

A NOVEL CHAIN AND HOOKING SYSTEM TO DOORS OF RAILWAY COACHES

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Abstract— It is a common feature seen while on travel in trains that some passengers intentionally or unintentionally prefer to travel by standing by the sides of the doors of the coaches. In the case of some passengers they just sit on the exit points and rest their legs on the foot-steps which are attached outside the coaches. In both the cases, the doors are let opened in the absence of having any facility for keeping them hooked to any system. This sometimes results in serious accidents to such passengers as there is every possibility of the doors of the fast moving trains forcibly closing unexpectedly which causes accidents to the passengers who travel either by standing by the sides of the doors or sitting on the exit points. Even otherwise, we usually notice that the doors of the fast moving coaches which are kept opened suddenly get closed forcibly due to various reasons, especially when the wind at extra velocity enters the coaches. Considering the accidents occurred to trains due to various other reasons, the accidents caused due to matters related to doors of the coaches may be trivial. However, it is always prudent to avoid any type of accidents with a little extra care keeping in mind the fact that “Prevention is better than Cure”. Against this background, a novel idea has been minted out in my mind to avoid accidents caused due to matters connected with the doors of the coaches of the trains.

Index Terms—Accidents, coaches, passengers, trains.

I. INTRODUCTION

The Indian Railways is an Indian state-owned enterprise, owned and operated by the Government of India through the Ministry of Railways. It is one of the world's largest railway networks comprising 115,000 kms of track over a route of 65,436 kms and 7,172 stations. In 2014-15, the Indian Railways carried 8.397 billion passengers annually or more than 23 million passengers a day (roughly half of whom were suburban passengers) and 1050.18 million tons of freight in the year. In 2014–2015 Indian Railways had revenues of 1634.50 billion which consists of 1069.27 billion from freight and 402.80 billion from passenger’s tickets.

Railways were first introduced to India in the year 1853 from Mumbai to Thane. In 1951 the systems were nationalized as one unit, the Indian Railways, becoming one of the largest networks in the world. The Indian Railways operates both long distance and suburban rail systems on a multi-gauge network of broad, metre and narrow gauges. It also owns locomotive and coach production facilities at

several places in India and are assigned codes identifying their gauge, kind of power and type of operation. Its operations cover twenty nine states and seven union territories and also provides limited international services to Nepal, Bangladesh and Pakistan.

Indian Railways is the world's seventh largest commercial or utility employer, by number of employees, with over 1.307 million employees as of last published figures in 2013. As for rolling stock, the Indian Railways holds over 239,281 Freight Wagons, 62,924 Passenger Coaches and 9,013 Locomotives (43 steam, 5,345 diesel and 4,568 electric locomotives). The trains have a 5 digit numbering system and runs 12,617 passenger trains and 7421 freight trains daily.[6] As of 31 March 2013, 20,884 km (31.9%) of the total 65,436 km route length was electrified. Since 1960, almost all electrified sections on the Indian Railways use 25,000 Volt AC traction through overhead catenary delivery. Procedure for Paper Submission

II. NEED TO ENSURE SAFETY

As already stated, the Indian Railways carry around 23 million passengers a day throughout the country. It is of paramount importance that the Indian Railways have to ensure safe journey of this much colossal number of passengers. Keeping this vital aspects in mind, every year, Government of India gives utmost importance to safety aspects and allocates sizeable amounts in the budgets for implementing improved and innovative measures aimed at ensuring safety of its passengers.

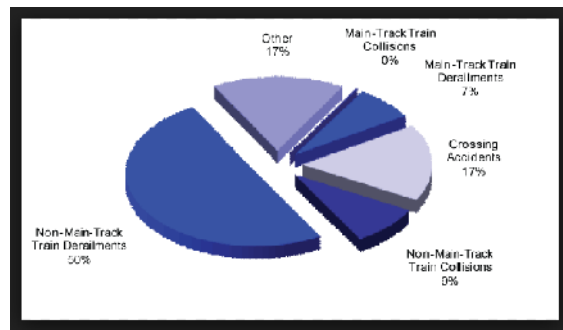


Fig. 1. Pie Diagram for Train accidents

Keeping in view the fact that the Railways will have to lift more originating traffic during the coming years, there is a growing emphasis on strengthening of infrastructure in the Railways.

The Fig. 1 shows pie-diagram gives the statistics of accidents caused on the tracks and to the trains.

Safety Action Plans were continually executed by the Indian Railways to reduce accidents caused by human errors. A multi-pronged approach with focus on introduction of newer technologies, mechanization of maintenance, early detection of flaws, etc. to reduce human dependence in the first place, along with upgrading the skills of the human resources were the prime drivers for accident prevention.

Periodical safety audits of different Divisions by multi-disciplinary teams of Zonal Railways as well as inter-railway safety audits are conducted by the Indian Railways on regular basis.

Further, training facilities for drivers, guards and staff connected with train operation have been upgraded. Disaster Management Modules have also been upgraded.

III. REPLACEMENT OF EXISTING SYSTEM

It is a well-known fact that the existing pattern of the doors of the railway coaches do not have a mechanism which can hold the doors in a stationary position. In most of the cases, this conventional pattern of the doors of the coaches can be termed as the prime reason for accidents caused at doors of the railway coaches. So, with a small chain arrangement which embody hooks on both ends which can be attached to the doors of the railway coaches, it is definitely possible to hold the doors in stationary position and keep away accidents. One hook attached to one end of the chain can be fitted to locking end of the doors whereas the other hook attached to the other end of the chain can be inserted to a hook-holder fixed on the sides of the railway coaches at a convenient place. Such a Chain System can be useful to hold the doors in stationary position which prevents accidents to the train passengers.



Fig. 2. Hook for proposed design

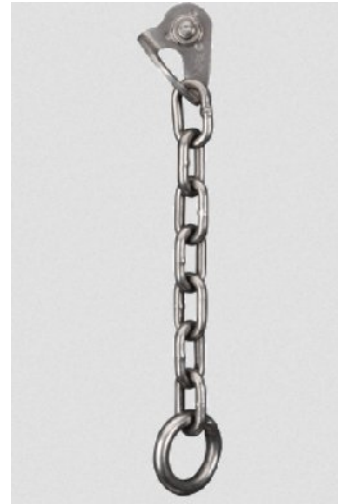


Fig. 3. Chain for the proposed model

IV. CONCLUSION

The replacement of existing door will considerably decrease the accident rate that is happening in rails nowadays and also this mechanism is also quite simple.

BIOGRAPHIES



Mr. Akhilesh B, Under Graduate Scholar, Department of Mechanical Engineering, NCERC, Thrissur. He has attended International Conference on Design & Fabrication of plastic reinforced brick manufacturing machine and also presented paper in National Conference on Recent Advances in Mechanical Engineering (RAME 2015). He was born on 14th March 1993 and is a native of Palakkad.



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