

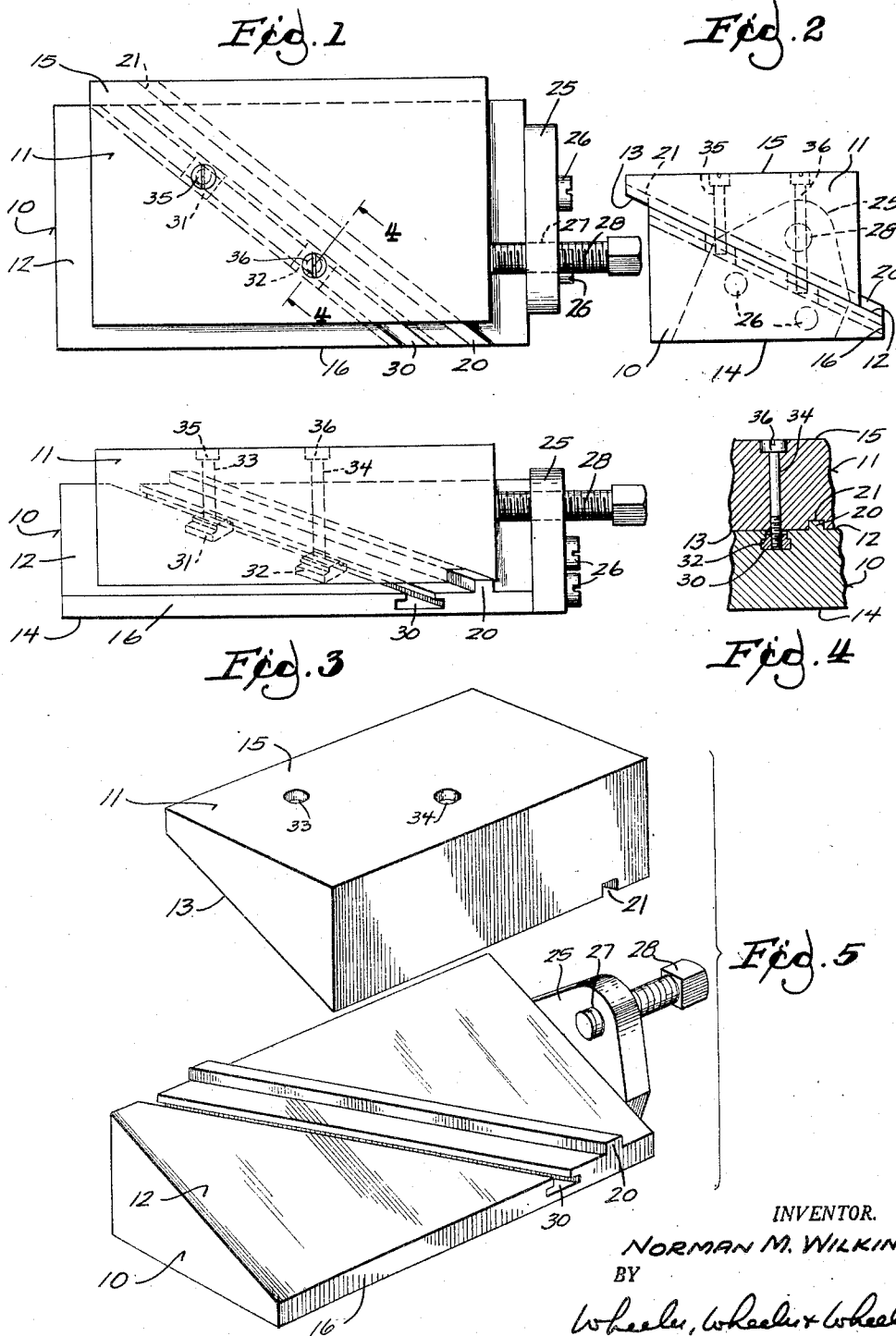
Jan. 7, 1958

N. M. WILKIN

2,819,037

LEVELING DEVICE

Filed Oct. 12, 1955



INVENTOR.

NORMAN M. WILKIN

BY

Wheeler, Wheeler & Wheeler
ATTORNEYS

1

2,819,037

LEVELING DEVICE

Norman M. Wilkin, Menomonee Falls, Wis.

Application October 12, 1955, Serial No. 540,120

4 Claims. (Cl. 254—104)

My invention relates to improvements in leveling devices.

More particularly stated my invention relates to a leveling device made of two complementary members having mating surfaces so slanted that adjustment of one of the blocks with respect to the other upon movement involving the sliding of the one block over the slanted surface of the other block would cause the blocks to be adjusted with reference to their combined dimensions.

Leveling devices of this general type are very common in shop practice, and I have improved them in accord with this invention by not only providing the slanted surfaces above referred to, but by also providing means for interengaging the complementary blocks along said slanted surfaces whereby to force the interrelated movement of the one block with respect to the other along special directional lines of advancement or retraction whereby to provide "micrometer" adjustment between blocks.

In the drawings:

Fig. 1 is a plan view of my improved leveling device.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a front elevation of the leveling device shown in Fig. 1.

Fig. 4 is a cross section fragmentarily along line 4—4 of Fig. 1.

Fig. 5 is an exploded view of the two principal members of my leveling device and showing key groove means for controlling the directional movement thereof together with a groove for T blocks to locate the principal members in a particular adjusted position.

The two principal structural members of my leveling device comprises a base block 10 and a top block 11 having slanted complementary surfaces 12 and 13 respectively which are plane surfaces in face to face relationship. The bottom surface 14 of the base block and the top surface 15 of the top block 11 are preferably in such relationship angularly to the surfaces 12—13 that they are in parallelism. In other words, when the bottom surface 14 of block 10 is on a horizontal surface, the top surface 15 is likewise horizontal, although it will be understood from the following description that this is not an absolutely necessary feature.

It is obvious from the description thus far provided that any movement of the block 11 with respect to the block 10 either to the right or to the left as shown in Fig. 2 will decrease or increase the distance between the surfaces 14—15, but such movement from right to left or left to right rectilinearly at right angles to the front margin 16 of block 10 will change the spacing of the surfaces 14—15 at the greatest possible rate. To decrease the amount of change in the dimension between surfaces 14 and 15 for a given increment of relative movement of the two blocks 10—11 and, therefore, to provide what I have termed micrometer adjustment between the blocks, I have provided a key and key slot to control the relative

2

movement between the blocks as will be apparent from the following description.

Diagonally across the face 12 of block 10 and at a selected acute angle with respect to the front margin 16 of block 10, I provide a key slide 20 shaped as shown most clearly in Figs. 3 and 5. Complementarily, the surface 13 of block 11 is grooved at 21 to receive the key slide 20 thereby limiting inter-related movement of the blocks 10—11 and to require that block 11 shall move upwardly or downwardly upon surface 12 but directionally in accord with the angle of key slide 20 across the face 12. Thus pressure upon surface 15, while normally tending to move block 11 with respect to block 14 along lines approximately at right angles to the front 16 of block 10, tends to move block 11 downwardly angularly with respect to the front 16 of block 10 as will be obvious from an examination of the drawings.

To control the relative movement between the two blocks, I provide an abutment block 25 secured to the end of block 10 by suitable means as, for instance, machine screws 26. This abutment block has a threaded bore 27 through which, in threaded engagement with the block, there is an adjusting screw 28 of sufficient length to extend through abutment block 25 and therebeyond, over the slanted surface 12, to bear against the end of block 11. Therefore, under pressure of the adjusting screw 28 against block 11, relative movement between the two blocks 10 and 11 may be forced upon relief of pressure between adjusting screw 28 and the block 11. Any superimposed weight upon surface 15 of block 11 may cause the block to slide downwardly and to the right as seen in Figs. 1, 3, and 5. Across the face 12 of block 10 parallel with the key slide 20, I provide a T groove 30 for the reception of T blocks 31—32. Each of these T blocks is provided with a threaded bore at such an angle to the block as to be alignable with a lock bolt bore 33—34 respectively. Therefore a locking bolt 35—36 inserted through block 11 and threadedly engaged with one or the other of T blocks 31—32 may be used to clamp block 11 upon block 10 in any selected position of adjustment of the two blocks relatively along key slide 20.

In the use of the leveling device described above, the two blocks 10 and 11 interengaged with their surfaces 12 and 13 in face contact may be adjusted manually or in accord with the threaded adjustment of adjusting screw 28 through abutment block 25 to force the blocks to assume relative position giving satisfactory selected dimension between the surfaces 14—15, then in manual or forced threaded adjustment, a sliding movement of the blocks required to be in the direction of the key slide 20, the distance between the surfaces 14—15 may be adjusted as desired. If, at the time of such adjustment, the leveling device is positioned under a heavy weight bearing upon surface 15, the weight may be lifted or lowered in accord with the sliding relative movement of the blocks under control of the adjusting screw 28.

It will be obvious from the above description that a sliding movement due, for instance, to one fractional turn of adjusting screw 28 and the angular movement of block 11 upon the slanting surface 12 may result in such a slight change in the dimension between 14 and 15 as to be measurable in minute fractions of an inch. It is for this reason that I have referred to this adjustment and the slanting movement of block 11 upon block 10 that it may be considered a micrometer movement.

It may be said of these blocks that if an object is supported by them, as for instance, a work piece is supported above the bed of a machine tool by placing sets of wedge blocks at spaced points between the work piece and the bed, it would normally be possible to raise or

lower the object by adjusting the respective blocks slidably in a direction to get the greatest possible change in "height" for each unit (inch) of movement; but in my wedge block construction, the direction of relative movement of the blocks in each pair is at an angle to the direction of greatest lift. Usually this angle would be 45 degrees from the direction of greatest lift, but in accord with my invention, a larger or smaller angle may be used. If the plane of the mated surfaces is at a slight angle to the horizontal and the guiding means between the blocks is at a great angle to the direction of greatest lift, it is possible to raise or lower an object supported by my blocks, in such small increments for each turn of the adjusting screw that the change in height would be difficult to measure.

I claim:

1. A pair of blocks having mated plane surfaces adapted to be placed in face to face relation with said surfaces at an angle to the horizontal whereby movement of one block relative to the other in the general direction of greatest lift raises or movement in the opposite direction lowers an object supported by said blocks, the mated surface of one of said blocks having directional guiding means shaped for engagement with the other block, said means being positioned to force relative move-

ment of the blocks to conform to a direction at an angle to the direction of greatest lift.

2. The blocks of claim 1 wherein the said means include a key for one block and a groove for the key in the other block.

3. The blocks of claim 1 wherein one of the blocks is provided with an abutment shaped to receive an adjusting member, and an adjusting member mounted to the abutment, said member being in position to adjustably bear against the other block approximately at right angles to the direction of greatest lift whereby to cause relative block movement.

4. The blocks of claim 1 having locking means for interengagement between the blocks, said means including a T block and bolt for one block, and a T groove in the other block to receive said T block, said groove being parallel to the guiding means.

References Cited in the file of this patent

UNITED STATES PATENTS

619,304	Herzog	Feb. 14, 1899
1,544,331	Malmgren	June 30, 1925
2,170,690	Mafera	Aug. 22, 1939