

A. LIETZ.

CLUTCH FOR NAVIGATIONAL SOUNDING MACHINES AND THE LIKE.

APPLICATION FILED MAY 17, 1909.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

1,047,421.

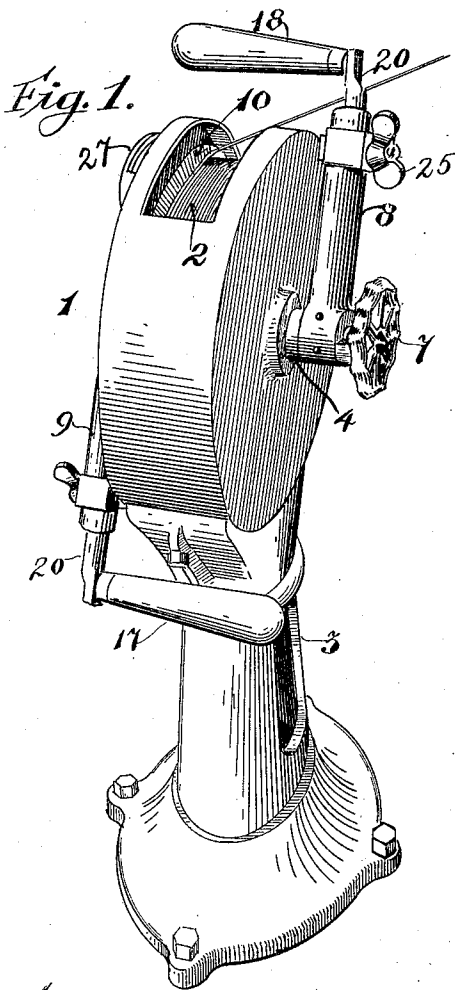


Fig. 2.

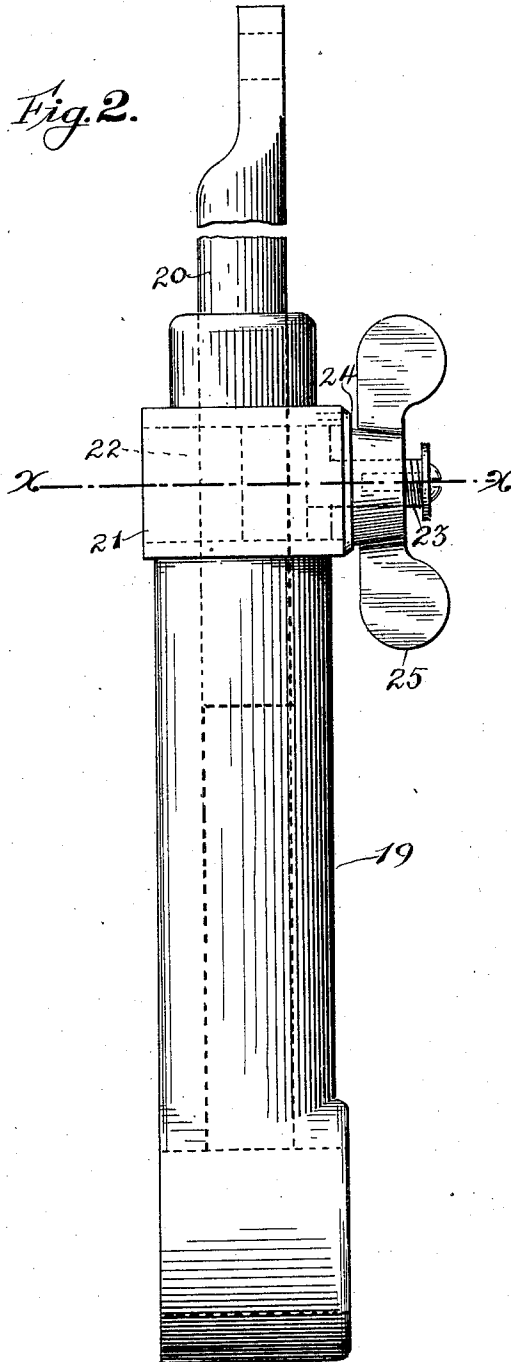
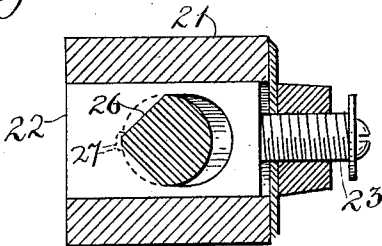


Fig. 3.



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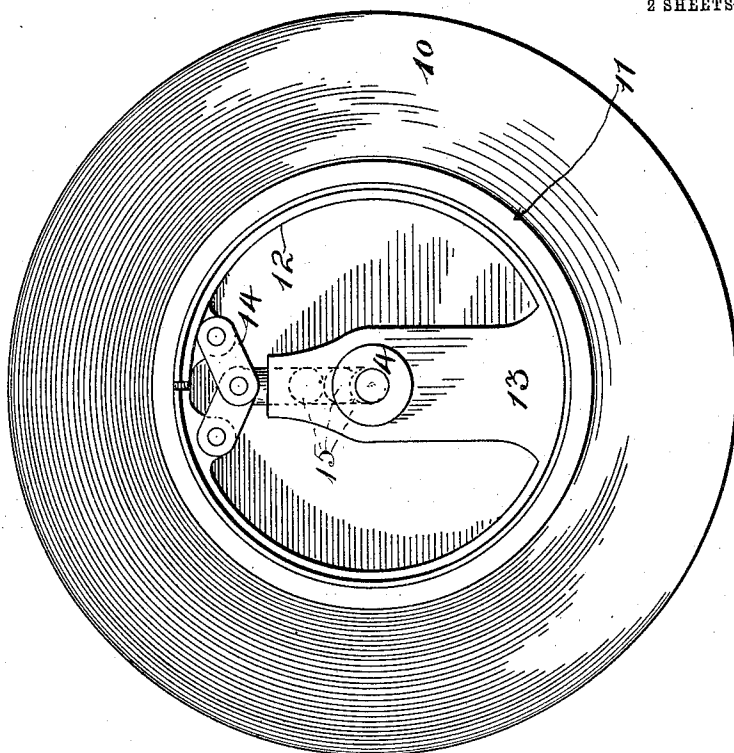


Fig. 5.

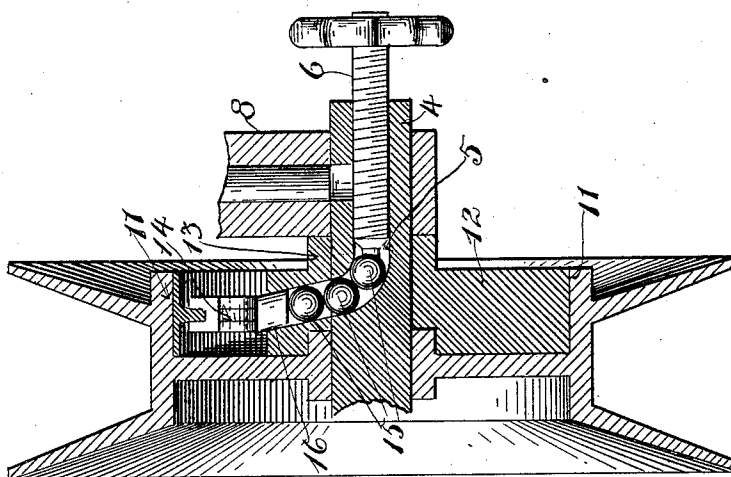


Fig. 4.

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UNITED STATES PATENT OFFICE.

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CLUTCH FOR NAVIGATIONAL SOUNDING-MACHINES AND THE LIKE.

1,047,421.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed May 17, 1909. Serial No. 496,396.

To all whom it may concern:

Be it known that I, ADOLPH LIETZ, citizen of the United States, residing at San Rafael, in the county of Marin and State of California, have invented a new and useful Improvement in Clutches for Navigational Sounding-Machines and the Like, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

My invention relates to clutches for navigational sounding machines and the like and has for its primary object to provide in machines of the character referred to novel and improved means for the dropping and raising the lead. In sounding with a lead and line, the line is frequently broken. The greatest source of parting the line is the sudden stoppage thereof while it is running out at a rapid rate.

A secondary object of my invention is to provide in a machine of the character described novel and improved means for stopping the line gradually to avoid the breaking due to sudden stoppage.

Navigational sounding machines are frequently used at night and the exigencies of shipboard life, sometimes demand that they shall be manipulated by inexperienced hands.

Another object of my invention is to provide a navigational sounding machine of construction so simple that any one familiar with similar devices, without special instructions, can operate it, not only in daylight but in the dark.

A vital necessity on shipboard is that all appliances shall be compact wherefore another object of my invention is to provide a navigational sounding machine, that may be made to occupy less space when out of use than when it is being used.

Other objects will appear in the following specification; and I attain my objects by the means illustrated in the accompanying drawing of which—

Figure 1 is a perspective view of my machine. Fig. 2 a view of a part of the handle shown in Fig. 1. Fig. 3 a sectional view taken along the line $x-x$, Fig. 2. Fig. 4 a sectional view of reel and my combined winding clutch and brake. Fig. 5 a side elevation of my reel and clutch.

The same numeral of reference marks the same part through the various views.

With the aforesaid objects in view my in-

vention consists in the parts, arrangements and combinations set forth in the following description and particularly pointed out in the claims.

Referring to the drawing, 1 is a case of substantially the form shown, having an opening 2 through which the line passes, and being mounted on the pedestal 3. Case 1 supports the journals for the shaft 4, and protects the internal mechanism from injury.

Shaft 4 is hollow for part of its length, as at 5, being threaded to receive the screw 6, operated by the handwheel 7. Power for winding the line is applied to the shaft either by hand through the handles 8, 9, or by suitable gear connections with a motor.

The reel 10 is loosely mounted on shaft 4, and has an annular rim 11 against the inner surface of which the clutch member 12 is engageable.

The friction clutch 12 is located within the reel 10, and its rim 11, and is rigidly attached to shaft 4 through the supporting piece 13. A toggle joint device 14 is fixed to the clutch member in substantially the position indicated in Fig. 5; and this clutch communicates with the hand-wheel 7 by suitable connections as the screw 6, the balls 15, and the rod 16, working in registering channels in the shaft and supporting piece 13 and bearing on the lowest member of the toggle joint, which may thus be raised or allowed to fall by turning screw 6 by wheel 7. The described connection is a simple and effective mode of communication between the hand-wheel 7 and the toggle joint 14; but I do not wish to confine myself to the specific form shown, as a bell-crank lever connection, or a series of rollers instead of the balls, and an outer sleeve instead of the inner screw may very well be substituted.

The clutch is split between the toggle joint connections and as the lowest member of the toggle joint is pushed upward, the clutch spreads and engages the inner surface of the rim of 11.

It will be seen from the foregoing, that the clutch is both the driving device and the braking device for my machine; for when the line is running out too rapidly, a touch on the hand-wheel 7 causes the partial engagement of the clutch, and produces a braking effect, the handles 8 or 9 being held by the operator; while a further pressure stops the line altogether from running out,

and places the reel in condition for winding. In this manner I produce my desired result of gradually stopping the running out so as to avoid rupturing the line and losing the lead, which in recent sounding devices has become an expensive article of manufacture.

Turning now to the means for rendering my device capable of easy manipulation and making it compact when out of use, I provide handles 8, 9, which are permanently fixed to the shaft, but are constructed so that the hand-pieces 17, and 18 may be turned out of the way in the position shown in Fig. 1, and may be shortened at the same time, their shortened position also being shown in the same figure. My said means consist of the hollow arm 19, having the squared portion 21, the movable piece 20 which is carried in the arm 19, and which supports the hand piece 17, 18, the slidable block 22, which is adapted to enter the squared portion 21, and is rigidly attached to screw 23, the washer 24, and the wing-nut 25. Movable piece 20 is provided with a squared portion 26, and block 22 has a passage way for piece 20 having a groove 27, for receiving the edge of said squared portion, when said portion is set in position, and wing-nut 25 draws block 22 against said edge, thus holding the handle in a lengthened condition, with the hand-piece turned outwardly. Releasing wing-nut 25 permits the handles to be rotated into the position shown in Fig. 1, and the piece 20 to be dropped so as to shorten the handle, tightening the wing-nut acting to clamp the piece 20 in that position.

A revolution counter 27 is attached to the case and operatively connected in any suitable manner.

To operate my device the hand-pieces 17 and 18 are turned outwardly in the manner above described, the movable piece 20 pulled upward and clamped by the wing-nuts 25. The lead is then thrown; and the reel being loose on shaft 4 pays out the line. If the rate of paying out is too great, hand-wheel 7 is turned so as to effect a tighter or looser engagement between the clutch and the reel thus throwing the control of the reel partially in the hands of the operators holding the handles, and when it is desired to stop the running out of the line altogether, hand-wheel 7 is turned until the expansion of said clutch becomes great enough to engage the reel without slip. In this state the apparatus is ready for winding, and the line is reeled in by turning the handles.

Another advantage of my apparatus consists in its capacity for giving truer observations. When the line runs out very rapidly, the lead strikes the bottom with a blow that tends to affect the gage thereon, causing it to show a greater depth than

actually exists; but when allowed to touch the bottom without jar, the actual pressure of the water at the actual depth alone affects the gage, and the reading thereon is correct.

A further utility of my device appears in the relation of my handle to the winding in process. When the wire is being wound in, the weight of the lead tends to cause it to run back again; and turning either of my handles to the position in Fig. 1, causes it to act as a stop against the frame, and thus prevent the running out of the lead.

Of course, the device may be operated by abler power than the operator's arms if desired; in which case, the gearing between the sounding machine and the motor is relied on to have sufficient flexibility, to act similarly to the operator's arms in slowly stopping the line, coöperating to this end with the gradual application of the clutch-brake.

Having described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine of the class described, the combination of a suitably mounted shaft having a hollowed portion, a member rotatably mounted on said shaft, an expansible and contractible friction-clutch member rigidly mounted on said shaft and coöperable with said rotatably-mounted member and having a hollow portion registering with the hollow portion of said shaft, a device for expanding and contracting said friction-clutch member, a member longitudinally movable in the hollow portion of said shaft, and a series of rolling members disposed in the hollow portions of said shaft and friction-clutch member between said expanding and contracting device and said longitudinally-movable member.

2. In a machine of the class described, the combination of a rotatable shaft having a longitudinal bore extending for a portion of its length and opening to the periphery of the shaft at its inner end, a member loosely mounted on said shaft, a clutch member rigidly mounted on said shaft and including operating means to cause its engagement with said loosely-mounted member and having a passageway leading from the peripheral end of the bore of said shaft, rolling members in said bore and passageway, means in said bore to cause said rolling members to move and to operate said clutch-operating means, and means to rotate said shaft.

3. In a machine of the class described, the combination of a rotatable shaft having a screw-threaded bore for a portion of its length and said bore at its inner end extending to the periphery of the shaft, a supporting-piece rigidly secured to said shaft and having a passageway leading from the

peripheral end of the shaft-bore, clutch
members on said supporting-piece, a device
for operating said clutch members and in-
cluding a member disposed in said passage-
5 way, a screw in said shaft-bore, rolling
members in said bore and passageway be-
tween said screw and said operating-device
member, a member loosely mounted on said
shaft and with which said clutch members

are engageable, and means to rotate said 10
shaft.

In testimony whereof I have set my hand
this 28th day of April A. D. 1909, in the
presence of the two subscribed witnesses.

ADOLPH LIETZ.

Witnesses:

FRANK P. MEDINA,
A. E. LARBER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
