

962,082.

T. M. FOOTE.
PRINTING TELEGRAPH.
APPLICATION FILED JULY 23, 1908.

Patented June 21, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

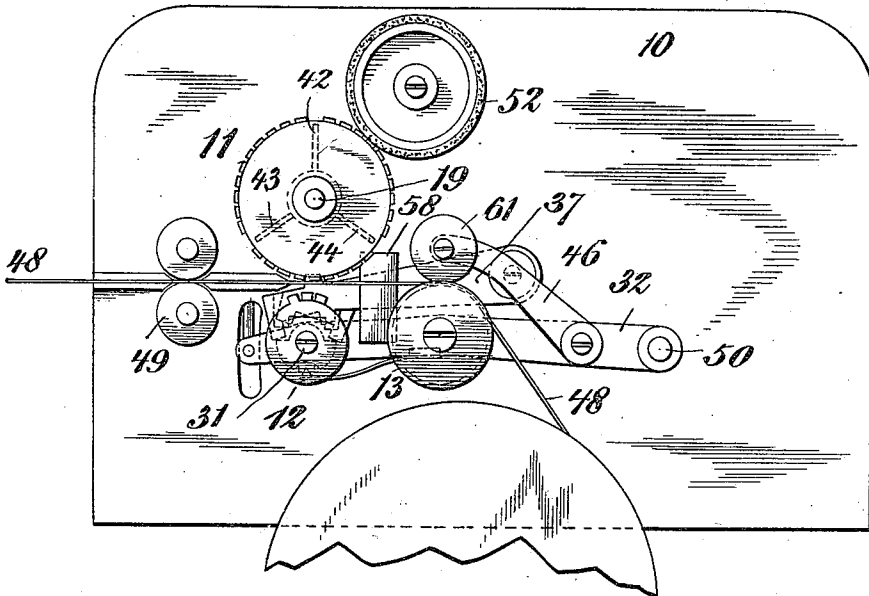


Fig. 2.

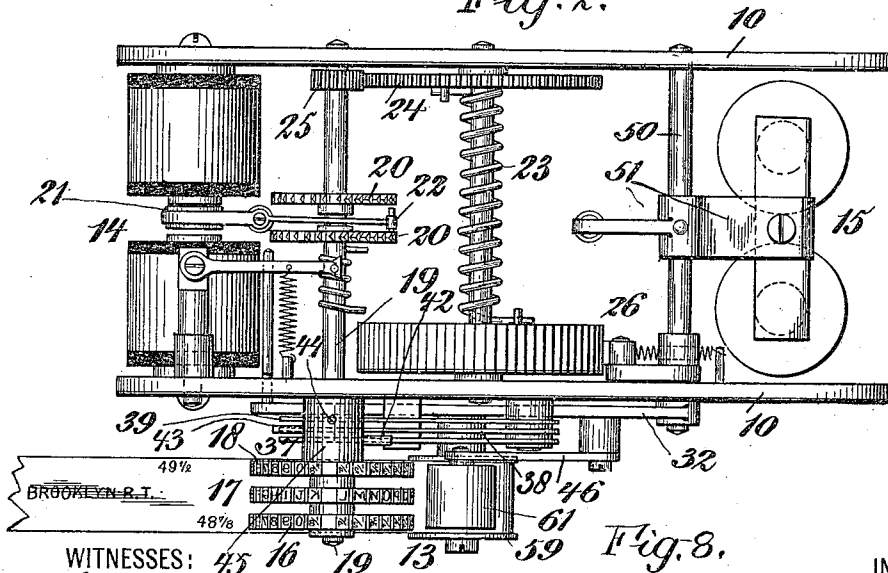


Fig. 8.

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Fig. 9.



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2 SHEETS--SHEET 2.



UNITED STATES PATENT OFFICE.

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PRINTING-TELEGRAPH.

962,082.

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To all whom it may concern:

Be it known that I, THEODORE M. FOOTE, a citizen of the United States of America, and a resident of Allston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to printing telegraphs, and particularly to that form of printing telegraphs commonly known as "stock tickers" in which stock quotations are printed telegraphically along a continuously fed record strip. In this class of instrument it is common to employ two printing wheels,—one containing characters from which the title of the stock is printed upon the strip, and the other containing numerals from which the quotations are printed. It is customary to print the title of the stock upon the strip and thereafter one or more quotations showing successive sales of the said stock, then to print the title of other stocks, and so on. The same stock is quoted time after time upon the same record strip at various intervals, but it often happens that many yards of record strip pass through the instrument before the same stock is again quoted. The result is that where an observer notices the quotation of the stock and wishes to find out the prior quotation it becomes necessary for him to search back along the record strip for quite a distance until he finally finds such prior quotation. This necessitates delay, annoyance, and often mistakes, because in looking quickly through the record strip a quotation is sometimes missed.

It is the purpose of this present invention to supply a means for recording a prior quotation whenever a stock is re-quoted, so that there shall be no necessity for the observer to search back along the record strip for such prior quotation, and to this end I provide a means whereby prior quotations may be printed upon the record strip in immediate proximity to the quotations then being made, but in a different path along the record strip, so that there shall be no danger of confusing the said prior quotation with the present quotations.

In the preferred form of my invention I provide an independent printing wheel, or

similar element, arranged parallel to the printing wheel, or similar element, from which the "present" quotations are printed, so that in a machine in which two printing wheels are used,—one for printing the title of the stock, as aforesaid, and the other for printing the quotations,—I add thereto a third wheel, preferably arranging the three wheels with the one containing the characters for printing the title of the stock between the two said number printing wheels, and I provide suitable selecting means by which the operator is enabled to select which wheel is to do the printing at any particular time. The result of this is that the title of the stock will be printed in a central path along the record strip, while the "present" and "prior" quotations will be printed thereon in paths parallel therewith respectively below and above the same.

My invention further consists in a novel selecting means for determining which of two or more printing wheels shall be employed during any printing operation of the instrument.

In order that my invention may be fully understood, I will now proceed to describe an apparatus constituting an embodiment of the same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a face view of such parts of a printing telegraph embodying my invention as are necessary for the clear understanding of the invention. Fig. 2 is a top view of the same. Fig. 3 is an enlarged front view of the printing elements and the selecting means, certain of the parts being broken away, and other of the parts being shown in section. Fig. 4 is a view in vertical transverse section thereof, the said section being taken substantially upon the line 4—4 of Fig. 3. Figs. 5 and 6 are views similar to Figs. 3 and 4, showing the parts in the position they assume when the selecting mechanism is being operated. Fig. 7 is a detail view of a slightly modified structure in which the independent printing wheel is mounted upon a different arbor from that upon which the other printing wheels are mounted, it being noted that all of the printing wheels are mounted upon a single arbor in the embodiment shown in the other figures. Fig. 8 is a portion of the record strip produced by the instrument shown in Figs. 1 to 6 inclusive.

Fig. 9 is a portion of the record strip produced by the modified form of instrument shown in Fig. 7.

The type of printing telegraph illustrated is in general the ordinary form of commercial stock ticker, and comprises a casing or frame-work 10, printing elements 11, a platen 12 for the several elements, a record strip feeding device 13, selecting magnets 14 for selecting the printing wheel to be employed and the particular character thereon which it is designed to print at the moment, and a printing magnet 15 for operating the printing mechanism. The printing elements 11 include three type-wheels designated respectively by the reference characters 16, 17, and 18. These three wheels are mounted upon a common arbor 19, said arbor also carrying escape wheels 20. The selecting magnets 14 are provided with an armature 21 to the lever of which is secured an escape lever 22. The operation of the selecting magnets 14 permits step by step movements of the arbor 19 under control of the escapement mechanism 20—22 in a manner well known in this type of instrument, the necessary power employed in rotating the arbor 19 being supplied by a power spring 23, the power from which is transmitted to the arbor through a spur gear 24 and a pinion 25. Power is stored in the spring 23 by means of a power storing device 26 operated by the printing mechanism 15, all in a manner well known.

The platen 12 comprises three wheels 27, 28, and 29 corresponding to the three printing wheels 16, 17, and 18, each wheel being provided with a tooth or projection 30 which, when in line with its respective printing wheel, constitutes the hammer or impression bed by which the record strip is forced against the selected character on a printing wheel. The three wheels 27, 28, and 29 are secured together fast upon a sleeve 31 so that their relative position with respect to each other is always unchanged, but the said sleeve is mounted loosely upon an arbor 31 which is carried by the printing lever 32; a collar 33 is also mounted upon the arbor, being secured fast upon the sleeve upon which the wheels 27, 28, and 29 are mounted, and hence is arranged to always move with the said wheels. The said collar has two shouldered portions 34, and three notches 35; the notches are arranged to be engaged by a spring tooth 36 by which the said collar and wheels are impositively held in any selected position. The shouldered portions 34 of the said collar 33 are adapted to be engaged by the forked ends of levers 37, 38, and 39, said levers being mounted loosely upon a pin 40 secured to the casing 10 of the machine. The forked ends of these levers rest normally lightly upon the shouldered portions 34 of the said

collar 33, and their upper edges are provided with projections 41 which are arranged in line with pins 42, 43, and 44 secured to, and projecting from, the hub 45 of the printing wheels 16, 17, and 18. The levers 37, 38, and 39 are guided in suitable guide slots extending downward from the upper face of the guide piece 58, and the printing lever 32 is similarly guided by a slot extending upward from the lower face of the said guide piece. The printing lever 32 also carries a feed roll 59, the said feed roll being mounted upon an arbor 60 secured to the said lever 32, an upper presser roll 61 being arranged for bearing upon the record strip fed by the said feed roll 59, said presser roll 61 being carried by a stud upon the end of an arm 46 which is pivotally connected at 47 to the said printing lever 32. The record strip 48 passes between the two rollers 59 and 61, thence between the printing wheels 16, 17, and 18 and the platen rollers 27, 28, and 29, and thence between guide rolls 49, as will be readily understood by reference to the drawings.

The printing lever 32 is mounted upon a rock shaft 50, said rock shaft also carrying the armature lever 51 of the printing magnet 15. The operation of the printing magnet will, by attracting its armature, raise the printing lever and parts carried thereby to a printing position to produce a record upon the strip 48 in accordance with the position of the printing elements 11 and the platen 12. Suitable inking mechanism is indicated by the wheel 52 which is shown as in engagement with the printing wheels 27, 28, and 29.

From the foregoing it will be understood that at each operation of the printing magnet a character selected from either of the three wheels will be printed upon the record strip. The particular character selected is so selected by the operation of the selecting magnets 14, in a manner well known, to the end that the elements are rotated to the desired position, but the particular wheel which it is desired shall effect the printing at any particular time is first of all selected in the following manner:

The printing wheels, together with the pins 42, 43, and 44 are rotated until one of the said pins is brought to a position opposite a tooth 41 upon one of the selecting levers 37, 38, and 39. When this has been effected the printing magnet is operated, with the result that the printing lever is lifted, and thereby the platen wheels 27, 28, and 29 and the collar 33. It may be remembered that the selecting levers have been said to be resting normally with their forked ends lightly upon the shouldered portions 34 of the said collar. The effect of the upward movement of the collar will then be to lift two of the levers freely, but the third

lever will be held down by the pin, and the platen will then be compelled to rotate partially by the engagement of the shouldered portion 34 with the forked end of the lever so held down, it being understood that the forked ends of the levers are of different shapes, as is clearly indicated in Fig. 3 of the drawings, whereby the desired movement will result from engagement therewith.

In Figs. 5 and 6 of the drawings the parts are shown at the moment the printing magnet has been operated, after the pin 44 has been brought to a position opposite the selecting lever 39. The result of this movement has been to rotate the platen rollers so as to bring the tooth or projection 30 upon the roller 29 opposite the wheel 18. It will be noted that the teeth or projection 30, upon the wheels 27, 28, and 29, are in staggered relation with each other, and it is to be understood that the shape of the forked ends of the levers is such that the rollers will be turned to a position wherein the tooth upon the roller 27 will be brought into line with the printing wheel 16 when the selecting lever 37 is held down by its pin 42, while the tooth or projection 30, upon the roller 28, will be brought into line with the printing wheel 17 when the selecting lever 38 is held in its downward position by means of the pin 43; and similarly the tooth or projection 30, upon the roller 29, will be brought into line with the printing wheel 18 when the selecting lever 39 is held in its downward position by the pin 44. It will thus be readily seen that the selection of a printing wheel merely depends upon bringing any one of the pins 42, 43, or 44 in a line with the projection 41 of any one of the levers 37, 38, or 39, which is effected by rotating the printing wheels to the proper position by means of the selecting magnet 14, and the subsequent operation of the printing magnet. The printing wheels are provided with blank spaces which come opposite the platen when the pins 42, 43, or 44 are in a position to be engaged by the selecting levers, so that when the printing magnet is employed to complete the effecting of the selection of a printing wheel no printing impression is produced thereby. Once the desired wheel has been selected the printing wheels may then be rotated to bring the proper printing character opposite the tooth or projection 30 upon the platen and the printing magnet again operated to produce a printed record of the character presented.

Considering the characters upon the printing wheels, the center printing wheel 17 is provided with letters of the alphabet, and certain other required symbols, while the two wheels 16 and 18 are each provided with numerals, fractions, etc., such as are employed in recording quotations. The result is that the middle printing wheel 17 may be

employed for printing the name or title of the stock, while the two wheels 16 and 18 can each be employed for printing quotations. In this form of my invention I employ the type-wheel 16 for printing the "present" quotations, while I employ the wheel 18 for printing a record of the latest "prior" quotation. The result is that the record strip appears as in Fig. 8, wherein the upper line shows the last prior quotation, and the lower line, the present quotations of the same stock, the name of the stock appearing in immediate proximity to the quotations in a path or line between the two sets of quotations.

In Fig. 7 I have shown a printing wheel 53 which corresponds with the wheel 18 shown in the other figures, such wheel being mounted upon an independent stationary arbor 54 and connected by a pair of gear wheels 55 with the wheels 16 and 17. I have also separated the platen roller 29 from the other rollers 27 and 28, such roller being designated by the reference character 56 in Fig. 7 and connected to the other rollers by means of a link 57. The result of thus placing the wheel 53 out of line with the other wheels is to enable me to print a prior quotation immediately above the quotation intended for the first of the series of the "present" quotations, as is shown in Fig. 9. In operating this instrument I first print the first of the series of the present quotations and then immediately thereafter print the prior quotation. The feed of the record strip during the printing of the first of the series of the present quotations is about equal to the distance between the center of the wheel 53 and the other printing wheels, or, in other words, is about equal to the distance the wheel 53 is set in advance of the other wheels. Of course, this will result in a blank space being left between the first and the second of the "present" quotations in the lowermost line, because the record strip will have moved for this distance during the printing of the prior quotations.

What I claim is:

1. A printing telegraph comprising three printing wheels arranged to produce printing impressions upon a traveling record strip in three different lines thereon, two of such printing wheels having co-incident axes, and the third printing wheel having its axis arranged parallel thereto, at a point in advance thereof in the direction of movement of the said record strip, the two said printing wheels containing respectively the letters of the alphabet and a full set of numerals, whereby the one is adapted for printing stock titles, and the other stock quotations, and the third said printing wheel also containing a full set of numerals whereby it is also adapted for printing stock quotations; and electrically controlled selecting

means for determining which printing wheel is to be employed at any given time.

2. In a printing telegraph the combination with a plurality of printing wheels
5 mounted to rotate together, means for rotating the same, a platen pivotally mounted in proximity to the printing wheels and having projections thereon out of line with each other, one for each printing wheel employed,
10 selecting levers mounted in proximity to the said printing wheels, and projections carried by the said printing wheels for engagement successively with the said selecting levers, the said selecting levers having

forked portions for engaging parts carried 15
by the said platen upon either side of its pivotal center, whereby to move the said platen in one direction or the other about its pivotal support when the said platen and wheels are moved toward and away from 20
each other, and means for so moving the said platen and printing wheels toward and away from each other.

THEODORE M. FOOTE.

Witnesses:

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