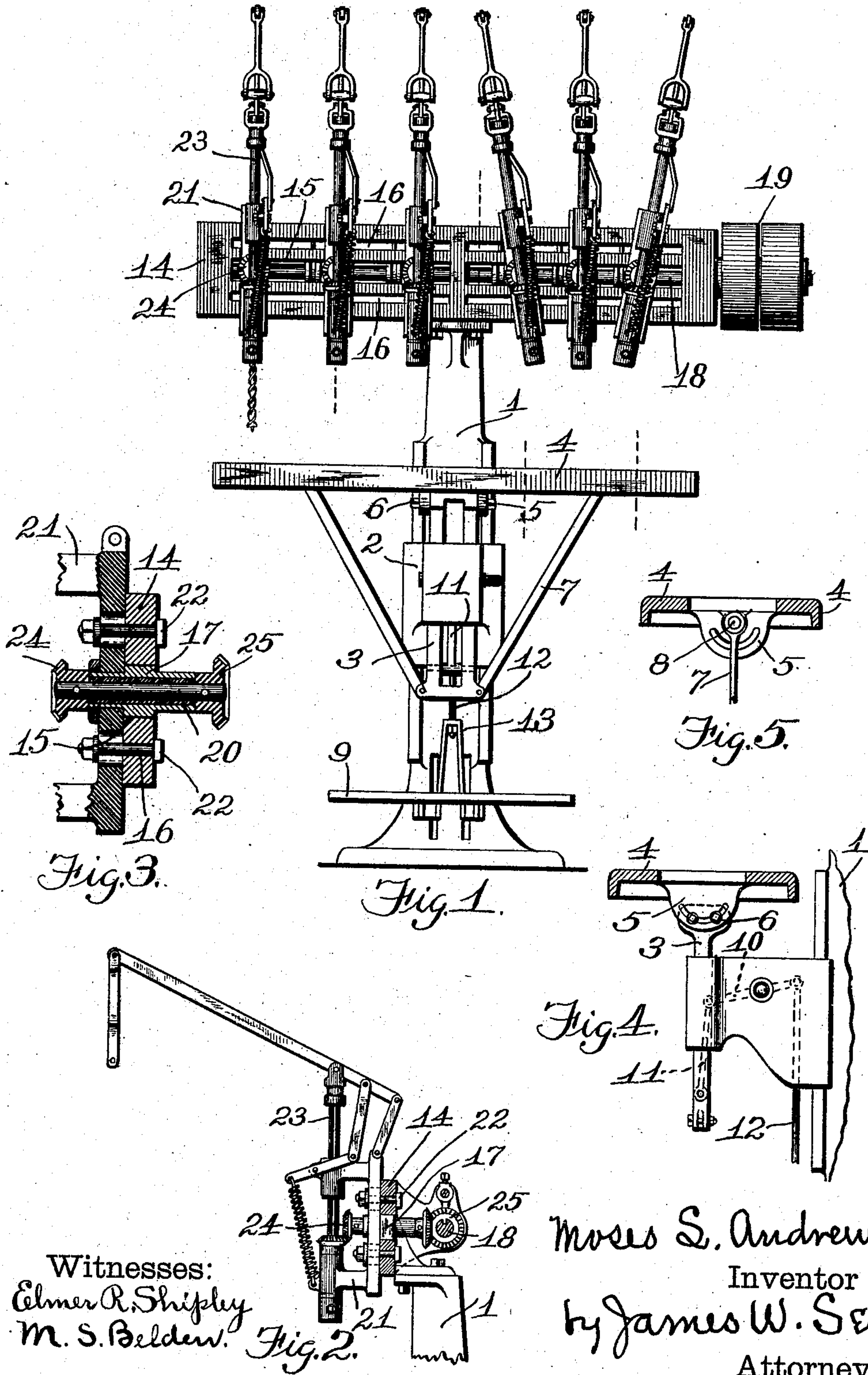


M. L. ANDREW.
BORING MACHINE.
APPLICATION FILED JULY 20, 1908.

911,639.

Patented Feb. 9, 1909.



UNITED STATES PATENT OFFICE.

MOSES L. ANDREW, OF DELHI, OHIO.

BORING-MACHINE.

No. 911,639.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed July 20, 1908. Serial No. 444,334.

To all whom it may concern:

Be it known that I, MOSES L. ANDREW, a citizen of the United States, residing at Delhi, Hamilton county, Ohio, have invented certain new and useful Improvements in Boring-Machines, of which the following is a specification.

This invention relates to improvements in multiple spindle wood boring machines, and the improvements will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a front elevation of a boring machine embodying my present invention: Fig. 2 a vertical transverse section of the upper portion of the machine in a plane between two of the spindle-brackets: Fig. 3 a vertical transverse section of the upper portion of the machine in the plane of one of the spindle brackets: Fig. 4 a side elevation of the table bracket, the table appearing in vertical transverse section: and Fig. 5 a vertical transverse section of the table.

In the drawing:—1, indicates the column of the machine: 2, the table-bracket sliding vertically on the front thereof: 3, the table-stem sliding vertically in the outer portion of the table-bracket: 4, the horizontal table supported by the upper end of the table-stem: 5, segmentally slotted ears projecting downwardly from the table and straddling the upper end of the table-stem: 6, bolts engaging the head of the table-stem and the slots of the table ears: 7, diagonal braces having their lower ends secured to the sides of the foot of the table stem and diverging upwardly into connection with the table: 8, pivots uniting the upper ends of the braces with the table, the common axis of these pivots being in line with the axis of the segmental slots in the table ears: 9, a treadle pivoted to the column and projecting forwardly under the table: 10, a lever pivoted in the table-bracket: 11, a link connecting the forward end of this lever with the table-stem: 12, a rod projecting downwardly from the rear end of the lever: and 13, a link-member connecting the treadle adjustably with the lower end of rod 12.

The table slides vertically in the usual manner, its sliding motion being produced by any of the usual table-moving devices employed in this class of machines the treadle and its connections being merely typical in character. The braces give sub-

stantial support to the outer portions of the table, and the pivot 8, in conjunction with the bolt and slot arrangement at the table-ears permits of the table being adjusted to various transverse angles.

Proceeding with the drawing:—14, indicates a rail secured to the top of the column above the table: 15, a central longitudinal slot in the rail: 16, longitudinal slots in the rail above and below the slot 15: 17, a block fitted to slide horizontally in slot 15 and projecting to the front and rear of the rail and provided with a bearing extending longitudinally through it, there being one of these blocks for each of the boring spindles with which the machine is to be provided, six being illustrated in the drawing: 18, a splined shaft extending along horizontally to the rear of the rail and supported in journal-brackets projecting from the rear of the rail: 19, tight and loose pulleys on one end of the splined shaft to provide for belt motion being imparted to the splined shaft: 20, a horizontal shaft journaled in each of the blocks 17: 21, a vertical spindle-bracket lying against the front face of the rail, at each of the blocks 17 and swiveled on the forward ends of the blocks in such manner that the brackets may stand vertically or be turned at various angles from the vertical while still lying against the rail: 22, bolts passing through rail-slots 16 and through vertical slots in the brackets and serving to clamp the brackets firmly against the rail: 23, boring spindles journaled in upper and lower bearings projecting forwardly from the brackets and provided with usual devices for moving them endwise and for carrying boring bits in their lower ends: 24, bevel gearing connecting each of the boring spindles with its appropriate one of shafts 20: and 25, bevel gearing connecting each of shafts 20 with splined shaft 18.

The splined shaft transmits motion to the entire series of boring-spindles in an obvious manner, and by loosening bolts 22 the individual brackets and their accessories may, after adjustment along the rail, be desired distance between the holes to be produced by the boring-bits. The brackets may, after adjustment along the rail, be bolted in vertical position so as to do their boring at right angles to the face of the table or, if desired, all or any one of the brackets may be adjusted angularly so as to do boring at angles to each other and to the

face of the table, the boring bits and their
spindles always remaining in a plane paral-
lel with the face of the rail. At the same
time the table may be adjusted so that its
5 face will be transversely at an angle to the
common plane of the boring-spindle, where-
by all of the boring bits may bore parallel
with each other and at right angles to the
transverse plane of the table or at other an-
10 gles to the transverse plane of the table, or
at angles to each other in their common
plane.

I claim:—

1. A boring machine comprising, a hori-
15 zontal rail provided with a central horizon-
tal slot and with a slot above and below the
central one, a splined shaft journaled to the
rear of the central slot of the rail, a block
fitted to slide in the central slot, a bracket
20 lying against the face of the rail and
swiveled upon the forward end of the block
and provided with vertical slots across the
upper and lower slots of the rail bolts en-
gaging the vertical slots of the bracket and
25 the upper and lower slots of the rail, a ver-
tically movable boring spindle journaled in
the front of the bracket, a shaft journaled in
said block, bevel gearing connecting the
front end of the shaft with the boring spin-
30 dle, bevel gearing connecting the rear end of
the shaft with the splined shaft, and a work-
table disposed below the boring spindle,
combined substantially as set forth.

2. A boring machine comprising, a col-
umn, a bracket projecting therefrom, a 35
table-stem sliding vertically in the bracket,
a table connected with the upper end of the
table-stem, a pivotal connection between the
table and the table-stem to permit the table
to be adjusted to various transverse angles, 40
upwardly converging braces having their
lower ends connected with the sides of the
foot of the table-stem, and pivots connecting
the upper ends of the braces with the table
and having their axes in a common line and 45
in line with the pivotal connection between
the table and the upper end of the table-
stem, combined substantially as set forth.

3. A boring machine comprising, a rail, a
series of spindle-brackets secured to the face 50
thereof in a common plane parallel with the
face of the rail, connections between the
brackets and the rail providing for the ad-
justment of the brackets at angles to each
other while remaining in their common 55
plane, bearing-spindles journaled in the
brackets, a table extending along under the
spindles, a support for the table, and a piv-
otal connection between the table and its
support and having its axis parallel with 60
the common plane of the brackets, combined
substantially as set forth.

MOSES L. ANDREW.

Witnesses:

MARY W. MATSON,
MARIE W. MATSON.