Advance Cam Operated Hammer
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Abstract:
In many industries various types of machines and equipment have been used for various operations such as forging, hammering, cutting etc. But different problems such as low power supply, less man power and also heavy laborious work force, safety etc. This project relates to operation performed by this can be achieved by either using electric motor power or by manually by means of simply rotating a hand lever attached to the shaft and hammering action can be provided. If there is good power supply it can be run automatically. For automatic operation A.C. motor is provided. Chain drive, belt drive, governor are also provided for speed control purposes so that the suitable speed can be achieved. When no electric power supply is there the advance cam operated hammer can be used manually by simply rotating the hand lever. Also the handling is simple and maintenance is easy of the project.

1. INTRODUCTION
The advance cam operated hammer is a device which can be used for multi-purpose operations by either automatically or manually. It is mainly used for hammering of work piece. It can also be used for various purposes such as punching, forging, bending, etc. This advance cam operated hammer is very essential for doing number of such operations like crushing, riveting, hammering of larger work piece and cutting of metal.

As in forging industry, the temperature of forging operation is very much higher and it is very difficult to do manual hammering over the forging metal by manually or hand and also there is always a risk while handling such type of high temperature base metals or work piece. So advance cam operated hammer neglects this type of problems in industry.

2. METHODOLOGY AND MATERIALS
During literature survey we found various research papers in which we found various methods which are been used to provide strong impact force to the work piece and our aim is to take that review for using as a guidance to make “Advance cam operated hammer”.

FORGING HAMMER (FLUID OPERATED) J.J. Kupta Et Al, United States Patent office journals, Application – December 2, 1955, Serial no. 550718, Patented Oct. 23, 1957, Published no. US2789540 This project found very useful when finding out during the literature survey. This project is simply is an improvement of forging hammers used for industrial purposes.

As we aware that in forging operation the temperature of the metal part is so high that manual hammering operation is quite difficult for this purpose. So in this project they provided control valves which directing the ram up or down by the steam power. So that ram is moved up and down with attached hammer automatically. So we can provide automatic control over hammer for the purpose of vital operation like forging.

HAMMER TOOL Howard Terhune, Cleveland, Ohio, United States Patent office journals, Application – September 27, 1944, Serial no. 555977, Patented Oct. 28, 1947, Published no. US2429780 This invention relates to portable motor operated and manually controlled machine tools or implements, and more specifically to an improved hammer tool and operating mechanisms of the reciprocating, rotary cam actuated type, and designed for interchangeable use as a portable power operated hammer, wood chisel, scaling chisel, piercing punch, rock drill, and other similar power tools. The novel operating mechanism of the project is an attachment, is adapted for combination with and receives power from a motor, an electric motor, which is manually controlled to supply rotary power and motion that is translated, or converted by the operating mechanism into reciprocating motion and power for a tool holder having selective interchangeable tools.

COMPOUND HAMMER Harold S. Sheldon, Tekoa, Washington DC, United States Patent office journals, Application – October 15, 1947, Serial no. 779931, Patented – March 21, 1950, Published no. US2501542 The invention herein disclosed relates to steam and air hammers of the pile driver type and in which, usually the motive fluid is just admitted to lift and then released to drop the ram to achieve a strong downward force to executing any hammering operations. The another objective of this invention is also taking less time and reducing the breaking probability of the load or other parts attached to the ram providing hammering action down the line.

CAM OPERATED, SINGLE SHOT, FALLING BLOCK FIRING MECHANISM FOR A RIFLE James Kepnar, Lawrenceville, GA (US), United States Patent office journals, Application filled – March 23, 2001, Serial no. 09/815,677, Patented September. 26, 2002, Published no. US 2002/0133997 A1 This invention relates to the field of firing mechanisms for single shot rifles, more particularly to a cam operated, falling block firing mechanisms incorporating a pivoted breechblock link. High power inside the machine is generated by using the cam by which strong action is generated to the bullets while
switching i.e. engaging the cam switch. So from this review we decide to take the advantage of using the cam as a vital impact factor of the hammering action by switching the hammer supported ram.

**POWERED IMPACT WRENCH**

David A. Giardino, Utica; William K. Wallace, Barneveld; Joseph R. Groshans, Clinton, all of N.Y, United States Patent office journals, Application – September 25, 1989, Patent no. 5083619 Published no.US5083619 This invention relates to the art of rotary impact wrenches of a type in which a rotating member is periodically reciprocated into and out of rotary impacting relation with an anvil portion of a torque output shaft. The object of the invention is to provide an improved power operated impact wrench including camming arrangement which permits the use of light weight tool housing without the inertia effect on the operator who is holding the tool. By reviewing various research papers we have concluded that Advance cam operated hammer design is feasible so we decide to make it work.

**ROTARY HAMMER**

Ulrich Demuth, Erbach-Emsbach; Winrich Habedank, Diez, both of Germany, United States Patent office journals, Application - November 20, 1996, Patent no. 6109364, Published no. US006109364A

**REVIEW**

It relates to a hammer with a tool holder and a hammer mechanism for the transmission of impact energy onto the drilling and/or chiseling bit in the tool holder has a switching device which with a single actuator makes it possible to switch between pure drilling operation, rotary hammering operation and pure hammering operation. The cam part is provided at the section of the actuator projecting inwardly over the slide part. The object of the invention is to develop a rotary hammer and is particular its switching device in such a way that it has a compact structure and can be operated without being prone to disturbance.

**OBJECTIVES**

- The main objective of our project work is to reduce or neglect the defined problem and provide an idea to overcome various problems by fabricating the concept as well as working model which represents a solution given to the existing problem.
- So our objective is to provide an electric motor driven mechanism so that the machine can perform operations with the help of electricity and automatically. The another objective is to give manual handling attachment by means of hand lever in the same model so that without power supply the operator can perform the various hammering operations without disrupting or stopping the machine.
- Another objective of our project is to get an impact from the hammer to the work piece by using the effective way by Snail cam. So that the complicated mechanisms get neglected and cost of the system can be reduced very much.

**ADVANTAGES**

The Advance Cam operated Hammer has many advantages for industrial purposes. These are as follows:

1) Compact in size.
2) Easy to operate.
3) Skilled labor may or may not be required.
4) Simple in construction.
5) Maintenance cost low and easy.
6) Electrical power may or may not be required.
7) Time consumption during operation is less.
8) Different operation can performed in this machine.
9) Heavy laborious effort is not required while operate by manually.
10) The operation can be performed in the both way i.e. a

**3. CONCLUSION**

After literature survey and design and calculation we found feasible to actual design and concluded that the fabrication of Advance Cam Operated Hammer is feasible and must work at desired factor as described.

**4. REFERENCES**

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