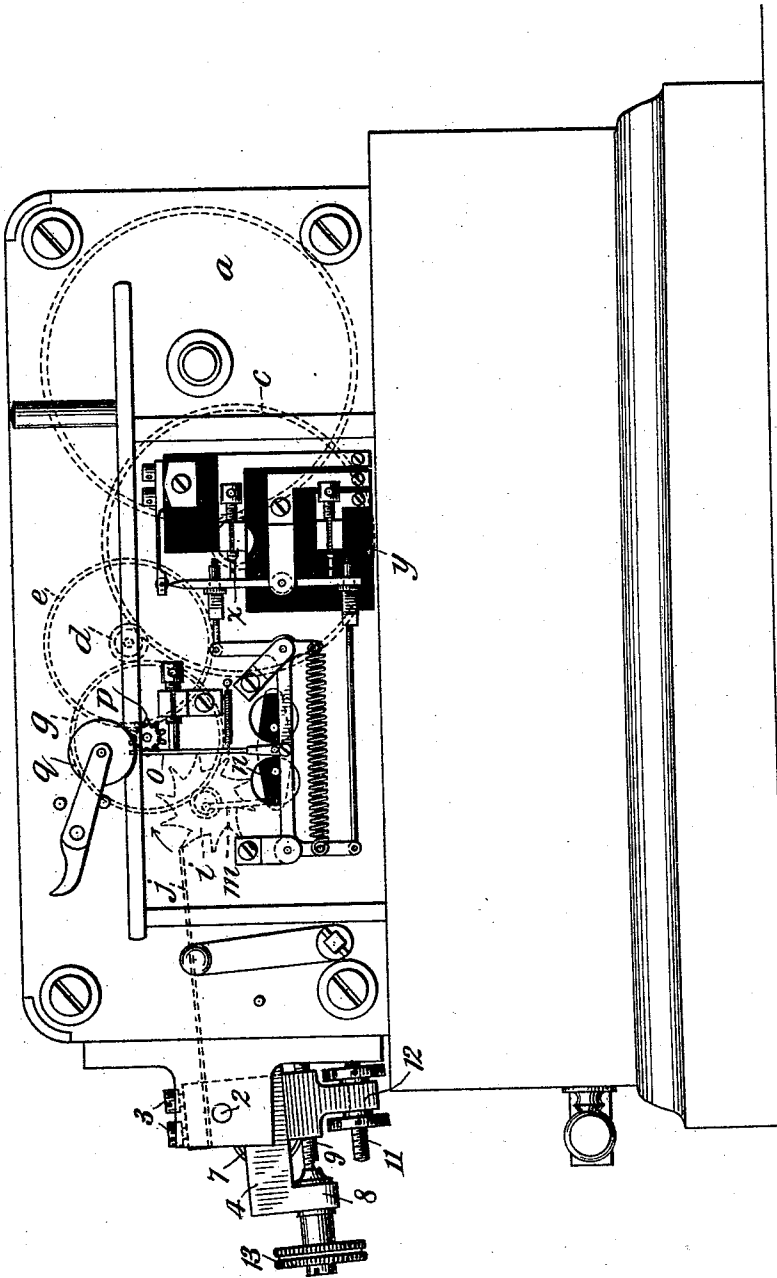
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Patented Mar. 30, 1897.

Fig. 2,



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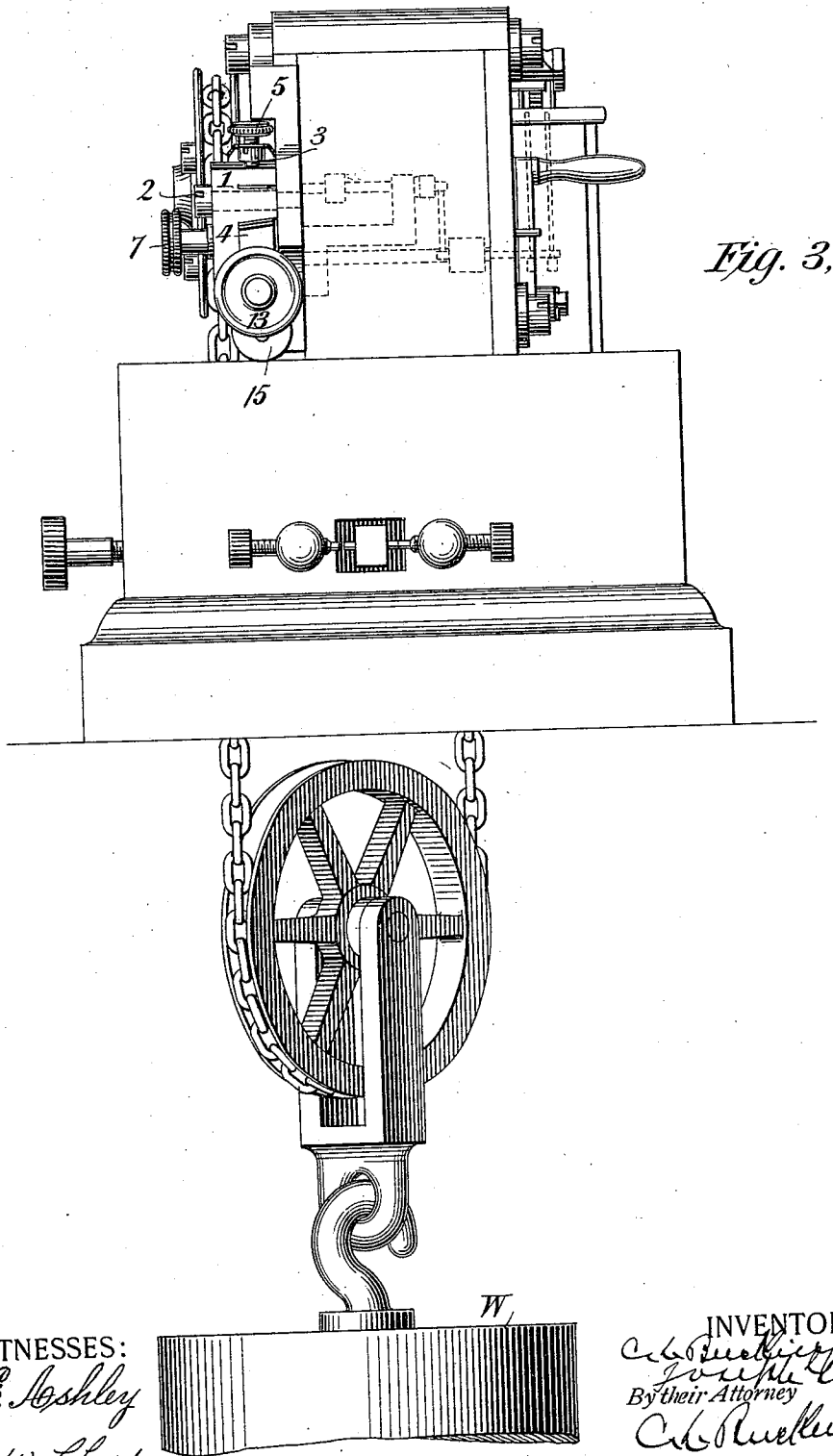


Fig. 3.

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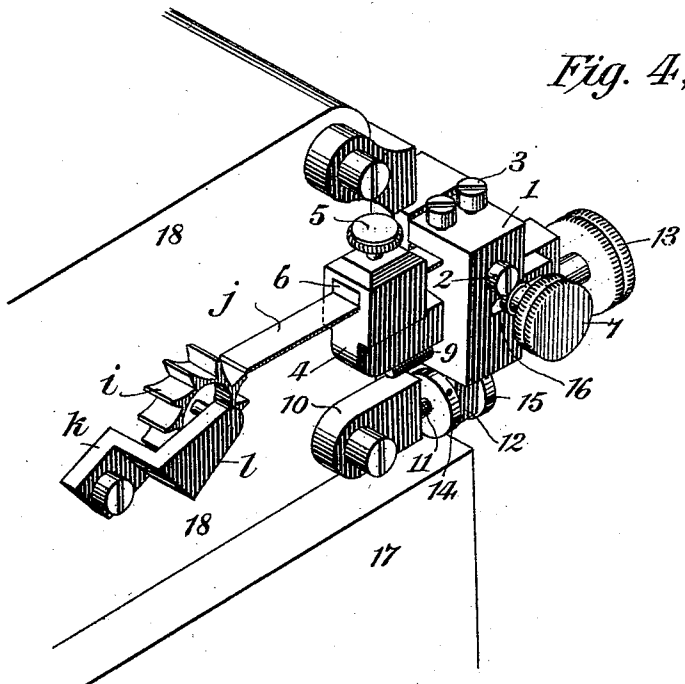
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C. L. BUCKINGHAM & J. GARDAM.
TELEGRAPH TRANSMITTER.

No. 579,633.

Patented Mar. 30, 1897.



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UNITED STATES PATENT OFFICE.

CHARLES L. BUCKINGHAM, OF NEW YORK, AND JOSEPH GARDAM, OF
BROOKLYN, NEW YORK; SAID GARDAM ASSIGNOR TO SAID BUCK-
INGHAM.

TELEGRAPH-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 579,633, dated March 30, 1897.

Application filed September 2, 1896. Serial No. 604,614. (No model.)

To all whom it may concern:

Be it known that we, CHARLES L. BUCK-
INGHAM, of the city and county of New York,
and JOSEPH GARDAM, of Brooklyn, county of
Kings, State of New York, citizens of the
United States of America, have made a new
and useful Improvement in Telegraph-Trans-
mitters, of which the following is a specifica-
tion.

Wheatstone transmitters heretofore em-
ployed in printing-telegraph systems have
been subject to irregularities in speed of
transmission, and to overcome this difficulty
we have reorganized the instrument by re-
moving its well-known form of regulator and
substituting therefor one of great simplicity,
which is automatic in action and capable of
maintaining within wide limits any required
rate of transmission.

Our invention is fully described by ref-
erence to the accompanying drawings, in
which—

Figure 1 represents a side view of a Wheat-
stone transmitter, together with a side view
of the outlines of the motor-train and of our
improved regulator. Fig. 2 is an opposite
view of the transmitter shown in Fig. 1, and
also shows other parts of the internal appa-
ratus. Fig. 3 represents an end view of the
transmitter and a weight and chain serving
as a motor therefor. Fig. 4 represents a per-
spective view of the governor with such de-
tails of construction as are necessary for se-
curing the various speeds of transmission.

In Figs. 1 and 2 is shown a train of gear-
ing *a b c d e f g h* such as is usually em-
ployed in Wheatstone transmitters for feed-
ing a fillet of paper and actuating the cir-
cuit-controlling apparatus. The paper strip
is fed by a wheel *p*, having spur-teeth engag-
ing the central row of perforations, and is
placed upon the shaft of wheel *f*, while above
the feed-wheel is a wheel *q* for guiding the
tape over the teeth of the feed-wheel. There
is also employed the usual organization which
characterizes the Wheatstone transmitter,
consisting of a crank-arm *m*, placed upon the
shaft of wheel *h*, which with the rotation of
said shaft causes a rocking motion of a walk-
ing-beam or arm *n*, through which, as the

needles *o* (one only of which is shown) enter
the holes of the tape, the contacts *x* and *y*
are alternately opened and closed. Connect-
ing with the train of gearing and upon the
shaft *h* is also placed a regulator-wheel *i*, hav-
ing teeth, substantially as shown in Figs. 1,
2, and 4, the points of which during rotation
pass rapidly under the point of a tuning-fork
spring *j*, which when set in vibration main-
tains a speed of oscillation depending upon
its length and cross-section. As wheel *i* ro-
tates, its teeth may or may not come in con-
tact with the point of the spring. If the
speed of the wheel were such that one tooth
should pass for each vibration of the spring,
there might be no contact, but if the wheel
were rotated under the action of a strong mo-
tor and with a tendency sufficient to move
the teeth of *i* at a greater rate than the vi-
brations of the spring, then at each passage
of a tooth the point of the spring would be
hit and rotation of the wheel would be re-
tarded. For the purposes of Wheatstone
transmission we have found that this regula-
tor, with proportions of apparatus shown in
the drawings, may readily be adjusted to a
speed of from fifty to two hundred words a
minute. Adjustments of the regulator are
effected as follows:

In Figs. 1, 2, 3, and 4 are shown different
views of the various parts, which consist of
a bracket carrying the heel of spring *j*,
mounted upon the outer frame of the trans-
mitter by a pivot or bolt 2, passing through
a large heel-piece 1. Sliding within the lower
part of heel-piece 1 is an L part 4, in which
is a horizontal aperture near the top of its
vertical arm, permitting it to be slid over
spring *j* near the latter's central part. Above
the spring *j*, within the aperture, is a clamp-
ing-shoe 6, which, by means of screw 5, serves
to rigidly fix spring *j* within the L-support.
Projecting from the lower side of the heel-
piece 1 is an arm 12, and through this pro-
jection passes screw 11, which is rigidly fixed
in a bracket 10. By means of screw-heads
14 and 15 arm 12 may be thrown to the right
or left around the supporting-bolt 2, thus
raising or lowering the free end of *j* with re-
ference to the teeth of *i*. The spring *j* may

also be given a lengthwise adjustment by loosening the screws 3 and 5. The adjustments above noted are wholly for the purpose of fixing the free end of the spring *j* with reference to the teeth of wheel *i*. An adjustment, however, which is necessary for securing any required speed of transmission is obtained by loosening spring *j* from the L-piece 4 and moving it from right to left. To this end a clamping-screw 7, as well as screw 5, is loosened, and the L-piece 4, under the action of screw 13, is moved to the left if it is desired to quicken transmission or to the right to make transmission slower. When, however, the L-piece 4 has been moved to proper position, set-screws 5 and 7 will be tightened to fix part 4 in position and to clamp spring *j* tightly thereto. The L-piece 4 and the clamping-piece 6 constitute a large metallic body of comparatively solid construction, so that when they are set the vibrating portion of spring *j* will be found almost wholly between its point and the support 4.

What we claim, and desire to secure by Letters Patent, is—

1. The combination, in a telegraph-transmitter, of a motor, a train of gear, circuit-controlling apparatus for directing suitable signals to line, a phonic governor consisting of a toothed wheel, *i*, connected to and driven by said train of gear, and a tuning-fork spring, *j*, whose vibration is maintained by the teeth of said wheel, as and for the purpose set forth.

2. The combination, in a telegraph-transmitter, of a motor, a train of gear, circuit-controlling apparatus for directing signaling-currents to line, a phonic governor consisting of a regulating-wheel, *i*, connected with said train, a tuning-fork spring, *j*, whose vibration is maintained by and which in turn controls the rotation of said wheel, and an adjusting apparatus for varying the vibrating length of said spring.

3. In a telegraph-transmitter, the combination of a motor, a train of gear, circuit-controlling apparatus for directing signaling-cur-

rents to line, a harmonic regulator consisting of a toothed wheel connected with said train of gear, spring *j*, means for limiting the vibrating length of said spring, and means of adjustment for setting the point of said spring with relation to the teeth of said regulating-spring.

4. In a telegraph-transmitter, the combination of a motor, a train of gear, circuit-controlling apparatus for directing signaling-currents to line, a toothed regulating-wheel *i* connected with said train, a vibrating spring *j*, a heel-support, 1, for said spring, and a clamping-arm for the purpose of limiting the vibrating length of said spring.

5. In a telegraph-transmitter, the combination of a motor, a train of gear, circuit-controlling devices for directing signaling-currents to line, a toothed regulating-wheel *i* connected with said train, a vibrating spring *j*, a heel-piece, 1, a clamping-arm, 4, for limiting the vibrating length of said spring, a clamping-screw, 5, a shoe, 6, and a set-screw, 13, for moving or adjusting said clamping-arm.

6. In a telegraph-transmitter, the combination of a motor, a train of gear, circuit-controlling devices for directing signaling-currents to line, a toothed regulating-wheel *i* connected with said gear, a spring *j*, a heel-piece, 1, pivoted at 2, a bracket, 10, a set-screw 11, as and for the purpose set forth.

7. In a telegraph-transmitter, the combination of a motor, a train of gear, circuit-controlling apparatus for directing signaling-currents to line, a toothed regulating-wheel connected with said gear, a spring *j*, a heel-piece, 1, pivoted at 2, a clamping-arm 4, clamping devices 5 and 6, a clamping-screw 7, an adjusting-screw 13, a bracket 10, and a screw 11, as and for the purpose set forth.

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Witnesses:

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