

Introduction and Research on the Protection Cabinet of Ancient Books and Paintings based on Modern Technology

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Abstract

The Chinese nation has thousands of years of history and culture, and numerous cultural relics and treasures have been handed down. As one of the non-renewable treasures, ancient calligraphy and painting contains the crystallization of ancient wisdom, and the inherited history and memory are extremely precious. However, the organic materials of ancient calligraphy and painting, impurities in the air, time erosion, artificial or unintentional destruction have caused irreversible losses to the original appearance of ancient calligraphy and painting. In this paper, through the introduction of the intelligent calligraphy and painting protection cabinet products developed by Huixin Intelligent Technology Co., Ltd., the use of modern science and technology to provide better protection of ancient calligraphy and painting, and provide better technical support for the inheritance of ancient calligraphy and painting in the future.

Keywords

Ancient Books; Calligraphy and Painting; Protection Cabinet; Intelligent Science and Technology.

1. Introduction

In the five thousand years of China, many ancient books, calligraphy and paintings have been handed down, which are not only the records of the history of successive dynasties, but also the crystallization of the wisdom of the great people. However, because of its special material, ancient calligraphy and painting is difficult to preserve. Inadvertently the contact of light, temperature, humidity and air will cause some damage to ancient calligraphy and painting. [1] Therefore, the protection of ancient books, calligraphy and painting has always been the top priority in cultural protection. At present, the storage methods of cultural relics in China are not very helpful to the storage life of cultural relics, and some even counterproductive.

Based on the above situation, the team programmed and developed an intelligent book protection cabinet, which relates to the technical field of cultural relic preservation. In order to solve the problem that the protection cabinet in the existing technology can only save and place ancient books and paintings, it is impossible to adjust and improve the details of its placement environment. [2]And the intelligent ancient book calligraphy and painting protection cabinet made by the team is cheap and easy to handle, so that the holders of fewer treasures can afford it, and the real-time monitoring function in the protection cabinet ensures economy and convenience to the greatest extent.

2. Current Situation of Protective Cabinet Market

2.1. The Infrastructure for the Protection of Ancient Books has not Yet Reached the Standard

Because the cultural value of ancient books is left on the shelf for a long time and does not spread and circulate, the scope of the audience is relatively small, resulting in that most university libraries have not included the protection of ancient books into the school (college) budget for many years. [3]The construction of ancient books has become a blind area because of eager for quick success and quick benefit and ideological bias in the construction of literature resources, and the consciousness and sense of responsibility for the protection of ancient books have not been gradually strengthened until recent years. [4]Although colleges and universities have purchased equipment, the storage conditions still do not meet the national standards, such as insufficient storage area of ancient books, no air conditioning system and air purification equipment installed in the storage room, no water and fire monitoring and alarm system, recording and testing equipment for various indicators such as aging and acidification, insecticidal disinfection equipment, repair equipment, and so on. It is hoped that with the gradual development of the protection of ancient books, hardware protection facilities can be matched accordingly. [5]

2.2. Lack of Professionals in the Protection of Ancient Books

The relevant courses of ancient book management and protection major are required by students to apply for jobs, and the school attaches importance to the employment rate, and other reasons are listed as elective courses in library science and information management majors. Students are afraid of the obscurity and difficulty of ancient prose, so it is difficult for students to be interested in study and study. The staff structure of most university libraries in our province is aging and non-professional, and they are not specialized in the knowledge of ancient literature protection.

At present, some university libraries in our province have attached importance to the training of talents in the protection of ancient books. every year, graduate students in library science and information science are recruited in various channels and in batches to participate in the training of theoretical knowledge and basic methods of literature heritage protection held by the National Ancient Books Protection Center and Heilongjiang Ancient Books Protection Center and other relevant institutions. [6]However, due to the small number of ancient books subject librarians, special managers of ancient books, lack of specialized ancient books restoration personnel, no echelon structure of ancient books protection talents and other conditions, it is difficult to meet the needs of practical work according to national standards.[7]

2.3. Lack of Classification, Catalogue and Publicity of Ancient Books

The consciousness and sense of responsibility for the protection of ancient books are not only shown in paying attention to the hardware facilities for the protection of ancient books, publicizing the cultural and academic value of ancient books, and breaking the traditional conservative storage concept of "emphasizing collection and neglecting use" is also an effective means for small and medium-sized libraries to protect ancient books. [8]The classification and catalogue arrangement of ancient books is the basic work for the protection, development and utilization of ancient books. For example, Peking University Library, Nanjing University Library and other university libraries have compiled a large number of ancient book collection catalogues and rare books catalogue. however, some colleges and universities in our province still have a scattered collection of ancient books and are not sorted in order. The catalogue of ancient books which can map the names, authors, editions and contents of ancient books to the "second class bibliography" is not compiled in the letter cover, but it is not compiled in order,

which leads to the propaganda and promotion of the cultural value of the ancient books in Tibet, resulting in a discount in the utilization rate of ancient books.

3. The Working Principle of the Protection Cabinet for Calligraphy and Painting of Ancient Books

When in use, the main body of the protection cabinet is first pulled out of the interior of the outer protection cabinet through a pull rod. When the main body of the protection cabinet leaves the outer protection cabinet completely, the corresponding intelligent cabinet door is opened through a password lock, and the intelligent cabinet door will be turned outward first. Then it will be moved to the inside of the cabinet door storage box through the electronic control track on the inside of the cabinet door storage box, which can save external operation space and is easy to use.

After that, the drawer is extracted from the interior of the storage room, the ancient books, calligraphy and paintings are placed on the corresponding shelf, and then the drawer is pushed into the storage room, and the upper cabinet door is closed. The interior of each storage room is equipped with humidity sensors and temperature sensors. After the cabinet door is closed, the air temperature and humidity in the storage room will be monitored in real time, and the air humidity in the storage room will be detected by the humidity sensor. And the information is transmitted to the intelligent module or to the mobile phone terminal through the data processor, and the air dryer will be turned on when the indoor air humidity exceeds the standard. at the same time, users can also use the mobile phone terminal to remotely control the opening and closing of the air dryer, so as to avoid damage to ancient books and paintings caused by excessive air humidity, and the environment of ancient books and paintings can be monitored by temperature sensors. And cooperate with the constant temperature control module to adjust it to keep it stable at the standard value, and ultraviolet light strips are arranged on the drawer of ancient books and paintings, which can play the role of disinfection and sterilization and prevent microbial bacteria from corroding ancient books and paintings.

4. Specific Implementation Methods of Calligraphy and Painting Protection Cabinets for Ancient Books

The intelligent protection cabinet for calligraphy and painting of ancient books includes the main body of the protection cabinet, one end of the main body of the protection cabinet is provided with an external protection cabinet, one side of the main body of the protection cabinet is provided with a pull rod, and the bottom of the main body of the protection cabinet is provided with a protection cabinet base. The bottom of the protection cabinet base is provided with a mobile chute, the top of the protection cabinet base is provided with a protection cabinet top cover, and the bottom of the protection cabinet top cover is provided with a center partition of the ancient books room.

The outer surface of the central partition of the ancient books room is provided with a first LED touch screen, the lower part of the first LED touch screen is provided with a password lock of the ancient room, the lower part of the central partition of the ancient room is provided with a layered clapboard, the lower part of the layered partition is provided with a central partition of the calligraphy and painting room, the outer surface of the central partition of the calligraphy and painting room is provided with a second LED touch screen, and the lower part of the second LED touch screen is provided with a password lock of the calligraphy and painting room.

A first intelligent cabinet door is arranged on both sides of the central partition of the ancient books room and the central partition of the calligraphy and painting room, a second intelligent cabinet door is arranged under the first intelligent cabinet door, and the interior of the main

body of the protection cabinet is provided with an ancient book storage room, which is used to place ancient books. and there are two ancient books storage rooms, the interior of the ancient books storage room is provided with ancient book drawers, the interior of the ancient book drawers is provided with ancient book shelves, and there are two ancient book shelves.

A classification board is arranged above the shelves of ancient books, and there are several classification boards, a calligraphy and painting storage room is arranged at the bottom of the ancient book storage room, and there are two calligraphy and painting storage rooms, and the interior of the calligraphy and painting storage room is provided with calligraphy and painting drawers. The interior of the calligraphy and painting drawer is provided with calligraphy and painting shelves, and there are a plurality of calligraphy and painting shelves, and the inside of the calligraphy and painting storage room and the ancient books storage room are provided with sliding tracks, and there are multiple sliding tracks.

One side of the sliding track is provided with a slider, the upper end of the inside of the ancient book drawer and the calligraphy and painting drawer is provided with an ultraviolet lamp strip, which plays the role of disinfection and antivirus, and one side of the ancient book drawer and the calligraphy and painting drawer is provided with a temperature sensor to detect the temperature in the storage room. the other side of the ancient book drawer and the calligraphy and painting drawer is provided with a humidity sensor to detect air humidity.

Both ends of the first intelligent cabinet door and the second intelligent cabinet door are provided with an electronically controlled rotating shaft, one side of the first intelligent cabinet door is provided with an electronically controlled locking rod, which is connected with a fixed lock groove, and one side of the second intelligent cabinet door is provided with a fixed lock groove. one end of the first intelligent cabinet door and the second intelligent cabinet door is provided with a cabinet door receiving box, which stores the cabinet door and saves space, and the inside of the cabinet door storage box is provided with an electronically controlled track.

One side of the cabinet door storage box is provided with a power box.

The first intelligent cabinet door and the second intelligent cabinet door are connected with the electronically controlled rotating shaft through screws, the cabinet door receiving box is connected with the electronically controlled track through screws, and the electronically controlled rail is connected with the electronically controlled rotating shaft through a chute.

The output of the humidity sensor and the temperature sensor is connected with the input of the signal converter, the output of the signal converter is connected with the input of the data processor, the output of the data processor is connected with the input of the wireless module and the intelligent module, the output of the wireless module is connected with the input of the mobile phone terminal, and the output of the mobile phone terminal is connected with the input of the remote controller.

The output of the remote controller is connected with the input of the intelligent module, and the output of the intelligent module is connected with the input of the air dryer and the constant temperature control module.

The main body of the protection cabinet is connected with the pull rod by screws, the moving chute and the outer protection cabinet are connected by sliding blocks, and the central partition of the ancient books room and the central partition of the calligraphy and painting room are fixedly connected with the layered partition to enhance the stability.

The calligraphy and painting drawer is welded with the calligraphy and painting shelf, the ancient book drawer is welded with the ancient book shelf, and the ancient book drawer is welded with the sorting board to enhance the stability.

The calligraphy and painting storage room and the ancient book storage room are connected with the sliding track through screws, the sliding rod is welded with the ancient book drawer

and the calligraphy and painting drawer, and the sliding rod is connected with the sliding track through a chute, which can slide.

The ancient book drawer and the calligraphy and painting drawer are connected with the ultraviolet lamp strip through a card slot, the calligraphy and painting storage room and the ancient book storage room are connected with the temperature sensor through screws, and the calligraphy and painting storage room and the ancient book storage room are connected with the humidity sensor through screws. easy for users to install.

5. The Significance of the Protection Cabinet for Calligraphy and Painting of Ancient Books

Only by establishing a library of ancient books that meet the requirements of the protection of ancient books can we effectively prevent the damage of ancient books, but the reality is that there are very few libraries of ancient books that fully meet the requirements of the protection of ancient books, and even some local libraries do not even have independent warehouses of ancient books, not to mention air conditioners and dehumidifiers.

Even in the economically developed Guangdong Province, the government funds are only used for customizing nanmu book boxes, frozen insecticidal cabinets and special protection of rare books listed in the national and provincial precious ancient books list.

Not to mention, the average private treasure holder has no extra money to protect ancient books, calligraphy and paintings.

At present, the scale and level of domestic enterprises engaged in ancient book protection equipment industry are different. As a small enterprise engaged in infrastructure reprocessing requires huge manpower and material resources, and needs sustained and stable funds as a support, in the face of the market does not have a clear core competitiveness, as a college student start-up enterprise, unable to bear the huge economic pressure brought about by protracted operations, and often face problems such as limited personnel, shortage of funds and so on. As small and medium-sized enterprises, mainly engaged in software development and hardware processing, it is easier to determine the core advantages of the brand in a short time, and software development caters to the development trend of the Internet era, compared with the manufacturing industry, there is no need to spend a lot of manpower, material resources and financial resources. Large enterprises require the company to have a stable talent supply system and a stable R & D base, with short technology as the selling point, which is not in line with the actual development of the company. Based on the above reasons, Huixin Intelligence will take technological processing and platform research and development as our main target business, and actively expand other businesses as our secondary target market and potential service center. through its own ability to make 10 kilowatt-hours of electricity a day, small intelligent protection cabinets for the protection of ancient books and paintings to add power.

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