Dec. 7, 1943. R. KRASBERG 2,336,262

PRESSING MECHANISM

Filed Oct. 7, 1940 2 Sheets-Sheet 1

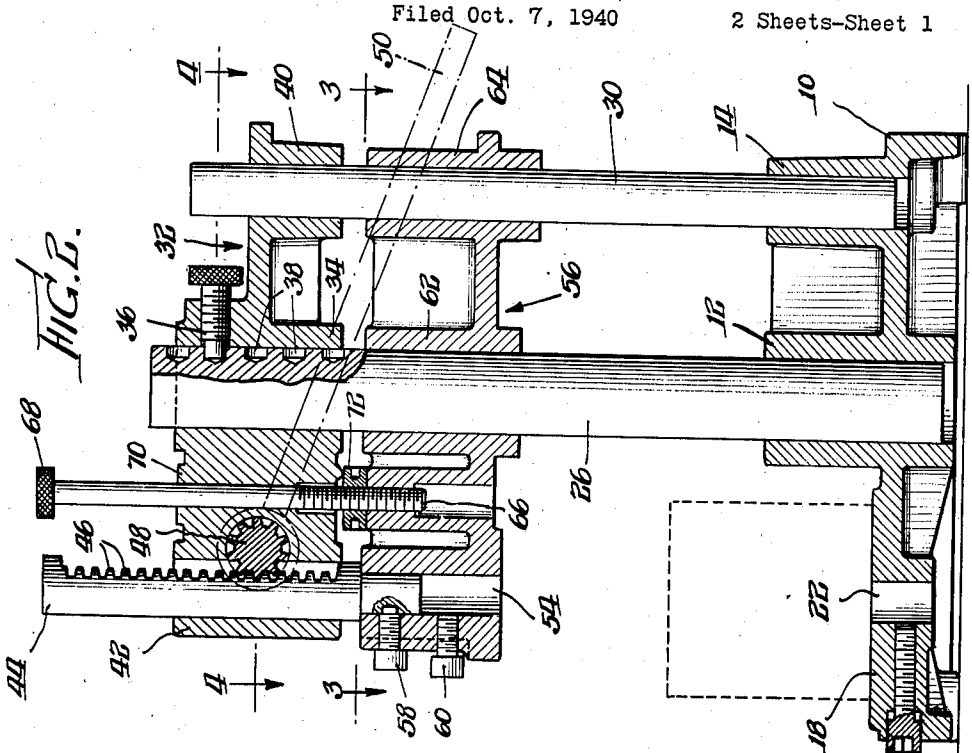


FIG. 2.

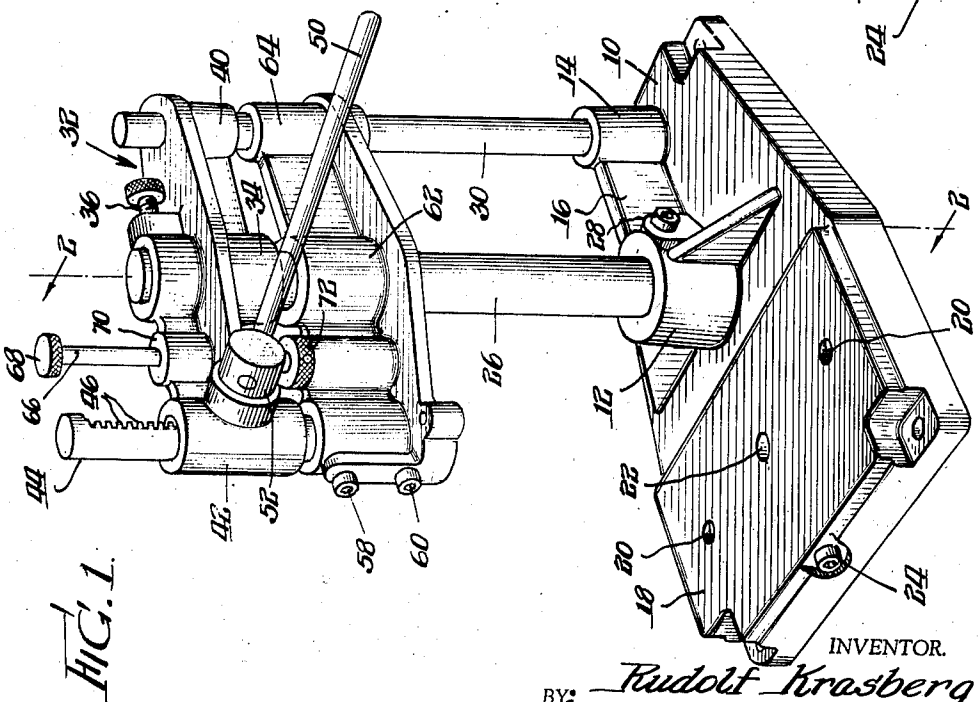


FIG. 1.

INVENTOR.
Rudolf Krasberg
BY: Cox Moore & Olson
attys.

Dec. 7, 1943. R. KRASBERG 2,336,262

PRESSING MECHANISM

Filed Oct. 7, 1940 2 Sheets-Sheet 2

FIG. 6.

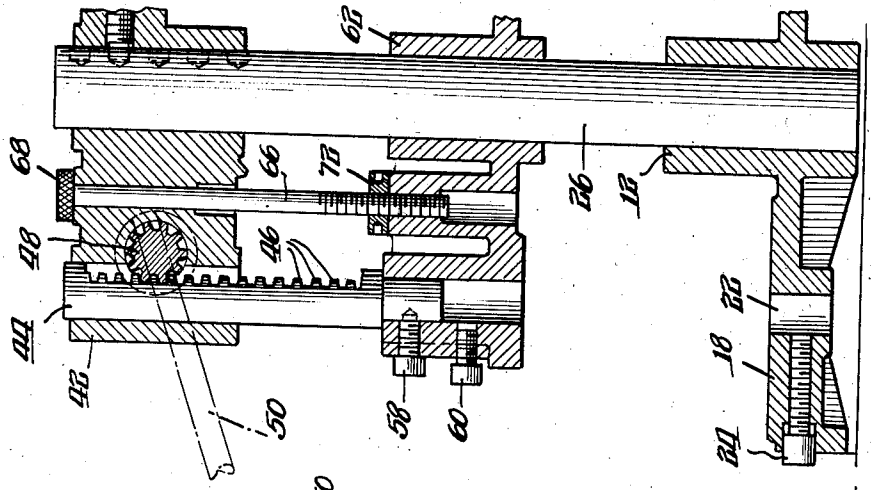


FIG. 5.

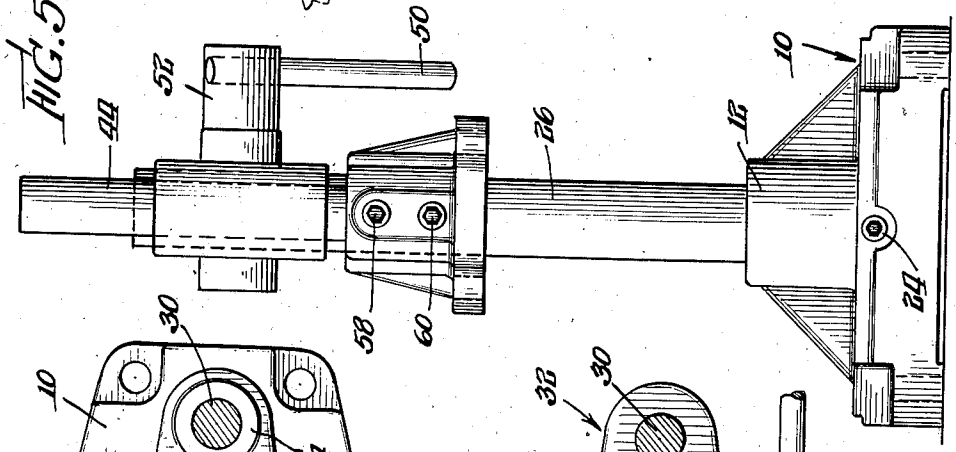


FIG. 3.

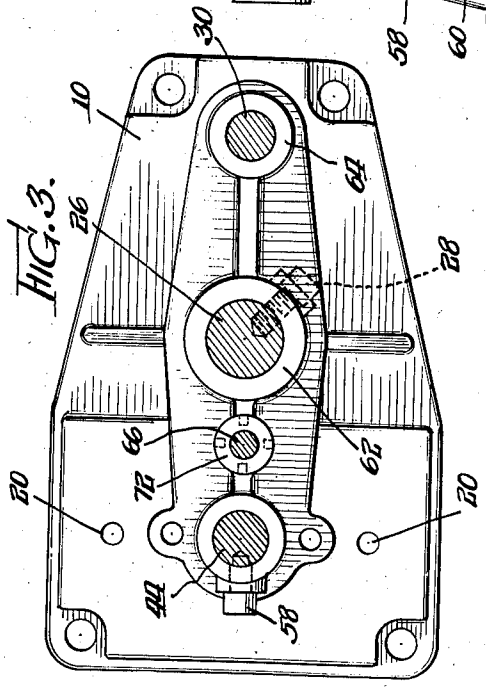
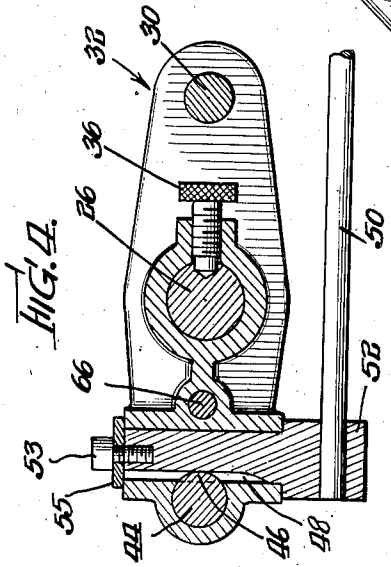


FIG. 4.



INVENTOR.

BY: Rudolf Krasberg

Cox Moore & Olson

attys.

Patented Dec. 7, 1943 2,336,262

UNITED STATES PATENT OFFICE

2,336,262

PRESSING MECHANISM

Rudolf Krasberg, Chicago, Ill.

Application October 7, 1940, Serial No. 360,034

11 Claims. (Cl. 164—86)

This invention relates generally to presses and more particularly to pressing mechanisms of the manually operable type adapted for general use in machine shops and manufacturing institutions.

I am familiar with conventional types of manually operable presses which have been available for general shop use. In this connection I refer, for example, to presses known as arbor presses which have been in common use for many years. These conventional presses with which I am familiar present certain disadvantages and inconveniences, particularly in connection with precision work, which the present invention contemplates overcoming. Thus, for example, the present invention contemplates a press which is more durable in construction and the moving parts of which are more accurate in travel than conventional presses with which I am familiar and which may be very economically produced by the practice of conventional machine shop methods.

More specifically, the invention contemplates a general utility press adapted for use for pressing operations where accuracy is not of particular importance and at the same time adapted to be used for precision work. That is to say, the construction of the press contemplated by the present invention is such that while the device may be employed for general pressing operations it has the distinct advantage of being capable for use in precision die work. Certain forming dies require precision accuracy while others permit of wider tolerance limits.

Another object of the present invention is to provide a pressing mechanism of the type set forth above wherein improved means is provided in association with a vertically shiftable pressing element for securing said element against lateral misalignment.

It is a further object of the present invention to provide a pressing device, as above set forth, which is conveniently portable and very compact as well as sturdy in construction, the constituent elements thereof being relatively few in number and simple in form.

A still further object of the present invention is to provide a pressing mechanism for general shop use which is equipped with improved practical features of adjustment to accommodate the device for work of various sizes.

The foregoing and numerous other objects and advantages will be more apparent from the following detailed description when considered in connection with the accompanying drawings wherein:

Fig. 1 is a perspective view of a press or mechanism embodying features contemplated by the present invention;

Fig. 2 is a vertical central sectional view of the device taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is a horizontal transverse sectional view taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a horizontal transverse sectional view taken substantially along the line 4—4 of Fig. 2;

Fig. 5 is a front elevational view of the press; and

Fig. 6 is a fragmentary vertical sectional view similar to the sectional view of Fig. 2 disclosing the vertically shiftable pressing element or member in its lowermost position.

Referring now to the drawings wherein like numerals have been employed to designate similar parts throughout the various figures, it will be seen that my invention contemplates a press having a base 10 having a central boss 12 extending upwardly therefrom and formed integral therewith, and a second boss 14 positioned toward the rear of the base and joined to the boss 12 by a connecting web 16. A work receiving portion or surface 18 traverses the upper side of the base 10 at the front thereof and is provided with suitable threaded apertures 20 to receive work securing screws (not shown) and an unthreaded central aperture 22 particularly designed to receive such elements as the shank of a die member or the like. Cooperatively arranged with respect to the aperture 22 is a clamping or set screw 24 which is designed to be tightened against the element received within the aperture 22.

The boss 12 provides the lower support for a vertical shaft 26, said shaft being secured against axial and rotative movements by a suitable set screw 28 which extends through the boss 12 and into the shaft 26. Extending upwardly from and secured within the boss 14 is a second smaller shaft 30, said shafts 26 and 30 being disposed in absolute parallelism.

The upper extremity of the larger, centrally disposed shaft 26 provides a support for a frame structure 32. This frame structure 32 is provided with a central boss 34 which encircles the upper extremity of the shaft 26. A set screw 36 extends through the boss or sleeve 34 and is designed at its inner extremity to interlock with any one of a series of apertures 38 provided in the shaft 26. The particular aperture 38 with which the

screw 36 interlocks will determine the degree of elevation of the frame 32 above the base 10. A boss or sleeve 40 forming a part of the frame 32 accommodates the upper extremity of the shaft 30. In this connection it should be noted that the distance between the axes of the shafts 26 and 30 is maintained accurately constant by the bosses or sleeves 12 and 14 at the lower extremities of said shafts and the bosses or sleeves 34 and 40 cooperating with the upper extremities of said shafts. Furthermore, these shafts 26 and 30 cooperate in positively securing the frame 32 against lateral displacement.

The forward extremity of the frame 32 is formed with a sleeve or head 42 for accommodating a vertically reciprocable rack member 44. Rack teeth 46 of said member mesh with complementary teeth of a pinion 48 rotatably mounted within the frame structure 32. Rotation may be imparted manually to the pinion 48 by manipulation of a handle 50. This handle 50 extends radially from and is secured within an enlarged extremity 52 of the pinion 48. The opposite extremity of the pinion 48 receives a screw 53 which bears against a washer 55 which cooperates with the enlarged head 52 in securing the pinion against axial displacement. The lower reduced extremity of the rack member 44 extends within a bore or aperture 54 of a slide frame designated generally by the numeral 56. A set screw 58 serves to detachably secure the frame 56 to the rack bar 44, as clearly illustrated in Fig. 2. The lower portion of the bore or aperture 54 is designed to receive the punch or die element (not shown) carried by the slide frame 56. A set screw 60 positioned beneath the set screw 58 serves to hold such punch or die element within the aperture 54.

The slide frame 56 is provided with a central sleeve portion 62 which has an accurate sliding fit with respect to the vertical shaft 26. A sleeve portion or section 64 formed at the rear of the slide frame 56 similarly cooperates with the vertical shaft 30 in guiding the frame during its vertical movement. It will be noted that the sleeve portion or bosses 62 and 64 and the forward portion of the slide frame 56 are formed as an integral rigid unit. The portion of the slide frame interposed between the rack bar 44 and the sleeve section 62 receives an adjustable threaded stop screw 66. The upper extremity of the screw 66 is formed with a knurled head 68. When the frame is shifted to its lowermost position as illustrated in Fig. 6, this head 68 engages an abutment surface 70 on the frame 32 and thus limits further downward travel of the frame 56. A lock or clamping nut 72 serves to secure the screw 66 in any desired position of adjustment. This position of adjustment would of course be determined by the extent to which the frame 56 must be lowered in completing the work or pressing operation to be performed.

From the foregoing it will be apparent that the disposition of the structure of the base 10, the upright shafts 26 and 30, the frame structure 32 and the slide frame 56 is such as to provide an all-purpose press which is adapted for precision work as well as the general run of work experienced in shop practice. By employing the shafts 26 and 30, the slide frame 56 is accurately guided in its vertical movements. In other words, the slide frame is free from any possible lateral or vertical distortion. Furthermore by having the parallel arrangement of the shafts 26 and 30, power for shifting purposes may be applied to the forward extremity of the slide frame without any possibility of binding or jamming. The foregoing structural arrangement permits of a very close sliding fit between the sleeve portion 62 and the shaft 26. The sleeve portion 64 and shaft 30 cooperate to prevent the slide frame from experiencing vertical tilting and this makes for smooth uninterrupted vertical travel. It will be noted that I prefer to have the sleeve portion 64 somewhat longer than the sleeve portion 62 so as to function very effectively in counteracting tendencies to vertically tilt the slide frame 56. Should the slide frame 56 experience the slightest degree of vertical tilting there would be a tendency for it to bind upon the shaft 26. This would not only set up friction in resisting the movement of the slide 56 but would also render the press unsuitable for precision work. It will also be apparent that the frame structure 32 provides rigid means for maintaining the shafts 26 and 30 in absolute parallelism and also provides a rigid support for the rack and pinion structure. Due to this rigidity in construction no vertical or horizontal displacement of the frame 32 occurs even under severe operating conditions to which the press may be subjected. A work piece is indicated generally by dotted lines in Fig. 2.

While certain details of construction have been disclosed herein for the purpose of illustrating one embodiment of the invention, it will be understood that other structural advantages and modifications may be made without departing from the spirit and scope of the appended claims.

The invention is hereby claimed as follows:

1. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and adjustably affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, an actuating mechanism carried by said frame including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section associated with said base structure, and means associated with said slide frame structure for accommodating a pressing tool.

2. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and adjustably affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, an actuating mechanism carried by said frame including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section

associated with said base structure beneath the portion of the slide frame connected with said actuator member, and means associated with said slide frame structure in the vicinity of the lower extremity of said actuator member for accommodating a pressing tool.

3. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and adjustably affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, a rack and pinion mechanism carried by said frame including a vertically shiftable rack member, means coupled with said pinion for effecting rotation thereof and consequent movement of said rack member, a slide frame structure connected with the lower extremity of said rack member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said rack member, a work supporting section associated with said base structure beneath the portion of the slide frame connected with said rack member, and means associated with said slide frame structure in the vicinity of the lower extremity of said rack member for accommodating a pressing tool.

4. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, said frame structure presenting a section extending laterally from one of said upright elements to provide a support, an actuating mechanism carried by said support including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section associated with said base structure, and means on said slide frame structure for accommodating a pressing tool.

5. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, an actuating mechanism carried by said frame including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section associated with said base structure, means associated with said slide frame structure for accommodating a pressing tool, and means for adjustably limiting the stroke of said slide frame.

6. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, an actuating mechanism carried by said frame including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section associated with said base structure, means associated with said slide frame structure for accommodating a pressing tool, and means including an upright member adjustably secured at its lower extremity to said slide frame for limiting the stroke of said slide frame.

7. A portable type press mechanism including a base structure, upright elements extending from said base and presenting spaced parallel guide surfaces, a frame structure vertically spaced from said base and affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, an actuating mechanism carried by said frame including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, means for securing said frame structure to at least one of said upright elements in various positions of vertical adjustment with respect to said base structure, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure being slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section associated with said base structure, and means on said slide frame structure for accommodating a pressing tool.

8. A portable type press mechanism including a base structure, upright shafts extending from and secured rigidly to said base structure, a transverse frame structure vertically spaced from said base and interlocked with said shafts toward the upper extremities thereof so as to cooperate with said base structure in maintaining said shafts in accurate parallelism, said frame structure having a section extending laterally from said shafts to provide an actuator support, actuator mechanism carried by said support including a vertically reciprocable actuating member, rack and pinion means for reciprocating said member, a slide frame slidably carried by said shafts between the aforesaid frame and base structures, said slide frame having a section extending laterally from one of said shafts and located beneath the actuator support of the other frame structure, means coupling the lower extremity of said actuator member with the lateral extension of said slide frame, a work supporting section associated with said base structure beneath the extension of said slide frame, and means on said slide frame structure in the vicinity of the lower extremity of said actuator member for accommodating a pressing tool.

9. A portable type press mechanism including a base structure, upright cylindrical elements extending from said base and presenting spaced

parallel guide surfaces, a frame structure vertically spaced from said base and adjustably affixed to said elements so as to cooperate with said base structure in maintaining said elements in accurate parallelism, an actuating mechanism carried by said frame including a vertically shiftable actuator member and a rack and pinion mechanism operatively associated therewith, a slide frame structure connected with the lower extremity of said actuator member and interposed between the aforesaid frame and base structures, said slide frame structure having cylindrical bearing surfaces slidable upon and accurately guided by said upright parallel elements in response to movement of said actuator member, a work supporting section associated with said base structure, and means associated with said slide frame structure for accommodating a pressing tool.

10. A portable type press mechanism as set forth in claim 1 wherein the means associated with the slide frame for accommodating a pressing tool includes a central portion for accommodating an elongated tool element and tool securing means positioned to one side of said central portion.

11. A portable type press mechanism including a base structure, upright elements extending from said base structure and presenting spaced parallel guide surfaces, a frame structure adjustably secured to said element and positioned above the base structure, said frame structure cooperating with the base structure to maintain said elements in accurate parallelism, a slide structure interposed between the base structure and frame structure, said slide structure being slidable upon and accurately guided by said upright parallel elements, a portion of the slide structure extending laterally beyond one of said upright elements, means associated with said laterally extending portion of the slide for accommodating a pressing tool adapted to act upon a work piece supported by the base structure, and actuating mechanism interposed between the slide structure and the frame structure including an actuator element connected with the slide and power transmitting means associated with the frame structure for imparting movement to said actuator member.

RUDOLF KRASBERG.