= Bookwheel =

The bookwheel (also written book wheel and sometimes called a reading wheel) is a type of rotating bookcase designed to allow one person to read a variety of heavy books in one location with ease . The books are rotated vertically similar to the motion of a water wheel , as opposed to rotating on a flat table surface . The design for the bookwheel originally appeared in a 16th @-@ century illustration by Agostino Ramelli , at a time when large books posed practical problems for readers . Ramelli 's design influenced other engineers and , though now obsolete , inspires modern artists and historians .

= = History and design = =

The bookwheel , in its most commonly seen form , was invented by Italian military engineer Agostino Ramelli in 1588 , presented as one of the 195 designs in Le diverse et artificiose machine del Capitano Agostino Ramelli (The various and ingenious machines of Captain Agostino Ramelli) . To ensure that the books remained at a constant angle , Ramelli incorporated an epicyclic gearing arrangement , a complex device that had only previously been used in astronomical clocks . Ramelli 's design is unnecessarily elaborate , as he likely understood that gravity could have worked just as effectively (as it does with a Ferris wheel , invented centuries later) , but the gearing system allowed him to display his mathematical prowess . While other people would go on to build bookwheels based on Ramelli 's design , Ramelli did not in fact ever construct his own .

To what extent bookwheels were appreciated for their convenience versus their aesthetic qualities remains a matter of speculation according to modern American engineer Henry Petroski . Ramelli himself described the bookwheel as a " beautiful and ingenious machine , very useful and convenient for anybody who takes pleasure in study , especially for those who are indisposed and tormented by gout . " Ramelli 's reference to gout , a condition that impairs mobility , demonstrates the appeal of a device that allows access to several books while seated . However , Petroski notes that Ramelli 's illustration lacks space for writing and other scholarly work , and that the " fanciful wheel " may not have been appropriate for any activity beyond reading .

While the design of the bookwheel is commonly credited to Ramelli , some historians dispute that he was the first to invent such a device . Joseph Needham , a historian of Chinese technology , stated that revolving bookcases , though not vertically oriented , had their origins in China " perhaps a thousand years before Ramelli 's design was taken there . "

= = Influence and legacy = =

The bookwheel was an early attempt to solve the problem of managing increasingly numerous printed works , which were typically large and heavy in Ramelli 's time . It has been called one of the earliest " information retrieval " devices , and has been considered a precursor to modern technologies , such as hypertext and e @-@ readers , that allow readers to store and cross @-@ reference large amounts of information . Other inventors , such as French inventor Nicolas Grollier de Servière (1596 ? 1689) , proposed their own variations on Ramelli 's design .

In contemporary times , the bookwheel is valued for its historical importance , decorative appeal , and symbolic significance . Ramelli 's design has been recreated by artists such as Daniel Libeskind , and inspired the name of the Smithsonian Library 's blog " Turning the Book Wheel " .

The mechanical concept of the epicyclic gears used to keep each book level as it rotates was later used for the Falkirk Wheel boat lift , although its designer claims to have found it independently .