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DESIGN AND FABRICATION OF MANULLY OPERATED ATHLETIC TRACK MARKER

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ABSTRACT

For sports days or for inter-school carnivals, one of the most important requirements for the trouble-free success of these meetings is that the track and field events be clearly and accurately marked. A minimum amount of equipment is required. Apart from a line-marking machine and some white paint, or other suitable marking material, all that is required is one, or two if possible, good-quality l00 meter tapes, lots of string or twine, a few colored ribbons and a few wooden pegs. For State, National and International competition, athletics fields are permanently laid out and marked with the help of professional surveyors using specialized, expensive equipment for school sports this degree of accuracy is not as critical, a very accurately marked out 400-metre track is possible.

In this work, the machine described is an manually operated Line Marking machine that is capable of marking a sports field with the help of limestone material completely manually. This would eliminate the tedious and time-consuming conventional method of line marking manually thus reducing human efforts and increasing the quality of the marking of the sports field. The machine is designed to travel along the path of the field Further, a mechanism for the smooth and continuous release of the limestone marking material is described.

INTRODUCTION

Fig no 0.1 MANULLY OPERATED ATHLETIC TRACK MARKER

A line marker is a device or machine with which lines or markings are drawn on a sports field or pitch (such as running track, tennis court etc.) They were originally developed to mark out lawn sports grass, but later also became used in many other sports with outdoor pitches. The marked lines are often white, but may be any color. There are two types of line marking machine, one is dry line marking machine, another one is wet line marking machine. Pitch marking is an important part of pitch preparation giving players and referees a clear indication of the location of the field markings. Clear white lines enhance every pitch or playground giving them clearly defined lines. The introduced the most revolutionary Machine & Paint system, setting new standards in performance and user friendliness.

Pitch line marking machines have revolutionized the way line marking is implemented, and the use of mode plastics and design technology has further pushed this development. As a result, line marking machines now come in a variety of shapes, sizes, and systems. This makes the ideal for different types of situations, whether this is within a construction site or on a sports pitch.

METHODOLOGY

The methodology contains the representation of the body design process based on the use of these criteria

- Define the line marking machine reference model.
- Designing of new line marking machine model.
- Optimization phase.
- Model update during line marking machine development.
- Design method implementation.

APPLICATIONS

- Used in athletic track marking.
- Used in volleyball and badminton court marking.
- Used in car parking lines marking.
- Used in safety margins marking in industrials and etc.

FUTURE SCOPE

- This track marker can be used in school and colleges for sports events.
- It can be used for rough marking for road width..
- It can be used for layout marking in constructions Industries.
- It can be automized in future.
- It can be used both wet and dry marking.
- It can be developed in future method of melting and hot application on road surface by spray or cover for the purpose of creating lines on the surface of roads..
- This marking machine is better than compared to other line marking machines.

RESULTS

Dry marking:

Fig no 1.1 Powder Flow On Floor

Fig no 1.2 Width of the line 70 mm

Fig no 1.3 Width of the line 50 mm

Step 1: The chalk powder or rangoli powder is pour into the body.

Step 2: By holding the machine handle started moving towards forward direction.

Step 3: The poured powder in the body start to flow on the floor or ground by rotation of blade which is fixed inisde the machine

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Wet marking:

Fig no 1.4 Pump Connected to the circular plate by the rod

Fig no 1.5 Paint Line Marking from The Marker

Step 1: The enamal paint mixed with salvent is directly pour into the spary can.

Step 2: Connect the pump to the circular plate by the rod..

Step 3: When we move the machine in forward direction the ciruclar plate start rotating. Then the pressure will be created inside the pump and it supplies the paint to the filter.

Step 4: The paint start to flow on the floor or ground by the filter.

CONCLUSIONS

- Different parts of the machine were also made in the NX 12.0.1 software and their corresponding cut sections and 2D drawings were also obtained.
- The corresponding design calculations were done and the required amount of different materials was hence determined.
- After planning and designing, we have successfully fabricated a model of machine. We can see that the machine can mark the line effectively and we can get the accurate line as the output.
- Manually operated athletic marking machine is mostly used for marking since it reduces the manpower.
- Suitable marking material is selected so that all the necessary requirement of ground safety, environmental factors and others can be fulfilled.
- Manual operated track marking machine is low equipment cost.
- Also, we have fabricated a model which does the work right and is both economic and optimized.

REFERNCES

1. Ashish bhaiswa G. H., Vishal franci G. H., “manually applicator road marking machine”.

2. Milan vasko, Milan sagar, peter kopas. “Design and stress analysis of wheeled compactor construction.

3. Anjish M George.“Modelling and static analysis of wheel spacer”

4. Priyank Mahajan, Rishabh Ishar, Dr. D.R. Prajapati.“Static analysis of truck wheel rim using Ansys software”

5. T. Hakoyama, P. Eyckens, H. Nakano, A. VanBael, D. Debruyne·, T.Kuwabara.“On the synergy between physical and virtual sheet metal testing”.

6. I. Ayuso, J.M. Calaforra “Low impact track marking of caves with speleological activity”.

7. Toshihiko Kuwabaraa, FuminoriSugawarab.“Multiaxial tube expansion test method for measurement of sheet metal deformation behavior under biaxial tension for a large strain range”,

8. S. Coppietersa, T. Hakoyamab, K. Denysa, D. Debruynea and T. Kuwabarab “Error assessment in post-necking strain hardening behaviour identification of mild steel sheet”.

9. On Bostan, Technical University of Moldova,Technological aspects of kinematic planetary precessional transmissions with plastic wheels.