"MODIFICATION IN DESIGN OF FLEX PERFORATING MACHINE"

[1]Mr.JiteshTarare, [2]Mr.ChetanDamahe, [3]Mr.C.D.Rewatkar, [4]Mr.VinitPatil
[1,2,3 & 4]Student- Shri Datta Meghe Polytechnic, Wanadongri, Nagpur
E-mail:- tararejitesh@gmail.com

ABSTRACT
In present scenario the flex perforation is done by the cutting tool or cutter. This is so done to make flex banner strong enough to resist wind force created by nature, protecting banner from tearing of wind force, but it is not completely truth i.e. due to cutting triangular holes or making cuts in flex banner for perforation purpose, makes the banner weak and it is torn off very easily and the ready-made perforated flex are so costly that it's cost counts more than 3 times of the normal flex.
In our machine the perforation is done in very low cost and the quality of perforation is almost same as to the ready-made perforated flex banner contents. In our machine the perforating is done by the perforating roller, which works on the concept of continuous roll passing.

KEYWORDS
Perforating roller, bearing, pedestal, shaft, frame, flex banner, belt, and pulley, motor

INTRODUCTION
Flex are often fabricated commercially on a plastic background, the banner industry has developed from the traditional cut-vinyl banners to banners printed within large, ultra-wide format inkjet printers on various vinyl and fabric materials using solvent inks and ultraviolet inks.

Banners are used in many business ventures, marketing to their potential audience. A number of British towns and cities have whole series of banners decorating their city centers, effectively advertising the town or its special features and attractions. Pre-printed banners are simple and accessible. Banners can be printed in enormous formats, with a full range of rich colors. They can also be used in many different physical situations whether it is hanging from an existing fixture, fixed to a wall or even free standing. When an advertising banner is hung or suspended between posts, grommets or another method of attachment are necessary to prevent the banner from tearing or flying away. Aluminum grommets can be punched into the banner.
and used as secure entry points to tie the banner down. This installation method allows for more durable advertisements. Some vendors offer pre-installed grommets. Another common form of free standing banners are retractable displays.

Banners can be found plastered behind a window screen, as billboards, atop skyscrapers, or towed by airplanes or blimps. As with variable of size and quantity, the number of sides and quality of ink are as much of a crucial factor. In an instance of retail stores, which purchase pre-printed clearance banners, or a variety of sales banner. A banner facing underneath or against glass is absorbing exposure from the sun. A banner
printed on UV outdoor ink will last several years to a decade where cheaper ink fades, requiring frequent replacement. Being behind glass, a two-sided banner can be displayed from the inside and out, often building recognition between shoppers and caretakers. Three-sided banners are often appealing as there is dimension and can be embellished differently. The more sides that exist, the more angles the banner covers, which is a possibility where a two-sided banner doesn't face the viewer from center of the room or streets.

DATA COLLECTION
THROUGH LITERATURE SURVEY

Bearings: Bearing (6203)
Internal diameter: 17 mm
Material: chrome steel

Motor: Geared motor worm and worm wheel gear box provided in motor to provide 50 N-m torque

Shaft: MS bar of 17mm diameter.Right bar used as it have advantage of having uniform diameter over its length.

Pedestal hub: pedestal(1203)
Material: bead

PROBLEM STATEMENT

WHY WE WANT TO CHOOSE THIS TOPIC.

If we look up to the nearby market then we'll find that the perforated flex available in the market is very costly which is 2-3 times than the manufacturing of flex. The flex which are perforated manually by means of cutter looses their strength due to irregular cutting and doesn't look good for advertising.

We decided to find a solution on this problem and present it in the form of a project to minimize the cost of the flex banner perforation and to maintain its strength along with its better outlook.

PROBLEM IDENTIFICATON

When a banner is hung or suspended between posts, grommets or another method of attachment are necessary to prevent the banner from tearing or flying away.

In India tearing of flex is done by simple cutter which cuts the banner in triangular or circular shape.

This Improper cutting makes the banner weak and fails to withstand the wind forces. To avoid this we have created a machine which can make even and symmetrical holes on full length of the banner.

DEVELOPMENT OF OUR CONCEPT

"Modification& Fabrication of A Machine to Reduce the Critical
Process Parameters along with Improve Productivity & reducing cost for flex perforation."

MATERIAL USED

1. Steel 2 inch square pipe
2. MS bar of 17mm diameter
3. Hollow cylinder of 10mm diameter
4. 6 bearing pedestal (1203)
5. 6 bearing (6203)
6. ½ hp motor
7. Punch nails
8. 2.5x1.5 in. bolts
9. Pulley
10. Gear
11. Power transmission belt

WORKING:

1. It works on the principle of roll piercing method.
2. Since the rollers have nails on it, it easily perforates the flex.
3. The rollers are powered by the motor and can be operated manually by means of detachable handle.

The machine works on the principle of roll piercing and this is possible due to the perforating rollers installed in machine. Due to the rollers we are able to perforate the flex with even distance.

Project Picture: Flex Perforating Machine

Thus flex perforating machine is suitable for flex perforation & printing industry. They can be also used for perforating paper and plastic sheet with minimum expenses

Conclusion:

Identification and solving of problem is being done in Previous chapter, The basic problem which is identified here in this project was solved with our project and the

unique outcome is achieved i.e. the uniform perforated holes in flexes.The perforation operation ease the banner to stand in even high wind pressure region more over this also enable the nice appearance of the advertisement which may not be a previous case.

Previous case

Outcome from project

The best result can be obtained from the project when it is compared with previous case. The uniform holes is being punched with the help of the mechanism used in project.Hence with the help of fabrication of Flex Perforating Machine we are now in a position to solve the problems occurring in flex banner i.e. we have solved two major problems.

1. Strength of the flex sheet get reduces due to irregular Handmade holes in the flex, this problem is solved with our project and theuniform size of holes with having equal pitch is obtained which ultimately secure the strength of Banner in high wind pressure.

2. Due to irregular shape the appearance of add may gets Damage but with this project such problems is resolved.

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Author detail:

NAME: Jitesh Tarare
College: S.D.M.P.
College ID: 2013CM0074
Email id: tararejitesh@gmail.com

NAME: Chetan Damahe
College: S.D.M.P.
College ID: 2013ME0231
Email id:
chetan.damahe.acco@gmail.com

NAME: C. D. Rewatkar
College: S.D.M.P.
College ID: 2014DSME47
Email id: rewatkar.cd95@gmail.com

Name: Vinit Patil
College: S.D.M.P.
College ID: 2014DSME43
Email id: vinitpatil.998@gmail.com