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C. G. JOHANNESMEYER ET AL

GUIDE WAY

Filed July 1, 1924

Fig. 1.

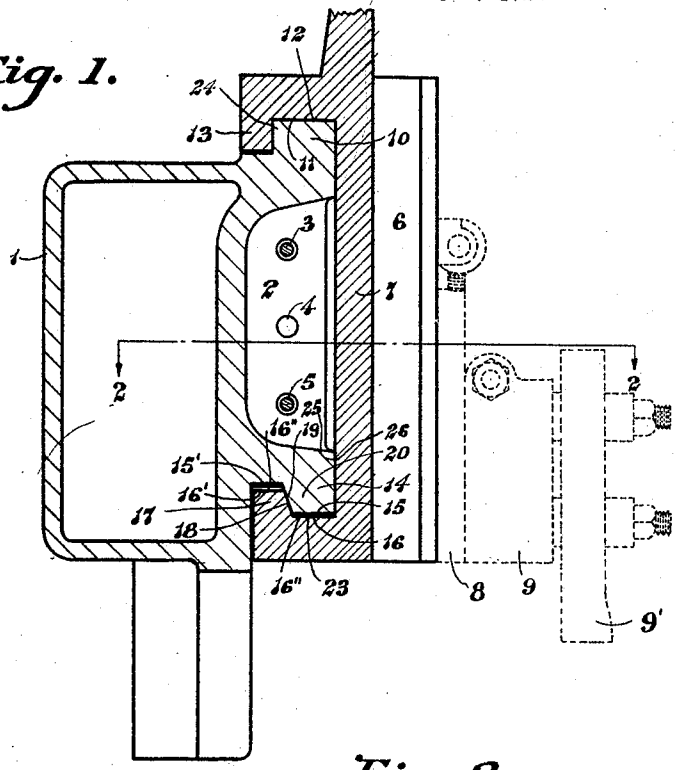
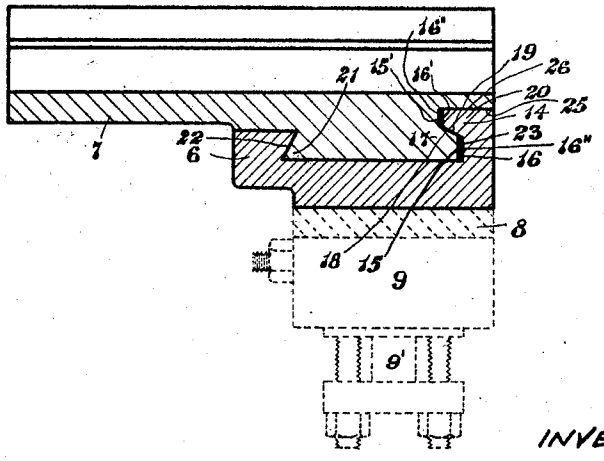


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES GEORGE JOHANNESMEYER, OF GLENDALE, AND ALFRED R. McCANN, OF HAMILTON, OHIO, ASSIGNORS TO THE LIBERTY MACHINE TOOL COMPANY, OF HAMILTON, OHIO, A CORPORATION OF OHIO.

GUIDEWAY.

Application filed July 1, 1924. Serial No. 723,510.

To all whom it may concern:

Be it known that we, CHARLES GEORGE JOHANNESMEYER and ALFRED R. McCANN, citizens of the United States, and residents, respectively, of Glendale, in the county of Hamilton and State of Ohio, and Hamilton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Guideways, of which the following is a specification.

Our invention relates to guide ways and more particularly to devices of this character especially adapted for use on metal planers.

The objects of our invention are to provide means adapted to rigidly maintain a slide in engagement with the saddle; to provide means adapted to rigidly maintain the saddle in engagement with the cross rail; to provide means whereby wearing of the metal caused by sliding movement of the guides is automatically provided for thereby maintaining the guides against lost motion; and to provide means adapted to prevent vibration caused by chatter of the cutting tool.

Our invention consists in providing a male member in engagement with a female member, said male member having its inner surface formed in interlocking engagement with a similarly formed outer surface of said female member; further, in providing one side of said male member with an angular surface in engagement with an angular surface of said similarly formed female member; further, in providing spaces respectively between adjacent flat surfaces respectively of said female and said male members.

Our invention further consists in the construction, combination and arrangement of parts as herein set forth and claimed.

In the drawing:

Fig. 1 is a section of a metal planer cross rail and saddle showing the slide in side elevation and the tool block, clapper box and cutting tool in dotted lines in side elevation;

Fig. 2 is a section taken on a line corresponding to 2—2 of Fig. 1 showing our invention in modified form.

In the embodiment of our invention as illustrated and which shows a preferred construction and the usual cross rail and tool adjusting feed mechanism of a metal planer comprise cross rail 1 having hollow portion 2 containing upper cross rail screw 3, feed rod 4 and lower cross rail screw 5. Slide 6 is vertically slidably mounted on saddle 7 horizontally slidably mounted on cross rail 1. Clapper box 8 fixed to slide 6 has tool block 9 secured thereto having tool 9′ suitably fixed therein.

We provide as shown in Fig. 1 upper rail 10 having horizontal flat and upper surface 11 in engagement with horizontal flat inner surface 12 of saddle 7. Flange 13 integral with saddle 7 extends downwardly in engagement with the inner side of upper rail 10 for the purpose of preventing the upper portion of the saddle against outward movement relative to cross rail 1. Lower rail 14 has horizontal flat outer and lower surfaces 15 and 15′ respectively in spaced apart parallel relation with horizontal flat inner surfaces 16 and 16′ of saddle 7 thereby respectively forming spaces 16″ therebetween. Angular member 17 integral with the saddle extends upwardly and has angular surface 18 in fitted engagement with angular surface 19 of angular projection 20 integral with lower rail 14.

In Fig. 2 we show a modified form of our invention in which saddle 7 has integral V projection 21 in fitted engagement with track 22 formed in slide 6. As shown in Fig. 1 angular surfaces 18 and 19 respectively of saddle 7 and cross rail 1 are so positioned as to be adapted to receive the thrust caused by the adaptation of tool 9′ to exert upward pressure when in cutting engagement with work being done.

Spaces 16″ between flat surfaces 15 and 15′ and 16 and 16′ respectively of cross rail 1 and saddle 7 permits angular projection 20 integral with lower rail 14 to wedge within similarly formed space 23 in saddle 7 in which the angular projection is fitted thereby maintaining the saddle in rigid engagement with the cross rail. Upper rail 10 may be of any desired shape and in fitted relation with space 24 formed in saddle 7.

In operation the mechanism of our invention is as follows:

Referring to Fig. 1, by way of example, upper rail 10 is slidably fitted in space 24 formed in the upper part of saddle 7. Lower rail 14 has longitudinal angular projec-

tion 20 formed thereon having angular side 19 in engagement with angular side 18 of saddle 7. The angular projection 20 is fitted within space 23 formed within the saddle and forming space 16'' between the lower sides 15 and 15' of the cross rail and the inner sides 16 and 16' of saddle 7. Upward pressure of saddle 7 causes angular projection 20 to wedge within space 23 whereby close engagement of angular sides 18 and 19 respectively of saddle 7 and angular projection 20 causes outer edge 25 of the angular projection to closely engage inner edge 26 of the saddle, whereby the saddle is maintained in rigid engagement with the cross rail.

It is, therefore, apparent that we have invented a simple, efficient and effective means whereby a male member, in slidable interlocking relation with the female member, may be maintained in rigid engagement therewith irrespective of the wear of the metal caused by slidable engagement of the parts.

An important advantage of our invention is that considerable pressure may be exerted transversely against saddle 7 (as shown in Fig. 1) caused by tool 9' exerting upward pressure against tool block 9 secured to clapper box 8 fixed to slide 6 secured in a fixed position relative to saddle 7. Also, as shown in Fig. 2, considerable side pressure may be exerted horizontally against slide 6, caused by sidewise pressure of the tool. Inasmuch as saddle 7 is maintained in rigid engagement with cross rail 1, tool 9' may accomplish a cut of considerable depth without the usual "chatter" usually developed where the tool is not maintained in rigid position relative to the work being done.

Chattering of tool 9' produces a finish on the work having indentations and roughened surface. It is, therefore, especially advantageous to provide the tool with considerable stability whereby a finished product may be free from such indentation. Furthermore, our invention, by insuring tool 9' with considerable stability, enables the operator of the metal planer to make heavy cuts from the work at high speed without the likelihood of damaging the machinery caused by excessive vibration developed by "chattering" of the tool and without the likelihood of breaking the tool, thereby producing a highly efficient article at a low cost of manufacture.

It is apparent that our invention is capable of some modification without departing from the scope or spirit as defined in the claims.

What we claim is new and desire to secure by Letters Patent is:

1. In a guide way, a slidable member, a stationary member relative to said slidable member, a longitudinal projection formed on said stationary member and having one side flared and substantially V-shaped and having a flat top and having the other side formed as by two flat surfaces in parallel relation with each other and at right angles to said top, and an angular surface between and connecting the inner ends of said flat surfaces, said slidable member having its inner part formed similar to said longitudinal projection and interlocking therewith, and a space respectively between said flat surfaces of said stationary member and the inner side of said slidable member.

2. In a guide way, a slidable member, a stationary member relative to said slidable member, a longitudinal projection formed on said stationary member, and having a flat top and having one side formed as by two flat surfaces in parallel relation with each other and at right angles to said top, and an angular surface between and connecting the inner ends of said flat surfaces, said slidable member having its inner part formed similar to said longitudinal projection and interlocking therewith, and a space respectively between said flat surfaces of said stationary member and the inner side of said slidable member.

3. In a guide way, a stationary member and a channel member slidable thereon, a longitudinal projection integral with said stationary member and having one side flared and substantially V-shaped and having a flat top and having the other side enclosed by surfaces comprising two flat surfaces in parallel relation with each other and at right angles to said top and an angular surface extending between the inner ends of said flat surfaces, said channel member having its inner side formed in fitted engagement with said longitudinal projection and interlocking therewith and a space respectively between said flat surfaces of said stationary member and the inner side of said channel member.

4. In a guide way, a stationary member and a channel member slidable thereon, a longitudinal projection integral with said stationary member and having a flat top and having one side enclosed by surfaces comprising two flat surfaces in parallel relation with each other and at right angles to said top and an angular surface extending between the inner ends of said flat surfaces, said channel member having its inner side formed in fitted engagement with said longitudinal projection and interlocking therewith and a space respectively between said flat surfaces of said stationary member and the inner side of said channel member.

5. In a guide way, a male member having a longitudinal projection, a female member, said male member having a channeled side

in fitted and interlocking relation with said longitudinal projection and having one side enclosed by surfaces comprising two flat surfaces in parallel relation with each other and an angular surface between said flat surfaces and a space respectively between each of said flat surfaces and said male member.

6. In a guide way, a longitudinal stationary member, a channeled member engaging said stationary member and longitudinally slidable thereon, said stationary member having an external angular surface and an external flat surface adjacent thereof, and parallel surfaces adjacent said flat surface, said channeled member having an internal angular surface and an internal flat surface adjacent thereof, said stationary member in close engagement with said channeled member.

7. In a guide way, a longitudinal stationary member, a channeled member in interlocking engagement with said stationary member and longitudinally slidable thereon, said stationary member having a side angular surface and an external flat surface adjacent said angular surface and having a V-shaped side and a flat front, said channeled member having a side formed similar to said stationary member and interlocked therewith, said angular surface of said stationary member in close engagement with said angular surface of said channeled member and a space respectively formed between each of said flat surfaces of said stationary member and said channeled member.

8. In a guide way, a longitudinal stationary member, a channeled member in interlocking engagement therewith and longitudinally slidable thereon, said stationary member having a longitudinal projection integral therewith having one side flared and substantially V-shaped and its other side formed by two flat surface and an angular surface therebetween, said channeled member in fitted engagement with said longitudinal projection, a space between said stationary member and said channeled member.

9. In a guide way, a longitudinal stationary member, a channeled member in interlocking engagement therewith and longitudinally slidable thereon, said stationary member having a longitudinal projection integral therewith and having one side formed by two flat surfaces and an angular surface therebetween, said channeled member in fitted engagement with said longitudinal projection, a space between said stationary member and said channeled member.

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