

(No Model.)

2 Sheets—Sheet 1.

J. T. WILLIAMS.

TURNING AND FACING ATTACHMENT FOR BORING MILLS.

No. 535,649.

Patented Mar. 12, 1895.

Fig. 1.

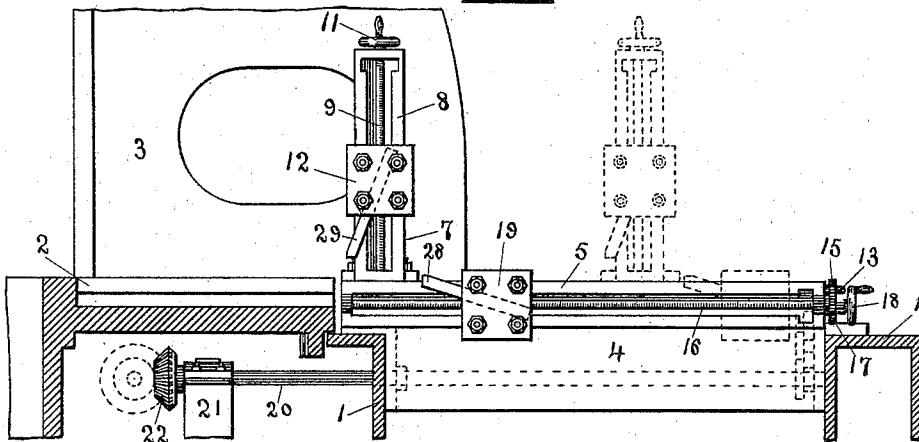


Fig. 2.

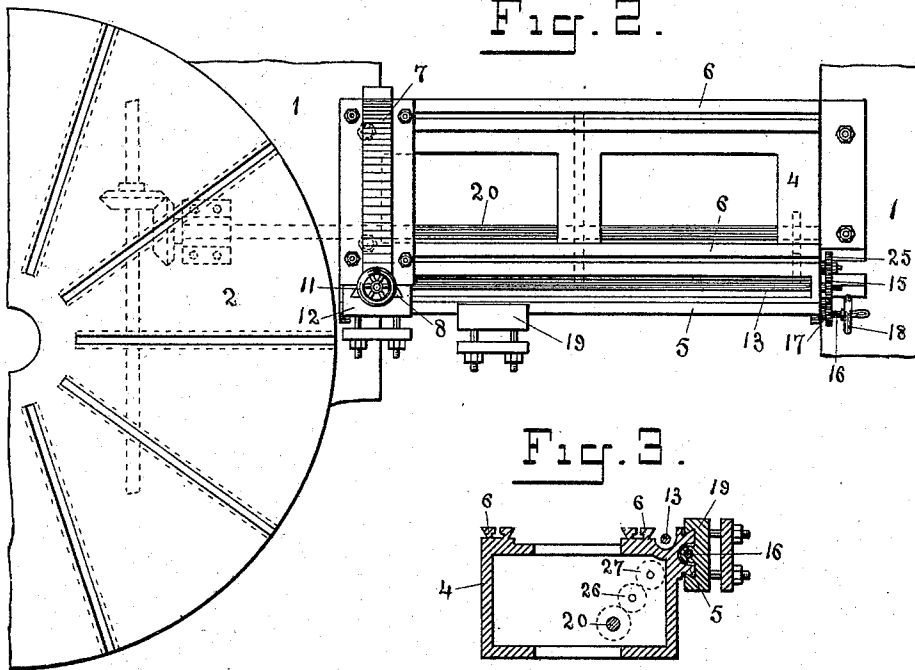
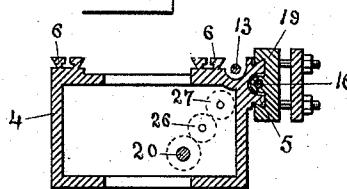


Fig. 3.



Witnesses

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Fig. 4.

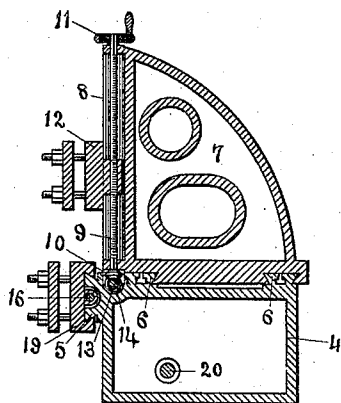


Fig. 5.

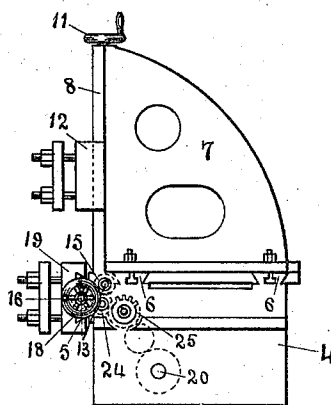


Fig. 6.

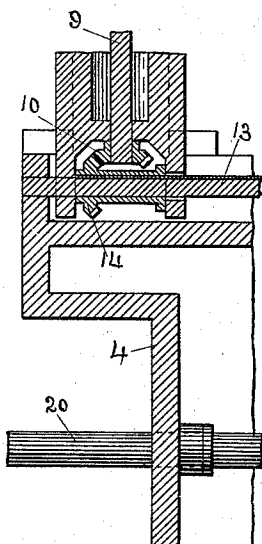


Fig. 7.

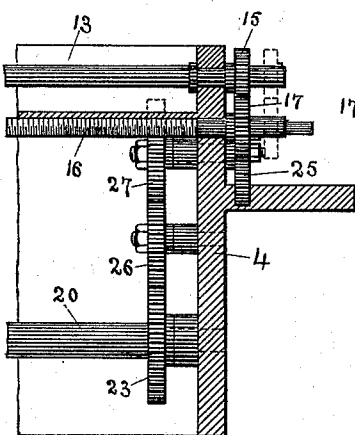
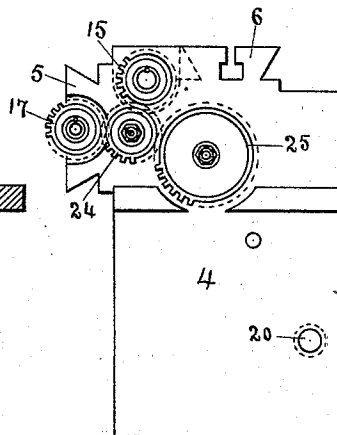


Fig. 8.



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JOHN THOMAS WILLIAMS, OF BESSEMER, ALABAMA.

TURNING AND FACING ATTACHMENT FOR BORING-MILLS.

SPECIFICATION forming part of Letters Patent No. 535,649, dated March 12, 1895.

Application filed December 24, 1894. Serial No. 532,845. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMAS WILLIAMS, a citizen of the United States, residing at Bessemer, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Turning and Facing Attachments for Boring-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in a turning and facing attachment for boring mills; and the objects of my improvement are, first, to provide a device or attachment to be secured to the bed of a boring mill in the rear of the table, the device carrying two additional tool heads to operate two additional tools on the back of work bolted to the mill table; second, to provide a bed to be attached to the bed of a boring mill in the rear of the table, the bed carrying vertically and horizontally operating tool heads, which can be operated both at the same time or singly as desired; third, to provide an additional bed to be attached to the bed of a boring mill in the rear of the table, the bed carrying a tool head operated horizontally to face on the under side of the work projecting over the edge of the table; fourth, to provide a bed to be attached to the bed of a boring mill in the rear of the table, the bed being provided with a vertical housing carrying a tool head operating vertically to turn off the edge of work bolted on the table. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a vertical side view of my improved turning and facing device attached to the bed of a boring mill. Fig. 2, is a top view of the same. Fig. 3, is a vertical or cross sectional view of the bed through the center of the horizontal tool head. Fig. 4, is a vertical cross sectional view of the bed and housing through the center of the housing. Fig. 5, is a vertical end view of the device. Fig. 6, is an enlarged detail vertical sectional side view of a part of the bed and housing through the center of the miter feed gears. Fig. 7, is an enlarged detail vertical side view of a part of the bed, the side of the bed removed to show

the internal gears. Fig. 8, is an enlarged detail vertical end view of a part of the end of the bed, showing the position of the feed gears.

Similar figures refer to similar parts throughout the several views.

The part of the boring mill bed 1 as shown, represents the bed of an extension boring mill as usually constructed. The part of the table 2 is shown as usually connected with the bed. The part of the housing 3 as shown, represents one side of a housing extending upward from the bed. Any other form or design of mill with the housings stationary will answer as well, to attach my improved turning and facing device to, no particular form or design of mill being required for its operation.

The bed 4 of my improved boring mill attachment, is made of cast iron or other suitable metallic material. The bed is made of a box form provided with the necessary flanges and ribs to secure rigidity and strength. The front end is provided with an overhanging lip to attach it to the bed of a mill, a flange being provided at the back end for the same purpose. Any other form of attachment can be adapted to fit other forms of mills. The bed is provided on one side with a raised dove-tail slide 5 extending the full length of the bed, the slide having a concave recess formed in its center. The top of the bed is provided with two raised dove-tail slides 6, 6 extending the full length of the bed, the slides having T slots formed in them for bolts. A concave recess is formed in the bed between one of the slides and the edge of the bed.

The housing 7 is made of cast iron or other suitable metallic material. The under side of the housing is provided with dove-tail recesses to fit the slides 6, 6 formed on the bed. The housing at the bottom edge is provided with flanges on both sides, to secure the housing to the slides with bolts as shown. The housing freely slides to any position desired on the slides, and is clamped to the position desired by the bolts in the flanges. A dove-tail slide 8 is formed on the face of the housing having a concave recess formed in its center. A feed rod 9 is journaled in bearings formed top and bottom of the recess in the slide. The feed rod has screw threads formed on it between the bearings. The lower end of

the rod is provided with a miter gear wheel 10 mounted thereon. The top end of the rod is provided with a hand wheel 11 attached thereto.

5 The tool head 12 is made of suitable metallic material. The head has a dove-tail recess formed in the back to fit the slide formed on the housing. A nut is formed in the center of the recess, the nut having screw-threads
10 formed in it to engage with the screw-threads formed on the rod, to operate the head up or down the slide by the rotation of the hand wheel on the head of the feed rod. The head is provided on its face with the usual plate
15 attached by studs, to clamp a tool and hold it firmly in the head.

A feed rod 13 is journaled in bearings formed at both ends of the concave recess formed in the top edge of bed. The rod is provided with a feather extending the full length
20 inside the bearings. A miter gear wheel 14 having a recess formed in it to slide on the feather is mounted loosely on the rod. The gear is engaged in a recess formed in the lower end of the housing and connects with the gear
25 on the bottom end of the vertical feed rod, the housing when moved on the slides carrying the gear wheel with it on the rod. The back end of the feed rod outside the bed is provided with a feather. A gear wheel 15 is
30 mounted loosely on the end of the shaft, the gear adapted to slide in and out on the feather.

A feed rod 16 is journaled in bearings at both ends of the recess, formed in slide 5 on
35 the side of the bed. The feed rod has screw-threads formed on it between the bearings. The back end of the rod outside the bed is provided with a feather. A gear wheel 17 is mounted loosely on the shaft, the gear wheel
40 adapted to slide in and out on the feather. The end of the rod outside of the gear is provided with a hand wheel 18, the wheel attached firmly to the end of the rod.

The tool holder 19 is made of suitable metallic material. The head is formed with a dove-tail recess formed in the back to fit the
45 slide 5 formed on the bed. A nut is formed in the center of the recess, the nut having screw-threads formed in it, to engage the screw-threads formed on the feed rod, 16, the tool
50 head being provided on its face with the usual metallic plate to clamp the tool. The plate is secured to the head with studs, the nuts on the studs, clamping the plate on the tool to
55 hold it to place.

A feed shaft 20 is journaled in bearings formed in the bed. An additional bearing 21 is provided near the outer end of the shaft. The shaft extends under the boring mill table
60 and has a miter gear wheel 22 mounted on the end. The miter wheel is intended to connect to a like wheel mounted on the usual feed shaft extending underneath the mill table shown in dotted lines. The feed shaft at
65 its back end is provided with a gear wheel 23 mounted thereon. A series of connecting gears 24, 25, 26 and 27 mounted on studs, con-

nects the gear wheel 23 on the feed shaft with the gears 15 and 17 mounted on the ends of the feed rods. The connecting gears can be of
70 any desired diameter to make the connection, or they can be of varying diameters to change the speed of the feed as desired.

In operating the device, the housing is placed and secured in any desired position on
75 the bed to clear the swing of the work bolted to the mill table, the tool head is brought to the proper position on the slide of the housing, by the rotation of the hand wheel, and the gear 15 on the end of the feed rod 13 is slipped
80 out on the end of the rod to disengage the gears, before operating the hand wheel. The horizontal tool head 19 is set in the same manner, by first, disengaging the gear 17 by slipping it out on the rod toward the hand
85 wheel. The rotation of the hand wheel 18 will then set the head at any desired position, the tools 28 and 29 being then placed in position and clamped in the heads. The feed shaft if then put in motion will operate one or both
90 of the tool heads as desired, by slipping in the feed gears on the ends of the feed rods, to bring them in contact with the connecting gears to the feed shaft.

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

1. In a turning and facing attachment to a boring mill, the combination with the mill of a bed having a vertical and horizontal slide
100 with tool heads operating on the slides, a vertical and a horizontal feed rod connected by miter gear wheels operating the vertical head, the end of the horizontal feed rod outside of the bed being provided with a gear
105 wheel mounted thereon, a horizontal feed rod journaled in the bed to operate the horizontal head the feed rod outside the bed being provided with a gear wheel mounted thereon, a main feed shaft journaled in the bed the shaft
110 having a gear wheel mounted thereon, and a series of connecting gears mounted on studs connecting the gear on the feed shaft with the gears on the ends of the feed rods, substantially as and for the purpose set forth.
115

2. In a turning attachment for a boring mill, the combination with the mill of a bed having raised dove-tail slides formed on the top of the bed, the slides being provided with
120 T slots for bolts, the bed being attached to the mill in the rear of the table, a vertical housing operating on the slides and secured thereto with bolts, the face of the housing being provided with a slide carrying a tool head a vertical feed rod having screw-threads con-
125 necting with a nut formed on the tool head, the feed rod journaled in the housing, and a hand wheel attached to the upper end of the feed rod, the rotation of the hand wheel being adapted to slide the tool head up or down
130 the face of the housing, substantially as described.

3. In a turning attachment for a boring mill, the combination with the mill of a bed

having a vertical housing attached to the slides thereof, the bed being attached to the mill in the rear of the table, a tool head operating on a slide formed on the face of the housing, a vertical feed rod journaled in the housing, the feed rod being connected with miter gears to a horizontal feed rod journaled in the bed, the rod being provided with a feather for one of the miter gears to slide on, the rod being provided at the end with a gear wheel loosely mounted to slide on a feather, a main feed shaft journaled in the bed the shaft having a gear wheel mounted thereon, and a series of gears mounted on studs connecting the gear on the feed shaft with the gear on the end of the feed rod, substantially as described.

4. In a facing attachment for a boring mill, the combination with the mill of a bed having a raised dove-tail slide on one side the slide carrying a tool head, the bed being attached to the mill in the rear of the table, a feed rod journaled in the slide formed on the bed, the feed rod having screw-threads connecting a nut formed on the tool head, and a

hand wheel mounted on the outer end of the feed rod, the rotation of the hand wheel being adapted to slide the tool head in or out on the slide, substantially as described.

5. In a facing attachment for a boring mill, the combination with the mill of a bed having a raised dove-tail slide carrying a tool head on its side the bed being attached to the mill in the rear of the table, a feed rod journaled in the slide formed on the bed, the feed rod having screw-threads connecting a nut formed on the tool head, a gear wheel mounted loosely to slide on a feather in the outer end of the feed rod, a main feed shaft journaled in the bed the shaft having a gear wheel mounted thereon, and a series of gears mounted on studs connecting the gear wheel on the feed shaft with the gear on the feed rod, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN THOMAS WILLIAMS.

Witnesses:

C. N. HUGHES,
T. B. LAWLER.