Sheet 1- 4 Sheets.

S. S. Laws.

Signalling Apparatus.

No. 75775 Patented Mar. 24, 1868

Fig: 1.

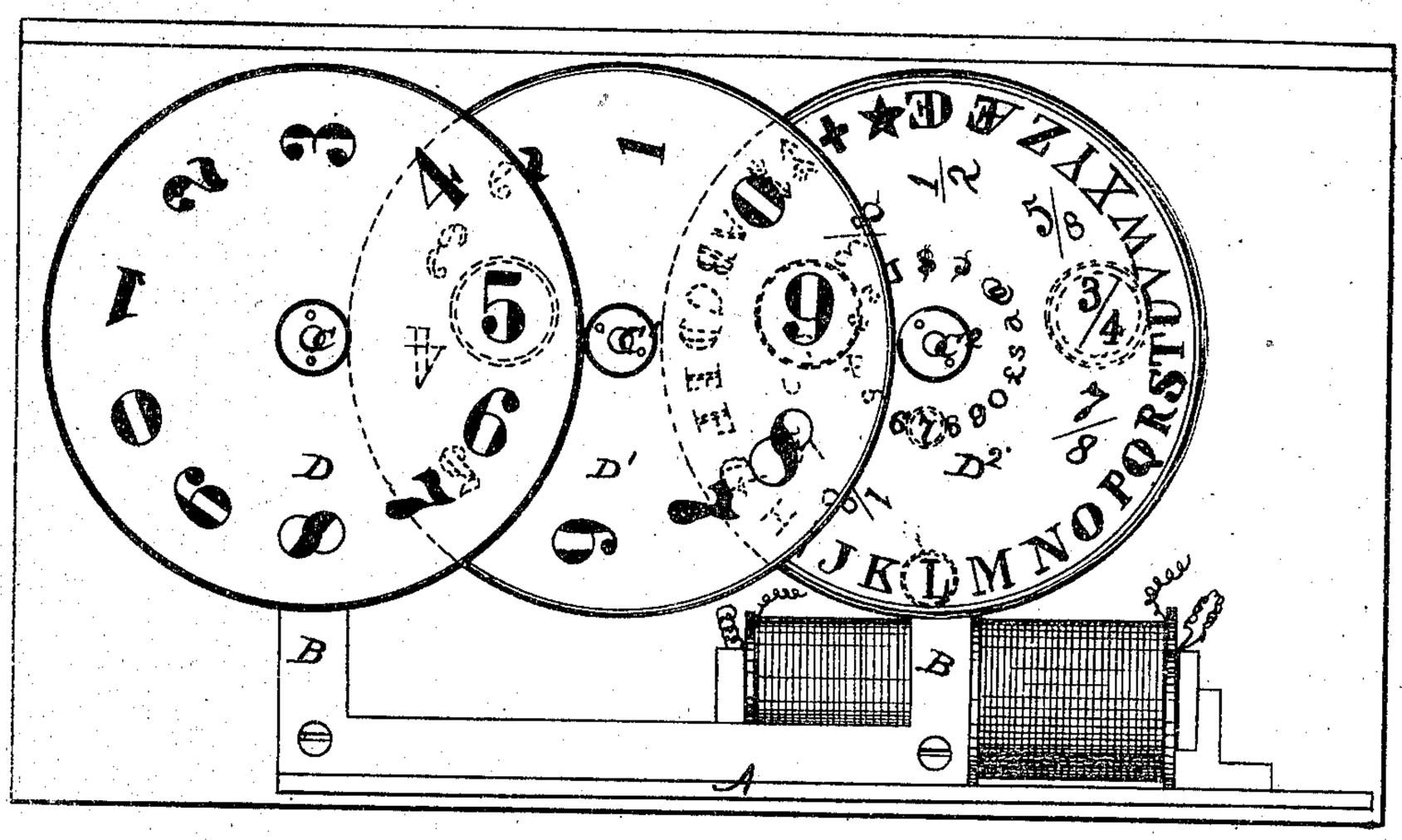
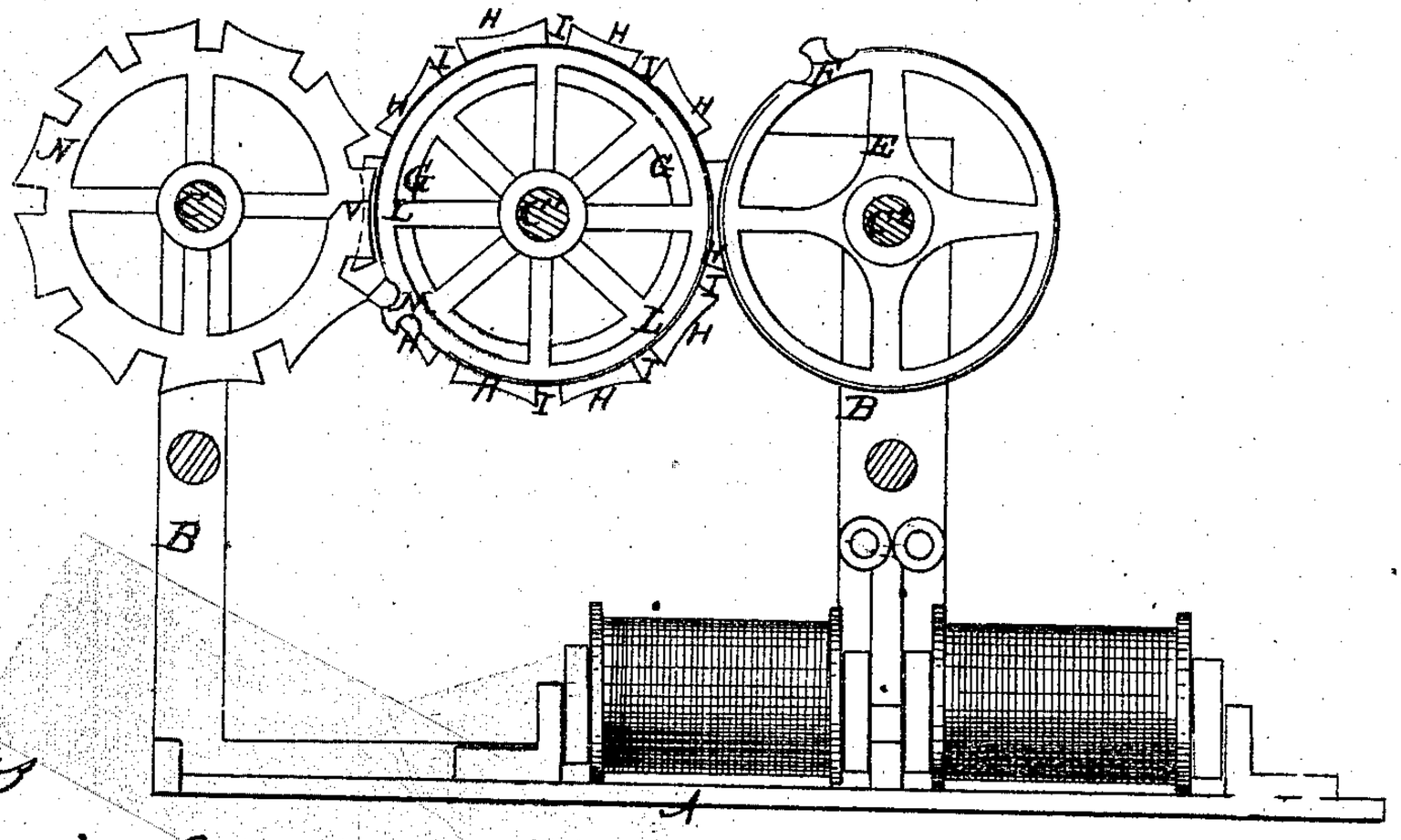


Fig: 2.



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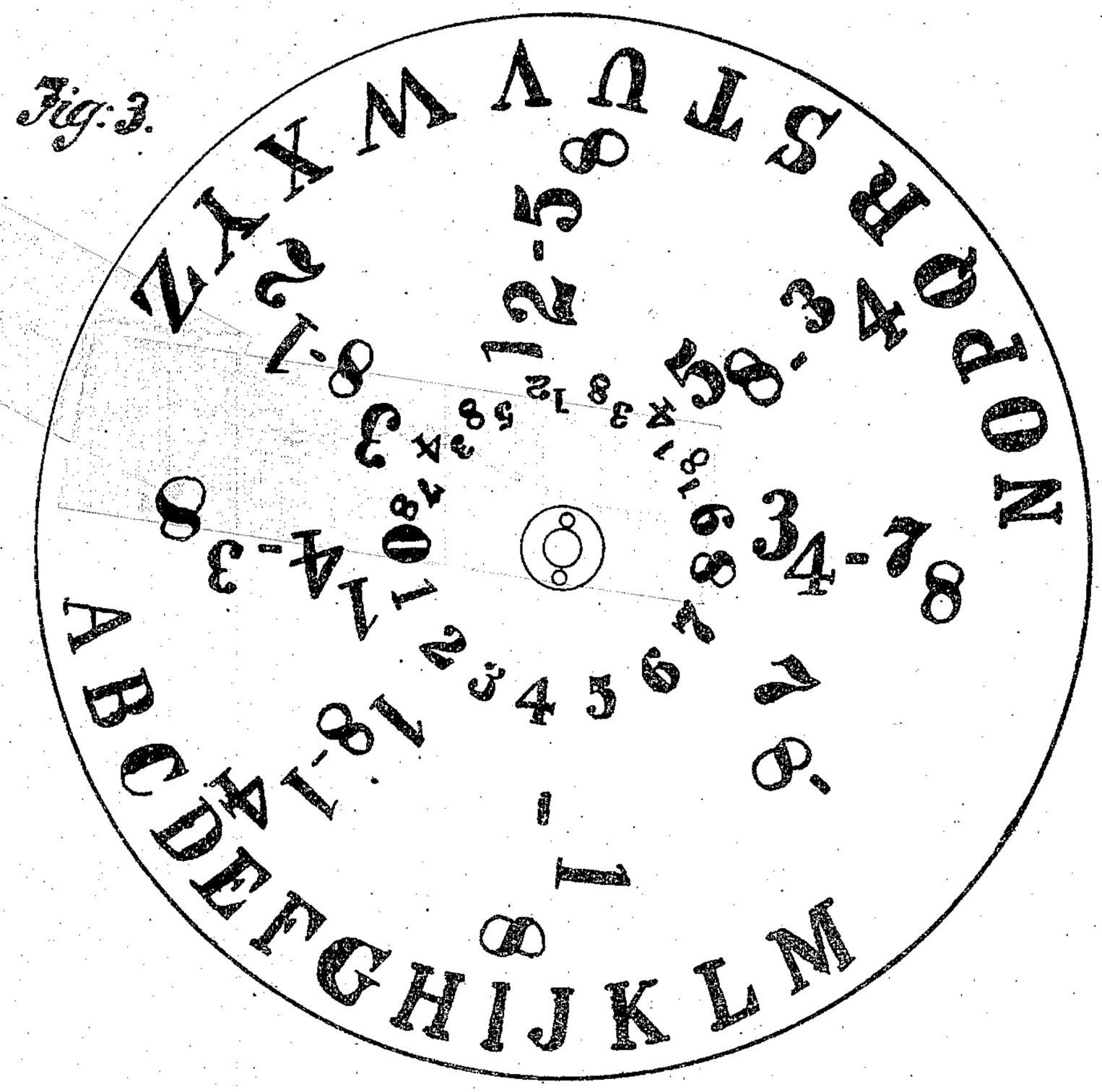
Signalling Apparatus.

No. 75775 Patented Mar 24 1868

Fig: 3.



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No. 75775 Patented Mar. 24, 1868

Fig. 4.

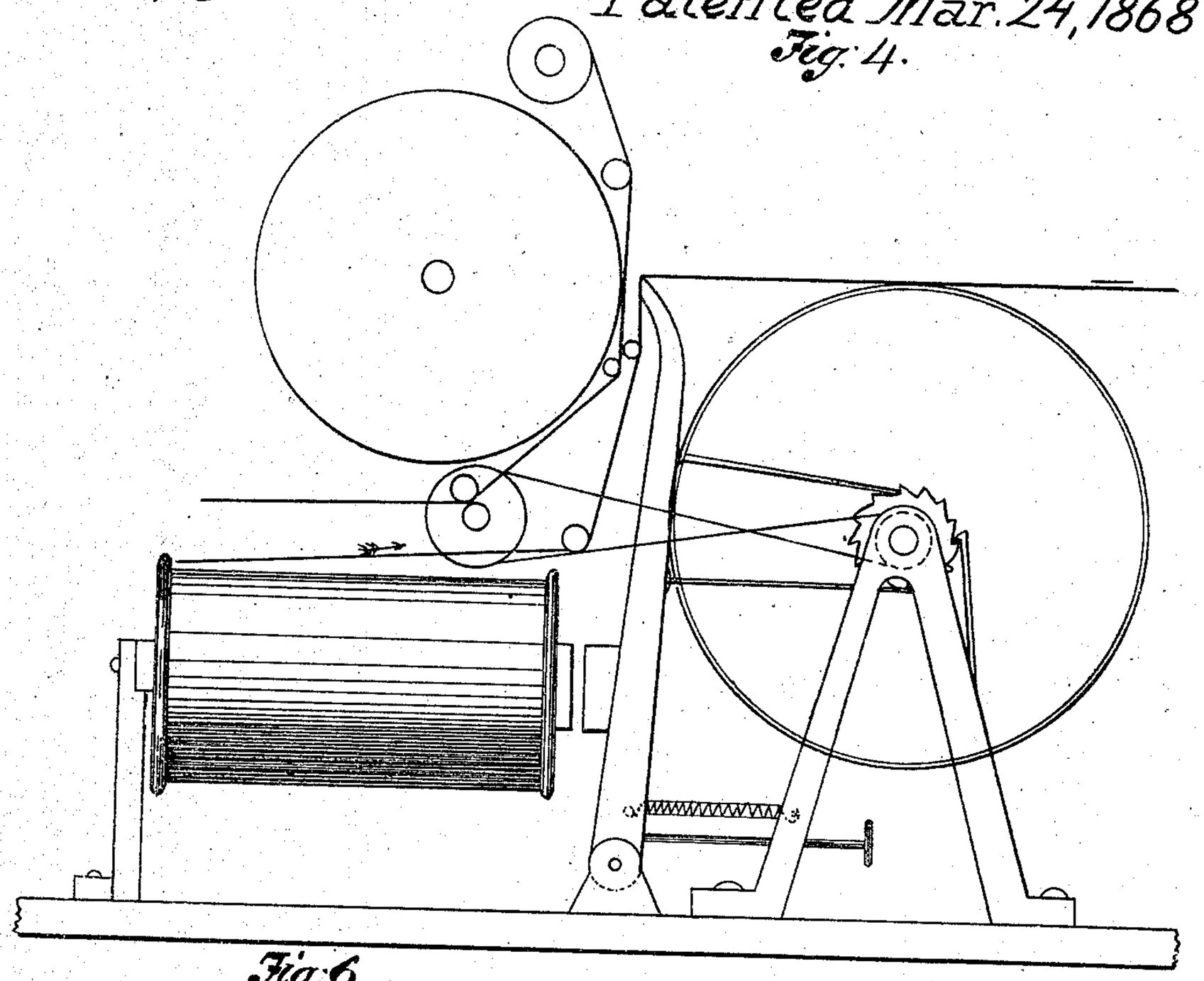


Fig. 6

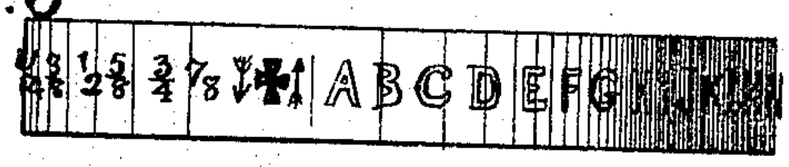
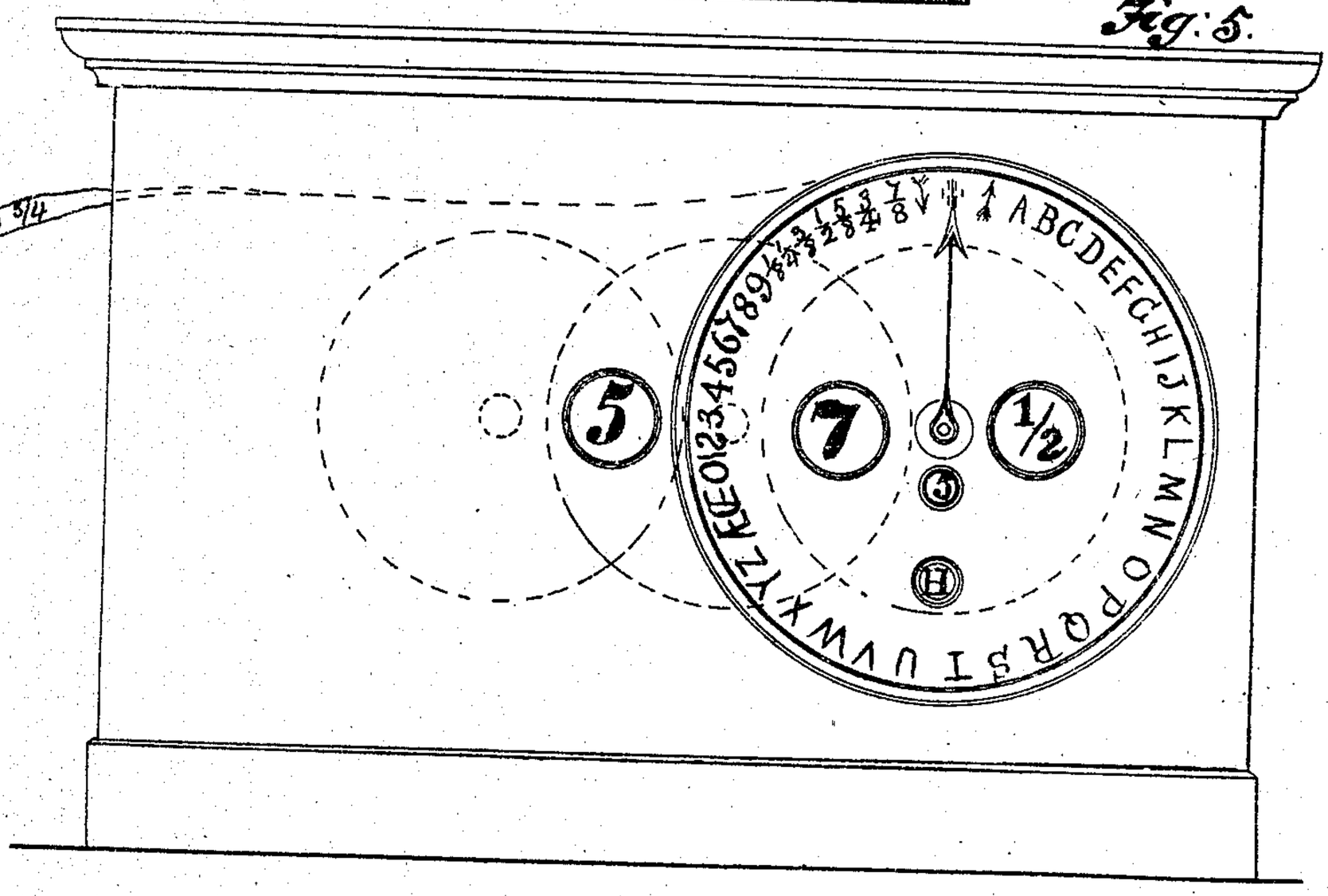


Fig. 5.



Sheet 4 – 4 Sheets.

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Signalling Apparatus.

No. 75775 Patented Mar. 24, 1868.

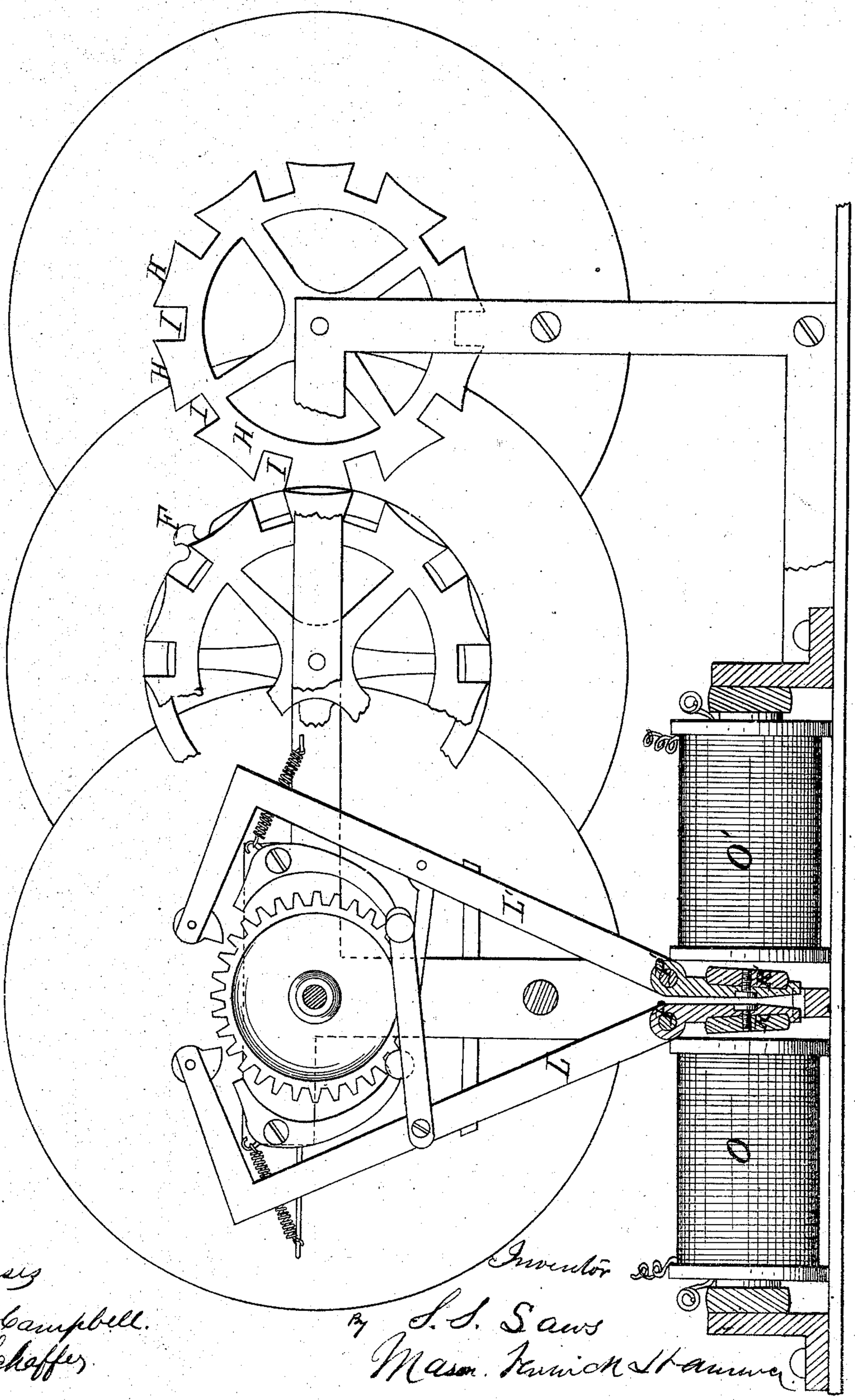

Fig. 7.

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SAMUEL S. LAWS, OF NEW YORK, N. Y.

Letters Patent No. 75,775, *dated March* 24, 1868.

IMPROVEMENT IN SIGNALLING-APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, SAMUEL S. LAWS, of the city, county, and State of New York, have invented certain new and useful "Improvements in Signalling or Indicating-Apparatuses;" and that the following description, taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention more particularly relates to an indicator or signalizer described in the schedule annexed to the Letters Patent granted to me on the thirty-first day of December, A. D. 1867, but the improvements embraced herein may be also adapted to other forms of indicators or machines for conveying intelligence, by whatever force or power operated; this class of indicators being intended for use more especially in showing or communicating the price of gold, stocks, bonds, produce, and other commodities disposed of and sold at the various boards, or exchanges, and markets of our country; and as at such boards and exchanges the variations of prices generally and by rule or common understanding are by eighth use is made of this important fact in one feature of the present improvements.

This invention consists, first, in a novel transmitter and regulator of motion, which may be termed a geared automatic advance and retrograde motor and check; and this device consists of a peculiar method of gearing together two or more wheels or arbors, or other devices, whereby, with a rotary or other motion imparted to the first one of the series, at a certain point or at points of its movement, an intermittent rotary or other movement will be imparted to the next in the series, whether the first wheel has a continuous or an intermittent motion, while at all other times the second wheel, without the use of any additional means, but from its own form and arrangement with regard to the first or actuating-wheel, will be stationary and fixed in position, and so on through any number or series of wheels; second, in locating either upon the periphery of a drum or wheel, or upon the face of a disk or plate, or upon any other suitable surface of a drum or wheel, or other device, arranged to have a rotary movement, or upon a stationary dial-face or plate of any suitable shape, when such dial-face is provided with an index-hand or pointer, arranged to be moved around upon its face from point to point, a complete series of the fractions of a unit, in eighths, from one to seven-eighths inclusive, viz, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, whether in regular order and succession or in irregular order, and whether either more or less duplicated, in combination with a full series of units of number, from 0 to 9 inclusive, upon the same or a different wheel, drum, disk, dial-face, or other surface, whether such numbers are arranged in regular order or succession, or either more or less in duplicate, or in combination with any other series of characters, either more or less complete, such as the letters of the alphabet, diphthongs, and other arbitrary or conventional signs or symbols for communicating intelligence, whether upon the same or a different face or surface, or in combination with both the units and the other characters upon the same or a different disk or face, according as may be desired.

In the accompanying plates of drawings my "improvements in reporting or signalling-apparatuses" are illustrated.

In plate 1,

Figure 1 is a face or front view of the apparatus, and

Figure 2 a longitudinal vertical section, taken in a plane to the rear of the indicating-disks shown in fig. 1.

In plate 2,

Figure 3 shows a disk or plate suitable for use in my apparatus, but with a different arrangement of the fractions to that shown in fig. 1 of plate 1.

In plate 3,

Figure 4 shows an arrangement of parts, by means of which printed impressions may be given of what is indicated by the apparatus.

Figure 5, a face view of a stationary dial, having the fractional units, units of number, letters of the alphabet, &c., arranged around it with a revolving hand or pointer, and other parts to be hereinafter described.

Figure 6, a plan or top view of a type-wheel; and

Figure 7, plate 4, is a vertical section, showing the working-apparatus of the machine, in which L and L′ represent two right and left-hand levers, working on the pivots P and P′, through the instrumentalities of the coils O and O′, and the armatures R and R′. The operation of these levers and their appurtenances is substantially the same as the like contrivances used in my patent for an electrical indicator, dated December 31, 1867, and numbered 72,742.

A, in the drawings, represents a base or foundation-plate, on which the several parts constituting the apparatus are arranged. B, uprights secured to plate A, along its sides, and carrying horizontal shafts C C^1 C^2, that at different points are extended across the plate A, turning at each end in bearings of the uprights B. These shafts, C C^1 C^2, in the present instance are three in number, and have secured to them similar circular disks or plates, D D^1 D^2, respectively, the several disks being vertical in position, and on the same side of the plate A, and arranged in a position to lap over, the one upon the other.

On two, D D^1, of these disks, are located, at equal and regular distances apart, the series of units, from 0 to 9 inclusive, in regular and inverse order and succession; and on the remaining disk, D^2, in concentric circles, as shown in the drawings, the letters of the alphabet, and other characters, the units of number, and the fractional units, (eighths.)

On the shaft C^2 which carries the disk D^2, and back of the said disk D^2, by and through a geared or toothed wheel secured thereto, the mechanism provided for operating the apparatus is to be arranged to act, one form and arrangement of which mechanism that may be used being that described in the Letters Patent hereinbefore referred to, and therefore needing no particular description herein.

E, a wheel fixed to shaft C^2, and turning in conjunction therewith. This wheel, at one point of its periphery, is provided with a tooth, F, by and through which, as the wheel revolves, the wheel G, fixed to the next shaft, C^1, is revolved. This wheel G, around its periphery or edge, is divided into a series of concave faces, H, of equal length, and at equal and regular distances apart, with the several concave faces separated by a notch or opening, I, of suitable shape to allow the tooth F on the wheel E to enter as such wheel revolves, and acting upon its sides to move the wheel G. By the concave faces to the wheel G, such wheel is always bearing upon the periphery of the wheel E, and the curve of such concave faces is of a radius corresponding to that of the wheel on which it bears.

Thus it will be seen, by the relative construction of the wheels E and G, and their arrangement, the wheel G will be revolved only when the tooth to the wheel E has become engaged with one of its notches or indentations, and for only a proportionate part of its circumference, when the tooth escaping from the notch, the wheel G, then, is at a bearing by one of its concave faces upon the periphery of the wheel E, and consequently thereby held stationary or fixed, until, by the advance or retrograde motion of the wheel E, it is again carried back through the same, or forward through its next notch, and so on.

By this arrangement and manner of gearing, it is obvious that whatever motion, whether continuous or intermittent, forward or backward, be imparted to the first or driving-wheel, E, the other or second wheel, G, will be correspondingly moved only at such times as the tooth to the driving-wheel, by its movement, becomes engaged therewith, as described, while at all other times, by the concave face bearing upon the driving-wheel, it is held stationary and fixed in position.

Wheels geared together as above described may be continued in a series of indefinite length, and in the present instance it is shown as continued to the next shaft, C^1, of the apparatus, by a wheel, L, having a single tooth, M, on the shaft C^1, and a concave or indented wheel, N, on the shaft C, when the operation between these two shafts will be similar to that described between the shafts C^2 and C^1, as is obvious.

By my arrangement of gearing herein described, it is plainly apparent that with the series of disks D D^1 D^2, having numbers and other characters upon them, as shown in the drawings, and with a case enclosing the whole, having openings at such points as to expose only one character of any of the series of characters at one time, as shown by the red lines in fig. 1, around the characters, various and many combinations of figures, letters, fractions, &c., may be indicated or exposed to view, and such combination of figures, &c., changed at pleasure in either one or more particulars, according to the information desired to be imparted.

On the disk D^2, shown in fig. 1, the several letters of the alphabet, together with two diphthongs, and other characters, are shown as arranged around in one and the same circle, and at regular distances apart, the whole number of such characters corresponding to the teeth upon the driving-wheel.

Upon a concentric circle within the "alphabet circle" are arranged the several fractions, from one-eighth to seven-eighths inclusive, with a blank space, making eighth divisions, or one division at every four upon the "alphabet circle;" and upon a concentric circle within the fraction circle are arranged the several units, from 0 to 9 inclusive, together with other characters thereon shown, making sixteen in all, or two to every division of the fraction circle.

With thirty-two teeth on the gear-wheel driving the shaft carrying the disk C^2, by every movement of such wheel one tooth, a different character upon the outer or alphabet circle will be shown at the opening in the case provided for it, and when moved two teeth, a character upon the inner or unit circle, and when moved four teeth, one of the fractions, at their respective openings.

In fig. 3 another arrangement of the "fractional units" is shown, in connection with the letters of the alphabet, figures, and other characters. This arrangement consists in duplicating the fractions in the manner shown, so that at the same time the price asked and bid can be exhibited to view, inasmuch as the difference between the two is usually one-eighth, as thus shown.

In fig. 5, plate 3, in lieu of locating the letters of the alphabet, &c., upon a disk arranged to revolve, they are located upon a fixed dial-plate in one and the same circle, around a common centre, whereat an index-hand

is secured to the driving-shaft or arbor, so as to be moved around the face of the fixed dial. This dial-plate is shown as secured to the outside of the case carrying the operating-mechanism, and also two other disks around which the units of numbers and the fractions are indicated, as shown in fig. 5 of the drawings. And in connection with the above a strip or band of paper is shown as issuing from the box at one end. On this strip, in the present instance, are the letters N. Y. C 109⅜, shown as printed.

To accomplish this, I intend to arrange the several fractions, units of number, and other characters, around a type-wheel, (see fig. 6,) to be operated in a similar manner to that described for the disk or dial-plates, and, in connection with any suitable mechanism, one arrangement of which is shown in fig. 4, take impressions therefrom at the proper times upon the strip before referred to.

This arrangement of mechanism forms no part of the present improvements, but is to be made by me the subject of a separate application hereafter. There are, however, other arrangements which may be used for the purpose, and therefore I do not deem it necessary to herein any more particularly refer to it.

It will be seen by reference to the drawings and description in this case, that the instrument described is peculiarly adapted to reporting the movements of gold or stocks at any financial centre. The right-hand disk has a unit, divided into eighths, to correspond with the smallest subdivisions by which stocks advance or recede in practice. The arrangement of the several disks permits the figures and fractions which communicate the intended intelligence to assume a position in a horizontal row, and to appear through apertures, as shown in fig. 5, plate 3, or to be seen through a single, straight, elongated aperture, similarly arranged, or in any other position that may be desired.

I am aware that a series of wheels has been alternately moved and held in place upon the same principle as is hereinbefore described. I am also aware that a right and left-hand scapement-movement has been used to move a ratchet-wheel backwards or forwards by means of electro-magnetism; therefore, neither of these contrivances is claimed by itself, but

What I do claim as my invention, and desire to secure by Letters Patent in a reporting and signalling-apparatus, is—

1. A series of wheels thus alternately moved and held in check, in combination with contrivances for giving either an advance or a retrograde movement, according to circumstances, substantially in the manner and for the purpose above set forth.

2. In a reporting and signalling-apparatus, I claim the series of disks and wheels, as above shown, in combination with the coils O O′, the armatures R R′, and the levers L L′, constructed, arranged, and operating substantially as above set forth.

3. In a reporting and signalling-apparatus, intended specially to report the rise and fall of gold, stocks, &c., I claim the use of disks operated substantially as above shown, and so arranged as to present integers representing tens, hundreds, &c., as well as fractions varying by eighths, when the whole are so disposed, either in rows or in any other pre-arranged order, as to communicate at a glance the changes in the stock-market, substantially in the manner above described.

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Witnesses:

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FREDERIC A. SAYER.