



ACCIDENTAL DECOUPLING PREVENTER AND WARNING DEVICE FOR RAILWAY LOCOMOTIVE

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Railway coupling is a very important part for a successful and safe train service. From engine to last guard van or guard compartment is well couple via a secure coupling system to make a safe train run on a railway track. For a safety run each coupling from engine to last guard van are should be inspected perfectly to avoid any dangerous accidental situation before start the train journey on a railway track. Various kinds of railway coupling are currently using in Indian Railway like JANNEY, AAR, KNUCKLE, TIGHT LOCK, CBC, ART COUPLER. Till now I mostly observe the JANNEY and KNUCKLE coupler in compartments and engines. All though various coupler may be use according to their advantages but proper mechanical inspection and maintenance is very important to make them efficient during operation period. A few small accidents took place due to loose coupling between engine and compartment or goods wagon in past time. Some of them are published in newspapers in past time. A very recent incident which published in a daily news paper (Anand Bazar Patrika) on 5 th June 2023. I attached the paper cut with my research paper. The goods train's last good wagon and the guard van is suddenly decoupled from the train during start the journey when detected then reverse back the train and recouple the bodies and then start again. All though these kinds of problem can possible due to mechanical error in the coupling system or may be improper inspection or improper maintenance.

I designed a simple system but effective to avoid such kind of decouple problems permanently. In my system a small device (size of a 500 watt voltage stabilizer) is fitted in the locomotive. Basically this is a decouple detector Cum alarm system for the loco pilot to alert for the decouple condition.

Working process of the system is simple. The detector Cum alert system gets its power supply 230 volt A.C. from the locomotive power supply system. Now connect one side of a sensing cable pair wire to the device. and the other side this cable goes through the chasis of locomotive and finally it paralaly come out with the vacuum pipe which is use for break system. The cable may be paralaly attached with the vacuum pipe for better holding through binding. The sensing cable must a jack socket or plug in socket type connectivity, when the vacuum pipe of the engine is connect with the wagon or bodgie's vacuum pipe then the cable automatically connect with the jack socket type of the wagon or bodgie's and establish a proper sensing system to access the wagon or bodgie' presence. As an example the first wagon or coach is connect with the engine and a paralal connection jack come out with the vacuum pipe of the first coach and again connect with the second coach's connection socket and similar way another paralal connection jack is come out with the vacuum pipe and connect with the connection socket of the third coach. This way the total process is repeated and finally the circuit is complete in the guard van. This way the total system is complete and ready for working.

Functioning and adventages of the system

Now I describe the system working principle with the diagram for a clear understanding. A small device size of a small stabilizer is fitted in the of the loco pilot cabin and a high pitch buzzer, on/off power switch for the device is fitted on the dashboard of the loco cabin. The sensing cable is attached to the device and other side of the cable goes just under through the chasis of the locomotive for connect with the coach. After complete of the coupling process with all wagon or coach and

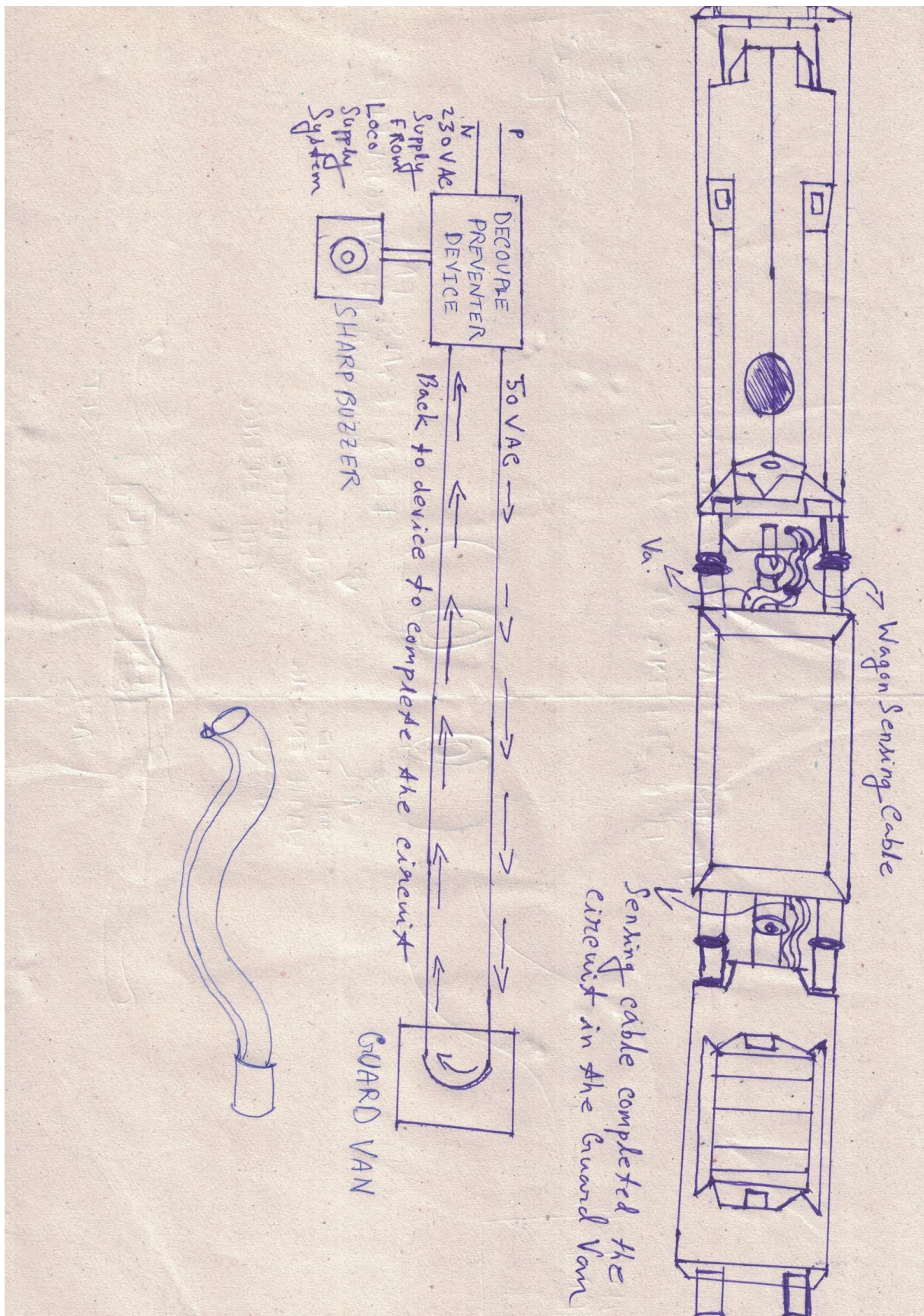
guard van and engine when the loco pilot just switch on the decoupling preventer device then first 230Volt A.C. applied to the device then the device step down the A.C. volt to lower value 50 volt A.C. This supply voltage goes through the cable's one wire and return back to the device through the another wire following the jumper connection bridge of the guard van' s vacuum pipe' s connection socket and complete the circuit.

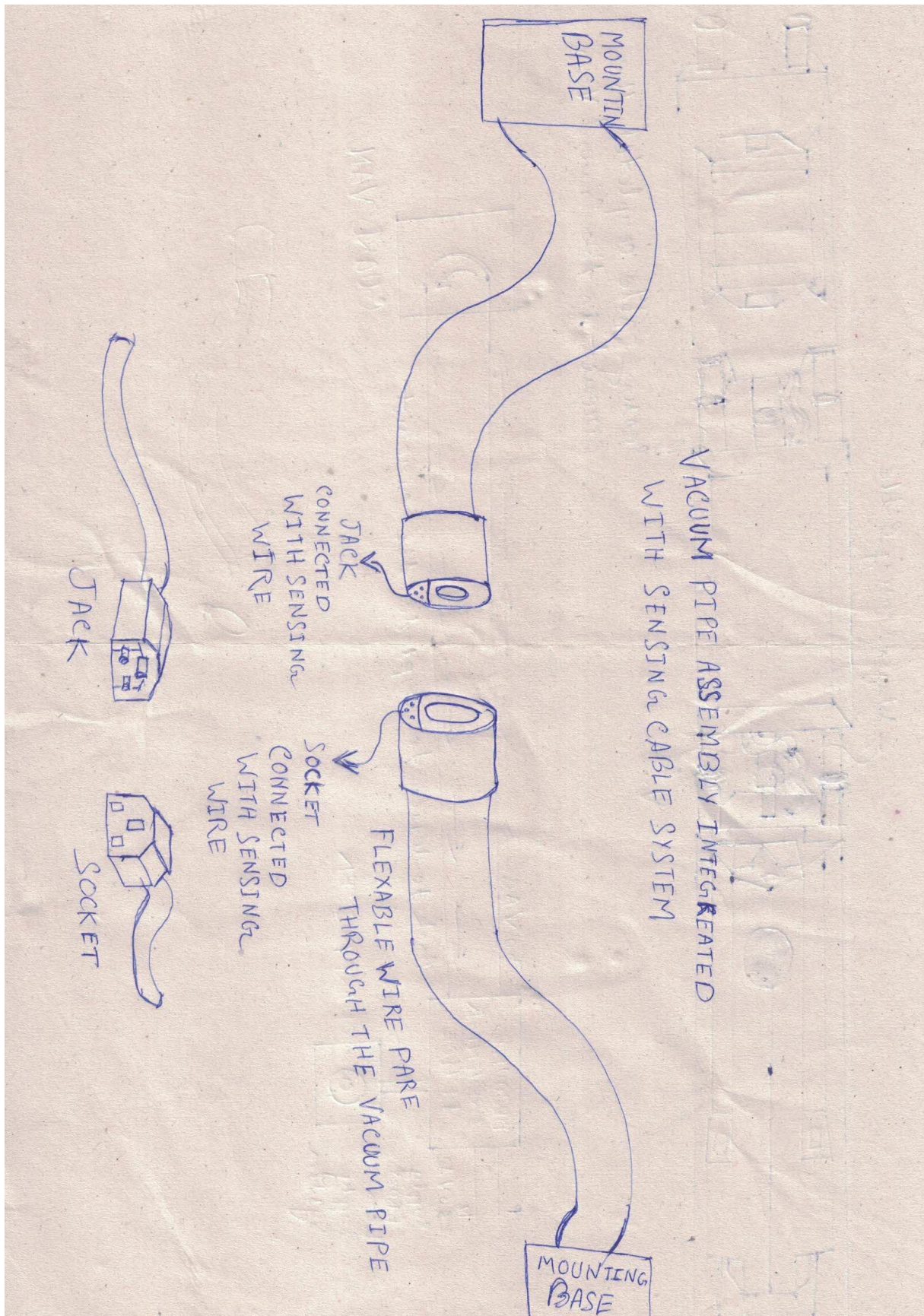
The two advantages are available in this condition. First is before start the train when the device is switch on for inspection if any vacuum pipe is not connected accidentally between any coach or between engine and coach or if the guard van is in disconnect condition then the circuit will be incomplete and the device immidately active the sharp buzzer (present in the dashboard) and alert the loco pilot about the condition and after detection when the problem is solve by correction the the device deactivate the buzzer automatically.

The second advantage is after complete of the coupling process if all vacuum pipe is connected from engine to guard van perfectly but any one coupling among them is in loose condition not properly coupled then in this condition if the loco pilot start the engine to pull the coaches then the loose coupling can easily deattach some coaches from the train and in this deattach condition the vacuum pipe is easily disconnect from each other for pulling effect and the circuit will be break and again the sharp buzzer present in the dashboard of the locomotive alert the lo pilot immediately about the condition and the problem is easily detected and can be solve easily. This way my designed device can be useful Railway saftey and security. I also attach the details of the Drawing and news paper cut out with my main documents.

Saftey precaution during handling of the sensing cable integrated vacuum pipe

The device must be switched off condition in engine during vacuum pipe connection and coupling period because the supply volt is 50 volt A.C. in sensing cable. All though in dry condition 50 volt A.C. is not so lethal but in rainy season all these things are wet and in this condition if the device is not switched off then any one can get a little high electric shock. This problem can also be solve by design special type of Jack and socket for this purpose. I also provide some example drawing of Jack and socket. In this design water can't reach and touch the connector pins and keep the system shock proof and work perfectly. DC supply can not be use in this area DC can't travel long distances but A.C. can do it efficiently so I use choose the 50 volt A.C. for this purpose because the telephone exchanges are also provide 50 volt A.C. for all land line phone communication system .





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এক নজরে

বগি ছেড়েই রওনা

▶▶ বগি ছেড়েই রওনা দিল মালবাহী ট্রেন। ওড়িশার বালেশ্বরের রেল দুর্ঘটনার রেশ কাটতে না কাটতেই এমন ঘটনায় আতঙ্কিত বাসিন্দারা। সূত্রের খবর, রবিবার ধুপগুড়ি ব্লকের আলতাগ্রাম স্টেশন সংলগ্ন ভান্ডানি এলাকায় মালবাহী ট্রেনের ইঞ্জিন ও বাকি অংশ থেকে গার্ড ভ্যান-সহ একটি পণ্যবাহী বগি কাপলিং খুলে আলাদা হয়ে যায়। মালবাহী ট্রেনটির শেষের একটি বগি ও গার্ড ভ্যান ছেড়েই গন্তব্যের দিকে রওনা দেয়। শেষে বুঝতে পেরে ট্রেনটিকে পিছিয়ে আনা হয় এবং বগি ও গার্ড ভ্যান জুড়ে সঙ্ক্যায় সেটি গন্তব্যের দিকে রওনা হয়। রেল আধিকারিক এস উমেশ জানান, জোড়া খুলে যাওয়াতেই ঘটনাটি ঘটেছে।

