Development status and trend of Chinese patent of friction sliding support

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Abstract

With the development of the isolation system is more and more quickly in our country, the application and research of isolation bearing more and more widely, including the friction-sliding isolation system is used in vibration isolation system and one of the most widely used isolation system, this article is based on soopat patent retrieval and service system of our country development present situation and trend of the friction-sliding isolation bearings are analyzed, mainly studied and analyzed the friction-sliding isolation bearings of the status quo and development of patent, patent development trend of the friction-sliding isolation system are explored.

Keywords

Patent, friction sliding support, development trend.

1. Status quo of patent protection in China

China's patent system was established and improved relatively late. On April 1, 1985, China's first patent law came into effect on the basis of drawing lessons from the patent systems of other countries. Since the implementation of patent law of the People's Republic of China in 1985, with the continuous popularization of patent protection, more and more innovative subjects adopt patents to protect innovative achievements. The patent application in China generally includes the application stage, examination stage and authorization stage. According to the patent law of China, the protection period of invention is 20 years, among which the protection period of utility model is 10 years. On this basis, this paper takes the Chinese patent status of friction and sliding isolation bearings as the research object, and USES soopat patent search and service system to search the number and type characteristics of patent applications in this field in China, as well as the patent technology to carry out comprehensive classification search and analysis [1].

One after the wenchuan earthquake, in our country for the structure of the earthquake began to pay more attention to and improve requirements, also gradually started to attach importance to the research and development of isolation of the building, the seismic isolation technology is set up between the building foundation and upper structure layer of isolation layer, the upper structure and foundation is isolated, so as to isolate the ground motion energy transferred to the building, reduce the buildings for seismic response. Make buildings better able to withstand the effects of earthquakes[2].

2. The development status of data retrieval based

2.1 Patents of isolation support at home and abroad

According to the search results of soopat, there are 5,312 patent applications involving isolation bearings in China, among which there are 2,522 inventions and 2,522 utility models. Search results it is found that our country's isolation bearing patent is on the rise, in general, has experienced the initial quantity is less, research and development in the stage of technical reserves, to apply for quantity increase slowly, and then to now isolation relatively fast development, the number of patent applications from this trend could see emphasis on isolation is increasing in our country, and constantly absorbing foreign in isolation knowledge reserves, development and innovation on the

research of vibration isolation. But relative to foreign development and application situation of earthquake isolation[3], our country and the developed countries in the world the isolation technology research and application of building and some gap, but our country in comparison is an earthquake-prone country, and due to the earthquake caused great economic losses and casualties, should speed up research and development of isolation technology [4].

2.2 Development trend of friction-slip isolation bearings

When soopat is used for patent search of friction and sliding isolation bearings, 118 patent results are obtained, including 44 inventions and 51 utility model patents from 2000-2018[5]. With the increase of time, the number of patent applications shows a state of increasing year by year. 2000-2010 were applied for 17 patents, is the beginning of the application for a patent for the friction-sliding isolation bearings, up to the first peak in 2011, is applying for patent the friction-sliding isolation bearings of the first "active" [6], in 2011 and 2012, 2013 is the friction-sliding isolation bearings of an application for a patent for a duration of longer active period, the patent application for the 10 every year, there was a fall in 2014, the year only applied for three patents, and in 2015 reached a small peak again to apply for the 14 patent[7], In 2016, the number of patent applications reached the peak of 18 years since 2000. In 2018, the number of patent applications reached 1/6 of the total, and 18 patents were applied. It took eleven years from the first patent application to the first peak[8]. The analysis shows that an emerging technology needs to undergo rapid development, which may take more than 10 years based on the analysis from the perspective of American patents. In recent years, the research of friction-slip isolation has made continuous progress in China[9].

3. Conclusion

Full consideration is given to the structural stress, axial deformation and structural ductility in the design of super-tall aseismatic structures. Ultra-high strength concrete is increasingly widely used, and the choice of concrete strength should be appropriate, preferably not more than C80. In order to ensure the consistency of the overall displacement of concrete and obtain the minimum and maximum displacement structural stiffness, the vertical and lateral forces of buildings should be protected to improve the torsion force.

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