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C. N. DAMM ET AL

2,075,008

DEGREE PLATE

Filed Feb. 26, 1934

Fig. 1

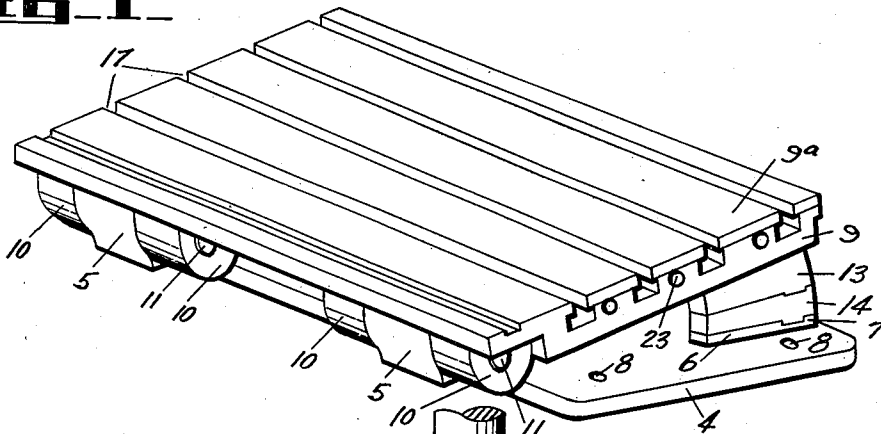


Fig. 2

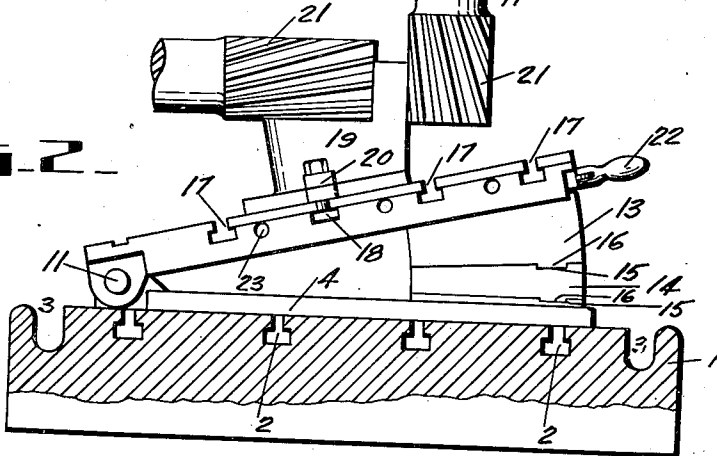


Fig. 3

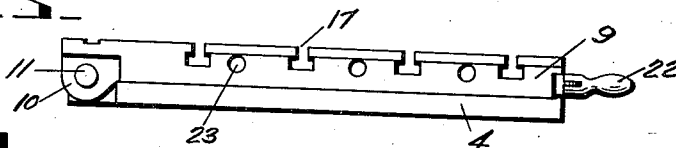


Fig. 4

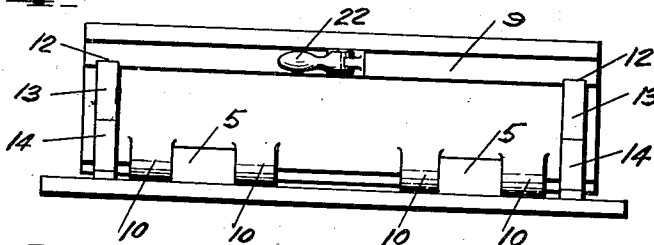


Fig. 5

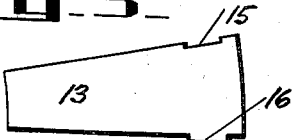
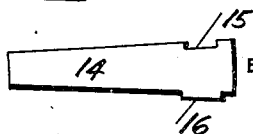


Fig. 6



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DEGREE PLATE

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5 Claims. (Cl. 90—58)

This invention relates to degree plates and has for one of its objects to provide an adjustable degree plate for employment in connection with machine tools that will be simple and of rugged construction.

A further object is to provide a degree plate in which the adjustment for angles will be positive.

A further object is to provide a degree plate that will be readily understood, easily adjusted and handled.

Together with the above and other objects, the invention consists in certain novel details of construction and combination of parts hereinafter described and claimed, it being understood that various modifications may be resorted to which will be within the scope of the appended claim without departing from the spirit of or sacrificing any advantages of the invention.

In the accompanying drawing forming a part of these specifications,

Fig. 1 is a perspective view of the degree plate in adjusted position to an angle.

Fig. 2 is an end elevation of the degree plate as applied to the platen of a milling machine, with a pattern part clamped in position and being machined as with milling cutters.

Fig. 3 is an end elevation of the degree plate in its horizontal or collapsed position.

Fig. 4 is a back side elevation of the degree plate in angular adjusted position.

Fig. 5 is a side elevation of one of the greater angle adjusting blocks.

Fig. 6 is a side elevation of one of the lesser angle adjusting blocks.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 1 designates a platen of a milling machine provided with the customary bolting slots 2 and oil trough 3, these parts being of the usual and well known milling machine platen construction.

The improved degree plate comprises a base member 4 provided with hinge lugs 5 having pivot pin holes and pivot pins there through, angle block placement pads 6 provided with angle block register slots 7, bolt holes 8 provided for receiving bolts by which the degree plate may be secured to the platen of a machine, the bolt holes registering with the slots 2 of the machine's platen; a face plate 9 provided with hinge lugs 10 registering with the hinge lugs 5 of the base 4, the hinge lugs provided with pivot pin holes which register with the pivot pin holes in the hinge lugs 5 of the base 4 and together

with the pivot pin 11 form the hinge between the base 4 and the face plate 9, at the opposite side of the face plate 9 from the hinges and at its under side near the two corners of the face plate are angle block placement slots 12 into which rest hardened steel angle blocks 13 for supporting the platen plate 9 in positive angular position. These angle blocks are of different angles as 13 and 14. A transverse groove 15 is provided in the upper side of each of the angle blocks 13 and 14 and also in the pad 6 of the base member 4. At the opposite angular side of the angle blocks a key 16 provides means by which the angle blocks 13 and 14 are held in exact registered position, stacked one with the other and to the base member. The key 16 may, for convenience, be made separately from the angle blocks and attached into a transverse groove cut in the angle face of the angle blocks as groove 15, or made integral therewith. In the upper side of the plate 9 are grooves 17 similar to an inverted letter T for receiving headed bolts 18 by which parts such as patterns or castings to be machined may be secured to the face plate, 19 representing such part secured by the bolt 18 and clamp 20. 21 represents milling cutters operating on a part of a machine being machined on angles to its base. The face plate at the opposite side from the hinge is provided with a hinged handle 22 by which the face plate may be easily raised to angular position or lowered after which it is turned to a position against the edge of the face plate where it will not interfere with the free longitudinal movement of the degree plate and machine tool platen. Additional means of securing the degree plate to the platen of the machine tool is provided by the holes 23 in which a finger clamp may be placed which also will hold the face plate 9 securely in adjusted position. The face plate may be either made with hardened face members 9a to prevent injury and prolong wear of its face or of one solid casting as would be without these hardened members. The angle blocks 13 and 14 are preferably made from tool steel hardened to resist wear and ground to the exact angle required; they may be nested one on the other to obtain the angle desired or of one single block of required angle and prevented from becoming displaced sidewise by their fit into the groove 12 at the under side of the face plate and longitudinally by the keys 16 in the grooves 7 of the base and the grooves 15 in the upper side of the angle blocks 13 and 14.

In the use of this invention, the degree plate

is placed on the platen of a machine tool such as a milling machine, shaper or planer and the side of the platen plate of the degree plate raised by means of the handle 22 to the desired angular degree required, and the angle blocks 13 and 14 placed in the grooves 12 of the under side of the platen plate 9 and the keys 16 placed in the grooves 7 and resting on the pads 6 of the base member 4. The part of a pattern, machine or the like is then secured to the top of the platen plate and the whole secured to the platen of the machine tool when the piece is ready to be operated on by the milling cutters 21 as shown in Fig. 2, or by cutting tools if a shaper or planer is employed in place of the milling machine. It has been the practice heretofore in machining angles on patterns and parts of machinery to employ fixed angle plates and blocking to position such parts on the platen of the machine tool. This is expensive, requires a great number of wedges, metal blocks and bolts, besides the angle plate to which the part is fastened and besides being expensive, is uncertain in holding the part to be machined, allowing the part to move and be injured when the cutter is applied.

From the above description, it is thought that the construction and advantages of the invention will be fully understood, and

What is claimed is:

1. In a degree plate comprising a base member having a plurality of machined pads on its upper side with a transverse groove therein, a face plate member in hinged relation to the base member and having a plurality of grooves at its under side and in register with the machined pads of the base member, a plurality of metal supporting blocks for the face plate member having their opposite supporting side faces inclined to each other and having at one of their inclined faces a transversely extending key whereby when

the supporting blocks are in supporting position of the face plate member and on the said pads the keys will rest in the grooves of the pads on the base member and against the bottom of the grooves in the under side of the face plate member.

2. In a degree plate, a base member machined at its upper side with a groove, a face plate member in hinged relation with the base member at one of its sides and having at its under side a groove in transverse relation to the hinge, a metal supporting block for the face plate member, the said block having two supporting sides inclined in relation to each other and means at one of the supporting sides for engaging the side of the groove in the base member.

3. In a degree plate comprising face plate and base members in hinged relation, a plurality of a plurality of vertical series of relatively inclined supporting surface members for supporting the face plate member in inclined relation to the base member.

4. In a degree plate comprising base and face plate members in hinged relation, a vertical series of relatively inclined faced face plate supporting members having means associated therewith, whereby the said members are held against longitudinal displacement in relation with each other and with the base member.

5. In a degree plate, a face plate member machined at its top and bottom sides, a vertical series of relatively inclined supporting surfaces supporting members for supporting the face plate member and means associated with said supporting member for holding said member in fixed relation with the said face plate member.

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