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MULTI PURPOSE TRENCHING MACHINE

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ABSTRACT

The innovative design of soil removing machine is very suitable for underground installation of the cable lines water and oil transportation. The machine is very helpful for avoiding the injuries of workers at the working time. The machine also reduces the human effort and time of extension of the projects. The adjustable depth of cut of the blades are designed with respect to collection of soil in the auxiliary tip of the holes. The holes collect the soil and gradually and discharged in the side of hopper. The curved distributors close the removed place of soil after installation process of requirement. The sprocket distance is adjustable for with respect to depth of cut. The total setup is suitable for both right and left side. The special machine is very suitable for perfect dimension of width and depth of cut. The rotary blades are placed either right or left side of the truck. The diesel engine is provided for transmitting the power directly to the main shaft sprocket and chain drive is to transmit the complete power to auxiliary shaft. The blades are attached with the shaft. The holes are provided for collection of soil in the curved blades through the holes and it is discharged through hopper. The design is very effective and great alternate for existing cranes and pocklines.

INTRODUCTION

In our day to day life we are using many advanced machines for various purposes. The machines are mainly introduced to reduce the human effort at various locations. The machines are working with the different source of energy. The multipurpose machines are used in various places, such as cranes, pocklines and drilling machines. The initial investment of the machines are very expensive. The demerits of the machines are they pollute the environment. But the selection of fuel is most important. The fuel is selected from depending upon our requirement such as load, speed and torque. The present day machines are huge in size. So it is not suitable for all the places. The technological innovations are only concerned about the complicated problems. But the simple problems are not solved by anyone. So it can be easily avoided by using our design of machine. The soil removing purpose is mainly used in water pipe installation, cable installation and oil transportation through underground. In present days there are many underground cable installation projects are going on. The complete action is only done by man power. So the time of completion is extended for long time. The main causes of underground installation are not affected to the climatic condition and the signal communication is not crashed at any source and favourable to the living species.

LITERATURE REVIEW

The underground soil removing machine is not prepared separately. So the time taken of the manual process is increased and maximum fuel power is required. The initial days of cable installation is done on human power only by using traditional equipment. But the present day of operation can be completed by the cranes and pocklines. But the size of the machine is very large and initial investment cost is high. So the machines are popular used in only specified location. In the existing machines it does not complete the action with in the time. Because the cranes are mostly used in carrying, transportation and lifting purposes. But the pocklines are mostly used in removing trees, distributing soil and weight lifting purposes. There is no machines for underground straight line soil removing. The pocklines are not comfortable to remove the soil at any kind of the places. Because the center distance of the wheel is very high and it is very suitable for various applications. But the machine is not suitable for soil removing the purpose of cable, gas and water lines. The problems can be reduced by innovating the machines for soil removing. The machines are very small in size and not stable for long time. The consumption of time is also maximum for soil removing and installation processes. The existing machines are not suitable to remove the soil near the drainage system. Because the existing machines removes the soil only intermediate wheels only.



Fig 2.1 and 2.2 manual operation

OBJECTIVE

To design a simple machine for the purpose of soil removing to support cable installation, water, gas and pipe line inserting in the underground. Our main aim is to minimize the human effort of boring and closing time. To create a machine design at any kind of depth level at any direction.

2D DESIGN

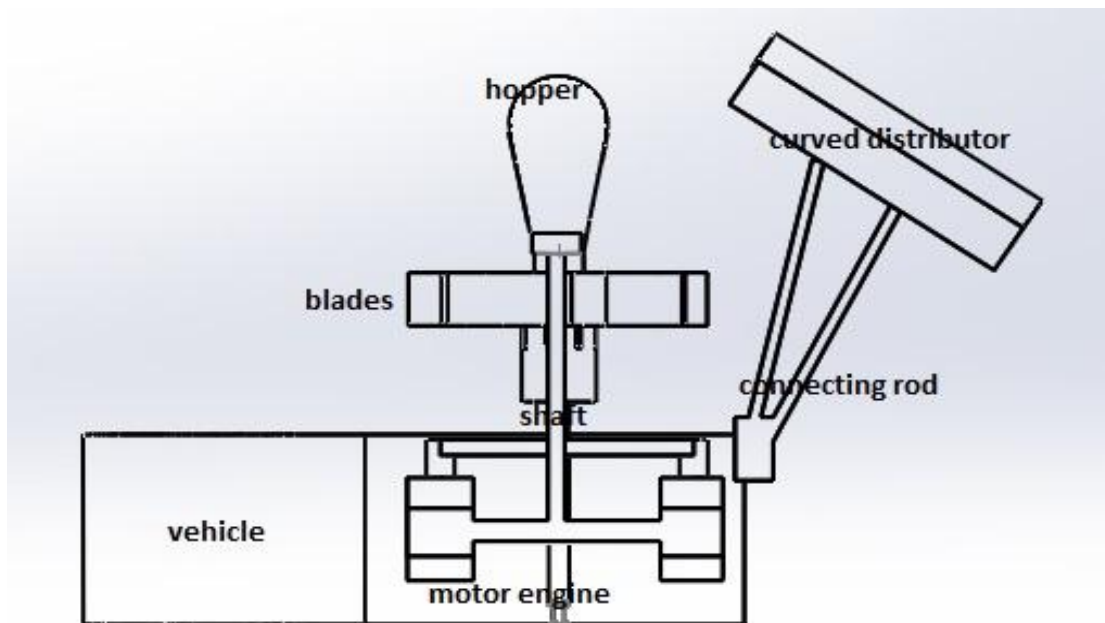


Fig 4.1 top view of the design

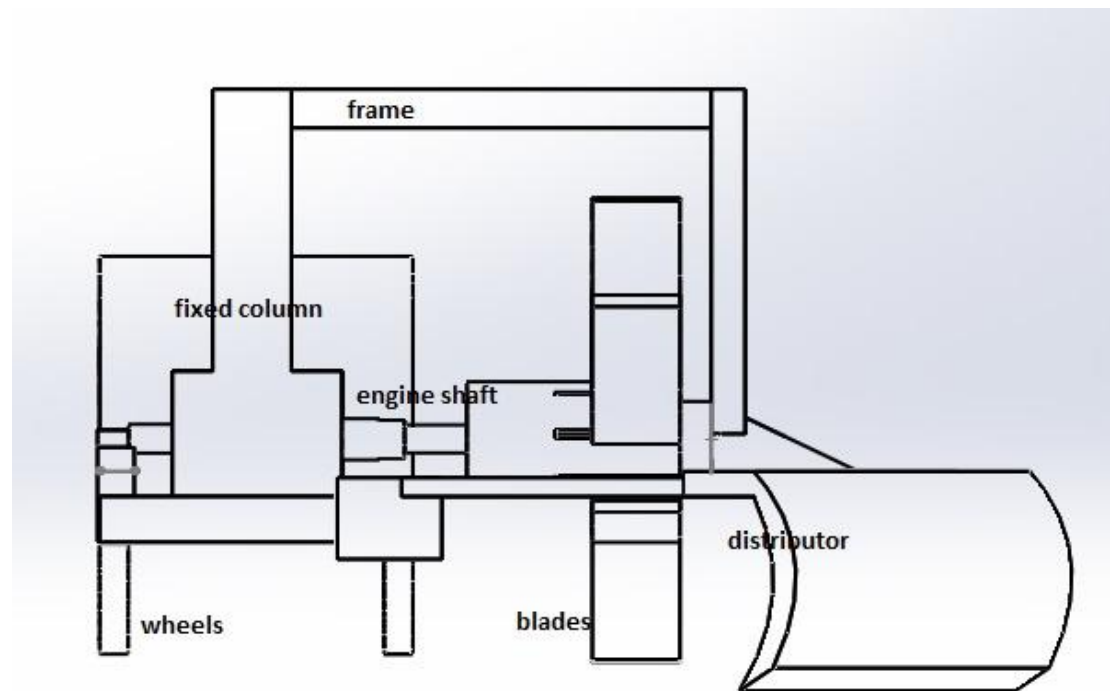


Fig 4.2 front view of the design

WORKING

The soil removing in under ground is to be used in many requirements. Such as drainage construction, cable line installation, gas, water oil transportation pipes are installed in now a days under ground. But there is no special machines for removing accurate dimension and depth of soil in the under ground. The effect of improper dimension reduces the life time of the pipe lines and straight installation is not possible. So it can be reduced that we are designed a machine for soil removing purpose in underground. In our design of machine the total setup is attached with the truck surface and it is clamped with tight bolts and nuts. The blades are designed with some angle of contact with one another. The blades rotate in clockwise direction. The soil is removed in sliding path of the front portion. The right side and left side edges are straight position. The blades are used to remove the soil in minimum depth of cut at the constant speed. The rotating blade is attached with the auxiliary shaft. The two diesel engines are provided for the rotating purpose of the whole design. The two diesel engines transmit the power and it is collected in a single sprocket and it is transmitted through the shaft by using chain drive. The removed soil can be placed in a certain distance of the rotating blades. The back portions are the curved distributors are gradually closed the holes after the installment of cables and pipe lines. The curved distributors are in adjustable pins attached with the ends. So it can be easily lifted and downed depending upon our requirement. The connection of main shaft sprockets and auxiliary shaft is adjustable. So we can easily adjust height with respect to depth of cut. The minimum depth of cut is the shaft are transmitted the power in the same shaft. The maximum depth of cut is needed then the adjustable shaft is downed from its initial position. So the maximum height of soil removing is possible. The blades are also changed our required width of the soil removing dimension. The end of the blades are attached with the auxiliary shaft. The end holes are provided at the tip of the shaft. Because the elimination of the soil is collected inside the auxiliary shaft. The collection of the soil is gradually discharged inside the hopper. The discharged soil after installation process of cable the curved distributors are closed by the removed soil. The whole design of rotary blades are we can able to attached the left and right side of the truck depending upon our requirement.

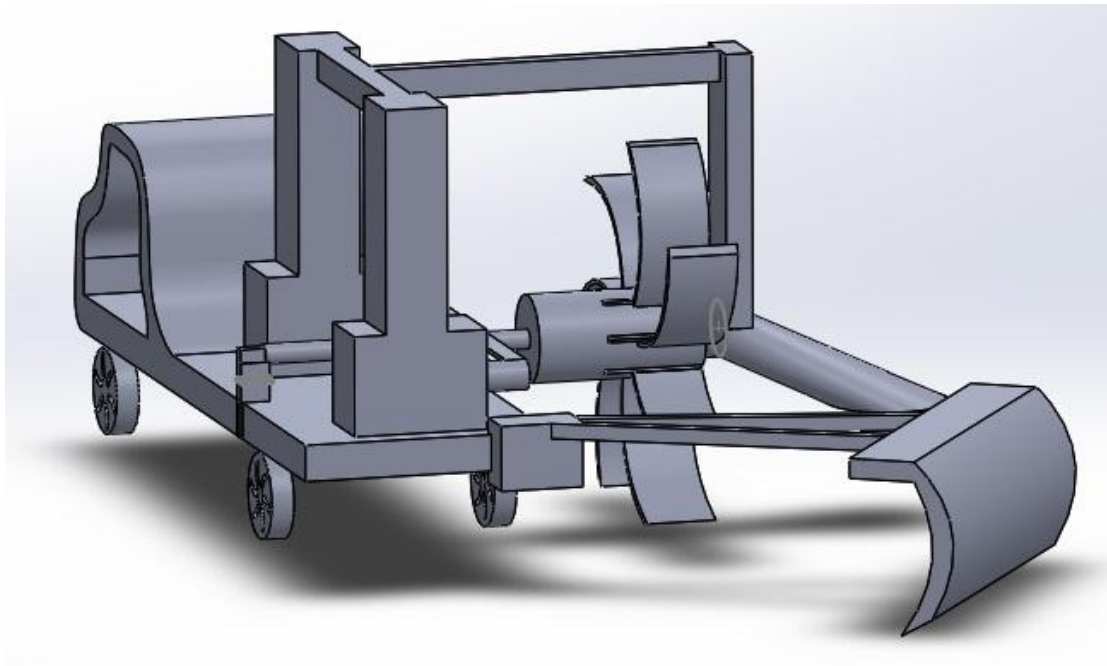


Fig 6.1 isometric view of the design

CONCLUSION

The design of machine can reduce the human effort in soil removing process and to minimize the initial investment cost of the machine. The adjustable features will be very helpful to many of the underground installation projects. The soil removing and closing features completely fulfill a number of requirements. The time taken by the machine to complete the action is very minimum. The blades distance and depth of cut is adjustable for our requirements. The machine is also to avoid the human injuries while the time of working.

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