

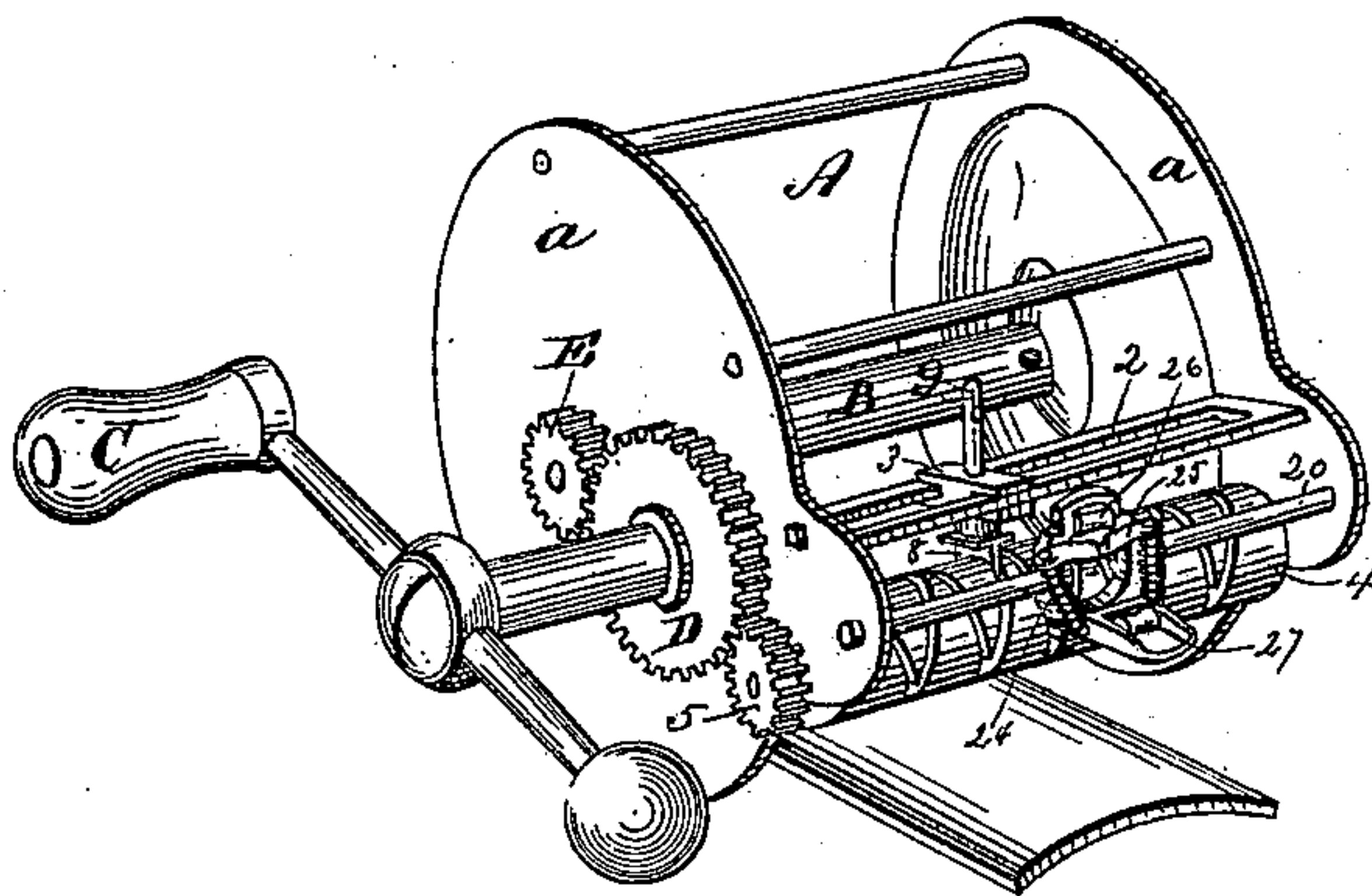
(No Model.)

J. P. COSTIGAN.  
FISHING REEL.

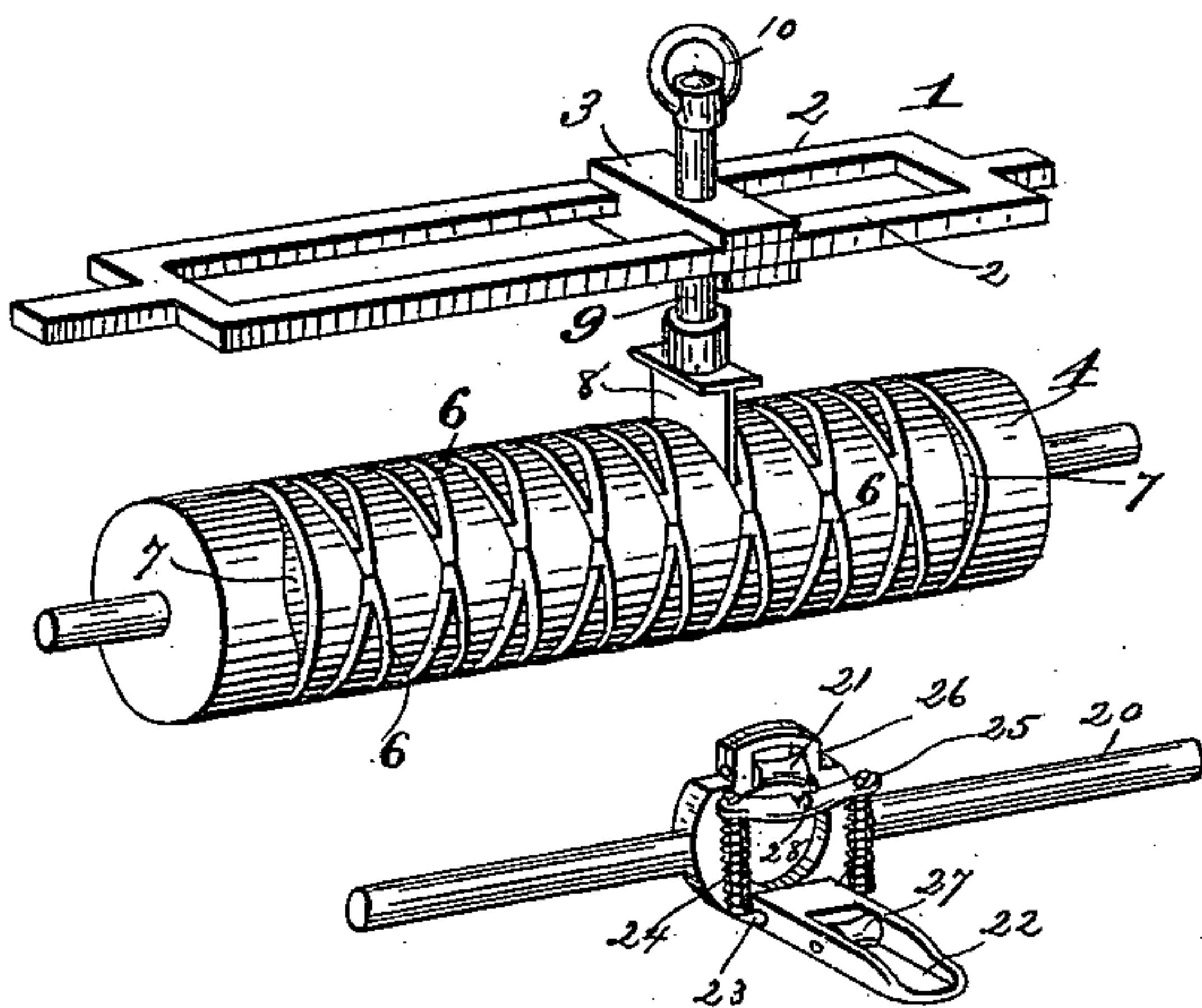
No. 396,469.

Patented Jan. 22, 1889.

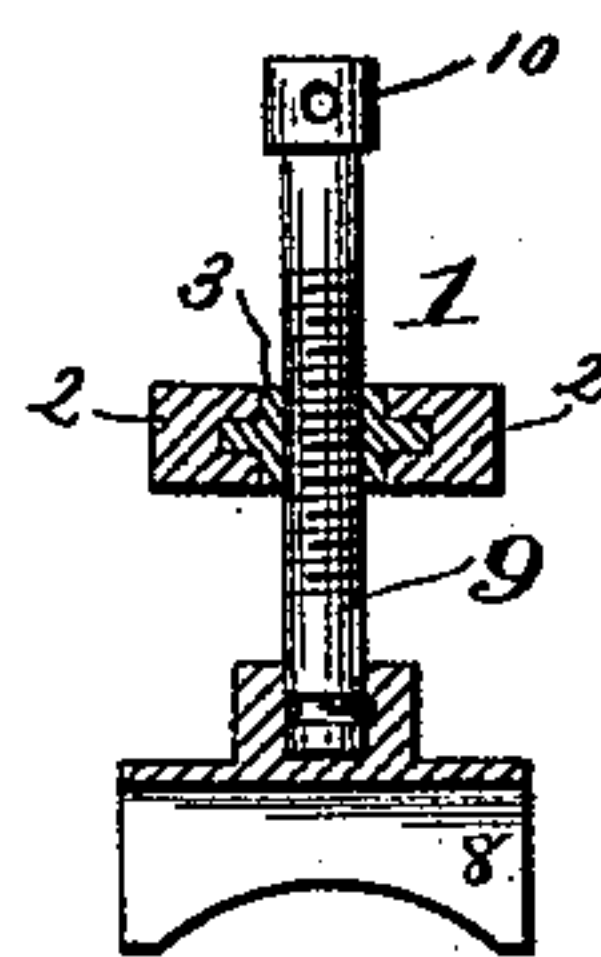
*Fig. 1.*



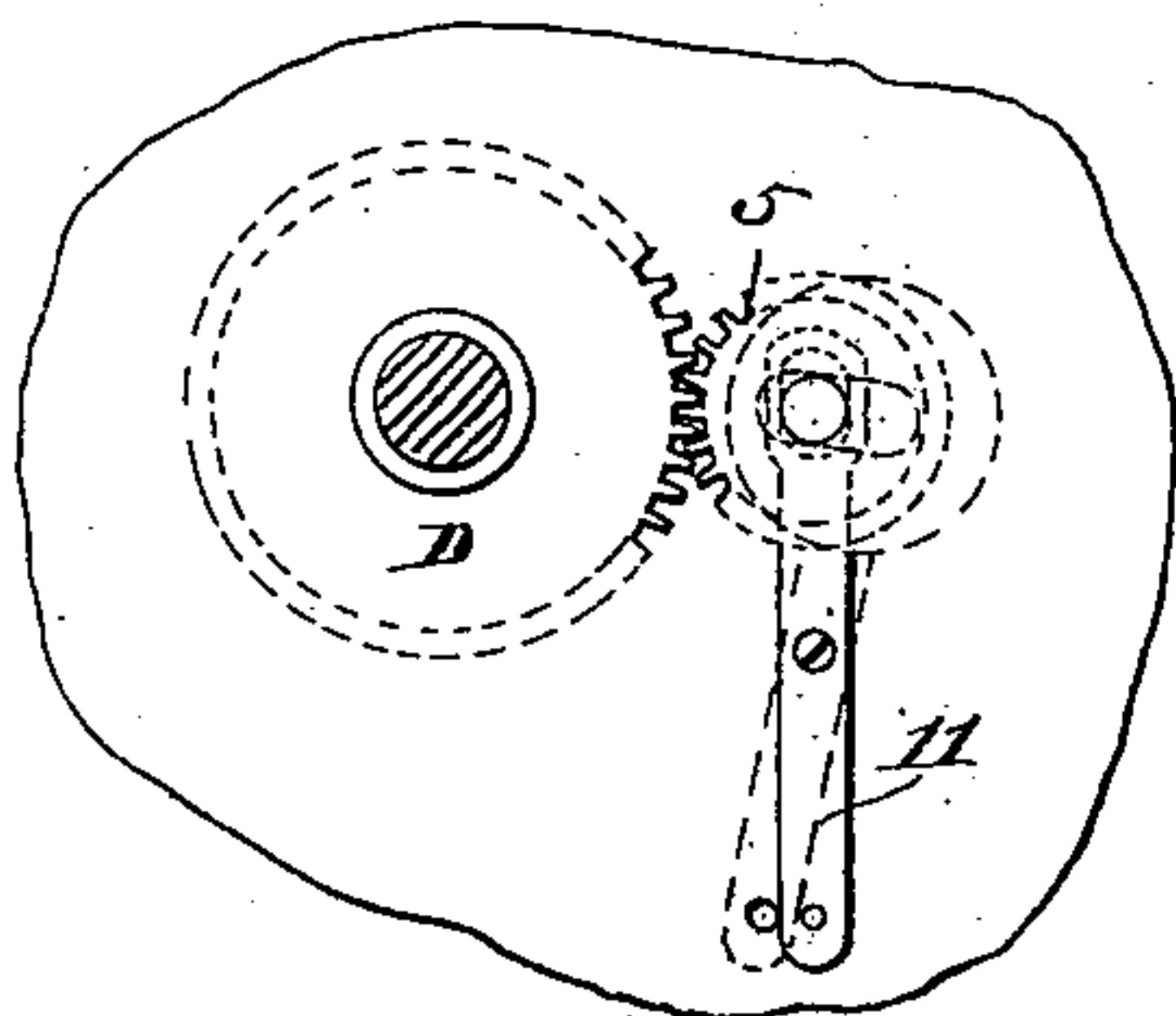
*Fig. 2.*



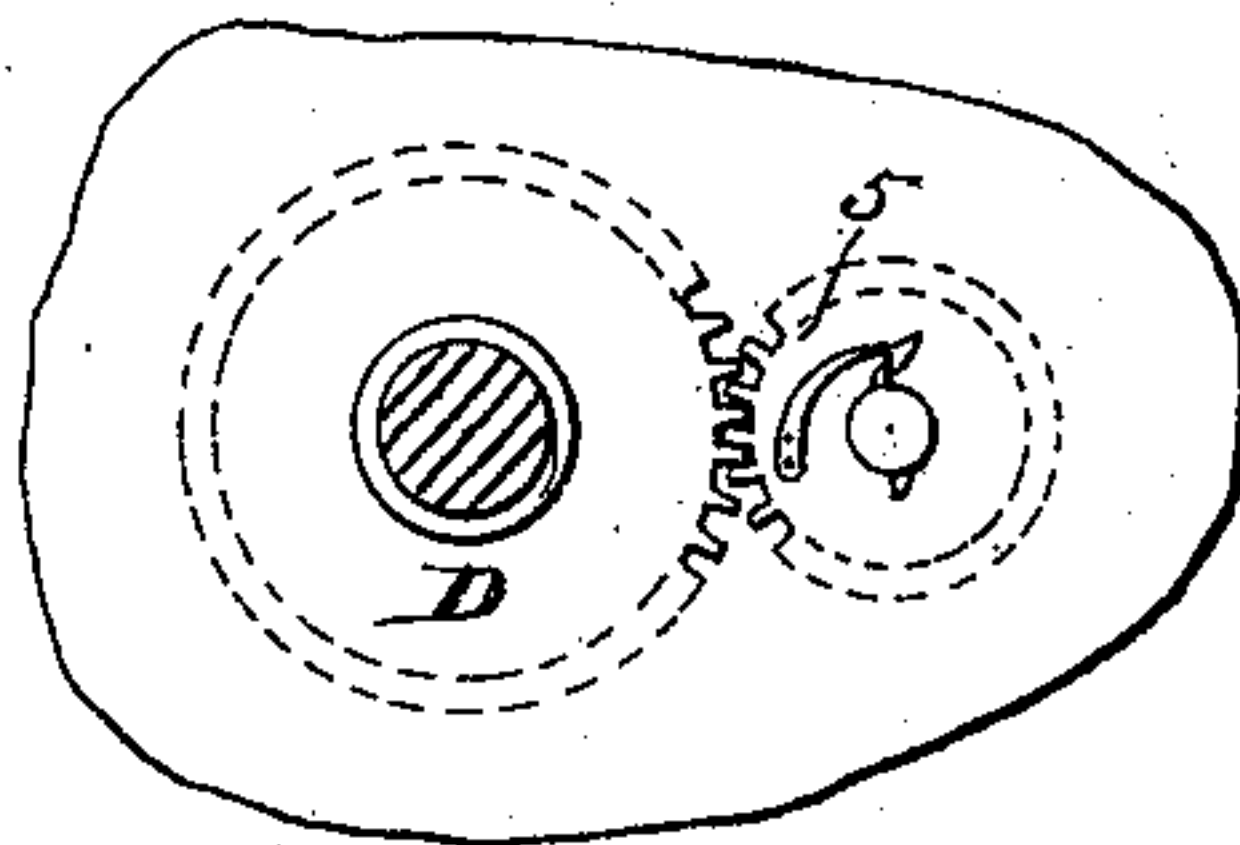
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

JOSEPH PATRICK COSTIGAN, OF ST. PAUL, MINNESOTA.

## FISHING-REEL.

SPECIFICATION forming part of Letters Patent No. 396,469, dated January 22, 1889.

Application filed October 18, 1888. Serial No. 288,461. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH PATRICK COSTIGAN, a citizen of the United States, and a resident of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Fishing-Reels; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to certain new and useful improvements in fishing-reels in the nature of attachments or additions to the ordinary forms of reels, and designed more especially to facilitate the laying of the line upon the winding-cylinder when reeling in, and to furnish a tension upon the line while reeling which shall be automatically relieved or removed when unreeling or casting, said tension device serving also to straighten out kinks or twists in the line, so that the latter may be evenly laid on the winding-cylinder.

The said invention will first be described, and the novel features pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of a reel with my improvements applied thereto. Fig. 2 is a detached view illustrating the line-laying devices and tension attachments enlarged; Fig. 3, a sectional view illustrating a modified form of guide and swivel. Fig. 4 illustrates a detail, and Fig. 5 a modification thereof.

Similar letters of reference in the several figures indicate the same parts.

The letter A designates a reel-frame of any approved pattern; B, the spool or winding-drum; C, the crank or winding-handle; D, the master-wheel, and E the pinion on the axis of the winding-drum in gear with wheel D. These parts are of the usual construction, and are arranged to co-operate in a well-known manner; hence do not require more specific explanation.

Supported in the end plate, *a*, of the frame, and preferably located in front of and below the axis of the winding-drum B, is a bar or cross-piece, 1, formed or provided with suitable ways or guides, 2, the side bars of said cross-piece 1 being preferably grooved,

as shown in Fig. 3. Upon or within this cross-piece is mounted a block or slide, 3, fitted to slide freely back and forth in a plane substantially parallel with the axis of the drum B. To one side of and preferably below this guide 1, and supported in bearings in the end plates, *a*, or in bars attached thereto, is a cylinder, 4, provided with a pinion, 5, in gear with master-wheel D, either directly, as shown, or through intermediate gearing, so that said cylinder will be caused to rotate in unison with the winding-drum. This cylinder 4 is furnished with reversed threads or grooves 6, the latter representing right and left hand screws, whose threads or grooves of the same pitch are crossed at equal distances and terminate in common grooves or channels, 7, at opposite ends, whereby the two spirals are caused to merge and become practically continuous, the one leading directly into the other at each end of the cylinder.

Upon or within the saddle or carrier 3 is attached an arc-shaped blade, 8, fitted to ride within the groove 6 and partially embrace the cylinder. This blade is of such length, measured across the cylinder 4, that when lying in one of the grooves 6 it will bridge the space at the points where the reversed grooves intersect and effectually prevent the blade from entering and following the oppositely-inclined groove until it has reached the end of the cylinder, where it strikes into channel 7, and the angular position of the blade being reversed or changed by contact with the outer wall of said channel it is led into the oppositely-inclined groove 6.

The blade 8 may be connected to its supporting block or saddle 3 in any desired manner, care being taken to provide for the slight change in the angular position of the block when passing from one spiral to the other. Thus in the example illustrated provision of this kind is made by attaching or forming the blade upon the end of a spindle, 9, and passing said spindle through an opening or bearing in block 3, thus forming a swivel-connection between the blade and block; or the swivel-connection may be made between the blade and the end of the pin, as shown in Fig. 3, and the pin may be threaded through the slide, so that it can be turned to withdraw the blade from the groove when desired.



Upon the slide or to the spindle 9 a loop or eye, 10, is attached or formed, this eye constituting a guide for the line which is led through it to the winding-drum.

5 The operation of this part of my invention is as follows: The end of the line is passed through the guide 10 and fastened to the winding-drum in the usual manner. Upon turning the handle C the drum is revolved, and at the  
10 same time the grooved cylinder 4 is set in motion. The blade 8 lying in one of the grooves 6 is caused to travel toward one end of the reel, carrying with it the slide and the guide through which the line passes, whereby  
15 as the line is wound upon the drum it is gradually carried or guided toward one end thereof. When, however, the blade 8 reaches the channel 7 at the end of cylinder 4 and the line has been wound to the end of the drum,  
20 said blade being caused to enter the opposite thread or groove is started toward the opposite end of the cylinder, and the line is guided back upon the winding-drum until it reaches the opposite extremity, when the same  
25 operation is repeated, the line being guided back and forth lengthwise of the winding-drum.

It is sometimes desirable, as when making a cast, that the winding-drum should be free  
30 to revolve, and as the laying-cylinder 3 would in such event have a retarding influence provision may be made, by the use of any of the well-known mechanical appliances adapted to the purpose, for detaching the cylinder 3  
35 from the master-wheel. For example, the pinion 5 may be connected to the shaft of the cylinder 4 by a ratchet-connection, such as would permit the pinion to rotate freely when the winding-drum is rotated in a direction to  
40 unwind the line and engage and rotate the cylinder when the crank is operated to wind up the line, (see Fig. 5;) or the end of the shaft carrying pinion 5 may be mounted in a lever, 11, so as to be moved into and out of gear  
45 with the master-wheel, as shown in Fig. 4. Other equivalent means for detachably connecting the cylinder 4 with the driving mechanism or master-wheel will be readily suggested to one skilled in the art, the important element and that claimed residing in the  
50 detachable character of the winding and line guiding or laying mechanisms.

The next feature of invention relates to a means for preventing the formation or winding  
55 in of kinked or twisted portions of the line, and for maintaining a certain degree of tension on the line during the winding operating, and at the same time permitting the line to freely unwind or be paid out.

60 Supported in the end pieces, *a*, of the frame, and when employed in connection with the line-laying devices, hereinbefore described, in front of the latter, is a cross-bar, 20, provided with two angularly-disposed eyes or guides,  
65 21 22, between which is pivotally supported a yoke or V-shaped frame, 23, upon whose limbs is mounted a cross-piece, 24, held pressed to-

ward the extremities of the frame 23 by springs 25, and prevented from escaping therefrom by suitable heads on the limbs. The  
70 yoke 23 is free to swing between the eyes 21 22, the outer edge of the latter, 22, being farther removed from the cross-piece 24, so that when the yoke is swung toward the eye 21 its outer face will be brought nearly in line with  
75 the outer wall of the eye 21, but when swung in the opposite direction toward eye 22 it will leave a free opening through said eye.

To reduce friction, a roller, 26, is journaled in the eye 21 at or near its upper edge, and  
80 a similar roller, 27, is arranged on the inner face of eye 22, and in order to retain the line in proper position on the cross-piece 24 the latter is provided with a groove or depression at or near the center, as shown at 28. The  
85 line is led through eye 22 over the cross-piece 24 and through eye 21 to the winding-drum, either directly or through guide 10, as hereinbefore described. As the line is wound in  
90 upon the reel, any kinked or twisted portions striking against the cross-bar will elevate or oscillate the yoke toward the eye 21, thereby partially closing the latter. With the yoke thus elevated but a narrow passage is provided  
95 between the cross-piece and the outer wall of the eye 21 or the roller therein, through which the line can enter to the winding-drum, whereby the twists and kinks are straightened out before reaching the drum.

The cross-piece is mounted upon springs  
100 and held in position by an elastic yielding pressure, so as to yield and permit the passage of knots &c., or in case the line becomes tangled to permit it to be wound up in case of  
105 necessity without danger of breaking the line or the tension device.

The yoke may also, in addition to performing the operation described—*i. e.* straightening out kinks and twists—be made to serve a  
110 further purpose of maintaining tension on the line while reeling in, for if the line be depressed in advance of the reel, so as to cause it to draw over and upon the cross-bar, the latter may be swung up against the eye 21, to  
115 operate as a friction-brake on the line, by pressing it against the wall of the eye or against the roller, the amount of tension thus produced being dependent upon the power of the springs, which latter are arranged to  
120 yield and permit the cross-bar to be depressed, thereby permitting the line to pass when sufficient power is applied to the winding-drum.

Having thus described my invention, what I claim as new is—

1. The combination, with the spool and winding mechanism of a reel, a guide-bar attached to the frame and having parallel grooves or  
125 ways therein, and a slide mounted to reciprocate in said grooved ways, of a cylinder provided with reversed grooves mounted in proximity to said guide-bar, and a pin adjustably  
130 mounted in said slide and provided with a blade entering the groove in the cylinder to



reciprocate the slide, substantially as described.

2. In combination with the spool-frame and winding mechanism of a reel, a cylinder provided with reversed grooves and connected to the driving mechanism, a guide-bar mounted in proximity to said cylinder, a slide mounted to reciprocate upon said guide-bar, an eye or guide for the line connected to said slide, and an adjustable pin supported in said slide and carrying a blade for engaging the grooves in the cylinder, substantially as described.

3. In combination with the spool of a reel such as described, a tension device composed, essentially, of two guides through which the line is passed, and an intermediate hinged cross-piece, substantially as and for the purpose set forth.

4. In combination with the winding drum or spool of a reel, a tension device consisting, essentially, of two guides supported upon the frame, and a yoke pivotally supported to swing between the guides and carrying a cross-bar with supporting-springs, substantially as described.

5. The combination, in a fishing-reel and with the winding drum or spool, of two angularly-disposed guides mounted upon the frame, and a yoke pivoted to swing between said guides and carrying a cross-piece with yielding tension devices operating to hold the line when passed through the guide and over the cross-piece clamped between the cross-piece and wall of the guide, substantially as described.

6. The combination, in a fishing-reel and with the winding-spool thereof, of a guide through which the line is carried to the spool, and a cross-bar or support for the line mounted upon a swinging support and adapted to be moved toward the guide to clamp the line against the latter, substantially as described.

7. The combination, in a fishing-reel and with the winding-spool thereof, of a guide through which the line is conducted to the spool, and a friction-bar mounted on movable supports in front of said guide and held

pressed toward the wall of the guide by elastic tension devices, said bar being adapted and arranged to be drawn toward the guide by the friction of the line upon it, substantially as described.

8. In a fishing-reel and in combination with the winding-spool thereof, two guides angularly disposed, and a pivoted yoke carrying a cross-bar mounted upon springs, said cross-bar being interposed between the guides in position to be acted upon by the line and swung up toward the rear guide to clamp the line, substantially as described.

9. The combination, to form a tension attachment for a fishing-reel, of the bar provided with a line-guide and a frictional tension-bar mounted upon said bar and movable toward and from the front of the guide with an elastic support for holding said bar pressed upon the line, substantially as described.

10. In a fishing-reel and in combination with the spool, the winding mechanism and an eye or guide reciprocated longitudinally of the reel to lay the line, and a tension device, substantially such as described, consisting of a guide for the line and a movable bar supported to reciprocate in front of said guide and provided with elastic pressure devices, substantially as described.

11. In combination with the spool and winding mechanism of a fishing-reel, substantially as described, the slide carrying the line-guide and blade, the grooved cylinder, and the pinion connected to said cylinder by a pawl-and-ratchet connection and receiving motion from the driving mechanism, whereby the spool may be rotated backwardly without moving the cylinder, substantially as described.

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

JOSEPH PATRICK COSTIGAN.

Witnesses:

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