(No Model.)

8 Sheets—Sheet 1.

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NAILING MACHINE.

No. 583,048.

Patented May 25, 1897.

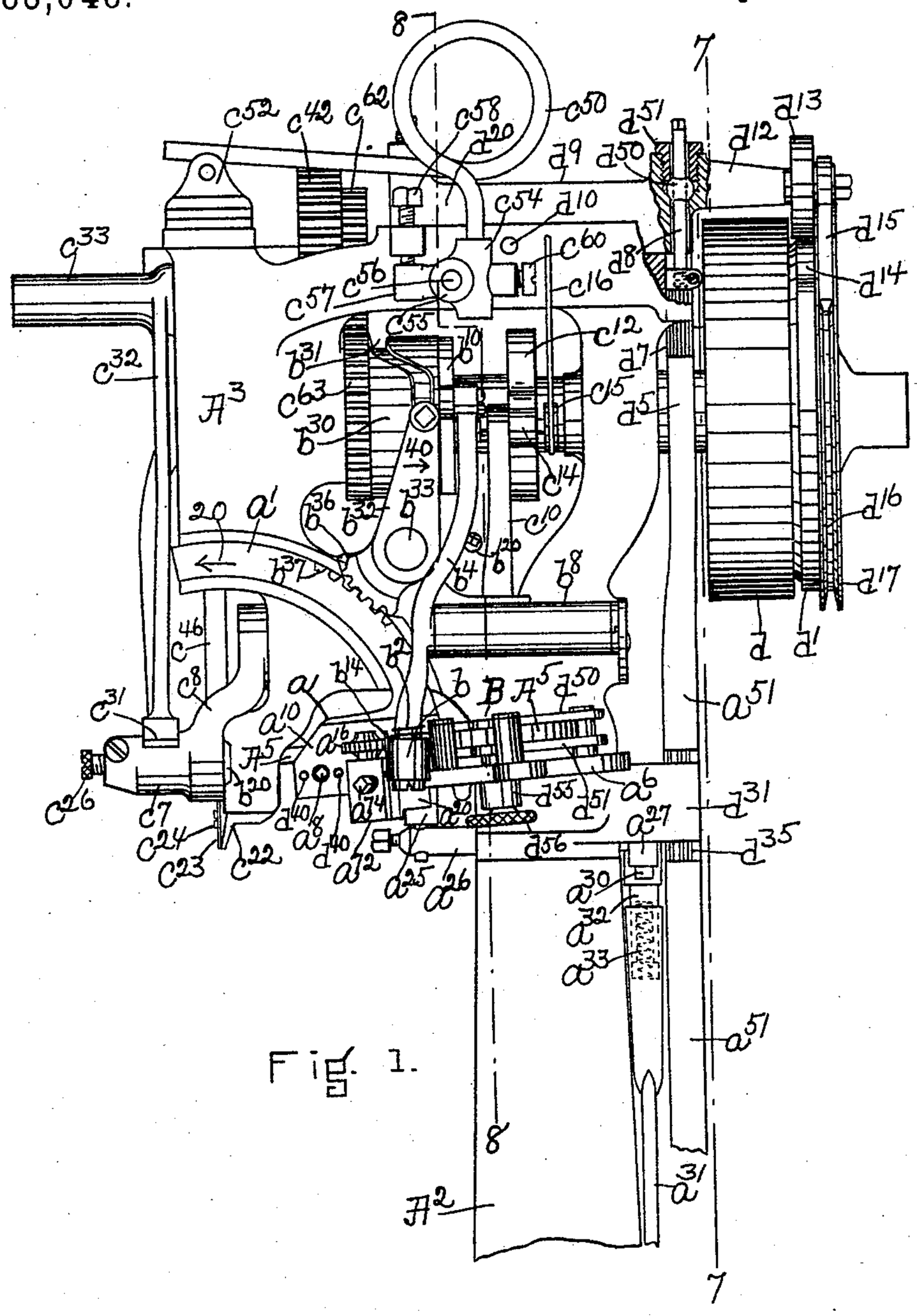

Fig. 1.

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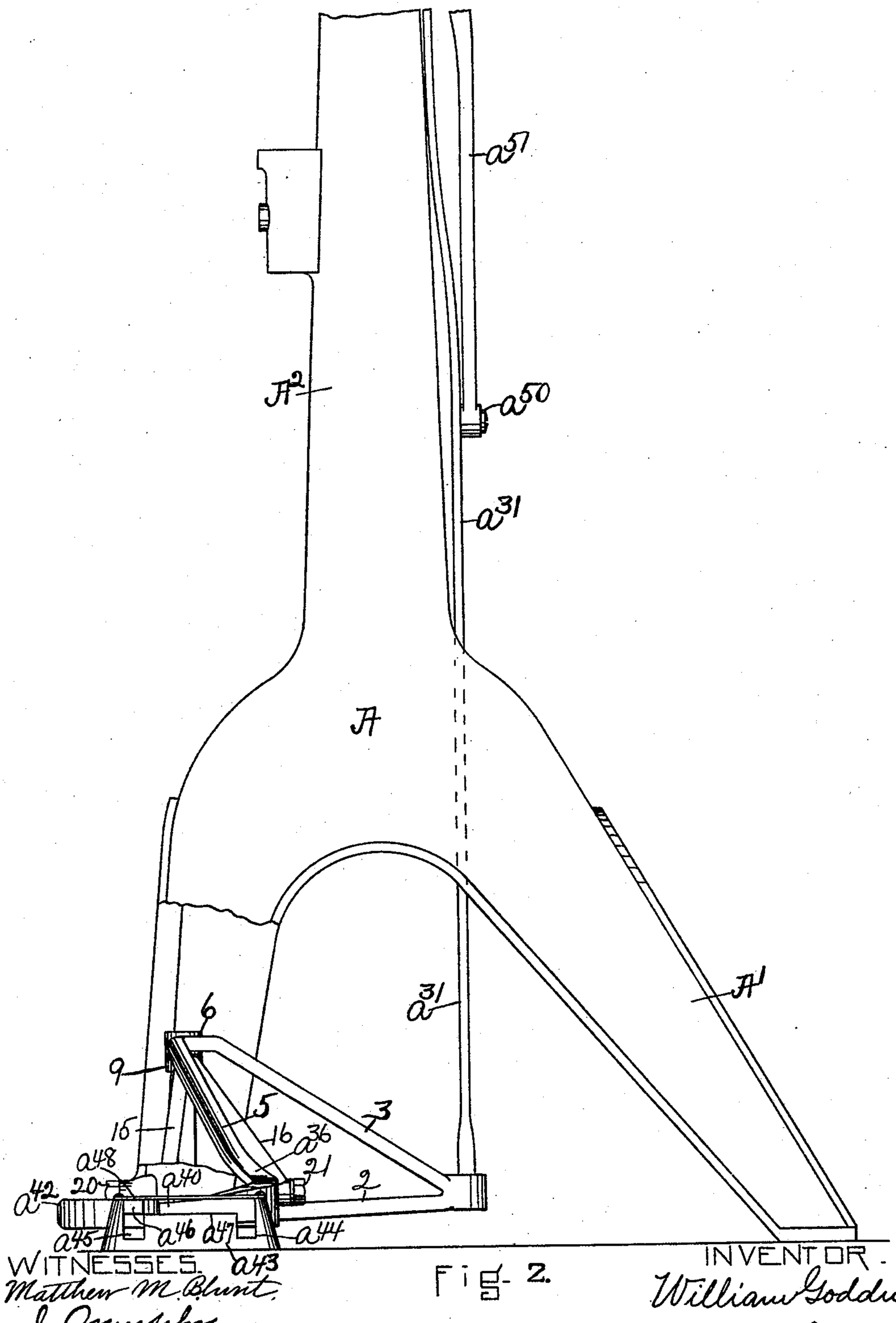

Fig. 2.

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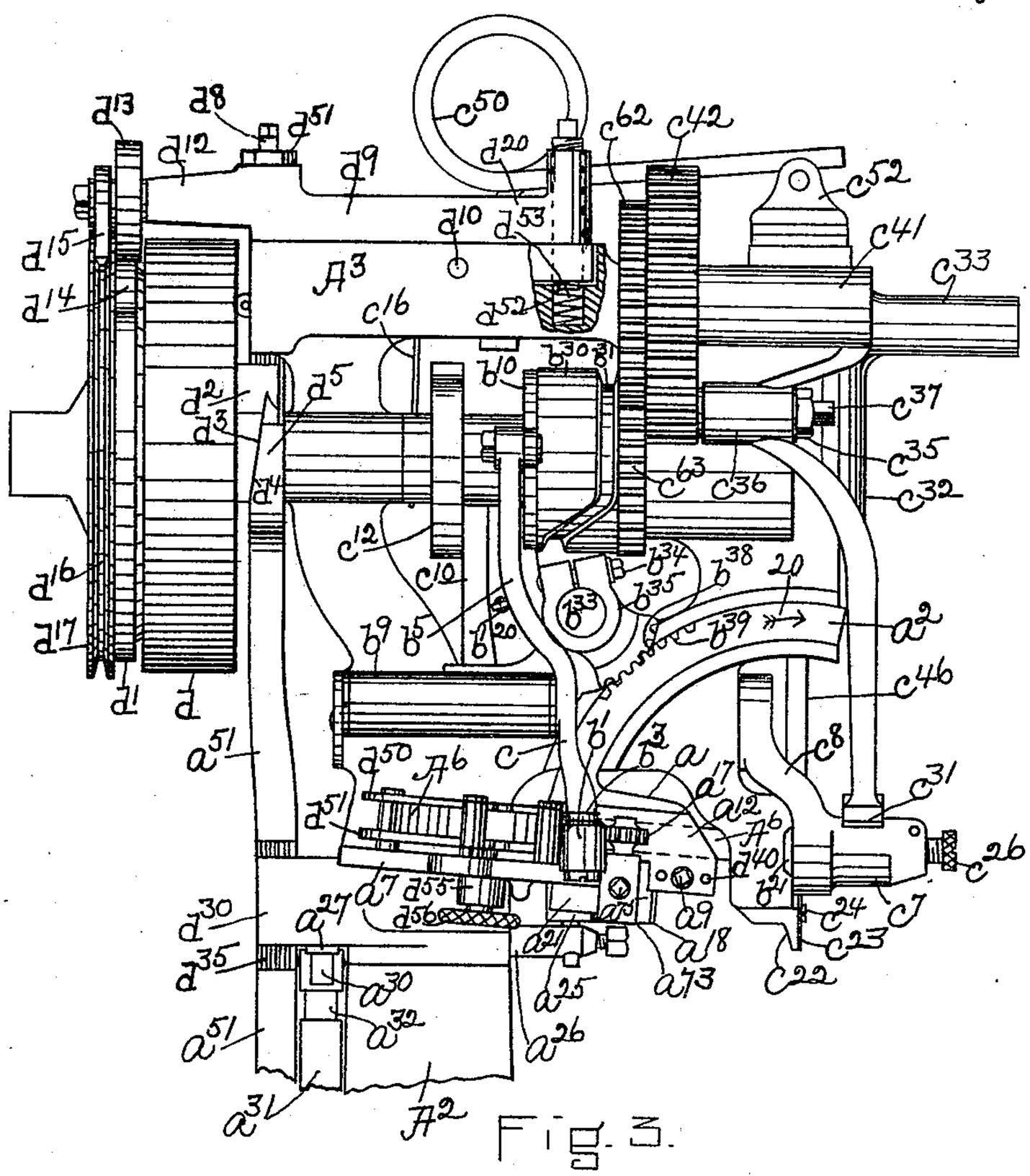

Fig. 3.

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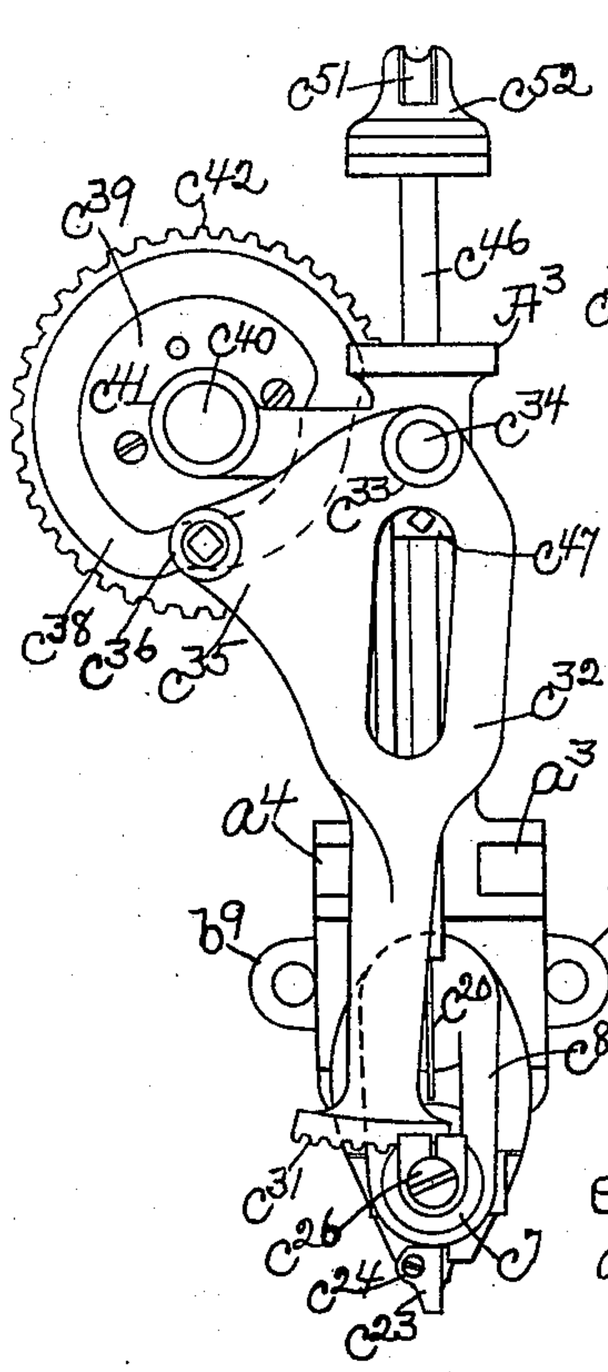

Fig. 5.

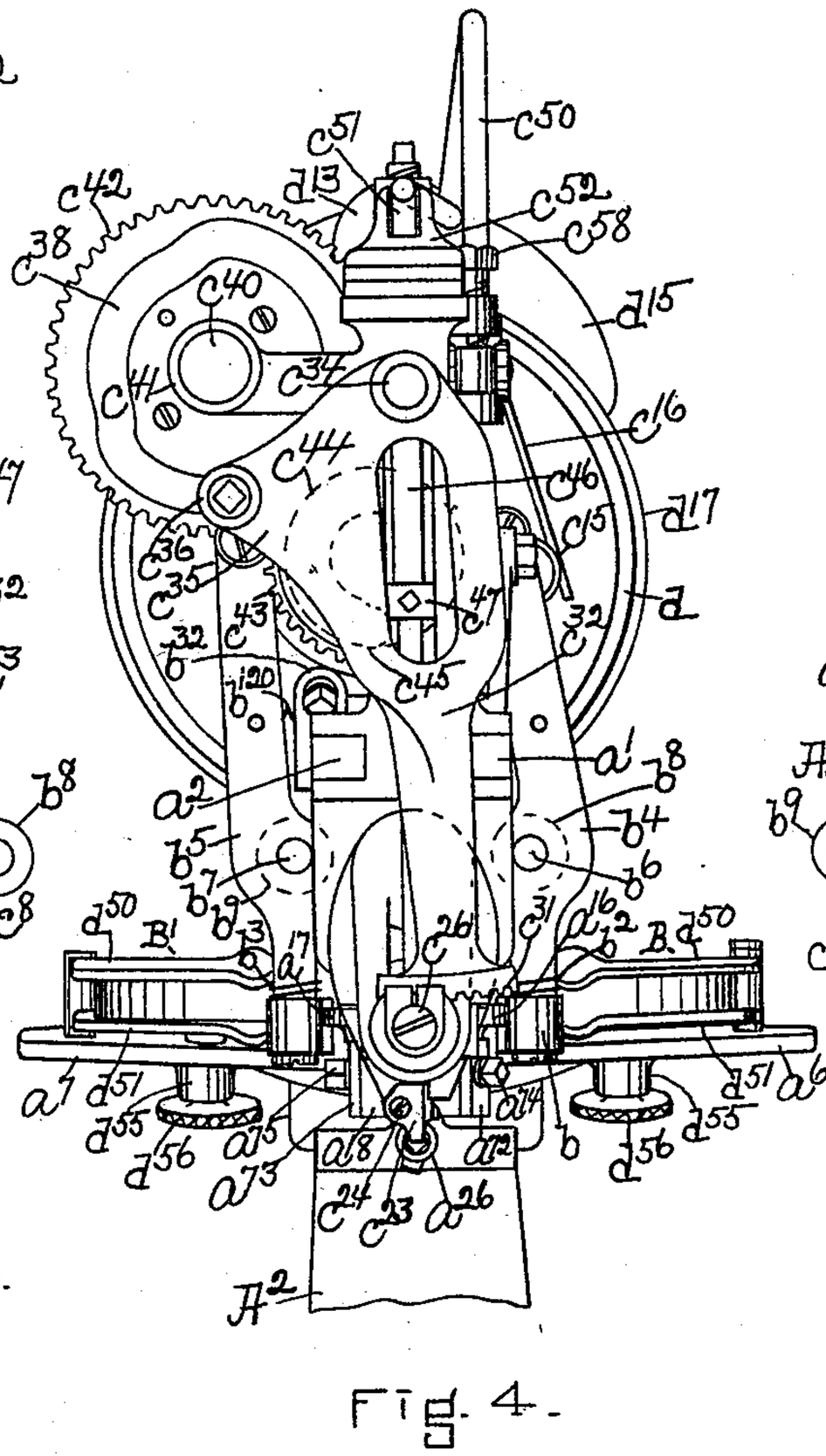

Fig. 4.

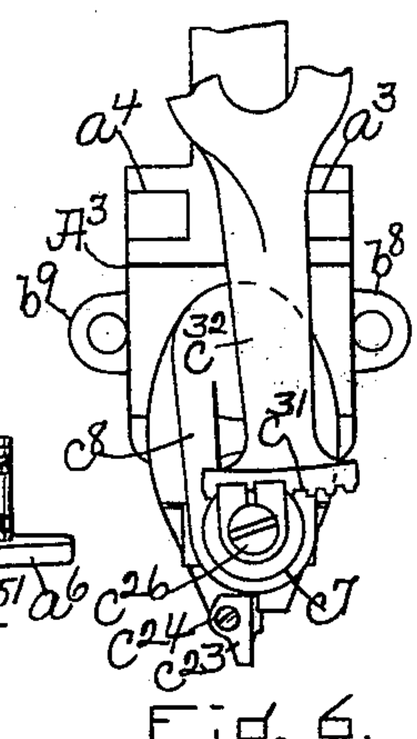

Fig. 6.

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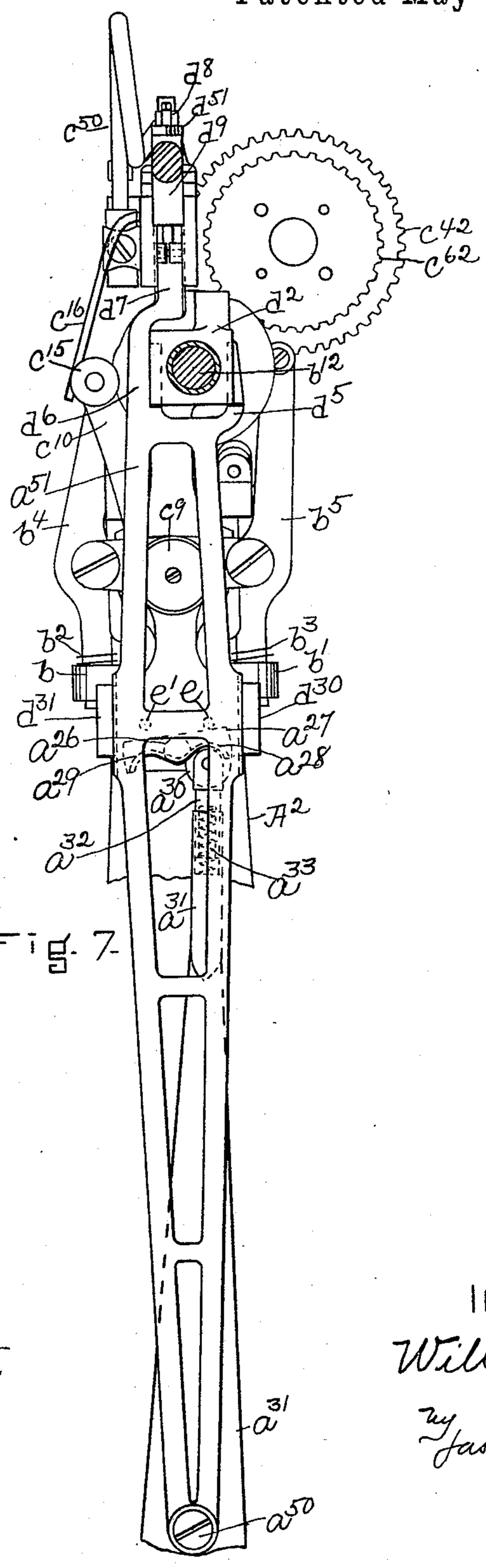

Fig. 7.

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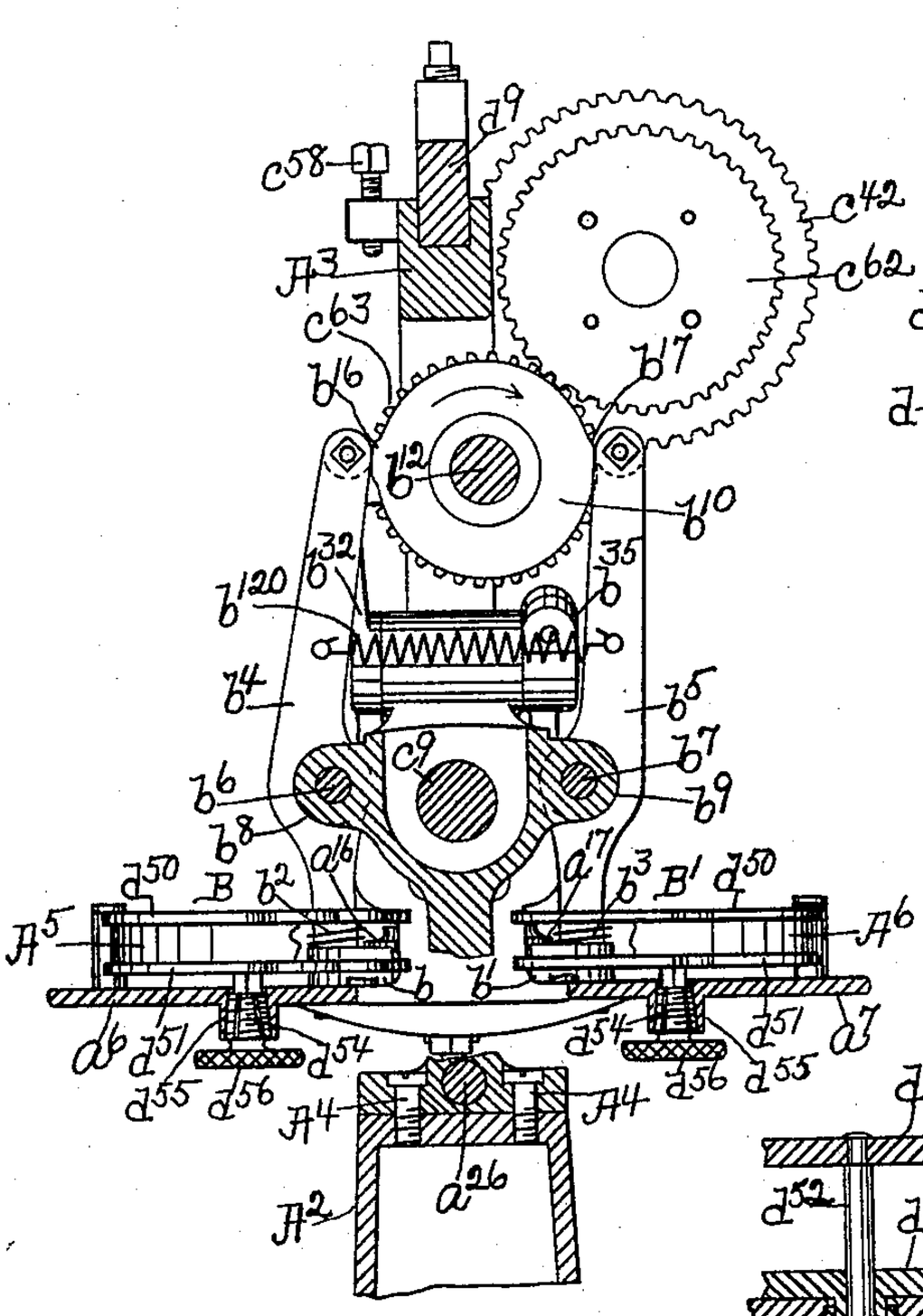

Fig. 8.

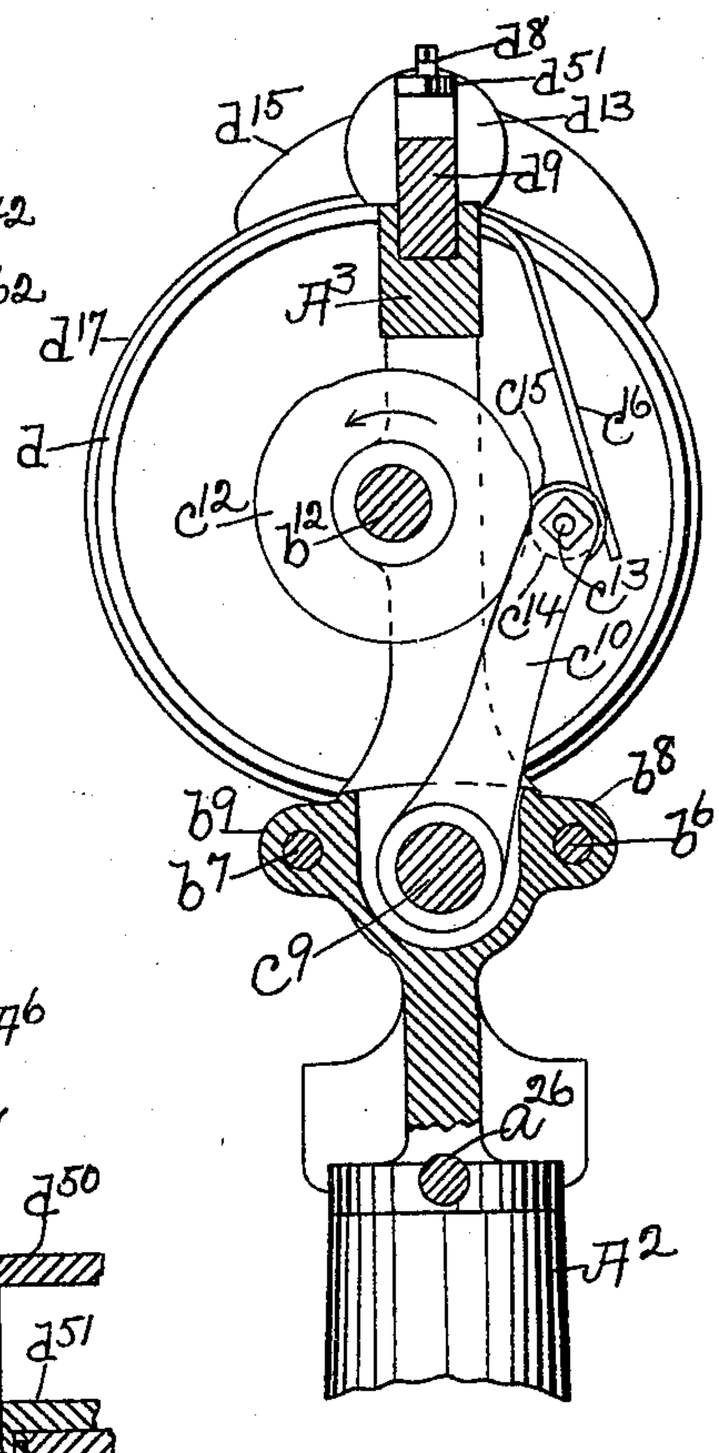

Fig. 9.

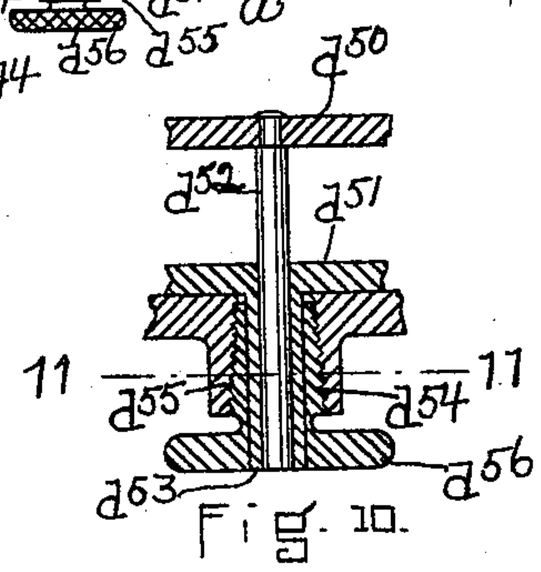

Fig. 10.

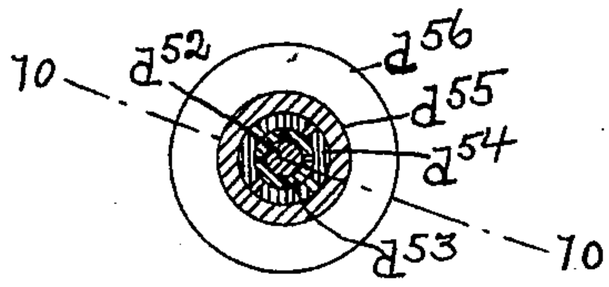

Fig. 11.

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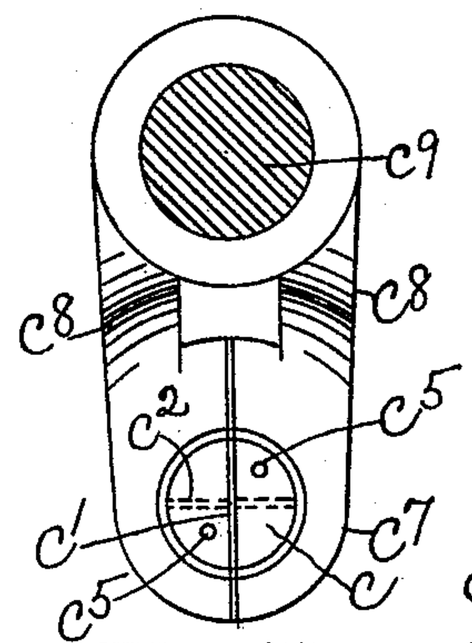

Fig. 15.

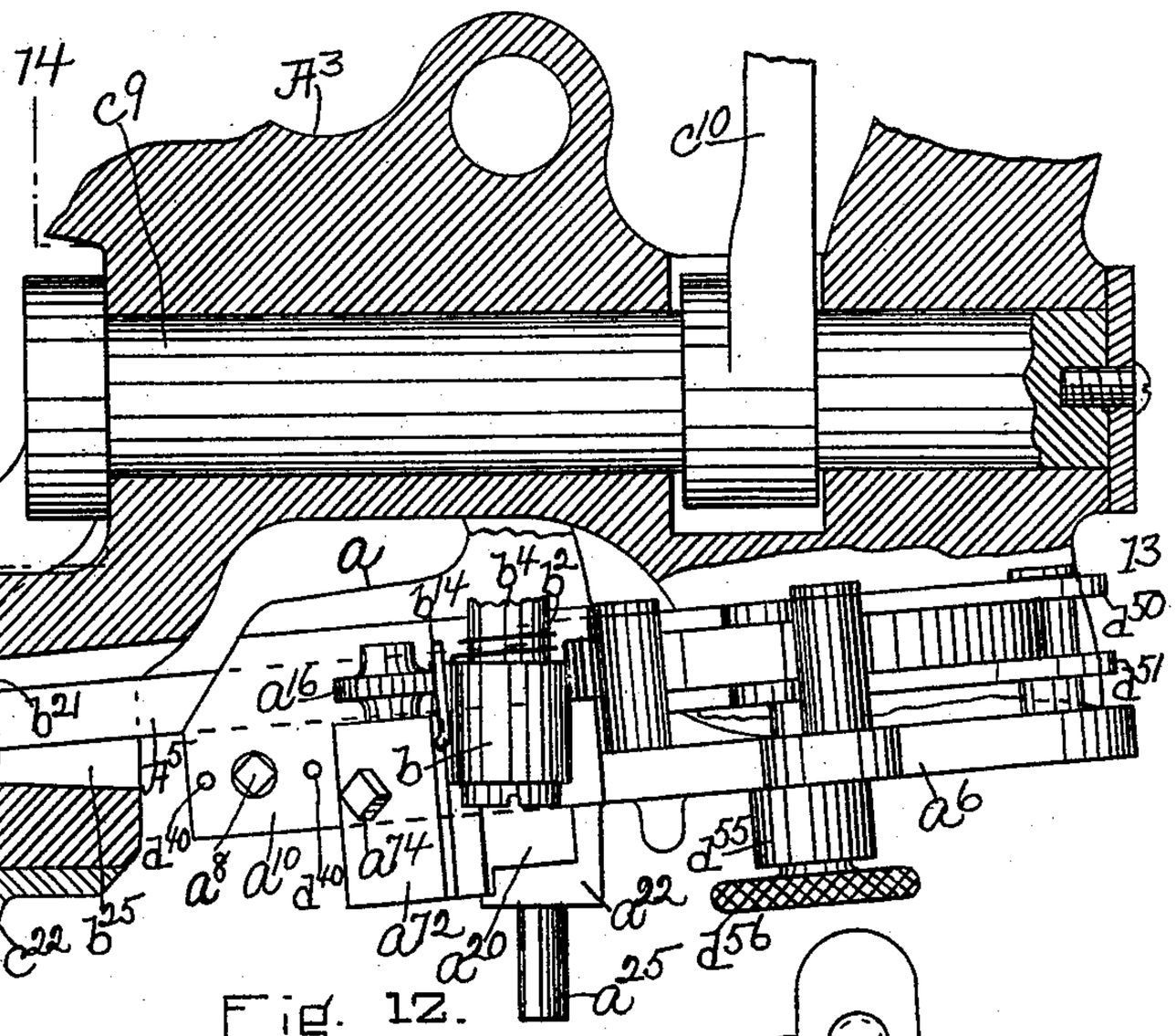

Fig. 12.

Fig. 14.

Fig. 16.

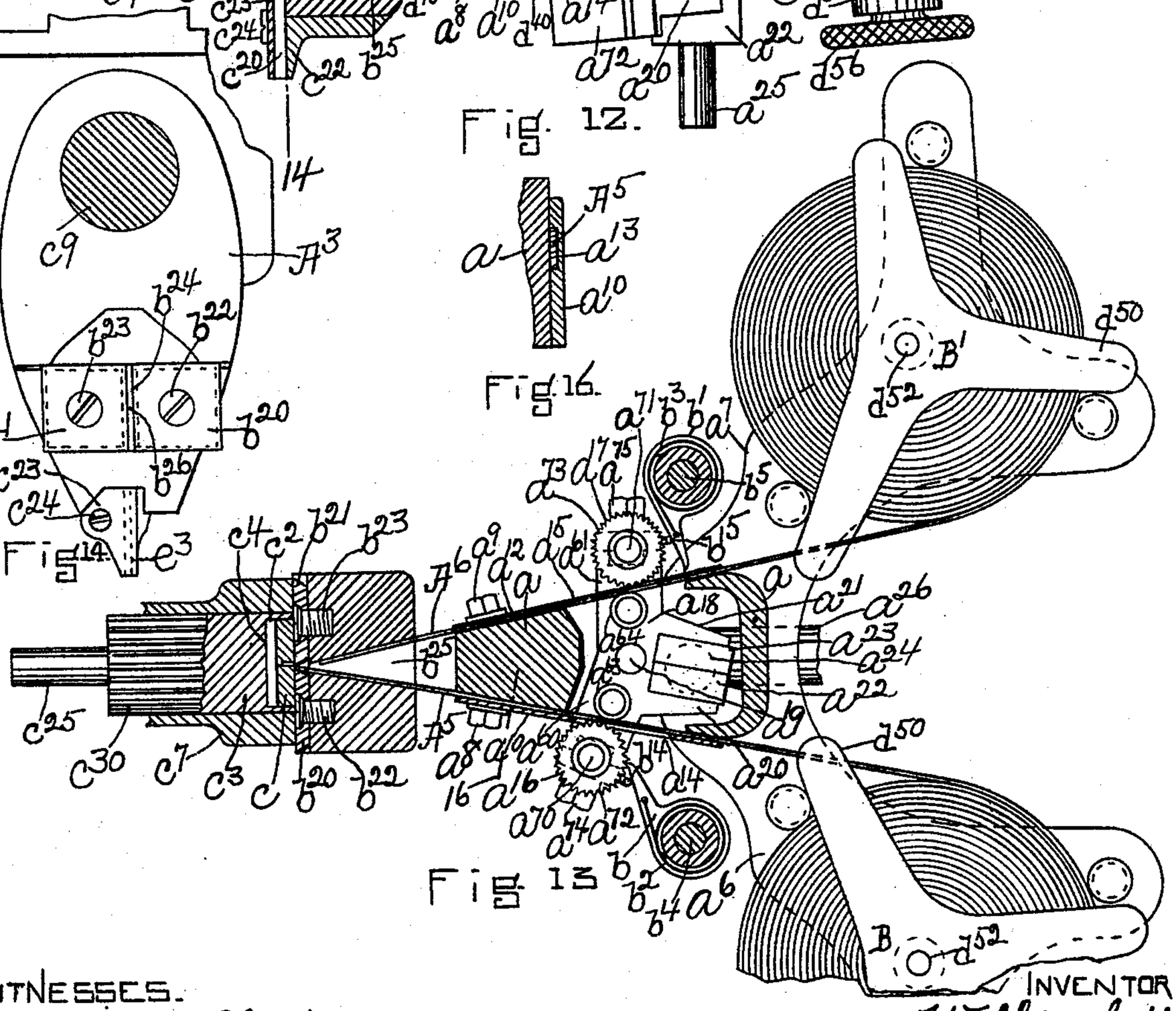

Fig. 13.

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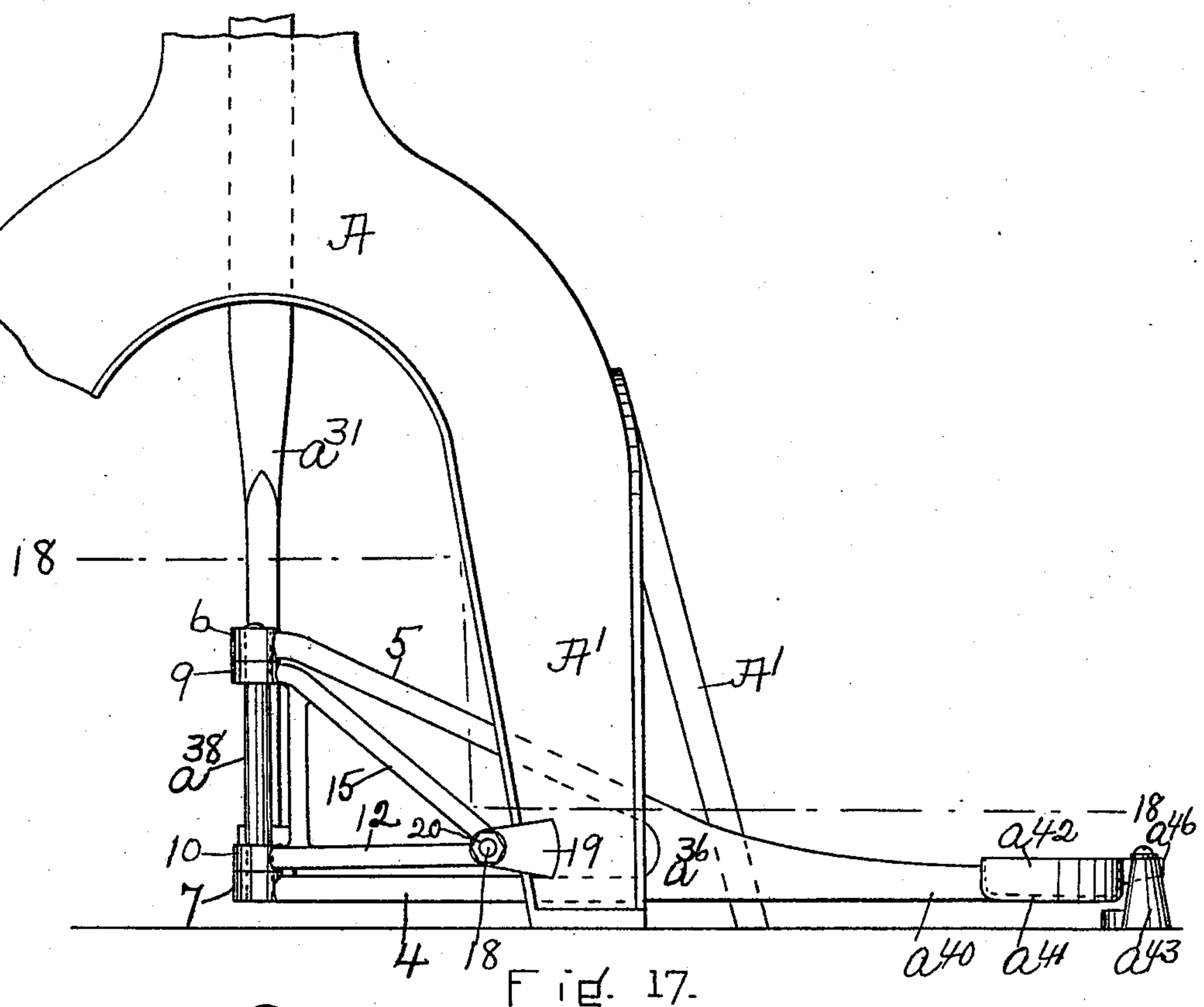

Fig. 17.

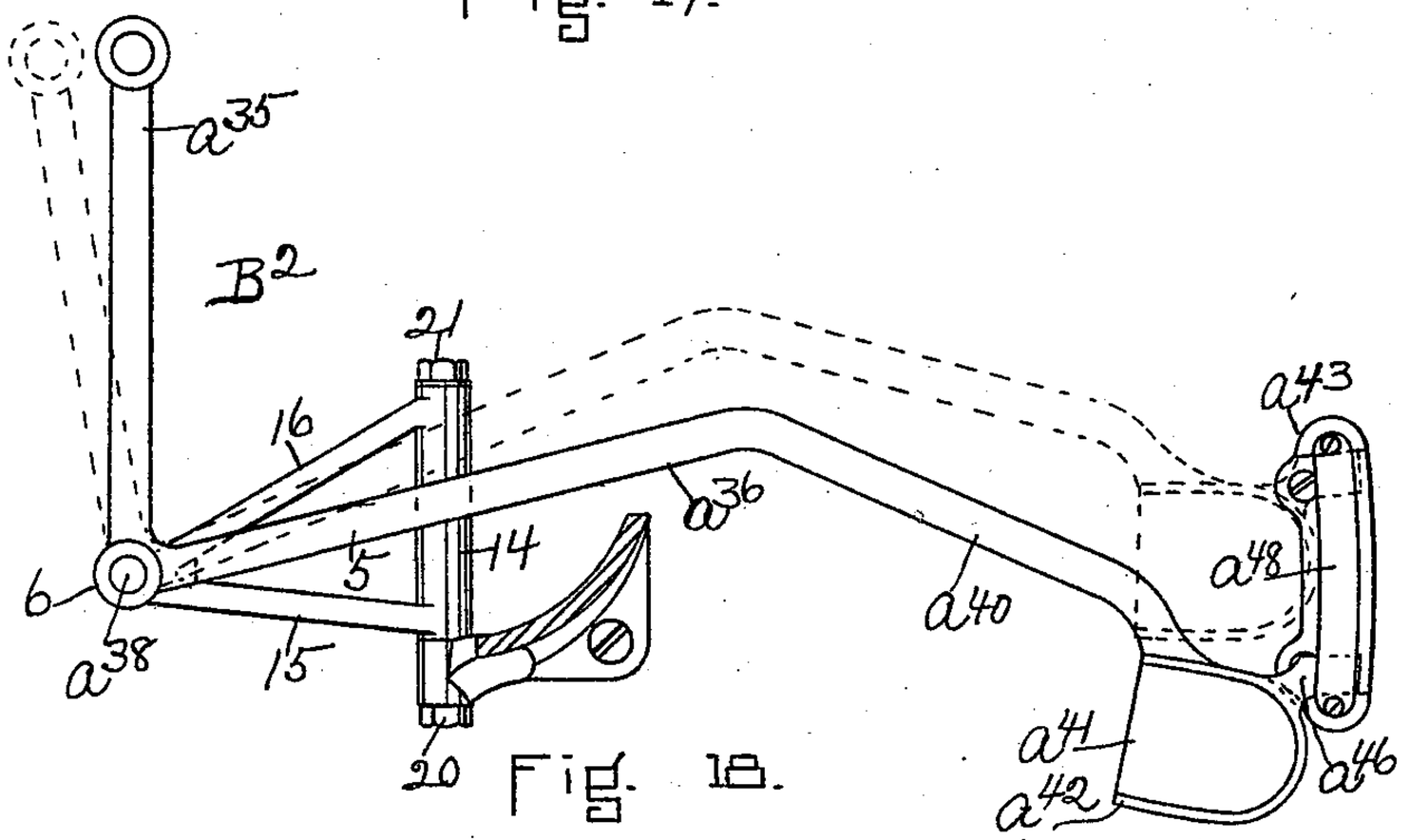

Fig. 18.

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UNITED STATES PATENT OFFICE.

WILLIAM GODDU, OF WINCHESTER, MASSACHUSETTS.

NAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 583,048, dated May 25, 1897.

Application filed September 19, 1896. Serial No. 606,376. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GODDU, residing in Winchester, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Nailing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to a machine or apparatus for inserting metallic fastenings into work, and is herein shown as embodied in a machine of that class commonly referred to as a "tacker," in which the tacks or nails are successively cut from a metal strip, ribbon, or band.

In accordance with this invention the strips from which the nails are formed are secured to a strip carrier or holder which is movable, as will be described, whereby the end of the nail-strip may be tilted or inclined with relation to a point substantially at the center of the strip near the cutters, so as to form tapered or pointed nails. The nail-strip holder or carrier referred to has coöperating with it a device or mechanism which I prefer to designate as a "strip-selecting" device, by which either of the nail-strips supported by the carrier or holder may be placed into what may be termed the "operative" position on the holder or carrier, so that while the selecting device remains in one position with relation to the strip carrier or holder one of the said strips is in position to be cut up into nails by a suitable cutting mechanism, as will be described, the nail-strip so positioned being fed forward by a feed mechanism, as will be described. The selecting device is under the control of the operator, and its position with relation to the strip carrier or holder may be changed at the will of the operator, so as to remove that strip which was previously positioned for making the nails from what may be termed its "operative" position, while the other strip supported by the said carrier or holder is by this movement of the selecting device placed into its operative position on the carrier or holder, so that, if desired, the nails may be cut or formed from the second strip on the further operation of the machine. The nail-strips referred to are movable longitudinally on their carrier or holder toward a suitable cutting mechanism, and each strip is provided, as herein shown, with its own feed mechanism, which may and preferably will be placed under the control of the strip-selecting device, so as to render the feed mechanism for a strip operative or inoperative, according to which strip is selected to be cut into nails. The nail-strip being longitudinally movable and inclined with relation to the cutting mechanism results in the machine herein shown in the nails alternately cut from the strip being formed with their points up, and in order to place the nail so cut into correct working position with the point down the machine herein shown is provided with a rotary cutter-carrier having a suitably-shaped cutter for the reception of the end of the strip formed into a nail, the said cutter-carrier being adapted to be rotated substantially one-half a revolution, so as to reverse the position of the alternately-cut nails and bring the said alternately-cut nails point down with their heads in line with the driver.

The cutting mechanism referred to may and preferably will be of a novel construction, as will be hereinafter more fully explained, and comprises a movable member, which in the present instance coöperates with a stationary cutter to form a guideway for the driver, which latter on its descent, as will be described, passes into the said guideway and forces the nail therein out of the guideway and preferably into a suitable nose, against which the boot or shoe or other material or work is held by the operator.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of the upper portion or head of a machine embodying this invention; Fig. 2, a side elevation of the supporting-base or lower portion of the machine shown in Fig. 1, one of the legs of the base being broken away, the said figure to be read in connection with Fig. 1; Fig. 3, a side elevation of the machine, looking at the opposite side from that shown in Fig. 1; Fig. 4, a front elevation of the head of the machine shown in Fig. 1, looking toward the right; Figs. 5 and 6, details in front elevation of parts of the machine shown in Fig. 4, occupying different positions, to be referred to; Fig. 7, a

vertical section of the machine shown in Fig. 1, the section being taken on the line 7 7; Fig. 8, a vertical transverse section of the machine shown in Fig. 1 on the line 8 8, looking toward the left, parts of the machine shown in Fig. 1 being omitted; Fig. 9, a vertical transverse section of the machine shown in Fig. 1 on the line 8 8, looking toward the right, with parts of the machine shown in Fig. 1 omitted; Fig. 10, a sectional detail, on an enlarged scale, of one of the strip-carrying reels; Fig. 11, a section on the line 11 11, Fig. 10, looking down; Fig. 12, a sectional detail, on an enlarged scale, of the front portion of the head of the machine to more clearly show the strip carrier or holder, the feed mechanism, and the cutting mechanism; Fig. 13, a horizontal section of the machine shown in Fig. 12 on the line 13 13; Fig. 14, a sectional detail on the line 14 14, Fig. 12, looking toward the right; Fig. 15, a detail to be referred to; Fig. 16, a sectional detail of one of the strip-guides; Fig. 17, a detail in elevation of the treadle mechanism to be referred to; Fig. 18, a detail in section and plan of the treadle mechanism shown in Fig. 17, the section being taken on the line 18 18.

The operative parts of the machine herein shown and which will be hereinafter fully described are supported or carried by a framework which comprises, as herein shown, a base A, provided with legs A′, a standard or upright A^2, and a head A^3, firmly secured on top of the said standard, as by screws A^4. (See Fig. 8.) The machine herein shown is especially designed to produce nails or tacks of different sizes from two nail strips or bands A^5 A^6, (see Fig. 13,) which are supported by a movable carrier or holder to be hereinafter described, the said nail-strips being assembled in the form of coils, as shown in Fig. 13, and retained upon the strip carrier or holder, as will be hereinafter described.

The strip-carrier referred to, as herein shown, consists, essentially, of a body portion a, having tapering sides, as shown in Fig. 13, and from which extend upwardly-curved arms a' a^2, (see Figs. 1, 3, and 4,) movable in segmental or curved guideways a^3 a^4, (see Figs. 5 and 6,) formed in the opposite sides of the front portion of the head A^3, the segmental or curved guideways being made in the arc of a circle having a center to be hereinafter described. The body portion a of the strip-carrier is provided with rearwardly-extended arms a^6 a^7, (see Fig. 13,) which carry suitable reels B B′ for the coils of the nail-strips, and the said reels are preferably of a construction as will be described. The body portion a of the strip-carrier has preferably secured to its inclined or tapering sides, as by screws a^8 a^9, guide-plates a^{10} a^{12}, preferably of the construction shown in Fig. 16, each of the said plates having a longitudinal channel a^{13} on its inner side of a width and depth substantially equal to the width and thickness of the nail-strip fed through the channel a^{13}, as will be described. The guide-plates a^{10} a^{12} are provided, as herein shown, with longitudinal slots or openings a^{14} a^{15}, (see Fig. 13,) through which project toothed wheels or rolls a^{16} a^{17}, having in the present instance the double function of gripping and feed rolls, as will be described. In accordance with this invention the strips A^5 A^6 are designed to be presented to the nail-forming mechanism or cutters, to be hereinafter described, by means of a feeding mechanism for each strip, and the particular strip presented to the cutting mechanism may be determined by the operator through the instrumentality of what I prefer to designate as a "strip-selecting" device, as will now be described.

The strip-selecting device herein shown comprises a lever a^{18}, (see Fig. 13,) pivotally secured at or near its center by a pivot pin or screw a^{19} to the under side of the body portion a of the strip-carrier, and the said lever is provided, as herein shown, with two rearwardly-extended arms, lugs, or projections a^{20} a^{21}, between which are inserted two clamping-plates a^{22} a^{23}, having on their contiguous sides substantially semicircular sockets or pockets, which coöperate to form a substantially spherical socket, in which fits a ball a^{24}, on the upper end of a stem or rod a^{25} to effect a universal joint or connection between the lever a^{18} and a rock-shaft a^{26}, from which the stem or rod a^{25} projects upwardly, the said rock-shaft being extended toward the rear side of the machine and having bearings in a lower part of the head A^3. (See Figs. 8 and 9.)

The clamping-plates a^{22} a^{23} are made of sufficient length to permit the arms a^{20} a^{21} on the lever a^{18} to slide up and down on the clamping blocks or plates a^{22} a^{23} when the movable strip-carrier is moved upward and downward, as will be described.

The rock-shaft a^{26} has secured to its rear end a cross arm or bar a^{27}, (see Fig. 7,) provided on its under side and on opposite sides of a vertical line through the center of the shaft a^{26} with two recesses or concavities a^{28} a^{29}, constituting practically two "cams," and which will be hereinafter referred to as such, and with which coöperates a roller a^{30}, carried, as will be described, by a rod a^{31}, connected, as herein shown, to a foot-treadle, as will be hereinafter described. The roll a^{30} is mounted in the forked end of a stem or rod a^{32}, which is yieldingly supported in a suitable socket in the upper end of the rod a^{31}, the spindle or rod a^{32} being normally pressed out of its socket in the rod a^{31} by a spring a^{33}, (see dotted lines, Fig. 7,) and the spindle or rod a^{32} is preferably made hollow for a portion of its length for the reception of the said spring to permit a substantially long spring to be used.

The rod a^{31} has its lower end connected to a treadle B^2 of novel construction, as will be described, and which I prefer to designate as a

"compound" treadle. The treadle B^2 is preferably made as shown in Figs. 2, 17, and 18, and comprises two members, one of which is movable in a substantially horizontal plane and is composed of an arm a^{35} and an arm a^{36} substantially at right angles to the arm a^{35}, and the said arms are preferably made triangular in shape, the arm a^{35} consisting of the substantially horizontal bar 2 and the inclined bar 3, to which are connected the substantially horizontal bar 4 and the substantially inclined bar 5 of the arm a^{36}, the inclined bars 3 5 of the said arms being united by a hub 6 and the bars 2 4 being united by a hub 7, the said hubs being fitted on a pivot-pin a^{38}, upon which the arms a^{35} a^{36} of one member of the treadle turn as a center in a substantially horizontal plane. The pivot pin or bar a^{38} also extends through hubs 9 10 of the second member of the compound treadle, the hubs 9 10 being located upon the pin or rod a^{38} between the hubs 6 7. The hubs 9 10 are connected by substantially horizontal arms 12, only one of which is shown in Fig. 17, to the hub or sleeve 14, (see Fig. 18,) to which the hub 9 is also connected by inclined bars or arms 15 16. (See Figs. 2 and 18.) The hub or sleeve 14 is loose on a stud, pin, or rod 18, herein shown as extended through a lug or ear 19 on one of the legs A' of the base A, the said pin or rod being secured to the lug or ear 19 by nuts 20 21.

The second member of the compound treadle just described is adapted to turn on the stud or pin 18 as a center in a substantially vertical plane, and on this movement in a vertical plane it will be noticed that the member of the compound treadle which moves on the pivot a^{38} in a substantially horizontal plane is movable in a substantially vertical plane as a stationary fixed body.

The movements of the compound treadle in substantially horizontal and vertical planes referred to may and preferably will be effected by the foot of the operator, and preferably with the heel, and to effect this result the arm a^{36} of the first member of the treadle is provided with an extension a^{40}, having at its end a heel-plate a^{41}, provided with an upturned flange a^{42}, forming substantially a socket into which the heel of the operator is adapted to be placed. The movement of one member of the compound treadle in a substantially horizontal plane is designed to effect the transfer of the cam-roller a^{30} from engagement with one cam-surface, as a^{28}, into engagement with the other cam-surface a^{29} of the strip-selecting device, and in order to limit the movements of the cam-roller a^{30}, and thereby positively retain the selecting device in the determined or chosen position until it is desired to positively change the same, I have provided a locking device for the member of the treadle movable in a horizontal plane.

The locking device referred to may and preferably will be made as hereinafter shown, (see Figs. 2, 17, and 18,) and consists, essentially, of a casting or block a^{43}, provided at or near its opposite ends with suitable depressions or sockets a^{44} a^{45}, into which an arm a^{46} on the heel-plate a^{41} is adapted to enter. The casting or block a^{43} is provided with a horizontal passage a^{47}, connecting the sockets or depressions a^{44} a^{45}, which passage is formed in the present instance by means of a removable top plate or bar a^{48}, secured to upwardly-extended outside walls of the sockets a^{44} a^{45} and coöperating with the central portion of the block or casting a^{43} between the said end walls. The sockets a^{44} a^{45} are separated by a space sufficient to enable the compound treadle to be moved in a horizontal plane such a distance as will effect the transfer of the cam-roller a^{30} from one cam-surface to another. The rod a^{31}, carrying the roller a^{30}, in the present instance has pivotally secured to it, as by a screw a^{50}, a clutch-operating bar a^{51}, which is designed to be moved in a vertical plane to effect the operation of a clutch mechanism, as will be described. The movement of the clutch-operating bar a^{51} is effected by a vertical movement of the compound treadle turning on the pivot or rod 18 as a center. The movement of the rock-shaft a^{26}, effected by the engagement of the roller a^{30} with one cam-surface, as a^{28}, turns the lever a^{18} into the position represented in Fig. 13, carrying one arm, as a^{60}, of the said lever forward and the other arm, as a^{61}, backward. The forward movement of the arm a^{60} of the lever a^{18} effects a bodily movement of the strip A^5 toward the front of the machine and brings the said strip into what may be termed its "operative" position, while at the same time the movement of the arm a^{61} of the lever a^{18} in a rearward direction carries with it the strip A^6 toward the rear of the machine and into what may be termed its "inoperative" position.

The bodily movement of the strips A^5 A^6 referred to may and preferably will be accomplished, as herein shown, by means of the feeding-rolls a^{16} a^{17}, extended through the slots a^{14} a^{15} in the guide-plates a^{10} a^{12} and engaging one side of the said strips, and the said feed-rolls preferably have coöperating with them on the opposite sides of the said strips antifriction-rolls a^{63} a^{64}, (see Fig. 13,) mounted upon suitable studs erected from the lever a^{18}. The feed-rolls a^{16} a^{17} are mounted upon suitable studs or pins a^{70} a^{71}, carried by bearing plates or bosses a^{72} a^{73}, (see dotted lines, Fig. 13,) adjustably secured to the arms of the lever a^{18} by means of suitable screws a^{74} a^{75}.

The movement of the nail-strips A^5 A^6 by means of the selecting device, as described, brings one of the said strips into what may be termed its "operative" position ready to be fed forward step by step, according as the nails are cut off from the end thereof. This forward feed of the nail-strips may and preferably will be effected by means of feed mech-

anism, consisting in the present instance of the feed-wheels a^{16} a^{17}, coöperating with spring-pressed pawls b b', adapted to engage the teeth of the feed-wheels a^{16} a^{17} and yieldingly held in engagement therewith by means of suitable springs b^2 b^3, the said pawls being loosely mounted upon the ends of suitable levers b^4 b^5, (see Fig. 4,) having their pivot-pins b^6 b^7 mounted in bosses and projections b^8 b^9 on the opposite sides of the head A^3. (See Figs. 1, 3, 4, and 8.) The feed-levers b^4 b^5 are adapted to be operated upon by suitable cam-surfaces on the periphery of a cam-disk b^{10}, loosely mounted on a shaft b^{12}, having bearings in the head A^3 and constituting in the present instance the main shaft of the machine, the said levers being kept in engagement with said cam-disk, as herein shown, by a spring b^{120}. (See Fig. 8.) In order to prevent the intermittent forward feed of the nail-strip, which is in its inoperative position, the pawls b b' are adapted to be disengaged from their coöperating feed-wheels a^{16} a^{17} by suitable devices carried by or movable with the lever a^{18} of the strip-selecting device, and in the present instance the disengaging devices are represented as upright arms or rods b^{14} b^{15}, (see Figs. 12 and 13,) secured to or forming part of the arms a^{60} a^{61} of the lever a^{18} and adapted to engage the pawls b b', so that when the selecting-lever a^{18} is turned into the position shown in Fig. 13 the pawl b' may be disengaged from its coöperating feed-wheel a^{17}, while the pawl b is permitted to be engaged with its coöperating feed-wheel a^{16} by its spring b^2. When the selecting-lever a^{18} is moved in the opposite direction, so that the arm a^{61} is brought forward and the arm a^{60} moved toward the rear of the machine, the pawl b will be disengaged from its coöperating feed-wheel a^{16} and the pawl b' engaged with its coöperating feed-wheel a^{17}. The cam-disk b^{10}, which operates upon the feed-levers b^4 b^5, is provided, as herein shown, with substantially diametrically opposite cam projections or surfaces b^{16} b^{17}, (see Fig. 8,) and it follows that on each revolution of the cam-disk in the machine herein shown both feed-levers are twice acted upon by the cam projections, and consequently a feed movement of the properly-positioned nail-strip is effected at each half-revolution of the cam-disk b^8, for a purpose as will be described.

In order to form pointed and headed nails or tacks from the nail-strips A^5 A^6, the strip-carrier is movable in the arc of a circle having its center at or about a point located substantially in the transverse center of the properly-positioned nail-strip and substantially in line with the cutting edges of suitable stationary cutters or knives b^{20} b^{21}, which are firmly but removably secured to the front portion of the head A^3, and in the present instance the stationary cutters or knives b^{20} b^{21} are secured by means of screws b^{22} b^{23}. The cutters b^{20} b^{21} are preferably made in the form of substantially square hardened plates, provided with inclined or beveled sides extended from the front surface to the rear surface of the said plates, so as to form four cutting edges, and the said cutters are secured to the head so as to leave a slot or nail-strip passage b^{24} between the adjacent cutting edges of the cutters, and through which slot or passage the positioned nail-strip is fed. The slot or passage b^{24} is narrowest at its front portion, as herein shown, and is gradually enlarged at its rear portion, and the enlarged portion of the slot coöperates with a substantially enlarged V-shaped passage or opening b^{25}, extended through the head, as represented in Figs. 12 and 13, the passage b^{25} tapering from the front side of the head toward the rear side, as shown in Fig. 13, and the side walls of the tapered slot b^{24} are substantially in line with the tapered sides of the body portion a of the nail-strip carrier, so that the nail-strips may be fed in a straight path from the carrier through the slot or passage b^{25} and into the slot or passage b^{24} between the knives. The nail-strip carrier is moved in the arc of a circle having its center substantially at or about the longitudinal center of the strip-passage b^{24}—namely, at or about the point marked b^{26}—and this movement inclines the end of the strip with relation to the front faces or cutting edges of the cutters b^{20} b^{21} so as to properly position the strip which is to be cut up into nails to obtain the desired taper on the portion projecting beyond the face of the cutters b^{20} b^{21} to form a tapered nail. The movement of the strip-carrier about the point b^{26} as a center may and preferably will be effected, as herein shown, by means of a suitable cam b^{30}, loosely mounted on the main shaft b^{12} and preferably integral with the cam-disk b^{10}, the cam b^{30} having a suitably-shaped cam-groove b^{31}, into which is extended a stud, roller, or projection on the long arm of the lever b^{32}, (see Fig. 1,) fast on a pivot-pin or shaft b^{33}, having bearings in the head A^3, and extended transversely to the opposite side of the said head, where it has fastened upon it, as by a clamping screw or bolt b^{34}, a lever or arm b^{35}. The lever b^{32} on one side of the head has its short arm provided with a segmental gear b^{36}, which meshes with gear-teeth b^{37}, made in the segmental arm a' of the strip-carrier, and the lever or arm b^{35}, fast on the shaft or pin b^{33}, is provided in a like manner with a segmental gear b^{38} in mesh with gear-teeth b^{39} on the segmental arm a^2.

By means of the cam-groove b^{31} of the cam b^{30} acting on the long arm of the lever b^{32} the pivot pin or shaft b^{33} is oscillated or rocked, so as to produce a rotary reciprocation of the segmental arms a' a^2 of the nail-strip carrier, and thereby move the body portion a of the said strip-carrier in a substantially vertical plane about the point b^{26} as a center, and consequently incline or tilt the end of the nail-strip, which is properly positioned with relation to the cutters and which is herein shown as the nail-strip A^5, so as to properly position

the said nail-strip to enable it to be formed into tapered nails when it has been fed forward by the feed mechanism. In the present instance the nail-strip A^5, on the forward movement or reciprocation of the strip-carrier in the direction indicated by the arrow 20, Fig. 1, is properly positioned to form the nail with the head portion up—that is, the said strip is positioned, as herein shown, so that when it is fed forward by its feed-wheel a^{16} the upper portion of the nail-strip will project farther beyond the front face of the stationary cutters than the lower portion, and the projecting end of the said nail-strip will be cut off and formed into a nail with the head up, in a manner as will be described. On the downward reciprocation of the strip-carrier in a direction opposite to the arrow 20 the lower portion or bottom edge of the nail-strip will be properly positioned, so that when it is fed forward the lower edge will project farther beyond the front face of the stationary cutters to form a nail with the head down. The stationary cutters have coöperating with them a movable cutter, preferably made as herein shown and consisting of a disk *c*, provided with a longitudinal slot *c'* (see Figs. 13 and 15) of a depth substantially equal to the width of the head of the nail to be formed. The disk *c* may be provided on its rear side with a like slot c^2, (see dotted lines, Fig. 15,) extended substantially at right angles to the slot *c'* on the front face of the said disk, so that when the front face of the disk *c* becomes worn the said disk may be reversed and the slot c^2 brought in line with the slot b^{24} between the stationary knives b^{20} b^{21}.

The movable cutter or knife *c* in accordance with this invention is designed to have two motions or movements, one a bodily movement across the slot b^{24} or lateral with relation to said slot, so as to shear or cut off the projecting portion of the nail-strip, and thereby form the nail. The second motion is a rotary motion to reverse the position of the nails alternately cut from the strip—that is, to reverse the position of those nails which are cut from the strip with their points upward. These motions of the movable cutter *c* may and preferably will be effected as will now be described.

In the present instance the movable cutter *c* is secured to a carrier, herein shown as a shaft or arbor c^3, (see Figs. 12 and 13,) the said shaft at what may be termed its "rear" end being provided, as herein represented, with a recess or socket c^4 of a depth substantially equal to the thickness of the movable cutting-disk *c*, so that when the cutting-disk *c* is placed into the said socket the front face of the cutting-disk may be substantially flush with the rear end or face of the shaft c^3.

The cutting-disk *c* may be detachably secured to its shaft or cutter-carrier c^3 in any suitable manner, and in the present instance the said disk is represented as provided with suitable holes substantially diametrically opposite, as represented in Fig. 15, which are adapted to fit over holding-pins c^5, projecting from the rear wall of the socket c^4 in the cutter-carrier. The cutter-carrier or shaft c^3 is mounted in an extension or hub c^7 of a crank or arm c^8, fast to a rock-shaft c^9, (see Figs. 1 and 12,) having bearings in the lower portion of the head A^3 of the machine, the said rock-shaft being provided, as herein shown, with a crank or arm c^{10}, adapted to be acted upon by a suitable cam-surface on the periphery of a cam-disk c^{12}, (see Figs. 1, 3, and 9,) which cam-disk is fast upon the main shaft b^{12}. In the present instance the crank or arm c^{10} carries at its upper end a stud or pin c^{13}, having mounted upon it an antifriction-roller c^{14} and a grooved wheel c^{15}, with which latter engages one end of a spring c^{16}, fast at its other end to the frame A^3, the said spring acting to keep the antifriction-roller c^{14} in engagement with the cam-disk c^{12}.

The cam-disk c^{12} may be designated the "cutting-off" cam, and at the proper time the said cam effects a rocking of the shaft c^9, so as to move the cutter-carrier c^3 a sufficient distance to completely sever the projecting portion of the nail-strip, which is located in the slot *c'* of the movable cutter, from the remaining portion of the nail-strip left in the passage b^{24}, substantially flush with the front faces of the stationary cutters. The movement of the cutter-carrier c^3 and its cutter *c* is such as to place both walls of the slot *c'* of the movable cutter *c* beyond the slot or passage b^{24} and into engagement with the face of one of the stationary cutters—as, for instance, the stationary cutter b^{23}—and thereby close the front end of the slot *c'* and transform the strip-receiving slot *c'* in the movable cutter into a closed guide for a driving-tool or driver c^{20} of suitable shape to enter the said guideway thus formed. The cutting-off cam c^{12} is of suitable shape to hold the cutter *c* stationary in the position just described—that is, in line with the driver—until the driver has descended through the slot *c'* and forced the nail properly positioned out therefrom and preferably through a suitable nose-piece c^{22}, secured to or forming part of the head A^3, the said nose-piece being preferably provided with a removable front plate c^{23}, which may be attached to the said nose-piece by a screw c^{24}.

From the description of the machine as thus far set forth it will be evident that the nails alternately cut from the properly-positioned strip, as A^5, have their points upward, and in order to properly position the nails thus formed with relation to the driver and the nose c^{22} the movable cutter and its carrier c^3 are made rotatable for substantially one-half a revolution, so as to reverse the position of the alternately-cut nails before the driver descends to force the same into the work. This semirotation of the movable cutter *c* may and preferably will be effected as herein shown and as will now be described.

The cutter-carrier c^3 is provided at one end

with a journal c^{25}, (see Figs. 12 and 13,) preferably supported in an adjustable bearing, herein shown as a socketed screw c^{26}, which is extended into a preferably split end of the hub c^{7}, the said split end being provided with a threaded socket into which the hollow shank of the screw c^{26} extends and abuts against the end of the cutter-carrier or shaft c^{3}, so as to move the cutter-carrier c^{3} longitudinally in its bearing-hub c^{7}, and thereby effect the adjustment of the movable cutter c with relation to the stationary cutter to take up the wear upon the said cutters. The cutter-carrier or shaft c^{3} is provided on its periphery for a portion of its length with gear-teeth c^{30}, with which mesh a segmental gear c^{31} on the end of a pivoted lever or arm c^{32}, (see Figs. 1, 4, and 5,) the said lever being provided, as herein shown, with a hub c^{33}, which is fitted upon a pin c^{34}, extended from the front face of the head A^{3}. The lever c^{32} is adapted to be acted upon by a suitable cam, which will effect oscillation of the lever c^{32} on its pivot c^{34}, and thereby effect an oscillation or rotary reciprocation of the carrier for the movable cutter. In the present instance the lever c^{32} is shown as provided with an arm c^{35}, (see Figs. 3 and 5,) having a boss or hub c^{36}, through which is extended a stud or pin c^{37}, carrying at one end a suitable roll, which enters a cam-groove c^{38} in the face of a cam-disk c^{39}, mounted on a shaft c^{40}, having bearings in a boss or arm c^{41}, extended from one side of the head A^{3}. The cam-disk c^{39}, as herein shown, is provided on its periphery with a gear c^{42}, which meshes with a gear c^{43}, (see Fig. 4,) fast on the main shaft b^{12}. The gear c^{43} may and preferably will be secured to or form part of a disk, head, or enlargement c^{44} on the main shaft, having at its end a lifting cam or projection c^{45}, which is designed in the rotation of the main shaft to elevate the driver-carrying bar c^{46}, which is vertically movable in the front portion of the head A^{3} and is provided with a cross-head or block c^{47}, (see Figs. 4 and 5,) which is extended into the path of movement of the lifting-cam c^{45}. The lifting-cam c^{45} is designed to elevate the driver-bar at the proper time and hold it elevated until the nail severed from the properly-positioned strip is placed into proper position to be driven into the stock or work, and the said lifting-cam is suitably shaped, as common to machines of this class, to permit of the descent of the driver-bar c^{46} at the proper time, which descent may and preferably will be effected, as herein shown, by means of a suitable spring, shown as a bent wire rod c^{50}, having one end engaging an antifriction-roller c^{51}, carried by the head c^{52} on the driver-bar, and having its other end secured in an adjustable support, shown as the socketed arm c^{54} of a lever c^{55}, pivoted, as at c^{56}, to the head of the machine and having its arm c^{57} engaged by an adjustable stop or screw c^{58}. The bent wire rod c^{50} may be secured in the socketed arm c^{54} by a set-screw c^{60}. (See Fig. 1.) As previously explained, the gear c^{43} is fast on the main shaft b^{12} and meshes with the gear c^{42}, which in the present instance is provided with twice as many teeth as the gear c^{43}, so that for each complete revolution of the main shaft the gear c^{42} will be moved one-half a revolution, as the reversal of the movable cutter c takes place once in every two revolutions of the main shaft.

The gear c^{42} has secured to it a gear c^{62}, (see Figs. 1 and 3,) which is provided with one-half as many teeth as the gear c^{42}, and the gear c^{62} meshes with a gear c^{63}, secured to or forming part of the cam-disk b^{30}, which effects the reciprocation of the nail-strip carrier in a vertical plane to effect a tilting of the nail-strips in a vertical plane. The gear c^{63} is provided with the same number of teeth as the gear c^{62}, and both of these gears are provided with the same number of teeth as the gear c^{43}, fast on the main shaft.

It will thus be seen that for each complete revolution of the main shaft the gears c^{43}, c^{62}, and c^{63} will make a complete revolution, while the gear c^{42} will make but one-half a revolution. The rotation of the main shaft b^{12} may and preferably will be effected by means of a normally loose pulley d, which may be supposed to be constantly driven and which is adapted to be engaged with a coöperating disk or wheel d', fast on the main shaft b^{12}, the said loose pulley being adapted to be engaged with the disk or wheel d' by a clutch mechanism, preferably of the construction herein shown, it consisting of a collar d^{2}, loose on the main shaft and having at its opposite sides beveled faces d^{3}, with which cooperate correspondingly beveled faces d^{4} on arms d^{5} d^{6} of a fork or yoke secured to or forming part of the bar a^{51}, (see Fig. 7,) the arm d^{6} of the yoke or fork being provided with an extension d^{7}, connected, as by a bolt or screw d^{8}, to a brake-lever d^{9}, pivoted in a slot in the upper surface of the head A^{3}, as at d^{10}, (see Fig. 1,) and having its long arm d^{12} provided with a roller d^{13}, which is adapted to enter a suitable depression or cam-recess d^{14} in the periphery of the disk d', the said long arm of the lever d^{9} having also secured to it a brake-shoe d^{15}, preferably made substantially V-shaped, to enter a V-shaped slot d^{16} in the periphery of a brake-wheel d^{17}, secured to or forming part of the disk or wheel d'. The screw-rod d^{8} is extended through the brake-lever d^{9} and yet secured thereto in any suitable manner as will permit the lever d^{9} to be turned slightly on its pivot, and as herein shown (see Fig. 1) the screw-rod d^{8} is extended through a ball d^{50} and an externally-threaded nut or sleeve d^{51}, inserted into a threaded socket in the lever d^{9} to confine the ball d^{50} in its socket, yet permit the lever d^{9} to be turned on its pivot and effect a movement of the rod d^{8} and the clutch-rod a^{51} in a straight line. The lever d^{9} is adapted to be turned on its pivot in one direction by a suitable spring d^{52}, (see Fig. 3,) which is located in a suitable recess or socket d^{53} in the head A^{3} and acts on the

under side of the short arm d^{20} of the lever. The cam-recess d^{14} in the periphery of the disk d' coöperates with the roller d^{13}, so as to permit the brake-lever d^{9} to be turned on its pivot, and thereby engage the brake-shoe d^{15} with its coöperating brake-wheel d^{17} when it is desired to stop the rotation of the main shaft b^{12}. The clutch-rod a^{51} may and preferably will be positively connected to the brake-lever d^{9}, as herein shown, so that up movement of the clutch-rod a^{51} will elevate the long arm of the brake-lever d^{9} sufficiently to raise the roller d^{13} out of its coöperating recess in the disk or wheel d' and at the same time effect the engagement of the loose pulley d with the disk or wheel d' to set the main shaft in rotation.

The roller b^{13} rides upon the full periphery of the disk d' and serves to maintain the loose pulley in engagement with the disk d', thereby permitting the operator to remove his foot from the treadle, and the positive connection of the brake-lever with the clutch-rod a^{51} also positively disengages the forked members d^{5} d^{6} of the clutch from the loose member d^{2} when the roll d^{13} enters its coöperating recess in the disk d'. The clutch-rod a^{51} is movable in suitable guides, shown in the present instance as lugs or arms d^{30} d^{31}, (see Figs. 1, 3, and 7,) extended from the rear side of the head A^{3}, and the said lugs or arms and the opposite sides of the clutch-rod a^{51} may and preferably will be provided with longitudinally-extended guiding-teeth, flutes, or ribs d^{35}. The guide-plates a^{10} a^{12} for the nail-strips A^{5} A^{6} may and preferably will have their channels a^{13} of a width substantially equal to the width of the strip which is to be fed through them, and each width of strip may and preferably will have its own guide-plate, and therefore the said guides are made detachable from the head A of the strip-carrier, and the said guides may be provided with suitable holes on opposite sides of the fastening-screws a^{8} a^{9}, into which project suitable pins or studs d^{40} on the side of the head A^{3}.

In order to facilitate the feed of the nail-strips with the least possible friction, the coils of the strips are preferably located so that the transverse center of each strip will be in a substantially straight line with the center point b^{26} of the slot b^{24}, through which the strip is fed, and to effect this result the guide-plates a^{10} a^{12} are detachably secured to the strip-carrier and the reels B B′ are preferably made as herein shown. Each reel consists in the present instance of an upper member d^{50} and a lower member d^{51}, (see Fig. 10,) each member, as shown in Fig. 13, comprising three radiating arms. The member d^{50} is supported by a rod or spindle d^{52}, which is extended down through an opening in the member d^{51}, which latter is provided with a longitudinally-split hub d^{53}, adapted to be engaged by a longitudinally-split nut d^{54}, tapering on its outer side and screw-threaded to engage a screw-threaded boss or projection d^{55} on the under side of its supporting-arm, either a^{6} or a^{7}, the split nut d^{54} being provided with a suitable head d^{56}.

By reference to Fig. 10 it will be seen that by unscrewing the nut d^{56} the upper member d^{50} of the reel is rendered loose and may be adjusted vertically with relation to the lower member d^{51}, and therefore in practice the coil of the wire strip may be placed upon the lower member d^{51}, and the spindle d^{52} of the upper member may then be inserted down through the center of the coil and into the split hub d^{53} of the lower member, after which the tapered end d^{54} may be inserted into its threaded socket in the boss d^{55}, and the upper and lower members d^{50} d^{51} of the reel, after being brought substantially into contact with the opposite edges of the strip or coil, may be raised as one piece, so as to correctly position the coil with relation to the center b^{26} of the slot or passage-way b^{24}, and when correctly positioned the reel may be fastened in this position by turning up the split tapered nut d^{54}, and as the tapered nut enters its tapered socket its split sides are contracted, and, acting on the split hub d^{53}, contracts it about the spindle d^{52} and firmly secures the spindle d^{52} and the split hub d^{53} to their supporting-arm, either a^{6} or a^{7}.

The operation of the strip-tacker herein shown may now be briefly described as follows: Let it be assumed that the machine is at rest and has just finished driving a nail through the nose c^{22}, and also let it be assumed that the nail-strips A^{5} A^{6} are in the position represented in Fig. 13, and, further, that it is desired to form a nail from the strip A^{5}. In the supposed case the treadle occupies the position represented by full lines in Figs. 2, 17, and 18 and the strip-selecting device occupies the position represented in Figs. 7 and 13. The machine is now in condition to be started, which is effected by the operator depressing the heel-plate a^{41}, moving the lug or finger a^{46} down into the socket a^{45}, and by such movement turning the treadle in a vertical plane on the rod 18 as a center. This movement of the foot-treadle elevates the rod or bar a^{31} and also the attached clutch-rod a^{51}, and the parts a^{31} a^{51} are moved upward a sufficient distance to operate the clutch members and engage the loose pulley d with the fast pulley or disk d', at the same time releasing the brake-lever d^{15} from engagement with its brake-shoe d^{17}. The selecting device being in proper position is not affected by the upward movement of the rod a^{31}, which on its upward movement compresses the spring a^{33}, as the cross-bar a^{27} is in engagement with one of the stops or pins e e', which project outward from the head A^{3} above the cross-bar a^{27} and serve to limit the rocking movement of the shaft a^{26} in opposite directions.

The machine is set in motion, as just described, and the driver-bar is elevated against the action of its spring c^{50}, so as to lift the driver c^{20} above the nail-strip passage or slot

b^{24} and into the position shown in Fig. 5. The driver is then held in its elevated position by its lifting-cam while the other operations of the machine are taking place. As soon as the driver c^{20} has been elevated, as just described, the rock-shaft c^9 is first acted upon to bring the movable cutter c and its cutter-carrier and the hub c^7, supporting the same, back into their normal or starting position to place the slot c' in the movable cutter substantially into line with the passage b^{24} between the stationary cutters, which return movement of the movable cutter c will be more specifically described hereinafter. The parts of the machine are now in position to effect the entrance of the nail-strip A^5 into the slot c' into the movable cutter, and, as herein shown, the strip-carrier is shown in its lowered position, from which it is moved upward in a substantially vertical plane to tilt the nail-strip A^5 with relation to the front faces of the stationary cutters b^{20} b^{21}, so as to properly position the said strip preparatory to forming a tapered nail with the head upward. The movement of the strip-carrier is effected, as above described, by means of the cam-groove b^{31} acting on the roller or projection carried by the lever b^{32}, which cam-groove is so shaped that during one-half the revolution of the cam-disk b^{30} the lever b^{32} will be moved forward, or in the direction indicated by the arrow 20, Fig. 1, which movement of the lever produces a rocking movement of the shaft b^{33} and by means of the segmental gears b^{36} b^{37} b^{38} b^{39} moves the segmental arms a' a^2 in their guideways in the direction indicated by the arrow 20, Figs. 1 and 3.

At or about or during the time the nail-strip carrier is moved upward in the direction indicated by the arrow 20 the nail-strip A^5 is moved forward through the slot or passage b^{24} beyond the front faces of the cutters or knives b^{20} b^{21} and into the slot c' of the movable cutter c. This feed or movement of the nail-strip A^5 is effected, as above described, by the feed-cam b^{10} acting on the feed-lever b^4 so as to move the said lever on its pivot b^6 and carry its lower end toward the strip A^5 to cause the pawl b, carried by the said lever, to turn the feed-roll a^{16} the distance of one or more teeth, so as to feed the nail-strip A^5 a distance sufficient to form one nail. The nail-strip A^5 is fed by its feed-wheel or roll a^{16} through the slot or passage b^{24} into the slot c' in the movable cutter c, and when the end of the strip projecting beyond the faces of the stationary cutters b^{20} b^{21} is in the slot c' in the movable cutter c the said movable cutter is carried bodily across or laterally with relation to the passage b^{24} by the cutter-operating cam c^{12} acting on the roller c^{14}, carried by the crank or arm c^{10} on the rock-shaft c^9. During this bodily or lateral movement of the movable cutter the crank or arm c^8 and its attached head c^7, which carries the cutter-carrier c^3, is moved from substantially the position shown in Fig. 6 into that shown in Figs. 4, 5, and 13—namely, into a position which brings the slot c' into line with the driver and the passage e^3 in the nose-piece c^{22}, the said passage being indicated by dotted lines in Fig. 14. At or about the time the movable cutter is positioned in line with the driver c^{20} the latter descends through the guide or throat formed by the movable cutter c and the stationary cutter b^{21} and forces the nail or tack in the slot c' down into and through the throat or passage e^3 in the nose c^{22}. The driver c^{20} is then elevated, as above described, and the rock-shaft c^9 is moved by the spring c^{16} back into its normal position, so as to bring the slot c' substantially into line with the passage b^{24}. During this return movement of the movable cutter the cutter-carrier c^3 has imparted to it a very slight rotary movement, (owing to the fact that the rock-shaft c^9 is moved a slight distance,) so as to carry the hub c^7, attached to it, from the position shown in Fig. 4 to that shown in Fig. 6. During this movement of the hub c^7 the lever c^{22}, being in engagement with the cutter-carrier, imparts a very slight rotary movement to the cutter-carrier c^3, which rotary movement imparts a corresponding rotary movement to the movable cutter c and turns the same so that the slot c' is slightly inclined with relation to the strip-passage b^{24}, but this inclination of the slot c' does not deviate from the perpendicular passage b^{24} sufficiently to impede or interfere with the entrance of the nail-strip into the slot c'. This inclination of the slot c' in the movable cutter c is corrected in the movement of the hub c^7 from the position shown in Fig. 6 to that shown in Fig. 4, when the movable cutter c is positioned in line with the passage in the nose c^{22} and in line with the driver c^{20}. The nail having been cut from the strip A^5 with the head up and driven into the stock, as above described, and the driver having been lifted and the movable cutter brought into its normal or starting position with the slots c' in line with the passage b^{24}, the nail-strip carrier is returned from its elevated to its lowered position by means of the cam-groove b^{31}, as previously described, and the nail-strip A^5 is tilted vertically about the point b^{26} as a center, so as to position the nail-strip correctly for forming a tapering nail with the head formed from the lower edge of the nail-strip, and at or about or during the return movement of the nail-strip carrier the forward feed of the nail-strip takes place through the same mechanism as above described, and the nail-strip is fed into the slot c' with its widest portion, which is to form the head of the nail, at the bottom of the slot. The slotted carrier c is then moved bodily to shear the nail from the strip A^5 and to position the slot c' with relation to the slot in the nose-piece c^{22} and with the driver c^{20}, but in this instance, if provision were not otherwise made, the point of the nail would be up and its head down, but at or about the time or during the movement of the hub c^7, the cut-

ter-carrier c^3, and the cutter c from the normal or starting position into the position just described in line with the driver c^{20}, or it may be after such movement is completed, the cutter-carrier c^3 is given a half turn or revolution, so as to reverse the position of the cut nail with relation to the driver and nose-piece, which rotary movement of the cutter-carrier c^3 is effected, as above described, by means of the cam-groove c^{38} in the disk c^{39} acting on the lever c^{32} so as to turn the said lever from the position shown in Fig. 4 to that shown in Fig. 5, and thereby impart a half-rotation to the cutter-carrier c^3. The cutter-carrier, when thus properly positioned, presents the head of the nail, which has been previously formed with its point up, to the driver, which then acts to drive the said nail into the work. The nail just cut having been driven, the driver is lifted and the lever c^{32} is returned to its normal position, (shown in Fig. 4,) which turns the cutter-carrier c^{31} one-half revolution back into its previous position, and also the rock-shaft c^9 is moved, as above described, so as to place the slot c' of the movable cutter again substantially into line with the strip-passage b^{24}.

The machine repeats the operation described upon the strip A^5 as long as it is desired to make the nails from the strip A^5, but when it is desired to cut and drive a nail of a different length from that cut from the strip A^5, either a shorter or a longer nail, as the case may be, the operator releases the pressure of the heel or foot upon the foot-plate a^{41} and places the rotation of the main shaft under control of the brake mechanism, which is engaged with the brake-wheel d^{17}, when the recess or depression in the fast disk d' is brought beneath or in line with the roller d^{13}, so as to permit the brake-lever d^9 to be turned by its spring and engage the brake-shoe d^{15} with its brake-wheel. The machine is thus momentarily stopped and may be again started substantially in an instant to work on the strip A^6, cutting the nails therefrom, and drive these nails into the work. This result is effected, as herein shown, by the operator turning the heel-plate and the compound treadle to which it is attached in a substantially horizontal plane from the full-line position to that indicated by the dotted lines in Fig. 18, and during this horizontal movement the strip-selecting member of the compound treadle is turned in a horizontal plane and the bar or rod a^{31} is moved, so as to withdraw the roller a^{30} (see Fig. 7) from engagement with the cam-surface a^{28} on the cross-bar a^{27} and carry it by the center of the rock-shaft a^{26} and into engagement with the cam-surface a^{29}, thereby rocking the shaft a^{26} in its bearings by means of the intermediate connection between it and the lever a^{18} until the cross-bar a^{27} strikes the pin or stop e', the rocking of the shaft a^{26} turning the lever d^8 on its pivot a^{20}, so as to move the arm a^{61} of the lever forward toward the cutting mechanism and the arm a^{60} of the said lever backward toward the rear of the machine, viewing Fig. 13. While this movement of the lever a^{18} is taking place, the nail-strips A^5 A^6 are gripped or engaged by the feed-rolls a^{16} a^{17}, coöperating with the antifriction-rolls a^{63} a^{64}, and the said strips are moved bodily with the said feed-rolls and in the same direction—that is, the strip A^6 is moved forward into the V-shaped opening between the cutters b^{20} b^{21} and the strip A^5 is moved backward out of the V-shaped opening, which is of sufficient width to readily permit the passage of the ends of the strips one by the other without interference. The nail-strip A^6 is now placed in its operative position and the nail-strip A^5 into its inoperative position, and the nail-strip A^6 remains in its operative position as long as the compound treadle occupies the position shown by dotted lines in Fig. 18. The machine is now in condition to be started, which is effected by the operator depressing the foot-treadle, so as to lower the foot-treadle and move the finger a^{46} into the slot a^{44}.

The slots a^{44} a^{45} permit of a downward movement of the foot-treadle after the selecting device has been properly positioned, and these slots and the passage a^{47} in the block or casting a^{43} enable the foot-treadle to be moved in a horizontal direction by the operator without paying special attention to the position of the strip-selecting device and particularly the roll a^{30}, as by means of the slots a^{44} a^{45} and the extended side walls of the same two positions are left for the option of the operator into which he can move the treadle and effect a change of position of the selecting device and thereby of the nail-strips.

The guide-plates a^{10} a^{12} are also formed and properly positioned on the strip-carrier, so as to maintain the transverse center of the strips in a straight line with the center of oscillation of the strip-carrier.

I claim—

1. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier, a nail-cutting mechanism to act on each of the nail-strips, and a strip-selecting device coöperating with the multiple strip-carrier and acting on the nail-strips to move the same on the said carrier toward and from the cutting mechanism, and move the selected nail-strip into operative position with relation to the said cutting mechanism, and to remove the other nail-strip away from and into an inoperative position with relation to said cutting mechanism, substantially as described.

2. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a nail-strip carrier movable in a substantially vertical plane to incline or tilt a nail-strip carried thereby, and alternately project the upper and lower edges of the strip beyond the center of the said strip, a feed mechanism independent of the

nail-strip carrier to effect a bodily movement of the said nail-strip on the said carrier, a cutting mechanism to sever a nail from the said strip, and a driver to act on the said nail, substantially as described.

3. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a nail-strip carrier movable in a substantially vertical plane to incline or tilt a nail-strip carried thereby and alternately project the upper and lower edges of the strip beyond the center of the said strip, a feed mechanism to effect the forward movement or feed of the said nail-strip, and a cutting mechanism to sever a nail from said strip provided with a revoluble member adapted to carry the cut nail and reverse its position with relation to a driver, and the said driver, substantially as described.

4. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a nail-strip carrier movable in a substantially vertical plane to incline or tilt a nail-strip carried thereby, a feed mechanism to effect the forward movement or feed of the said nail-strip, and a cutting mechanism to sever the nail from the said strip and provided with a movable member having a lateral or bodily movement and a rotary movement, substantially as and for the purpose specified.

5. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier movable in a substantially vertical plane, a rotatable shaft, means to operatively connect said multiple strip-carrier with said shaft, a clutch mechanism to control the rotation of said shaft, a strip-selecting device coöperating with said multiple strip-carrier, and a compound-treadle mechanism comprising two connected members, one of which governs the operation of the strip-selecting device and is movable in a substantially horizontal plane, and the other member of which governs the clutch mechanism and is movable in a substantially vertical plane, substantially as described.

6. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a stationary cutter, a movable cutter constructed to receive the end of a nail-strip, a rotatable carrier for said movable cutter, a support for said rotatable cutter-carrier movable bodily with relation to the said stationary cutter to sever the portion of the nail-strip carried by the rotatable cutter to form the nail, and means to rotate said movable cutter-carrier to reverse the position of the cut nail, substantially as described.

7. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier, feed mechanism for said nail-strips carried by said carrier, a strip-selecting device coöperating with said multiple strip-carrier to move said nail-strips bodily in opposite directions and thereby place one of the said nail-strips in its operative position and remove the other nail-strip from its operative position, disengaging devices for said mechanisms actuated by the strip-selecting device to render inoperative the feed mechanism for the nail-strip which is not to be cut into nails, and a cutting mechanism to cut a nail from the operatively-positioned nail-strip, substantially as described.

8. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier movable in a substantially vertical plane, a rotatable shaft, means to operatively connect said multiple strip-carrier with said shaft, a clutch mechanism to control the rotation of said shaft, a strip-selecting device coöperating with said multiple strip-carrier, and a compound-treadle mechanism comprising two connected members, one of which governs the operation of the strip-selecting device and is movable in a substantially horizontal plane, and the other member of which governs the clutch mechanism and is movable in a substantially vertical plane, and means to control or determine the extent of the horizontal movement of the said treadle, substantially as described.

9. The herein-described treadle mechanism comprising two members, one of which is pivoted to the other to turn in a substantially horizontal plane, and the other member of which is pivoted to turn in a substantially vertical plane and is connected to the first member to carry the first member with the second member in its movement in a substantially vertical plane, substantially as described.

10. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier movable in a substantially vertical plane, a rotatable shaft, means to operatively connect said multiple strip-carrier with said shaft, a clutch mechanism to control the rotation of said shaft, a strip-selecting device coöperating with said multiple strip-carrier, and a compound-treadle mechanism comprising two connected members, one of which is movable in a substantially horizontal plane independent of the second member and connected to said second member to move with it in a substantially vertical plane, a rod or bar connected to the horizontally-moving member and acting on the strip-selecting device, and a rod or bar pivotally connected to the first rod or bar and acting on the said clutch mechanism, substantially as described.

11. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier, a strip-selecting device coöperating therewith and comprising a lever pivotally attached to the said strip-carrier, a rock-shaft and an intermediate connection between

said rock-shaft and said lever, and means to operate said rock-shaft, substantially as described.

12. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a stationary cutter, a movable cutter, a rotatable carrier for said movable cutter, a support for said rotatable cutter-carrier movable bodily with relation to said stationary cutter, and means to move said cutter-carrier in its support to adjust it with relation to the stationary cutter, substantially as described.

13. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a stationary cutter, a movable cutter coöperating therewith and consisting of a metal piece provided with a slot normally in line with the edge of the stationary cutter to permit the end of a metal strip or band to be inserted therein, means to move the said slotted cutter bodily with relation to the stationary cutter to sever the portion of the strip in its slot from the remaining portion of the strip and form a nail, and means to produce partial rotation of the said movable cutter, substantially as and for the purpose specified.

14. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a movable cutter provided with a slot for the reception of the end of a metal strip or band and having a bodily movement and an intermittent rotary movement, substantially as and for the purpose specified.

15. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a nail-strip carrier movable in the arc of a circle in a substantially vertical plane, and an adjustable reel for the nail-strip carried by and movable with the said nail-strip carrier, substantially as described.

16. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier movable in the arc of a circle in a substantially vertical plane, a strip-selecting device coöperating with said strip-carrier, strip-feed mechanisms, and a cutting mechanism provided with an intermittently-rotatable member, substantially as described.

17. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier movable in an arc of a circle, and a strip-selecting device coöperating with said multiple strip-carrier and comprising two members, one of which is pivotally secured to the said strip-carrier and movable therewith, and the other of which is rotatably mounted in a fixed support and connected to said first member to turn it on its pivot when the second member is rocked, substantially as described.

18. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a stationary head provided with a nose having a nail-passage, a reciprocating driver carried by said head in line with the nail-passage in said nose, a cutting mechanism comprising a stationary cutter fixed to said head with its cutting edge out of line with the nail-passage in the said nose, a movable cutter provided with a strip-receiving slot normally in line with the cutting edge of the stationary cutter, a carrier for said movable cutter movable bodily with relation to the said stationary cutter to carry the strip-receiving slot in the movable cutter beyond the cutting edge of the stationary cutter and into line with driver and the nail-passage in the nose, substantially as described.

19. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier comprising a body portion provided with upwardly-extended segmental or curved arms and having rearwardly-extended reel-supporting arms, a rotatable shaft, a cam mounted thereon, mechanism actuated by said cam and connected to said segmental arms to reciprocate said carrier in a substantially vertical plane, a strip-selecting mechanism or device coöperating with said strip-carrier at the will of the operator, and a cutting mechanism to sever a nail from the strip operatively positioned by the said strip-selecting device, substantially as described.

20. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier, comprising a body portion provided with upwardly-extended segmental or curved arms and having rearwardly-extended reel-supporting arms, a rotatable shaft, a cam mounted thereon, mechanism actuated by said cam and connected to said segmental arms to reciprocate said carrier in a substantially vertical plane, a strip-selecting mechanism or device coöperating with said strip-carrier at the will of the operator, and consisting of a lever pivotally attached to the strip-carrier to move in one plane, a rock-shaft, and an intermediate device attached to the rock-shaft to move in a different plane from said lever but connected to the latter to effect its movement, and a cutting mechanism, substantially as described.

21. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a multiple nail-strip carrier comprising a body portion provided with upwardly-extended segmental or curved arms, and having rearwardly-extended reel-supporting arms, a rotatable shaft, a cam mounted thereon, mechanism actuated by said cam and connected to said segmental arms to reciprocate said carrier in a substantially vertical plane, a strip-selecting mechanism or device coöperating with said strip-carrier at the will of the operator

and consisting of a lever pivotally attached to the strip-carrier to move in one plane, a rock-shaft and an intermediate device attached to the rock-shaft to move in a different plane from said lever but connected to the latter to effect its movement, and a cutting mechanism consisting of a stationary cutter, a slotted movable cutter coöperating with said stationary cutter, a carrier for said movable cutter, having two movements with relation to the said stationary cutter, namely, a lateral movement and an intermittent rotary movement, substantially as described.

22. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a nail-strip carrier movable in the arc of a circle in a substantially vertical plane, and a removable guide-plate attached to the side of the said nail-strip carrier to bring the center of the strip substantially in line with the center of the arc in which the strip-carrier is moved, substantially as described.

23. In a machine for inserting metallic fastenings into work, the combination of the following instrumentalities, viz: a treadle capable of movement in a substantially vertical plane, and in a substantially horizontal plane, and independent mechanisms operated by said movements, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM GODDU.

Witnesses:
A. VAN WAGENEN,
JAS. H. CHURCHILL.