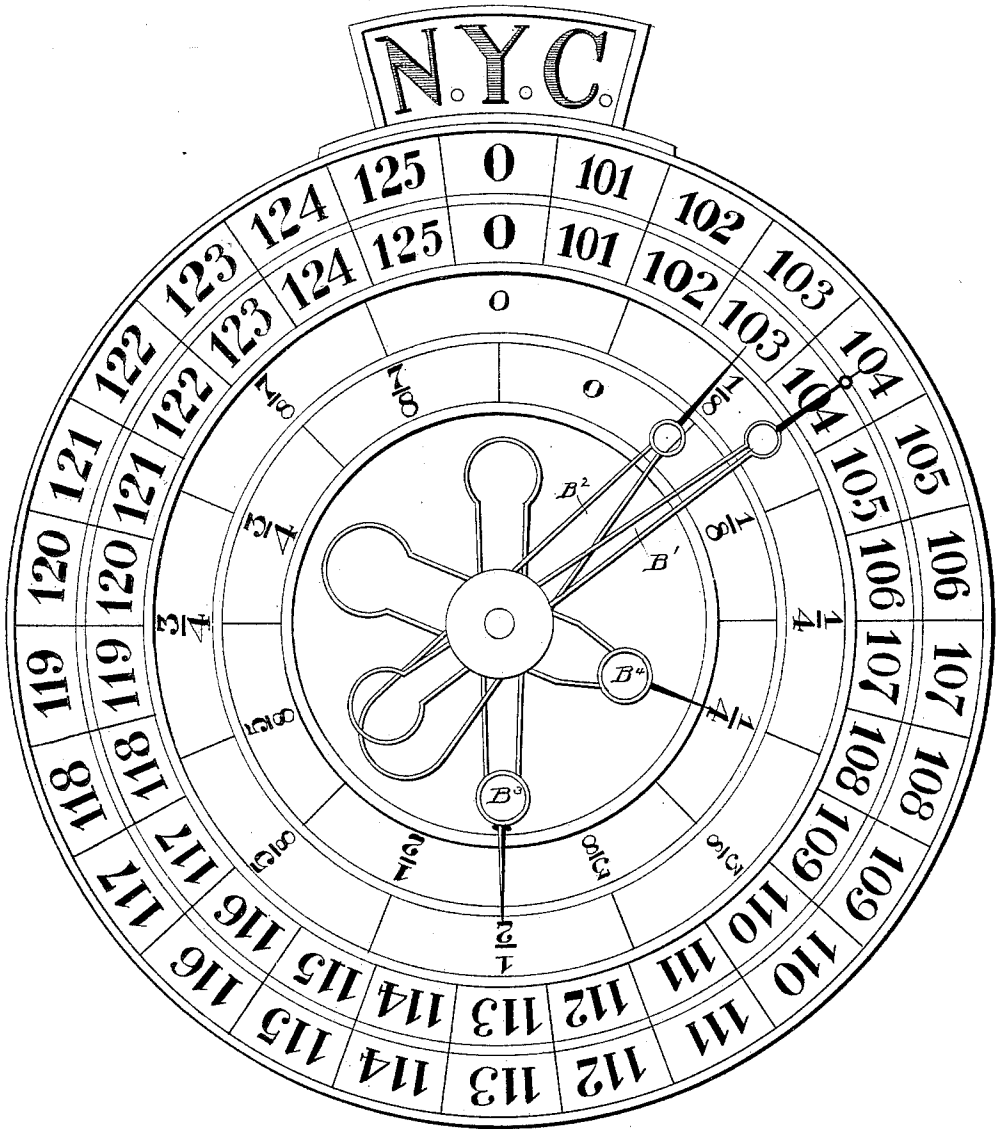
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J. A. ENOS.

STOCK INDICATOR.

No. 398,713. Patented Feb. 26, 1889.

Fig. 1.



Witnesses:

W. W. Montgomery

R. W. Elliott

Inventor:

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(No Model.) 5 Sheets—Sheet 2.

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Fig. 7.

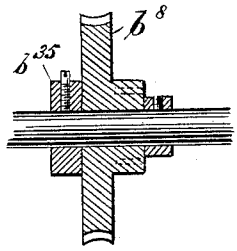


Fig. 2.

WITNESSES

H. C. Newman,
E. L. Newman,

INVENTOR

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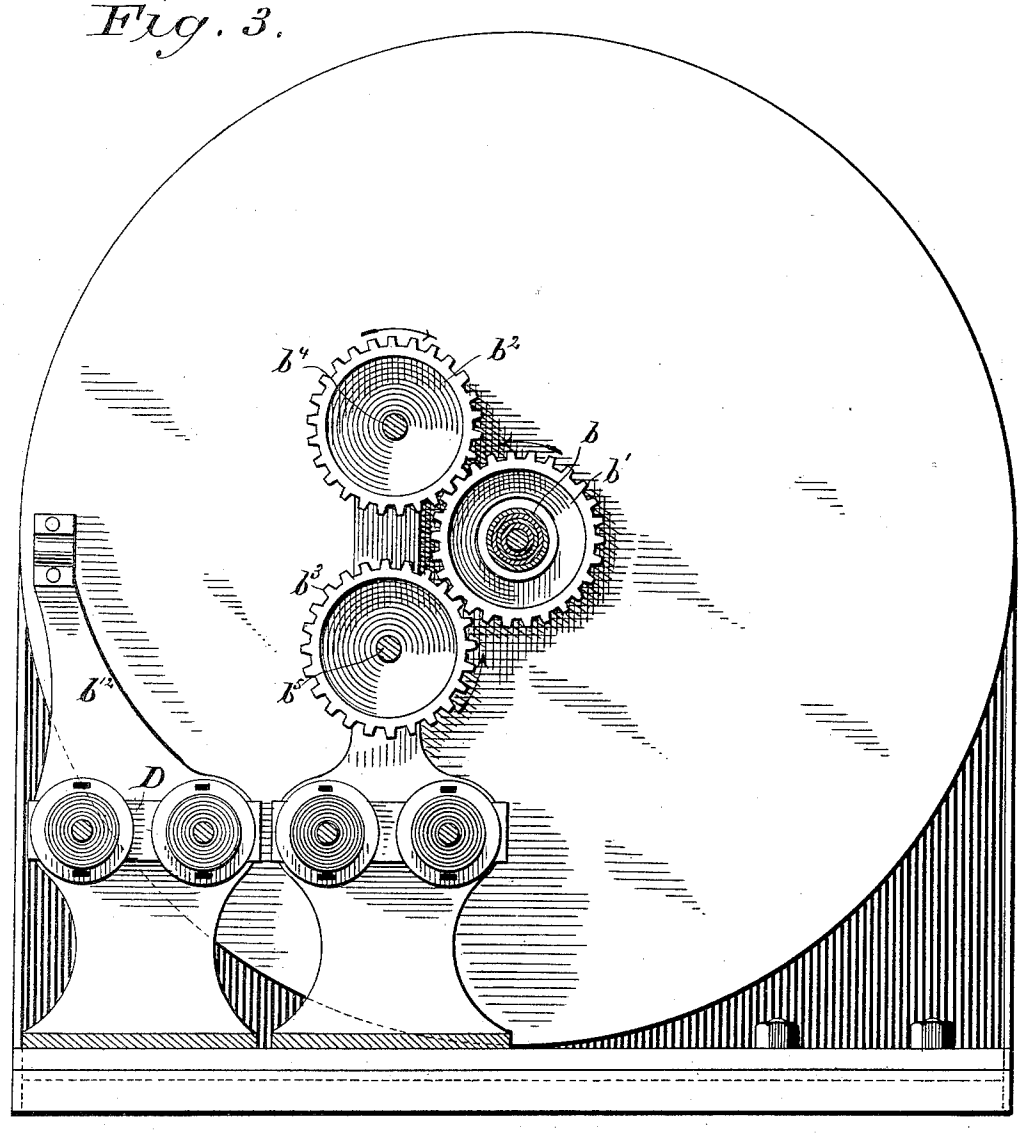
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J. A. ENOS.

STOCK INDICATOR.

No. 398,713. Patented Feb. 26, 1889.

Fig. 3.



WITNESSES

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(No Model.) 5 Sheets—Sheet 4.

J. A. ENOS.

STOCK INDICATOR.

No. 398,713. Patented Feb. 26, 1889.

Fig. 4.

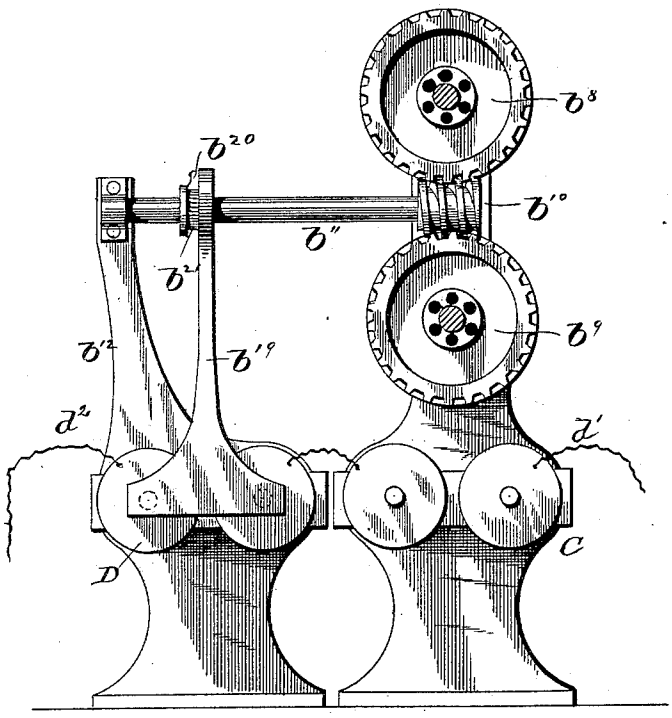
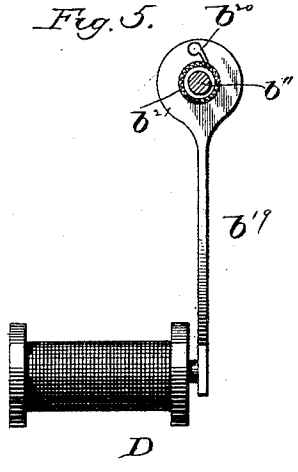


Fig. 5.



Witnesses:

W. W. Northmen

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(No Model.) 5 Sheets—Sheet 5.

J. A. ENOS.

STOCK INDICATOR.

No. 398,713. Patented Feb. 26, 1889.

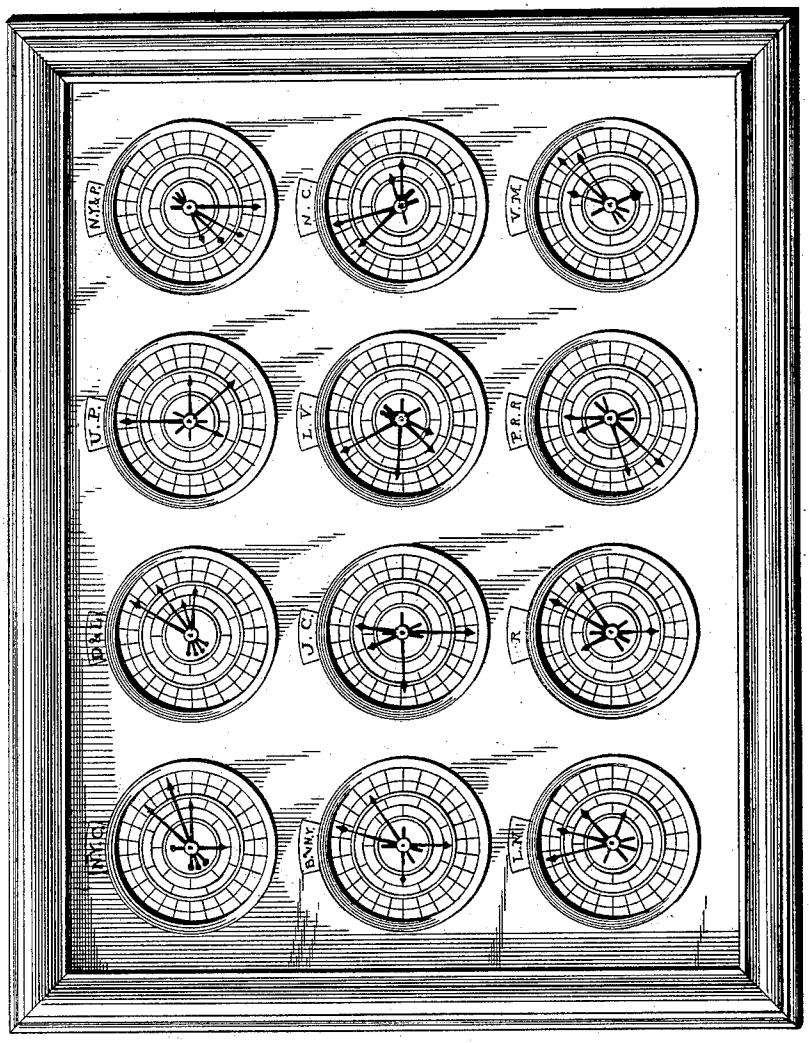


Fig. 6.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN A. ENOS, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO EDWIN SHAPLEIGH, OF SAME PLACE, AND HOWARD WILSON MORTON, OF KEMPTVILLE, NOVA SCOTIA.

STOCK-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 398,713, dated February 26, 1889.

Application filed March 2, 1888. Serial No. 265,918. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. ENOS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stock-Indicators; 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.

This invention relates to indicators.

The object of the invention is to provide a device by which quotations may instantly be received and be made graphic and visible to all with certainty and convenience.

The invention resides, essentially, in a dial having arranged in front of it a series of hands mounted on center sleeves, a gear-wheel mounted on each sleeve, and a second gear meshing with the gear on the sleeve, operated by a worm-wheel and lever receiving motion from a lever caused to vibrate by an electric current.

Furthermore, the invention resides in various novel details of construction whereby the objects of the invention are attained.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 represents a front elevation of an indicator, showing the face of the dial and the hands mounted in the front of the same. Fig. 2 represents a vertical sectional view of the dial and hands, the mechanism for operating one hand being shown in elevation. Fig. 3 represents a transverse sectional view taken through a group of mechanism on the line x x of Fig. 2. Fig. 4 represents a transverse sectional view through the operating mechanism taken on the line y y. Fig. 5 represents a detail view of the mechanism used in operating the worm-shaft. Fig. 6 represents a series of dials, each representing a particular stock, arranged in a case or cabinet. Fig. 7 is a detail view showing the manner of holding the gears b^8 and b^9 against longitudinal movement on their respective shafts.

In the drawings, A represents a dial having in its face a series of grooves, a a', in which are placed rings a^2 a^3, of card-board, metal, ivory, or other suitable material, bearing marks or figures indicative of the value of the stock being quoted. The center of the dial bears the hub a^4, through which extends a shaft, B, upon which are mounted a series of sleeves, (designated by the letters a^5 a^6 a^7 a^8,) arranged one upon the other, each acting as an independent shaft for the operation of its hand mounted upon the outer end thereof and in front of the dial. Each hand is independent of the others and is operated by distinct mechanism, although each is similarly moved. As here represented, four hands are used, while but one group of mechanism is shown, being that provided for the sleeve a^5. Upon the inner end of the sleeve a^5 is rigidly mounted a gear-wheel, b', through which motion is given to the sleeve a^5. Meshing with this wheel b' are wheels b^2 b^3, each rigidly mounted upon shafts b^4 b^5, carrying a pawl, b^6, engaging a ratchet, b^7, upon its particular shaft. The wheels b^2 b^3 are always in mesh with the wheel b', and when the wheel b^8 is rigidly connected with its shaft by its clutch and receives motion from the screw the wheel b^9 is free to turn with it, and vice versa.

The worm-wheel b^8 is mounted upon a shaft, b^4, a similar wheel, b^9, being carried upon a shaft, b^5. Each of the gears b^8 and b^9 is mounted loosely on its respective shaft, and is prevented from moving longitudinally thereon by the collars b^{35}, fixed to the shafts upon that side of the gears opposite the clutches. These worm-wheels engage a worm, b^{10}, upon a shaft, b^{11}. Mounted on a standard, b^{13}, is a lever, b^{14}, carrying clutches b^{15} b^{16}, attached to engage the worm-wheels b^8 b^9. The clutches carried by the lever are mounted upon shafts b^4 b^5 and caused to turn therewith by means of splines b^{24} b^{25}. Thus while they are permitted to slide upon the shafts through movement of the lever, when in engagement with their wheels they are caused to impart motion to the shaft upon which the worm-wheels are mounted, when desired.

Beneath the shafts b^4 b^5 is mounted a double magnet, C, suitably connected with a battery,

and having interposed an ordinary key and sounder or other suitable device to insure its operation.

The lower end of the lever b^{14} extends downward between the parts of the double magnet C.

A single magnet, D, is mounted beneath the worm-shaft b^{11}, and operates a lever, b^{19}, loosely mounted thereon. A pawl, b^{20}, on this lever engages a ratchet, b^{21}, on the worm-shaft, and causes each movement of the lever to be communicated to said worm-shaft and partially rotate it. The object is to require a great number of movements of the lever and a similar number of movements of the device by which it is operated to accomplish a single revolution of the worm-shaft.

Forward and backward movement of the hands upon any one of the shafts may be caused by the revolution of the shafts b^4 b^5, respectively, which movement is accomplished by throwing either of the wheels b^8 b^9 into engagement with its particular shaft by means of the clutch previously mentioned. For instance, should it be desired to cause the hand on the sleeve a^5 to move forward one point on the dial, the current of electricity is caused to pass through the magnet C, energizing it and causing the lower end of the lever to be attracted thereto. This causes its upper end to be thrown in the opposite direction, whereby the clutch b^{16} engages the worm-wheel b^9 and secures it to the shaft on which it is mounted. The weight b^{30} upon the upper end of the lever causes it to remain in this position when the attraction upon its lower end has been removed. The current passes through the portion c of the magnet, through the connection d^2 to the magnet D, or through the magnet c' and the connection d', according to the direction in which the hands are to be operated.

The passage of a current through the magnet D attracts the lower end of the lever b^{19}, the pawl thereon engaging the ratchet on the worm-shaft b^{11}, causing a partial rotation of the worm. This movement is transmitted to the shaft b^4 through worm-wheel b^8, and by a wheel, b^2, is transmitted to the sleeve a^5. During this operation the worm-wheel b^9 is also rotated; but as its clutch has been withdrawn from it it is free to revolve upon its shaft. The gear-wheel b^3 is also being moved by the main gear-wheel b', with which it meshes; but it is also permitted to revolve upon its shaft by means of a pawl and ratchet there provided, as shown. Thus it will be seen that the upper shaft alone is in effective operation and forward movement of the hand is insured. The number of teeth in the ratchet b^{21}, as well as the pitch of the thread of the worm and number of teeth in the worm-wheels and other gear-wheels, may be arranged to provide for the proper number of movements of the lever b^{19}, and consequently a similar number of depressions of the key or other instrument used to make and break the electric current, and it is desirable that a large number of movements be given the key to move the hand being operated but one point upon the face of the indicator. To reverse the movement of the hand, the magnet c is energized in order to attract the lever and throw the lower train of wheels into and the upper train out of operation. The operation of the worm is the same in each instance.

The mechanism here shown and described operates but one hand, B'—that carried by the shaft a^5. Each shaft is provided with similar mechanism, and may be operated through independent wires, all being bound in a cable and carried from one indicator to another. The arrangement of the gearing, as here shown, had been designed to necessitate about twenty depressions of the key to cause the hand to move one space upon the face of the dial.

The disks a^2 a^3, preferably made of paper, are printed or otherwise marked to suit the character of quotations being given, and may be removed and replaced at pleasure. The larger hands, B' B^2, indicate the full points, while the smaller hands, B^3 B^4, indicate fractions of points. It is intended that the longest hand, B', shall indicate present fluctuations of stock in full points, while the hand B^3 indicates its fractions of the same. The hands B^2 B^4 indicate the figures at which the stock was held when selling began, or at what the bidding ceased on the day previous.

In Fig. 6, I have illustrated a series of indicators representing various markets, each of which of course is operated independently.

As a means for operating the various hands, I have here shown, for convenience, the ordinary key and sounder used in telegraphy; but I do not wish to confine myself to the use of this instrument, since it is obvious that various devices may be used for this purpose.

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

1. In a stock-indicator, the combination of a dial, a series of hands mounted on concentric sleeves, a main gear-wheel mounted on each sleeve, a gear-wheel meshing therewith and mounted on a second shaft, a worm-wheel also mounted on the shaft, a worm operating the worm-wheel, and a lever caused to vibrate by an electric current and operating said worm-wheel, substantially as described.

2. In an indicator, a dial, a hand mounted on a shaft carrying a gear-wheel, gear-wheels meshing therewith mounted on independent shafts, each caused to rotate in one direction with the shaft upon which it is mounted, a worm-wheel mounted upon a shaft, a worm meshing with the worm-wheel, a lever mounted on the worm-shaft and carrying a pawl engaging to rotate upon said worm-shaft, and a magnet whose armature is carried by said lever, substantially as described.

3. In an indicator, a main shaft carrying a

hand and a main gear-wheel, gear-wheels mounted on the independent shafts, worm-wheels also mounted on the independent shafts, a worm, and clutches engaging the worm-wheels to throw them into or out of engagement, said clutches being operated by movement of a lever actuated by a current of electricity, substantially as described.

4. In an indicator, the combination of a main shaft carrying the main gear-wheel, independent shafts carrying gear-wheels, worm-wheels also mounted on the independent shafts, the worm engaging the worm-wheels, clutches carried by a lever attached to said shafts, and a double magnet electrically connected, between which the lever extends, and means whereby a current of electricity may be caused to pass through either magnet for the purpose of operating the lever, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. ENOS.

Witnesses:
R. G. DYRENFORTH,
W. W. MORTIMER.