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Schuler et al.

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[54] **BED OF A LATHE**

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[51] **Int. Cl.** **B23b 17/00**

[58] **Field of Search** ..... 82/32; 408/234, 237; 308/3 A

[56] **References Cited**

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[57] **ABSTRACT**

A bed of a lathe comprises a concrete base block and a metal body provided with guide ways for guiding movable lathe elements such as bed slides or the like. The guide-ways are formed by horizontal parallel grooves provided in the front face of the metal body, each groove having opposite side walls and a bottom wall. The metal body has a bottom face fixed on a conforming top surface of the concrete block by a plastic adhesive which constitutes the sole and exclusive means for transferring forces between the metal body and the concrete block.

5 Claims, 3 Drawing Figures

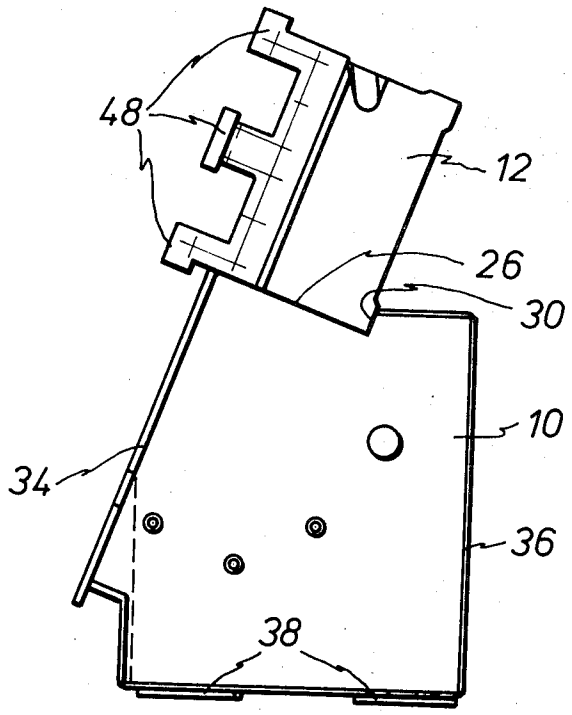


Fig. 1

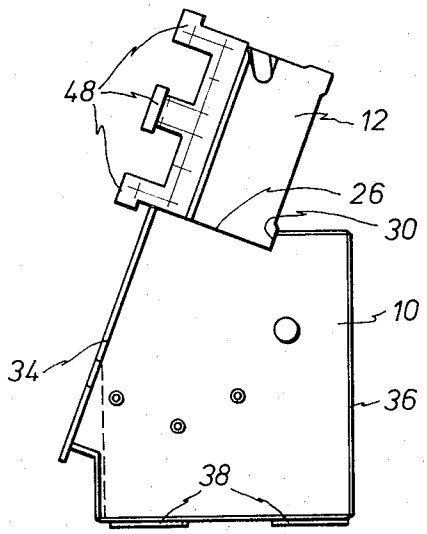
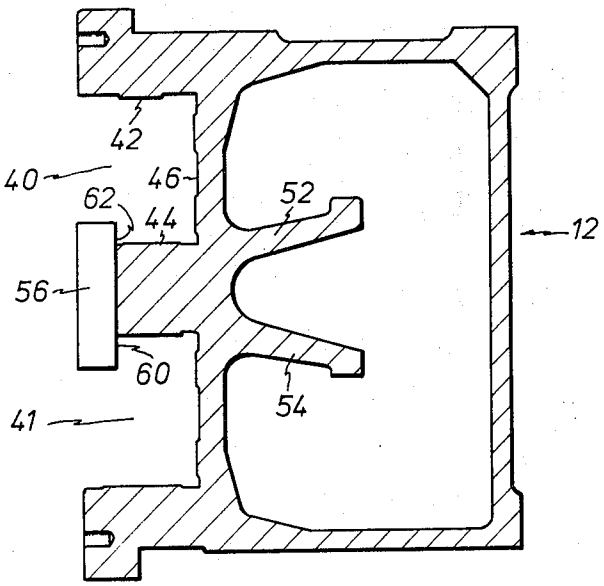


Fig. 3



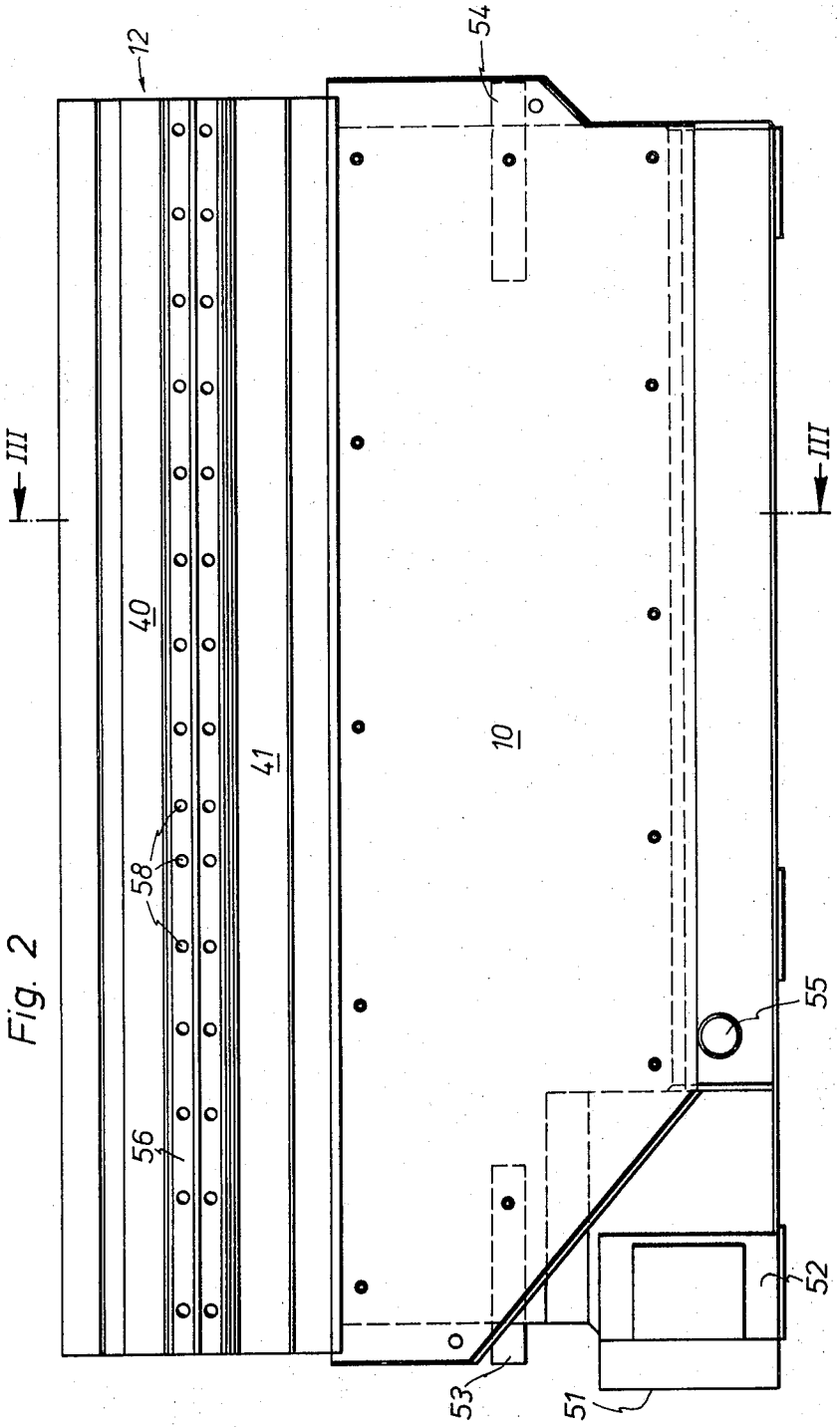


Fig. 2

BED OF A LATHE

BACKGROUND AND BRIEF DESCRIPTION OF INVENTION

This invention relates to a bed of a lathe of the type comprising a concrete base block and a metal body rigidly connected thereon, such metal body being provided with guide ways for guiding the movable elements of the lathe such as bed slides.

Beds of this type are known in the art. In a prior bed of this kind, steel rods are fixedly embedded in the concrete base block so as to extend therefrom and through the metal body formed with the guide ways, the rods being threaded and provided with nuts for rigidly fixing the metal body upon the concrete base block. Beds of this type excel by their rugged and rigid structure provided that the cross-section of the metal body is large enough to prevent any flexure of the portions of the metal body located between the rods.

It is another advantage of this type of lathe beds that the concrete block and the threaded rods holding the metal body thereon will absorb and dampen any oscillations that might be set up by the tools in the metal body.

Experience has shown, however, that in prior beds of this type those portions of the metal body located between the threaded rods may be subjected to undesirable flexure and oscillation under adverse conditions.

The present invention is based on the discovery that these objectionable properties of prior beds of the type described are caused by a poor surface quality of the concrete base block, as it is not easily possible to obtain a perfectly smooth and plane top surface thereof. As a result, unavoidable clearances will be left between the top surface of the concrete block and the bottom face of the metal body over wide regions thereof. Within these regions the metal body lacks intimate contact with the concrete block and, therefore, may be subjected to undesirable oscillation and flexure.

It is the object of the present invention to provide a bed of a lathe of the type comprising a concrete base having a supporting face, a metal body mounted on said face and provided with guideways for guiding movable lathe elements and with a bottom face conforming to and mounted on said supporting face, in which a clearance between such faces is avoided thus enabling the concrete base to exert its vibration-absorbing effect on every point of said bottom face.

According to the present invention this object is attained by the provision of a thin layer of an adhesive plastic between the bottom face of the metal body provided with the guideways and the top face of the concrete base block, such layer of adhesive rigidly bonding the metal body to the concrete base thus effectively damping any oscillations and vibrations set up by the operation of the tools in the metal body. Since the adhesive is capable of transferring very high tensile and pressure forces between the metal body and the concrete base, it will effectively prevent any undesirable flexure of the metal body relative to the concrete base.

Preferably the metal body is a hollow cast iron body filled with core material. This core material contributes considerably to the dampening of vibrations.

These and other features and advantages of the present invention will be more fully appreciated in the detailed description of a preferred embodiment of the invention following hereinafter with reference to the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a side view of a bed of a lathe constructed in accordance with the present invention;

FIG. **2** is an elevation of the bed shown in FIG. **1**; and

FIG. **3** is a vertical cross-section of the metal body, such section being taken along the line III-III in FIG. **2** on an enlarged scale.

DETAILED DESCRIPTION OF INVENTION

The bed of the lathe comprises a base block **10** which consists of concrete and is shaped as a horizontal prism, and a metal body **12** rigidly mounted thereon, said metal body representing a prismatic box of great rigidity. This box may consist of cast iron. Preferably the casting is provided with a plurality of vertical internal partitions subdividing the interior space of the casting into individual cells which still contain the core material such as sand.

The concrete base block **10** has a top face **26** inclined to the horizontal at about 20°. The metal body **12** has a bottom face conforming to the face **26** and resting thereon. Adjoining the face **26** the base block **10** is provided with a narrow upwardly inclined face **30** engaged by a marginal zone of the rear wall of the metal body **12.** The front wall **34** of the base block **10** is inclined at about 70° to the horizontal whereas the rear wall **36** of the base block is vertical and adjoins the top face of the base block extending between the metal body **12** and the rear face **36.** The inclination of the front wall **34** facilitates the discharge of the chips by permitting them to freely drop downwardly from the tool or tools mounted on the metal body **12.**

In the described embodiment the base block **10** consists of concrete reinforced by embedded steel grids. This block is so rigid and stiff that it needs no foundation and, therefore, can be installed on any floor capable of supporting the weight of the lathe by means of three vibration-absorbing plates **38** provided on its bottom without requiring any preparatory work. As shown in FIG. **2,** the lefthand end of the base block **10** is provided with reference faces **51** and **52** on which different units may be mounted. Rods **53** and **54** embedded in the base block **10** and a bore **55** of the block serve the purpose of attaching suspension means for the manipulation of the base block.

The metal body **12** is provided with guideways for guiding movable lathe elements, such as bed slides, tail stocks, or the like. Moreover all of the units of the lathe subjected to the forces exerted by the tools and the workpiece, such as a spindle housing, a main transmission, a feed transmission and the like are mounted on the metal body **12.** All other units such as the main motor, a hydraulic control unit, a switch board and screening plates are fixed to the base block **10.** The mounting of some of these units on the metal body **12** and of others of the units on the base block **10** ensures that no undesirable influences affect the work of the lathe.

The machine is fit for transportation in assembled condition.

Preferably, the guideways on the metal body **12** are formed by horizontal parallel grooves **40** and **41**, each groove having parallel side faces **42** and **44** and a bottom face **46** extending transversely thereto. Each of the grooves **40** and **41** may accommodate a bed slide movable independently of the other bed slide throughout the length of the metal body **12.** A pair of internal ribs **52** and **54** cooperating to form a V-shaped profile reinforces the front wall of the hollow casting of the metal body **12** internally. A flat bar **56** is mounted on the front wall of the metal body **12** and fixed thereto by screws extending through screw holes **58** to form guiding faces **60** and **62** for the slides, and this wall is parallel to wall **34.**

The bottom face of the metal body **12** and the top face **26** of the base **10** are disposed in opposed and closely adjacent relationship and the space between them is completely filled by a very thin layer of an adhesive plastic serving the purpose of rigidly bonding the metal body to the base throughout the entire area of said faces. The same is true with respect to the face **30** of the base **10** and the marginal zone of the back face of the metal body **12.** As adhesive plastics for bonding machine parts to each other are well known and readily available on the market, a detailed specification thereof is deemed dispensable herewith.

This thin layer of adhesive guarantees a very effective reinforcement of the metal body **12** by the concrete base **10** thus ensuring that any oscillations that might be set up in the metal body **10** by the forces acting between tool and work will be efficiently absorbed and dampened throughout the entire area of the faces **26** and **30.**

Having described the structural and functional features of the specific embodiment of the machine of this invention, it can be appreciated that the principles of the invention can be applied to similar and other types of machines. Such applications of the principles of this invention are considered to be within the scope of the invention as defined in the claims below.

We claim:

1. A bed of a lathe comprising portable base formed by a compact block of concrete having a supporting top face, a metal body resting on said face and provided with guideways for guiding movable lathe elements and with a bottom face conforming to and co-extensive with said supporting top face, said metal body being mounted on said base with said faces in opposed and closely adjacent relationship, and a thin layer of an adhesive plastic filling the space between said faces for rigidly cementing said metal body to said concrete base, whereby oscillations of said bottom surface are impeded by the non-oscillating concrete material of said block cemented thereto by said adhesive.

2. A bed as claimed in claim **1** in which said layer constitutes the only and exclusive means for the transfer of forces from said metal body to said base.

3. A bed as claimed in claim **1** in which said metal body is hollow, consists of cast iron and is filled with core material.

4. A bed as claimed in claim **1** in which said guideways are formed by parallel grooves, each of which has parallel side faces and a bottom face extending transversely to said side faces.

5. A bed as claimed in claim **1** in which said metal body has a front face extending substantially at right angles to said bottom face and being provided with horizontal parallel grooves constituting said guideways, each groove having parallel side faces and a bottom face, said metal body side face being slightly inclined.

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