(No Model.) 2 Sheets—Sheet 1.

J. M. BAILEY & R. A. CARTER.

FLANGING MACHINE.

No. 328,274. Patented Oct. 13, 1885.

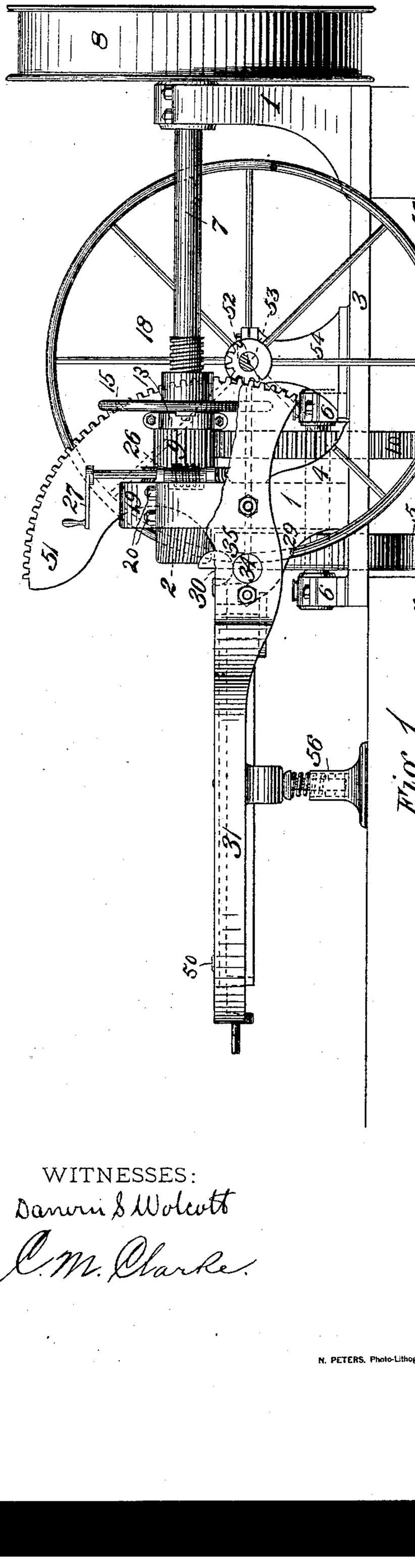

Fig: 1.

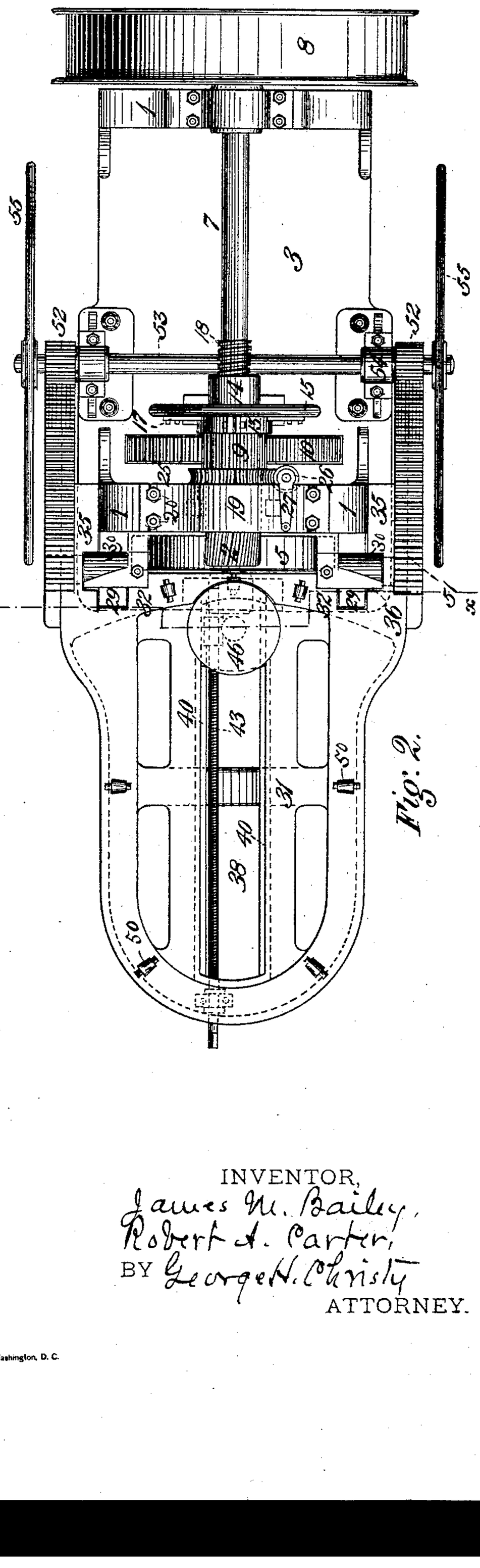

Fig: 2.

WITNESSES:
Dawn S Wolcott
C. M. Clarke.

INVENTOR,
James M. Bailey,
Robert A. Carter,
BY George N. Christy
ATTORNEY.

(No Model.) 2 Sheets—Sheet 2.

J. M. BAILEY & R. A. CARTER.

FLANGING MACHINE.

No. 328,274. Patented Oct. 13, 1885.

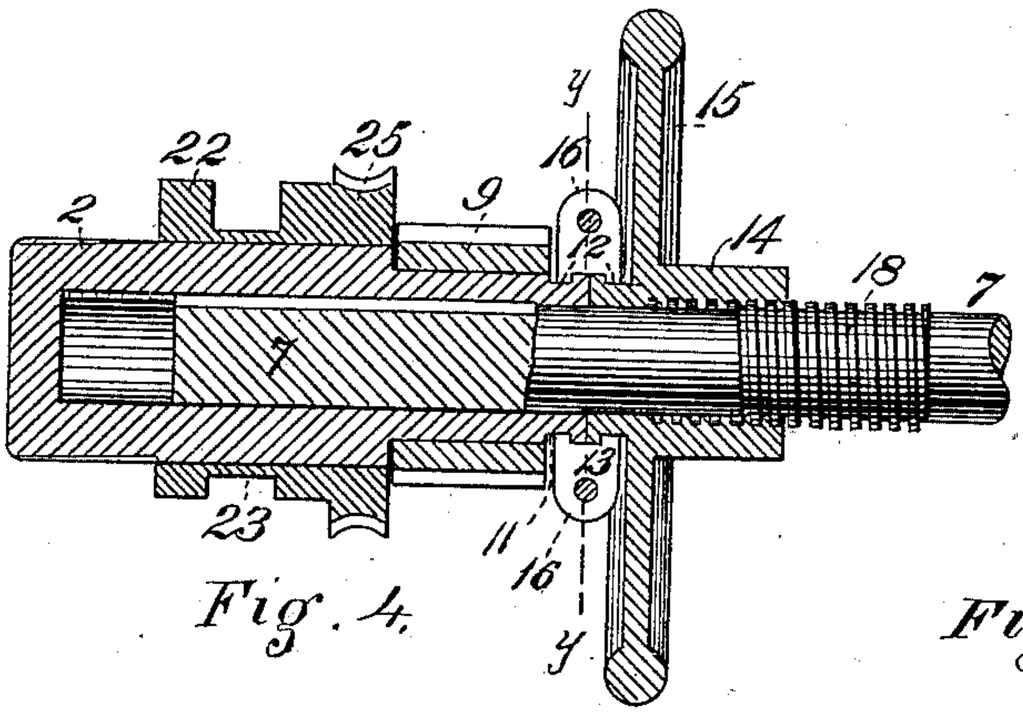

Fig. 4.

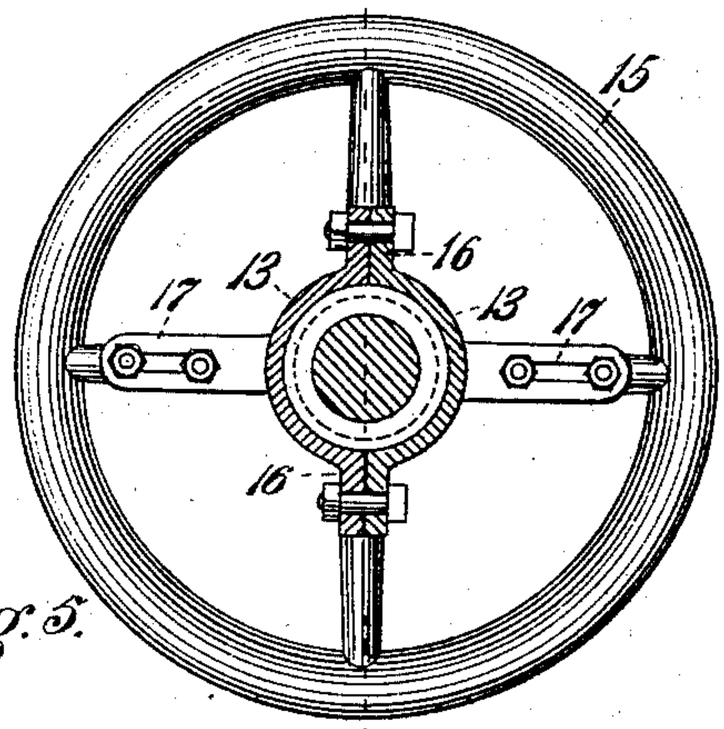

Fig. 5.

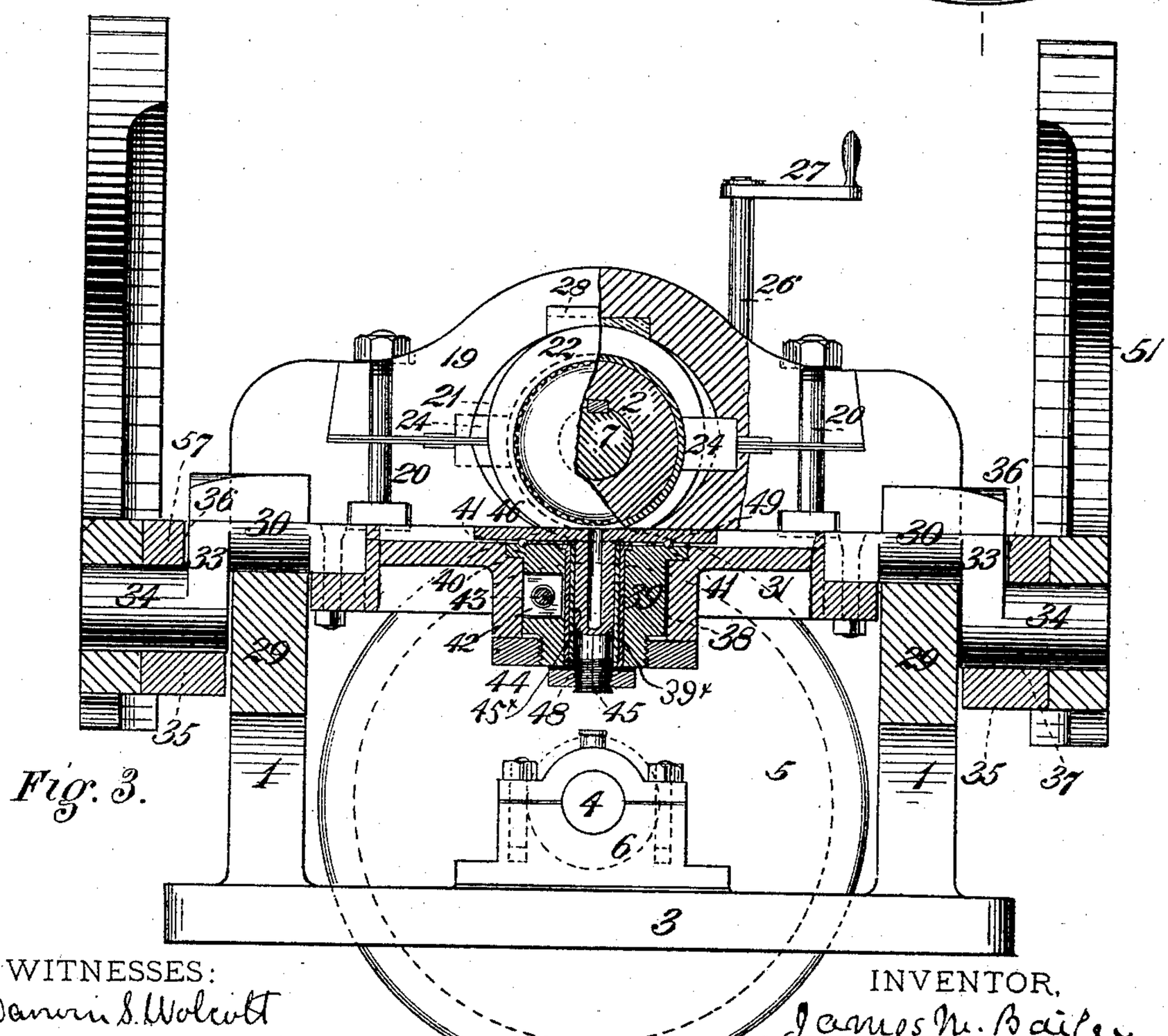

Fig. 3.

WITNESSES:
Dannie S. Wolcott
C. M. Clarke.

INVENTOR,
James M. Bailey
Robert A. Carter.
BY George H. Christy
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES M. BAILEY AND ROBERT A. CARTER, OF PITTSBURG, PA.

FLANGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 328,274, dated October 13, 1885.

Application filed August 5, 1885. Serial No. 173,585. (No model.)

To all whom it may concern:

Be it known that we, JAMES M. BAILEY and ROBERT A. CARTER, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented or discovered certain new and useful Improvements in Flanging-Machines, of which improvements the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a view in side elevation of a flanging-machine. Fig. 2 is a plan top view of the same; Fig. 3, a front elevation, certain parts being shown in section, the section being taken on line *x x*, Fig. 2. Fig. 4 is a sectional elevation of the upper flanging-roll and its adjusting mechanism. Fig. 5 is a sectional view, the section being taken on the line *y y*, Fig. 4.

The invention herein relates to certain improvements in that class or kind of flanging-machines in which the edge of the sheet to be flanged is held in a horizontal position between two continuously-rotating rolls, while the body of the plate is gradually turned to a vertical position or one at right angles or approximately so to a plane passing between the rotating rolls, the plate being free to rotate under the action of the rolls; and the invention consists in the construction and combination of parts, all as more fully hereinafter described and claimed.

The standards 1, for supporting the upper roll, 2, and its driving-shaft, are formed or cast integral with the bed-plate 3, the rear standard being located on the middle line of the bed and at the end thereof, and the posts forming the front standard being located at the edges of the bed near its front end, and being connected by a horizontal cross-bar, as shown. Through the opening thus formed in the front standard passes the shaft 4 of the lower roll, 5, said shaft being mounted in suitable journals, 6, formed on the bed-plate, through which is formed a transverse slot for the reception of the lower part of the lower roll. The upper roll, 2, is bored out, exactly as shown in Fig. 4, for the reception of the front end of its driving-shaft 7, which is so connected to the upper roll by a spline and groove as to permit the roll to move longitudinally on said shaft, but also to cause it to rotate with the shaft, said shaft being provided with a driving-pulley, 8, at its rear end.

On the rear end of the upper roll, 2, is secured the pinion 9, adapted to intermesh with the gear-wheel 10, secured to the shaft of the lower roll.

In the upper roll, just in the rear of the pinion 9, is formed the peripheral groove 11, adapted for the reception of one of the inwardly-projecting beads, 12, formed on the inner periphery of the split coupling-ring 13, the other bead of said rim fitting into a corresponding peripheral groove formed in the hub 14 of the hand-wheel 15. The two parts of the ring-coupling are provided at their ends with ears 16, whereby they may be drawn together around the roll and hub 15, for the purpose of connecting said parts, by means of suitable bolts and nuts. Each part of the ring-coupling is also provided with a slotted arm, 17, for the purpose of adjustably securing said parts to the spokes of the hand-wheel, as shown in Fig. 5. The portion of the hub 14 on the opposite or rear side of the hand-wheel is provided with internal screw-threads, as shown, adapted to engage the threaded portion 18 of the driving-shaft 7.

It will be clearly understood from the above description that if the hand-wheel 15 be rotated on the shaft 7 said wheel and the roll 2 will be moved longitudinally along the shaft.

In the cross-bar of the front standard is a recess having undercut ends for the reception of the cap-piece 19, having beveled ends, as shown in Fig. 3, the cap-piece being slid laterally into place. Both the cross-bar and cap-piece are slotted in their front sides for the reception of the clamping-bolts 20. In the cross-bar and cap-piece are formed semi-elliptical recesses, forming, when the cap is in place, an elliptical opening, 21, having its major axis in a horizontal plane. In this elliptical opening is arranged the disk 22, having an eccentric opening therethrough for the reception of the upper roll, 2, said eccentric disk forming the bearing or journal of said upper roll. In the disk is formed a groove, 23, the bottom of said groove being concentric with the upper roll, and into this groove project the lateral bearing-blocks 24, secured between the cross-bar

and cap and lying in the major axis of the elliptical opening 21. As the minor axis of the opening 21 is made equal to the diameter of the disk 22, said disk will bear only at the top and bottom of the opening, and as the bottom of the groove 23, against which the blocks 24 bear, is concentric with the roll, it follows that the rotation of the disk will only effect a vertical movement of the roll—*i. e.*, a movement toward and from the lower roll in a straight vertical line.

On the rear end of the disk 22, projecting beyond the standard, is formed a gear-wheel, 25, concentric with the upper roll, and with this wheel engages the worm 26, secured in any suitable manner to the rear side of the front standard, and provided with a handle, 27, whereby the worm may be rotated. This worm and gear serve not only to rotate the disk, but also to lock the same as against rotation. In the cap piece at that point where the disk 22 bears is inserted a brass bearing, 28.

On the front side of the front standard are formed lugs 29, provided with curved grooves in their upper edges for the reception of the pintle-pins 30 of the table 31, which is slotted, as at 32, for the reception of the lugs 29. The inner ends of these pins are bolted, as shown, in recesses formed in the table adjacent to the slots 32, as shown in Fig. 3. The outer ends of the pintle-pins 30 are formed with crank-arms 33, provided with outwardly-projecting pins or lugs 34.

In the inner face of the arms 35 of the table are formed slots or recesses 36 for the reception of the crank-arms 33, and at the lower end of the slots 36 holes or openings 37 are formed through the arm 35 for the reception of the pins or lugs 34, all as shown in Fig. 3. By connecting the outer end of the pintle-pin to the arm 35 of the table by means of the crank-arms and their projecting lugs 34 an enlargement of the arms 35 on their upper side for the purpose of affording sufficient material at that point for the reception of the outer end of a straight pin or pintle is avoided. Such enlargement would be objectionable, as it prevents the flanging of plates of a diameter greater than the ordinary size. The upper side of the pintle-pin 30 is cut away, as shown in Figs. 1, 2, and 3, so as to permit of the flanging of larger plates than is possible in machines having journals of the usual form.

In the table 31 is formed a longitudinal slot, 38, for the reception of the blocks 39, the walls of the slot being cut away so as to form ways 40, on which rest flanges 41, projecting from the sides of the block, as shown in Fig. 3. In one side of the block is formed a recess for the reception of a nut, 42, through which works the screw-rod 43, said rod being supported and held as against longitudinal motion at both ends by straps or other suitable devices secured to the under side of the table. It has been heretofore customary to connect the screw-rod by a swivel-joint to the block, the nut being located in the outer end of the table. This construction is objectionable, however, as when the block is moved toward the outer end of the table the screw-rod will project more or less beyond the end of the table, and hence will be in the way of the operatives. By my construction such objectionable feature is avoided.

The lower end of the block 39 is provided with a threaded boss, on which screws the nut 44, the outer edges of said nut bearing against the lower edges of the walls of the slot 38, and thus retaining the block in place. Through the block 39 is formed an opening for the reception of the hollow boss 45 formed on the pivot-plate 46, on which the plate to be flanged is secured. Between the boss and the walls of the opening are inserted two brass sleeves or bushings, one fitting loosely within the other, the outer sleeve, $39^{\times}$, being supported by an outwardly-projecting flange formed thereon, said flange resting in a recess around the upper end of the opening in the block 39, the inner sleeve, $45^{\times}$, being supported by an inwardly-projecting flange formed on the lower end of the outer sleeve. This outer sleeve fits loosely within the opening in the block 39, and the boss 45 fits loosely within the inner brass sleeve. These brass bushings are interposed between the boss and the block 39 for the purpose of providing two rotating frictional surfaces between such parts, and thus decreasing friction. In the upper face of the block 39 and the under side of the plate 46 are formed semicircular grooves for the reception of suitable ball-bearings, 49, thus facilitating the rotation of said plate. It will be noticed that the opening through the block 39 for the reception of the boss of the pivot-plate is located near the front end of the block, as shown in dotted lines in Fig. 2, thus providing for a closer adjustment of said block and plate to the flanging-rolls.

Around the edges of the table are located in suitable recesses the conical friction-rolls 50, whose upper peripheries project a little above the surface of the table and support the edges of the plate being flanged.

To the arms 35 of the table are bolted the toothed segments 51, with which the pinions 52 on the shaft 53 intermesh, said shaft being suitably journaled in standards 54, bolted to the bed-plate of the machine, and also being provided with hand-wheels 55, by which the shaft and pinions are rotated for the purpose of raising and lowering the table. The segments 51 should be made of such a weight as to nearly counterbalance the weight of the table, thereby assisting the operator when turning up the table during the flanging operations.

Additional weights may be attached to the segments when plates heavier than the ordinary plate are being operated on; or a rope may be attached to the outer end of the table, and being passed over a pulley secured above

the table, weights may be secured to the free end of the rope for counterbalancing the table.

The face of the upper roll is spirally grooved, as shown, for the purpose of drawing the edges of the plate in between the rolls, the tendency of the rolls while operating being to force the edge of the plate out from between them. If desired, the lower roll may be similarly grooved. It sometimes occurs that the table 31 is suddenly dropped, and in order to prevent the strain on the pivotal connections of the table incident to such an occurence a spring-block and abutment, 56, is placed in such a position as to catch and support the table. (See Fig. 1.)

We claim herein as our invention—

1. In a flanging-machine, a pair of flanging-rolls in combination with an eccentric adjusting-sleeve surrounding one of said rolls, said sleeve being mounted in a suitable bearing or journal, said parts being so constructed and arranged that the rotation of the sleeve will effect a movement of the roll in a vertical plane, substantially as set forth.

2. In a flanging-machine, a pair of flanging-rolls in combination with standards for supporting said rolls, and an eccentric adjusting-sleeve surrounding one of said rolls and located within one of the standards, such sleeve bearing on the standard at two points only, substantially as set forth.

3. In a flanging-machine, a pair of flanging-rolls in combination with an eccentric adjusting-sleeve surrounding one of said rolls and provided with a groove concentric with the roll, and bearing-blocks located within said groove and arranged to prevent any lateral motion of the roll, substantially as set forth.

4. In a flanging-machine, a pair of flanging-rolls in combination with an eccentric adjusting-sleeve surrounding one of said rolls, and a worm and gear for rotating said sleeve around the roll and holding the same in its adjusted position, substantially as set forth.

5. In a flanging-machine, a pair of flanging-rolls, one of said rolls being bored out, as described, in combination with a driving-shaft having its forward end located within the roll and connected thereto by a spline and groove, substantially as set forth.

6. In a flanging-machine, a pair of flanging-rolls, one of said rolls having an axial opening therein, in combination with a driving-shaft having its forward end located within said roll, the shaft and roll being locked together as against independent rotation, a hand-wheel mounted on the shaft and having an internally-threaded hub adapted to engage a threaded portion of the shaft, and a coupling for uniting the hand-wheel and the roll, substantially as set forth.

7. In a flanging-machine, a roll having an axial opening therein, in combination with a driving-shaft having its forward end located within said roll and locked thereto as against independent rotation, a hand-wheel mounted on the driving-shaft and arranged to move longitudinally thereof, a split coupling-ring arranged to connect the roll and the hand-wheel, the parts of said ring being adjustably attached to the hand-wheel, substantially as set forth.

8. In a flanging-machine, a swinging table in combination with pintle-pins for supporting said table, the outer ends of said pins being provided with crank-arms having lugs, the outside arms of said table being suitably constructed to receive said crank-arms and lugs, substantially as set forth.

9. In a flanging-machine, a swinging table, slotted as described, in combination with a movable block located within said slot and having an axial opening therethrough for the reception of the boss of the pivot-plate, a threaded adjusting-rod adapted to engage a nut located in one side of the block, substantially as set forth.

10. In a flanging-machine, the block 39, having an opening therethrough lined with brass or other anti-frictional metal, in combination with the pivot-plate provided with a boss located within the opening in the block 39, and a loose bushing of anti-friction metal arranged around said boss, substantially as set forth.

In testimony whereof we have hereunto set our hands.

JAMES M. BAILEY.
ROBERT A. CARTER.

Witnesses:
DARWIN S. WOLCOTT,
G. W. WILLIAMS.