

No. 743,440.

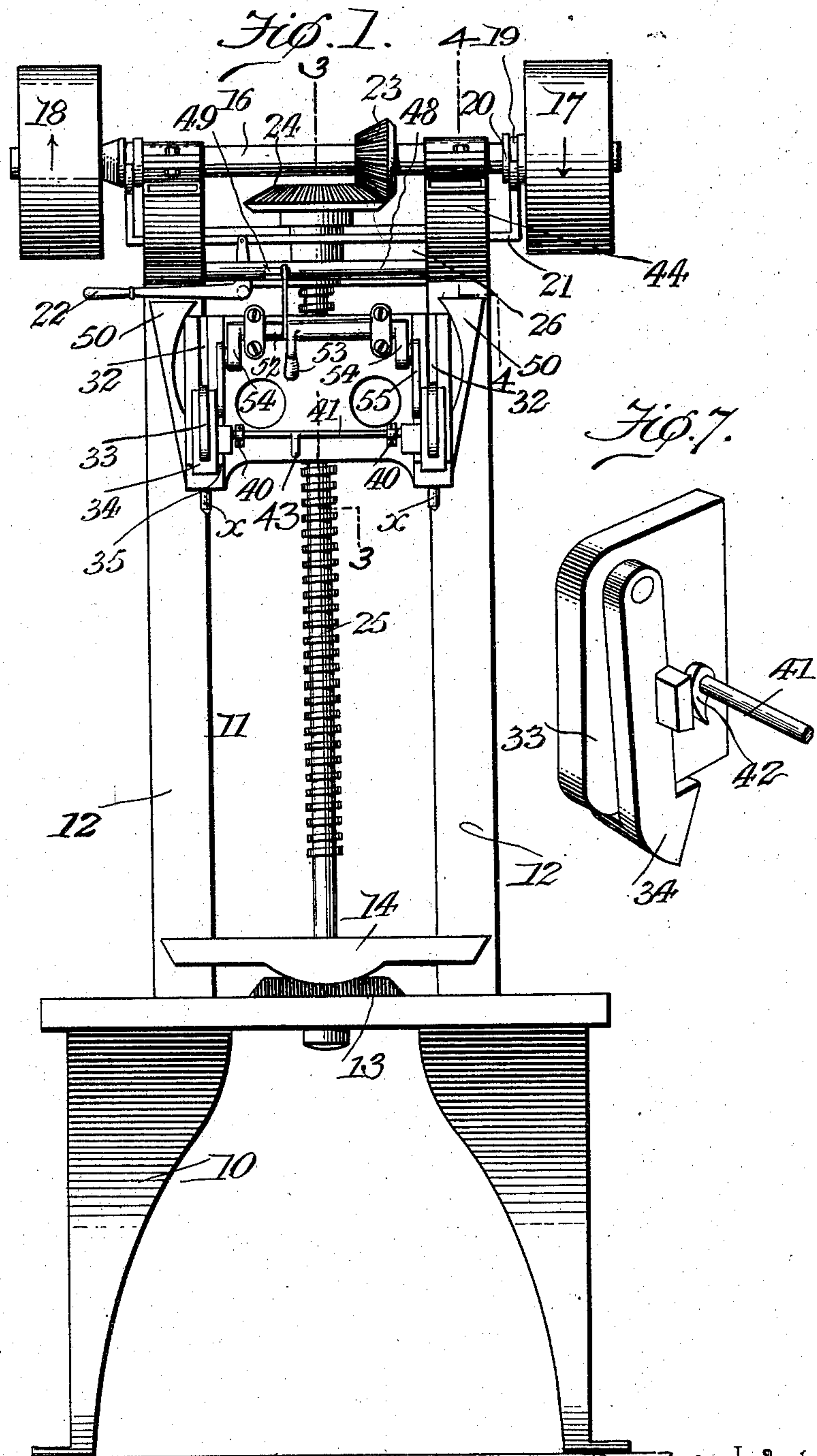
PATENTED NOV. 10, 1903.

C. W. BOYKIN.
BARREL HEAD DOWELING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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John E. Parker

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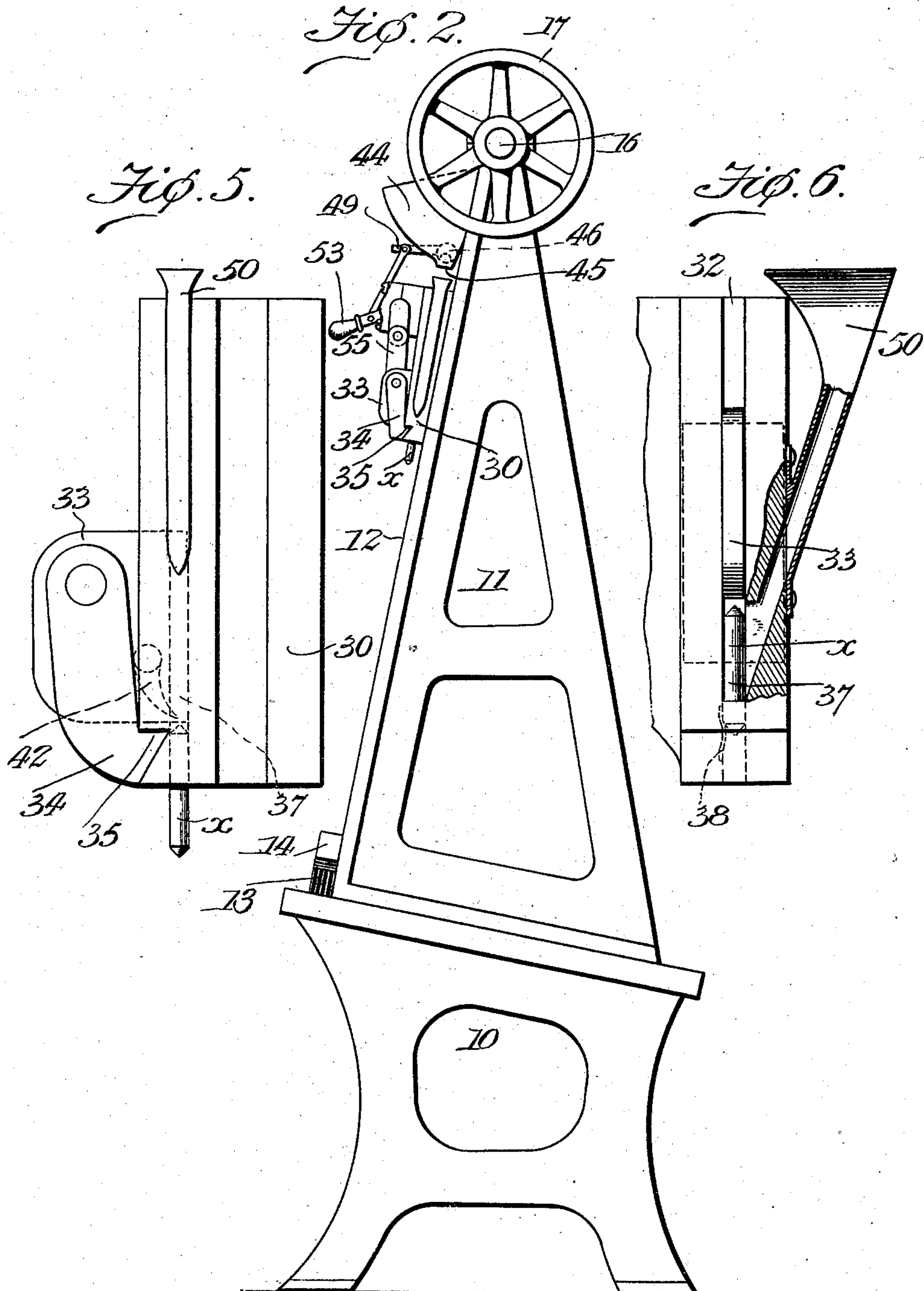
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3 SHEETS—SHEET 2.



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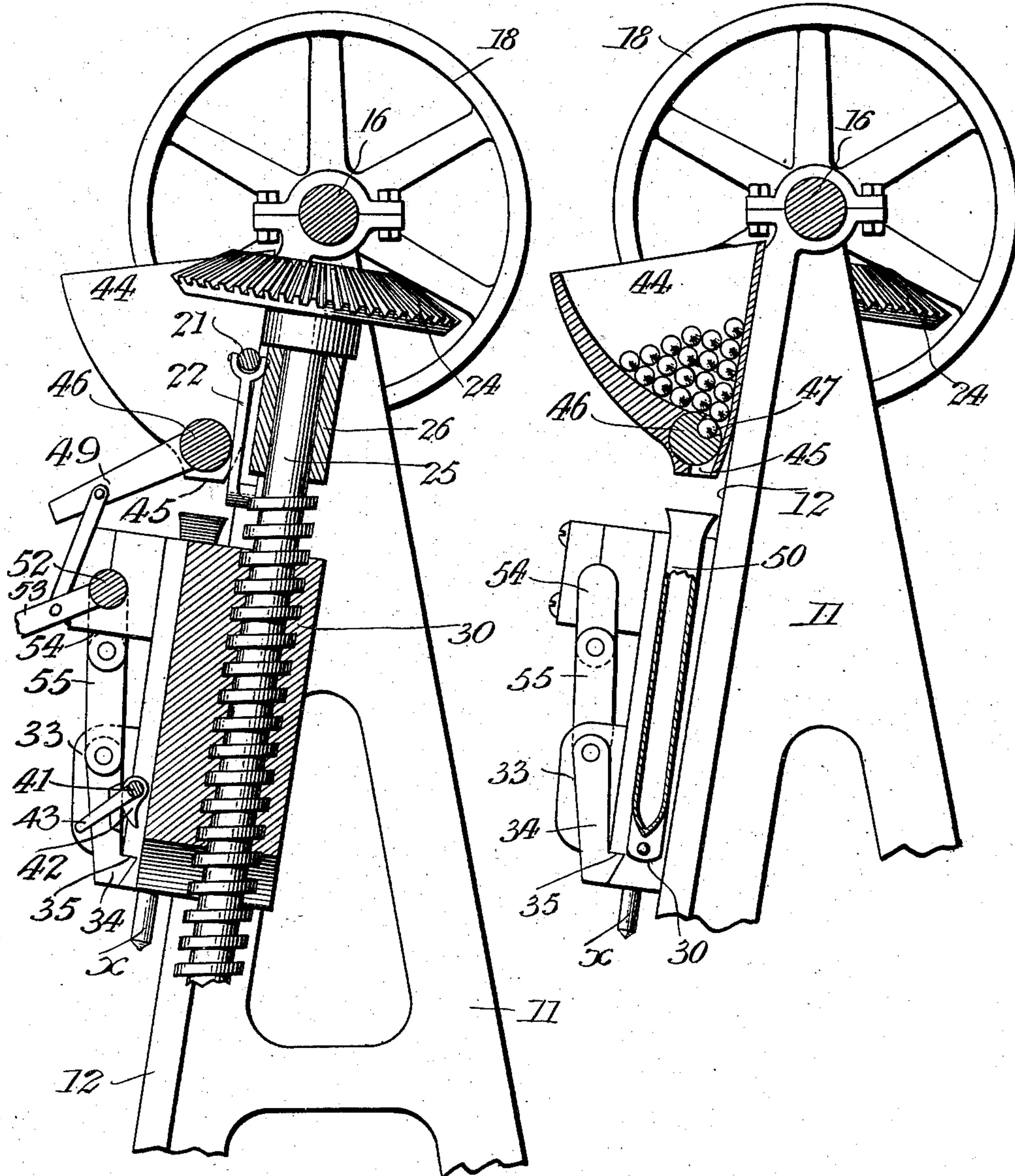
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3 SHEETS—SHEET 3.

Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

CLAUD WINSTON BOYKIN, OF CORINTH, MISSISSIPPI, ASSIGNOR OF ONE-HALF TO ELEAZER P. SIMMONS, OF CORINTH, MISSISSIPPI.

BARREL-HEAD-DOWELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 743,440, dated November 10, 1903.

Application filed February 27, 1903. Serial No. 145,408. (No model.)

To all whom it may concern:

Be it known that I, CLAUD WINSTON BOYKIN, a citizen of the United States, residing at Corinth, in the county of Alcorn and State of Mississippi, have invented a new and useful Barrel-Head-Doweling Machine, of which the following is a specification.

This invention relates to certain improvements in machines for securing strips of material together by dowels, and has for its principal object to construct a mechanism especially adapted for securing strips of board to each other in the manufacture of heads for barrels, casks, and the like.

A further object of the invention is to provide a mechanism in which mutilation of the strips will be prevented and by which the dowel-pins may be inserted an equal distance in adjacent strips.

A still further object of the invention is to provide a mechanism in which the pressure exerted on the strips may be wholly under the control of the operator, and, further, to provide a mechanism in which the dowels are automatically fed to position from a supply reservoir or hopper.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a front elevation of a doweling-machine constructed in accordance with the invention. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse sectional elevation of a portion of the machine, drawn to a somewhat larger scale, on the line 3 3 of Fig. 1. Fig. 4 is a similar view on the line 4 4 of Fig. 1. Fig. 5 is a side elevation of the dowel-inserting block removed from the machine. Fig. 6 is a front elevation of one end of the same. Fig. 7 is a detail perspective view of one of the dowel-pin-driving blocks detached from the machine.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The frame of the machine comprises a base 10, on which is mounted a superstructure 11, comprising a pair of spaced standards having inclined faces 12 at the front of the machine. On the base 10 is a block 13, preferably formed of yieldable material, and on this is mounted the central portion of a supporting-block 14, the lower face of which is slightly rounded where it rests upon the compressible block, so that some slight rocking as well as yielding movement will be provided for in order to compensate for slight variations in shape of the wooden strips. This block 14 serves as a support for the strips to be secured together, the rear faces of the strips resting against the inclined faces 12 of the standards 11.

At the top of the machine are bearings for the reception of a horizontally-disposed shaft 16, on the opposite ends of which are mounted belt-wheels 17 and 18, said wheels being mounted loosely on the shaft and driven in opposite directions, respectively, by suitable belts or other actuating devices. The hubs of the belt-wheels are provided with clutch-faces adapted to engage clutching-sleeves 19, feathered to the shaft and having peripheral grooves for the reception of the bifurcated arms 20 of a sliding clutch-rod 21. The rod 21 is held in suitable guides near the top of the frame and is connected to the shorter arm of a bell-crank lever 22, pivoted to the upper portion of the frame, the longer arm of said bell-crank lever terminating in an operating-handle arranged within convenient reach of the attendant, so that by moving the handle down the belt-wheel 17 will be unclutched from the shaft and the belt-wheel 18 clutched thereto, while movement in the opposite direction will unclutch the belt-wheel 18 and lock the belt-wheel 17 to the shaft. The shaft is further provided with a bevel-pinion 23, intermeshing with a substantially horizontally-disposed bevel-gear 24, secured to the upper end of a threaded shaft 25. The upper end of the shaft 25 has a suitable bearing in a cross-bar 26, extending between the two

standards, and the lower end of said shaft extends through a suitable guiding-opening in the upper portion of the base 10.

The opposite standards 11 form guides for the reception of a sliding block 30, which is preferably provided with grooves for the reception of inwardly-projecting flanges on said standards, and at the central portion of said block is a threaded opening for the passage of the shaft, the block acting as a nut and being raised and lowered by the rotative movement of the shaft.

Near the opposite edges of the block 30 are vertically-disposed grooves 32 for the reception of vertically-movable blocks 33, and to each of said blocks is hung a bifurcated pawl 34, embracing the block and adapted to engage a locking-shoulder 35 near the lower edge of the block 30 and prevent upward movement of the block. The lower portion of each slot 32 terminates in a guiding-opening 37 of a diameter slightly larger than a double-pointed dowel-pin, such as x , and when the dowel-pin is fed to said opening, in the manner hereinafter described, it is held from falling by a small spring 38, which frictionally engages the dowel. On the front face of the block are two lugs 40, forming bearings for a small rock-shaft 41, on the opposite ends of which are cams 42, adapted to engage with the inner faces of the pawls 34, and said rock-shaft being further provided with a handle 43, arranged within convenient reach of the operator, so that the handle may be turned to force the cams 42 outwardly against the pawls, and thus unlock the pawls from the shoulders 35 and permit upward movement of the blocks 33. When in the position shown in Fig. 5, the block 33, being locked in its upward movement, forms a rigid stop for the dowel-pin, and if downward movement be imparted to the block said dowel-pin will be driven into a suitable opening in the strip or board resting on the cross-bar 14.

At the upper end of each of the standards 11 is secured a reservoir or hopper 44, having a lower discharge-mouth 45 communicating with an oscillatory discharging device comprising a circular block 46, having at one edge a pocket 47 of sufficient size to permit the entrance of a single dowel-pin. One of these blocks 46 is arranged at each side of the machine, and the two are connected by a small bar or spindle 48, having an operating-handle 49, which may be moved down to place the two pockets in communication with the mouths of their respective hoppers and then upwardly to allow the dowels to fall by gravity from said pockets. When discharged from the pockets, the dowels fall into receiving-chutes 50, having flared upper ends and slightly curved, so that the dowel-pin falling with its longitudinal axis in a substantially horizontal plane will be turned and thence fed in the direction of its length in a downward direction through the chute. The lower end of the chute 50 is in communication with an

opening leading to the slot 32; but when the block 33 is in the position shown in Fig. 5 this opening is closed by the block, and the entrance of the dowel-pin is thus prevented.

Near the top of the block 30 are suitable bearings for the reception of a rock-shaft 52, having an operating-handle 53, and provided at its opposite ends with small cranks 54, connected by links 55 to the blocks 33, so that by moving the handle upward the blocks, having been previously unlocked by manipulating the cams 42, can be raised to a point above the opening at the lower end of the chute and permit the entrance of a single dowel-pin in the slot 32, and on the downward movement of the handle the blocks will engage with and force the dowel-pins from the position shown in Fig. 6 to that illustrated in Fig. 5, this movement being in a measure assisted by gravity. When the blocks 33 reach their lowest position, the pawls 34 are automatically locked, the cams 42 having returned to the initial inoperative position by gravity and the weight of the cam-operating handle 43 assisting in this returning movement.

In operating the machine a strip of wood or other material is placed on the cross-bar 14, the upper edge of the strip being provided with dowel-receiving openings. The operator then clutches the belt-wheel 17 to the shaft, and the movement of the latter is transmitted to the threaded shaft 25, causing a descending movement of the block 30. The dowel-pins x project below the block 30 for a distance equal to half their length and on the descending movement of the block are driven firmly into the previously-formed openings in the strip. The operator then engages the belt-wheel 17 and clutches the belt-wheel 18 of the shaft, reversing the movement of the screw and causing the block to ascend. During the ascending movement the operator may unlock the pawls 34 by manipulating the cams 42 and then raising the blocks 33 to permit the entrance of a dowel-pin, if any be contained in the chute, and again returning the parts to the initial position. At or near the completion of the upward movement the operator manipulates the handle 49 and causes the discharge of a dowel-pin from the reservoir or hopper to each of the chutes. The machine being again in readiness, a second strip of material is placed on the previous strip, said second strip being provided with openings in both its upper and lower edges and the openings in the lower edges being placed directly over the dowel-pins, so that the latter partly enter said openings due to the pointed ends of the pins. On the descending movement of the block the dowel-pins carried thereby will be forced into openings on the upper edge of the second strip, and at the same time pressure will be applied to the upper edge of said second strip and the two strips forced into close engagement, completing the operation of uniting the two strips. In this manner any number of

strips may be secured together to form a barrel or cask head or for other purposes. While the strips employed for the purpose are generally placed on the upper and lower edges, there may be some variation in the width of the strip, and the lower compressible block 13 will compensate for this and permit the formation of close, tight, and liquid-proof joints between the strips.

While in some cases the operating-handles 49 and 53 may be disconnected members and separably operable, it is preferred, in order to reduce the number of movements necessary to impart proper operation of the machine, to connect these two handles by means of a link 60, so that when the handle 53 is moved the auxiliary blocks will be raised and at the same time dowel-pins will be discharged into the chutes.

Having thus described the invention, what is claimed is—

1. The combination in a doweling-machine, of a movable block adapted to engage with and force successive strips tightly together, means for successively feeding previously-formed dowel-pins to the block, and means carried by said block for holding portions of the pins projecting beyond the block in the direction of the work-support.

2. The combination in a doweling-machine, of a work-support, a dowel-carrying block, means for reciprocating the block, dowel-receiving openings, means for retaining the dowels therein, slidable auxiliary blocks carried by the main block and arranged above said opening, said blocks forming backing means in the driving of the dowel-pins, and a chute for feeding successive dowel-pins to the opening, the discharge-mouth of the chute being closed by the auxiliary block when the latter is adjusted to dowel-driving position.

3. The combination in a doweling-machine, of a work-support, a dowel-carrying block, means for reciprocating the same, dowel-pin-receiving openings, chutes leading to said dowel-receiving openings, reservoirs arranged above the chutes, means for delivering single dowel-pins from the reservoirs to the chutes, auxiliary blocks carried by the main block and adapted to guiding-slots therein, said blocks closing the discharge-mouth of the chute when in dowel-driving position and forming backing means for the dowel-pins during the driving operation, means for locking the auxiliary blocks in dowel-driving po-

sition, and means for raising said block to permit the entrance of single dowel-pins from the chutes to the receiving-openings.

4. The combination with a doweling-machine, of a work-support, a dowel-carrying block having a vertically-disposed slot, a dowel-receiving opening forming a continuation of the slot and extending below the same, a chute having a discharge-opening leading into the slot, a reservoir for discharging single dowel-pins through the chute, a sliding auxiliary block arranged in the slot and serving to force the dowel-pin to position in the work, said block when in its lowest position covering the discharge-mouth of the chute, means for raising and lowering said block, and means for locking the block in its lowest position.

5. In a doweling-machine, the combination of the work-support, a guiding-frame, a dowel-pin-carrying block adapted to said frame, means for reciprocating the block on the frame, said block being provided with parallel slots and with dowel-receiving openings in alinement with the slots, dowel-reservoirs, means for discharging single dowel-pins therefrom, chutes for delivering the pins to the dowel-receiving openings, a rock-shaft mounted on the block, rocker-arms on said rock-shaft, a pair of dowel-driving blocks arranged in the slots of the block and having a linked connection with said rocker-arms, pawls depending from said auxiliary blocks and adapted to engage locking-shoulders on the block, and a cam-shaft for moving said pawls to releasing position.

6. In a doweling-machine, the combination with dowel-pin-driving means, of a work-support, and a centrally-disposed block of yieldable material on which said support is mounted.

7. In a doweling-machine, the combination with dowel-pin-driving means, of a work-support having a curved rear face, and a yieldable block engaging with said curved rear face to permit both rocking and yielding movement of said work-support.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CLAUD WINSTON BOYKIN.

Witnesses:

H. M. MCAMIS,
O. E. PRICE.