Originally published in *Antique Angler*, November/December, 1984, pp. 1-4

# THE SMITHSONIAN INSTITUTION'S FISHING REEL PATENT MODELS

by Steve Vernon

Deep inside the Smithsonian Institution's National Museum of American History, almost lost in a cabinet drawer within a cavernous storeroom under the aegis of the Division of Community Life, is a small group of fishing reels that would bring a tear to the eye of the most jaded reel collector. The bulk of the ancient assemblage is made up of patent models—the working models submitted by inventors to the U.S. Patent Office when they filed their application for patents. Thanks to the Museum's efforts, these few models have been rescued from past sales by the Patent Office to the highest bidder.

While doing research on U.S. reel patents, I was fortunate to be permitted to examine and photograph the models, thanks to the gracious hospitality of Mr. Carl Scheele, Curator of the Division of Community Life, and Mr. Jim Knowles, Division of Transportation. As the collection constitutes a national treasure, and as it is unlikely that it will be on public display in the near future, writing this article seemed to be the best way to share one of Washington's best-kept secrets with fellow collectors.

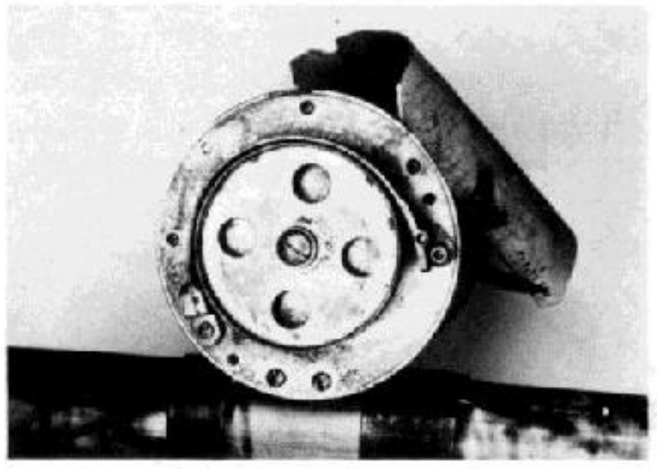
Most of the models show evidence of use, sometimes abuse. For photography, I was permitted to remove easily-unscrewable covers so that the internal features would be visible. However, some of the reels will require more time and expert effort before they can be disassembled properly.

The oldest model in the collection accompanied Mark S. Palmer's application for a patent describing the first level-wind mechanism. The patent, no. 27,305, was granted on Feb. 28, 1860. The invention comprised a tined line guide which traveled across the front of the reel on a rotating shaft cut with an endless helical groove. It was the forerunner of almost all of the successful level winds built since that time.

*Palmer's level-wind model. The sliding button on the front cover disengages the intermediate gear that rotates the level-wind shaft. Unfortunately, the half-nut, or pawl, which rode in the helical groove is missing.*

Palmer's line-guide transport mechanism was adopted for a number of other inventors' reel patents, beginning in 1873, before the better known level-wind designs of Nelson H. McGregor and William Shakespeare, Jr., were patented (1894 and 1897, respectively), and incorporated into commercially successful reels. It was not until the turn of the century that a sizeable portion of the angling public accepted level-winding as a legitimate function of the casting reel.

The first patented friction brake in a fishing reel is represented by Andrew Dougherty's model for his patent of Feb. 9, 1864 (pat. no. 41,494). A thumb lever on the back of the reel tightened a curved spring around a drum formed by a flange on the end of the reel spool.



*Dougherty's thumb-activated friction brake. The lever is pressed upward to tighten the spring around the drum.*

Dougherty's brake was meant to be used "for controlling the delivery of line. . . by the same hand which holds the rod." It was the forerunner of many lever-operated drum brakes patented since that time. The earliest ancestor of the modern "star drag" would be patented later that same year by William H. Van Gieson. As both inventors worked in New York City, perhaps the almost simultaneous appearance of the two types of friction clutch was not merely coincidental.

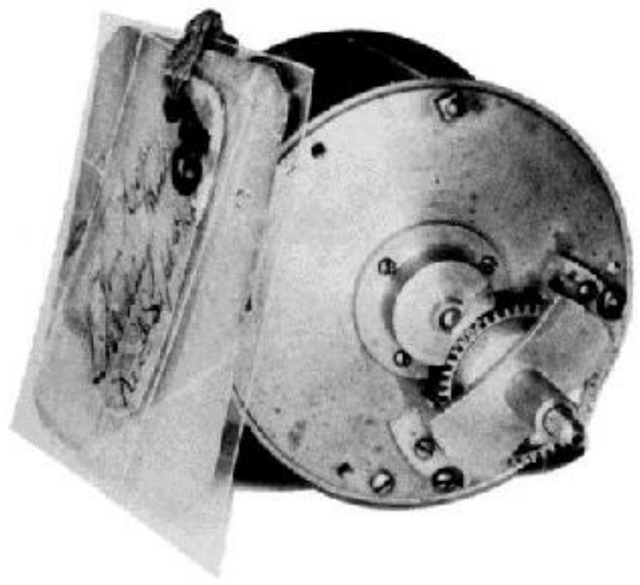
Julius Vom Hofe's first patent, no. 71,344, was issued on Nov. 26, 1867, for

*(Continued on page 3)*

**Reel Patent Models**

*(Continued from page 1)*

a bridge which bore the main gear and was fastened to the headplate to ensure that the gear would remain aligned. The beautifully machined model also was equipped with a spool journal bearing, attached to the same headplate, which protects and aligns the pinion. Vom Hofe's reel was built "in such a manner that both bearings of the driving-shaft are rigidly connected to one and the same plate, and consequently said bearings are not thrown out of line when the cap (cover) is screwed down, and the shaft is not liable to bind or to rattle."



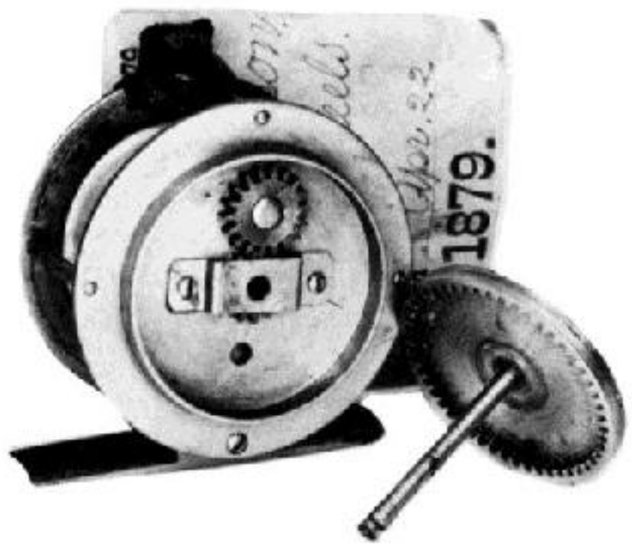
*The bearings for both the spool journal, or "gudgeon," and crankshaft of Vom Hofe's reel are attached to the headplate, rather than to the cover.*

An unscrewable rear cover was the most salient feature of the first patented quick-takedown reel, for which Charles W. MacCord received a patent (no. 147,414) on Feb. 10, 1874. When the cover was unscrewed, the spool could be removed through the annular headplate.

*MacCord's spool can be removed after the rear cover is unscrewed. The spool is driven by a four-gear train operated by a crank mounted at the center of the front cover.*

The object of MacCord's invention was "to enable the angler to exchange one line for another, or to replace a damaged one, with greater facility." The invention anticipated the competing designs of William Carter and the Meisselbachs which were incorporated into various popular quick-takedown reels after the turn of the century. As readers of the March/April, 1984, issue of *Antique Angler* already are aware, the British reel manufacturer Onesimus Ustonson had been exporting reels with readily removable covers to this country decades before MacCord's patent was granted.

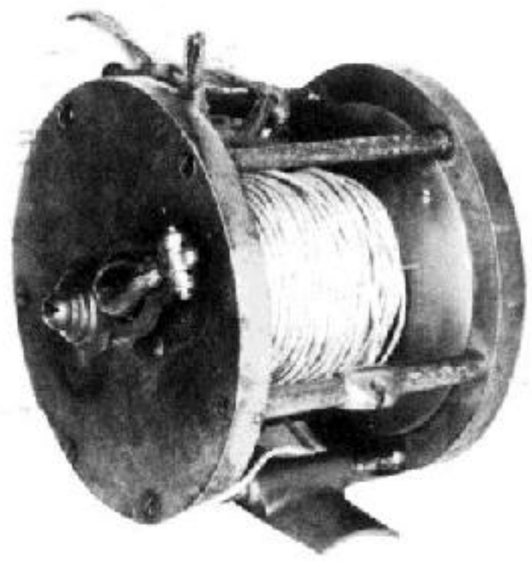
On April 22, 1879, L. Taylor Dickson received a patent (no. 214,495) for a reel driven by an epicyclic gear train. Cranking rotated an internal main gear built into the front cover. The main gear drove an intermediate gear that caused the spool-attached pinion ("sun" gear) to rotate. Although Henshall mentioned examples of epicyclic gearing in Kentucky reels, Dickson's model was built with the first three-gear, patented American design of that type. Similar trains eventually would be used more satisfactorally in automatic reels than in casting reels.




*Dickson's disassembled model. The internal gear that has been removed is rotated by the crank knob, hidden from view.*

One of the advantages of Dickson's design was that the direct attachment of the handle to the rotating cover minimized the number of external projections. That same consideration was given to later patented designs, perhaps the best known of which would be George Upton's "Redifor" reels.

Another early level-wind reel was patented by Simon W. Wardwell, Jr., on Oct. 21, 1879 (pat. no. 220,776). The line guide, which was driven similarly to Palmer's, could be manually pivoted down so that it would not interfere with the outgoing line during casting. The device anticipated the automatically pivoted guides on the much later "Beetszel" and "Pflueger Supreme" reels.



*Wardwell's patent model, with a view of the folding handle and level wind. The line guide, shown pivoted down for casting, travels on a grooved shaft almost completely enclosed within the front pillar.*

Wardwell's reel also was equipped with a freespool clutch operated by a shaft that extended through the core of the spool. The rotating shaft turned the spool by means of a transverse pin that was engaged by teeth on the spool. When the shaft was pulled outward from the rear headplate, the pin was disengaged, but the pinion, loosely keyed to the other end of the shaft, remained meshed with the main gear. The clutch was only the second freespool mechanism patented by that time which did not demesh the gear train.

The inventor also provided a folding crank knob, a "handle pivoted to yield under pressuure, to prevent it from breaking."

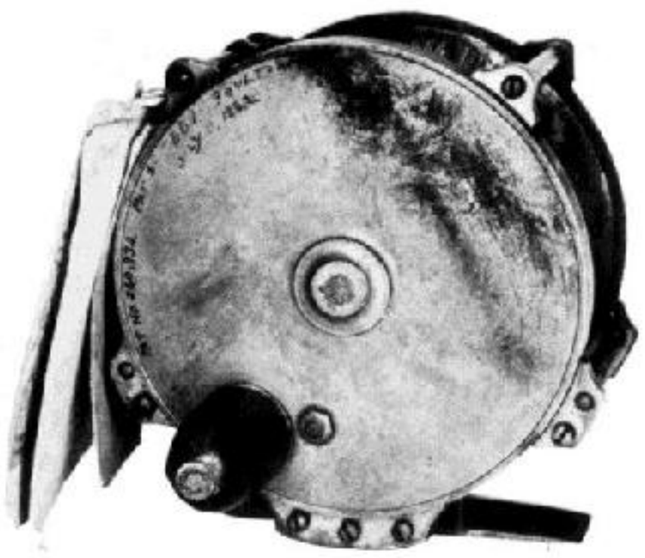
James B.D'A. Boulton patented a reel on July 11, 1882, which was driven by an epicyclic gear train that was alleged to produce less friction than Dickson's design. The patent (no. 260,932) was assigned to William Mills and Thomas Bate Mills, and the reel, equipped with a ratchet and pawl-activated brake, was sold through the Wm. Mills & Son catalog. In contrast to Dickson's invention, Boulton's crank drove a planetary intermediate gear between a stationary internal gear and the central "sun" gear mounted on the spool shaft.

The single-action, raised pillar reel patented (no. 377,100) on Jan. 31, 1888, by George S. Gates was equipped with a friction disc clutch to permit the spool to turn while the danger from a rapidly revolving handle was minimized. The clutch, one of the ancestors of the "star drag," comprised a convex metal disc which pressed a rubber ring against the spool flange. The frictional tension was adjusted by a knurled nut on the back of

*(Continued on page 4)*

**Reel Patent Models**

*(Continued from page 3)*



*Boulton's model for his epicyclic-geared reel.*

the reel. A spring on the crank, which locked the crank and driveshaft together, was slid by the angler to release the driveshaft; spool rotation was then controlled by the friction clutch.

*Gates' reel, showing the sliding spring which frees the driveshaft from the crank to permit the operation of the drag.*

A few production models of twentieth-century reels complete the Museum's collection. They include a reel built into a cylindrical casing within a rod butt, patented in 1903 by William J. Harris and Henry Case, a B.F. Meek & Sons No. 3, an early South Bend reel, and a J.B. Humphreys reel, reputedly the first closed-face spinning reel.

It is unfortunate that the equipment used in our most popular participant sport is so sparsely represented in our national museum. After all, the development of the reels that so many of us enjoy collecting comprises, in a small way, another triumph of American ingenuity and technology. Anyone who might consider a donation to the collection can contact Mr. Carl Scheele, Curator of the Division of Community Life, National Museum of American History, Smithsonian Institution, Washington, DC 20560. It is part of our collecting responsibility to see that our angling heritage is preserved.