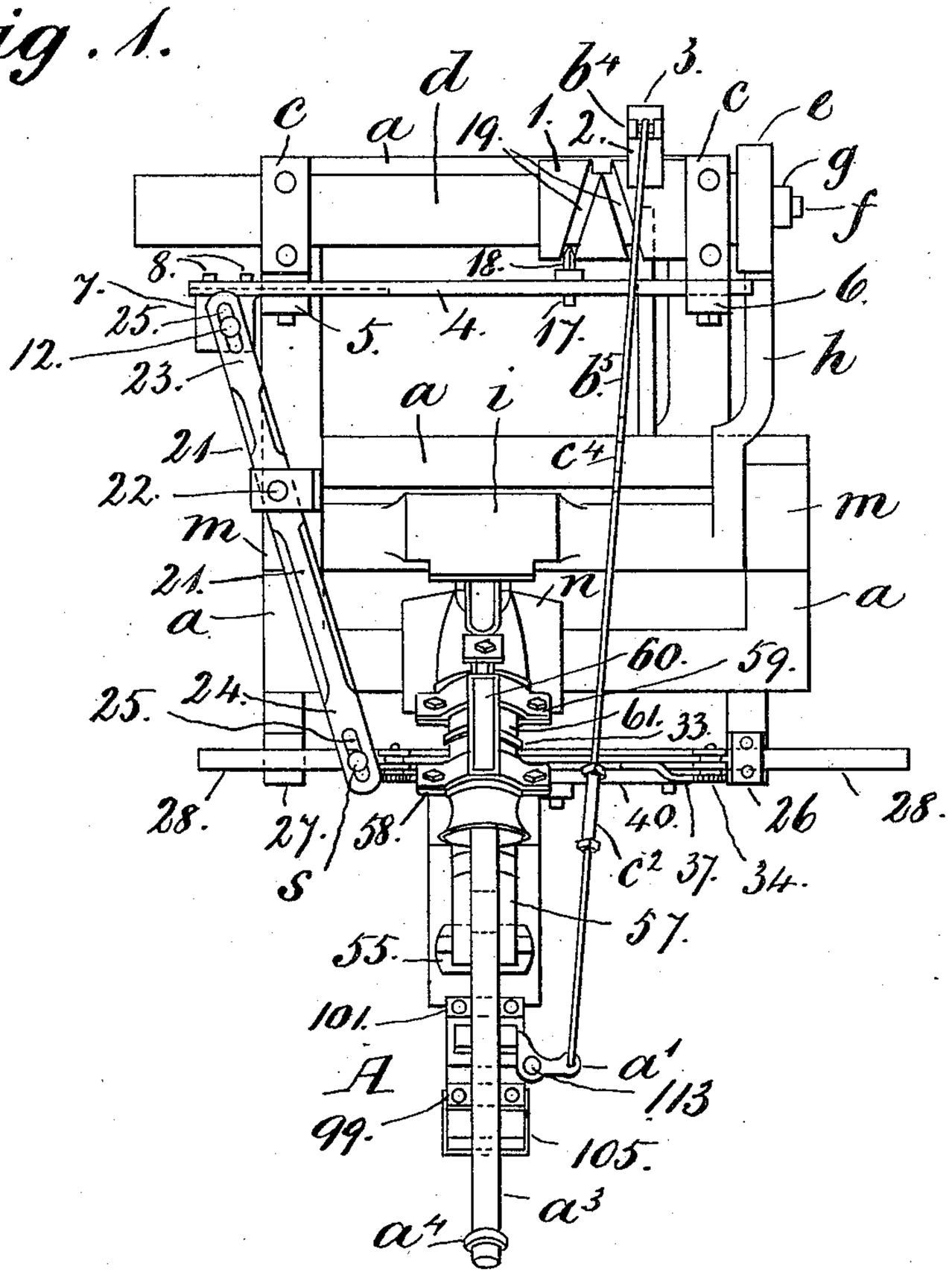
(No Model.) 7 Sheets—Sheet 1.

R. HERSEY.

NAIL PLATE FEEDER.

No. 427,866. Patented May 13, 1890.

Fig. 1.



Witnesses.

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(No Model.) 7 Sheets—Sheet 2.

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NAIL PLATE FEEDER.

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Fig. 2.

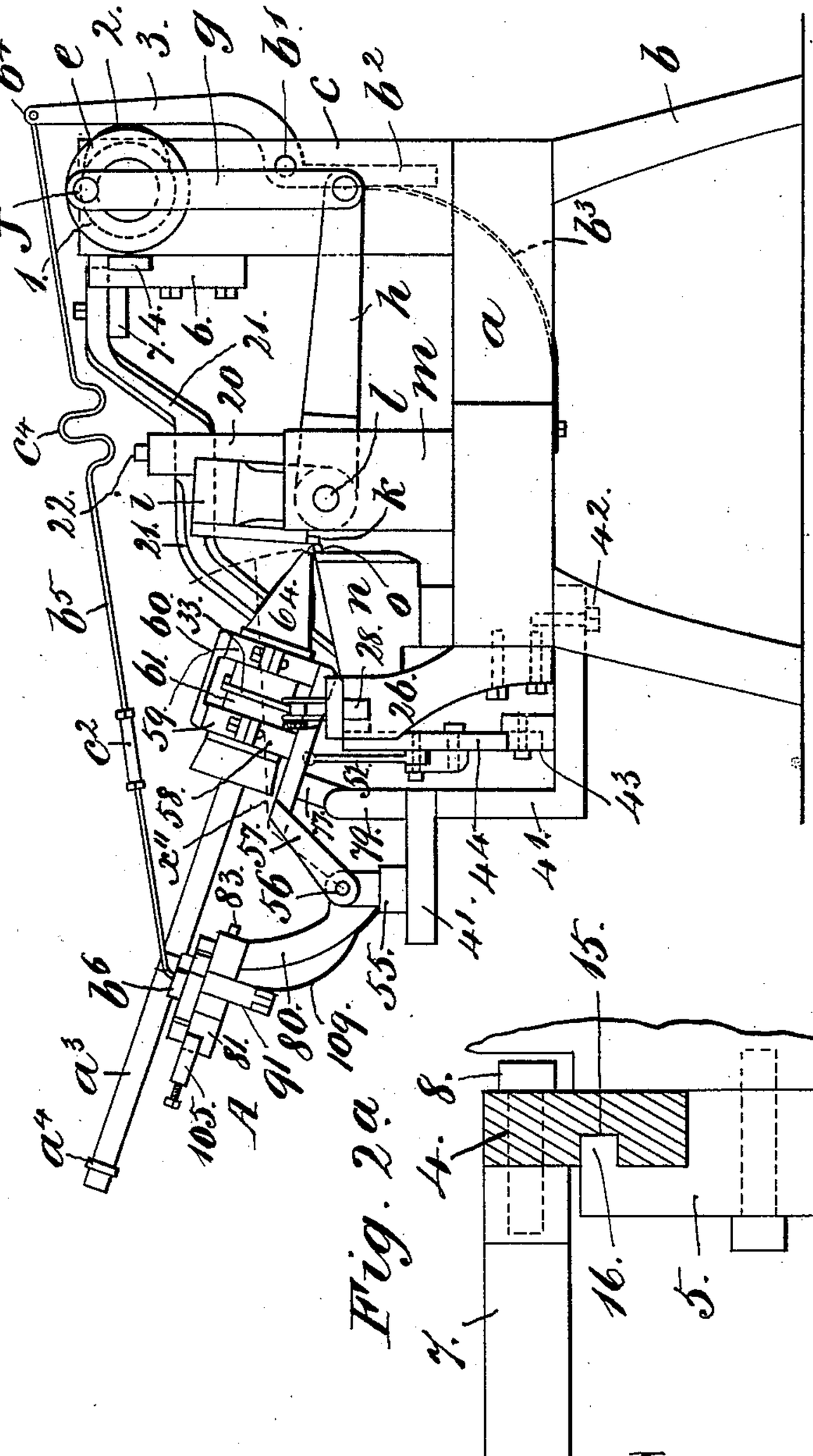
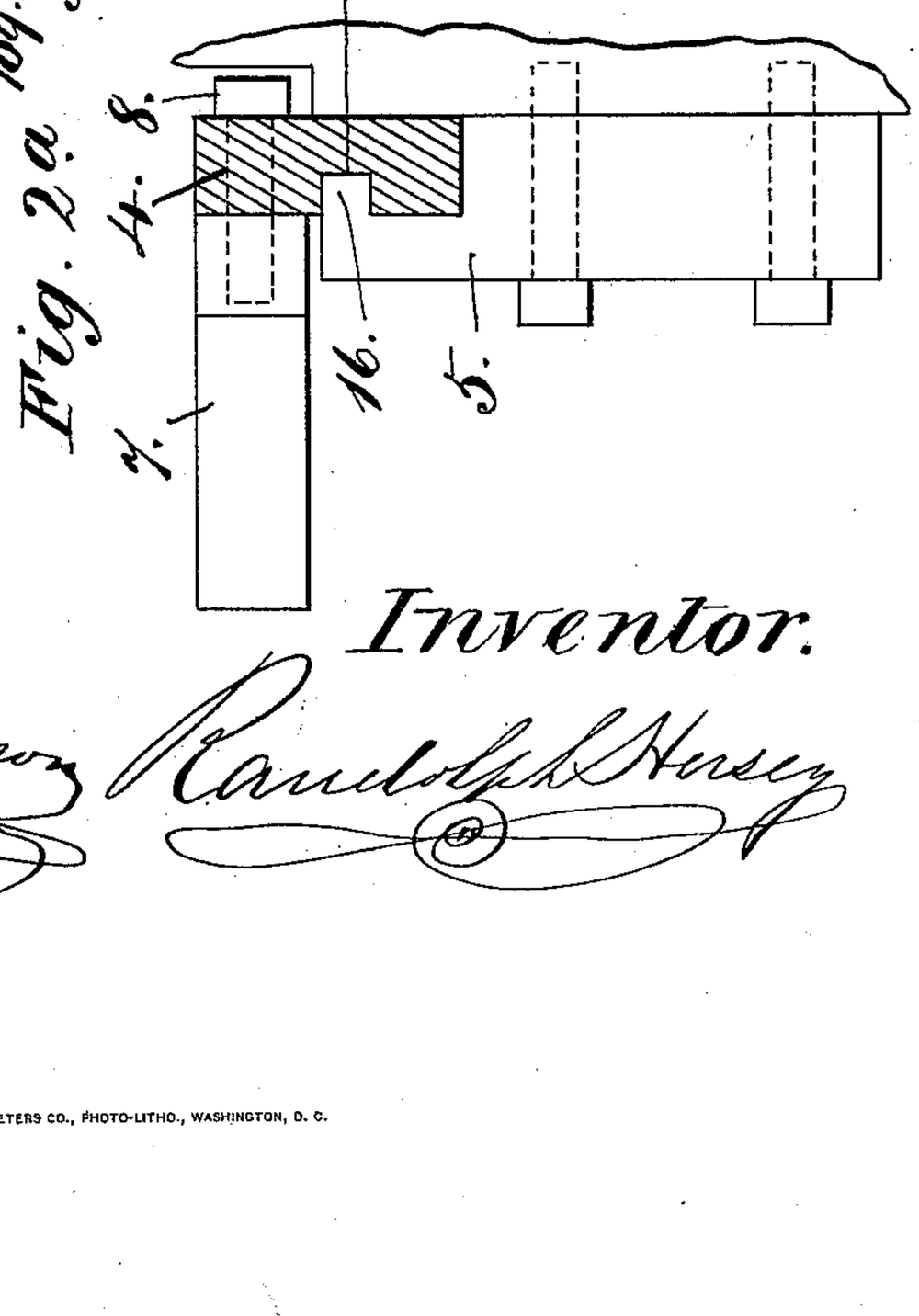


Fig. 2a.



Witnesses.

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(No Model.) 7 Sheets—Sheet 3.

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NAIL PLATE FEEDER.

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Fig. 3.

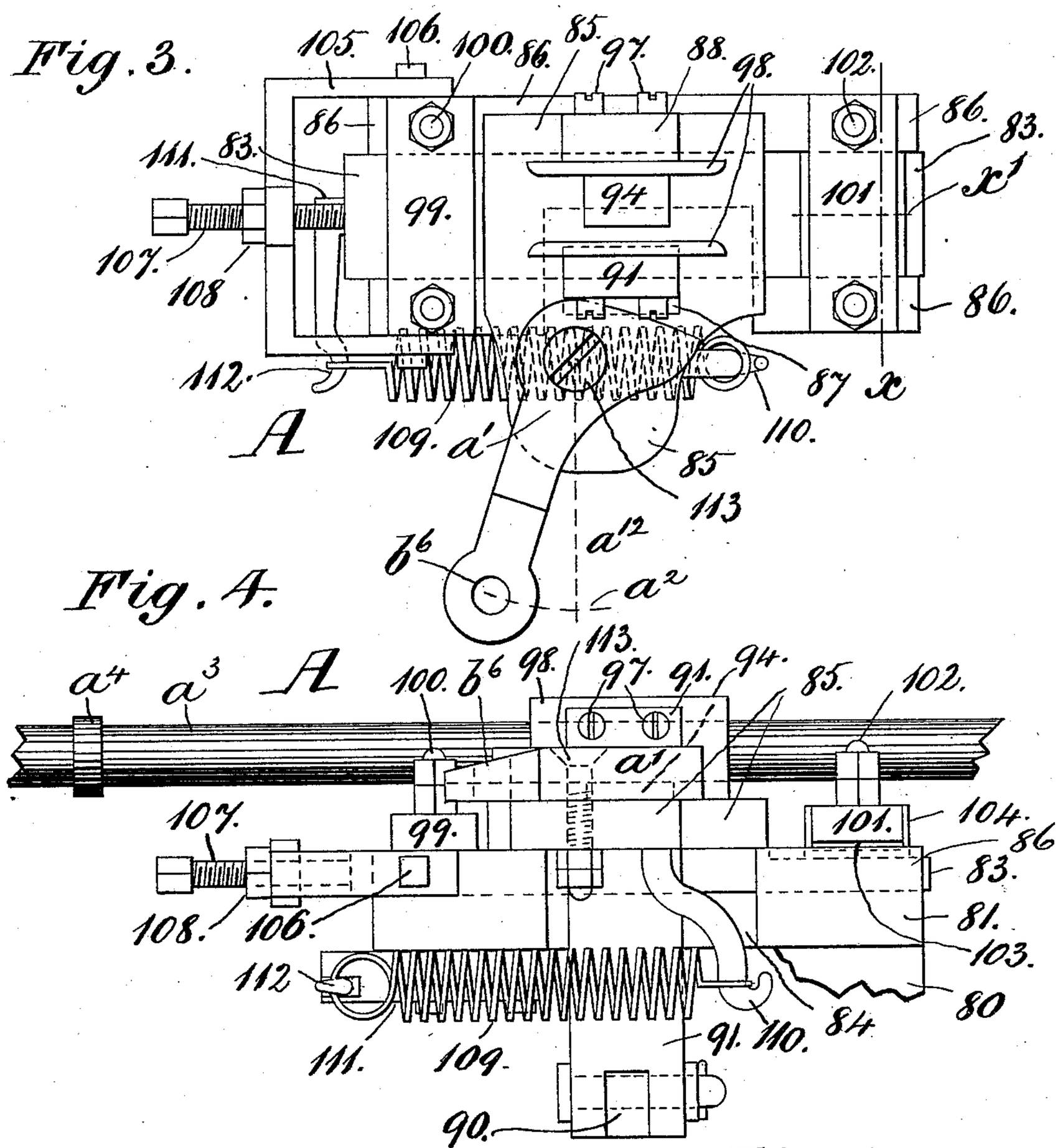
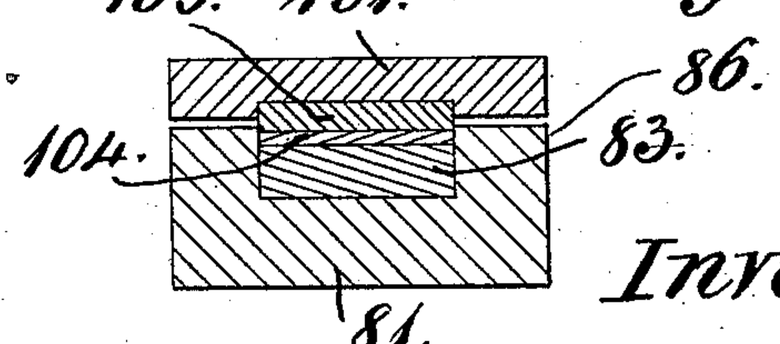


Fig. 4.

Fig. 6.

Fig. 5.



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(No Model.) 7 Sheets—Sheet 4.

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NAIL PLATE FEEDER.

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Fig. 7.

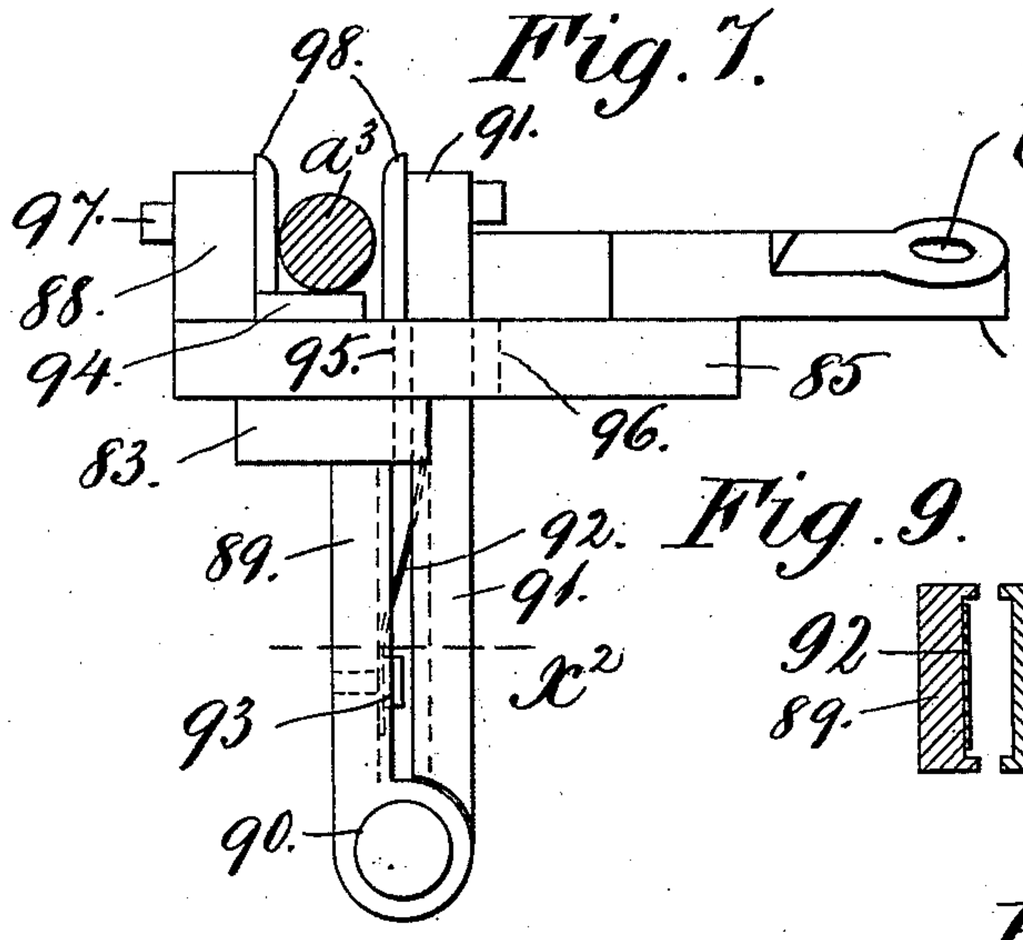


Fig. 9.

Fig. 17.

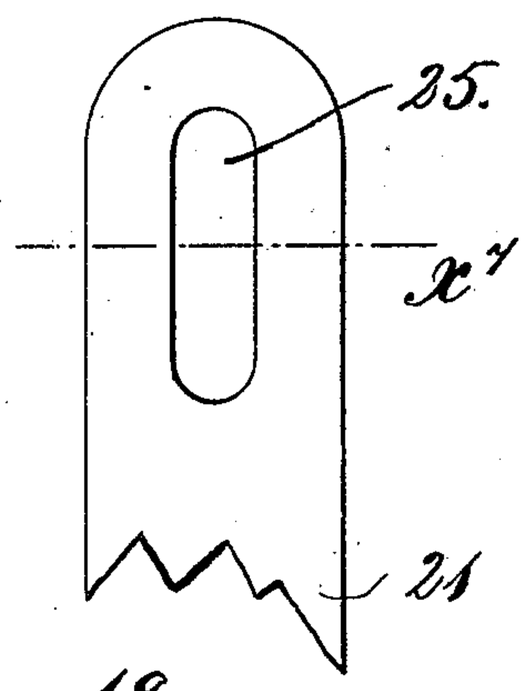


Fig. 8.

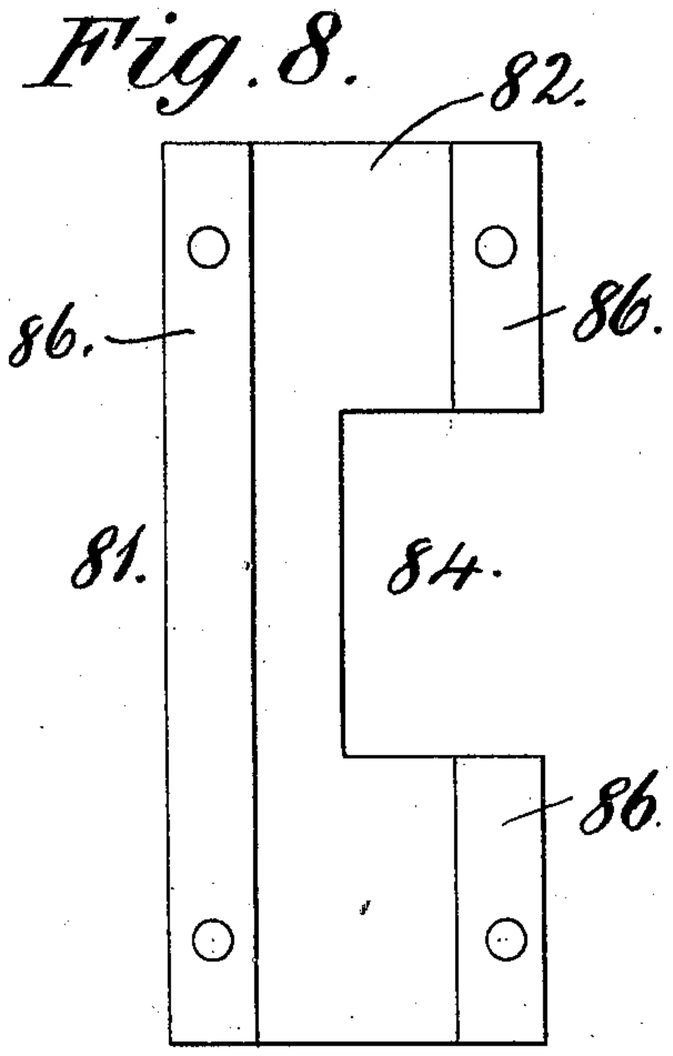


Fig. 18

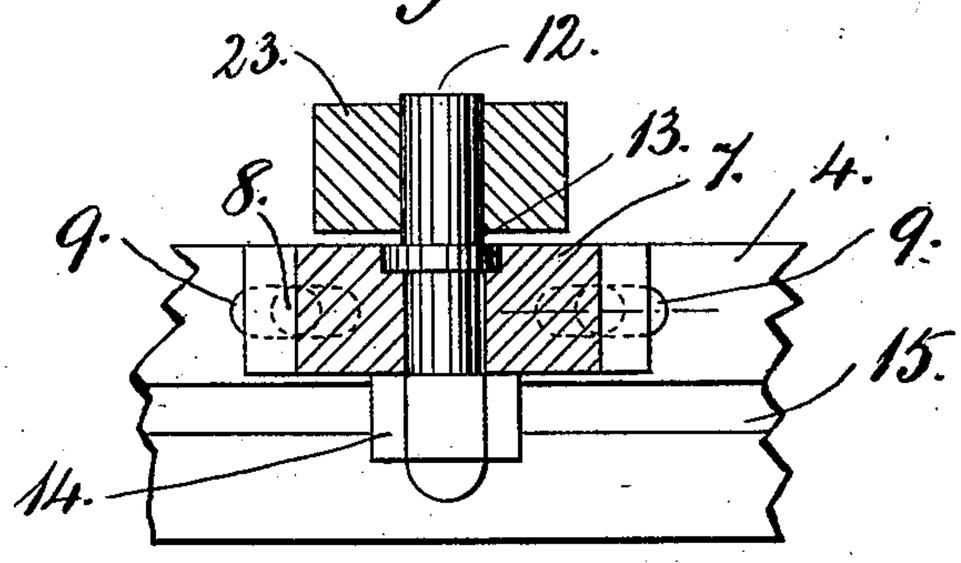
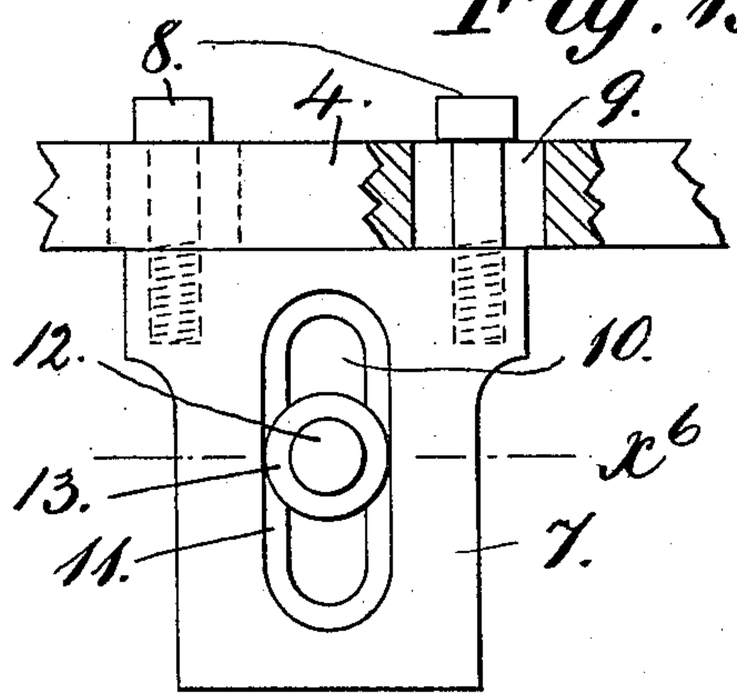


Fig. 19.



Witnesses.

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(No Model.) 7 Sheets—Sheet 5.

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NAIL PLATE FEEDER.

No. 427,866. Patented May 13, 1890.

Fig. 10.

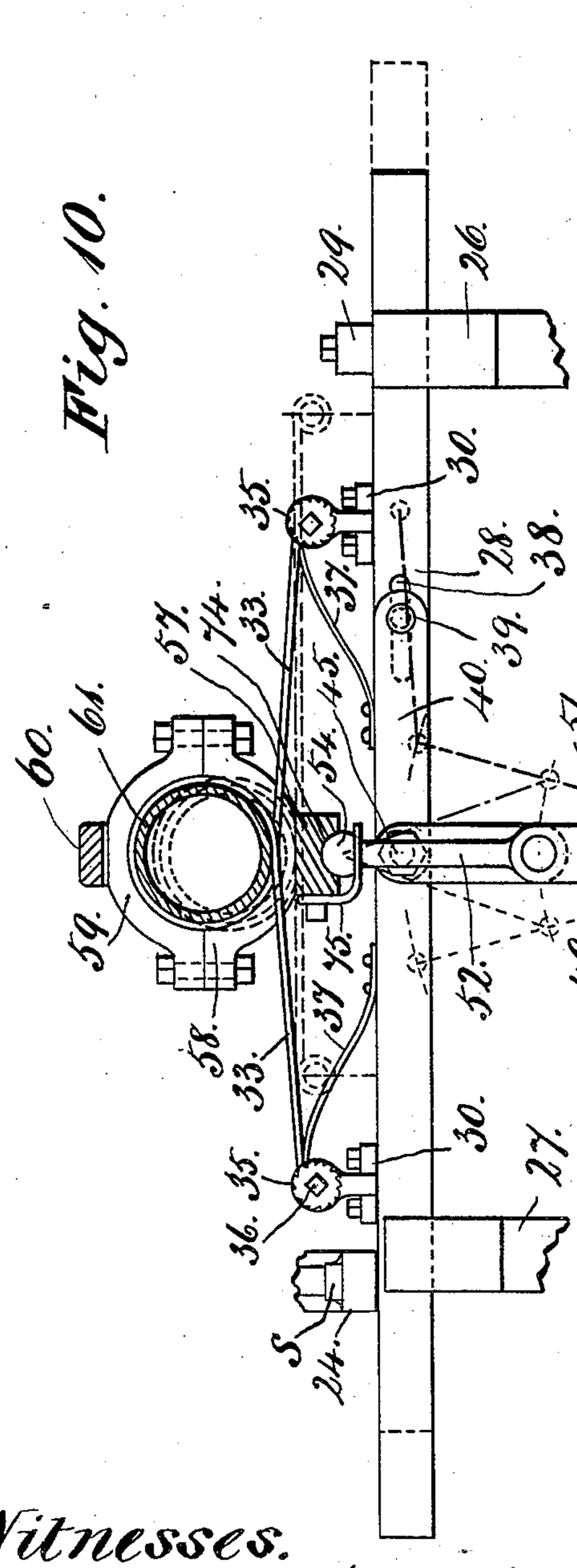
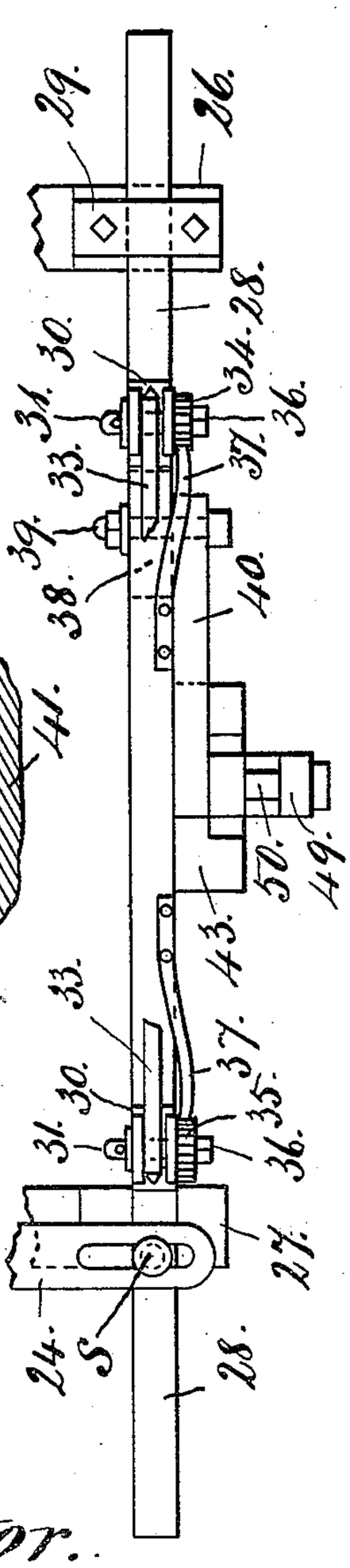


Fig. 11.



Witnesses.

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NAIL PLATE FEEDER.

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Fig. 12.

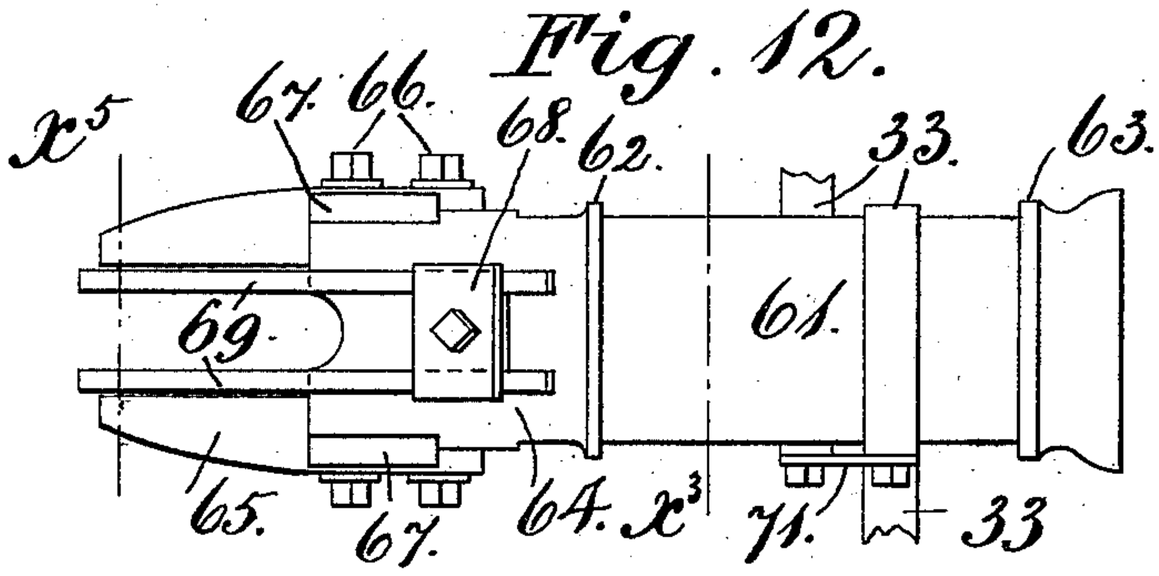


Fig. 14.

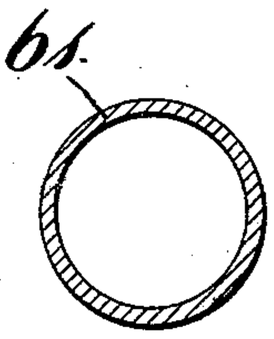


Fig. 12a

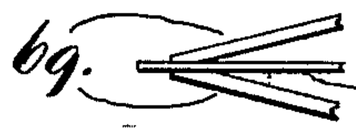


Fig. 13.

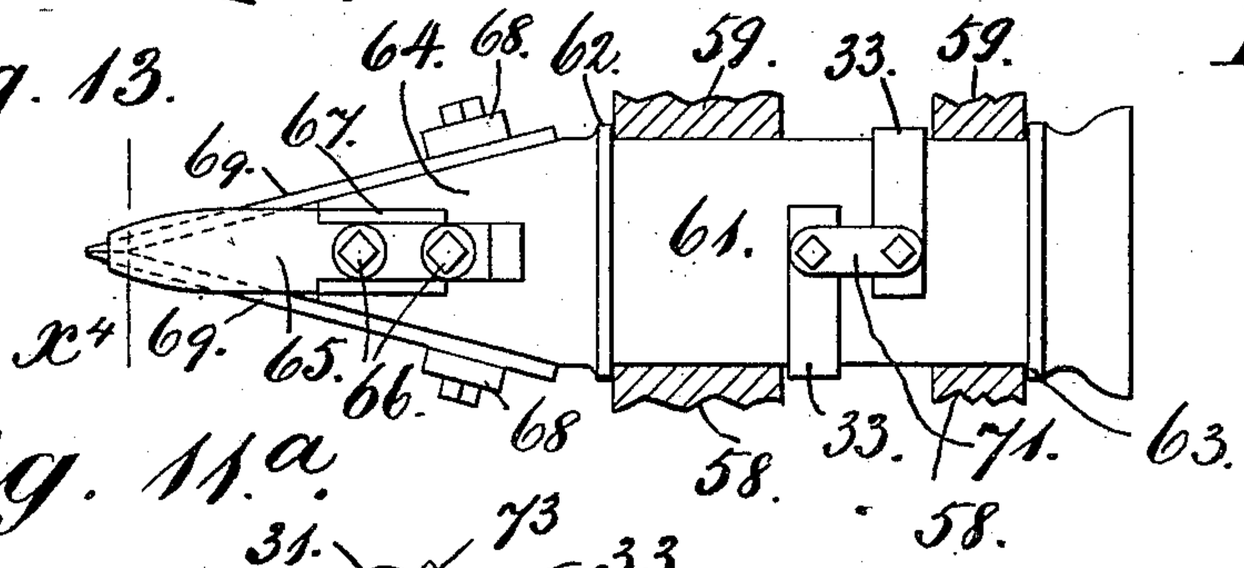


Fig. 15.

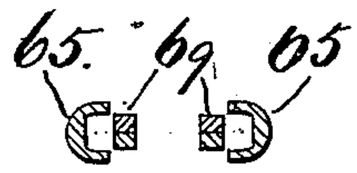


Fig. 11a.

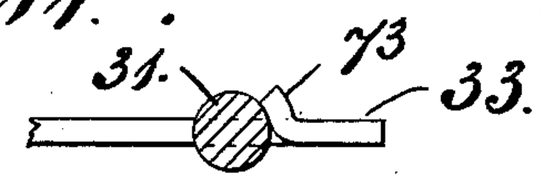


Fig. 11b

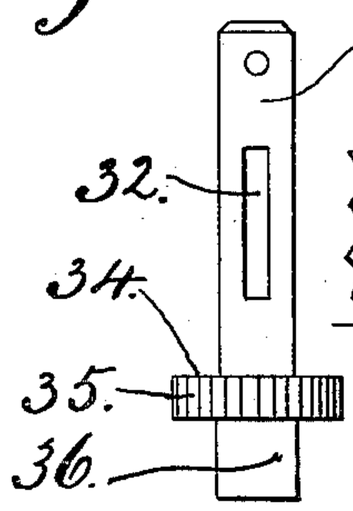


Fig. 11c.

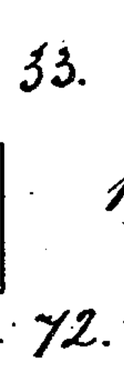
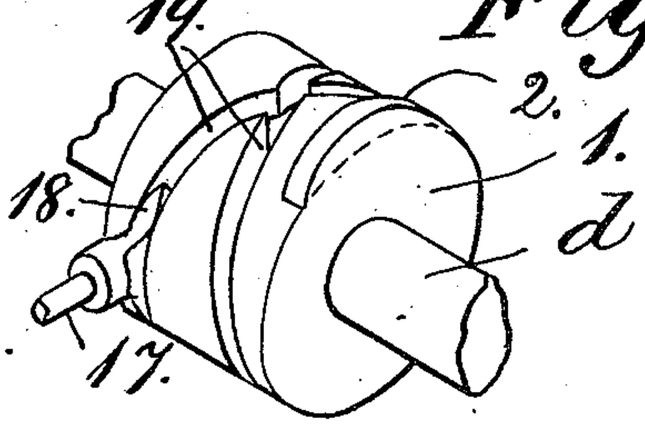


Fig. 16.



Witnesses.

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NAIL PLATE FEEDER.

No. 427,866. Patented May 13, 1890.

Fig. 20.

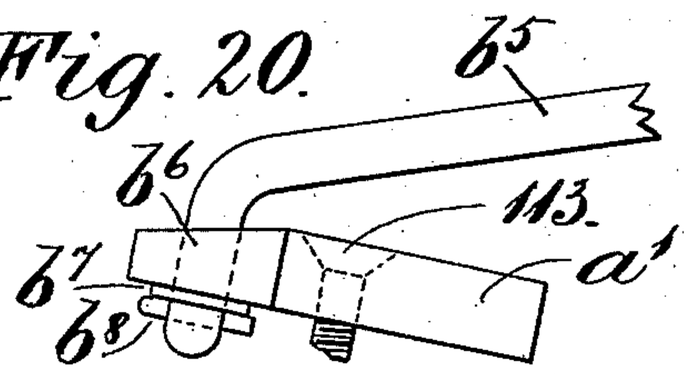


Fig. 21.

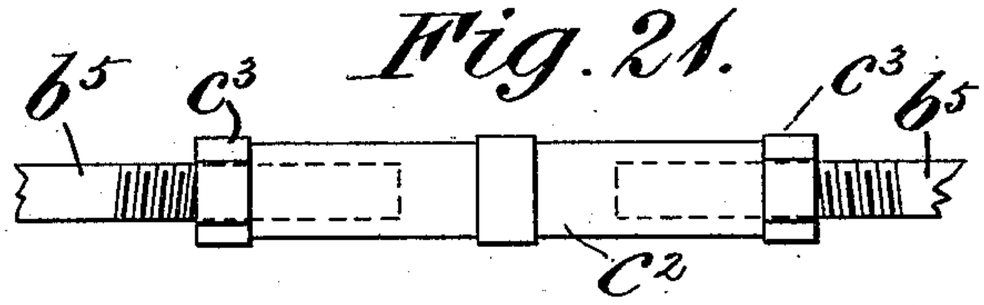
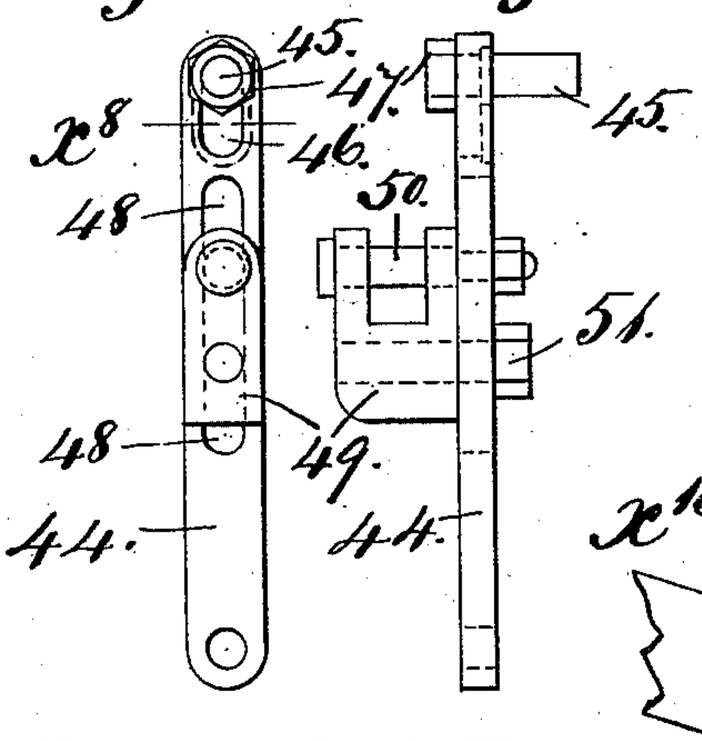


Fig. 22. Fig. 23.



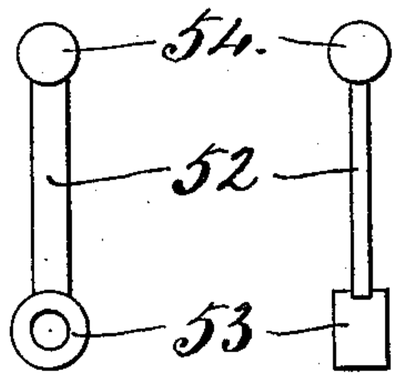
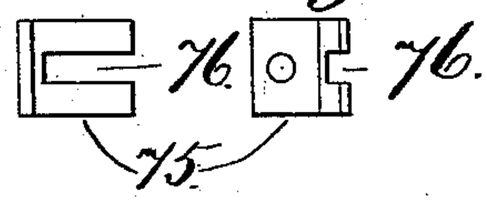


Fig. 24. Fig. 25.

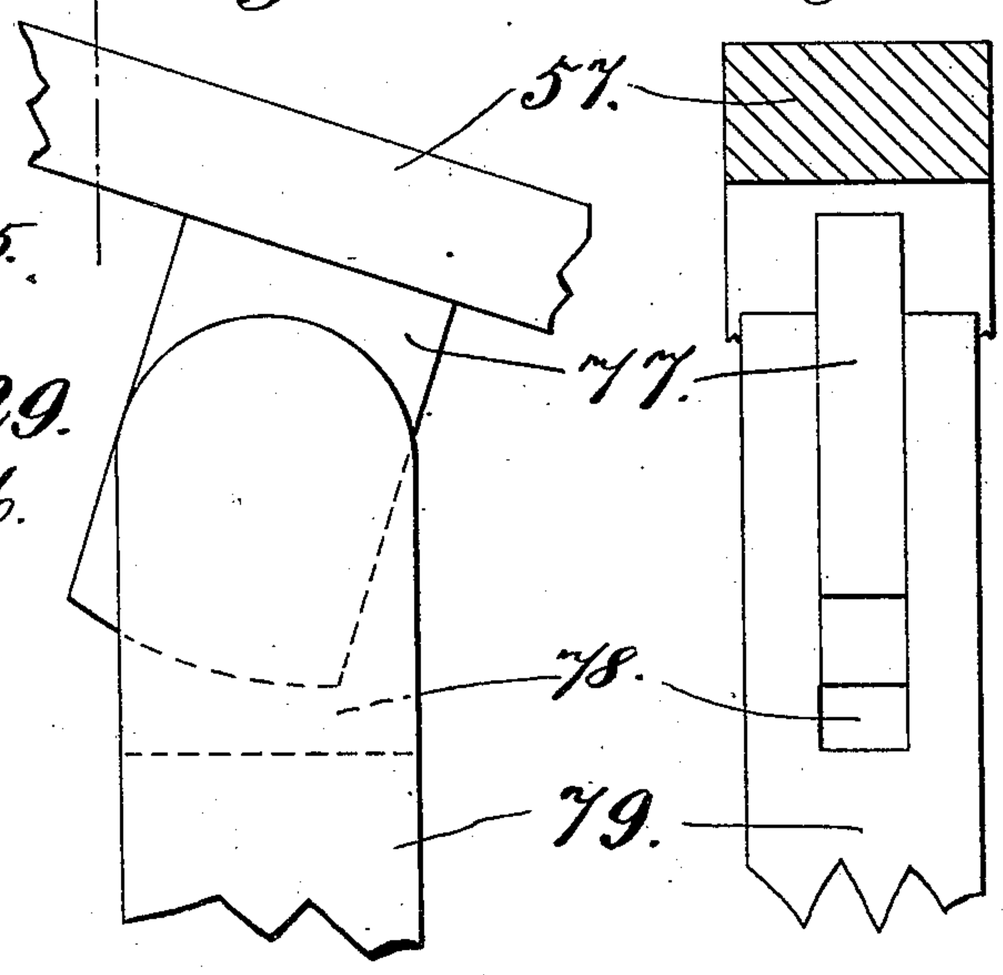
Fig. 26. Fig. 27.

Fig. 28. Fig. 29.



x10 Fig. 30.

Fig. 31.



Witnesses.

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UNITED STATES PATENT OFFICE.

RANDOLPH HERSEY, OF MONTREAL, QUEBEC, CANADA.

NAIL-PLATE FEEDER.

SPECIFICATION forming part of Letters Patent No. 427,866, dated May 13, 1890.

Application filed February 28, 1890. Serial No. 342,037. (No model.)

To all whom it may concern:

Be it known that I, RANDOLPH HERSEY, a citizen of the United States of America, residing at the city of Montreal, in the district of Montreal, and Province of Quebec, Canada, have invented new and useful Improvements in Nail-Plate Feeders; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to automatic nail-plate feeders for nail-cutting machines; and the object of my invention is to arrange an automatic nail-plate feeder in such a manner that it may be attached to the ordinary hand-feed machines at present in use, and thus obviate the necessity of building a nail-cutting machine expressly to enable the nail-plate feeder to be used in connection therewith, which is the case with most, if not all, of the automatic nail-plate feeders at present in use; also, to make such other improvements in said nail-plate feeders as will be hereinafter described and claimed.

In the drawings hereunto annexed, illustrating my invention, similar letters and numerals of reference indicate like parts.

Figure 1 is a plan view of the nail-plate feeder, illustrating it with such parts of an ordinary hand-fed nail-cutting machine with which my automatic nail-plate feeder connects, being a diagram showing the relative positions of the parts. Fig. 2 is a side elevation of the automatic nail-plate feeder illustrated in connection with such parts of an ordinary hand-fed nail-cutting machine with which it connects. Fig. 2^a is a side elevation of the bearing 5, showing the manner of holding and guiding the slide-bar 4 therewith. Fig. 3 is a plan of the mechanism A detached, by which the handle of the nail-plate-holding tongs is held and fed or moved to cause the feeding of the nail-plate. Fig. 4 is a side elevation of the mechanism A. Fig. 5 is a transverse section on line x, Fig. 3, of the friction-bearing. Fig. 6 is a section on line x', Fig. 3, of the friction-bearing. Fig. 7 is an end view of the slide 83 (and parts thereto connected) of the mechanism A removed from the guiding-bed 81. Fig. 8 is a plan of guiding-bed 81 of the mechanism A detached. Fig. 9 is a horizontal section on line x^2, Fig. 7. Fig. 10 is a front elevation, showing the operation of the parts by which the cylinder 61 is raised, lowered, and rotated. Fig. 11 is a plan of the slide-bar 28 and parts connected thereto. Figs. 11^a, 11^b, and 11^c are details showing the construction and arrangement of the pins 31 and straps 33 connected therewith. Fig. 12 is a plan of the cylinder 61 and parts thereto connected detached. Fig. 12^a is a detail showing the manner of holding and guiding the nail-plate 70 by the spring-bars 69. Fig. 13 is a side elevation of the cylinder 61 and parts thereto connected. Fig. 14 is a section of the cylinder 61 on line x^3, Fig. 12. Fig. 15 is a section on line x^4, Fig. 13, or line x^5, Fig. 12, of the guides 65 and spring-bars 69. Fig. 16 is an isometrical view of the switch-cam 1 and head 18, also cam projection 2, detached. Fig. 17 is a plan view of the ends of the lever 21. Fig. 18 is a section on line x^6, Fig. 19, of the adjustable block 7, with pin 12 and end of lever 21 connected therewith, the section of the lever being taken at line x^7, Fig. 17. Fig. 19 is a plan view of part of the slide-bar 4, showing the attachment of the adjustable block 7 thereto. Fig. 20 is a detail showing in side elevation the connection of the end of the spring-rod b^5 with the pawl a'. Fig. 21 is a detail showing the manner of adjusting the length of the spring-rod b^5. Fig. 22 is a front view of the main arm 44 of the toggle-joint detached. Fig. 23 is a side elevation of the main arm 44 of the toggle-joint detached. Fig. 24 is a front elevation of the upper arm 52 of the toggle-joint detached. Fig. 25 is a side elevation of the upper arm 52 of the toggle-joint detached. Fig. 26 is a section on line x^8, Fig. 22, of the main arm 44 of the toggle-joint. Fig. 27 is an elevation of the pin 45 detached. Fig. 28 is a plan of the retaining-plate 75 detached. Fig. 29 is a side elevation of the retaining-plate 75 detached. Fig. 30 is a side elevation of the sliding tongue 77 and guide 79 detached. Fig. 31 is a front elevation of sliding tongue 77 and guide 79 detached, the sectional part of this figure being taken on line x^{10}, Fig. 30.

a is the frame-work of an ordinary nail-cutting machine carried on any ordinary supports b.

c are the ordinary projections of the frame-work a, forming bearings to the ordinary main shaft d, on the end of which is secured a disk

e, provided with a crank-pin *f*, which, by a connecting-rod *g*, operates the lever *h* of the cutting-head *i*, provided with cutter *k*, being carried by the ordinary bearings *l* in the projections *m* of the frame *a*.

n is the ordinary rest, carrying the bed-cutter *o*.

All the above-mentioned parts are constructed and arranged as in the ordinary hand-fed nail-cutting machines at present in use, and as they are the only ones with which my automatic nail-plate feeder connects it is not considered necessary to show any of the remaining parts of such ordinary machine.

1 is a switch-cam (see Figs. 1, 2, and 16) secured on the main shaft *d*. This is provided with a cam projection 2 for actuating a lever 3, hereinafter described.

4 is a slide-bar (see Figs. 1, 2, 2ª, 18, and 19) carried in bearings 5 and 6, attached to the projections *c* of the frame *a*. This slide-bar is provided with an adjustable projection 7, secured thereto by bolts 8, passing through slotted holes 9 in the bar 4.

10 is a slotted opening formed with an enlargement 11 for holding a pin 12, provided with a collar 13, adjustably situated therein, being secured in the desired position in the slot 10 by a nut 14.

As the projection 7 travels from side to side in front of the bearing 5, it becomes necessary to provide for this. Consequently the said bearing is formed as more particularly shown in Fig. 2ª, where this end of the slide-bar is provided with a groove 15, (see also Fig. 18,) into which the projection 16 of the bearing 5 enters, the parts being arranged, as shown, so that the projection 7 may freely travel over the top of the bearing 5, while it securely guides the bar 4.

18 is a head situated in and actuated by the groove 19 of the switch-cam, the neck 17 of which is fitted to an opening formed in the slide-bar 4 and forms a bearing to the said neck, so that by the revolutions of the cam 1 the slide-bar 4 is caused to slide longitudinally from side to side of the machine, having a reciprocating motion.

20 is a bracket (see Figs. 1 and 2) attached to or made in one with one of the projections *m*, as shown, carrying a lever 21, by a pivot 22. The ends 23 and 24 of this lever are both provided with a slot-opening 25. (See Fig. 17.) The slot in the end 23 (see Fig. 18) connects with the pin 12 in the projection 7, and thus the motions of the slide-bar 4 are imparted to the lever 21.

26 and 27 are brackets attached on the frame *a*, carrying a slide-bar 28. The bracket 26, as shown, (see Figs. 1, 2, 10, and 11,) is provided with a cap 29, which is omitted in bracket 27, as it would obstruct the motion of the end 24 of the lever 21, which passes over it. This said end of the lever is connected to the slide-bar 28 by a pin *s*, sliding in the slotted end 24 of the lever 21, and thus the vibrations of the lever cause a reciprocating longitudinal motion to the slide-bar 28. On the upper side of the slide-bar 28 are attached brackets 30, (see Figs. 10 and 11,) made in the form of "double eyes," in which are carried the pins 31, provided with slot-openings 32 (see Figs. 11ª, 11ᵇ, and 11ᶜ) to receive each and hold the end of one of the straps 33 in the manner which will be hereinafter more particularly described. The heads 34 of the pins 31 are made cylindrical and are provided with ratchet-teeth 35, also a square projection 36, by which with a key the pins 31 may be turned about in the brackets 30.

37 are springs attached on the slide-bar 28 and arranged to act upon the ratchet-teeth 35, so that when the straps 33 have been tightened, for the purposes hereinafter described, the said pins 31 will be held by the springs 37 from rotating and slackening the straps.

Horizontally in the slide-bar 28 is formed a slot-opening 38, in which is placed a bolt and nut 39, thereby adjustably attaching to the slide-bar a vibrating link 40, the other extremity of which connects with the main arm 44 of the toggle-joint hereinafter described.

To the under side of the frame *a* is attached a bracket 41 by means of a set-screw 42, which forms a pivot, so that the bracket 41 may be adjusted in position upon the said pivot and then firmly secured in place, the bracket being situated so that the cylinder 61 (hereinafter described as being carried by a frame 57, attached on the bracket) will be in the proper position to present the nail-plate to be cut by the cutters *k* and *o*, as shown in Figs. 1 and 2.

On the lower part of the bracket 41 is attached or made integral therewith a bracket 43. To this is pivoted the main arm 44 of the toggle-joint. (See Figs. 2, 10, 11, 22, 23, 24, 25, 26, and 27.) In the upper end of the main arm 44 a slot and recess 46 are formed to receive an adjustable pin 45, provided with a collar and secured in place by a screw-nut 47. With the pin 45 the link 40 connects, so that the longitudinal reciprocating motions of the slide-bar 28 impart vibratory motion to the main arm 44, as indicated by dotted lines in Fig. 10, which vibratory motions may be increased or diminished in extent to a certain amount according to the position that the pin 45 is secured in the slot 46.

49 is a bracket attached on the arm 44 by a pin 50 and tap-bolt 51, the former of which forms a journal for the upper arm 52 of the toggle-joint. This arm is provided at its lower extremity with an eye 53 to fit the pin 50 and at its upper extremity with a ball 54. By providing the main arm 44 with the slot 48 and by passing the bolt 50 and tap-bolt 51 through the said slot the position of the bracket 49 is rendered adjustable.

On the upper portion of the bracket 41 is secured a head 55. To this is pivoted at 56 a bent frame 57, having bearings 58 made integral therewith. The caps 59 of the said

bearings are preferably each made integral with a distance-bar 60, and by this said frame and bearings is carried the cylinder 61; which consists of a hollow sleeve (see Figs. 12, 13, 14, and 15) provided with collars 62 and 63, closely fitting the said bearings of the frame, so that no appreciable "end-play" of the cylinder will be allowed. The cylinder proper 61 terminates in a conical flattened hollow projection 64, to which are attached side guides 65 by bolts and nuts 66.

67 are projecting flanges formed on the hollow projection 64. To these the necks of the guides 65 are fitted, so that by slackening the bolts 66 supplementary pieces may be placed between the necks of the guides 65 and the hollow projection 64. Thus the distance that the guides 65 may be set apart may be adjusted to certain different widths of nail-plates from which the nails are cut, as the guides 65 guide the nail-plate edgewise in the ordinary manner for nail-plate feeders of this class.

On the upper and lower sides of the projection 64 are attached, by means of plates and clamping-bolts 68, spring-bars 69, which hold the nail-plate 70 to the proper vertical elevation in a line with the axis of the cylinder 61. By the grip of the spring-bars 69 upon the nail-plate it is prevented from returning forward after it has been fed backward, as will be hereinafter more particularly described.

To the cylinder 61, by means of a clamping-plate 71 and bolts, as shown, are secured the ends of the straps 33. These are turned sufficiently round the cylinder 61 and their opposite ends connected with the pins 31 by passing them through the slots 32, (see Fig. 11^b,) and cutting small slits 72 in the straps and turning up the flaps 73 thereby formed the ends of the straps are prevented from withdrawing from the slots 32. The straps may be wound up on the pins to bring them to the proper tension and properly time and set the rotations of the cylinder 61, which will be caused by the reciprocating longitudinal motions of the slide-bar 28.

As shown in solid lines in Fig. 10, the slide-bar 28 is in the midway position or at "half-stroke." While the motion of the bar 28 is thus causing the rotation of the cylinder 61 it is also operating the toggle-joint, causing it to raise and lower the frame 57. The ball 54 of the arm 52 is received in a socket 74, formed in the frame 57.

75 is a retaining-plate attached on the side of the frame 57. It is provided with a slot-opening 76, (see Figs. 10, 28, and 29,) through which the arm 52 passes. This retaining-plate is for the purpose of retaining the ball 54 and socket 74 together should they be inclined to part by reason of the machine being run at a high speed.

To cause a more steady motion of the frame 57 and cylinder 61 carried by it, a parallel tongue 77 is formed on the frame 57, projecting downward. This is received within the parallel slot 78 of a bracket 79, formed on the bracket 41 or attached thereto, as desired. (See Figs. 2, 30, and 31.)

Returning to the head 55, it is provided with an arm 80, made integral therewith, and integral with the top of this arm is formed the slide-bed 81 of the mechanism A, by which the feeding of the nail-plate to the cutters *k* and *o* is caused. This mechanism A is more particularly shown by Figs. 3, 4, 5, 6, 7, 8, and 9. The slide-bed 81 consists of a grooved plate, of which 82 is the groove. In this the slide 83 moves, being guided by the upward-extending sides 86. The bed 81 is provided with an opening or recess 84. The slide 83 is made integral with a flange 85, and this flange slides over the sides 86 of the bed 81. It is provided with an opening 87 (hereinafter more particularly described) and an upward integral projection 88.

94 is a projection formed on the flange 85, the object of which is to carry the handle a^3 at such a height that the ferrule a^4 will not be caught on any of the parts of the mechanism A before it comes to the plates 98, as will be hereinafter described.

On the lower side of the slide 83 a downward-projecting arm 89 is formed integral therewith. To this is hinged at 90 an upward-projecting arm 91, the two (89 and 90) being recessed, as shown in Fig. 9, to give room for securing a spring 92, as shown, (see Fig. 7,) held in place by a tap-bolt 93, the said spring being arranged to press the arm 91 apart from the projection 89. The arm 91 extends up through the opening 87, which is much wider, as shown by the dotted lines 95 and 96 in Fig. 7, allowing for the required motion of the arm, and this opening 87, as shown in Fig. 3, is of equal width with the arm 91, allowing for its free motion.

To the projection 88 and arm 91 are attached by tap-screws 97 plates 98. When the slide 83 is put in proper position with the bed 81, the projection 89 and arm 91 project down through the opening or recess 84, it being made sufficiently wide to allow of the necessary motion of the slide 83.

The slide is secured in place in the bed 81 by a strap 99 in front and bolts and nuts 100, the parts being fitted to allow the slide 83 to move freely longitudinally, but without lost motion transversely. The back end of the slide is held in place by a strap 101 and bolts and nuts 102. This strap is provided with a recess in which is placed an elastic cushion 103, and under the elastic cushion and about the strap, as shown, Figs. 3, 4, 5, and 6, is placed a gib 104, so that by properly tightening down the strap 101 by the bolts and nuts 102 an adjustable amount of friction may be imparted to the slide 83. By this adjustable friction on the slide 83 a much smoother action of the slide is obtained, and, if desired, the strap 99 may be similarly provided with

an elastic cushion and gib, as described for the strap 101; but in the most of cases one adjustable friction will be found sufficient.

To the bed 81 is attached a strap 105 by bolts 106. This is provided with a set-screw 107, (secured by a jam-nut 108,) adapted to regulate the amount that the slide 83 will move forward by means of a spring 109, and thus govern the amount of feed travel that will be imparted by the slide 83 and gripping-plates 98 to the handle a^3, as any excess of motion of the spring-bar b^5 will only cause the pawl a' to swing farther forward in the arc a^2. (See Fig. 3.)

The spring 109, as shown in Fig. 2, is illustrated as a bow-spring attached on the arm 80, and is arranged to press directly against the arm 91 and projection 89; but, as shown in Figs. 3 and 4, it consists of a spiral spring connected upon a hook 110, projecting below the flange 85 and secured thereto, and a projection 111, secured on the under side of the bed 81, provided with an arm terminated in a hook 112, the spring being arranged to draw the two hooks 110 and 112 with some force toward each other, thus causing the front end of the slide 83, when not otherwise acted upon by the spring-bar b^5 through the pawl a', to rest against the end of the set-screw 107.

113 is a pivot by which is attached to the flange 85 the pawl a', situated as shown in Figs. 3, 4, and 7, and in outline in Figs. 1 and 2 this is fitted to allow the pawl a' to swing freely, and by being provided with a countersunk head can be arranged to take up any lost motion or looseness of the pawl a'. It is screwed into the flange 85, and its end projecting below the flange is provided with jam-nuts to secure its position. (See Fig. 4.)

The pawl a' actuates the arm 91 and causes the plates 98 to grip the handle a^3 of the nail-plate-holding tongs, so that when the slide 83 is caused to move backward the handle a^3 will move with it and cause the nail-plate to be moved farther down in the cylinder 61 and project at each rotation of the cylinder the amount necessary for forming the next nail to be cut off by the cutters k and o.

The tongs attached to the handle a^3 are of the ordinary description at present in use, and are not therefore shown, being part and parcel of the handle. They are furthermore made sufficiently small to pass freely within the cylinder 61 in the same manner as heretofore in use in this class of rotating-cylinder automatic nail-plate feeders.

The handle a^3 is provided with a ferrule a^4. Is so adjusted in its position on the handle that by coming in contact with the plates 98 the handle is prevented from moving the tongs too far down in the cylinder 61 and prevents them from coming in contact with the cutters o and k, (see Fig. 2,) by which the nails are cut.

The action of the plates 98 to grip the handle a^3 and release it is caused in the following manner by the parts now further described: The cam projection 2 of the switch-cam 1 actuates the lever 3, pivoted upon a pivot, bar, or shaft b', projecting from one of the projections c or extending between the two projections c, as found most convenient. The lever 3 is provided with a downward-extending arm b^2, pressed upon by a spring b^3 to cause the lever 3 to return forward after it has been forced backward, as shown in Fig. 2, by the cam projection 2. The upper end of the lever 3 terminates in a double eye b^4, to which is attached the back end of the spring-rod b^5. (See Figs. 1, 2, 20, and 21.) The front end of this rod is bent and passed through an eye b^6, formed in the end of the pawl a', being secured by a washer b^7 and split pin b^8. The rod b^5 is adjustable in length, being made in two parts provided with right and left hand screws united by a correspondingly-screwed buckle c^2, secured by jam-nuts c^3.

To cause a certain amount of spring in the length of the rod b^5, to lengthen and shorten the same, it is provided with a bent portion c^4. When the cam projection 2 begins to move the lever 3 to the position shown in Fig. 2, the rod b^5 first moves the eye b^6 in the arc a^2 (see Fig. 3) until the handle a^3 of the tongs is firmly gripped by the plates 98 by reason of the pawl a' pressing upon the arm 91, the eye b^6 being brought to about the position of the dotted line a^{12}, the cam projection 2 continuing to move the lever 3 and rod b^5. The slide 83, with parts thereunto attached, is now compelled to move in the bed 81 from the position shown in Figs. 3 and 4 to the position shown in Figs. 1 and 2, the resistance of the spring 109 and friction-bearing being overcome by the motion of the rod b^5, whereby the nail-plate is moved backward the amount required to be cut off to form the next nail. This operation is so timed that it takes place just before the cutter k operates, and just when the cylinder has completed one of its half-revolutions, the cam projection 2 being so configurated that the parts are positively held in position while the cutting off of the nail is accomplished. As soon as the cam projection 2 has passed the lever 3 the spring b^3 causes the rod b^5 to return the pawl a' from the position shown in Figs. 1 and 2 to that shown in Figs. 3 and 4. The spring 92 now causes the plates 98 to release the handle a^3, and the spring 109 now moves forward the slide 83 and parts thereto attached to cause the front end of it to rest against the end of the set-screw 107, ready for the next backward or feed motion.

The amount that the toggle-joint will raise and lower the frame 57 and cylinder 61, as represented by the dotted line x'' in Fig. 2, can be adjusted by the hereinbefore-described adjustment of the parts of the toggle-joint. The pivot 56 being placed at a lower level than that of the end of the projection 64, (see Fig. 2,) the cylinder 61 is caused to move bodily forward as it is raised upward. By

adjusting the position of the pin 12 (see Figs. 1, 18, and 19) in the slot 10 the vibrations of the lever 21 may be enlarged or decreased in extent, and thus the longitudinal motions of the slide-bar 28 may be adjusted to impart to the cylinder 61 and parts thereto attached an exact semi or desired rotation.

By the spring part c^4 of the bar b^5 any undue strain upon the parts operated thereby is prevented should they get out of perfect adjustment, and the said spring part c^4 also insures a more even or equal action of the parts operated by the said rod.

What I claim as my invention, and wish to secure by Letters Patent, is as follows:

1. In an automatic nail-plate-feeding machine, the combination of the switch-cam 1, longitudinally-sliding bar 4, adapted to be operated by the said switch-cam, lever 21, and longitudinally-sliding bar 28, adapted to be operated by the slide-bar 4, straps 33, attached to slide-bar 28, and cylinder 61, having straps 33 attached thereto and adapted to be rotated on its axis by the said bar and straps, the whole substantially as described.

2. In an automatic nail-plate-feeding mechanism, the combination of the switch-cam 1, longitudinally-sliding bar 4, having adjustable slotted block 7, provided with adjustable pin 12, said bar being arranged to be operated by the said switch-cam, lever 21, and longitudinally-sliding bar 28, adapted to be adjustably moved thereby, and straps 33, connected to the said bar 28 and adapted to rotate the cylinder 61, the whole substantially as and for the purposes set forth.

3. The combination, in an automatic nail-plate-feeding machine, of the slide-bar 28, having a longitudinal reciprocating motion, provided with brackets 30 and pins 31, having slots 32, and ratchet-teeth 35, springs 37, adapted to hold the said pins from rotating, straps 33, and cylinder 61, the straps being adapted to rotate the said cylinder, the whole substantially as described and shown, for the purposes set forth.

4. The combination, in an automatic nail-plate-feeding mechanism, of a reciprocatingly-rotated cylinder 61 with the slide 83, provided with plates adapted to grip the handle of the nail-plate-holding tongs and then slide and feed the nail-plate in the cylinder, the whole substantially as described and shown, for the purposes set forth.

5. The combination, in an automatic nail-plate-feeding mechanism, of the bed 81, slide 83, adapted to move therein, said slide having flange 85, also projections 88 and 89, hinged arm 91, spring 92, actuating-pawl a', and spring 109, the whole constructed, arranged, and operating together substantially as and for the purposes described.

6. The combination, in an automatic nail-plate-feeding mechanism, of the bed 81, slide 83, adapted to move longitudinally therein, said slide having flange 85, projections 88 and 89, hinged arm 91, actuating-pawl a', and springs 92 and 109, and friction-bearing, as described, the whole constructed and arranged as shown and described, substantially as and for the purposes set forth.

7. The combination, in a nail-plate-feeding mechanism, of the slide 83, having plates 98, adapted to grip and actuate the handle a^3, pawl a', and rod b^5, having spring portion c^4, with lever 3 and cam projection 2, the whole substantially as and for the purposes set forth.

8. The combination, in an automatic nail-plate-feeding mechanism, of the pivoted frame 57 and cylinder 61, with parts thereto attached and carried thereby, as described and shown, with the toggle-joint consisting of main arm 44, having adjustable bracket 49 and adjustable pin 45, and upper arm 52, whereby the motions of the frame 57, caused by the action of the toggle-joint, may be adjusted, the whole substantially as and for the purposes described.

9. The combination, in an automatic nail-plate-feeding mechanism, of the stationary bed 81, having a slide arranged therein and adapted to operate the handle a^3, as described, with a vibrating frame 57, having reciprocatingly-rotating cylinder carried in the said frame, substantially as described.

10. In a nail-plate-feeding mechanism, the combination of the slide 83, having adjustable friction, as described, projections 88 and 89, hinged arm 91, actuating-pawl a', and actuating-springs 92 and 109, and set-screw 107, the whole constructed, arranged, and operating together substantially as described and shown, for the purposes set forth.

11. In a nail-plate-feeding mechanism, the combination of the switch-cam having projection 2, head 18, adapted to operate the longitudinally-reciprocating slide-bar 4, and lever 3 with said slide-bar and lever, lever 21, adapted to be adjustably operated by said slide-bar 4, longitudinally-reciprocating bar 28, adapted to be operated by the lever 21, straps 33, and cylinder 61, adapted to be rotated by said bar 28, actuating said straps, and toggle-joint adapted to actuate the cylinder, as described, with rod b^5, and the mechanism A, constructed and arranged as described, adapted to operate the handle a^3, as described, the whole constructed, arranged, and operating together substantially as and for the purposes set forth.

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Witnesses:
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