

(No Model.)

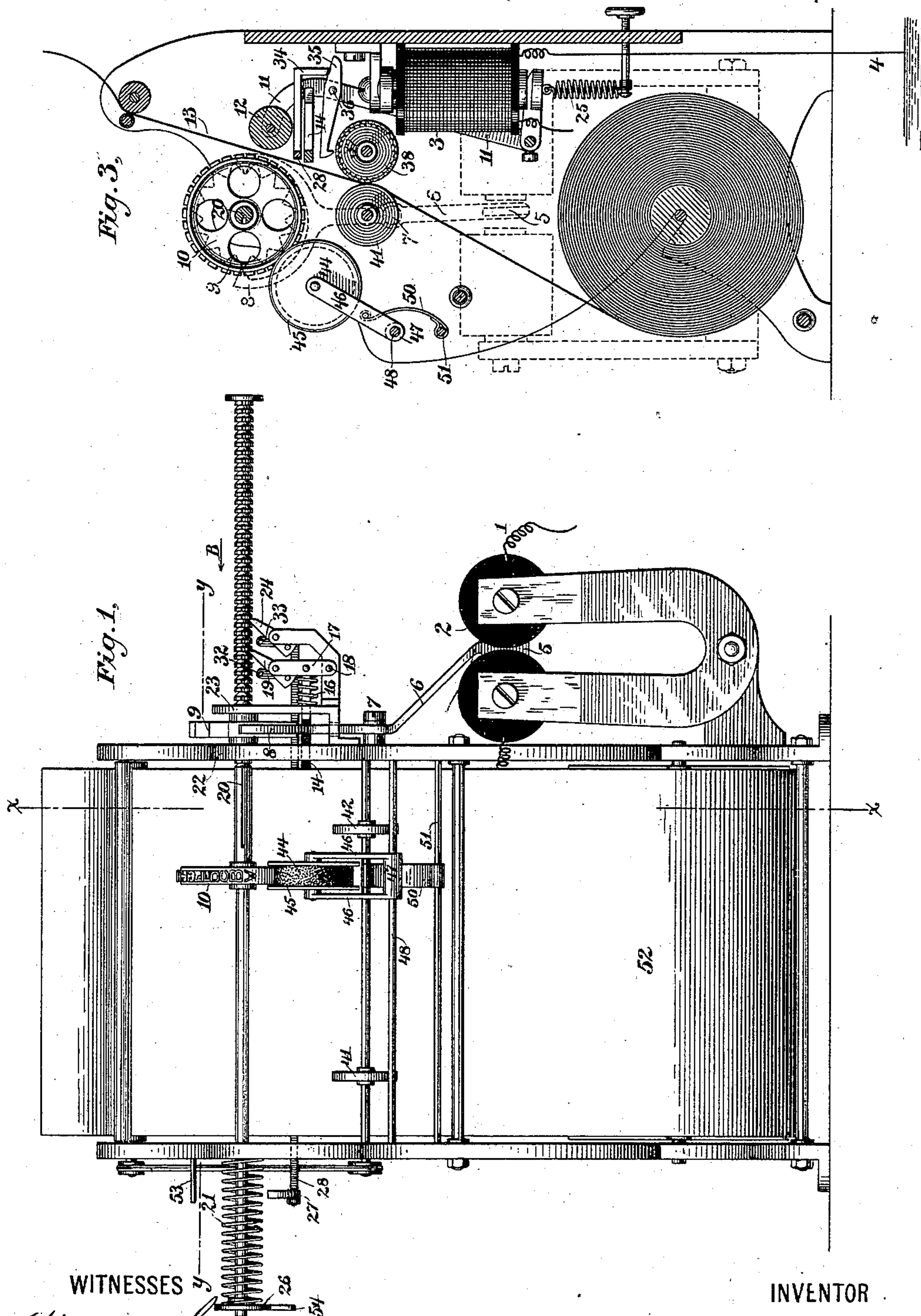
2 Sheets—Sheet 1.

H. VAN HOEVENBERGH.

PAGE PRINTING TELEGRAPH.

No. 293,927.

Patented Feb. 19, 1884.



WITNESSES

Wm A. Shinkle
Geo W. Breck.

INVENTOR

Henry VanHoevenbergh,
By his Attorneys

Pope Edgecomb & Butler.

(No Model.)

2 Sheets—Sheet 2.

H. VAN HOEVENBERGH.
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Fig. 2,

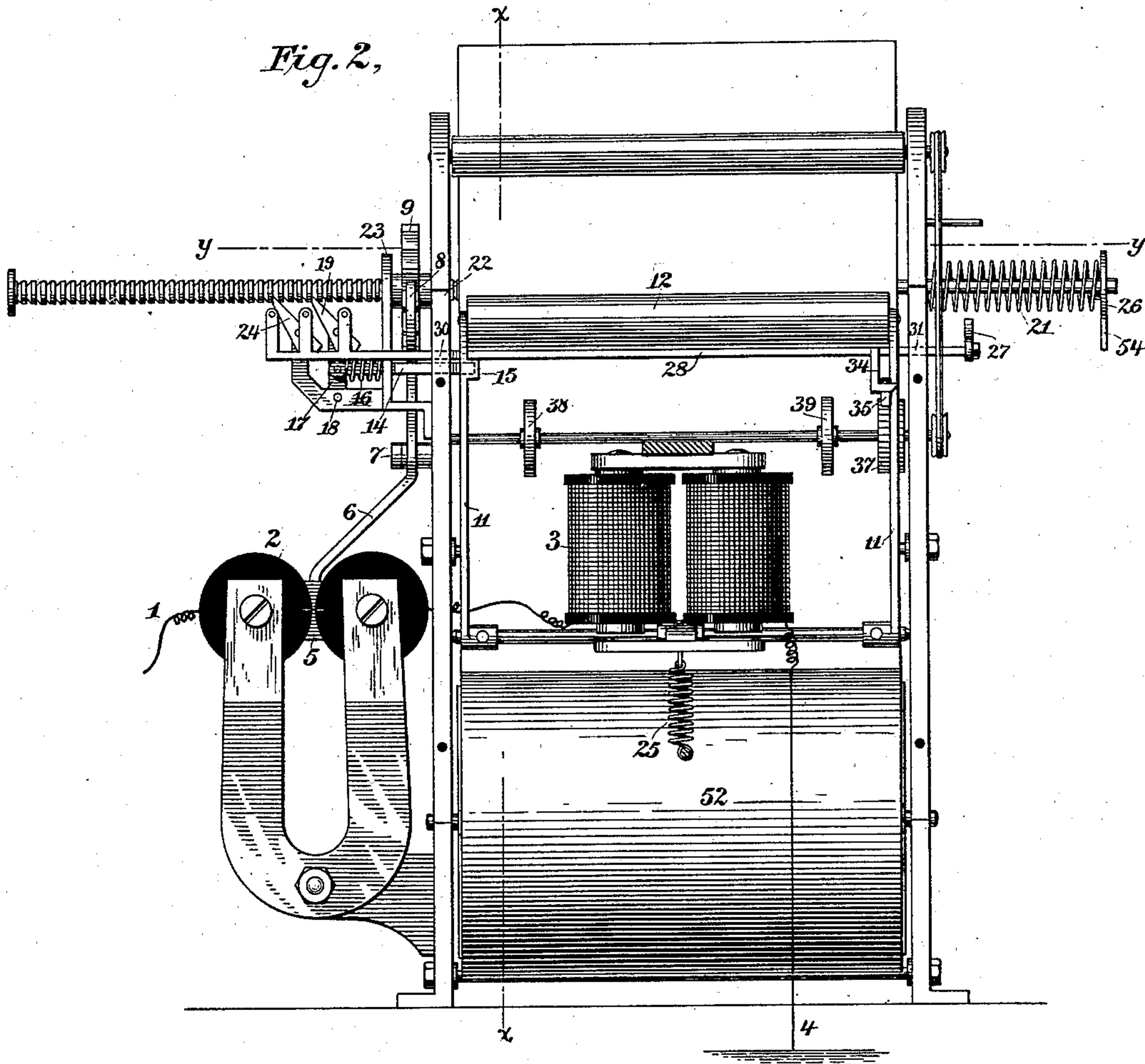
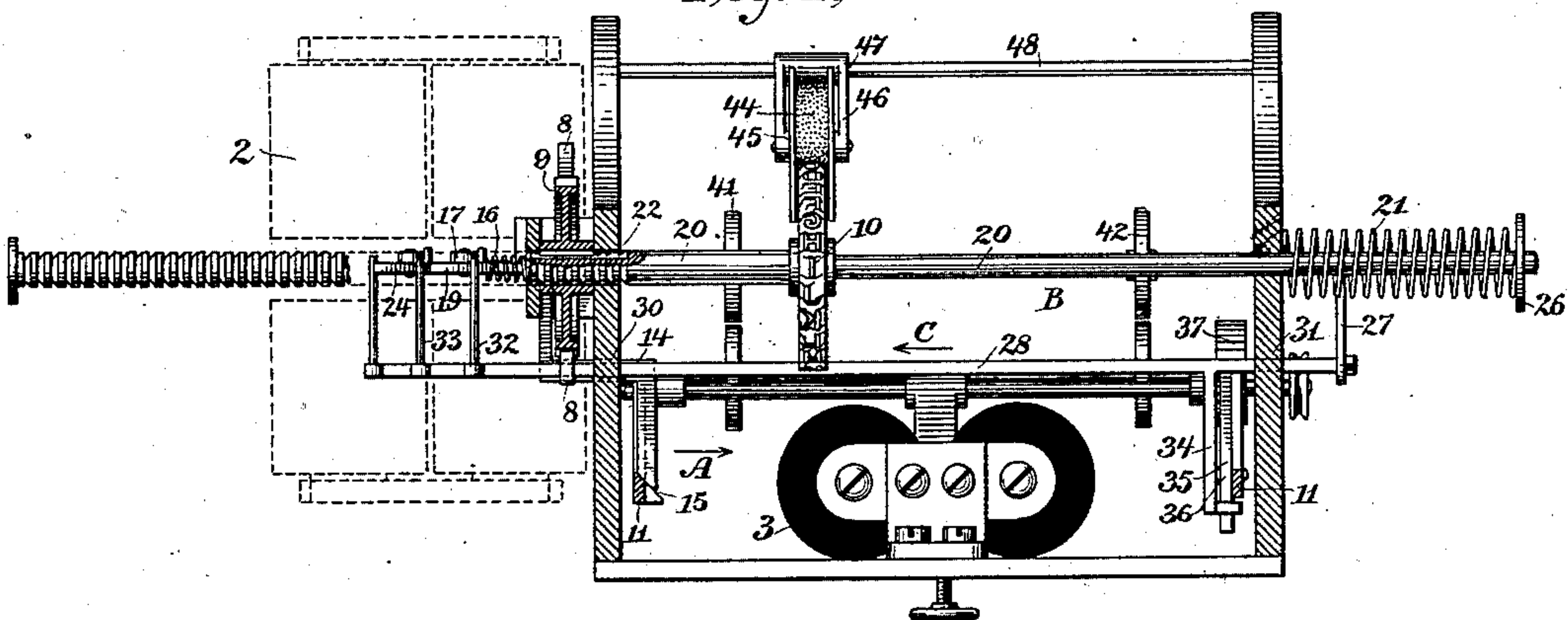


Fig. 4,



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UNITED STATES PATENT OFFICE.

HENRY VAN HOEVENBERGH, OF ELIZABETH, NEW JERSEY.

PAGE-PRINTING TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 293,927, dated February 19, 1884.

Application filed August 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY VAN HOEVENBERGH, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Electro-Telegraphic Printing-Instruments, of which the following is a specification.

My invention relates to that class of telegraphs which record in printed characters at a receiving-station the advices transmitted from a sending-station. It particularly relates to the receiving-instrument of such a system, and may be described as a receiving-machine operated by electrical currents for producing a record in printed-page form of the message transmitted from the sending-station. This record, when taken from the instrument, is ready for delivery without further treatment.

The main objects in view are strength, lightness, and simplicity in the construction, and rapidity in the operation of the instrument.

My improved receiving-instrument and the manner of its operation may be set forth, in brief, as follows: The single electrical conductor, which leads from the sending to the receiving station, is traversed by currents which, as regards their volumes, may be divided into two classes, hereinafter designated as "stronger" and "weaker" currents. At the receiving-station two electro-magnetic systems are included in the circuit of this conductor. One system, which is actuated by changes in the polarity of the weaker currents, causes the progression of the type-wheel upon its own axis. The other system is operated by the stronger currents only and without regard to their polarity. This latter may be a simple electro-magnet. It performs a series of functions, as follows: By the forward stroke of its armature-lever it causes an impression to be taken upon the receiving-page. The same movement also brings a lateral spacing mechanism into position for operation when released. By the return-stroke of its armature-lever it liberates to action the said spacing mechanism, which causes the shaft of the type-wheel to be laterally advanced through a distance equal to the space between two letters. When the margin of the page is reached, this lateral advance movement of the type-

wheel shaft automatically brings a vertical spacing mechanism into a position to be actuated by the next backward movement of the said armature-lever.

The invention also includes a unison device and certain details of mechanism, which will be hereinafter specifically described and claimed.

My invention is set forth in the accompanying drawings, in which Figure 1 is a front elevation; Fig. 2, a rear elevation; Fig. 3, a transverse section on the lines X X of Figs. 1 and 2; and Fig. 4, a plan section on the lines Y Y of Figs. 1 and 2.

Similar letters of reference have been applied to corresponding parts appearing in the different figures.

The main conductor 1, which enters the receiving-station, is traversed by currents of two strengths. These currents are subject also to variations of polarity. The conductor 1 includes the coils of magnets 2 and 3, and is grounded at 4. (See Fig. 2.) The magnetic system 2 is preferably a doubled polarized magnet. It is actuated by changes in the polarity of the weaker currents, and its office is to cause the to-and-fro movement of the common armature 5, carried by a forked driving mechanism, 6, which is arbored at 7, and provided with pallets 8, engaging with the beveled teeth of the wheel 9. The oscillations of this mechanism may be used to cause the step-by-step movement of the wheel 9, which is connected by a spline-and-feather attachment (see Fig. 4) with a shaft, 20, carrying the type-wheel 10; or, if desired, the forked driver 8, by slight modifications, may serve as an escapement mechanism to liberate the type-wheel to the action of a spring or descending weight, and thus control its advance in a well-known manner. The former of these two plans has been illustrated in the figures. The magnet 3 performs a variety of functions. It is only actuated by the currents of greater strength; but being a simple electro-magnet, it is actuated by these currents regardless of their polarity. Thus, when the type-wheel has reached its printing position under the influence of polar changes of the weaker currents, an increase of current, whether positive or negative, (produced upon the line by suit-

able transmitting mechanism,) actuates the magnet 3 and causes its armature-levers 11, carrying the platen 12, to bring the paper sheet or page 13 against the type-wheel 10 and effect an impression upon said sheet. This operation will be clearly understood by reference to Fig. 3. The same forward stroke of the lever 11 causes the bent traction-bar 14 to be moved in the direction of the arrow A, Fig. 4. This action may be conveniently caused by the co-operation of beveled surfaces 15, formed, respectively, upon said traction-bar 14 and said armature-lever 11. This movement is in opposition to a spiral spring, 16, (see Figs. 1 and 4,) which surrounds said traction-bar, one end of the spring being attached to said traction-bar, while the other presses against the frame-work of the instrument. The said movement causes the crank 17 to be turned on its fulcrum 18, thereby advancing the dog 19 from its original position of engagement with the ring-teeth formed upon the type-wheel shaft 20 into engagement with the next tooth. The dog 19 is thus set forward without disturbing the position of the type-wheel shaft 20. Considering, now, the return-stroke of the armature-lever 11 under the action of the spring 25, first, the platen 12 is withdrawn to a distance from the type-wheel; secondly, the beveled surfaces 15 are allowed to slide upon each other, thus liberating the rod 14 to the action of the spring 16, and causing the type-wheel shaft 20 to be advanced through the space corresponding to one tooth, which equals the space between two adjacent letters upon the printed page. At the end of this movement the shaft 20 is locked in its new position by the action of the dog 24. The shaft 20 has a tendency, due to the spring 21, to pass loosely through its bearings 22 and 23, and the wheel 9 in the direction of the arrow B, Fig. 1. Such movement is, however, prevented by the dog 24.

For the purpose of causing the type-wheel to start each time in unison with the transmitter, I provide a pin or stop, 53, which projects horizontally from the frame-work of the instrument. An arm, 54, extending from a disk, 26, carried at the left-hand end of the type-wheel shaft 20, is engaged by this pin when the type-wheel is allowed to revolve at the extreme right-hand limit of its excursion. The length of the pin 53 is such as to intercept the path of the arm 54 when the type-wheel has been advanced a step immediately after the last character of the line has been printed. If the type-wheel be then allowed to revolve in the usual manner, it will be arrested at a predetermined unison-point by the impingement of the arm against the pin or stop. Assuming that in the manner described the printing of a single line of letters along the face of the page has progressed until the type-wheel has been brought to its unison-point, and that the disk 26, attached to the end of the shaft 20, has come into proximity with the detent 27,

projecting from the rod 28, then at the next longitudinal movement of the shaft 20 the rod 28, which passes through bearings 30 31 in the frame of the instrument, will be pressed in the direction of the arrow C, Fig. 4. The rod 28 being further provided with detents 32 and 33, projecting in front of the dogs 19 and 24, the movement described will cause said dogs to be depressed and the shaft 20 to be released. It will accordingly, under the influence of spring 21, slide through its bearings and assume such a position that the type-wheel will be at the commencement of the line. In this manner the type-wheel is automatically returned to the left-hand margin of the page. It is evident, however, that the type-wheel will remain at its unison-point during this last longitudinal movement of the shaft 20, and no character will be printed. The dogs 19 and 24, in subsequently returning under the action of suitable springs to their positions of engagement with the teeth upon the shaft 20, will restore the rod and detent 27 to their normal positions, as shown. The rod 28 also carries a detent, 34, provided with a double elbow, the last branch of which normally extends over the end of a dog, 35, pivoted to the armature-lever 11 at 36. The lateral movement of the bar 28, caused by the next movement of the type-wheel shaft after the printing of the last letter of any line, actuates the detent 34, so as to release the dog and allow it to fall into engagement with the teeth of a wheel, 37, carried upon the shaft of the feed-rollers 38 and 39. The subsequent return movement of the armature-lever 11, under the influence of the spring 25, will accordingly cause a partial revolution of said wheel and rollers, thereby advancing the page vertically through the distance that separates two adjacent horizontal lines of printed matter. Additional guide-wheels, 41 and 42, are also provided to assist in advancing the paper. The dog 35 is subsequently returned to its normal position through the agency of the detent 34, provided for the purpose with a beveled end.

The type-wheel is supplied with ink by the roller 44, provided with side flanges, 45, which serve to retain the roller in front of said type-wheel. The roller is arbored upon the branches 46, extending from the sleeve 47, which slides freely upon the bar 48, and which is maintained in a vertical position by the spring 50, sliding longitudinally on the bar 51. The supply of paper is contained on the roller 52.

The mechanism at the transmitting-station which is to operate in conjunction with the receiving-instrument herein described forms no part of the subject-matter of this application. It may be of any convenient form designed to establish upon the line the currents of the character described.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, in a printing-telegraph in-

strument, of a longitudinally-movable type-wheel shaft and a type-wheel rigidly fixed thereto.

2. The combination, substantially as hereinbefore set forth, of a longitudinally-movable type-wheel shaft or spindle, a type-wheel rigidly fixed thereto, and means, substantially such as described, for rotating said type-wheel and shaft.

3. The combination, substantially as hereinbefore set forth, of a longitudinally-movable type-wheel shaft, a type-wheel rigidly fixed thereon, and means, substantially such as described, for impelling said type-wheel and type-wheel shaft to and fro.

4. In a printing-telegraph instrument, the combination, substantially as hereinbefore set forth, with the longitudinally-movable type-wheel and the armature-lever of the printing-magnet, of devices actuated by the movements of said armature-lever for both longitudinally and vertically spacing the impressions produced.

5. The combination, substantially as hereinbefore set forth, of a type-wheel shaft, a spring or equivalent device tending to move said shaft longitudinally in one direction, teeth formed upon said shaft, a dog engaging with said teeth, and mechanism for moving said dog in the direction to impel said shaft against the action of said spring.

6. The combination, substantially as hereinbefore set forth, of the armature-lever, the traction-bar, the beveled surfaces of said lever and bar, the dogs, the shaft, and the type-wheel, co-operating in the manner described.

7. The combination, substantially as hereinbefore set forth, of the type-wheel shaft, mechanism for moving it horizontally through succeeding steps corresponding to the succeeding letters in a horizontal line of characters, and mechanism actuated by its last step move-

ment for returning it to a position to print the first letter of a horizontal line.

8. The combination, substantially as hereinbefore set forth, of the horizontally-moving type-wheel shaft, a subsidiary shaft advanced by the last step movement of said type-wheel shaft, and mechanism released by said subsidiary shaft for causing the return of said type-wheel shaft.

9. The combination, substantially as hereinbefore set forth, of the mechanism for printing characters in horizontal lines, the paper-feeding mechanism, including the ratchet, ratchet-wheel, and feed-rollers, the magnet-armature for actuating said ratchet and ratchet-wheel, and the detent for preventing the engagement of said ratchet with said ratchet-wheel, except on the completion of the printing of a horizontal line of characters.

10. The combination, substantially as hereinbefore set forth, of the type-wheel, the type-wheel shaft, and mechanism for vertically advancing the page upon which the impressions are received from said type-wheel, which mechanism is brought into position for operation by the last step movement of said shaft.

11. The combination, substantially as hereinbefore set forth, of the longitudinally-movable type-wheel shaft, the arm carried at one end thereof, a pin against which said arm is caused to impinge by the revolution of said shaft after the last character of a line has been printed, and the releasing device for said shaft brought into action after the type-wheel shaft has been arrested by said arm and pin.

In testimony whereof I have hereunto subscribed my name this 31st day of July, A. D. 1883.

HENRY VAN HOEVENBERGH.

Witnesses:

DANIEL W. EDGECOMB,
CHARLES A. TERRY.