

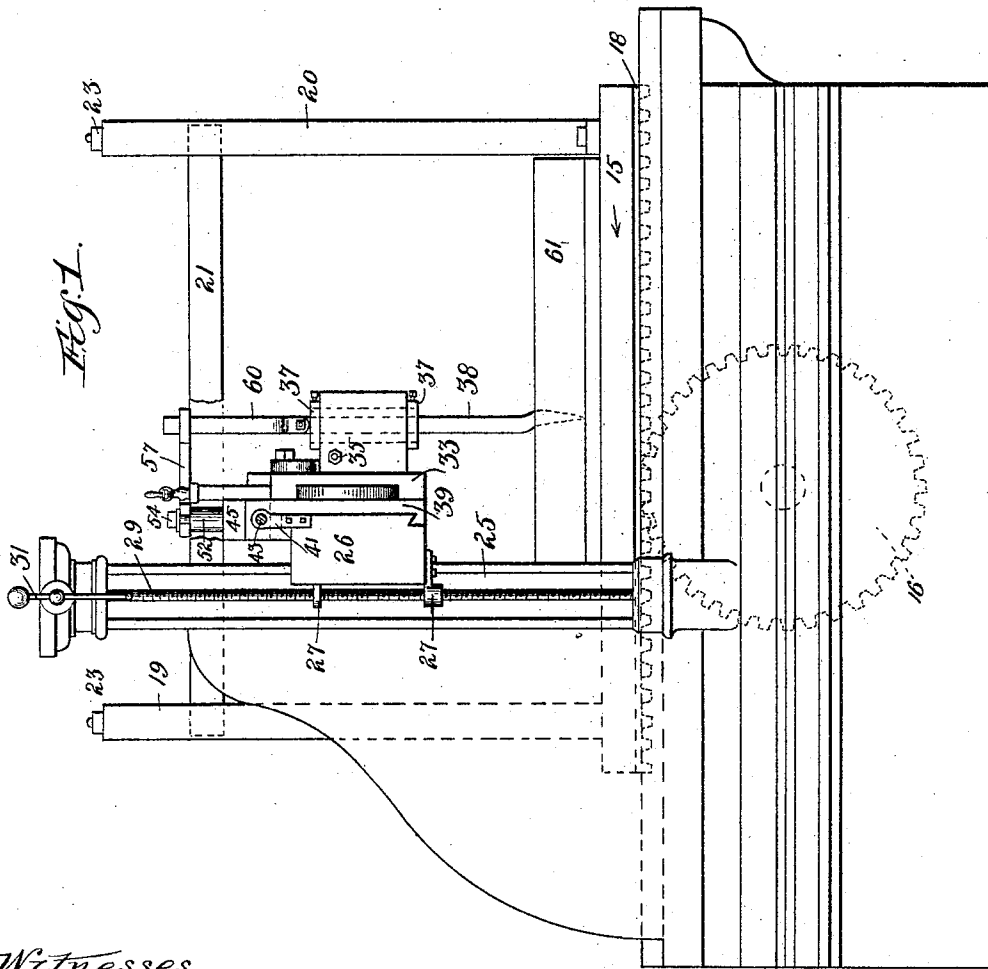
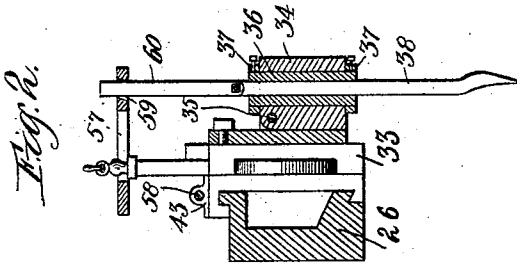
(No Model.)

5 Sheets—Sheet 1.

J. THOMLINSON, Jr. & E. L. KASTHOLM.
PLANING MACHINE.

No. 529,428.

Patented Nov. 20, 1894.



Witnesses
Wm. M. Rheem
H. White

Inventors
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By Bond, Adams, Richardson & Jackson
their Attorneys

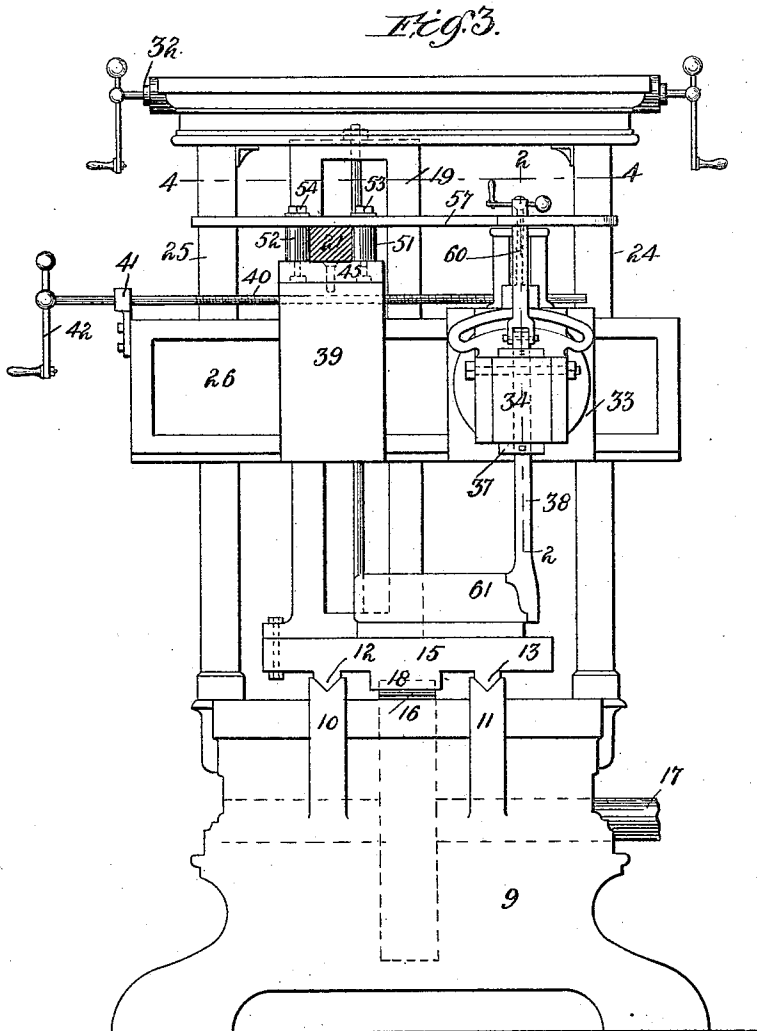
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Fig. 5.

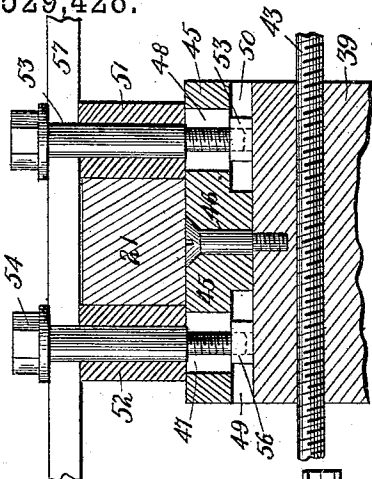


Fig. 6.

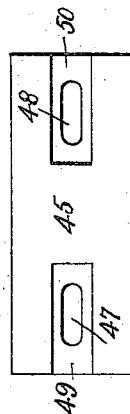
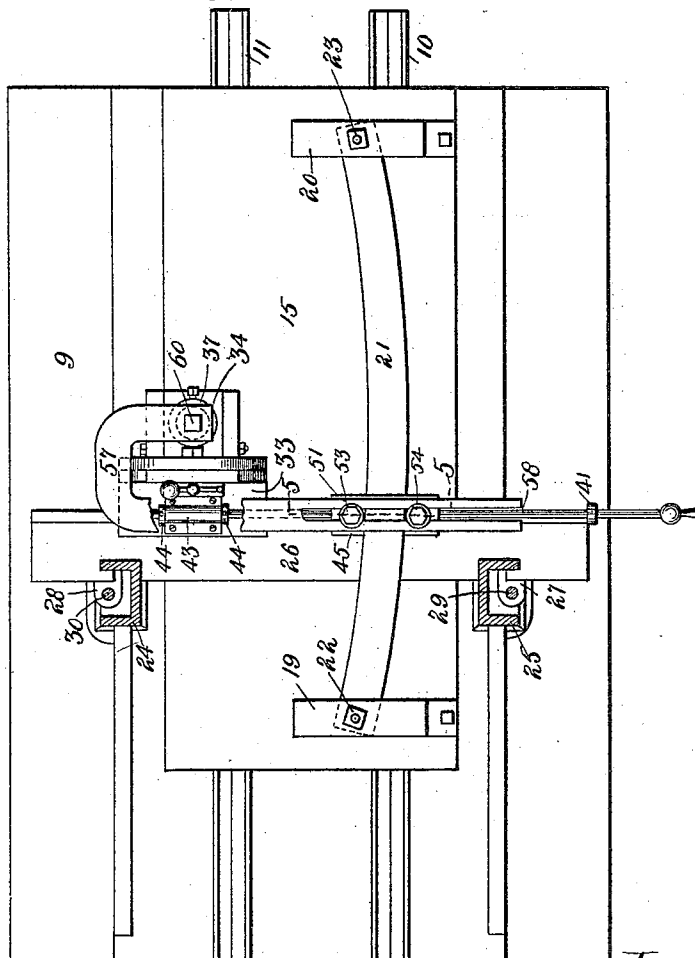


Fig. 4.



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5 Sheets—Sheet 4.

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PLANING MACHINE.

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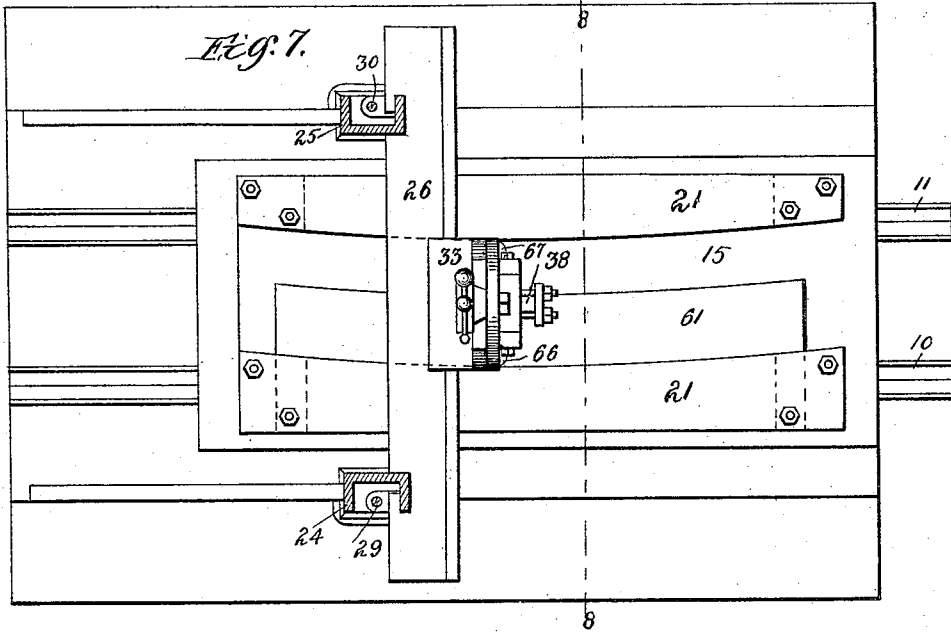
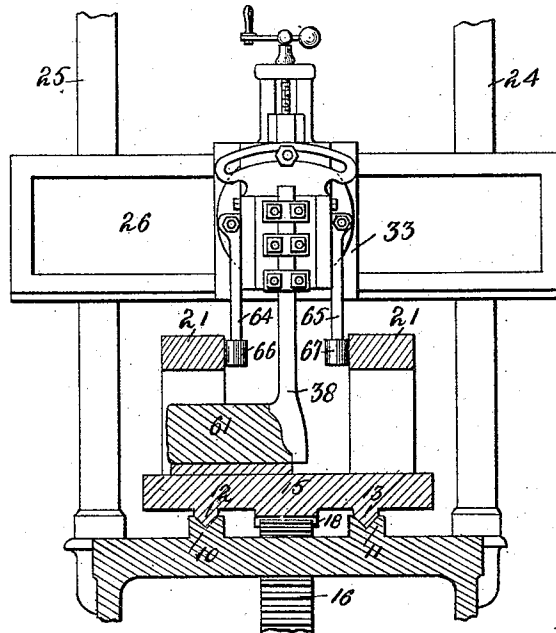


Fig. 8.



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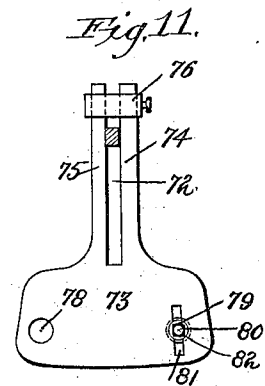
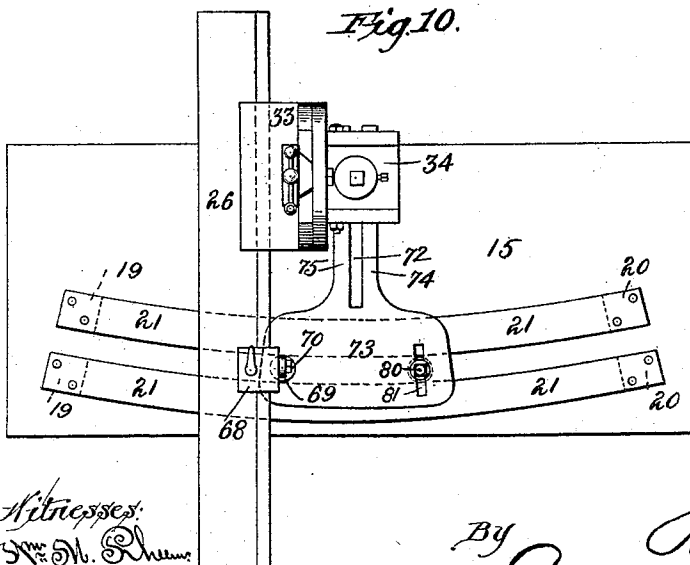
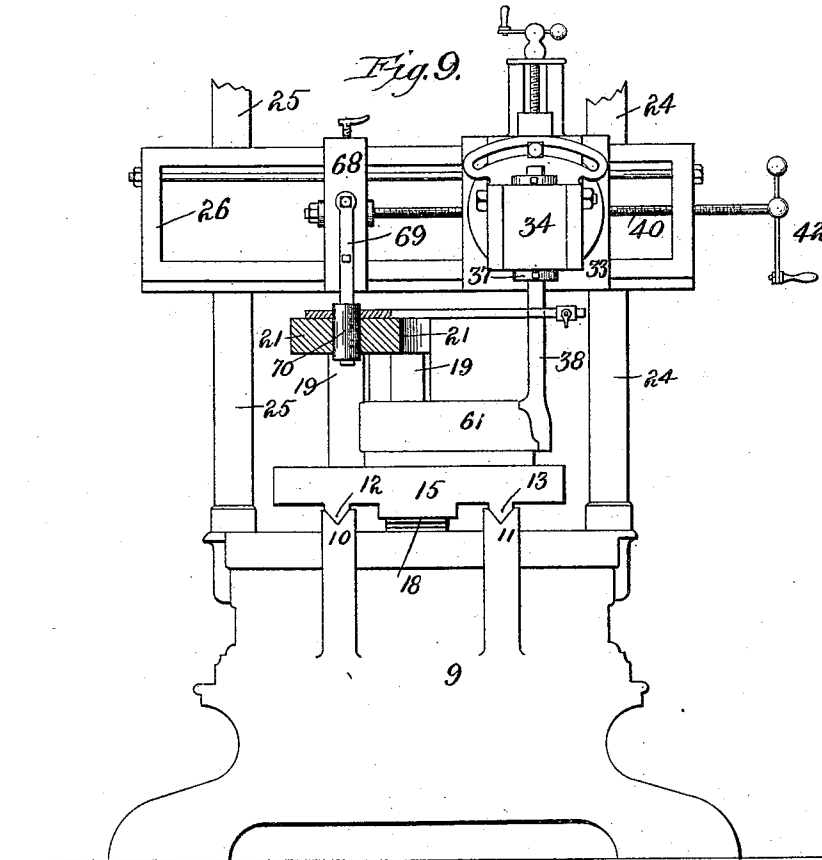
(No Model.)

5 Sheets—Sheet 5.

J. THOMLINSON, Jr. & E. L. KASTHOLM.
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UNITED STATES PATENT OFFICE.

JOHN THOMLINSON, JR., AND EMIL L. KASTHOLM, OF CHICAGO, ILLINOIS.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,428, dated November 20, 1894.

Application filed May 19, 1893. Serial No. 474,837. (No model.)

To all whom it may concern:

Be it known that we, JOHN THOMLINSON, Jr., and EMIL L. KASTHOLM, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Planing-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a planing machine, showing one form of our improvement. Fig. 2 is an enlarged detail, being a vertical cross section on line 2—2 of Fig. 3. Fig. 3 is an end elevation, the standards at one end of the machine being removed. Fig. 4 is a horizontal section on line 4—4 of Fig. 3. Fig. 5 is an enlarged detail, being a vertical section on line 5—5 of Fig. 4. Fig. 6 is an underside view of one of the plates shown in Fig. 5. Fig. 7 is a top or plan view showing another construction embodying our invention. Fig. 8 is a vertical section on line 8—8 of Fig. 7. Fig. 9 is an end elevation of still another construction embodying our invention, part being in section. Fig. 10 is a top or plan view of the same; and Fig. 11 is a detail of the tool operating device.

Our invention relates to planing machines, and in the construction shown has particularly to do with machines for planing stone.

In preparing stone for architectural purposes it is often necessary to provide the stone with one or more curved or irregular edges; and our invention has for its object to provide a new and improved machine by the use of which a stone may be automatically cut to any desired pattern.

Another object of our invention is to improve the construction of planing machines of this class.

We accomplish these objects as hereinafter specified and as illustrated in the drawings.

That which we regard as new will be set forth in the claims.

In the drawings,—9 indicates the bed plate or supporting frame of a stone planing machine, which carries longitudinally extending bars 10—11, adapted to receive ribs 12—13 formed upon the under side of a platen 15.

The platen 15 is adapted to be moved longitudinally of the machine upon the supports 10—11, such motion being imparted to it by

a gear wheel 16 mounted upon a shaft 17, which gear wheel intermeshes with the teeth of a rack 18 formed on the under side of the platen 15. The shaft 17 may be rotated in either direction to move the platen 15 upon the frame 9. Rising from the ends of the platen 15 are standards 19—20, as shown in Figs. 1 and 4.

21 indicates one or more guide bars, which are adapted to be secured in a horizontal position between the standards 19—20, their ends being secured by bolts 22—23. In Figs. 1 to 6 inclusive a construction is shown in which a single guide bar is used, while Figs. 7 to 11 show two methods of arranging the parts of the machine when two guide bars—or a guide slot—are used. When a single bar 21 is used, one of its edges is an exact counterpart of the pattern to be cut upon the stone, the other edge being parallel thereto, so that—as will be hereinafter more fully described—the bar serves as a pattern by which the action of the cutting tool is controlled.

We will first describe the single guide bar construction, and afterward the different two-bar or slot constructions.

24—25 indicate standards, which rise from opposite sides of the frame 9 at some suitable point between the standards 19—20.

26 indicates a cross head or frame mounted in a horizontal position between the standards 24—25, by which it is supported. The cross head 26 is connected by lugs 27—28 to screw threaded rods 29—30 respectively, which are arranged vertically within the standards 24—25, as best shown in Figs. 1 and 4. The arrangement is such that by rotating the rods 29—30 the cross head 26 may be adjusted vertically. The rods 29—30 are adapted to be rotated by means of a hand lever 31 mounted upon a shaft 32, journaled at the top of the standards 24—25 and connected to the rods 29—30 by beveled gears, or any other suitable devices.

As the above described mechanism for adjusting the cross head vertically is old, and in itself forms no part of our present invention, it will not be necessary to describe it further.

Mounted upon the cross head 26, and movable longitudinally thereof, is a tool stock 33, as best shown in Figs. 2 and 3. The tool stock

33 carries a hinged box 34 pivotally secured thereto by a bolt 35, as best shown in Fig. 2. The box 34 carries a sleeve 36, which is secured in place by collars 37, as shown in Fig. 2.

5 The sleeve 36 is adapted to receive and carry a cutting tool 38.

39 indicates a frame or block, which is also mounted upon and movable longitudinally of the cross head 26, as best shown in Fig. 3.

10 The frame 39 is connected to the tool stock 33 by a screw threaded rod 40, which is mounted in a bracket 41 secured upon the cross head 26. One end of the rod 40 is provided with a hand lever 42, and the other end of said

15 rod is journaled in a bearing 43 carried by the tool stock 33, it being secured in place by collars 44, as best shown in Fig. 4. By this construction, by rotating the rod 40 by means of the hand lever, the frame 39 and tool stock

20 33 may be moved toward or from each other. 45 indicates a plate which is mounted upon and pivotally connected to the frame 39 by a pivot 46, as best shown in Fig. 5. The plate 46 is provided with slots 47—48, and recesses

25 49—50 under said slots, as shown in Figs. 5 and 6.

51—52 indicate rollers, mounted upon bolts

53—54 secured in a vertical position upon the plate 45 by nuts 55—56, as best shown in Fig.

30 5. The rollers 51—52 are at such a distance apart that they will be adapted to receive between them the guide bar 21, as shown in Figs. 3 and 5.

57 indicates a bar, which is secured over

35 the rollers 51—52 by the bolts 53—54, which pass through a slit 58 in said bar. The bar 57 extends from the frame 39 to the tool stock 33, at which point it is curved, as shown in Fig. 4, and is provided with a square socket

40 59 adapted to receive the squared end of a bar 60, as shown in Fig. 2. The lower end of the bar 60 is hinged to the upper end of the tool 38 as shown. The sides of the socket 59 are inclined, as shown in Fig. 2, to permit of

45 the tilting of the bar 60 when the box 34 is swung upon its pivot 35.

The box 34 is pivoted in position as above described to provide for throwing the cutting edge of the tool upward after a cut has been

50 made, to permit the stone to be returned to position for a new cut. The slit 58 in the bar 57 is to permit of the adjustment of the tool stock 33 and frame 39 toward and from each other.

55 In operation a stone 61 is placed upon the platen 15, the edge to be planed being in position to be engaged by the cutting edge of the tool. The platen is then moved in the direction indicated by the arrow in Fig. 1, when

60 the stone will be advanced against the cutting edge of the tool in the usual manner. As the platen progresses, the guide bar 21 moving between the rollers 51—52 will cause the frame 39 to move longitudinally of the cross

65 head 26, the motion of the frame 39 being determined by the shape of the guide bar 21. As the tool stock is rigidly connected to the

frame 39 it will be similarly moved, and the edge of the stone will be planed to a figure corresponding to that of the guide bar. As 70 the plate 45 is pivotally mounted upon the frame 39 it will be free to turn upon such pivot, and consequently the bar 57 will always lie perpendicularly to that portion of the guide bar in contact with the rollers 51—52, 75 and through the bars 57 and 60 the cutting edge of the tool will always be held at the proper angle to the surface of the stone, the sleeve 36 in which the tool is mounted being free to rotate. 80

By the above described construction, all that is necessary to adapt the machine to cut any desired figure is to provide a guide block 21 having a figure corresponding to that desired, and the machine will automatically cut 85 the stone to such figure.

In the construction shown in Figs. 7 and 8 the frame 39 and devices for operating the tool stock are dispensed with, and instead of a single guide bar located above the cross 90 head, we provide two guide bars 21, located opposite each other and extending longitudinally of the machine at a lower level than the cross head. The opposite faces of the bars 21 are equally curved, one being concave and 95 the other convex, and are duplicates of the pattern to be cut, forming a slot the counterpart of the bar 21. The tool stock 33 is provided with depending arms 64—65, which carry rollers 66—67 adapted to bear against 100 the faces of the guide bars 21, as shown in Fig. 8.

The construction shown in Figs. 7 and 8 is simpler in some respects than that shown in the other views, but we have shown no de- 105 vices for maintaining the cutting edge of the tool at a constant angle to the surface to be cut. Its operation is, however, the same as that above described as far as the automatic shifting of the tool stock upon the cross head 110 is concerned. The advantage incident to the use of the frame 39 in addition to the tool stock lies in the fact that the adjustment of the tool stock for cutting stone of different widths is thereby more readily accomplished. 115

In the construction shown in Figs. 9, 10, and 11, a cross head 26 is provided, carrying a frame 68 in many respects similar to the frame 39, and a tool stock 33. The frame 68 is connected to the tool stock by a screw 120 threaded rod 40 similar to that shown in Fig. 3. In this construction the guide bars 21 are placed closer together than in the construction shown in Figs. 7 and 8, but are mounted in substantially the same way, leaving a narrow slot 71 between them. 69 indicates a rod 125 which is secured to and depends from the rod 62, as shown in Fig. 9, and carries at its lower end a roller 70, the diameter of which is equal to the width of the slot 71 formed by the bars 21. The roller 70 is adapted to move in said slot 71. The shaft of the tool 38 is squared or made angular in cross section, and is adapted to fit into a slot 72 in a plate 73, said

slot being formed by arms 74—75 projecting from the body of said plate, as best shown in Fig. 11. A collar 76, which is adapted to be fitted upon the arms 74—75, serves to hold said arms tightly together, thereby clamping them upon the shank of the tool. A thumb-screw 77 serves to secure the collar 76 in position. The plate 73 is provided with a circular hole 78 which is adapted to receive the roller 70, as best shown in Figs 9 and 10, which hole is preferably placed near one edge of the plate 73. 79 indicates a roller, which is mounted upon a shaft 80 secured in a slot 81 formed in the plate 73, by means of a nut 82 which fits upon the upper end of said shaft. The slot 81 is near the opposite edge of the plate 73 from that at which the hole 78 is located, as shown in Fig. 11. The roller 79 is also adapted to move in the slot 71, as shown in Fig. 10. By this construction the roller 79 co-operates with the roller 70 to hold the arms 74—75 of the plate 73 at a constant angle to the guiding slot 71, thereby serving to hold the cutting edge of the tool at a constant angle to the stone. We prefer to locate the hole 78 and slot 81 as far apart as possible, as the plate 73 may thereby be more accurately adjusted; but they may be placed closer together if desired. To still further adjust the position of the plate 73 the roller 79 may be moved backward or forward in the slot 81 and secured in position by the nut 82.

The last described construction is much simpler than that shown in Figs. 1 to 6 inclusive, and combines all the advantages of such construction in addition to those found in the construction shown in Figs. 7 and 8. We therefore prefer the last described construction.

One of the features of our invention is the supporting of the guide or guides 21 on standards 19, 20, carried by the movable platen or work support and so arranged that the said guide or guides will be sufficiently elevated above the work to permit its passage beneath the guide or guides. The guides may be arranged at any required elevation according to the height of the stone to be cut. It will be understood that the guide bars are removable or interchangeable, so that by employing bars of proper shape any desired pattern can be cut. The tool stock may have a side feed of from six to seven feet according to the size of the planer, and it is our purpose to use tools of such width that a piece of molding or a panel can be produced with one tool, of proper width and so arranged that its cutting edge will be always presented at a constant angle to the work.

That which we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a longitudinally movable platen or work support, a guide carried by said platen and elevated above the work, a cross-head supported transversely to and independent of the platen, a movable frame mounted on said cross-head and carrying a roller engaged with the elevated guide on the platen, a tool stock also mounted on said cross-head, a screw-shaft adjustably connecting said movable frame and tool stock, and means for holding the cutting edge of the tool at a constant angle with the work, substantially as described.

2. The combination of a movable platen, the guide-bars 21 carried by said platen, the cross-head 26 supported transversely of the platen and independent thereof, a movable frame mounted on said cross-head, a tool stock also mounted upon said cross head and connected to said frame, the roller 70 carried by said frame and engaged with the guide-bars on the platen, a plate 73 having a hole 78 to receive the roller 70 and arms 74 and 75 to embrace the tool shaft, means for connecting said arms together, and a roller 79 carried by said plate and engaged with the guide-bars on the platen, substantially as described.

3. The combination with supporting devices, and a cross head 26 supported thereby, of a movable frame mounted upon said cross head, a tool support also mounted upon said cross head and connected to said frame, guide bars 21, roller 70 supported by said frame, a plate, having a hole 78 adapted to receive said roller, a roller carried by said plate, and means for connecting the tool to said plate, whereby the cutting edge of the tool will be held at a constant angle to the work, substantially as described.

4. The combination with supporting devices, and a cross head 26 supported thereby, of a movable frame mounted upon said cross head, a tool support also mounted upon said cross head and connected to said frame, guide bars 21, roller 70 supported by said frame, a plate, having a hole 78 adapted to receive said roller, a roller carried by said plate, means for connecting the tool to said plate, whereby the cutting edge of the tool will be held at a constant angle to the work, and means for adjusting the position of said plate, substantially as specified.

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