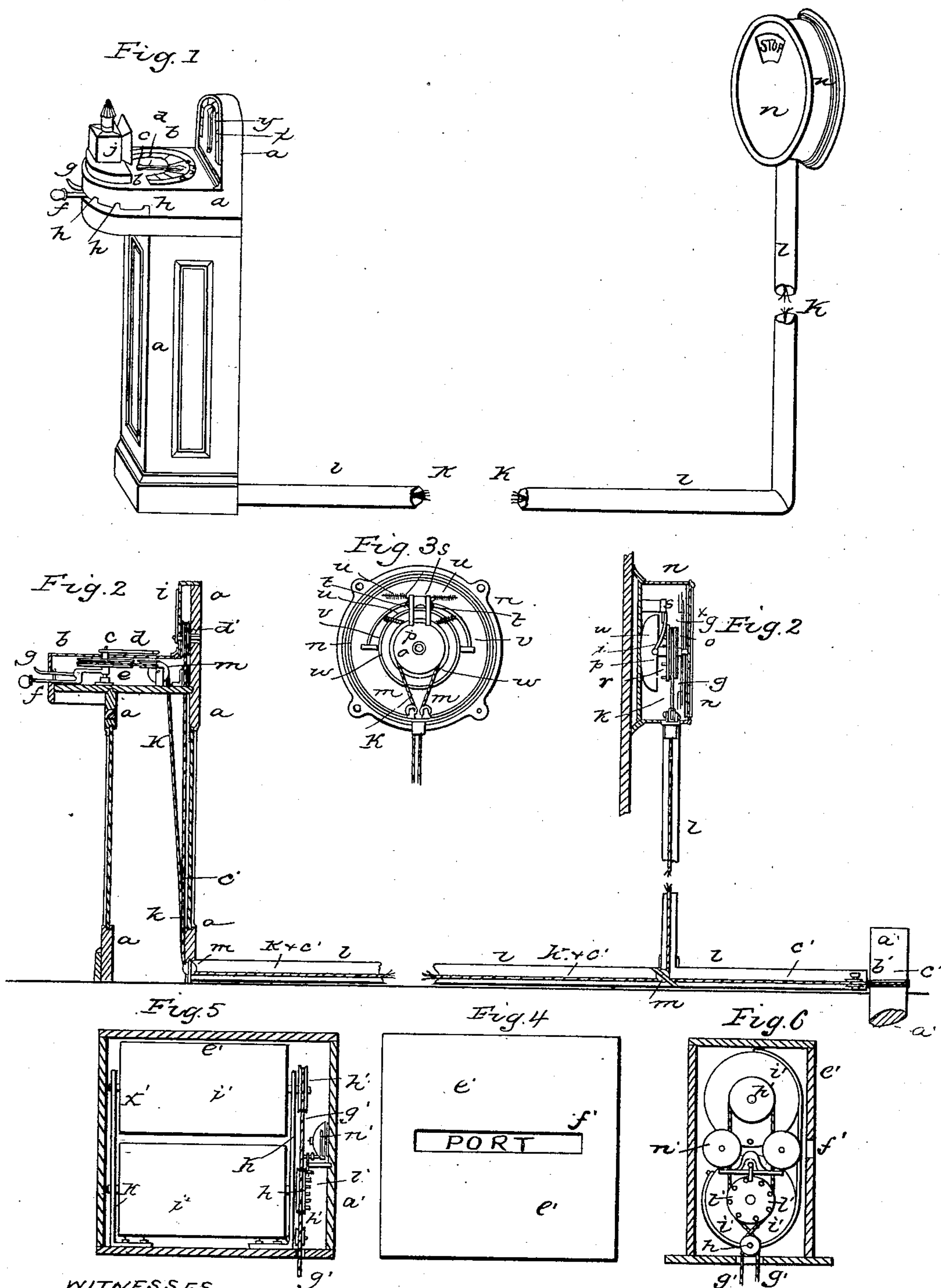


J. S. GISBORNE.
Signalling Apparatus.

No. 60,502.

Patented Dec. 18, 1866.



WITNESSES
John King
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IMPROVEMENT IN SIGNALLING APPARATUS.

JOHN SACHEVERELL GISBORNE, OF LIVERPOOL, ENGLAND.

Letters Patent No. 60,502, dated December 18, 1866.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN SACHEVERELL GISBORNE, of Liverpool, England, electrical engineer, have invented certain new and useful "Improvements in Apparatus for Signalling on board ship and elsewhere;" and I do hereby declare that the following is a full and exact description of the construction and operation thereof, reference being had to the accompanying sheet of drawings, making a part of this specification, and to the figures and letters of reference thereon; that is to say—

The object of my invention is to enable persons separated from each other a considerable distance, or placed in such circumstances that speech cannot always be heard, to communicate by signals, both visible and audible. I effect the said communication by mechanical apparatus, so arranged with corresponding visible signals at both ends that motion given by hand at the sending end of the apparatus will bring into view the corresponding and desired order, message, or device, at the receiving end. It also consists in means used in connection therewith, whereby, at the same time, a bell or gong is sounded as to invite attention to the visible signal given.

My said apparatus can be employed for signalling or communicating on or in many places; as instances, on railway trains, in mine and mine shafts, from one part to another in manufactories and warehouses. As, however, it is particularly well adapted for signalling between the captain or officer in command of a ship and the engineer or steersman, a comparatively limited number of the messages being necessary, I will hereinafter particularly describe apparatus for use on board ship, as any mechanician will be competent, from the description which follows, to apply similar apparatus in other places and positions, where the conditions are somewhat different. And in describing the said apparatus I will first refer to all the parts and afterwards state particularly what I claim as of my invention.

The drawings represent, by—

Figure 1, a perspective view of complete apparatus, the exhibiting part at the receiving end consisting of a rotatable disk.

Figure 2 is a longitudinal and vertical section of the apparatus shown by fig. 1; part of a rudder stock provided with tell-tale mechanism being also shown; and

Figure 3 is an elevation of the exhibiting apparatus, the front of the case and disk being removed.

Figure 4 is a front elevation.

Figure 5, a longitudinal elevation, the front of the case being removed; and

Figure 6, an end elevation, the end of the case being removed; all of another modification of receiving and exhibiting apparatus, designated by me the roller and canvas arrangement, to be used when preferred and there is room, in place of the disk arrangement first above referred to.

In figs. 1, 2, and 3, like letters of reference denote the same parts.

Of the sending apparatus, *a* is the stand or frame; it is usually made ornamental and placed on the bridge or other exposed and convenient part of the ship. *b* is the dial whereon the orders, messages, characters, or devices, of which, as before mentioned, there are counterparts at the receiving end, which constitute the visible signals, are inscribed or placed. *c* is a stud carrying the pointer, *d*, and pulley, *e*; these parts are free to be operated by the handle, *f*, which can be moved laterally. *f* is provided with the thumb-spring, *g*, shaped to fit into the notches, *h*, so as to hold the parts in the desired position and make it certain that just sufficient motion has been given and transmitted to bring the whole of the desired signal into view at the receiving end; that is to say, to bring into view the signal corresponding to that opposite to which the pointer, *d*, has been brought. *i* is another dial, provided with a pointer, to be operated from the receiving end, as hereinafter mentioned, and *j* is a lamp to illuminate both dials and to allow them to be seen at a glance by day and night. The motion of the sending apparatus is transmitted from the pulley, *e*, by the double line or endless conductor, *k*, made of wire, wire cord, rope, chain, bands, or other flexible material or construction not easily stretched. I prefer wire cord. *k* is led away from the sending apparatus to the receiving apparatus; it operates the latter. In conveying *k*, under ordinary circumstances, from one place to another in a ship, it is convenient to use containing pipes or tubes, here marked *l*, and anti-friction pulleys, *m*, for by these *k* can be carried round curves and angles with great ease. In the receiving apparatus, the case of which is marked *n*, the motion-transmitter,

k, passes over the pulley, *o*, and by being "taut" or fastened thereto, imparts motion to it as well as to the shaft, *p*, and the disk, *q*, fixed on the latter. On the surface of *q* the signals corresponding to those on the dial, *b*, are inscribed or formed at such distances apart that only one can be seen when the thumb-spring, *g*, is in any of the notches, *h*. When *o p* and *q* are made to move, each of the tappets, *r*, secured in *o*, catches one of the levers, *s*, hung on or supported by pins, *t*, and kept in position by springs, *u* and *u*^x, and causes one of the hammers, *v*, to strike the gong or bell, *w*, and thereby give audible signals, and this in every case, whichever way the pulley, *o*, is made to move or rotate. The ends of the levers, *s*, are provided with short jointed pieces, so as to allow the tappets, *r*, to pass in one direction one of the hammers without raising it and sounding *w*. The opening, *x*, in the front of *n*, is just large enough to allow one order or visible signal to appear. The word "stop," shown, is an order frequently given by the captain to the engineer of a steamship.

In practice it is desirable that the engineer or steersman of a ship should be enabled to reply that he has received a signal and that he understands it; for this purpose sending apparatus similar to that above described is provided and connected to operate, by motion-conductors, the pointer, *y*, and bring it opposite the desired signal on *i*. Instead of providing special sending apparatus from a steersman, the motion of the rudder itself can be made to give the reply, and thereby act as what is known as a tell-tale. Details are shown in fig. 2, where *a'* is a part of a rudder-stock, *b'* a wheel or lever fixed thereon, *c'* motion-transmitter, passed over or connected to *b'*. *c'* is led through the same tube, *l*, as *k* to dial *i*, within which latter *c'* passes over or is connected to pulley *d'*, the axis or shaft of which carries and gives motion to the pointer *y*. In figs. 4, 5, and 6, *e'* is the case, with opening *f'*. *g'* is the motion-transmitter, similar to *k*, above mentioned; it passes over the pulley, *h'*, and gives motion thereto, as well as to the rollers, *i'*, and the canvas, *j'*; on the latter the visible signals are formed or placed. The rollers, *i'*, are supported in the frame, *k'*, and move in the same direction at the same time, thereby allowing the desired order to be brought opposite to *f'*. The word "port," shown, is a well-known nautical term. When the pulley, *h'*, is moved, the tappets or pegs, *l'*, come into contact with the lower ends of the spring-hammers, *m'*, and cause them to strike the bells, *n'*.

That others may be enabled to operate apparatus constructed according to my invention, I will now set forth how this is effected. The handle, *f*, and spring, *g*, are moved laterally, so as to bring the pointer *d* opposite to the signal which it is desired should appear at *x*, at the receiving end; the said movement by *e* and *k* is transmitted to *o p* and *q*, and by the length of stroke or movement the visible signal on *q* is brought opposite to *x*. The motion of *o* at the same time, however, brings the tappets, *r*, whichever way the movement may be made, into contact with *s*, and thereby, with the assistance of *u* and *u*^x, the hammers, *v*, are caused to strike *w* and give the audible signal; thus giving an audible signal whenever a visible one is given. The like motion operates to produce similar results in the arrangement shown by figs. 4, 5, and 6, and I would have it here understood that where space is available I prefer the arrangement shown by these last-mentioned figures, because the motion-transmitters do not require attention so frequently as when arranged in the manner shown by figs. 1, 2, and 3, so as to enable the receiver of a signal to give reply that the order has been received. Sending apparatus to be operated by hand can be provided or the motion can be taken from *a'* by *b'* and *c'* and transmitted by the latter to the pulley *d'*, and the indicating pointer *z*. The materials of which the several parts are or may be constructed are shown by coloring of the ordinary character on the sheet of drawings.

Having now described the nature and particulars of my said invention, and how the same may be carried into effect, I would have it understood that what I claim is—

1. The pulley *e*, stud *c*, pointer *d*, and handle *f*, arranged substantially in the manner described, as means for giving motion to one or more endless or double-line flexible motion-conductors, *k*, to give either audible or visible signals, or both.

2. In combination with the above the spring *g*, constructed to fall into the notches *h*, in the manner and for the purpose set forth.

3. The dials *b* and *i*, placed close together, substantially as shown on the drawings, so that they are illuminated by one lamp and can be seen at a glance.

4. The employment of one or more flexible endless or double-line conductors, *k*, as means for conveying or communicating motion for operating signalling apparatus, and for conveying or communicating the motion of a rudder stock, substantially as described.

5. The combination of the pulley *o*, disk *q*, case *n*, with opening *x*, and motion-conductors *k*, either with or without the bell or signalling apparatus, substantially as described.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

JOHN SACHEVERELL GISBORNE.

Witnesses:

JOHN P. KING,
JOHN DAVIES.