

(No Model.)

3 Sheets—Sheet 1.

A. & E. F. WEBSTER.
MECHANISM FOR SIGNALING.

No. 266,000.

Patented Oct. 17, 1882.

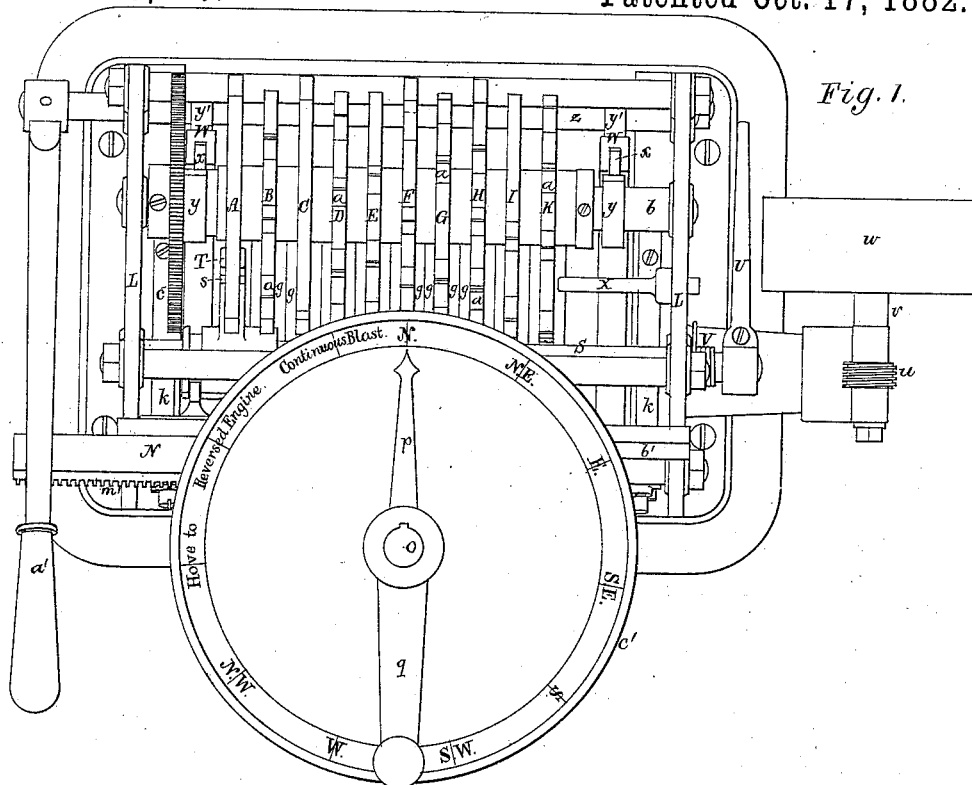


Fig. 1.

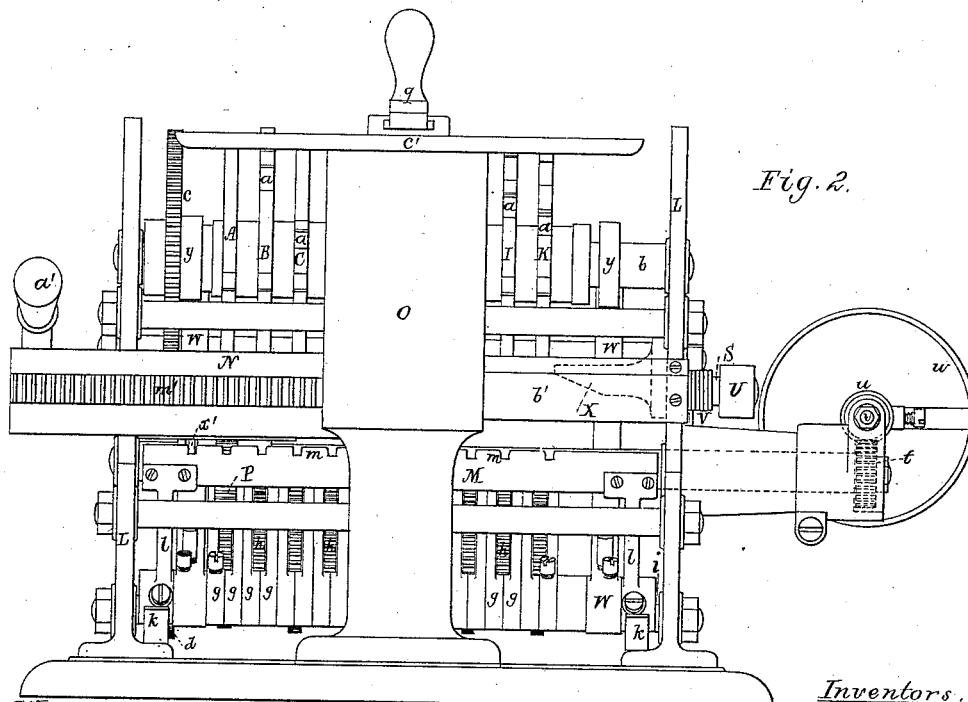


Fig. 2.

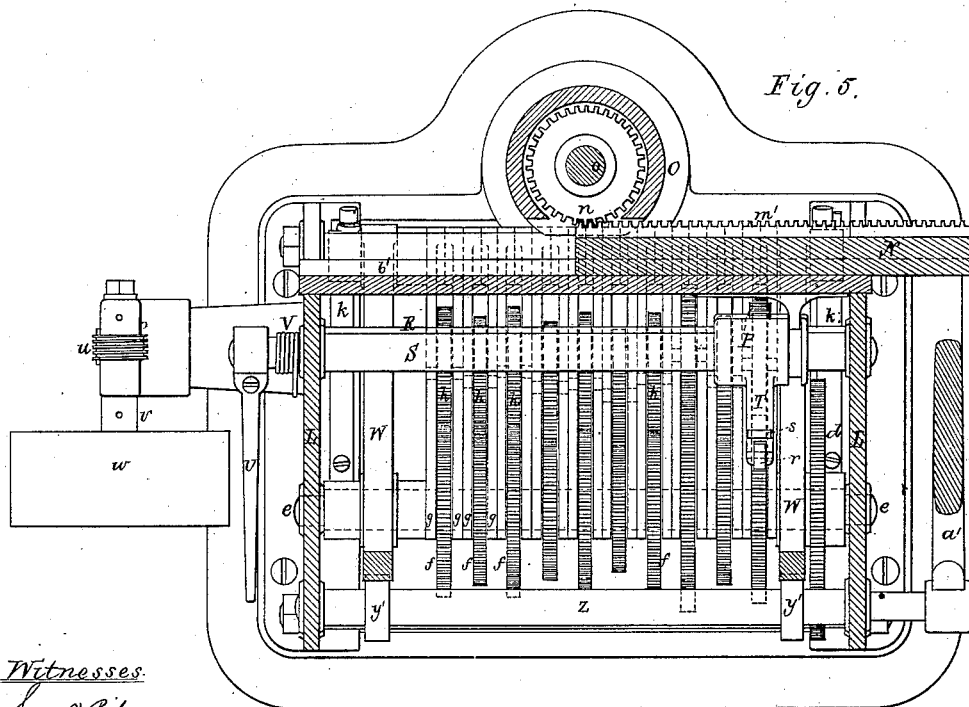
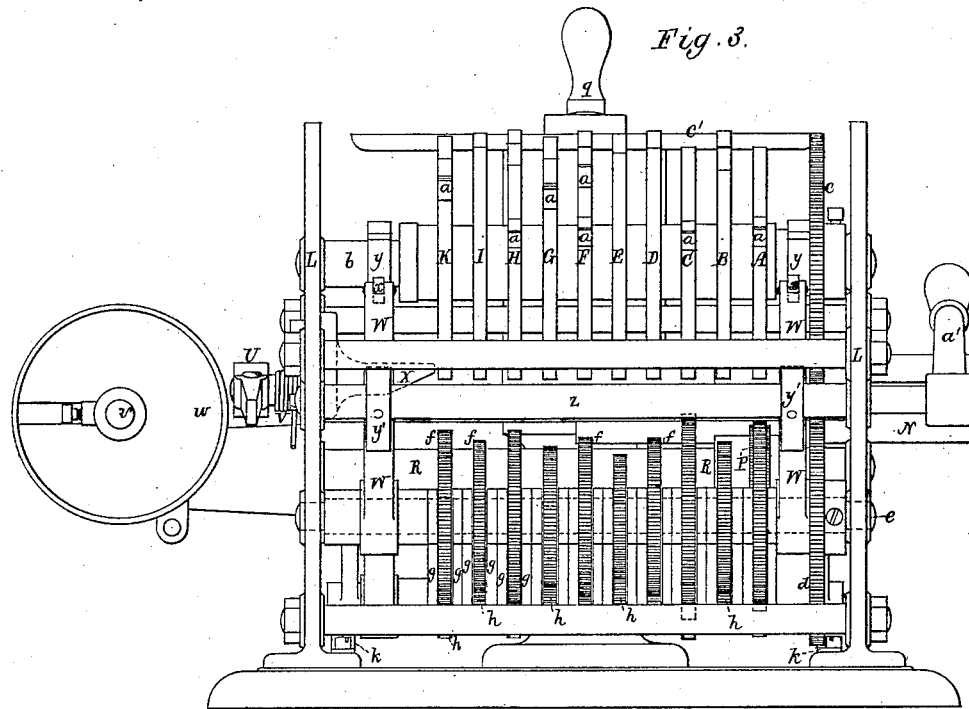
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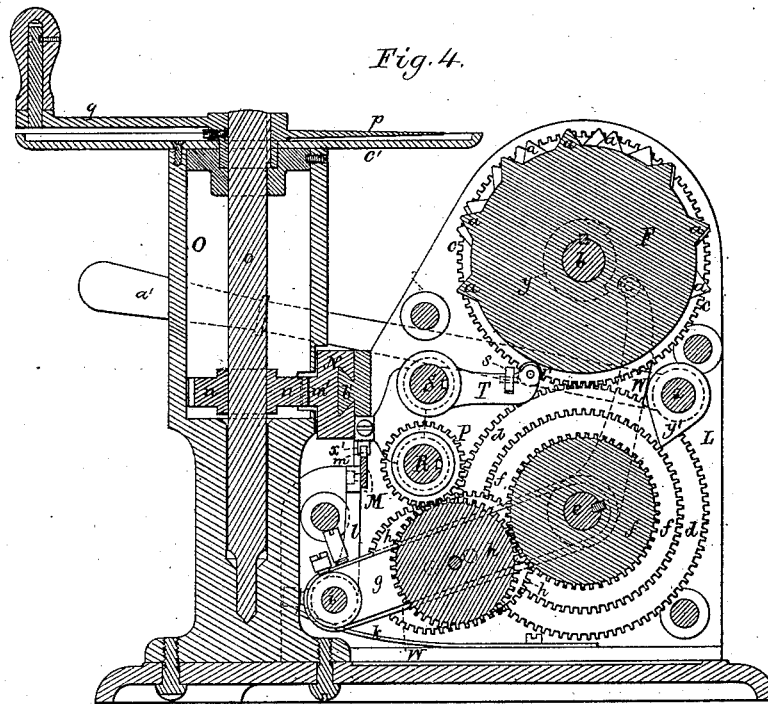
3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

AMBROSE WEBSTER AND EDGAR F. WEBSTER, OF WALTHAM, MASS.

MECHANISM FOR SIGNALING.

SPECIFICATION forming part of Letters Patent No. 266,000, dated October 17, 1882.

Application filed July 5, 1882. (No model.)

To all whom it may concern:

Be it known that we, AMBROSE WEBSTER and EDGAR F. WEBSTER, of Waltham, in the county of Middlesex, of the State of Massachusetts, have invented a new and useful Improvement in Mechanism for Signaling; and we do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

10 Figure 1 is a top view; Fig. 2, a front elevation; Fig. 3, a rear elevation. Fig. 4 is a transverse section, and Fig. 5 a horizontal section, of an automatic signalizing-machine embodying our invention, the nature of which is defined in the claims hereinafter presented. The plane of section of the last-named figure is midway between the shaft of the signal or "star" wheels and that shaft underneath it for supporting the series of gears of variable diameters, to be hereinafter described.

20 The machine is specially intended for the production of signals according to the well-known "Beaumont code" for indicating the course on which a vessel may be steering in a fog or at night, such signals usually being sounds or blasts of a whistle given at determined intervals, each blast being continued for a certain period—as one and one-half a second of time, for instance. The intervals between the blasts may be two or four seconds, while that between each signal and its repetition is to be always the same—viz., twenty seconds, for instance. To indicate that the vessel may be steering north, the whistle sounds or blasts for a second and a half of time each is to be produced, with intervals of twenty seconds between them. To indicate that the vessel is sailing on a north-east course, each signal may consist of four blasts, with an interval of four seconds between the first and second of them, one of two seconds between the second and third, and one of two seconds between the third and fourth of them, there being an interval of twenty seconds between each signal and the next one given. Thus it will be seen that, the signal for each course being a number of blasts of equal length, given at variable intervals, and that there is to be an equal interval between each signal and the next succeeding one, the machine herein described is to make such signals for eight courses—viz., north, north-east, east, south-east, south, south-west, west, and north-west;

but if signals for sixteen or thirty-two courses are required the number of signal or star wheels and their operative trains of gears is to be correspondingly or properly increased. For effecting the said eight-course signals the machine has eight star-wheels, (marked A, B, C, D, E, F, G, and H,) besides which it has two other star-wheels, I and K, one of which is to signalize that the vessel is "hove to" or stopped, the other signifying that the engine is reversed and the vessel moving "astern." These star-wheels, each of which consists of a disk having one or more triangular teeth, *a*, projecting from its periphery, are placed at equal distances apart on and fixed to one horizontal shaft, *b*, arranged in the upper part of a suitable frame, *L*, such shaft being provided, near one end of it, with a gear, *c*, to engage with another gear, *d*, of equal size, fixed upon the shaft *e*, carrying the gears *f*, of variable diameters, of the train.

Pivoted on the shaft *e* is a series of arms, *g*, having between and pivoted to them a series of gears, *h*, arranged as represented. Each gear *h* engages with one of the gears *f*, and composes with it a train for the star-wheel directly over such gear. The several arms are connected by a shaft or rod, *i*, extending through them, such shaft at its end being borne upward by two springs, *k*. Above the shaft is a notched bar, *M*, which is supported by two standards, *l*, projecting upward from the rod *i*. This bar has in its upper part a series of notches, *m*, corresponding in number to the number of signals the machine is calculated to make.

N is a bar adapted to slide horizontally and lengthwise of it on a dovetailed rail, *b'*, and provided with a toothed rack, *m'*, to engage with a pinion, *n*, fixed on a vertical shaft, *o*. The said shaft *o* extends upward concentrically within a post, *O*, carrying on its top a dial or circular plate, *c'*. An index-pointer, *p*, extended from the shaft *o*, projects over the said dial, upon which the courses are marked, as upon the card of a mariner's compass. There is also to the shaft *o* a crank, *q*, for revolving it. On turning the shaft by the crank so as to carry the index-pointer to any division or course mark on the dial, the slide-bar N will be moved so as to carry a driving-gear, P, to its proper position to put in operation the train of gears of the star-wheel for effect-

ing the signal against which the pointer may then be directed on the dial. The said gear P slides on a splined shaft, R, by which it is to be revolved, and it is so applied to the slide-bar N as to be movable by it on the shaft R. Above the shaft R is another shaft, S, which has projecting from it toward the star-wheels an arm, T, carrying two friction-wheels, *r* and *s*, arranged in it, as shown. The arm T slides on the shaft S lengthwise thereof, but is adapted thereto by a spline or feather connection, in order for the arm to turn the shaft at the proper times. The arm is applied to the slide-bar N, as is the gear P, so as to be movable simultaneously therewith when the latter is moved by the slide-bar.

To the outer end of the shaft S there is fixed an arm, U, from which, at its end, a line to lead to and operate a whistle or the sliding shutter of a lantern is to be extended upward. A spring, V, coiled on the shaft S, and fastened to it and the frame L, serves to turn the said shaft, so as to force the outer friction-roller, *r*, of the arm T up to the periphery of a star-wheel, especially when the latter may be in revolution.

Fixed to the shaft R at its outer end is a worm-gear, *t*, that engages with a worm, *v*, carried by a shaft, *v*, provided with a driving-pulley, *w*. On revolving the said driving-pulley *w* at a regular and proper speed, the shaft R will be slowly revolved, and of course will revolve the gear P to cause it to put in operation the gears for actuating the star-wheel that may then be directly over the arm T.

From the slide-bar N a tooth, *x'*, projects to engage with the notched bar M by entering either of its notches, the purpose of such tooth and notched bar being to hold the driving-gear P and the arm T in position while a star-wheel may be actuating the said arm. To depress the bar M out of engagement with the tooth, in order that the machine may be set for giving a different signal, there are applied to the shaft or rod *i* two levers, W, that are fulcrumed on the shaft *e*. The upper arm of each lever W carries a friction-roller, *x*, to work against the periphery of a circular sector, *y*, fixed on the star-wheel shaft. The said levers W and sectors *y* are to prevent any movement of the bar N while a signal is being made, as the signal must be fully completed before the machine can be set to make a different one. While the friction-roller *x* is in contact with the arc of the sector the said sector will prevent the notched bar M from being depressed out of engagement with the tooth of the bar N. Consequently the index-pointer of the dial can only be revolved while the friction-rollers *x* are out of contact with the arcs of the sectors. When this takes place each of the two levers can be moved by one of two cams, *y'*, fixed on a cross-shaft, *z*, arranged, as shown, and provided at one end with a lever or arm, *a'*, for operating it.

It being desirable at times to produce a continuous blast of the whistle, to signalize that the vessel is departing or leaving port, there is projected from the frame, and in the position as shown, a stationary cam, X, against which the friction-wheel *s* of the arm T will be borne when said arm is moved under the cam. As the arm may so move it will be depressed by the cam, and in consequence thereof the arm U will be moved downward, and the whistle sounded, the sounding of it continuing so long as the roller of the arm T may be against the cam. In this case the driving-gear P will not be in engagement with any of the gears for operating the star-wheels.

What we claim as our invention in the signaling-machine substantially as described is as follows:

1. The combination of the series of variable gears *f* and the operative gears *c*, *d*, and *h*, and the supporting-arms of the said gears *h*, with the series of star-wheels A B C, &c., and the sliding arm T and gear P, combined with the slide-bar N, all being adapted and arranged substantially in manner and to operate as set forth.

2. The combination of the tooth *x'* and the notched bar M, with the slide-bar N, and the series of arms *g*, provided with the actuating-gears *h* of the series of variable gears, all being adapted, arranged, and to operate substantially as set forth.

3. The combination of one or more sectors, *y*, and levers W with the series of star-wheels A B C, &c., the notched bar M, and the slide-bar N, provided with the tooth *x'*, the said slide-bar and star-wheels being provided with operating-gears *c d f* and *h*, arranged, adapted, and to operate substantially as set forth.

4. The dial, its pointer, and the latter's shaft, and the pinion *n*, in combination with the slide-bar N, provided with the toothed rack *m'*, and the sliding arm, the gear P and its splined shaft R, as set forth.

5. The combination of the shaft *z* and the cams *y'* thereof with the levers W, applied to the sectors *y* and to the notched bar M, substantially as set forth.

6. The supporting-frame and stationary cam X, in combination with the splined shaft S, its whistle-operating arm U, and the sliding arm T, as set forth.

7. The shaft *b*, its series of star-wheels A B C, &c., the shaft *e*, the connecting-gears *c d*, and the separate train of gears *f* and *h*, the former carried by shaft *e*, and their supporting-arms *g*, in combination with the slide N, the splined shaft R and its gear P, the splined shaft S, provided with arm U and its arm T, all arranged as and for the purpose set forth.

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