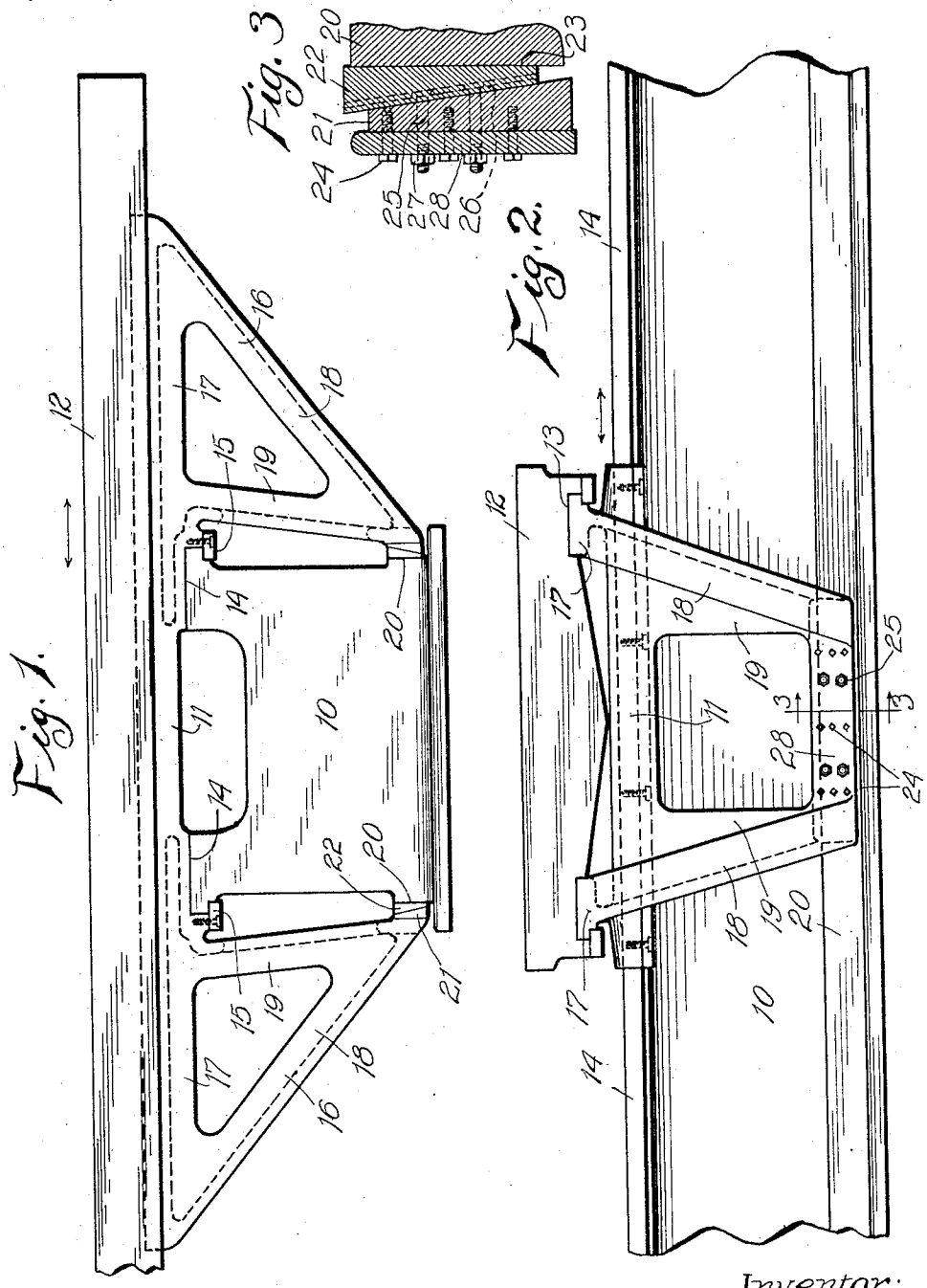
M. M. CORY.

MACHINE TOOL.

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1,396,165. Patented Nov. 8, 1921.



Witness:
E. B. Jacker

Inventor:
Marcus M. Cory

By Miller Chindahl & Parker
Atty's

UNITED STATES PATENT OFFICE.

MARCUS M. CORY, OF FOND DU LAC, WISCONSIN, ASSIGNOR TO GIDDINGS & LEWIS MACHINE TOOL COMPANY, OF FOND DU LAC, WISCONSIN, A CORPORATION OF WISCONSIN.

MACHINE-TOOL.

1,396,165. Specification of Letters Patent. Patented Nov. 8, 1921.

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To all whom it may concern:

Be it known that I, MARCUS M. CORY, a citizen of the United States, residing at Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Machine-Tools, of which the following is a specification.

This invention relates to boring, drilling and milling machines, or the like, and refers more particularly to a so-called table-type horizontal boring, drilling and milling machine, although the invention may be applied to boring mills, milling machines and other machines in which the essential features of the invention are found advantageous.

More particularly the invention refers to the saddle for supporting the platen of machines of this character and to means for mounting or supporting the saddle and for making any necessary adjustments thereof in the original assembly or to take up wear on the working surfaces.

The objects of the invention are to eliminate any deflection of the platen at either of its extreme positions at the sides of the main bed or knee of the machine so as to avoid inaccuracies in the work due to the distortion or misplacement of the saddle or platen caused by the weight when the platen is at one extreme end of the saddle; and to get this result by simple, economical and efficient means.

I accomplish these objects by the use of a saddle having an overhanging extension at each end, the extension being of a truss shape and extending down to secure an additional bearing near the foot of the bed.

Referring to the accompanying drawings, Figure 1 is an end view of the bed, saddle and platen of a machine tool illustrating the application of my invention hereto. Fig. 2 is a side view of the parts shown in Fig. 1. Fig. 3 is an enlarged detail of the adjusting gibs.

In the embodiment of my invention selected for illustration, 10 indicates the longitudinally extending stationary bed of a table-type horizontal boring, drilling, and milling machine. A transversely extending saddle 11 is longitudinally slidable on the bed 10 and carries a platen 12 transversely slidable on ways 13. In the devices of the prior art the saddle 11 terminates substantially at the sides of the bed 10 or has only a slight overhang. When the platen 12 has been moved transversely to a position where the combined overhanging weight of the platen itself and of a heavy piece of work carried thereby imposes a severe strain on the ways for the platen, the resilience of the metal will allow considerable deflection of the platen to occur impairing the accuracy of the work.

My improved saddle 11 is supported upon ways 14 on the top of the bed 10 and carries suitable retaining gibs 15 engaging the under side of the outer edge of each way 14. The upper portion of the saddle 11 extends beyond the sides of the bed 10 forming on each side triangular truss-shape extensions 16 each comprising a horizontal top member 17, an inclined strut 18 and a vertical connecting portion or tension member 19.

Horizontal members 28 extend between the lower corners of the trusses 16 on the same side of the bed, to unite the whole overhanging portion as a rigid unit, and to form a suitable bearing for slidable engagement with ways 20 machined on the sides of the bed near the bottom.

Each cross piece 28 may be provided with suitable means for engaging the ways 20 comprising a stationary gib 21 bolted to the cross piece 28 and a slidable gib 22 having a machined face 23 adapted to engage the way 20. The gibs 21 and 22 have a slight taper as clearly indicated in Fig. 3 and any suitable means may be provided for shifting them relative to each other to bring the face 23 into the proper engagement with the way 20 and support the truss 16. I have illustrated screws 24 holding the gib 21 in place on the truss 16 and bolts 25 having heads slidable in the T-shaped slot 26 adapted to be drawn tight by suitable nuts 27.

While I have illustrated the ways 20 as extending in vertical planes, it is obvious that the inclination of these ways may be varied over a considerable range to suit the requirements of various conditions of service. As the outer ends of members 17 are restrained from swinging sidewise by the guides on the platen, it is unnecessary to reinforce or brace them against such swinging movement by any other means.

It will be apparent that the upper portion of the saddle 11 is in tension under all normal conditions of positive loading while the strut 18 is in compression and the vertical member 19 will be under enough tension to prevent the foot of the truss from moving down on the way 20. The upper surface of the member 11 therefore will form a continuous support from end to end whose rigidity depends on the compressive action of the strut 18 rather than on any supporting member subject to a bending action.

Suitable means for sliding the saddle on the bed and the platen on the saddle either with or without a power drive and suitable power driven tools on one or both ends of the bed 10 to operate on the work carried on the platen will, of course, constitute part of the machine but inasmuch as these devices form no essential part of my invention, illustration thereof is deemed unnecessary.

While I have illustrated and described in detail the specific embodiment of my invention at present preferred it should be duly understood that the description is only for purposes of illustration and many variations and modifications will naturally occur to those skilled in the art. I aim in the subjoined claims to cover all such legitimate modifications and variations.

I claim as my invention:—

1. A machine of the class described having, in combination, a longitudinally extending bed, a saddle longitudinally slidable on said bed and having a central portion and a lateral projection, said projection comprising a pair of spaced triangular trusses each having a horizontally extending top member alined with said central portion, a downwardly extending member adjacent the side of said bed, a strut joining the ends of said outwardly and said downwardly extending members, and a cross piece joining the lower ends of said downwardly extending members to unite said trusses into a rigid integral unit.

2. A machine of the class described having, in combination, a longitudinally extending bed, a saddle longitudinally slidable on said bed and having a central portion and a lateral projection, said projection comprising a pair of spaced triangular trusses each having a horizontally extending top member alined with said central portion, a downwardly extending member adjacent the side of said bed, a strut joining the ends of said outwardly and said downwardly extending members, and a cross piece joining the lower ends of said downwardly extending members to unite said trusses into a rigid integral unit, and vertical guide surfaces on the sides of said bed near the bottom thereof slidably engaging and supporting said cross piece.

3. A machine of the class described having, in combination, a longitudinally extending bed having a pair of spaced ways on its upper surface and another pair of spaced ways on its sides spaced from the top of the bed, a longitudinally slidable saddle on said bed comprising a central portion supported by said upper ways, and an overhanging portion on each side extending outwardly in alinement with said central portion and downwardly adjacent the side of said bed for supporting engagement with said lower ways.

4. The combination recited in claim 3 in combination with a pair of adjustable gibs carried by the downwardly extending portions of said overhanging portions whereby the distribution of stress and weight between said upper and lower ways and the various portions of said saddle may be properly adjusted.

5. A machine of the class described having in combination, a longitudinally extending bed, a saddle longitudinally slidable on said bed, and a platen transversely slidable on said saddle, said platen projecting laterally beyond said bed, said saddle having a pair of laterally projecting extensions forming ways for said platen, each extending way being reinforced by a downwardly extending and a diagonally extending member forming a triangular truss, the lower and inner corner of said truss being slidably engaged and supported by said bed.

6. A machine of the class described having, in combination, a bed, a longitudinally slidable saddle on said bed, said saddle extending transversely beyond said bed, and a plurality of abutting surfaces on said bed adapted to engage said saddle on each side of the center line of the machine, comprising a pair of ways at the top of the bed having horizontal main surfaces, and a pair of ways below said first mentioned ways, having main surfaces at an angle to the horizontal.

7. A machine of the class described having, in combination, a longitudinally extending approximately rectangular bed, a pair of spaced ways on said bed, a transversely extending saddle slidable on said ways, said saddle having outwardly projecting and downwardly projecting portions on each side of the bed, a second pair of ways on the sides of the bed vertically spaced below said first mentioned pair of ways, the downwardly extending portions of said saddle being engaged and supported by said second pair of ways.

8. A machine of the class described having, in combination, a longitudinally extending bed, a saddle longitudinally slidable on said bed and extending transversely beyond said bed on both sides, said saddle comprising a horizontally extending top portion and a truss integrally united with said top portion and having a laterally extending member alined with said horizontal portion and

a member extending downwardly for supporting engagement with the lower portion of the side of said bed.

9. A machine of the class described having, in combination, a stationary base having substantially vertical side portions and a movable supporting member horizontally slidable on said base and having an overhanging projecting portion, said overhanging portion extending outwardly and also extending downwardly beside said stationary base in sliding and supporting engagement therewith near the bottom.

10. A machine of the class described having, in combination, a stationary base having substantially vertical sides and a laterally projecting support horizontally slidable on said base and engaging said base near the bottom of its vertical side and also at another point spaced vertically a substantial distance above the bottom.

11. A machine of the class described having, in combination, a stationary base, a triangular supporting member projecting laterally from one side of said base and horizontally slidable thereon, the adjacent side of said triangular member extending substantially vertically adjacent the side of said base, and means on said base slidably engaging and supporting said triangular supporting member adjacent the ends of its vertically extending portion.

12. A machine of the class described having, in combination, a base provided with ways along its top and also having ways with upright working faces at its opposite sides near its bottom, a saddle slidably mounted on said top ways and having depending portions at opposite sides of said base provided with faces complementary to the working faces on said lower ways to slide in contact with the latter, and a platen slidably mounted on said saddle, said depending portions of the saddle coöperating with said lower ways on the base to prevent deflection of the platen due to weight at extreme ends of said saddle.

In testimony whereof, I have hereunto set my hand.

MARCUS M. CORY.