

The Geared Continuous Hinge: Solutions and Applications

By Ginny Powell

While you may not give hinges much thought, they actually hold up as one of the greatest inventions of mankind - definitely equal to the wheel.

The history of the hinge dates back so far that archaeologists aren't sure of its exact origin. In fact, bronze hinges date back to ancient times, found in societies in Africa and Asia, as well as Europe.

In the United States, as Easterners began pouring into St. Louis in the late 1840s and early 1850s to make their westward journey, Charles Hager was building his business by providing wagon wheels and hardware for Conestoga wagons. This made Hager an active part of the new frontier in the development of hinges as we know them today.

In commercial, educational and institutional facilities, doors are hung using one of three hinge types: standard (conventional) hinges, continuous hinges or pivots - and it is the continuous hinge, with its intermeshing gears and thrust bearings, that is the far superior choice in many high use applications.

The Continuous Hinge

There are two types of continuous hinges-the pin-and-barrel and the geared. The pin-and-barrel continuous hinge (sometimes known as the piano hinge) has two leaves joined together by a pin. The geared continuous hinge features gear teeth that mesh together under a cap that runs the length of the door.

The geared continuous hinge was patented in 1963 by Austin Baer, and in 1968 he earned a second patent for adding thrust bearing to his original design, known as the Roton® Continuous Geared Hinge.

The patent expired in 1985, and Hager Companies purchased Baer's company in 1989.

"There were situations in facilities with high-abuse door openings where we knew a standard butt hinge wasn't the best choice. We were intrigued by the Roton® continuous hinge and how it distributed the weight over the length of the door," explains Warren Hager Executive Vice President & Assistant Secretary for Hager Companies. "We purchased The Baer Company because we felt the product was a perfect fit with the quality Hager was known for and it allowed us to bring additional value and solutions to our customers."

Today every major U.S. commercial hardware manufacturer offers a line of continuous hinges.

Benefits of a Continuous Hinge

While continuous hinges are not as commonly used as standard hinges, there are several solid reasons for choosing a continuous hinge over another hanging device:

- Continuous hinges extend the full length of the door, which means they distribute the doors' weight evenly to the frame. This reduces the amount of stress to the doorframe when compared to using a standard or pivot hinge.
- Because a continuous hinge is secured to the full height of the opening, a continuous hinge keeps the door in constant alignment, eliminating the chance of a sagging door.

- Additionally, continuous hinges also help reduce the chance of wood doors from warping, which is especially helpful when the door opening is three-and-a-half or four-feet wide.
- Continuous hinges also remove the gap between the door and frame, and this absence of the gap helps prevent fingers from being pinched, which means a safer door. This safety makes a continuous hinge a natural choice for doors where children are present.

Those are the exact reasons Jeff Ghan, locksmith with Mercy Hospital, changed the specifications for the hospital and now requires continuous geared hinges on all doors over three-feet wide. "Installing continuous geared hinges on door openings over three feet in width decreased future issues, saving us time and money," he says.



Smart Applications for a Continuous Hinge

These characteristics mean that continuous hinges are often installed for openings that are subject to high traffic and abuse, such as gymnasiums, health care facilities and sports complexes. "As the population continues to grow, the demand on door openings increases with security and safety at the forefront," explains Dan White, Manager of Product Development for Hager Companies. "For these high-demand openings, the continuous geared hinge remains the smartest choice for the life of an opening."

Here are a few examples of where you can install a continuous hinges:

HOSPITALS, STADIUMS, ARENAS AND SCHOOL GYMNASIUMS

Over time, the doors that get a lot of use also tend to "come off their hinges" and sag or warp. Because a continuous hinge runs the length of the door, it keeps the door in constant alignment and eliminates this issue.

PRISONS AND BACK DOORS TO CONVENIENCE STORES AND STRIP MALLS

A geared continuous hinge can keep a building even more secure than a standard hinge because there isn't a pin that can be removed. In fact, prying off a continuous hinge would be time-consuming - which acts as a deterrent.

STOREFRONTS

Doors allow air to escape, which can be a great source of energy loss when trying to warm or cool the air (depending on the time of year). A continuous hinge helps close the gap between the door and the frame - creating a tighter seal.

One example where a continuous hinge solved a recurring door problem was at a St. Louis university hospital radiology treatment room. The doors were four by seven feet (lined in 1/4" lead) and hung on heavy duty pivot hinges with an intermediate pivot. The bottom pin on the floor pivot broke twice, and as a result, the room was rendered unusable. This cost the hospital about \$24,000 a day in lost revenue, not to mention the delay in treatment for patients.

"The late Richard Mehaffy, DAHC, a distributor, reached out to me to discuss the issue. After conferring with the technical department at Hager, we recommended installing a Roton® continuous lead lined aluminum hinge designed specifically for doors up to 1,200 pounds. This solved the problem immediately and we never got a call back again." explained Bud Wilson, President of Horizon Marketing Group.

Continuous hinges are generally available in five standard lengths: 79, 83, 85, 95, and 119 inches, and can be cut to the exact length needed during the installation process (varies by manufacturer). With the frequent use of electronic locks today, continuous hinges can also be modified for concealed electric through-wires, exposed electric switches, and electric power transfers.

Though continuous hinges are not as commonly used as their standard counterpart, they are a financially smart hardware solution. They are durable, long-lasting and solid, which allows for an extended life for the total door opening.



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