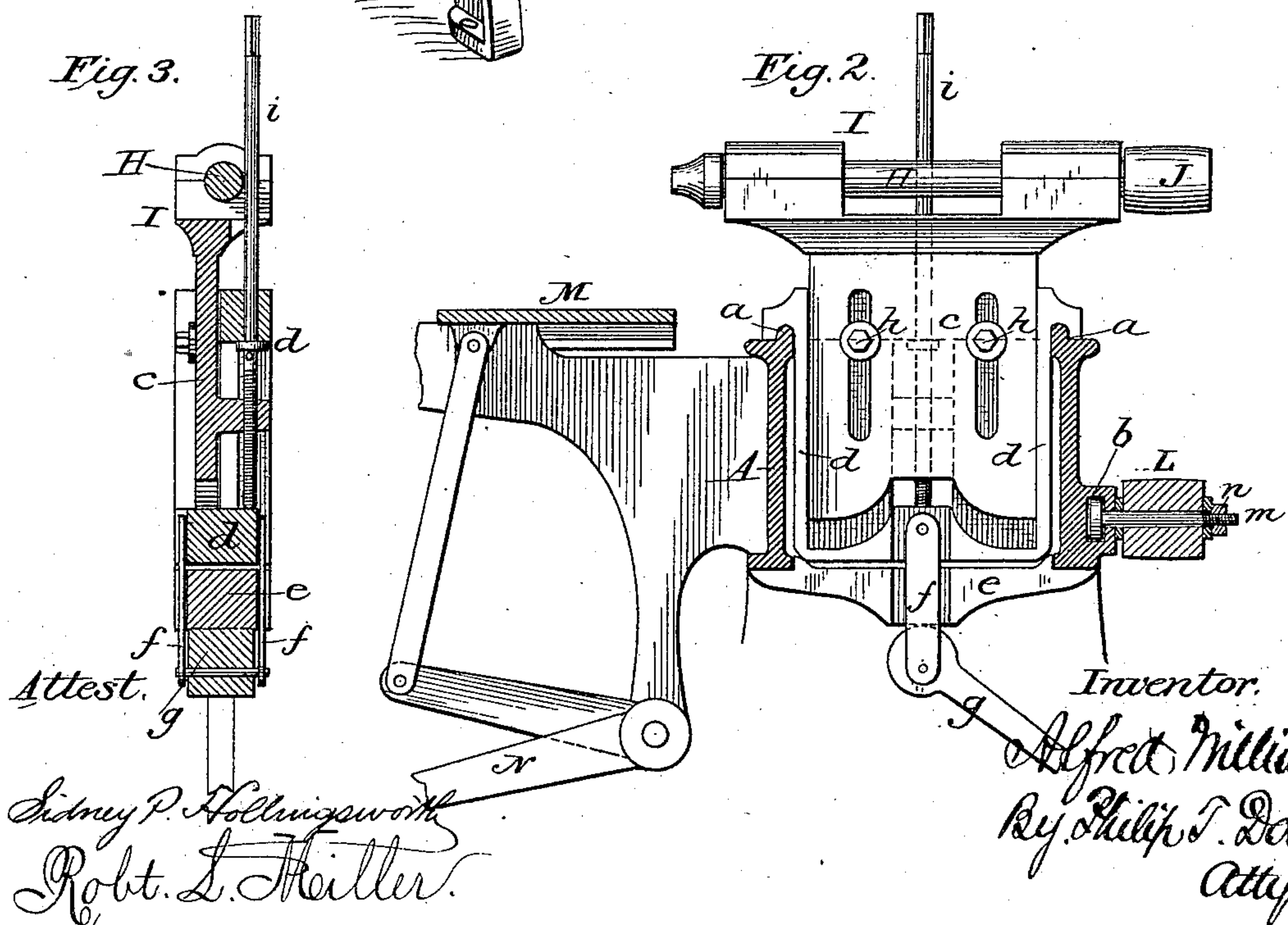
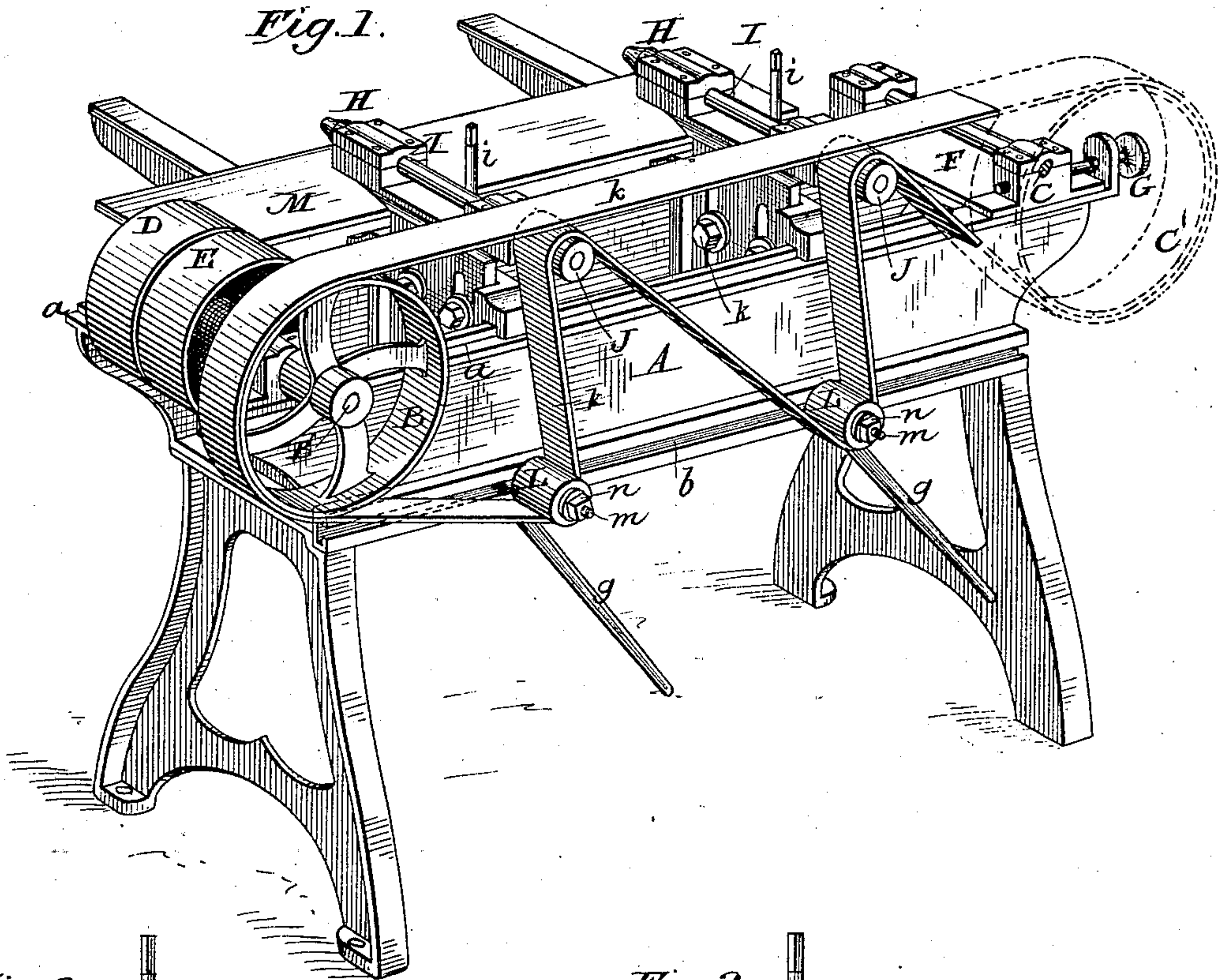


(Model.)

A. WILLIAMS.
WOOD BORING MACHINE.

No. 245,988.

Patented Aug. 23, 1881.



UNITED STATES PATENT OFFICE.

ALFRED WILLIAMS, OF MOLINE, ILLINOIS, ASSIGNOR TO WILLIAMS, WHITE
& CO., OF SAME PLACE.

WOOD-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 245,988, dated August 23, 1881.

Application filed June 20, 1881. (Model.)

To all whom it may concern:

Be it known that I, ALFRED WILLIAMS, of Moline, in the county of Rock Island and State of Illinois, have invented certain Improvements in Boring-Machines, of which the following is a specification.

This invention relates to that class of gang-boring machines in which a number of parallel spindles are driven by means of a belt common to all, the invention consisting in various features of construction hereinafter described, but more particularly in a series of idle-pulleys around which the driving-belt is passed, and by means of which the belt is given a proper degree of tightness, notwithstanding changes in the position and number of the spindles employed.

Referring to the accompanying drawings, Figure 1 represents a perspective view of the improved machine provided with two boring-spindles, the machine being so constructed that the number of spindles may be changed at will. Fig. 2 represents a vertical cross-section of the machine, and Fig. 3 a vertical central section through one of the spindle-supporting heads.

A represents the rectangular body or frame of the machine, sustained upon suitable legs, and provided at the top with two parallel ways, *a*, and on the rear side with a horizontal groove, *b*.

B and C represent two horizontal shafts, mounted at opposite ends of the frame in bearings secured thereon, and provided with pulleys B' and C'. The shaft or pulley B', through which power is transmitted to the machine, has its bearings secured rigidly upon the frame, and is provided, in addition to pulley B, with fast and loose pulleys D E to receive the driving-belt. The shaft of pulley C' has its bearings formed upon a plate, F, secured to ways or guides upon the main frame, and arranged to slide lengthwise thereof, for the purpose of moving the pulley C' to assist in tightening the belt. The adjustment of plate F and pulley C' is secured by means of a hand-screw, G, journaled in a bearing in the main frame and engaging with a sliding-plate, as shown in the drawings.

H H represent the two boring-spindles,

each mounted in bearings on the upper end of a head or stock, I, which latter are mounted adjustably within the main frame. Each spindle-supporting head or stock I consists of three main portions, *c*, *d*, and *e*, as shown in Figs. 2 and 3. The part *c*, upon which the bearings are formed, is seated and arranged to slide vertically within the part *d*, which latter is seated upon the ways *a* of the main frame and extended downward through the latter to its under side, at which point the part *d* is connected by means of links *f* and eccentric lever *g* to the part *e*, which has a bar extending across and bearing against the under side of the main frame. The section *d*, hooking over and bearing upon the ways of the main frame as shown and described, serves to sustain the entire weight of the spindle and its bearings. The bar *e*, operating in connection with the link *f* and lever *g*, serves, when the lever is depressed, to lock the entire spindle-supporting head rigidly in position in the main frame. By lifting the lever the head is unlocked, and may then be moved lengthwise of the machine, in order to bring the boring-spindle to any position that may be required. By adjusting section *c* vertically with relation to section *d* the spindle may be raised and lowered, as required. The parts *c* and *d* are united by means of vertical slots and connecting-bolts *h* therein, as shown, and the vertical adjustment of the part *c* is secured by means of a vertical screw, *i*, journaled in one side of the part *d*, and extending through a lug on the side of part *c*, as clearly represented in Fig. 3, so that by simply turning the screw the boring-spindle may be fixed at any required height.

The boring-spindles are provided on their rear ends with driving-pulleys J, and motion is transmitted to all the spindles in the machine by means of a single driving-belt, *k*, passed around the main pulleys B' and C', over the spindle-pulleys J, and downward around the intermediate idle-pulleys, L, which latter are secured upon adjustable spindles to the rear side of the frame. The spindles by which pulleys L are sustained are made of tubular form, and sustained upon central bolts, *m*, these bolts being seated at the head in the groove *b*,

in the main frame, and being provided at the outer end with nuts *n*, by tightening which the spindles and pulleys may be secured firmly in position. By simply releasing the nuts *n* the
5 spindles are set free, so that the pulleys *L* may be moved lengthwise of the machine independently of each other to any required points. By thus arranging the pulleys so that they may be moved lengthwise of the machine the belt
10 may be maintained at the proper tension under all circumstances, regardless of the number and position of the boring-spindles employed.

While it is preferred to sustain the pulleys *L* in the peculiar manner shown, any other
15 equivalent support which will permit a like adjustment of the pulleys may be substituted for that shown.

The machine is provided, as usual, with a work-supporting bed or table, *M*, arranged to
20 slide upon ways or guides extending laterally from the machine, and connected by intermediate devices with a hand-lever, *N*, by which it is moved, in order to carry the material upon the table to and from the spindles.

25 The machine is ordinarily provided with six spindles, each mounted in a separate head; but heads and spindles may be removed from or added to the machine at will.

I am aware that two series of spindles ar-
30 ranged in parallel lines have been driven by means of a single driving-belt passed to and fro between them, the belt being carried at one end by a driving-pulley and at the other by a stationary guide-pulley, and this I do not claim.

It will be seen that in my machine the idle- 35 pulleys are located at points between the respective spindles, and that the idle-pulleys are adjustable and regulate the tension and position of the belt independently of the spindles. This construction is advantageous, in that it 40 permits the belt to be tightened regardless of the adjustment and number of the spindles, and also in that it enables me to carry the driving-belt into contact with one-half or substantially one-half the circumference of each of the 45 spindle-pulleys, whereby the belt is given the required degree of adhesion.

Having thus described the invention, what is claimed is—

1. In a boring-machine, the combination of 50 the main pulleys *B'* and *C'*, the adjustable boring-spindles provided with pulleys, the driving-belt, and the independently-adjustable idle-pulleys *L*, located at intermediate points with reference to the driving-spindles.

2. In a boring-machine, the combination of 55 the pulleys *B'* and *C'*, the adjustable boring-spindles provided with pulleys *J*, and the laterally-adjustable intermediate pulleys, *L*, having their spindles adjustable horizontally upon 60 the main frame and the driving-pulley passed around the various pulleys in the peculiar manner described and shown.

ALFRED WILLIAMS.

Witnesses:

E. H. GLEASON,
E. W. OSBORN.