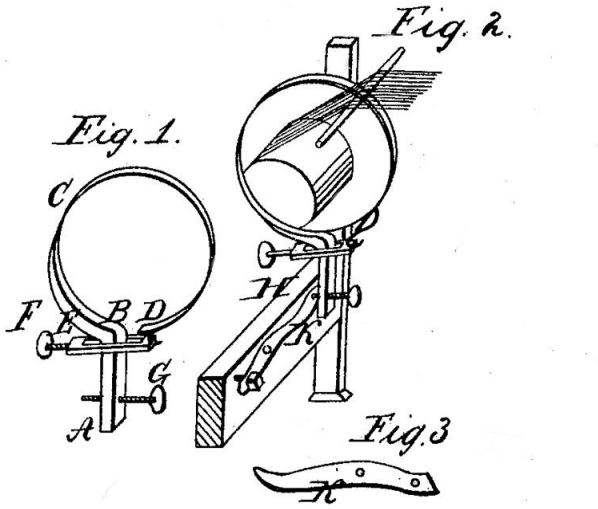
Originally published in *The Reel News*, Vol. XIV, No. 4, July, 2004, pg. 15.

Roots o'Reels IX. Adjustable Brakes

by Steven K. Vernon

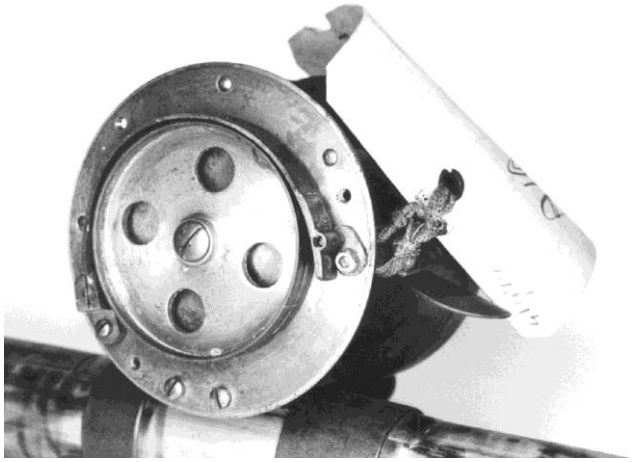
(*This article is part of a series about inventions that were adapted for use in fishing reels.*)

In retrospect, it's hard to imagine that the use of a belt of some sort, wound around a moving part to control its rotation, had not become commonplace in machinery by the nineteenth century. After all, wheeled vehicles and much more sophisticated machines had been in use for millennia. Nevertheless, this particular type of "drum" friction brake appears to have been considered novel when Stephen Kimball*, of Putney, Vt., was granted patent no. 758 for such a device in 1838. With the quaint title of "Take-Up and Let-Off", or "Mode of Applying Friction to the Yarn-Beams of Power-Looms," Kimball's invention consisted of a "belt…made of steel or iron" that could be tightened around the rotating yarn-beam and whose pressure could be adjusted with a screw. Kimball also provided for the use of a brake "shoe" when he suggested that "the beam head where the belt comes in contact should be wound or covered with woolen cloth."



Kimball's patent drawings for his drum-type friction brake. The spring or belt (C) can be tightened with the screw (F), as shown in Fig. 1. Fig. 2 shows a badly drawn brake mounted on the loom girt and clamped on the yarn-beam.

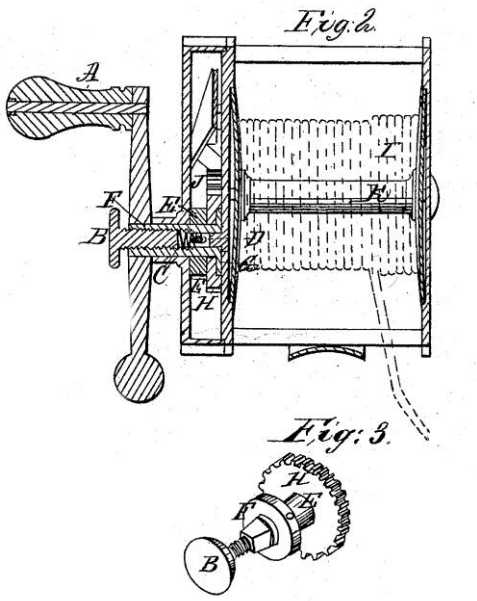
Early British and American fishing reels were equipped with only two types of devices that retarded spool rotation: clicks and flat, sheet-metal springs that bore against the spool flange. Some of these devices could be rendered inoperable, but the braking pressure of neither type could be varied. The earliest U. S. patent for a fishing reel brake was granted to Andrew Dougherty, Brooklyn, in 1864, for a drum brake similar to Kimball's invention. His brake, or



Andrew Dougherty's patent model, owned by the Smithsonian Institution, with its tail cap removed to show the friction brake. When the thumb-lever is pressed upward, the spring is tightened around the disc attached to the tail-end of the spool arbor. (The patent drawings show the button mounted vertically, so that the angler presses it toward the spool to apply drag.)

what we now would call "drag," consisted of a sheet-metal spring that could be tightened around a "wheel" or disc mounted on the spool arbor inside the tail cap of the reel. A thumb-plate mounted on a rotating rod spanning the back of the reel controlled the pressure of the friction brake. The plate's forward motion was stopped by a frame pillar, and it could be adjustably mounted so that the range of brake pressure it applied could be varied.

Dougherty's brake was a remarkably sophisticated innovation for a reel. Nevertheless, an equally sophisticated brake also was patented in 1864



Van Gieson's star-drag-like friction brake of 1864. The drag components of Fig. 3 are shown in a ball-handle reel in Fig. 2. Screw B adjusts the brake pressure.

by William Van Gieson, of New York. Van Gieson's invention, assigned to the Thos. H. Bate Co., was the predecessor of the star drag, lacking only a stellate nut to adjust the brake pressure. Instead, Van Gieson used a screw to vary the frictional tension between his crankshaft-mounted drag discs.

An Edward Vom Hofe salmon reel equipped with his adjustable brake of 1879.

Despite the appearance of the two brakes as early as 1864, another adjustable brake did not become available on a reel until Edward Vom Hofe's first patent was granted in 1879. The pressure exerted by his "tension device" could be varied by turning a knurled adjusting wheel. Still, the device permitted only incremental changes in brake pressure. It was not until 1887 that another infinitely variable brake controlled by a thumb-button became available. The reel was the "Henshall-Van Antwerp" classic manufactured by Thomas Chubb.

By the1880s, the angling world was ready for adjustable reel brakes, and the number of patents for such devices began to accelerate. Over the next couple of decades, the brakes gradually evolved into two separate functional groups: brakes designed as "drags" for fighting hooked fish, and brakes designed to minimize backlash during casting. I like to think that some of them can trace their roots back at least to Kimball's friction brake.

* Kimball's name is spelled "Kimballe" on the patent drawings but lacks the "e" elsewhere.