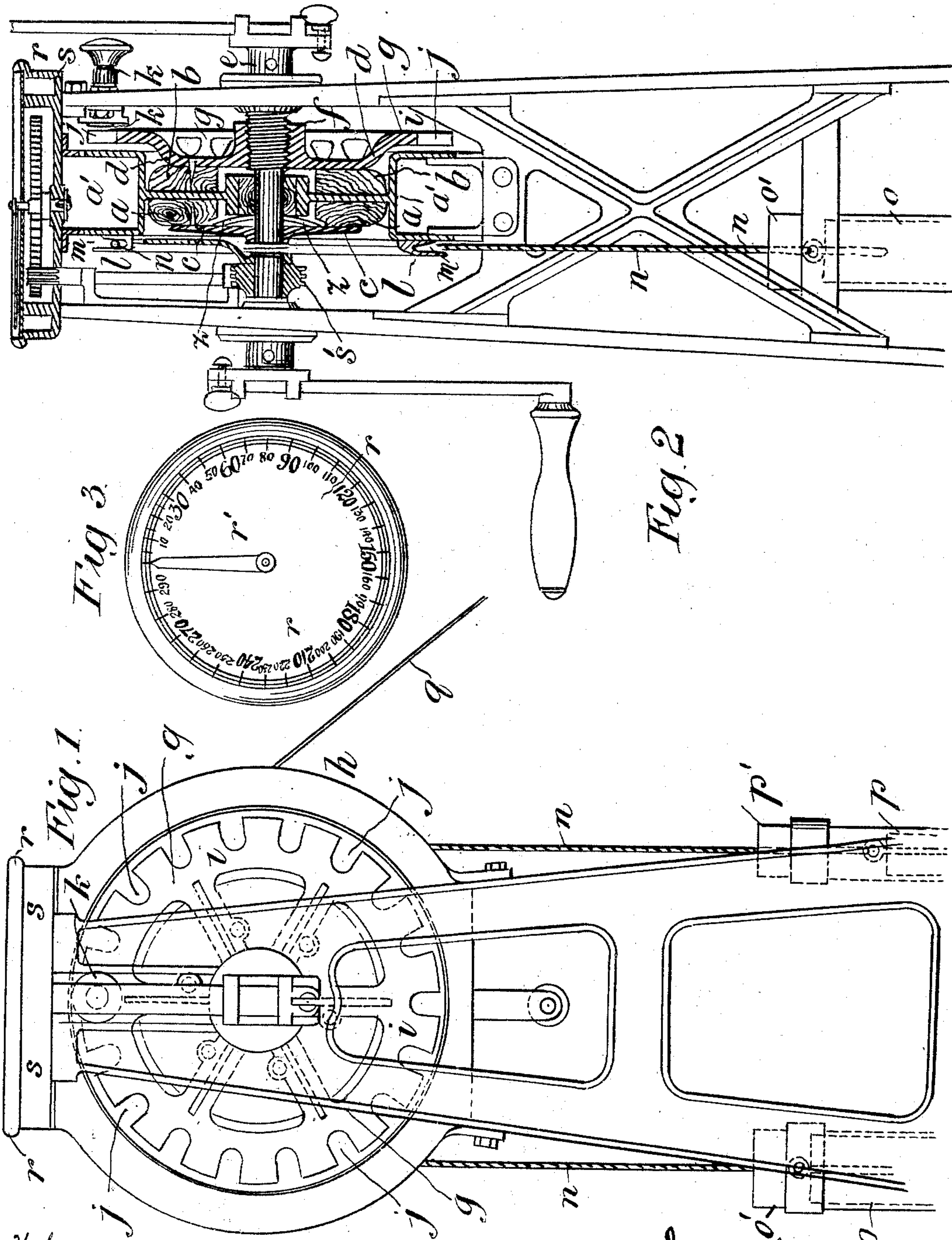


W. THOMSON.
 NAVIGATIONAL SOUNDING MACHINE.
 APPLICATION FILED JULY 31, 1906.

928,007.

Patented July 13, 1909.



Witnesses
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NAVIGATIONAL SOUNDING-MACHINE.

No. 928,007.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed July 31, 1906. Serial No. 328,640.

To all whom it may concern:

Be it known that I, WILLIAM THOMSON, BARON KELVIN OF LARGS, of Largs, Scotland, have invented certain new and useful
5 Improvements in and Connected with Navigational Sounding-Machines, of which the following is a specification.

This invention, which relates to navigational sounding machines, has for its object
10 to produce a machine which shall offer a constant resistance to egress of the wire with a view to getting flying soundings, approximately satisfactory, without the constant use of a depth gage. Steel wire is used for
15 the sounding line, which is coiled on a drum. When the wire is being paid out, this drum runs loose on the main spindle.

In order that the invention may be properly understood and readily carried into effect, there is hereunto appended one sheet of
20 drawings, of which—

Figure 1 is a side elevation of a navigational sounding machine embodying the invention. Fig. 2 is a back elevation of the same. Fig. 3 is a plan of the indicating dial
25 placed on the top of the machine.

The mechanism for braking the drum of the sounding machine, illustrated in Figs. 1 and 2, is the same as that described in British
30 Patent No. 22030—1903, with the addition of a springy washer *z*, which pushes the reel clear of the lignum vitæ *a*; when the pressure on the other lignum vitæ *b*, is relieved. Thus the reel can run free on the spindle, and
35 it may be clamped by means of two annular surfaces of lignum vitæ *a*, *b*, carried by the two brake-disks *c*, *d*, and brought into contact with the reel *a*¹ by action of a nut and a thread cut on the spindle *e*. One of these
40 brake-disks, namely, that marked *c* is keyed to the spindle *e* aforesaid. The other brake-disk marked *d* is controlled by a nut *f* working on a portion of the spindle which is screw-cut as shown. It is made in one casting with
45 this nut.

The nut *f* forms the center boss of the

wheel *g* which has spokes *h*, Fig. 1, and a rim *i*, in the circumference of which a number of notches *j* are cut, the object of the notches being to allow the entry of a stop pin *k* adapted for temporarily clamping the wheel
50 *g* and nut *f* to the frame of the machine.

The constant resistance to egress of the wire *q* is arranged for as follows:—On one side of the reel is fitted a projecting rim *l* in
55 which is cut a V-groove *m*, the angle of the V being for example about 40°. In the groove of the pulley *m* is laid a brake-cord *n*, to the ends of which are attached weights *o*, *p*, one weight, namely that marked *o*, being about three or four times as heavy as the
60 other one marked *p*. For example, the heavy weight may be 6 lbs. and the light weight 2 lbs. These weights are made of cylindrical pieces of lead, in which iron hooks
65 for fastening them to the brake-cord are fixed. The weights *o*, *p*, move vertically in guide-tubes *o*¹ *p*¹ and the brake-cord *n* is of such length as to allow about 5 cms. travel. The heavy weight is at the end which the
70 cord tends to lift, by means of its friction with the groove of the pulley *m*, when the wire *q* is running off the reel *a*¹. After this weight has been lifted a few centimeters, the light weight comes to the bottom of its
75 guide-tube, and the tension of the cord *n* then ceases to be enough to lift the heavy weight farther. Thus the action is automatic. The resistance offered to the reel *a*¹ at the radius of the V-groove, is very nearly
80 constant, being the difference in tension of the brake-cord at the two ends, and, of these tensions, the larger is absolutely constant, while the smaller, though subject to frictional variations, always remain small, and so does
85 not cause any important variation in the resistance against the rotation of the reel.

A large horizontal dial *r* for indicating the number of fathoms of wire paid out is placed on the top of the framework *s*, as seen more
90 particularly in Fig. 3, and the pointer for this dial is worked from a worm wheel *s*¹ which

turns with the wire reel or drum a^1 . The pointer r^1 and worm wheel s^1 are connected by the necessary gearing. The dial of the counter is graduated to show the actual
5 amount of wire out.

Having thus described the invention, what I claim and desire to secure by Letters Patent is:

10 In a navigational sounding machine, the combination of an axially movable reel, a braking member adapted to frictionally engage one side of the reel, a second braking member adapted to frictionally engage the

other side of the reel, means for forcing said second braking member against the side of 15 the reel to cause the reel to be clamped between the braking members, and means whereby the reel is automatically moved out of frictional engagement with said first-named braking member when the pressure 20 on the second braking member is relieved.

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Witnesses:

JOHN LIDDLE,
JOHN TRAIN LIDDLE.