

(No Model.)

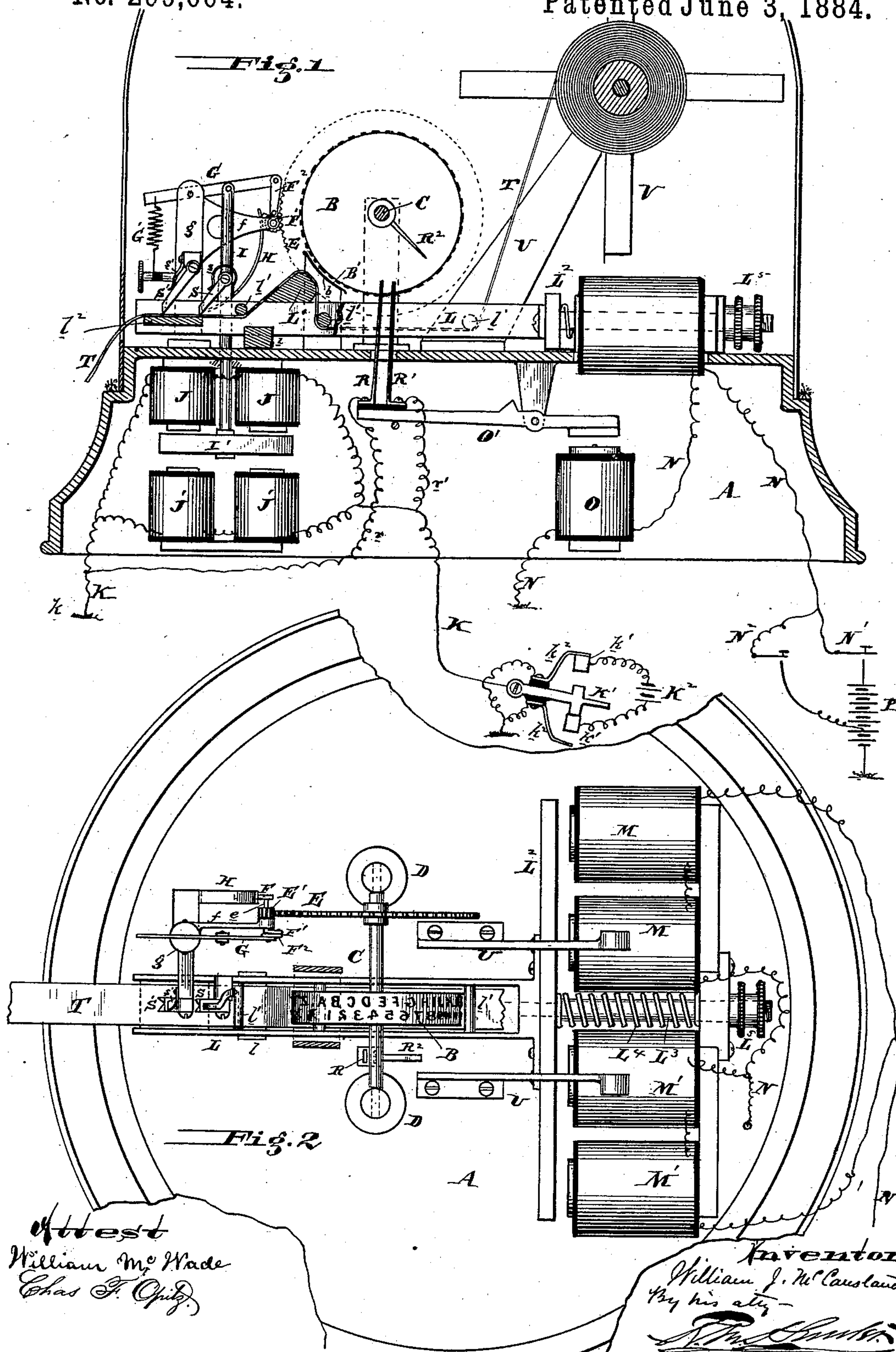
2 Sheets—Sheet 1.

W. J. McGAUSLAND.

PRINTING TELEGRAPH.

No. 299,664.

Patented June 3, 1884.



(No Model.)

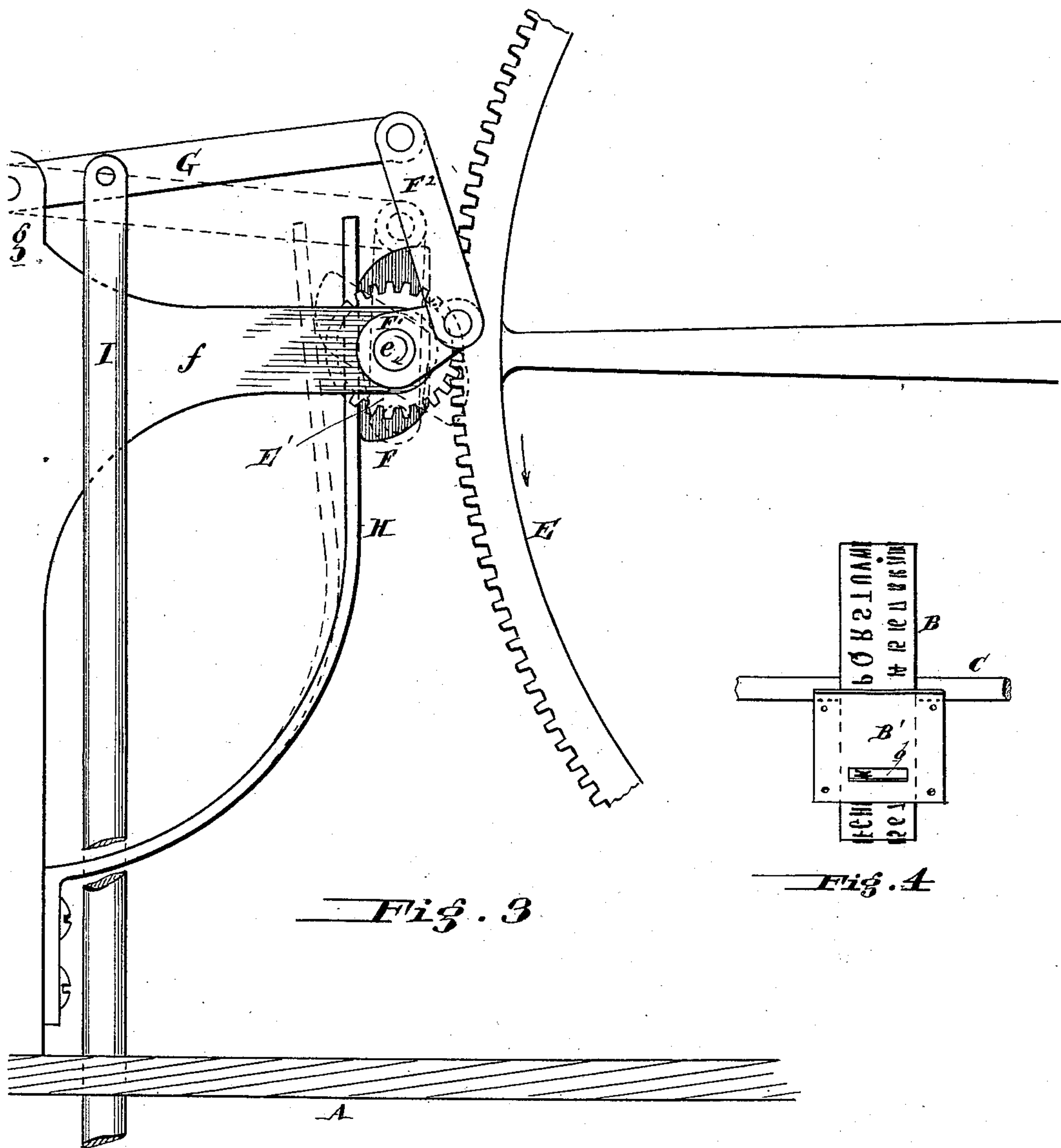
2 Sheets—Sheet 2.

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Attest
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Chas. F. O'Quinn

Inventor
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Wm. H. H. H.

UNITED STATES PATENT OFFICE.

WILLIAM J. McCAUSLAND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO WILLIAM W. KURTZ, OF SAME PLACE.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 299,664, dated June 3, 1884.

Application filed June 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. McCAUSLAND, of the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have
5 invented an Improvement in Printing-Telegraphs, of which the following is a specification.

My invention has reference to printing-telegraphs; and it consists in certain improvements, fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

The object of my invention is to so construct a printing-telegraph that it may be worked
15 with far greater rapidity and accuracy than has heretofore been possible with machines in use.

In the drawings, Figure 1 is a sectional elevation of my improved printing-telegraph.
20 Fig. 2 is a plan of same. Fig. 3 is an enlarged detached view of the mechanism for operating the type-wheel, and Fig. 4 shows the type-wheel and its slotted screw.

A is the base.

25 B is the type-wheel, and is secured on shaft C, journaled in suitable bearings or support, D. This shaft C carries a spur-wheel, E, and a unison stop-pin, R. The pinion E', secured to the shaft e, which is carried by a bearing,
30 f, meshes with said spur-wheel E and rotates the same. Shaft e is provided with a crank, F', and bar F, set substantially at right angles to said crank, and against which a spring, H, constantly presses. Crank F' is connected to
35 an arm, G, pivoted to a standard, g, by a link, F². The arm G is vibrated by a rod, I, and armature I', which works between polarized electro-magnets J J', which alternately change their polarity, so that when one is north the
40 other is south, and vice versa. The armature may be counterbalanced by a spring, G'. The transmitting-instrument may be of any desired construction; but for simplicity the following is shown: A vibrating hammer, K',
45 strikes alternately the contact-blocks k', respectively connected to the two poles of the battery K², so that a current of either polarity may be transmitted over the line k, through electro-magnets J J', into ground at k. The
50 type-wheel B may be constructed in any de-

sired manner, but is preferably made with the letters and figures arranged circumferentially about the said type-wheel and in two separate parallel frames, the figures being arranged
55 opposite the spaces between the letters, so that each revolution of the pinion E' will cause, if desired, two letters and two figures to be printed; hence each reciprocation of the armature I' moves the type-wheel a space covered by
60 two letters and two figures.

L is the printing-frame, and is adapted to move horizontally in guides l. It is provided with an armature, L², arranged before magnets M M', coupled in pairs and receiving
65 a current from an extra line-wire, N, over which a strong current may be sent by battery P upon closing key N'. The printing-frame, upon being drawn toward the press-magnets, compresses a spring, L⁴, encircling rod L³, and the throw or movement of said frame may be
70 regulated by nuts L⁵. The paper T is wound upon the usual reel, V, supported by the standards U, and passes under bars l', over printing-block L', under another bar, m', and finally over a plate, l², forming part of the press-frame.
75

S is a pivoted arm pointed at the bottom, carried by press-frame and pressed upon the paper by spring s.

S' is another pivoted arm similar to that just described, but is pivoted to the station-
80 ary support g or frame of the machine, and is pressed upon the paper by a spring, s. The unison consists of two flexible conducting-arms, R', insulated from each other, respectively connected by wires r r' with the line
85 K on each side of the type-wheel magnets J J', and are raised or lowered within range of pin R² by armature O' and unison-magnet O in the press-magnet circuit N.

B' is a stationary screen, having a slot, b,
90 therein to prevent the printing of more than one letter or figure at one time.

The operation is as follows: Currents of electricity of alternate opposite polarity are transmitted down the line K, causing the armature
95 I', rod I, and arm G to vibrate rapidly. This causes the pinion E' to rotate rapidly, the crank F' being carried over the dead-centers by the bar F and spring H, (see Fig. 3,) thereby rapidly rotating spur-wheel E and type-wheel B.
100

When the desired letter is reached, the lever K' is arrested. Key N' is then closed, causing the current from battery B to pass over line N, then to divide and pass partly over each magnet M M'. This causes the armature L² to be attracted, compressing spring L⁴, reciprocating the press-frame L, and causing the paper to be pressed against the type-wheel, causing the impression from the desired letter to take place through the slot b in the perforated shield or screen B'. The reciprocation of the press-frame and the action of the pivoted arms S S' cause the paper to be intermittently fed through the machine. As a space between the figures is always in line with the letters, nothing but a letter will print through the slot in the shield. When printing a letter, the crank F' is always on the dead-center, and the arm F puts the spring H under tension, as indicated in dotted line Fig. 3; hence with every semi-revolution a letter may be printed. If it is desired to print a figure, the type-wheel is worked around until the letter immediately before the desired figure is reached, and then upon breaking the line-current in wire K the crank F' assumes the position shown in full lines, Fig. 3, and which, by the proper relative sizes of the wheels E and E', causes a figure to come before the opening in the shield, and now upon printing a figure would be printed; hence two figures might be printed for every evolution of the pinion E. By this construction of mechanism I am enabled in practice to almost double the speed of the printing-telegraphs now in use, and which is the main object of my invention. By dividing the current over two press-magnets I am enabled to greatly increase the power from a given battery, and thereby with small magnets am enabled to print more positively and perfectly. If it is desired to bring the instrument to unison, I close a key, N², and put a small current to line N, which current is insufficient to operate the press-frame, but is amply sufficient to operate the armature O', and throw the spring-conductors R' within range of the pin R², as it revolves around with the type-wheel. The type-wheel revolves until the arm or pin R² strikes the spring R, and presses it against the spring R', thus short-circuiting the current over line K, around the type-wheel magnets J J', thus destroying their power, and bringing the type-wheel to rest. If desired, the figures and letters on the type-wheel might be arranged in one plane alternately, or in any other manner desired, upon a single type-wheel; but I prefer the construction shown, because it prints the figures and letters in different lines, rendering it more easily read.

In place of using polarized magnets J J', an ordinary well-known vibrator may be used to rapidly vibrate the armature I'; but I prefer to use the polarized electro-magnets and armature, as it makes the instrument more positive.

I do not limit myself to the construction shown, as my invention may be modified in various ways without departing from my invention.

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

1. In a printing-telegraph, the combination of a type-wheel and a spur-wheel secured thereto with a pinion adapted to mesh with said spur-wheel, a crank to rotate said pinion, means to overcome the dead-centers of said crank, and means to rotate said crank, said means being controlled by electric currents transmitted over a line-wire, substantially as and for the purpose specified.

2. In a printing-telegraph, the combination of a type-wheel and a spur-wheel secured thereto with a pinion adapted to mesh with said spur-wheel, a crank to rotate said pinion, means to overcome the dead-centers of said crank, and cause said crank to assume a position substantially at right angles to dead-centers, and means to rotate said crank, said means being controlled by electric currents transmitted over a line-wire, substantially as and for the purpose specified.

3. In a printing-telegraph, the combination of a type-wheel and a spur-wheel secured thereto with a pinion adapted to mesh with said spur-wheel, a crank to rotate said pinion, means to overcome the dead-centers of said crank, electro-magnets, and connecting mechanism to rotate said crank upon changing the polarity of line-current, substantially as and for the purpose specified.

4. In a printing-telegraph, a type-wheel and its shaft, in combination with a spur-wheel secured to said shaft, a pinion adapted to mesh with said spur-wheel, a crank to rotate said pinion, an electro-magnet and armature connected to said crank and adapted to turn said crank up or down and hold it on the dead-centers, and mechanism, substantially as set forth, to throw said crank over the dead-centers upon the armature, releasing it, so that said crank and its pinion may be held in four positions in its revolution, substantially as and for the purpose set forth.

5. The combination of type-wheel B and pin R² with electro-magnets and connecting mechanism to rotate said type-wheel, armature O', provided with spring-conductors R R', electro-magnet O, line N, line K, and conductors r r', connected with the line K on each side of type-wheel magnets, substantially as and for the purpose specified.

6. The combination of type-wheel B and pin R² with electro-magnets, and connecting mechanism to rotate said type-wheel, electro-magnet O, armature O', line K, and means secured to said armature, which, when in contact with pin R², short-circuits line K around the type-wheel magnets, substantially as and for the purpose specified.

7. The combination of the type-wheel and

press-magnets with a press-armature, a reciprocating press-frame made integral with said armature, and provided with a press-block and a feed-plate, means to guide the paper over said feed-plate and press-block, a stationary pawl, and a moving pawl carried by said press-frame, both of said pawls having sharp points and provided with springs to press them down upon the paper as it passes over the feed-plate, and arranged to feed the paper as the press-frame is reciprocated in the act of printing, substantially as set forth.

8. The combination of the type-wheel and horizontally-reciprocating press-frame L, arranged tangential to the type-wheel, having printing-block L', guides for the paper to cause said paper to pass under and around said type-wheel, and means to feed said paper upon reciprocating said frame, substantially as and for the purpose specified.

9. The combination of a type-wheel and horizontally-reciprocating press-frame L, arranged tangential to the type-wheel, having printing-block L', guides for the paper to cause said paper to pass under and around said type-wheel, means to feed said paper upon re-

ciprocating said frame, two or more press-magnets, a single press-armature adapted to be attracted by all of said press-magnets simultaneously and actuate said press-frame, and a single line-wire, N, the current of which is divided between said electro-magnets to increase their power in printing, substantially as and for the purpose specified.

10. The combination of type-wheel B, having letters and figures arranged upon its periphery and in different parallel planes, the letters being arranged in line with the spaces between the figures, and vice versa, means to press the paper against said type-wheel, and a stationary slotted screen, the slot in which is the full width of the type-wheel, to prevent the printing of more than one letter or figure at a time, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

WILLIAM J. McCAUSLAND.

Witnesses:

R. M. HUNTER,

WILLIAM McWADE.