

(No Model.)

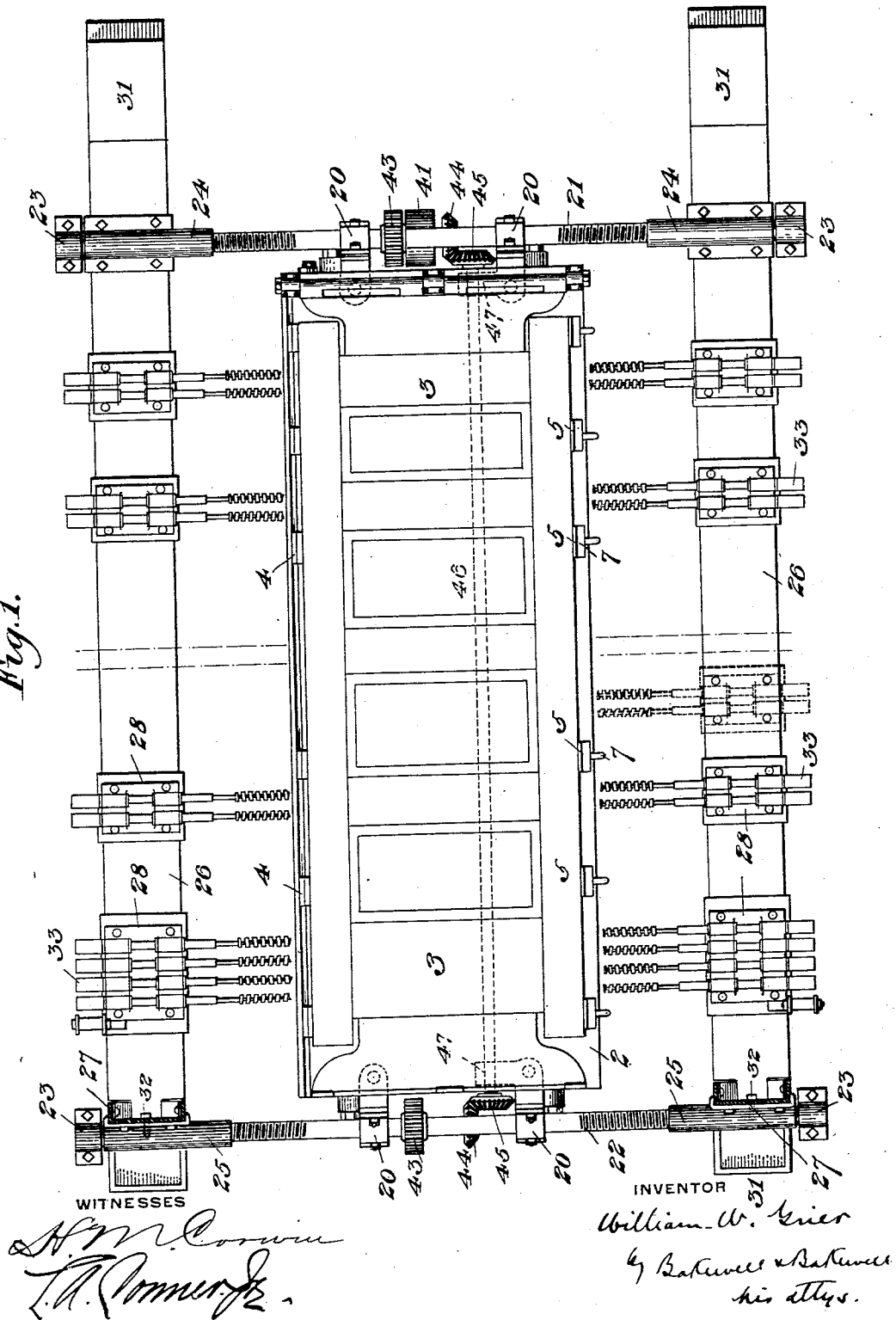
4 Sheets—Sheet 1.

W. W. GRIER.
BORING AND DOWELING MACHINE.

No. 580,273.

Patented Apr. 6, 1897.

Fig. 1.



(No Model.)

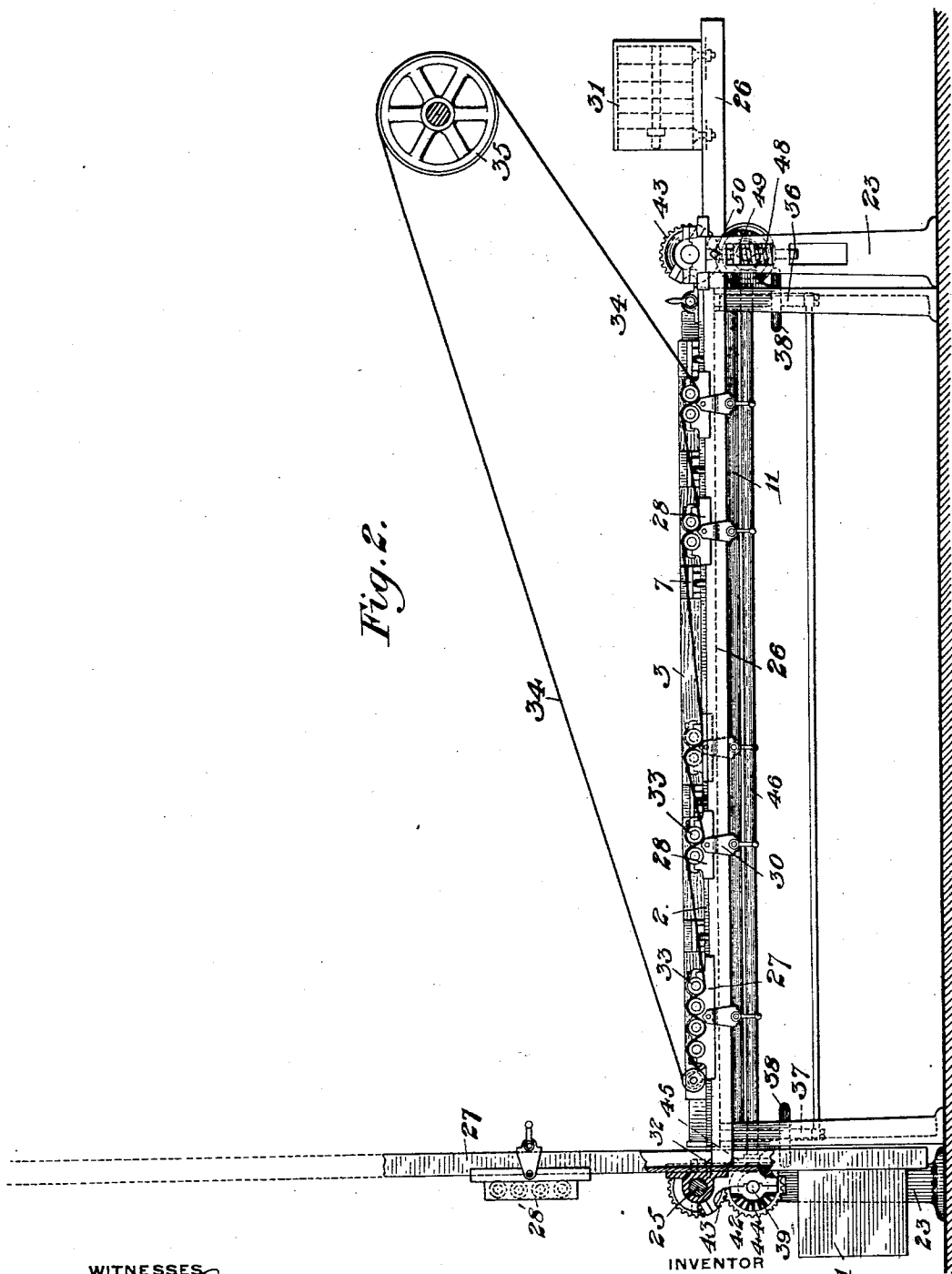
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Fig. 2.



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Fig. 3.

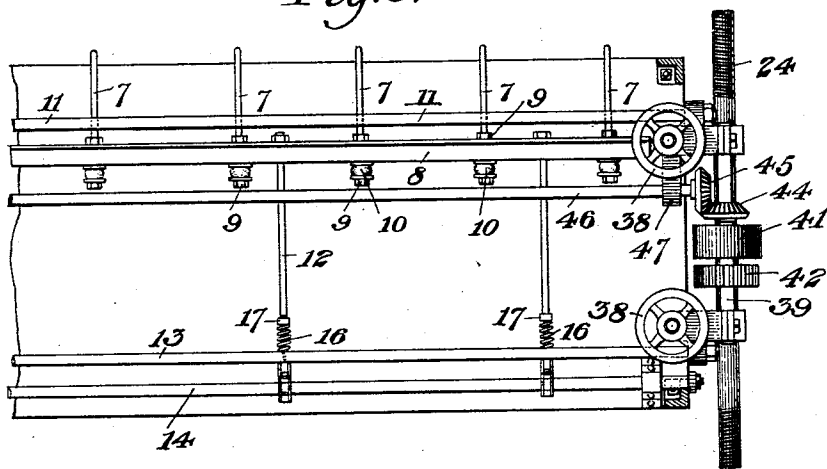
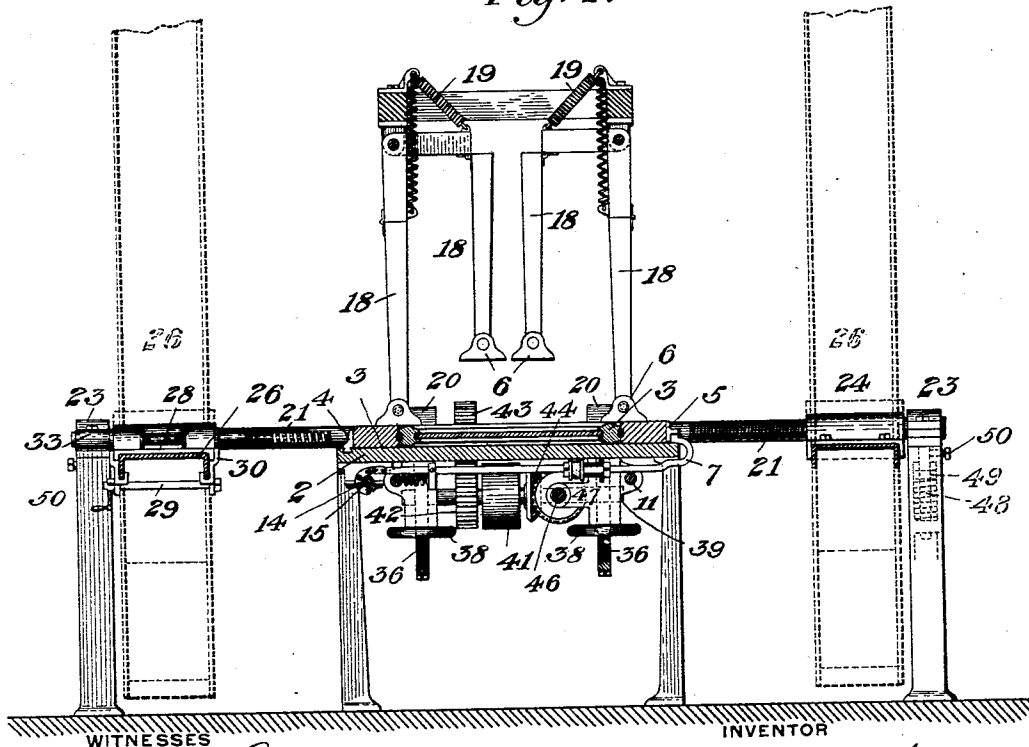


Fig. 4.



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Fig. 5.

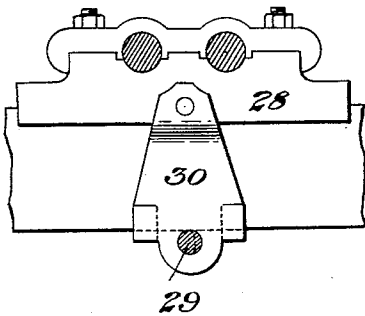


Fig. 6.

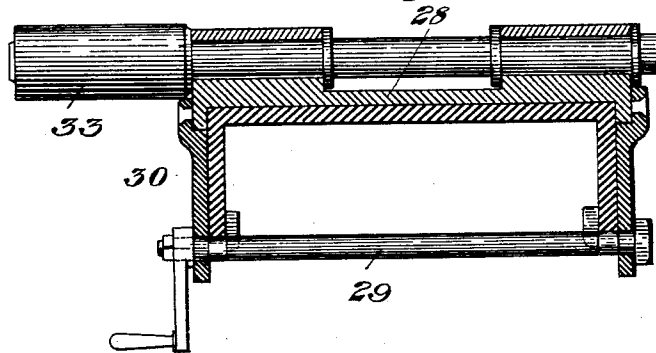


Fig. 7.

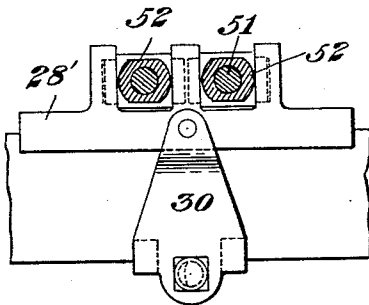


Fig. 8.

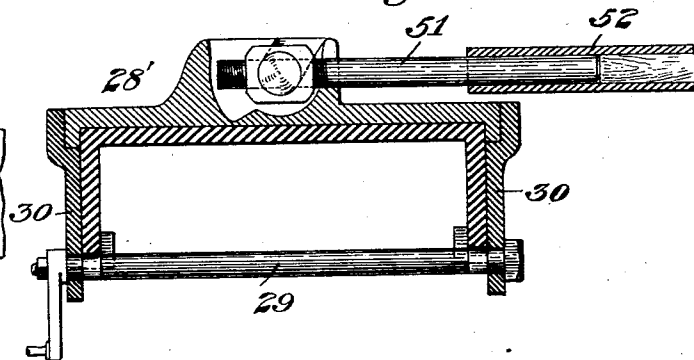


Fig. 9.

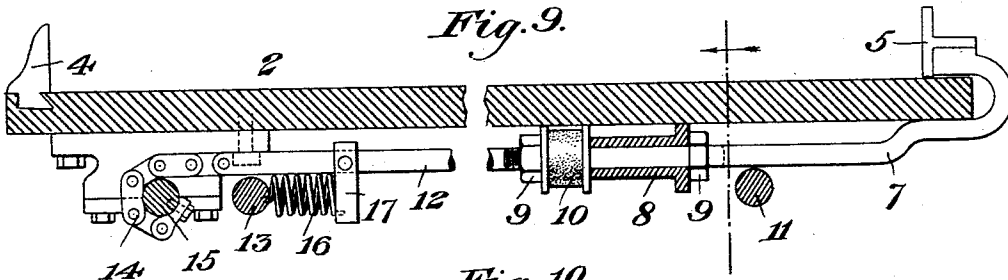
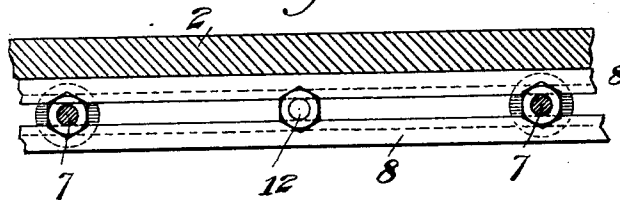


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM W. GRIER, OF OAKMONT, PENNSYLVANIA.

BORING AND DOWELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 580,273, dated April 6, 1897.

Application filed October 17, 1895. Serial No. 565,958. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. GRIER, of Oakmont, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Boring and Doweling Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of my improved machine. Fig. 2 is a side elevation of the same, partly broken away. Fig. 3 is a partial bottom plan view. Fig. 4 is a vertical transverse section showing the top clamps. Figs. 5 and 6 are detail views of the boring-spindles. Figs. 7 and 8 are similar views of the dowel-inserting mechanism. Fig. 9 is a cross-section of the table, showing the movable clamps and their operating means; and Fig. 10 is a partial view of the clamp-carrying bar.

My invention relates to the boring and doweling together of framed woodwork, and more especially doors, and is designed to afford a simple and easily-operated machine by which such joining may be quickly carried out and the boring and doweling accomplished while the parts are clamped together in position.

In the drawings, 2 represents a flat table upon which the parts of the door 3 are placed and held together by clamps 4, 5, and 6. The clamps 4 are stationary and are fixed along one side of the table, and with them cooperate the movable clamps 5, which are carried upon the hooked ends of rods 7, secured to a longitudinally-extending bar 8 by nuts 9. Between the outer nuts 9 and the bar are placed rubber washers 10, by which any inequalities in the width of the door are compensated for and a yielding pressure given. The bar 8 is slotted longitudinally, as shown in Fig. 10, so that the clamps may be adjusted longitudinally to any desired point and there secured. The rods 7 rest upon a longitudinal truss-rod 11, and the bar 8 is moved back and forth and partly supported by rods 12, which rest upon another truss-rod 13 and to whose ends are connected chains 14, which are secured to and wind about a shaft 15. The clamps are normally held apart by springs 16, which are secured between the truss-rod 13 and lugs 17, secured to the rods 12, and nor-

mally press the movable clamps toward the edge of the table. To clamp the parts of the door or other article downwardly, I pivot upon the upper frame 15 the depending jointed links 18, which are normally held in elevated position by springs 19 and which when depressed act as toggle-levers to force the clamps 6, secured to their lower ends, in contact with the parts of the door, as shown in Fig. 4.

Beyond each end of the table are supported bearings 20, within which are carried shafts 21 and 22, which extend beyond the sides of the table and are supported at their outer ends in bearings 23. Between the bearings 20 and 23 the shafts are provided with right and left hand screw-threads, respectively, which engage screw-threads in nuts 24 and 25. To the nuts are secured swinging arms or beams 26 and 27, respectively, the arms 26 carrying the boring-spindles and the arms 27 the dowel-inserting devices.

The boring-spindles are arranged in suitable groups in rests 28, having bearings therefor, which rests, as shown in Figs. 5 and 6, may be slid along the arms 26 to any desired position and then clamped in place by eccentric shafts 29, passing through lugs 30, depending from the rests. Both sets of arms project beyond the nuts and are provided with counterweights 31, and each arm is of such length that when depressed to horizontal operative position its end enters the longitudinal recess or channel in the opposite vertical arm, it being held therein when it reaches the horizontal position by a suitable stop and spring-pressed catch 32. The spindles are provided at their outer ends with pulleys 33, with which engages a belt 34, passing over a driving-pulley 35, as shown in Fig. 2.

The bearings of the shafts 21 and 22 rest upon hand-wheels 38, engaging screw-threads upon vertical shafts 36 and 37, and supported in lower bearings integral with the bearings 20 are counter-shafts 39 and 40, the shaft 39 having a driving-pulley 41 and gear-wheel 42, intermeshing with a similar wheel 43 upon the shaft 21. The shafts 39 and 40 are provided with bevel-wheels 44, intermeshing with similar wheels 45 upon a longitudinal shaft 46, carried in arms 47, supported upon the vertical shafts 36 and 37, so that both shafts 21 and 22 are rotated simultaneously.

The hand-wheels are employed to raise or lower the shafts and the swinging arms in order to bring them to the center line of the door or other frame, and when the shafts are so adjusted their outer bearings 23 and 24 are similarly raised or lowered, springs 48 being arranged to press upon vertical plungers 49, which contact with the lower halves of the bearings, these bearings being held in adjusted position by set-screws 50.

The dowel-applying mechanism, as more clearly shown in Figs. 7 and 8, consists of a series of rods or spindles 51, pivotally supported in adjustable rests 28', similar to those employed for the boring-spindles, each rod having an outersliding sleeve 52, within which the dowel-pin is inserted, the rods being tilted up for such purpose.

The operation is as follows: Both sets of swinging arms being tilted into vertical position to give free access to the table on both sides, the parts of the doors are laid in proper position and the clamps 4, 5, and 6 applied thereto to hold them in such position. The shafts 21 and 22 having been adjusted to the proper level the arms 26 are swung down into horizontal position upon both sides, and the shafts 21 and 22 being rotated the belts 34 rotate the boring-spindles and the augers are driven inwardly through the stiles and into the rails. The shafts 21 and 22 then being rotated in the opposite direction the borers are withdrawn, and the arms 26 being swung up the arms 27 are depressed into horizontal position within the tilted sleeves 52, the rods 51 and sleeves are swung down, and the shafts 21 and 22 again being rotated the dowel-pins are forced into place in the holes, which have been provided with glue, the sleeves being pushed back upon rods 51 as the pins move in. The shafts 21 and 22 being then rotated in the opposite direction to withdraw the rods 51, the arms 27 are swung up and the door removed from the clamps.

The advantages of my invention will be apparent to those skilled in the art. The table is readily accessible on both sides for the placing and clamping of the parts of the door. The arms being in vertical position, the boring of both sides is done simultaneously and the dowels are inserted without changing the door or table.

The dowels are easily placed in position for being driven in and are easily and quickly inserted, and the whole machine is simple and compact.

I claim—

1. In a machine for manufacturing frame woodwork, a stationary horizontal table, having suitable clamps for holding the wooden strips in position, a tilting arm located at one side of the table and provided with boring-spindles, and means for moving the arm in parallel lines to and from the table when in the plane of the clamped framework, whereby the arm may be swung aside to allow access to the side of the table; substantially as described.

2. The combination with a stationary table having clamps, of a shaft at one end thereof having swinging arms arranged to extend one on each side of the table, and means for simultaneously moving said arms to and from the table; substantially as described.

3. The combination with a table having clamps, of a longitudinally-swinging arm mounted at one end of the table and having boring-spindles, and a similar arm mounted at the other end of the table and having dowel-inserting devices; substantially as described.

4. The combination with a table having clamps, of shafts mounted at the ends of the table, swinging arms secured to threaded nuts upon said shafts and arranged to be swung to a horizontal position along the table, rotatable spindles mounted upon said arms and means for rotating said shafts; substantially as described.

5. The combination with a table having clamps, of two shafts mounted at its ends having right and left hand screw-threads thereon, two swinging arms mounted upon nuts engaging the screw-threaded portions of the shafts, rotatable spindles mounted upon said arms and means for rotating the shafts simultaneously; substantially as described.

6. The combination with a table having clamps, of a bar having swinging rods mounted thereon in line with the parts to be clamped upon the table, sleeves carried upon the rods, and means for moving the bar toward the table; substantially as described.

7. The combination with a table for framing woodwork, having suitable clamps for the parts, of a swinging dowel punch or rod, having thereon a loose freely-sliding dowel-holding sleeve, and means for moving the punch toward the table; substantially as described.

In testimony whereof I have hereunto set my hand.

WILLIAM W. GRIER.

Witnesses:

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H. M. CORWIN.