

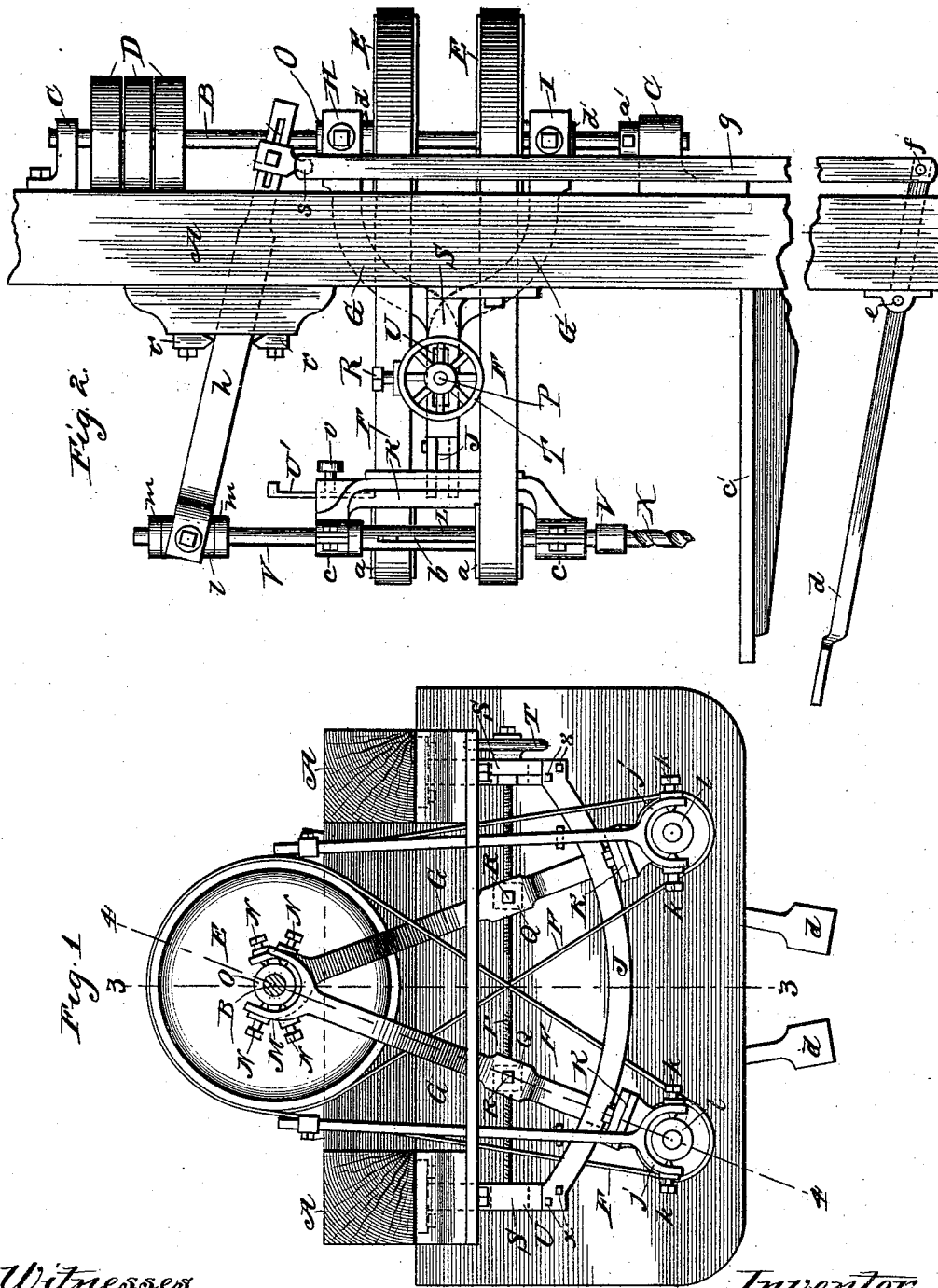
(No Model.)

2 Sheets—Sheet 1.

C. H. PURDY.
DOUBLE BORING MACHINE.

No. 494,082.

Patented Mar. 21, 1893.



Witnesses
W. C. Corlies
Martin A. Olsen.

Inventor
Charles H. Purdy.
By Robert T. Chace
Atty's.

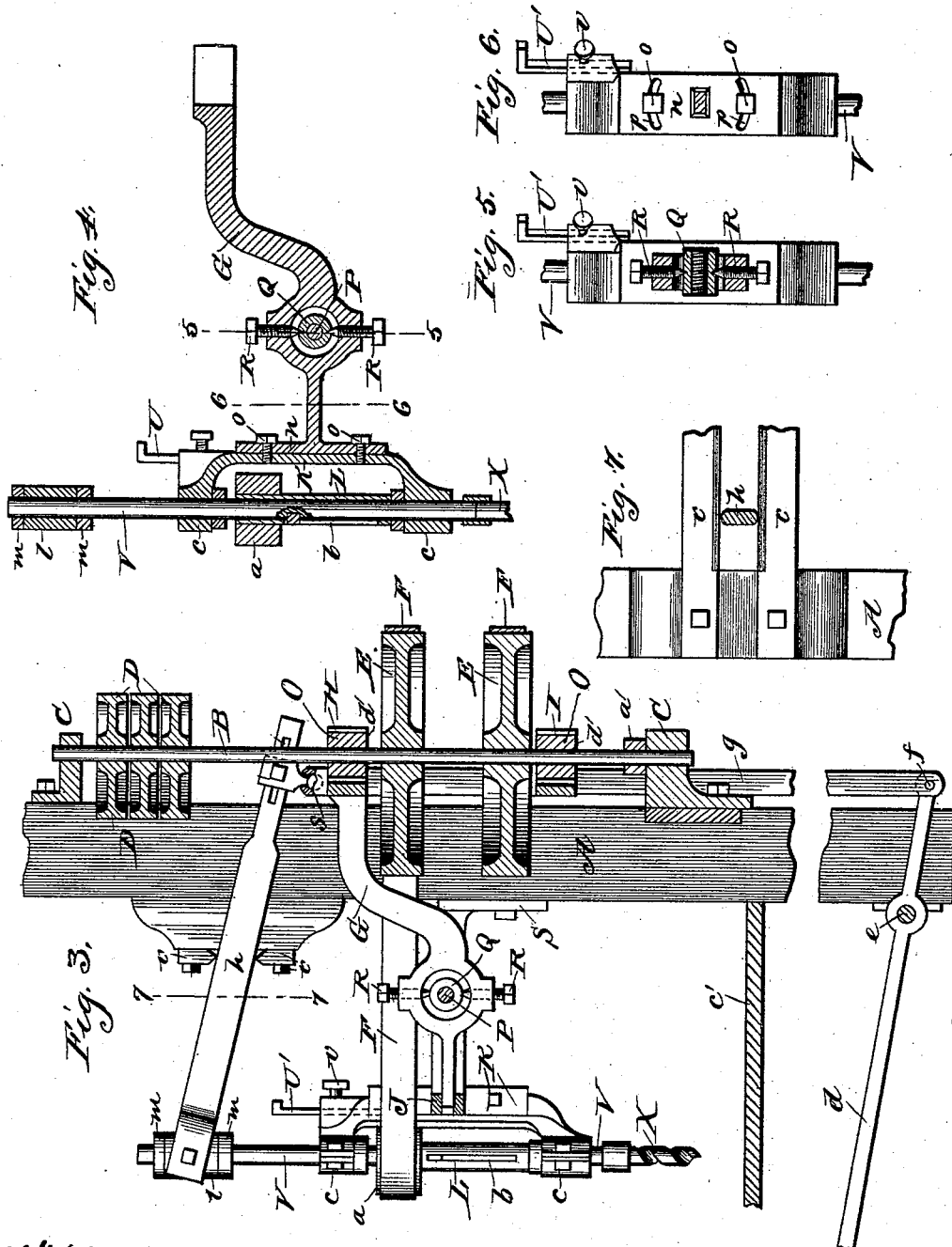
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UNITED STATES PATENT OFFICE.

CHARLES H. PURDY, OF MICHIGAN CITY, INDIANA, ASSIGNOR TO THE
FRANK H. CLEMENT COMPANY, OF ROCHESTER, NEW YORK.

DOUBLE-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,082, dated March 21, 1893.

Application filed May 26, 1892. Serial No. 434,396. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. PURDY, a citizen of the United States, residing at Michigan City, in the county of La Porte and State of Indiana, have invented a certain new and useful Improvement in Double-Boring Machines, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

- Figure 1 represents a top or plan view, with the top portion of the frame cut away; Fig. 2, a side elevation of the same; Fig. 3, a vertical central view, taken at the line 3—3, Fig. 1; Fig. 4, a vertical sectional view, taken at the line 4—4, Fig. 1, of one of the auger holders. Fig. 5, is a vertical sectional view, taken at the line 5—5, Fig. 4, looking to the left. Fig. 6, is a vertical sectional view, taken at the line 6—6, Fig. 4, looking to the left. Fig. 7, is a vertical sectional view, taken at the line 7—7, Fig. 3, looking to the right.

My invention relates to double boring machines, in which two augers or bits are used in the same machine.

- The object of my invention is to make a double boring machine, in which the augers or bits swing laterally from the same center and bore vertically, at the same time being capable of being adjusted so as to bore holes at desirable distances apart, and also being capable of being adjusted so as to bore at an angle, as, for instance, in boring wooden chair-seats, so that the legs being inserted in the holes, flare or stand at an angle to each other. The mechanisms whereby I accomplish above results, are fully hereinafter described and especially made the subject matter of my claims.

- In the accompanying drawings, A represents the frame of my machine, which may be made in any suitable manner.

B, is a vertical driving shaft, having bearings, C, securely attached to the frame A.

- D—D are loose and tight pulleys on the shaft B, by which said shaft is driven.

E—E, are drums or pulleys on the shaft B, revolving with it, from which the auger-spindles are driven by means of belts, F—F.

- G—G, are bent arms, each of which is connected with the shaft B, one at H and the other at I. These arms G pass through a

slotted guide or support, J, and carry on their front ends yokes, K—K. These yokes carry the auger or bit-drivers, L. The arms G may have their rear ends bifurcated at M, clearly shown in Fig. 1, and held in position by set-screws, N, which are countersunk into sleeves, O, which surround the shaft B loosely. This connection with the shaft B allows them to swing laterally to and from each other from the common vertical center. The set-screws N are one means of attaching the arms G to the driving-shaft, but any device which properly retains the concentric relation of the boring-spindle to said shaft may be substituted therefor.

P, is a right and left screw-threaded shaft, which extends through internally threaded sleeves or nuts, Q, in the arms G; these sleeves swivel in said arms by the pointed set-screws, R—R. The right and left screw-threaded shaft P is supported vertically in the brackets, S—S, which also support the slotted support or rest J.

T, is a hand-wheel attached to the right and left screw-threaded shaft P, by which it is turned to adjust the arms G in either direction to carry the bits or augers to any desired distance apart. The sleeves Q are swiveled in the arms G so as to admit of the arms G moving to or from each other. But to admit of this movement, the screw-threaded shaft P must have a slotted bearing to allow it to move from or toward the shaft B, while at the same time it must have no end movement. The slots U in the bracket S admit of the first movement, and suitable collars or shoulders on the screw prevent end movement in the brackets S. The driving-pulleys E being driven from the shaft B, which also constitutes the pivotal center from which the arms G swing laterally, the belts F drive the augers or bits equally well in whatever position they are in.

V, is a vertical spindle to which the auger or bit, X, is attached, and it passes through the sleeves L to which the pulleys, a, are securely attached.

b, is a spline and groove which cause the spindle V to revolve with the sleeve L and admit of its passing vertically through the sleeve L and do its work. The spindle V has bearing-boxes in the yoke K, at c—c.

d, is a foot-treadle with the pivoted bearing at *e*, and is pivotally connected at *f* with the rod *g*, which is connected at its upper end with the lever, *h*, by a ball or universal joint, *s*. The lever *h* is attached to the vertical spindle V, by means of a bifurcated end, *j*, and pointed set-screws, *k*, and a loose sleeve, *l*. *m*, are collars rigidly attached to the spindle V, so as to revolve with it and prevent the sleeve *l* from moving vertically on the spindle. The operator, by placing his foot upon the treadle lever, *d*, moves the auger down to its work through the instrumentality of the devices just above described.

The arms G are connected to the yoke K by means of a plate, *n*, and clamp-screws, *o*, as clearly shown in Fig. 4. The plates *n* have slots, *p*, which enable the operator to adjust the yoke so that the yoke will stand at an angle by loosening the clamp-screws, *o*. To admit of this adjustment, the lever *h* must rock on its bearings, *r*. This lever has therefore rounded edges, and its bearings *r* are made narrow on their supporting edges, as clearly shown in Figs. 2 and 7. The ball or universal joint *s*, admits of this rolling motion of the lever *h*, and said lever may slide endwise on its bearings *r*, as is required in raising and lowering the auger spindle V vertically.

U' is an adjustable stop attached to the yoke K by means of the set-screw *v*, which regulates the depth of the hole that it is desired to bore with the auger.

The slotted guide-support J is preferably made in two parts, which are fastened together by means of bolts and nuts, *x*, which facilitates placing the arms G in position.

A' is a collar resting upon the bearing-box of the shaft B to hold it vertically in position, and the loose sleeve O to which the arms G are pivoted is also held in position on the shaft B by collars, *d'*.

c' is a table upon which the articles in which it is desired to bore holes are placed. The augers are swung to the desired position for boring holes by means of the right and left screw-threaded shaft P; the belts F are adapted to run the augers from the pulleys E in whatever position they are placed, by reason of their being adjustable concentrically with the shaft on which the driving-pulleys E are placed and from which they are

driven. If it is desired to bore these holes at an angle, the operator loosens the clamp-screws *o* and turns the yokes K to adjust the auger-spindles to the desired angle; the bearings of the lever *h* and its pivotal connection with the upright bar *g* being such as to admit of such adjustment.

So far as I know, I am the first to make a double boring machine in which the augers or bits are carried on an adjustable swinging arm that has a lateral concentric adjustment on the driving-shaft, so that the lengths of the belts are not varied in whatever position the augers are placed relatively to each other, and in which the augers can be set at an angle to each other, as above described. This enables me to bore with facility, and rapidly, wooden chair-bottoms, and do other work of similar character, which is very important.

Having fully described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a boring or routing machine, the combination of an arm or arms G, swinging concentrically with the driving-shaft B, and a yoke or boring-head K, L pivoted to the extremity of said arm, whereby the boring spindle is adjustable laterally and to an angle with the boring table, substantially as described.

2. In a boring or routing machine, the combination of the concentrically swinging arms G; screw-shaft E having sections threaded right and left; swiveling nuts Q; and means of preventing end movement of said screw-shaft, whereby the arms G are adjusted at equal distances from the center line of the machine, and the center line through both bearing spindles is retained parallel with the longitudinal edge of the table *c'*.

3. In a boring or routing machine, the combination of the concentrically swinging-arms G, guide-bar J, adjustable pivoted yokes K, actuating levers *h*, and suitable retaining bearings *r*, constructed to admit of the rolling movement, the vertical swing, and the lateral and endwise movements of the levers *h*, for the purposes set forth.

CHARLES H. PURDY.

Witnesses:

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W. C. FARGHER.