No. 833,842. PATENTED OCT. 23, 1906.

W. E. MARHOFF.

FISH LINE REEL.

APPLICATION FILED FEB. 5, 1906.

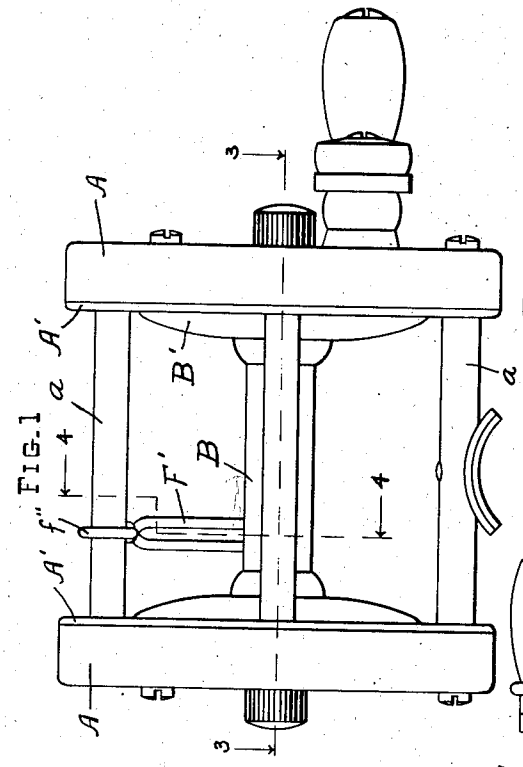


FIG. 1

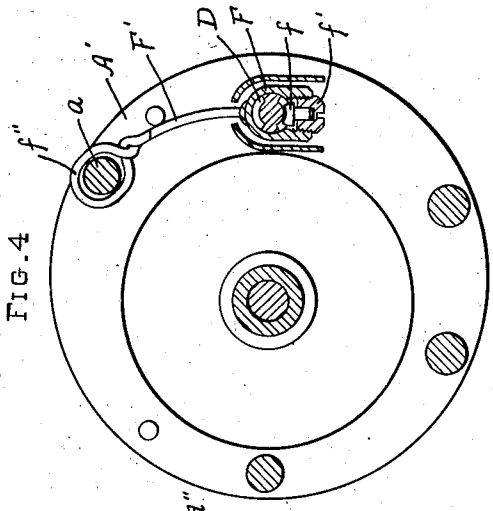


FIG. 4

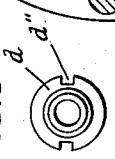


FIG. 5

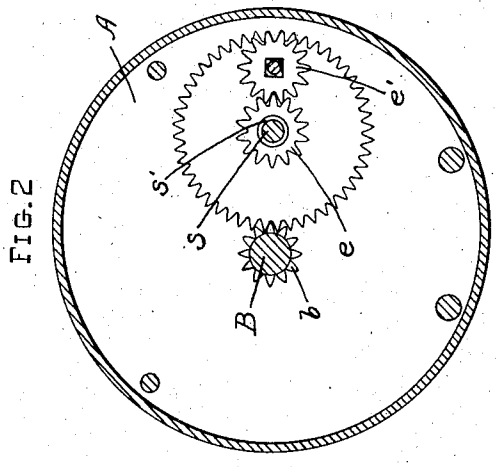


FIG. 2

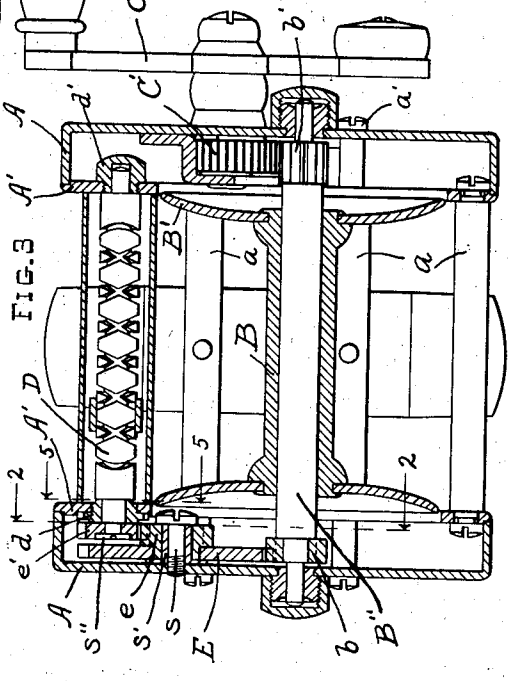


FIG. 3

Witnesses:

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UNITED STATES PATENT OFFICE.

WALTER E. MARHOFF, OF KALAMAZOO, MICHIGAN.

FISH-LINE REEL.

No. 833,842. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed February 5, 1906. Serial No. 299,528.

To all whom it may concern:

Be it known that I, WALTER E. MARHOFF, a citizen of the United States, residing at Kalamazoo, Michigan, have invented certain new and useful Improvements in Fish-Line Reels, of which the following is a specification.

This invention relates to improvements in fish-line reels.

It relates particularly to improvements in level winding devices therefor.

The objects of this invention are, first, to provide, in a fish-line reel, an improved level winding device which is very compact and simple in structure and may be embraced in a structure without materially increasing the diameter of the frame and still have a spool of large capacity; second, to provide, in a fish-line reel, an improved level winding device in which all of the parts are inclosed and at the same time are readily accessible should it be desirable to remove them for the purpose of oiling or the like.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a structure embodying the features of my invention. Fig. 2 is a transverse section taken on a line corresponding to line 2 2 of Fig. 3. Fig. 3 is a longitudinal section taken on a line corresponding to line 3 3 of Fig. 1, the spool-shaft being shown in full lines. Fig. 4 is a detail transverse section taken on a line corresponding to the broken line 4 4 of Fig. 1, showing the arrangement of the parts. Fig. 5 is an elevation view of the bearing-block *d* for one end of the line-guide shaft D.

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, the head-plates A are chambered to receive the gear. These are secured to the head-rings A′ by suitable screws, as *a′*. The head-rings A′ are secured together by suitable pillars *a*. The spool B is provided with suitable flanges B′ at each end. The spool is mounted upon the shaft B″, which is provided with a pinion *b′* at one end, with which the gear C′ is arranged to mesh. The gear C′ is carried by the shaft or spindle of the crank C.

A reversely-threaded line-guide shaft D is mounted in suitable bearings *d d′*, carried by the head-rings A′. These bearings are threaded into suitable openings in the head-rings. The opening for the bearing *d* is of such diameter that when the bearing is removed the shaft can readily be removed through the bearing-opening. This enables the removal of the line-guide shaft from the frame without its being necessary to remove but one of the head-plates. The bearing D is suitably notched at *d″*, so that it can be readily engaged by a tool for inserting or removing the same.

On the end of the guide-shaft D is a pinion *e′*. This pinion is secured to the shaft by the screw *s″*, which is tapped into the end thereof, the pinion being countersunk to receive the head of the screw, as clearly appears in Fig. 3. A pinion *e* is arranged to mesh with this pinion *e′*. The pinion *e* is mounted upon the stud *s*, which projects inwardly from the head-plate A, the stud being threaded into the head-plate. On the stud is a suitable bushing, as *s′*, upon which the pinion *e* revolves. Secured to this pinion *e* and mounted upon the same stud is a gear E. This gear lies beside the pinions *e e′* and is arranged to mesh with the pinion *b* on the spool-shaft B″. The line-guide shaft is thus connected to the spool, so that when the spool is operated the line-guide shaft is operated therewith.

By arranging the connecting-gear as I have illustrated and described it is not necessary to enlarge the diameter of the reel-frame in order to properly connect the line-guide eye to the spool-shaft. The parts are freely accessible and are readily assembled or disassembled, as occasion may require.

On the line-guide shaft is a casing F, by which the line-guide F′ is carried. Within the casing F is a pin *f*, arranged to engage the threads on the shaft. (See Fig. 4.) This pin is pivoted in the block *f′*, which is screwed into the casing. By this means the shaft-engaging pin can be readily adjusted to properly engage the shaft. The line-guide eye F′ projects upwardly from the casing F and is provided with a loop *f″* at its upper end,

which embraces one of the pillars *a* of the frame. This prevents the turning of the case F upon the shaft. The line-guide eye F′ is preferably formed of wire. It has, as will be noted, a very long line-receiving eye, so that the liability of the line becoming entangled therein when running out is reduced to a minimum and so that the same runs freely therethrough whether the spool has a large or a small quantity of line thereon. The line-guide shaft has a shield made up of plates *g*. These plates are arranged so that there is a slot or opening at the top, in which the line-guide eye reciprocates. By this arrangement of the parts I secure an effective level winding mechanism, and at the same time the same is arranged so that the reel still presents an attractive appearance. As previously stated, it is not necessary to materially increase the diameter of the frame, and at the same time a spool having a large capacity may be used.

I have illustrated and described my improvements in detail in the form preferred by me on account of structural simplicity and economy, although I am aware that they are capable of considerable variation in structural details without departing from my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fishing-reel, the combination of the pillars; head-rings carried thereby; chambered head-plates secured to said rings; a spool-shaft; a pinion therefor; a reversely-threaded shaft; bearings therefor, threaded into suitable openings in said head-rings, one of the said bearing-openings having a diameter exceeding that of said threaded shaft; a pinion secured upon the end of said threaded shaft; a pinion arranged to mesh therewith, a stud on which said pinion is mounted, projecting inwardly from one of the head-plates; a gear mounted on said stud to which said last-named pinion is secured, arranged to mesh with said pinion on said spool-shaft; a casing through which said threaded shaft is arranged; a shaft-engaging pin arranged thereon; a block on which said pin is mounted, threaded into said casing; and a line-guide eye formed of wire looped about one of the frame-pillars carried by said casing, for the purpose specified.

2. In a fishing-reel, the combination of the pillars; head-rings carried thereby; chambered head-plates secured to said rings; a spool-shaft; a pinion therefor; a reversely-threaded shaft; bearings therefor threaded into suitable openings in said head-rings, one of the said bearing-openings having a diameter exceeding that of said threaded shaft; a pinion secured upon the end of said threaded shaft; a pinion arranged to mesh therewith, a stud on which said pinion is mounted, projecting inwardly from one of the head-plates; a gear mounted on said stud to which said last-named pinion is secured, arranged to mesh with said pinion on said spool-shaft; a casing through which said threaded shaft is arranged; a shaft-engaging pin arranged thereon; a block on which said pin is mounted, threaded into said casing; and a line-guide eye carried by said casing, for the purpose specified.

3. In a fishing-reel, the combination of the pillars; head-rings carried thereby; chambered head-plates secured to said rings; a spool-shaft; a pinion therefor; a reversely-threaded shaft; bearings therefor threaded into suitable openings in said head-rings, one of the said bearing-openings having a diameter exceeding that of said threaded shaft; a pinion secured upon the end of said threaded shaft; a pinion arranged to mesh therewith, a stud on which said pinion is mounted, projecting inwardly from one of the head-plates; a gear mounted on said stud to which said last-named pinion is secured, arranged to mesh with said pinion on said spool-shaft; and a line-guide, for the purpose specified.

4. In a fishing-reel, the combination of a chambered head; a spool-shaft; a reversely-threaded shaft; a driving connection for said spool-shaft and reversely-threaded shaft, arranged to drive said threaded shaft at a reduced speed relative to said spool-shaft, consisting of a pinion on said spool-shaft, a pinion on said threaded shaft, a pinion arranged to mesh with said pinion on said threaded shaft, a stud upon which the said last-named pinion is mounted, a gear secured to said last-named pinion, mounted on said stud and arranged to mesh with the said pinion on said spool, whereby said driving connection is compactly arranged within said chambered head, substantially as and for the purpose set forth.

5. In a fishing-reel, the combination of the chambered heads; pillars; a spool-shaft; a pinion therefor; a reversely-threaded shaft; a pinion secured upon the end of said threaded shaft; a pinion arranged to mesh therewith; a stud on which said gear is mounted; a gear mounted on said stud to which said last-named pinion is secured, arranged to mesh with said pinion on said spool-shaft; a casing through which said threaded shaft is arranged; a shaft-engaging pin arranged thereon; a block in which said pin is mounted, threaded into said casing; and a line-guide eye formed of wire looped about one of the frame-pillars carried by said casing, for the purpose specified.

6. In a fishing-reel, the combination with the frame, heads and pillars of a reversely-threaded shaft; a line-guide arranged upon said threaded shaft; and a line-guide eye formed of wire looped about one of the pillars, for the purpose specified.

7. In a fishing-reel, the combination of

chambered heads; a spool-shaft; a reversely-threaded shaft; bearings therefor threaded into suitable openings in said heads, one of said bearing-openings having a diameter exceeding that of the threaded shaft; connections for said spool and threaded shaft; and a line-guide, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

WALTER E. MARHOFF. [L. S.]

Witnesses:

LULU GREENFIELD,

OTIS A. EARL.