

E. P. BULLARD, JR.
 CROSS RAIL SECURING DEVICE FOR MACHINE TOOLS.
 APPLICATION FILED JAN. 3, 1911.

1,058,720.

Patented Apr. 15, 1913.

2 SHEETS-SHEET 1.

Fig. 2.

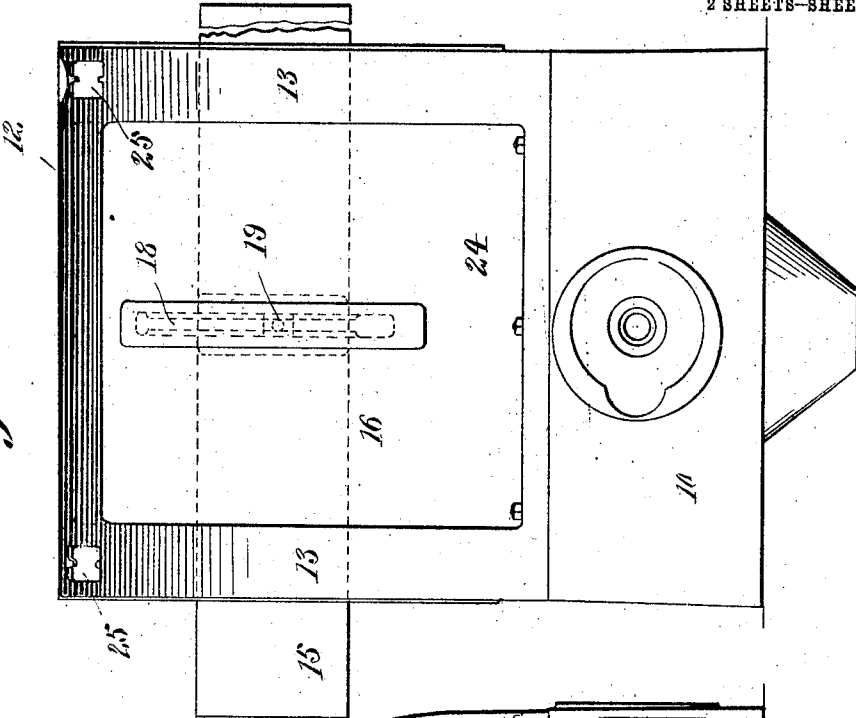
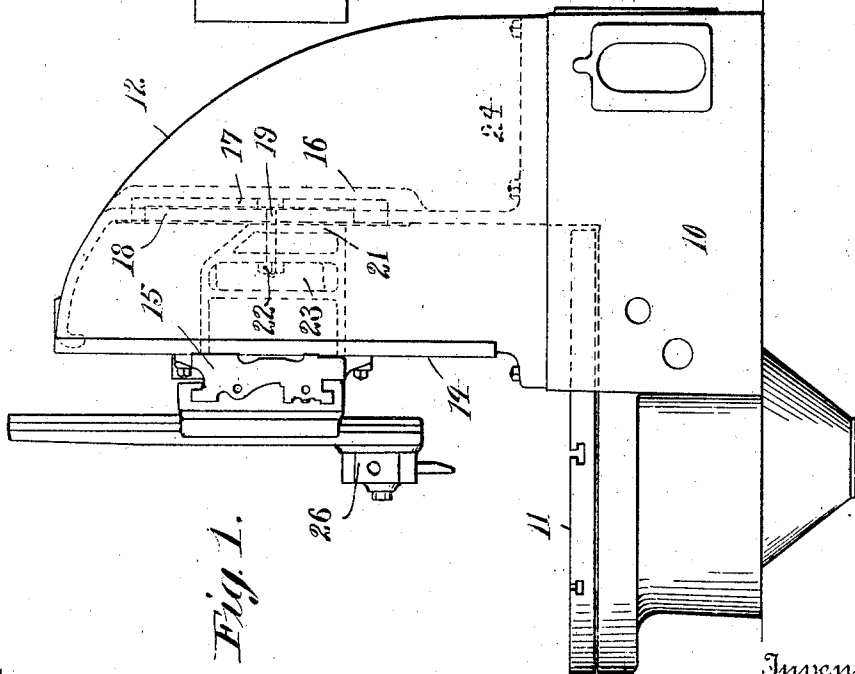


Fig. 1.



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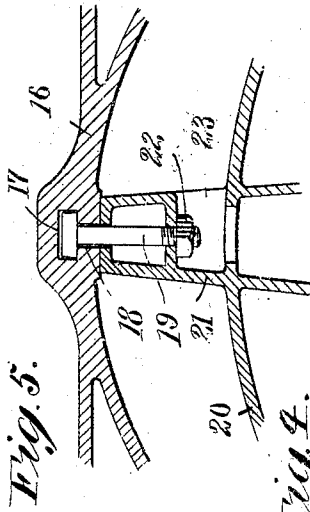


Fig. 4.

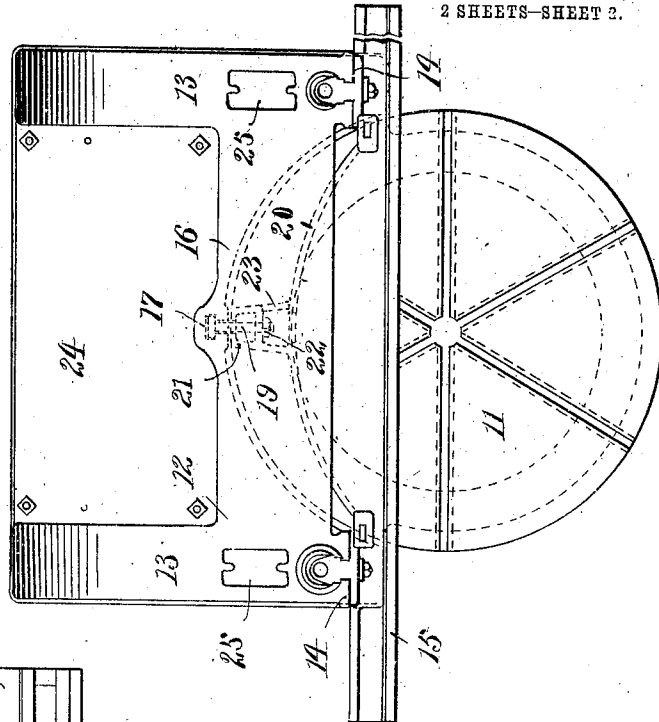
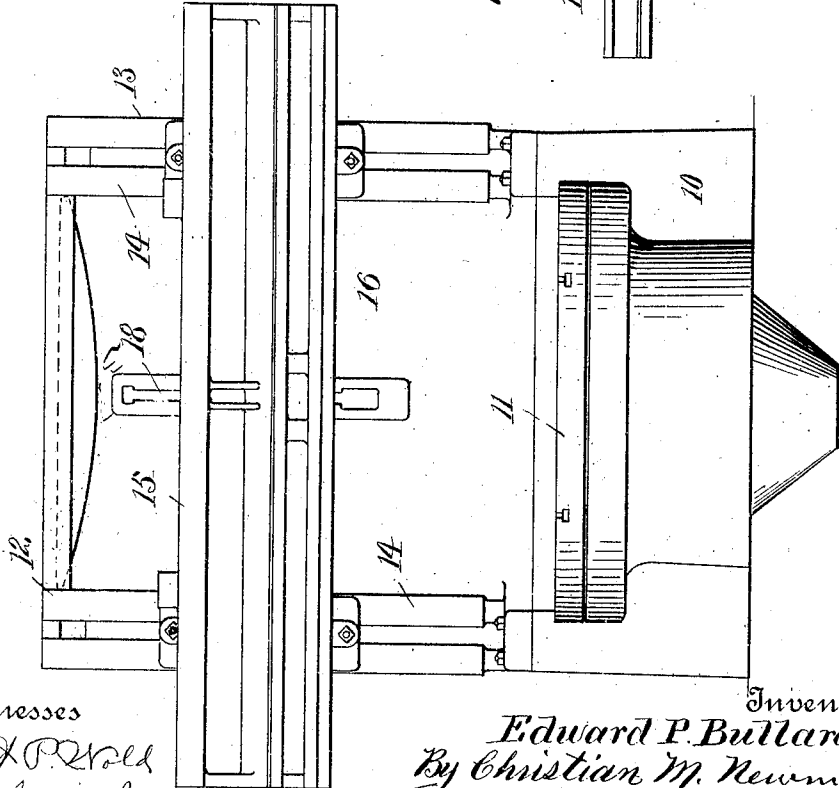


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD P. BULLARD, JR., OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE BULLARD MACHINE TOOL CO., OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CROSS-RAIL-SECURING DEVICE FOR MACHINE-TOOLS.

1,058,720.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed January 3, 1911. Serial No. 600,618.

To all whom it may concern:

Be it known that I, EDWARD P. BULLARD, Jr., citizen of the United States, and resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Cross-Rail-Securing Devices for Machine-Tools, of which the following is a specification.

10 This invention relates to metal working machinery of the machine tool type, and particularly to improvements in that class of machines known as boring mills, maxi-
15 mills, and the like.
The above class of machines include in their make up, a rotary work carrying table, an adjustable cross rail for supporting the tool head above the tables. Heretofore in this sort of machines it has been common to
20 support a pair of columns on the two opposite side portions of the base and to the rear of the center of the work carrying table, and to provide a way in the vertically finished faces of these two columns for adjustably
25 supporting the cross rail in position. These two supports adjoining the end portions of the rail, so far as I know, have heretofore constituted the sole support for the rail, and as the head carried by the rail is usually positioned intermediate of these points when
30 in operation it does not stand perfectly rigid but will vibrate more or less according to the work being performed and the yieldability of the rail. I therefore find it particularly desirable, in the present require-
35 ments of a machine of this class, where high grade steel is to be operated upon and where rapid production is an essential feature, that both the head and its rail be rigidly positioned, which I have accomplished by providing an improved form of column made of a single piece, constituting the upper
40 frame work of the machine and including two vertical faced ways for the attachment of the rail and by providing a third connection for the rail with the intermediate portion of this column, and which like the side connections is made adjustable to permit the rail to be raised and lowered as
50 desired.

On the accompanying drawings forming a part of this specification similar characters of reference will be found to designate like

or corresponding parts throughout the several figures and of which—

Figure 1, shows an incomplete side view of the main parts of a boring mill and including my improved form of column cross rail and intermediate support therefor. Fig. 2, is a rear view of the construction shown in Fig. 1. Fig. 3, is a front view of the machine shown in Figs. 1 and 2. Fig. 4, is a plan view of Fig. 3. Fig. 5, shows an enlarged detail cross sectional view of the intermediate connection of rail and column heretofore referred to.

Referring in detail to the characters of reference marked upon the drawings 10 indicates the base of the machine and upon the forward portion of which is operatively mounted the rotary work carrying table 11, and which features may obviously be of any preferred or well known type and adapted to be fitted with any preferred form of driving connections, not shown. Upon the rear and raised portion of the base is mounted my improved form of column 12 and which as will be noted includes side portions 13 having vertically disposed faces 14 with ways therein for the attachment of the cross rail 15. Intermediate of these side portions of the column is integrally formed a web 16 that includes a concave front face (see Figs. 4 and 5) a centrally arranged vertical pocket 17 having a somewhat narrow vertical slot 18 formed through the front of the web and into the pocket, adapting it to receive the head of a T bolt 19 that is designed to be slipped up and down in said pocket and slot with the movement of the rail. An enlargement 20 is formed on the rear side of the central portion of the rail and extends into the concave face portion of the column; and upon the central portion of this enlargement I provide an extended post 21 that projects rearward and against the face of the web of the column adjoining the slot 18 before mentioned. The threaded end of the T bolt extends through a portion of this post and is provided with a nut 22 which may be gotten at through the side opening 23 and be tightened or loosened for the purpose of clamping or releasing the post and rail from the column as occasion requires. The column is further formed with a central rear space 24 intermediate of the side portions and

web to receive a motor or other driving medium for operating the machine. I also form pockets 25 in each of the side portions of the column to receive weights, not shown, 5 which are used to counterbalance the head 26, and which may be of any preferred construction.

From the foregoing description it will be noted that the column including its base, 10 two sides and web, are formed in one piece, which obviously is not only cheaper to make, but much more rigid and durable than if formed of two or more pieces as has heretofore been the custom in boring mill constructions. This feature of a single piece 15 column when employed in connection with a rail having an intermediate third connection with the column, produces an exceptionally stiff and rigid rail when clamped 20 in position, thus insuring rigidity to the head and accuracy of operation of its tools upon the work carried by the table. Therefore, the invention is considered to be highly important and essential for the production 25 of a first class machine of this kind.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In a machine tool of the class described, 30 the combination with a base, of a column mounted thereon and including integral side members having vertical ways and an integral non-movable web portion with a vertical slot therein connecting the sides, a 35 cross rail adjustably mounted upon the ways of the side members and adjustably connected to the slot in the web of the column.

2. In a machine tool of the class described, the combination with a base, of a column 40 mounted thereon and formed of a single piece and including side portions and a non-movable web connecting the same and having a vertically disposed guide slot therein, a rail adjustably secured to the face of the 45 side portions and having a third connection intermediate of said rail and slot of the web whereby the central portion of the rail is rigidly secured to the said web.

3. In a machine tool of the class described,

the combination with a base, of a column 50 mounted therein and including side standards and a movable cross portion with a vertical slot arranged in said cross portion, a vertically adjustable rail secured to the 55 face of the side portions and having an intermediate rearwardly extended part to engage the slot in the fixed cross portion of the column, and an adjustable connection 60 intermediate of the said rearwardly extended part of the rail and the slot of the cross portion of the column which permits the rail to be securely clamped to different portions of the said cross portion.

4. In a machine tool of the class described, the combination with a base, of a column 65 comprising side portions having vertically arranged ways on their faces and a concave cross portion having a vertically and centrally arranged slot therein, a cross rail adjustably secured to the ways of the side 70 portions of the column and having an enlargement on its rear side intermediate of the faces of the side columns, a bolt carried in an extension of the enlargement and adapted to engage the slot of the cross portion 75 and designed to be clamped in different positions with the vertical adjustment of the rail.

5. In a machine tool of the class described, the combination with a base, of a column 80 mounted thereon and including side standards and a non-movable intermediate cross portion having a vertical slot therein, a vertically adjustable cross rail secured to the 85 face of the standards and to the slot in the intermediate non-movable cross portion, means for clamping said intermediate portion of the cross rail to the said slotted cross portion, and a horizontally adjustable tool 90 carrying saddle mounted upon the said rail.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 28th day, of December A. D., 1910.

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