

No. 751,152.

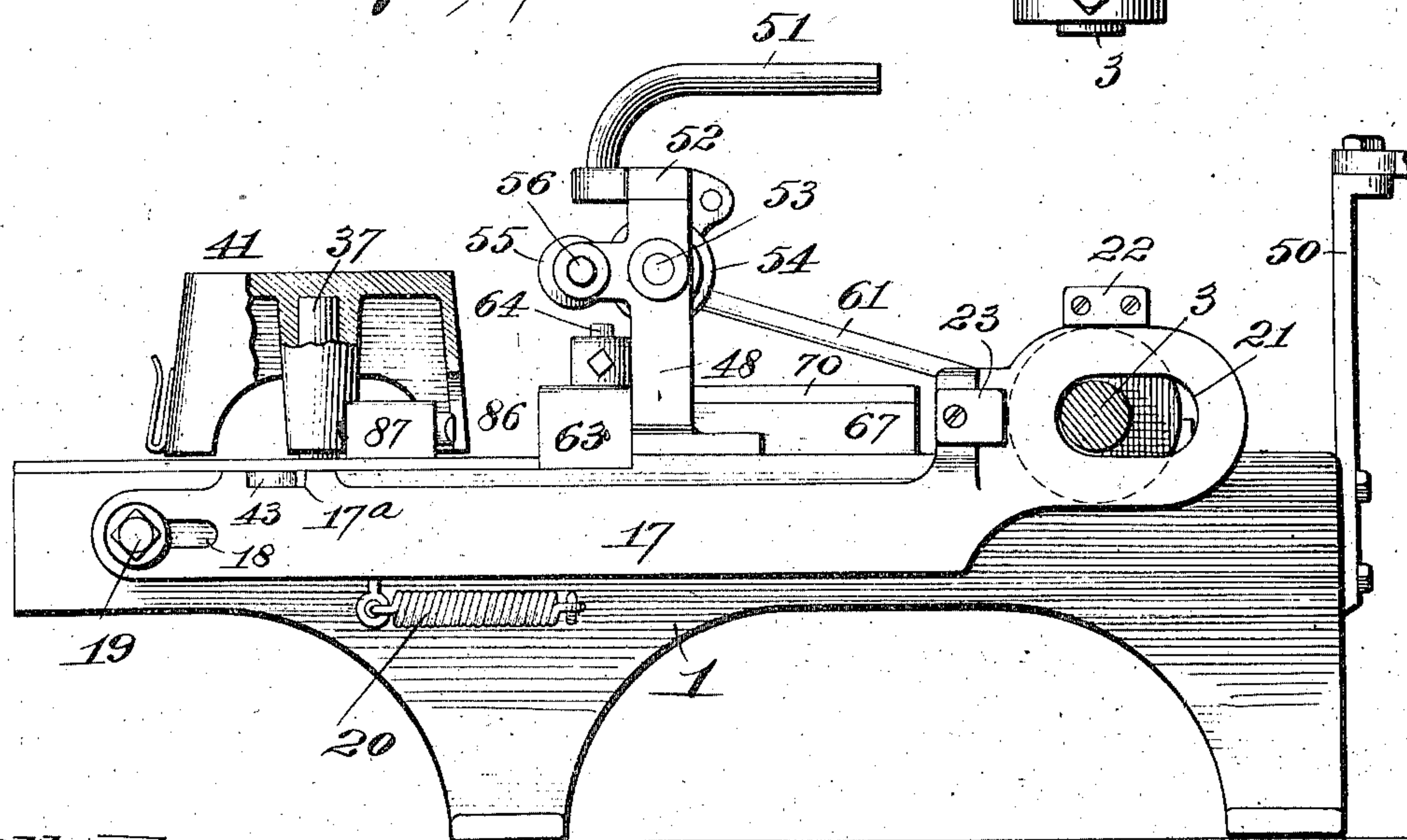
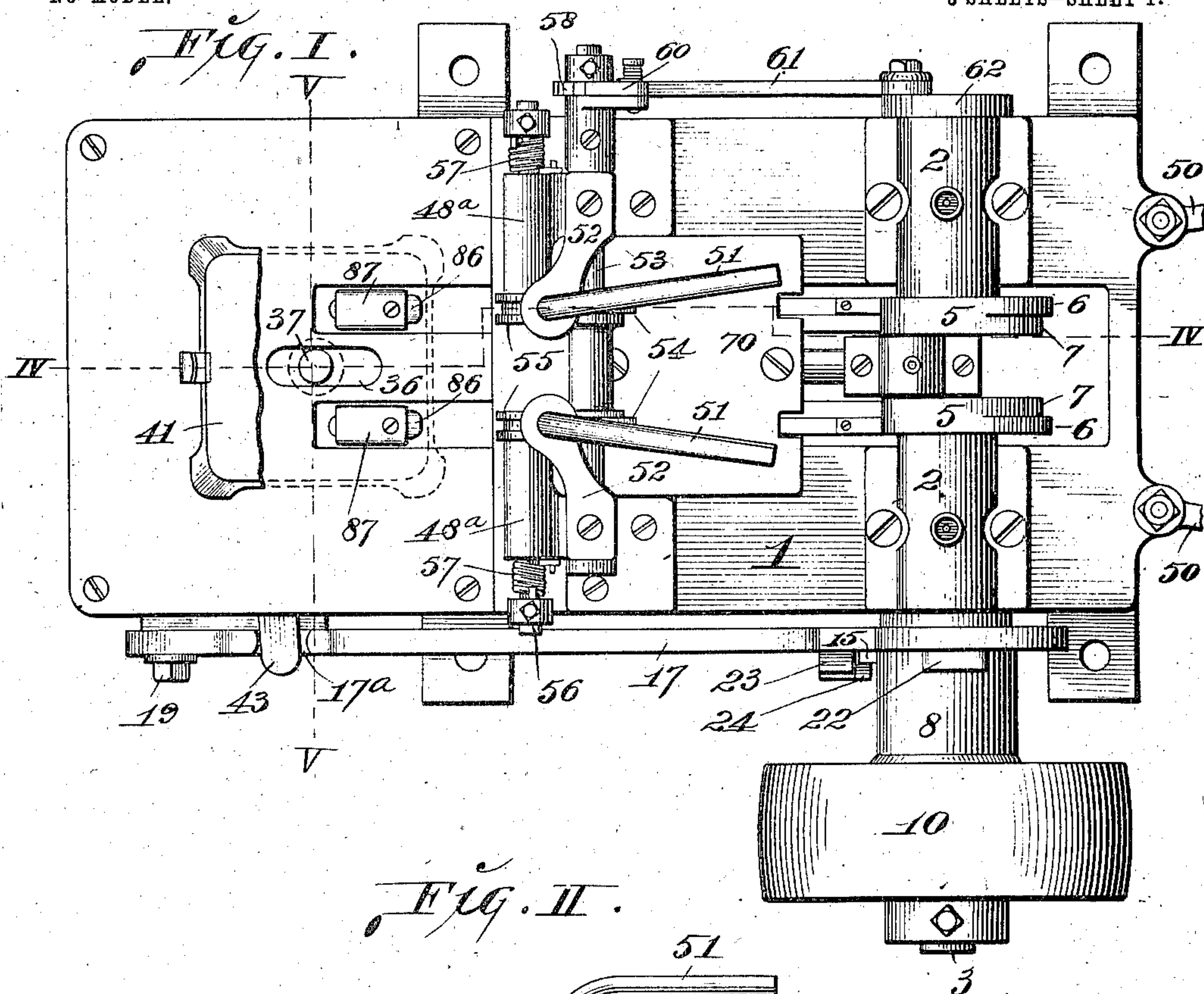
PATENTED FEB. 2, 1904.

G. A. EDE.  
STAPLING MACHINE.

APPLICATION FILED APR. 9, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



attest:—  
M. P. Smith,  
E. J. Knight

Inventor: —  
G. A. Ede.  
By Wright 13<sup>th</sup> Atty's.



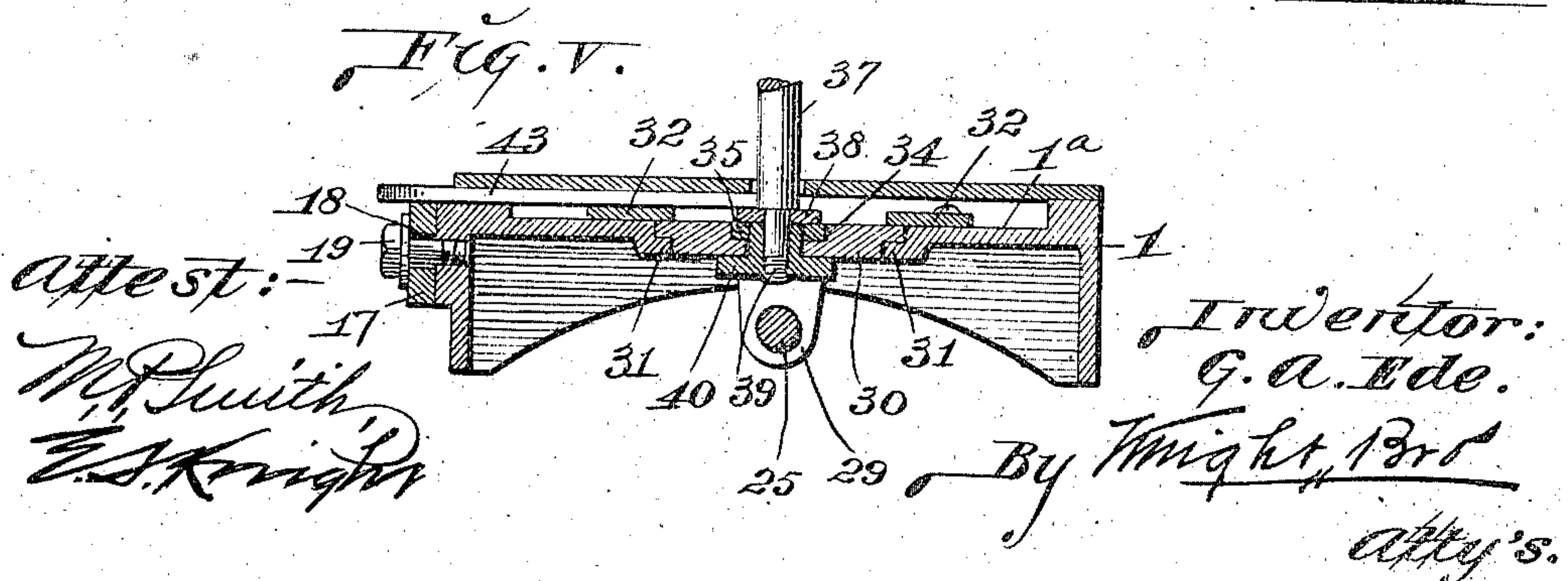
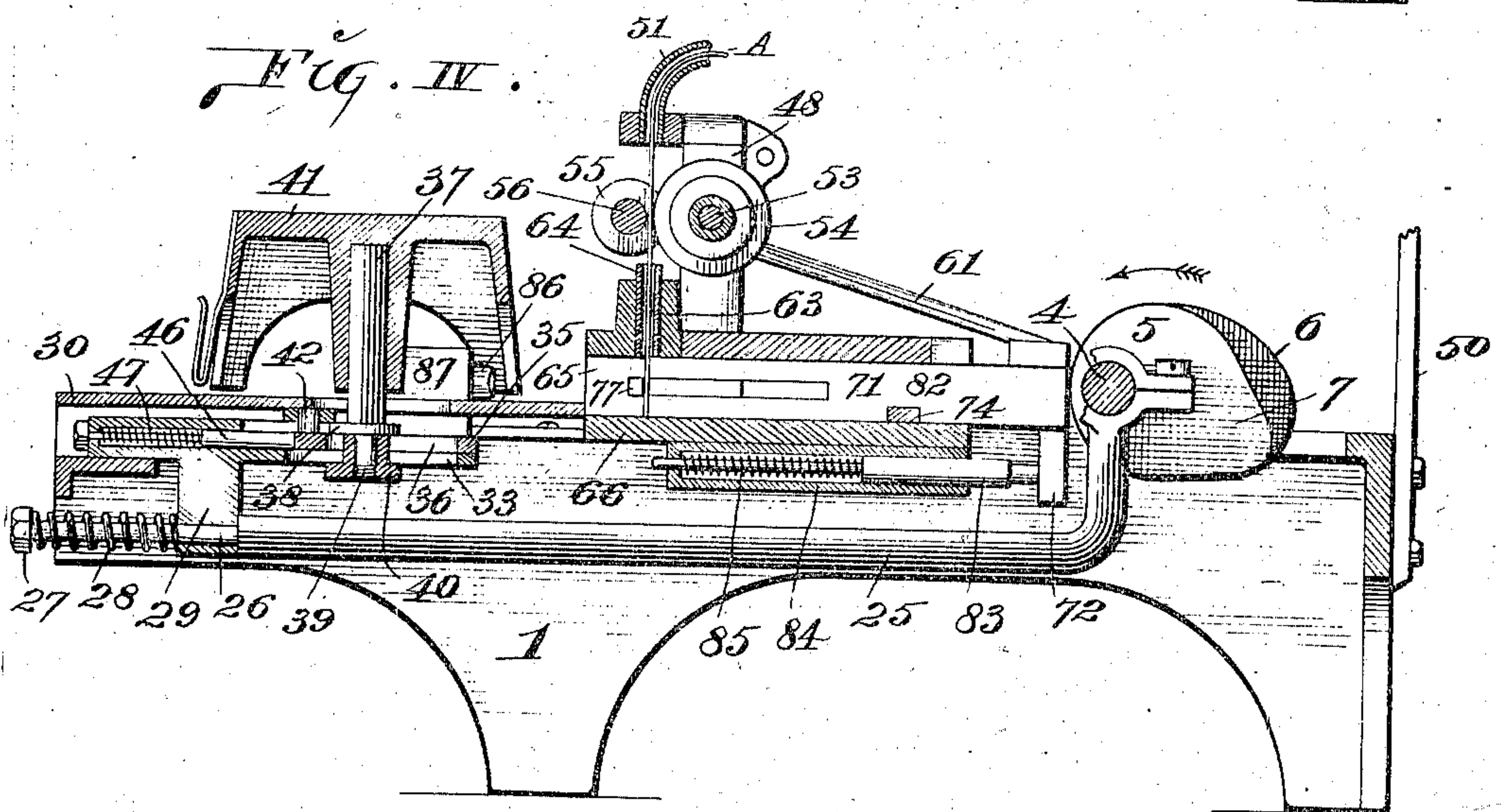
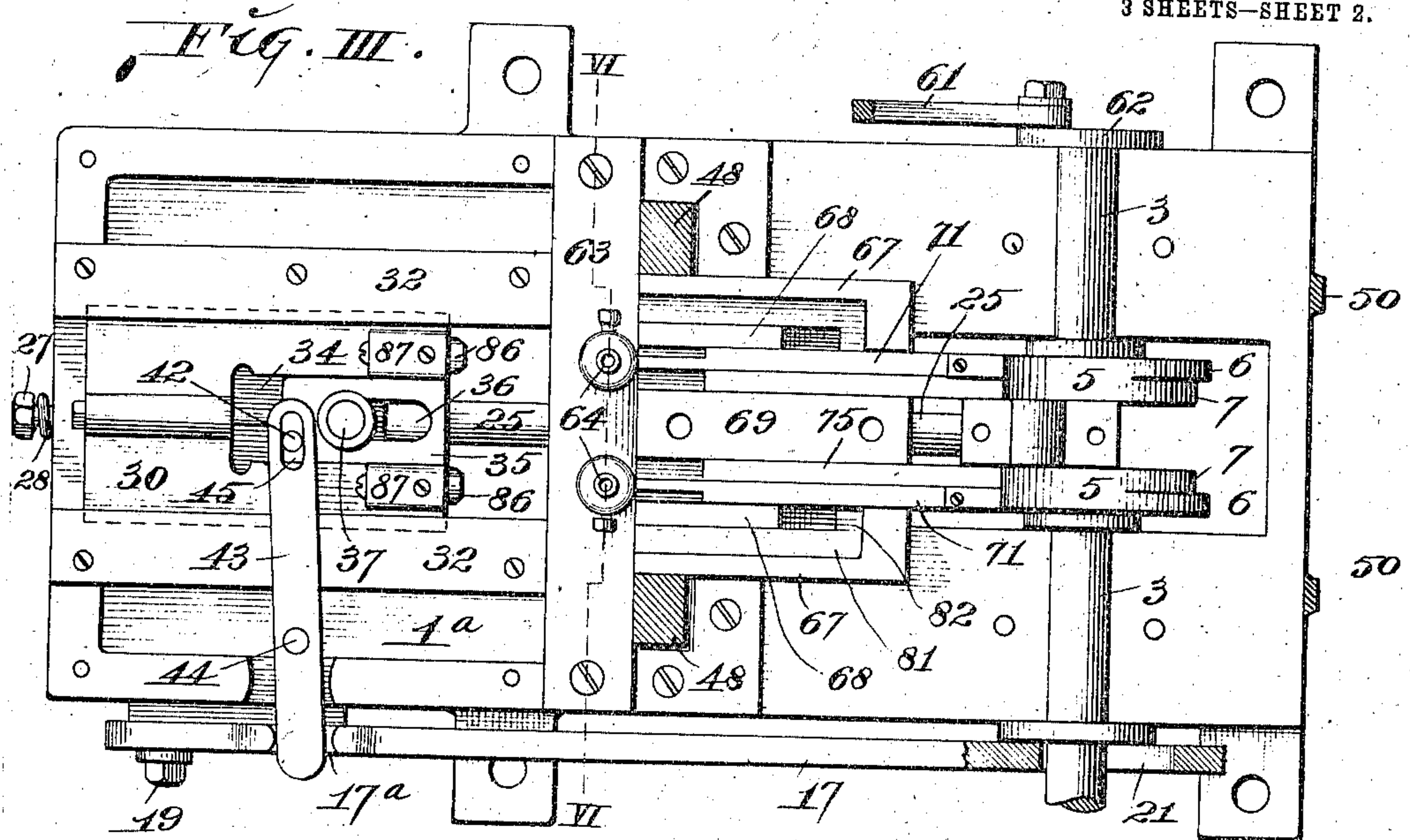
No. 751,152.

PATENTED FEB. 2, 1904.

G. A. EDE.  
STAPLING MACHINE.  
APPLICATION FILED APR. 9, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



attest:  
M. Smith  
E. S. Knight

Inventor:  
G. A. Ede.  
By Wright, Bro  
attys.



No. 751,152.

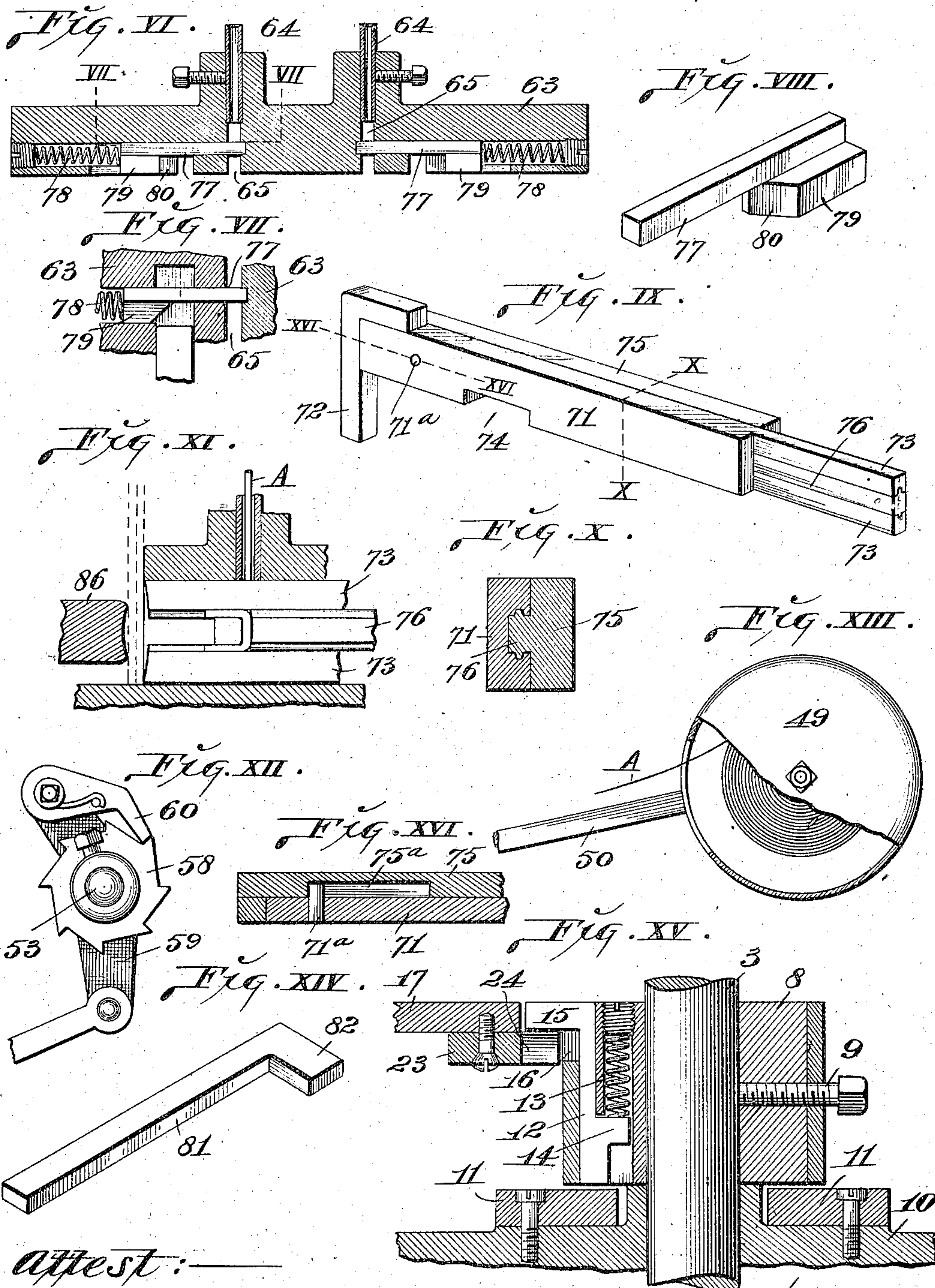
PATENTED FEB. 2, 1904.

G. A. EDE.  
STAPLING MACHINE.

APPLICATION FILED APR. 9, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



attest:  
M. Smith  
E. S. Knight

Inventor:  
G. A. Ede.  
By Knight, Bro. & Co. attys.



# UNITED STATES PATENT OFFICE.

GEORGE A. EDE, OF COBDEN, ILLINOIS.

## STAPLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 751,152, dated February 2, 1904.

Application filed April 9, 1903. Serial No. 151,816. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. EDE, a citizen of the United States, residing in Cobden, in the county of Union and State of Illinois, have invented certain new and useful Improvements in Stapling-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in machines used in forming and driving staples into veneer baskets.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of my machine. Fig. II is a side elevation of the machine with the driving-clutch and belt-pulley omitted. Fig. III is a top or plan view of the machine with the cap-plates that inclose the staple-forming mechanism removed. Fig. IV is a longitudinal section taken on irregular line IV IV, Fig. I. Fig. V is a transverse section taken on line V V, Fig. I. Fig. VI is a longitudinal section taken on line VI VI, Fig. III, through the cross-bar in which the staples are formed. Fig. VII is a section taken on line VII VII, Fig. VI. Fig. VIII is a perspective view of the staple-form finger. Fig. IX is a perspective view of the staple forming and driving bars. Fig. X is a transverse section taken on line X X, Fig. IX. Fig. XI is a view, partly in vertical section and partly in elevation, illustrating a portion of the cross-bar in which the staples are formed and the staple forming and driving fingers in the position assumed subsequent to the production of the staple and previous to the staple being driven. Fig. XII is a face view of the ratchet mechanism by which the wire-feed wheels are rotated. Fig. XIII is a view, partly in plan and partly in horizontal section on one of the wire-reels. Fig. XIV is a perspective view of one of the slides by which the staple-form fingers are retracted after the staple has been formed. Fig. XV is a section of the drive-shaft clutch mechanism of the machine. Fig. XVI is a section taken on line XVI XVI, Fig. IX.

1 designates the frame of the machine, upon

the rear portion of which are mounted bearing-boxes 2, in which the main shaft 3 is mounted. This shaft is provided with a crank 4, at each side of which is a cam member 5, that bears cams 6 and 7. (See Figs. I and III.) The main shaft 3 is driven through the medium of a clutch 8, fixed thereto, preferably by means of a set-screw 9 and a loose pulley 10, mounted upon said shaft and bearing dogs 11, that are adapted to receive engagement of a slide-bolt 12, located in said clutch. (See Fig. XV.) The slide-bolt 12 is when free of restraint projected toward said dogs 11 by a spring 13, that bears against a shoulder 14, projecting from the bolt. The slide-bolt bears an arm 15, which operates in a slot 16 in the clutch 8. No invention is herein claimed for the clutch construction illustrated *per se*, its construction being shown solely for the purpose of affording an understanding of the parts associated therewith which do constitute features in the present improvement. The clutch itself is made the subject-matter of a separate application for Letters Patent of the United States previously filed by me.

17 designates a retaining-bar located at the side of the machine-frame occupied by the clutch 8 and pulley 10 and having its forward end supported by a bolt or screw 19, that passes through a slot 18 in the bar and is seated in the machine-frame. The slot 18 permits reciprocation of the retaining-bar, and said bar is normally retained in a rearwardly-projected position through means of a retractile spring 20, that connects it to the machine-frame. The rear end of the retaining-bar 17 contains a slot 20, within which the main shaft 3 operates. (See Fig. II.) The width of the slot 21 is greater than the diameter of the main shaft, so that said shaft may rotate within the rear end of the retaining-bar without wearing it, and for the purpose of upholding the bar, so that it will not touch the shaft, I apply to the retaining-bar directly above the location of the shaft a wear-block 22, preferably of fiber, and which is adapted to rest and ride upon the clutch 8, as seen in Fig. I.

23 is a trip-block secured to the outer face of the retaining-bar 17 in proximity to the inner end of the clutch 8. This trip-block is



provided with an inwardly and downwardly projecting beveled finger 24, (see Figs. I and XV,) that occupy a position in the path of travel of the arm 15, projecting from the clutch slide-bolt 12. When the main shaft 3 is being driven through the medium of the loose pulley 10 and clutch 8, the slide-bolt 12 in said clutch is held projected into engagement with the dogs 11 of said loose pulley, thereby creating connection between the loose pulley and main shaft. The shaft then makes one revolution, and the retaining-bar being in its rearward position, in which it is held by the spring 20 when the arm 15 of the slide clutch-bolt reaches the inclined beveled finger 24, said arm rides onto said finger, with the result that the slide-bolt 12 is withdrawn from engagement with the loose pulley-dog 11 previously engaged thereby, permitting said loose pulley to rotate freely on the main shaft while the clutch 8 remains at rest with the arm of the slide-bolt in engagement with the stop-block. The mechanism of the stapling-machine previously operated when the loose pulley and clutch were in engagement then remains at rest until the loose pulley and clutch are again turned into gear in the manner hereinafter to be explained.

25 designates a reciprocating rod having its rear end journaled to the crank 4 of the main shaft 3 (see Fig. IV) and having its forward end reduced into a stem 26, upon the termination of which is a nut 27, that confines an expansion-spring 28. The stem of the reciprocating rod 25 is loosely positioned in the leg 29 of a reciprocating carrier 30, which rides upon guides 31 of the table 1<sup>a</sup> of the machine-frame and is confined by bars 32. (See Figs. III and V.) The leg 29 of the carrier 30 is held normally projected in a rearward direction by the spring 28 on the reciprocating rod-stem 26. The carrier 30 is provided with a longitudinal slot 33 and a slideway 34, the latter of which is located in the upper side of the carrier.

35 is a slide seated in the slideway 34 and provided with a longitudinal slot 36.

37 is a post bearing a washer 38 on its lower portion and having its lower end extending through the slot 36 in the slide 35 and the slot 33 in the carrier 30. The lower termination of the post is threaded, as seen at 39, Fig. V, and is seated in a washer 40, that is adapted to move beneath the carrier 30, while the slide 35 rides in the slideway 34, the construction providing for movement of the slide 35 and washer 40 independent of the carrier 30. The post 37 is adapted to support a basket-form 41, that is rotatably mounted thereon to receive the basket to be stapled and permit of all of the sides being moved into a position facing the stapling mechanism.

42 is a stud carried by the slide 35 and to which is fitted a rocking lever 43, pivoted to the machine-table 1<sup>a</sup> at 44. The inner arm of

the rocking lever 43 is provided with a slot 45, in which the slide-stud 42 operates. The outer arm of the rocking lever 43 is situated in a notch 17<sup>a</sup> in the upper edge of the retaining-bar 17, by which the main-shaft clutch 8 is controlled.

46 designates a cushion-pin mounted in the carrier 30 at the rear of the slide 35 and backed by an expansion-spring 47. (See Fig. IV.) This cushion-pin serves to hold the slide 35 forwardly, so that the basket-form 41 will be centralized above the parts beneath it and will not strike said parts when rotated. The pin is also adapted to receive the rebound of the slide 35 after the machine has been operated in the introduction of staples in the baskets mounted on the form 41.

48 designates standards mounted upon the frame of the machine and by which the staple-wire delivery and feed mechanism is supported. The staple-wire A (see Figs. IV, XI, and XIII) is contained in a pair of reel-housings 49, (see Fig. XIII,) that are supported by arms 50, supported from the rear portion of the machine-frame, as seen in Figs. I, III, and IV. There are two of said arms and wire-reel housings, from which two wires are conducted to guide-tubes 51, mounted upon arms 52, supported by the standards 48. The wires on passing through said tubes are directed downwardly, as seen in Fig. IV.

53 designates a feed-wheel shaft journaled in the standards 48 and bearing wire-feed wheels 54, that are located beneath the exit ends of the wire-guide tubes 51. The feed-wheels 54 are opposed by rollers 55, mounted upon rods 56, loosely positioned in standard-arms 48<sup>a</sup>. The rollers 55 are eccentrically positioned with respect to the axis of the rods 56, and they are held to the feed-wheels 54 by springs 57 on said rods. The feed-wheel shaft 53 is rotated through the medium of a ratchet-wheel 58, fixed thereto, and a rocker 59, that bears a spring-controlled pawl 60 for engagement with said ratchet-wheel. The rocker 59 is loosely mounted on the feed-wheel shaft and is united to the main shaft 3 of the machine by a connecting-rod 61, fitted to a crank-disk 62, carried by said main shaft.

63 designates a cross-bar extending transversely of the machine immediately beneath the delivery and feed mechanism, and in which are seated vertical wire-guide tubes 64, into which the wires A enter as they are fed downwardly from the feed-wheels 54. The guide-tubes 64 lead to vertical channels 65, extending through the cross-bar 63. (See Figs. IV, VI, and VII.) The cross-bar 63 is mounted upon a table 66, (see Fig. IV,) that is surmounted by outer guides 67, inner guides 68, and a central partition 69, located in the rear of the cross-bar 63. (See Fig. III.) 70 is a cap-plate mounted on said guides and partition.

71 designates staple-forming bars that are positioned on the table 66 between the guides



57 and 68 for reciprocation, each bar being provided at its rear end with a depending leg 72. The staple-forming bars bear at their forward ends pairs of forming-fingers 73, the terminations of which serve as wire-cutting edges. (See Fig. XI.)

75 designates driver-bars slidably positioned alongside of the staple-forming bars 71 and bearing drive-fingers 76, positioned intermediate of the forming-fingers 73, between which they operate, as seen most clearly in Figs. IX and XI. The slide-bars 71 and 72 are united to each other by tongue-and-groove connection, as illustrated in the figures referred to.

77 designates staple-form fingers reciprocally positioned longitudinally of the cross-bar 63 and adapted for movement across the channels 65, as seen in Figs. VI and VII. These fingers are normally projected across said channels by springs 78, located in the rear of the fingers. The form-fingers carry cams 79, having beveled faces 80. (See Figs. VI, VII, and VIII.)

81 designates retracting-slides for withdrawing the form-fingers 77 against the action of the springs 78. These retracting-slides are positioned between the guides 67 and 68. Each of the slides 81 is provided with an arm 82, (see Figs. III and XIV,) that enters a notch 74 in the forming-bar 71. (See Figs. IV and IX.)

83 designates return-bolts slidably mounted in barrels 84, located beneath the table 66 and having their rear end projecting from said barrels toward the legs 72 of the forming-bar 71. These return-bolts are backed by expansion-springs 85, that hold the bolts normally projected in a rearward direction to bear against the legs 72, as seen in Fig. IV.

86 designates dies that are mounted in uprights 87, mounted on the carrier 30 in positions to place said dies directly in advance of the channels 65 in the cross-bar 63, so that when the parts of the stapling mechanism are moved the dies and the forming-fingers 73 and driving-finger 76 will approach each other, as seen in Fig. XI.

In the practical use of this machine a drive-belt runs continuously on the loose pulley 10, and when the machine is at rest the clutch 8 is free from engagement with said loose pulley by reason of the slide-bolt 12 being held in a retracted position by the stop-block 23 of the retaining-bar 17, said bar being, as explained, held in a rearward position by the spring 20. The stock from which a basket is to be produced is then placed over the basket-form 41 in a folded condition, so that the rim of the basket will be present at the rear of the dies 86 when the form is rotated on its post 37. The basket-form is then pushed rearwardly toward the cross-bar 63. Upon the movement of the form as stated the slide 35, that supports the post 37, is carried in a direction corresponding to that of the form, and the inner end of the

rocking lever 43 is moved therewith, causing the outer end of said lever to be thrown forwardly. The lever therefore acts to shift the retaining-bar 17 forwardly and move the finger 24 of the retaining-block 23, carried by said bar, away from the arm 15 of the clutch slide-bolt 12. As a consequence this spring-pressed slide-bolt is thrown toward the loose pulley 10 and is engaged by one of the pulley-carried dogs 11, thereby putting the loose pulley and clutch of the machine into gear. The rotation of the main shaft 3 then takes place, and the first action thereof is to reciprocate the rod 25 in a rearwardly direction from the position in which it is seen in Figs. III and IV. On the movement of said rod the carrier 30 is moved rearwardly toward the cross-bar 63. Continued rotation of the main shaft carries the cam members 5 in the direction of the arrow, Fig. IV. The cam 6 of each cam member then first comes in contact with the rear end of each forming-bar 71, striking the upper portion of the legs 72 and moving the fingers 73 of said bars into the channels 65 in the cross-bar 63 in the passage through which the forward cutting edges of said fingers act to sever sections from the stapling-wire A, which projects downwardly into said channels in the rear of the form-fingers 77, which, as explained, are normally projected across said channels. Continued movement of the forming slide-bar results in the formation of a staple, which is produced between the forming-finger 73, as seen in Fig. XI. As soon as the staples have been produced the movement of the forming-bars results in the retracting-slides 81 engaging with the beveled faces 80 of the cams 79, forming a part of the form-fingers 77. When the retracting-slides engage said cams, the form-fingers are retracted out of the channels 65, thereby removing them from their previous positions in front of the staples. The driver-fingers 76 of the driver-bars 75 are then carried forwardly under the action of the cams 7, and the said driver-fingers push the previously-formed staples forwardly from their position between the forming-fingers 73 and force them through the basket on the basket-form 41, and their ends are clenched by reason of coming in contact with the dies 86, which, as explained, were previously moved rearwardly, where they occupy the position illustrated in Fig. XI. After the main shaft has made a complete rotation and the staples have been formed and driven, as explained, the basket-form is moved forwardly by the reciprocating rod 25, thereby causing the retaining-bar to carry the stop-block 23 rearwardly, so that the finger of said block will be engaged by the arm of the clutch slide-bolt to throw the clutch out of gear with the loose belt-pulley. The machine then remains at rest until the action described for putting it in operation again takes place after the basket-form has been



turned to present a fresh side of the basket to be stapled.

The staple-forming bars 71 and the driver-bars 75 are arranged to move independently under the actuation of the cams that strike them to press them forwardly; but inasmuch as only the staple-forming bars receive the engagement of the return-bolts 83 to throw them rearwardly after they have been actuated in a forward direction it is necessary to provide connection between the bars for the return of the driver-bar. This connection I provide by the application of pins 71<sup>a</sup> to the forming-bars, which project into longitudinal slots in the driver-bars and which engage the driver-bars in said slots, as seen in Fig. XVI, to unite said bars 71 and 75 so that they will travel together on their return stroke.

I claim as my invention—

1. In a stapling-machine, the combination of a frame, two independent pairs of staple-forming bars, a driving-bar, movably connected with each of said staple-forming bars, two independent form-fingers in alinement with and movable in opposite directions to one another, at right angles to the forming and driving bars, a cam mounted on each of said form-fingers, two independent retract-

ing-bars for engagement with said cams to move the form-fingers in opposite directions out of the path of the driving-bars, a main shaft rotatably mounted in the frame to operate the staple-forming mechanism.

2. In a stapling-machine, the combination of a frame, two independent pairs of staple-forming bars, a driving-bar, movably connected with each of said staple-forming bars, two independent form-fingers in alinement with and movable in opposite directions to one another, at right angles to the forming and driving bars, a cam mounted on each of said form-fingers, two independent retracting-bars for engagement with said cams to move the form-fingers in opposite directions out of the path of the driving-bars, an inner rectangular guide and an outer L-shaped guide mounted on the frame, between which said retracting-bars are adapted to slide, a main shaft rotatably mounted in the frame to operate the staple-forming mechanism.

In testimony whereof I have hereunto set my hand this 23d day of March, 1903.

GEORGE A. EDE.

In presence of—

A. H. JORAM,

S. O. DILLENDER.