

# Design and Fabrication of Pneumatic Lifting Table

Kalaiyarasan A<sup>1</sup> Srinivasan C<sup>2</sup> Sabarigovind S<sup>3</sup> Sonu Kumar C<sup>4</sup> Mano K<sup>5</sup>

<sup>1,2</sup>Assistant Professor <sup>3,4,5</sup>UG Student

<sup>1,2,3,4,5</sup>Department of Mechanical Engineering

<sup>1,2,3,4,5</sup>Muthayammal Engineering College Rasipuram, India

**Abstract**— Now-a-days the most elaborate safeguarding system cannot offer effective protection unless the worker knows how to use it and why. Specific and detailed training is therefore a crucial part of any effort to provide safeguarding against machine related hazards. This kind of safety training are necessary for the new operators and its maintenance or setup personnel, when any new or altered safeguards are put in service, or when workers are assigned to a new machine or operation. Air counter balances are devices that support the weight of slide, connection, and upper die so that it is not suspended from the crankshaft bearings. Any geared bed lifter with long stroke (regardless of size), and any bed lifter with flanged slide for large, heavy dies, can benefit significantly from air counter balancing.

**Key words:** Lifter, Heavy Dies, Crankshaft Bearings

## I. INTRODUCTION

### A. Machinery Maintenance and Repair

The employer shall establish and follow a program of periodic and regular Inspections of his bed lifters to insure that all their parts, auxiliary equipment, and safeguards are in a safe operating condition and adjustment. The employer shall maintain records of these inspections and the maintenance work performed. The Good maintenance and repair procedure can contribute significantly to be safety of the maintenance crew as well as to the machine operators. But the variety and complexity of machines to be serviced, the hazards associated with their power sources, the special dangers that may be present during machine breakdown, and the severe time constraint often placed on the maintenance personnel to make all the safety maintenance and repair work difficult.

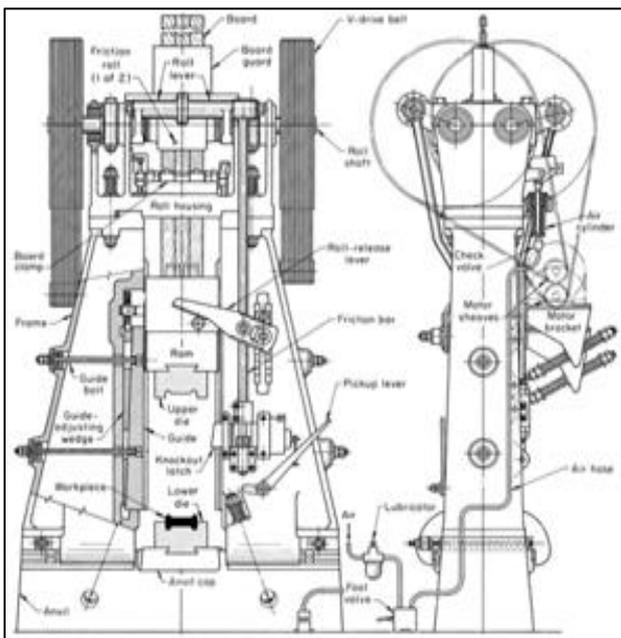


Fig. 1: Principle Component of Board Step Hammer

Training and aptitude of people assigned to these jobs should make them alert for the intermittent electrical failure, the worn part, the inappropriate noise, the cracks or other signs that warn of impending breakage or that a safeguard has been damaged, altered, or removed. By observing machine operators at its tasks and listening to their comments, maintenance personnel may learn where potential trouble spots are and give them early attention before they develop into sources of accidents and injury. Sometimes all that is needed to keep things running smoothly and safely is machine lubrication or adjustment.

## II. OBJECTIVE OF THE STUDY

To design and develop the full surface of parts to be machined without having to change the clamp. When released, the clamping jaw is retracted by the force of a spring. Using the support 04512 the cam-operated edge clamp and also be placed in that desired position transversely to the T-slot.

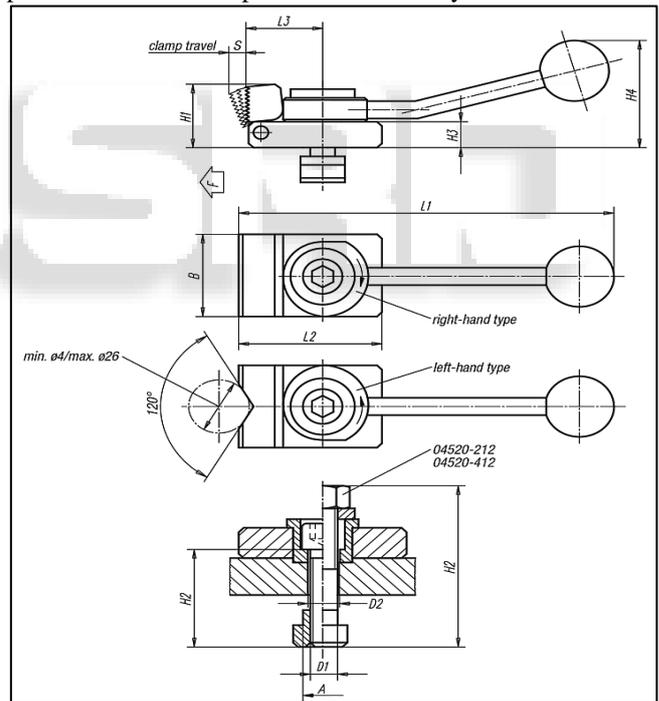


Fig. 2: Counterblow Bed

### A. Counterblow Bed Lifters

The counterblow bed lifter, another variation of the power-drop bed lifter, is widely used in Europe. These bed lifters develop striking force by the movement of two rams, simultaneously approaching from opposite directions and meeting at a midway point. Some bed lifters are pneumatically or hydraulically actuated; others incorporate a mechanical-hydraulic or a mechanical-pneumatic system.

The rams of a counterblow bed lifter are capable of striking repeated blows; they develop combined velocities of 5 to 6 m/s (6 to 20 ft/s). Compared to single-action bed lifters,

the vibration of impact is reduced, and approximately the full energy of each blow is delivered to the work piece, without loss to an anvil. As a result, the wear of moving bed lifter parts is minimized, contributing to longer operating life. At the time of impact, forces are canceled out, and no energy is lost to foundations. In fact, counterblow bed lifters do not require the large inertia blocks and foundations needed for conventional power-drop bed lifters.

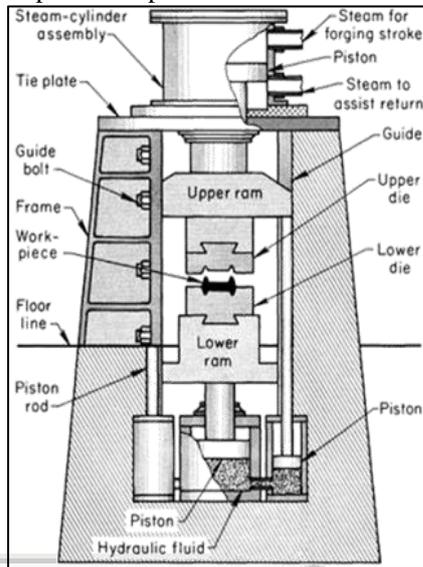


Fig. 3: Principle Compounded of Verticle Counter Blow

B. Open-Die Forging Bed Lifters

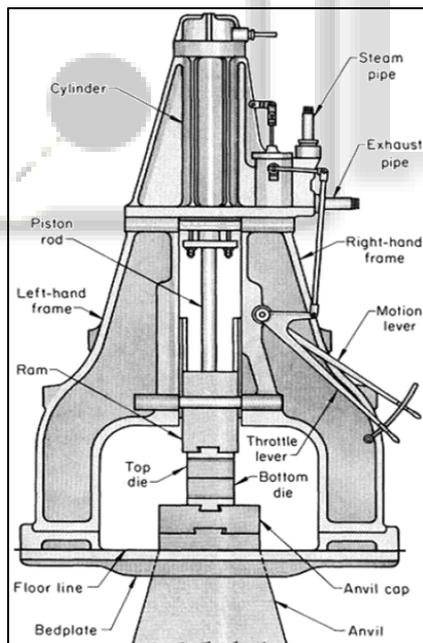


Fig. 4: Double frame hammer used for open die forging

Open-die forging bed lifters are made with either a single frame (often termed C-frame or single-arch bed lifters) or a double frame (often called double-arch bed lifters) (Fig. 4). Open-die forging bed lifters are used to make a large percentage of open-die forgings. The rated sizes of double-frame open-die forging bed lifters range from about 2720 to 10,900 kg (6000 to 24,000 lb), although larger bed lifters have been built. A typical open-die forging bed lifter is operated by steam or combed liftered air--usually at bed litterers of 690 to 825 kPa (100 to 120 psi) for steam and 620 to 690 kPa (90 to 100 psi) for air. These bed litterers are similar to those used

for power-drop bed lifters. There are two basic differences between power-drop bed lifters used for closed-die forging and those used for open-die forging. First, a modern power-drop bed lifter has blow-energy control to assist the operator in setting the intensity of each blow.

III. DESIGN OF THE EXPERIMENTAL UNIT

A. Metal Forming Process

Tooling and forming sequence of a simple clip 0.25" wide are using a multiple-slide bed liftering machine [9.1]. The forming sequence processed by moving (or sliding) the forming tools toward the work piece in sequentially. The tool slide processed using cam-operated bed lifter or using linear hydraulic/pneumatic cylinders. Assuming the tool slide are processed using pneumatic cylinders and through a solenoid valves, it is decided to automate the forming processes using PLC.

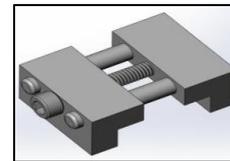


Fig. 5: Diagrammatic representation of bed tilting body using Pro/E

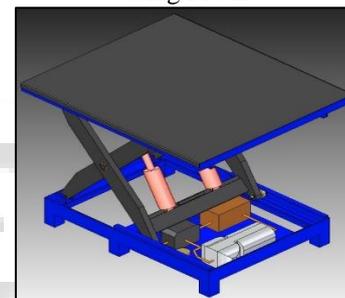


Fig. 6: Diagrammatic representation of Assembled Cam Operated Bed lifter using pro/E

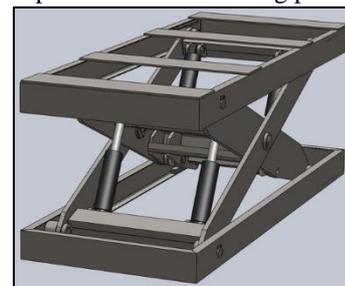


Fig. 7: Diagrammatic representation of rendered pneumatic Operated Bed lifter using catia v5

IV. CONCLUSION AND PLANS FOR DEVELOPMENT



Fig. 8: Pneumatic Operated Bed lifter

Hence a fastening device to hold or secure objects tightly together to prevent movement or separation through the application of inward bed litterer. In United Kingdom and Australia, the term clamp is often used instead when the tool is for temporary use for positioning components during construction and woodworking; thus a G clamp or a sash clamp but a wheel clamp or a surgical clamp.

To position components while fixing them together, others are intended to be permanent. In the field of animal husbandry, using a clamp to attach an animal to a stationary object is known as "rounded clamping." A physical clamp of this type is also used to refer to an obscure investment banking term; notably "fund clamps." Anything that performs the action of clamping may be called a clamp, so this gives rise to a wide variety of terms across many fields.

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