

Technological Advances and Change in Door Locking System in Hotels

Dr. Stephan Alex Almeida

H.O.D-Front Office

Anjuman-I-Islam's Institute of Hospitality Management, Mumbai, India

Abstract: *Previously a luxury for expensive houses, smart door locks made their debut in the hotel sector. These locks eliminated the difficulties associated with mechanical keys and eased hotel management by utilizing card and radio frequency technology. The history of security and access control spans aeras, from Roman metal locks through modern advancements to ancient Assyrian wooden pins. Punch cards, magstripe cards, and finally RFID keycards replaced the bulky metal keys that were used for hotel door locks in the 1800s. Starwood Hotels invented mobile keyless access, which transformed the visitor experience by allowing for remote check-in and encrypted keys on smartphones. The result of this 6,000-year-old, harmonic fusion of security and technology is OpenKey's mobile key solution, which improves security and visitor happiness.*

Keywords: Smart key, electronic door locks, open key, mobile key, hotel door lock

I. INTRODUCTION

Smart door locks were once virtually exclusively associated with upscale home remodeling. The hotel business was the first in the nation to implement smart door locks. The management of the hotel is also made simpler and more effective by using this type of lock, which is unlocked using a card and other radio frequency methods. This prevents the storage problems and management complication brought on by mechanical keys. (Bonwin, 2019)

Development of door locking system:

The Assyrians used wooden locking pins to safeguard the royal family's personal goods in the Palace in the year 4000 B.C. Ancient Egypt develops a primitive form of the pin tumbler, a forerunner of locks still in use today, in the year 2000 B.C. Ancient Greece also invented a primitive form of the keyhole during this time period. Around 200 AD, the Romans improved the Greek keyhole design by using metal in place of the wooden components and adding steel springs to move the pins. The earliest all-metal warded locks were made by English artisans around 900 A.D. using concentric plates, matched notch patterns, and skeleton keys to release the bolt. Robert Barron develops the first double-acting lever tumbler lock in the British Industrial Age in 1778. 1784: With his unique cylindrical key system, Joseph Bramah enhances Barron's design by enabling the bolt to retract. 1851: The Great Exhibition of 1851 marks the beginning of American dominance in lock and key design when American locksmith Alfred C. Hobbs receives a \$1,000 award for correctly identifying both the Barron and Bramah designs. 1861: Linus Yale Jr. wins his first patent for the ground-breaking Yale pin tumbler cylinder lock using information from his father's handcrafted bank lock design.

As early as 1862, according to Philippe Lesigne, head concierge of Le Grande Hotel Paris, hotel rooms were locked with metal room keys that "were attached to a big key-ring, which was hung on a board at the concierge office. The hotel business didn't fervently embrace lock & key technology as a source for security and an enhanced guest experience until the 1970s. During this time, punch card-operated hotel door locks reached the market and represented the next advancement in hotel room security.

Punch cards were replaced with the magstripe cards that are still widely used in hotels today in the 1980s. Punch cards were replaced by magstripe cards because they were significantly more secure. They were less expensive than conventional keys and were also simple to disable or replace. Magstripe cards were equally crucial since they preserved security without compromising visitor convenience. The appeal of magstripe locks' improved security ratings propelled this technology's quick acceptance in the 1990s and continued into the 2000s. Regrettably, the vulnerability of magstripe

cards was exposed when hackers were able to enter rooms, transfer loyalty card points, and commit other forms of crime. Magstripe cards' promise of greater security has abruptly come to an end. Hotels started using Radio Frequency Identification (RFID) keycards in the 2000s, which have a tiny chip and open locks by contact.

Starwood Hotels developed mobile keyless entry as (Starwood preferred guest) SPG Keyless in 2014 in an effort to improve security and convenience for visitors. The biggest hotel chains today have prioritized deploying mobile key, with Hilton introducing digital key in their 4,000th property in December 2018. The advantages of mobile keys for hotels are what are driving the quick adoption of keyless access. With mobile keys, visitors may check in remotely before arriving and get a safe, encrypted key right on their smartphone. With OpenKey, hotel owners have a low-cost, highly secure tool at their disposal to keep visitors safe while also delivering the ease required to improve the crucially important guest experience. **(Openkeys, 2019)**

Objectives:

- To understand various new door locking systems in hotels.
- To understand technological advances impact on door locking systems in hotel.

II. REVIEW OF LITERATURE

Mews blog reports that after barely changing for millennia, locks and keys are undergoing a remarkable historic transition from mechanical to electrical. The first electronic keycard lock, patented by Tor Srnes in 1975, established the groundwork for the current transition by creating a new market for programmable locks and the opportunity for a variety of authentication techniques. After fifty years, it appears that we are just now beginning to see the potential of electronic lock technology. **(Mews, 2017)**

According to the author, the widespread adoption of mobile key entry is anticipated to lead to favorable changes in guest and host activities throughout the hotel business. Additionally, it is anticipated that the adoption of mobile key room access and smartphone application use will whet consumers' appetites for more seamless travel experiences. However, not all hotels may benefit from this invention, however those that are technologically advanced may implement it. **(Torres, 2018)**

The article claims that using mobile keys enables guests to skip the front desk and get right to their rooms without having to wait there. Although mobile keys are convenient and can save guests time, they can also present security risks. The safeguards hotels and mobile key providers have in place to safeguard their electronic key system determine the security of the mobile key. **(Lambarena, 2018)**

If you thought your electronically protected hotel room was secure, think again, according to the authors. Security experts have discovered that electronic lock systems used by major hotel chains may be hacked, enabling crooks to enter rooms undetected.

The information was discovered by a team of researchers who used a master key card they created by hacking a lock system to open any door in the structure. It has sparked worries that criminals could use these devices to create fake room key cards. **(MAILONLINE, 2018)**

Authors suggest a smart door lock system for households in this article. How could a single click on a smartphone make life simpler? The main goal of this system is to improve our quality of life by giving disabled persons access to a safe and secure system. Technically, the system we've proposed is a remote access control door system, in which a mobile application used by a user within the house can access a picture of a person standing at the front door that was acquired by a camera positioned at the door. By using Bluetooth, the user receives the image on a mobile device and can lock or open the door as necessary. **(Meghna Prabhu, 2019)**

While some hotels may provide a lot of general security, including guards, a doorperson, and keycard access to the elevators. Doors to hotel rooms sometimes do a terrible job of deterring burglars. The hotel room lock operated by the door handle and the swinging-arm system that (ostensibly) provides extra protection for people inside in the event of an intruder attempt entrance are both nearly immediately neutralized using simply the paper pizza menus pushed under the hotel room doors. **(Good, n.d.)**

Onity, a leader in electronic access solutions, has introduced Serene, an all-in-one simple lock made for upscale hotels with an eye for aesthetics. This compact lock combines cutting-edge Direct Key mobile access technology with

attractive appearance. According to Fayyad Sbaihah, president of Onity, "Serene has been brilliantly designed to elevate both the form and function of a locking system to meet the growing demand for sophisticated locks with sleek aesthetics that complement an exceptional guest experience. (Onity, 2020)

III. METHODOLOGY

Academic publications, industry reports, social media, internet review sites and databases pertaining to the hotel and travel industries were employed in the study's secondary data gathering.

IV. FURTHER RESEARCH SCOPE

The information given traces the development of door locking mechanisms used in the hotel business over time, from primitive metal keys to contemporary mobile key technology. Despite the thoroughness of the historical viewpoint, there is a vacuum in the research on the level of security now maintained by hotel door locking systems, including an evaluation of the efficiency and risks of mobile key technology. In the area of hotel security and access control, there is also a lack of knowledge about new trends and technologies that will emerge beyond 2018.

V. CONCLUSION

Hotel door locking systems have advanced significantly over the years because to ongoing efforts to improve guest convenience and security. The industry has made considerable breakthroughs, moving from metal keys to mobile keys. However, it is essential to continuously examine and address potential weaknesses in these systems if one wants to guarantee the security of visitors and the privacy of their personal information.

Future studies should concentrate on assessing the security of mobile key technology, investigating cutting-edge concepts like biometric access management, and looking at how Internet of Things (IoT) devices are incorporated into hotel security systems. In a technology environment that is always changing, this will assist the hotel business in staying ahead of potential dangers and offering customers the highest degree of security and convenience.

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