

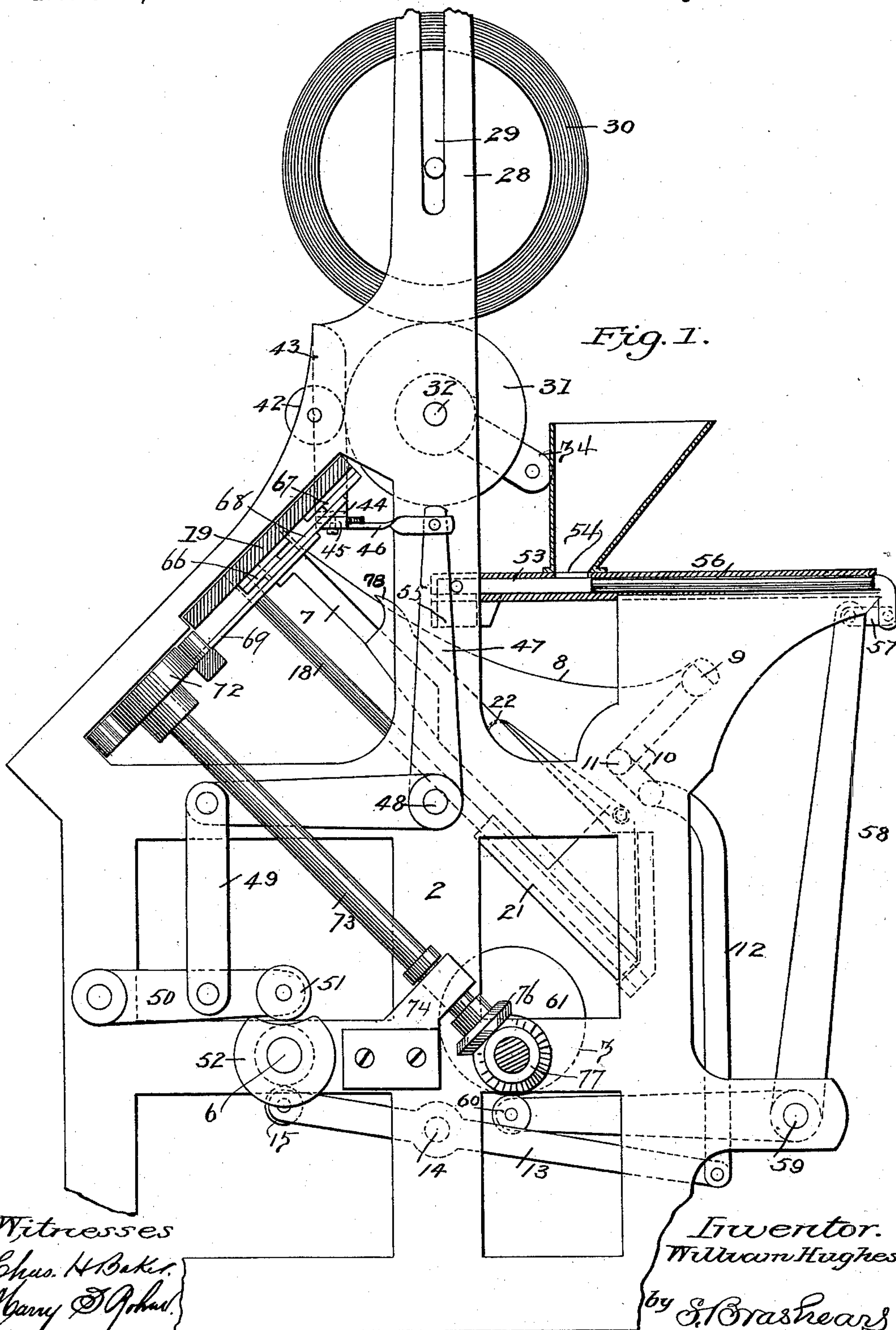
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7 Sheets—Sheet 1.

W. HUGHES.
CIGARETTE MACHINE.

No. 540,210.

Patented May 28, 1895.



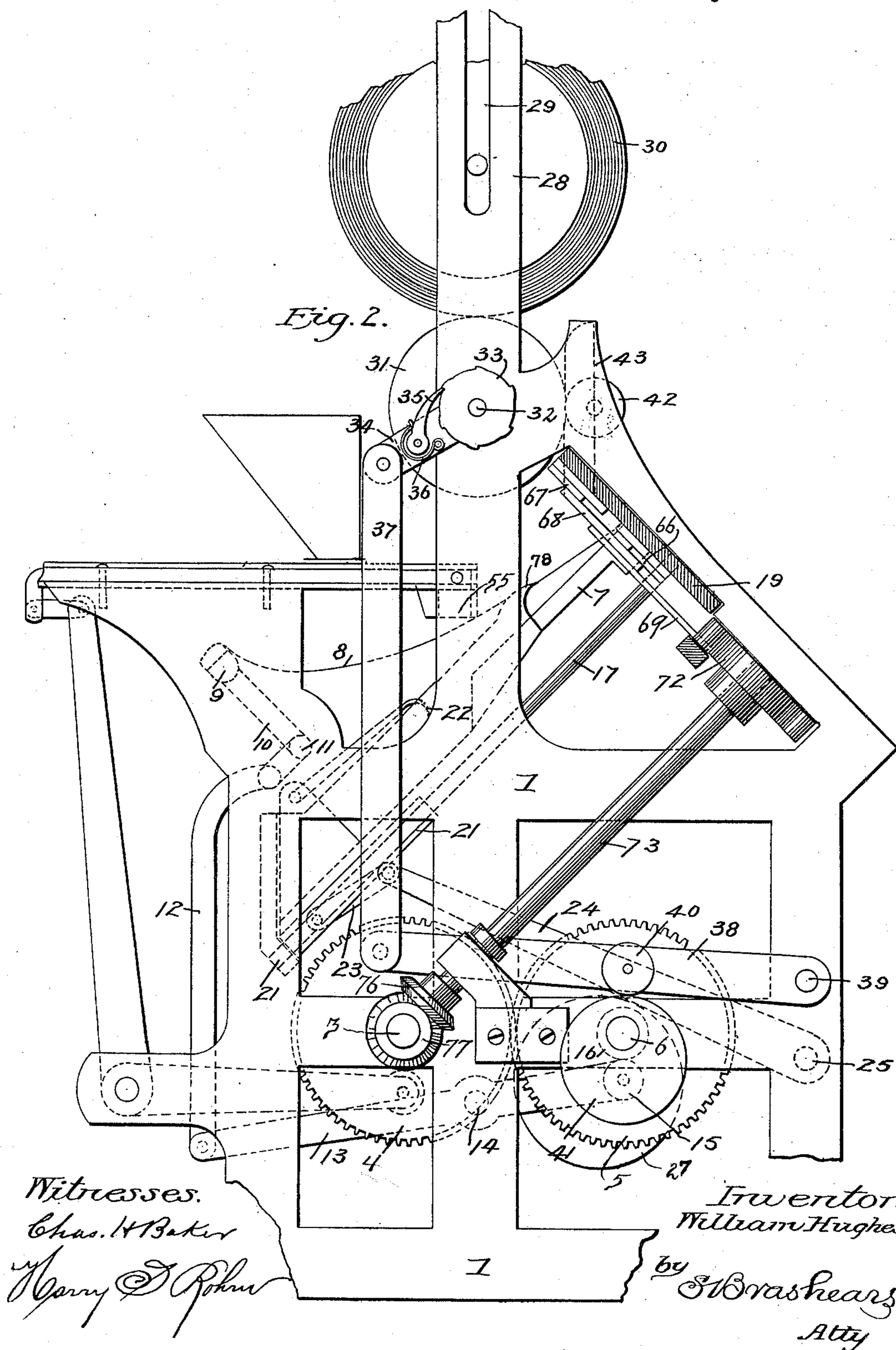
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7 Sheets—Sheet 2.

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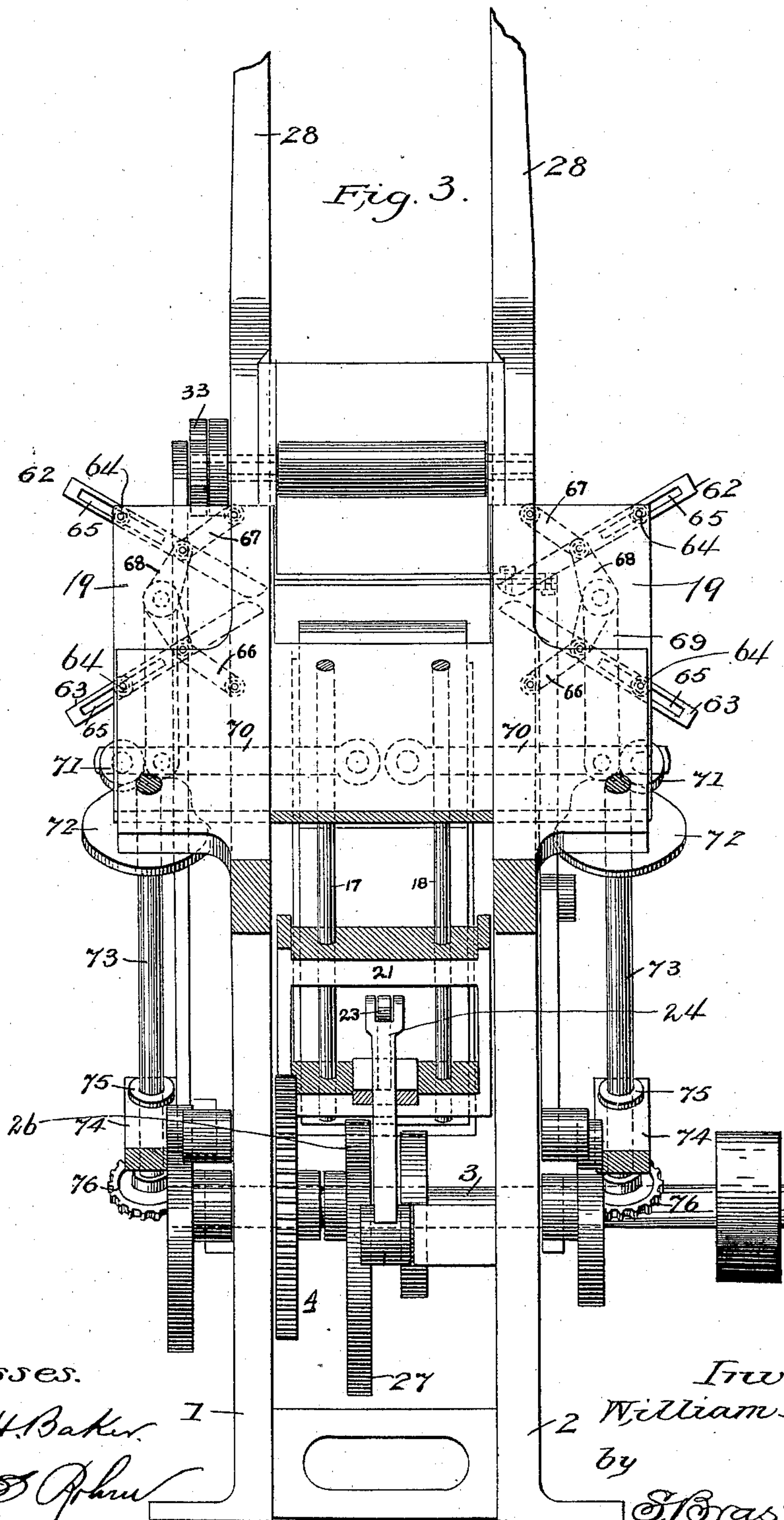
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7 Sheets—Sheet 3.

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Witnesses.

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Inventor.

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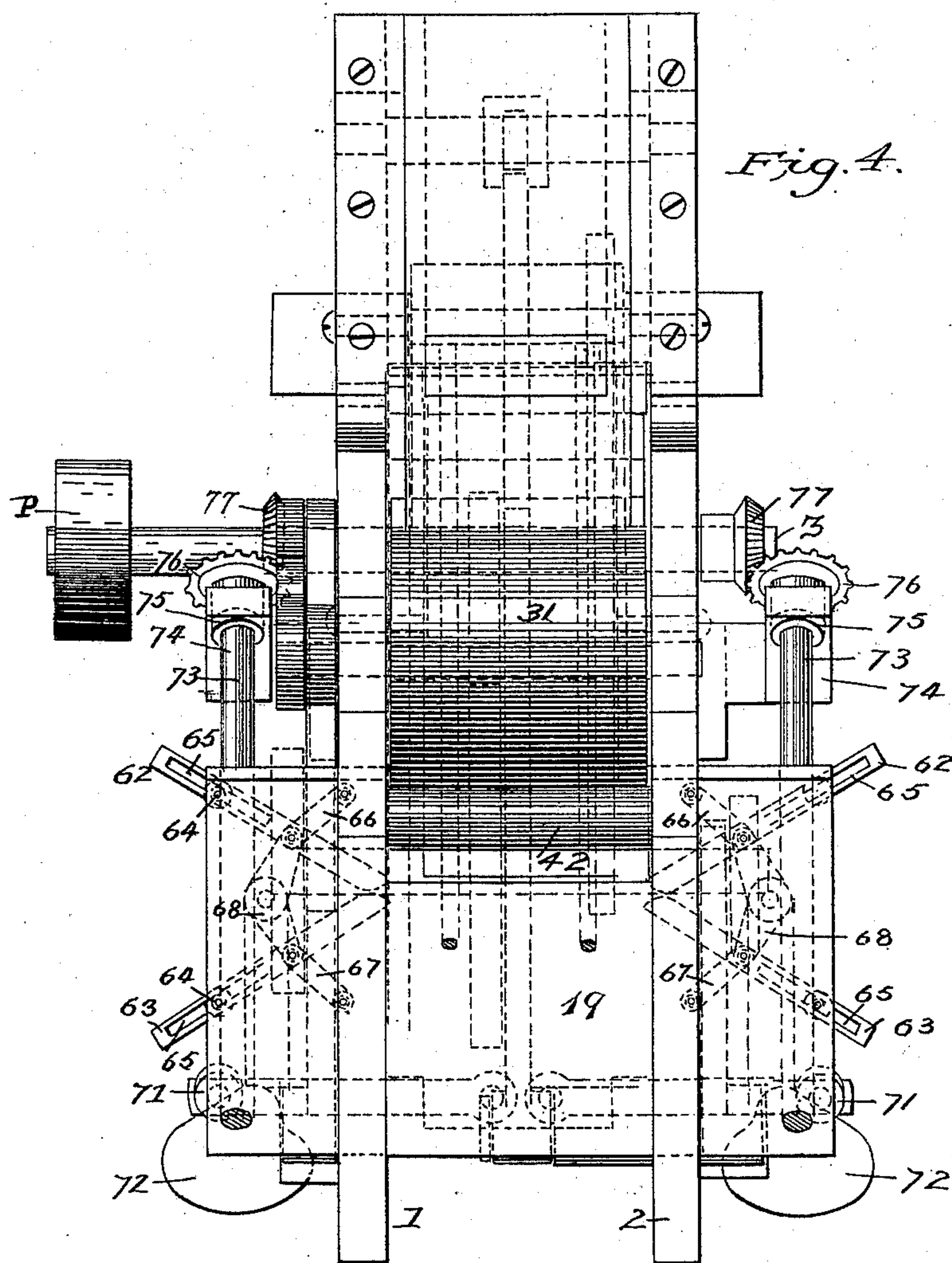
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7 Sheets—Sheet 4.

W. HUGHES.
CIGARETTE MACHINE.

No. 540,210.

Patented May 28, 1895.



Witnesses.
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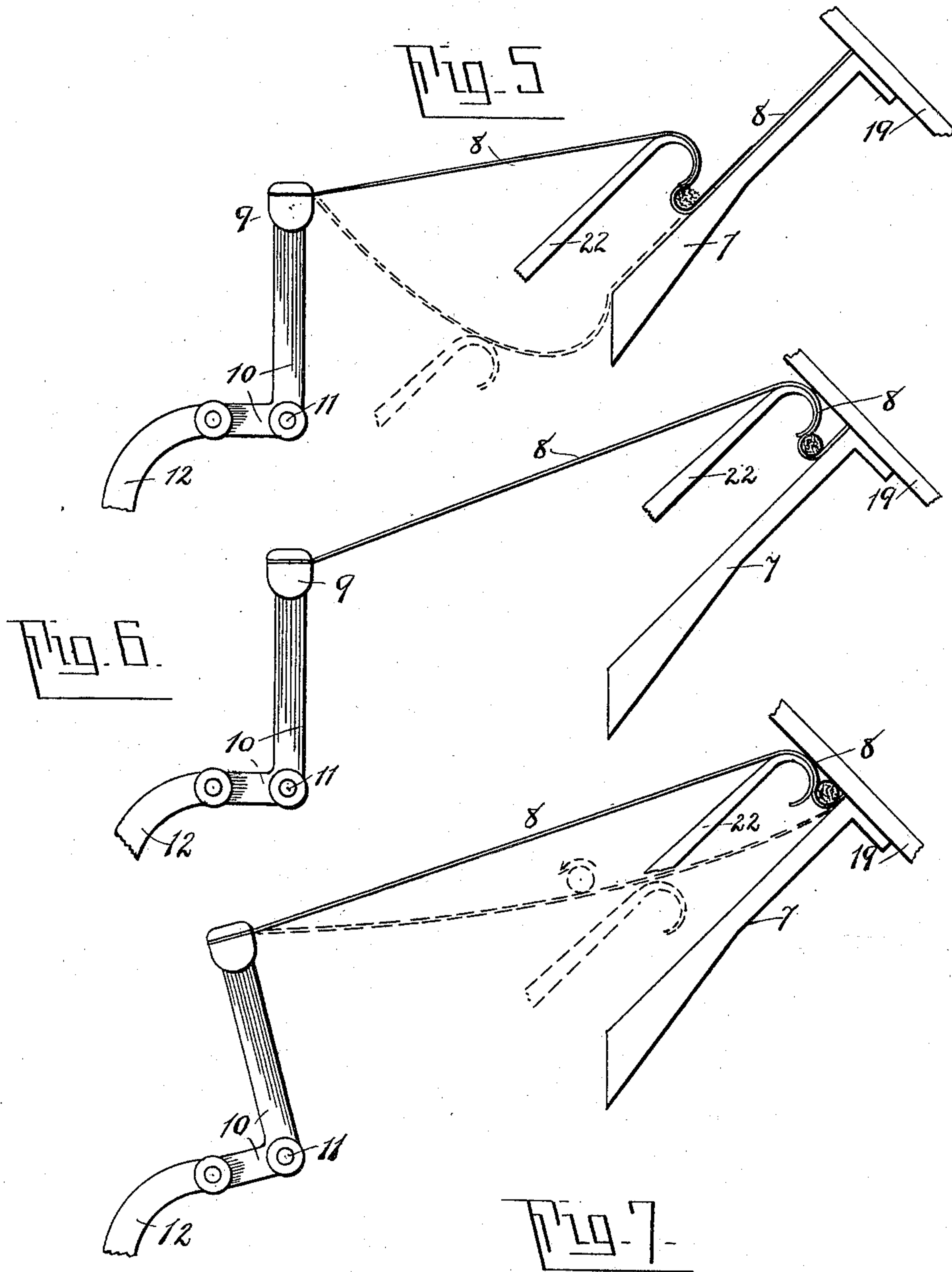
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7 Sheets—Sheet 5.

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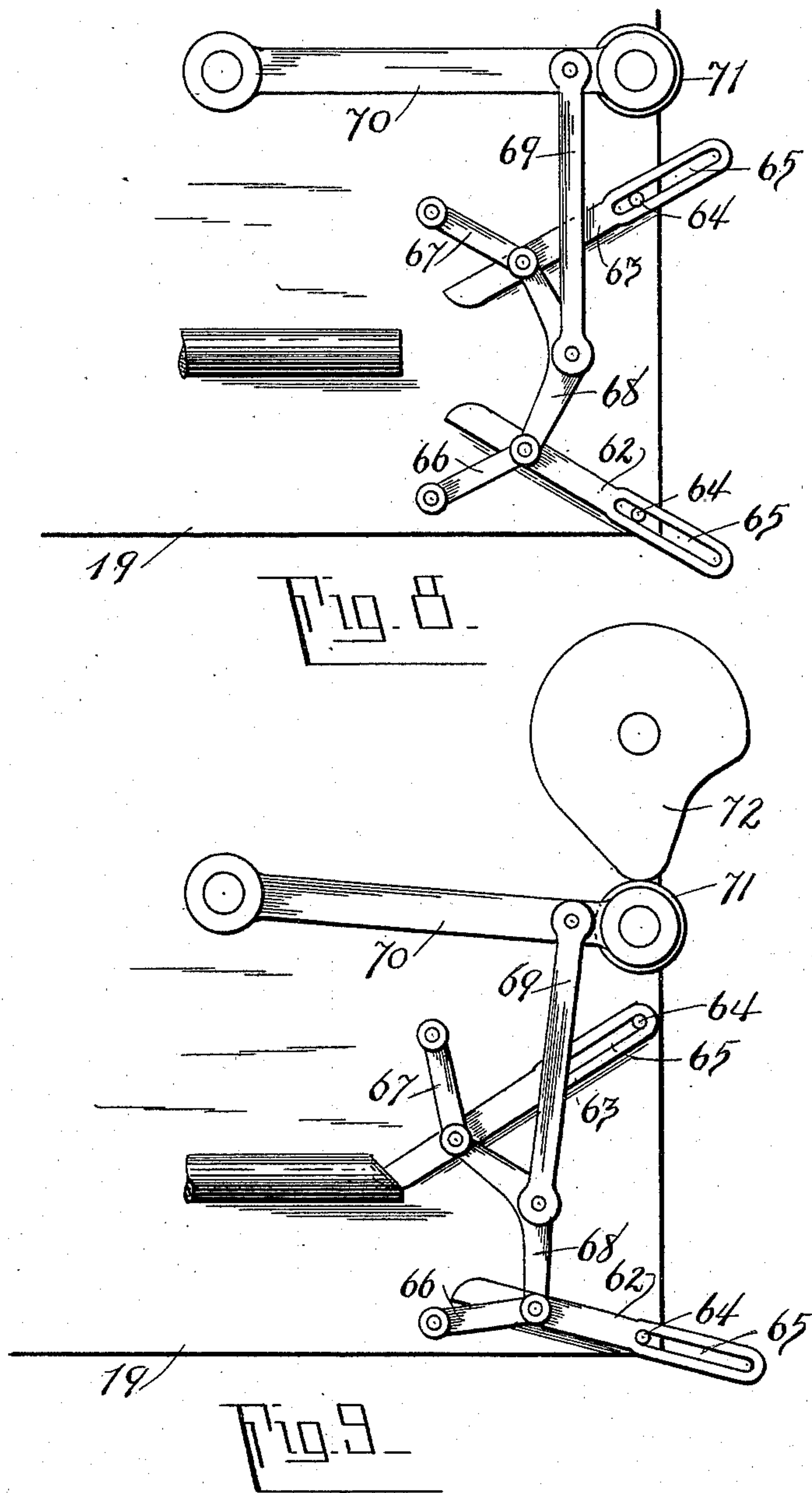
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7 Sheets—Sheet 6.

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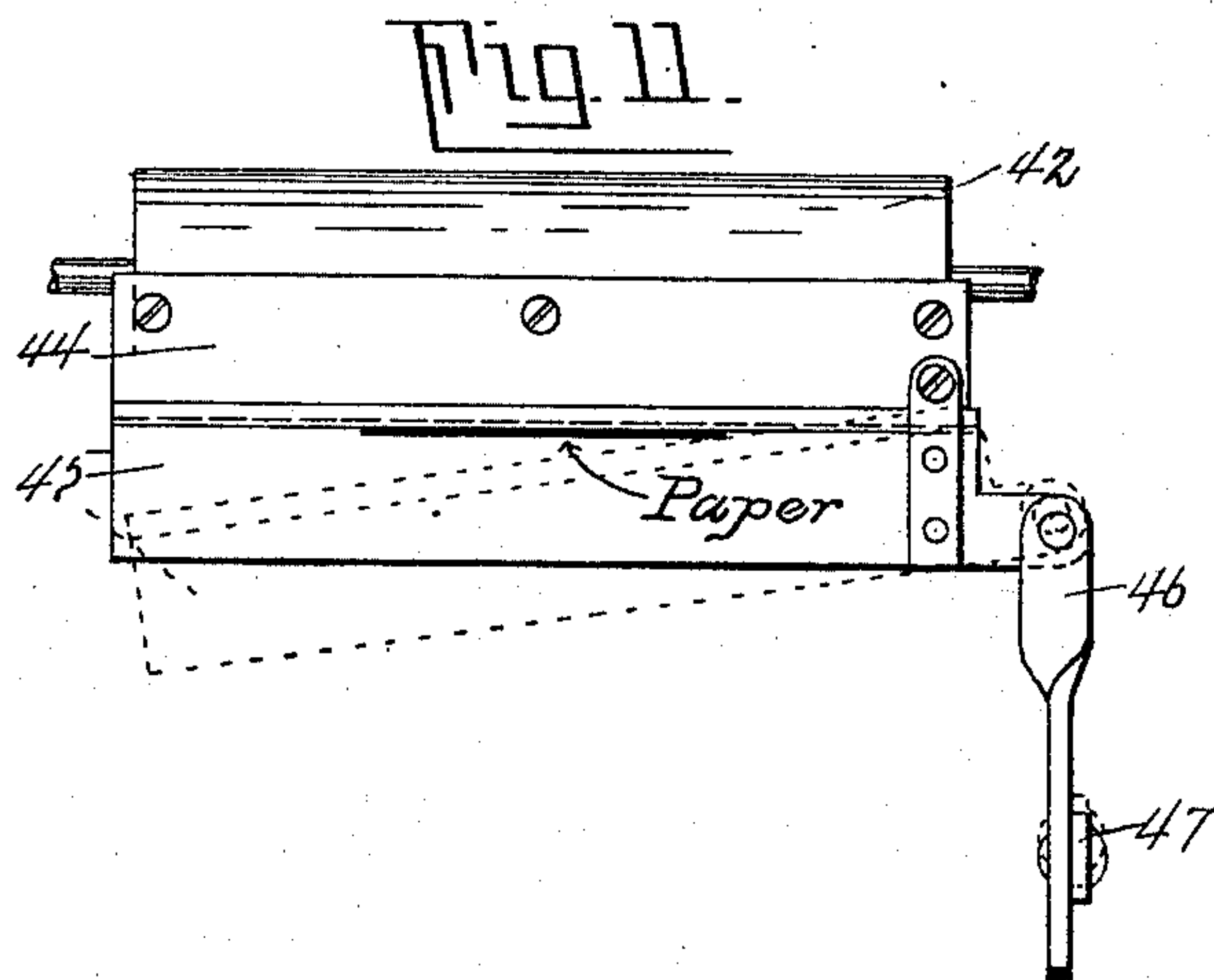
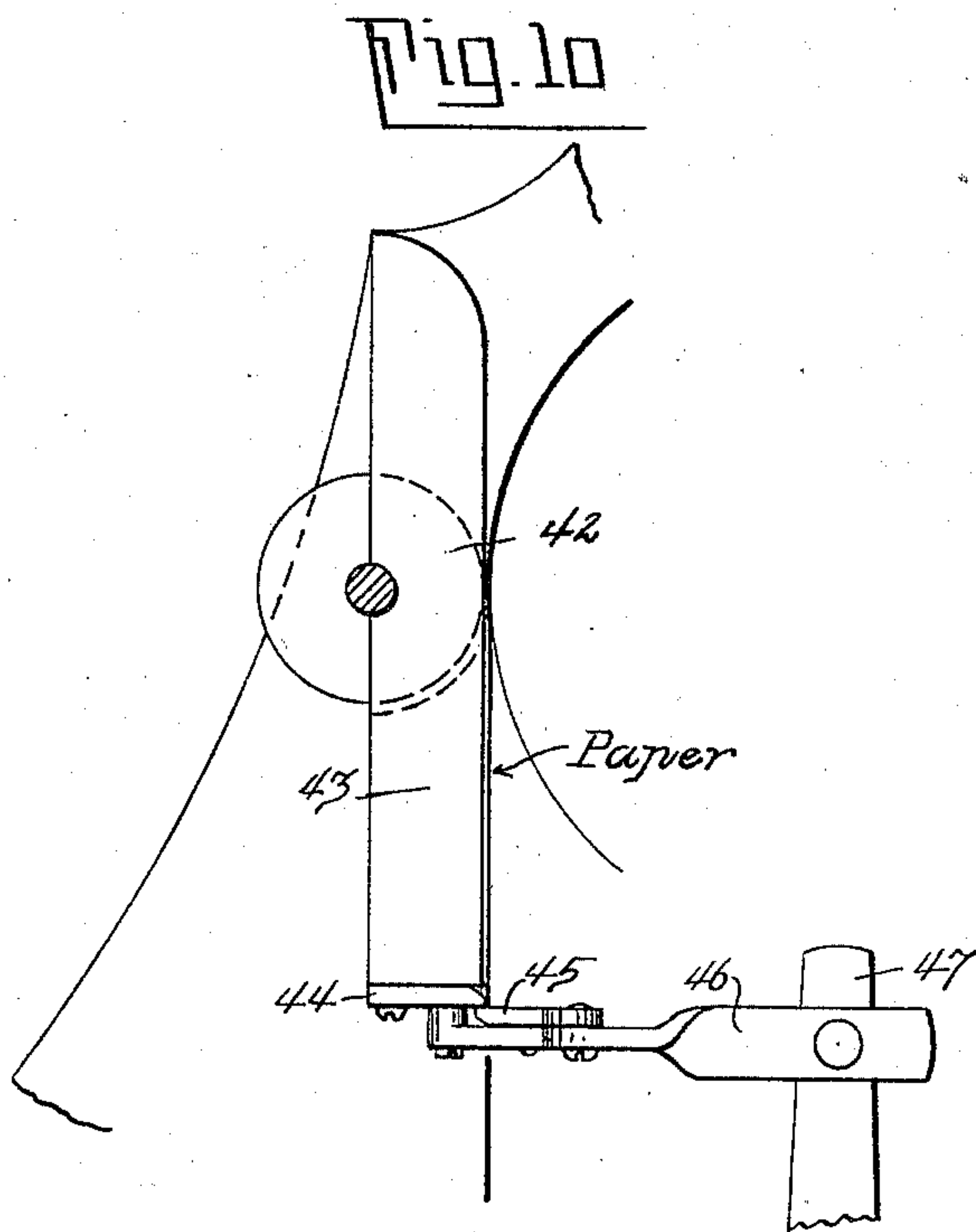
(No Model.)

7 Sheets—Sheet 7.

W. HUGHES.
CIGARETTE MACHINE.

No. 540,210.

Patented May 28, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM HUGHES, OF MEXICO, MEXICO.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 540,210, dated May 28, 1895.

Application filed August 23, 1893. Serial No. 483,838. (No model.) Patented in Mexico January 30, 1893, No. 404, and in Spain June 21, 1893, No. 14,348.

To all whom it may concern:

Be it known that I, WILLIAM HUGHES, a citizen of the United States, residing at Mexico city, in the Republic of Mexico, have invented certain new and useful Improvements in Cigarette-Machines, (for which I have obtained the following foreign patents, to wit: Mexican, No. 404, dated January 30, 1893, and Spanish, No. 14,348, dated June 21, 1893, registered in Colonial Office March 31, 1894;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a new and improved cigarette machine especially designed for the manufacture of cigarettes having folded or tucked in ends and known on the market as "Spanish or Havana" cigarettes, and has for its object to provide a machine wherein the paper wrappers and tobacco are fed to the machine and therein rolled into cylindrical shape to form a cigarette, the ends of the cigarettes folded or tucked in, and the completed cigarettes delivered from the machine in uniform size and shape.

To these ends my invention consists in the various constructions and arrangements and combinations of parts hereinafter fully described and afterward pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved machine, partly in section. Fig. 2 is a similar view looking from the other side. Fig. 3 is an end view partly in section. Fig. 4 is a top plan view of the machine. Fig. 5 is a detail view showing the cigarette-rolling mechanism. The dotted lines show the apron ready to receive the tobacco and paper before the bight is formed therein. Fig. 6 is a view of the same mechanism as above, showing the rolling completed. Fig. 7 is a similar view showing the cigarette in position for crimping, the dotted lines showing the position assumed by the apron and lever during the release of the completed cigarette. Fig. 8 is a view showing the position of the crimping device immediately before the cigarette is crimped. Fig. 9 is a similar view showing the crimping devices as in op-

eration. Figs. 10 and 11 are detail views of the paper-cutting mechanism.

The frame of the machine consists of two parallel side frames 1 and 2 of suitable dimensions and configuration and firmly secured at the proper distance apart by means of suitable braces or tie-rods.

3 indicates the drive shaft which is mounted in suitable bearings in the lower part of the machine frame and is driven in any preferred and well known manner. To one end of said drive shaft is secured a gear wheel 14 which meshes with a similar gear wheel 5 mounted on one end of a shaft 6 mounted in bearings in the frame of the machine. The various different parts of the machine necessary to form the completed cigarette derive their motion from the two shafts 3 and 6 as will hereinafter appear.

The numeral 7 indicates the table upon which the cigarette is rolled and consists of a flat plate secured to the frame of the machine in an inclined position as shown. Over said table 7 is disposed an apron 8, secured at one end to the upper end of the table and at its other end secured to a clamp bar 9. Said apron may be made of cloth, rubber, or any other material desired or preferred. Said clamp bar 9 is secured at each end to the upper end of a bell-crank lever 10 pivoted to the frame at 11, the other end of said bell crank lever 10 being connected to the upper end of a connecting rod 12 which at its lower end is pivoted to a lever 13 the latter in turn being pivoted near its center as at 14 Figs. 1 and 2, to the frame of the machine and carrying at its extremity a friction roll 15 which bears against a cam 16 upon the shaft 6. The said cam in its revolution with the shaft 6 depresses the inner end of the lever 13 and through the medium of the rod 12 and bell crank levers 10 swings the clamp bar 9 forward and straightens out the apron 8 for the purpose hereinafter made apparent.

17 and 18 indicate two guide rods arranged beneath the table 7 and parallel therewith, said guide rods being secured at their upper ends to a plate 19 rigidly secured to the frame of the machine and at their lower ends secured to brackets secured to the

frame of the machine. Mounted and adapted to travel upon said guide rods 17 is a carriage 21 in the upper portion of which is journaled a hooked or curved plate 22 which is adapted to travel with said carriage and as it is moved upward and over the table 7 engages the lower side of the apron 8 and forces a part of the apron to crimp, fold or roll about the paper and tobacco, and as the said hooked plate continues to move upward over the table 7, the paper and tobacco are rolled to form a cigarette, as more fully hereinafter described.

The reciprocating movement of the carriage 21 is accomplished as follows: To the carriage is pivotally secured one end of a link 23 which at its other end is pivoted to one end of a lever 24 the other end of said lever 24 being pivotally connected to the frame of the machine at 25. A friction roller 26 is mounted upon the lever 24 near its center and bears upon the periphery of a cam 27 secured on the shaft 6. As said cam 27 rotates with the shaft 6 it raises and lowers the lever 24 and through the medium of the link 23 reciprocates the carriage 21 back and forth upon the guide rods 17 and 18. The cam 27 may be slightly flattened or otherwise adjusted or shaped, as will be obvious to a mechanic, so that at a certain point during its revolution it will have no effect to either raise or lower the lever 24 and hence the carriage, for an interval will remain stationary. The cam is so arranged that this will occur when the carriage is at the extreme limit of its upward movement, for the purpose hereinafter described.

From the sides 1 and 2 of the frame of the machine extend upwardly projecting standards 28 which from their top extremities downward for a suitable distance are slotted as at 29, within which slots are adapted to rest the journals of a drum or paper roll 30, said journals having a free movement in said slotted standards. The paper roll 30 rests upon a cylinder 31 mounted on a shaft 32 journaled in the standards and as said cylinder revolves the paper roll 30 is rotated to feed off the paper.

The cylinder 31 is rotated as follows: Secured to one end of the shaft 32 of the cylinder 31 is a ratchet wheel 33, and loosely mounted on the shaft 32 is an arm 34 to which is pivoted a pawl 35 the free end of which engages the teeth of the ratchet wheel 33 and is held in engagement therewith by a spring 36. The arm 34 is pivotally secured to a connecting rod 37 the other end of which is pivotally connected to one end of a lever 38 the other end of said lever being pivoted to the frame of the machine at 39. Upon the lever 38, near its center, is journaled a friction roller 40 which bears against the periphery of a cam 41 rigidly mounted on the shaft 6. As the cam 41 rotates with the shaft 6 it raises and lowers the lever 38 and through the medium of the connecting rod 37 operates the arm 34

carrying the pawl 35, the movement being sufficient to cause the pawl to turn the ratchet wheel 33 a distance equal to two of its teeth, which will feed an amount of paper from the roll 30, sufficient for the manufacture of one cigarette. As the paper is fed from the roll 30 it passes between the cylinder 31 and a roller 42 supported by a plate 43 secured to the frame of the machine. The plate 43 serves as a guide for the paper and also to support the paper cutting mechanism. The roller 42 revolves with the cylinder 31 through friction but if desired it may be positively rotated by gearing connected with the shaft 32.

To the lower edge of the plate 43 is secured the cutting mechanism consisting of a fixed blade 44 and a pivoted blade 45 constituting a pair of shears. The cutting edges of said blades are preferably serrated or toothed and said blades may either cut at an angle in the manner of ordinary shears, or the pivoted blade may be so pivoted as to approach the fixed blade evenly and squarely, and said blades may be either straight or curved.

The cutting mechanism is operated as follows: To one extremity of the pivoted blade 45 is secured one end of a link 46 which at its other end is secured to the upper extremity of a bell crank lever 47, pivoted at 48 to the frame, the lower extremity thereof being pivotally connected to one end of a link 49 which at its other end is similarly connected to a lever 50 at or near the center of the latter. The lever 50 is pivoted at one end to the frame of the machine and is provided at its other end with a friction roll 51 which bears against the periphery of a cam 52 rigidly mounted on the shaft 6. As the cam revolves it raises and lowers the lever 50 and through the medium of the link 49, bell crank lever 47 and link 46 operates the pivoted blade 45 to cut the paper, the cut off portion falling down upon the apron 8.

The tobacco is fed to the apron as follows: The numeral 53 see Fig. 1 indicates a flattened tube, open at its outer end and secured in a horizontal position to the frame of the machine. Said tube is provided with a feed opening 54 of a size necessary to receive the proper quantity of tobacco to make one cigarette at a time, said opening being formed in the top of the tube 53, and is also provided with a discharge spout 55 at its inner end. In said tube 53 is fitted a plunger 56 which is caused to reciprocate back and forth within said tube to discharge the tobacco on the apron as follows: To the outer end of the plunger 56 is pivoted one end of a link 57 which is pivotally secured at its other end to the upper end of a bell crank lever 58 mounted on the shaft 59 secured to the lower part of the frame of the machine. The said bell crank lever at its other extremity carries a friction roll 60 which bears against the periphery of the cam 61 rigidly mounted on the shaft 3. The cam 61 in its rotation rocks the

bell crank lever 58 upon its shaft 59 and through the link connection 57 transmits to the plunger 56 a reciprocating motion.

The mechanism for folding or tucking in the ends of the cigarettes is constructed as follows: To the under side of the plate 19 and opposite the upper end of the table 7 are secured the tuckers 62 and 63. As the tuckers and their operating mechanisms upon each side are duplicates of each other it will only be necessary to describe the tuckers and operating mechanism upon one side of the machine. The tuckers 62 and 63 each consists of a bar curved at the inner end and slotted, as shown. Guide pins 64 pass through slots 65 of the tuckers and into the plate 19. To the tuckers 62 and 63 are pivotally secured links 66 and 67 the other ends of the said links being pivoted to the plate 19. Pivoted to the tuckers 62 and 63 and common to both, is a lever 68, which at its center is pivoted to one end of a connecting rod 69, the other end of said rod being pivoted to a lever 70 which at its inner end is pivoted to the plate 19 and at its outer end carries a friction roll 71. This friction roll 71 bears against the periphery of an irregularly shaped cam 72 mounted upon one end of a shaft 73, said shaft at its upper end having a bearing in the plate 19 and at its lower end journaled in a bracket 74 secured to the frame of the machine, a collar 75 being secured to the shaft and bearing against the bracket 74. Upon the lower end of the shaft 73 is secured a bevel gear 76 which meshes with a similar gear 77 secured to the end of the drive shaft 3, and by means of which the shaft 73 is rotated. Said shaft in its rotation rotates the cam 72 which at one period of its rotation causes the lever 70 to describe the arc of a circle and through the medium of the connecting rod 69 and lever 68 causes the tuckers 62 and 63 to alternately describe an oscillating or compound curved movement toward and from the end of the cigarette, the curved ends of the tuckers engaging the end thereof and folding or tucking in the end of the paper wrapper. I have shown the tuckers arranged at right angles to the table 7, but they may be arranged at any desired angle thereto, and instead of the tuckers being straight as shown they may be made angular or curved and will operate equally as well as if constructed as shown. In practice the levers bearing the friction rolls will be held in close contact with the peripheries of the different cams by means of springs in a manner common and well known, and which I have not illustrated in the drawings.

The operation of the machine is as follows: Power is applied to pulley P, to drive the shaft 3, which, through the medium of gear wheels 4 and 5 communicate motion to the shaft 6. The shaft 3 in its rotation revolves the cam 41 which latter raises the lever 38, and through the medium of the connecting rod 37 operates the arm 34 carrying the pawl

35 to turn the ratchet wheel 33 which operates the cylinder 31 and thus turns the paper roll 30 the proper distance to reel off sufficient paper for the manufacture of one cigarette. As the paper is fed off from the roll 30 it passes between the cylinder 31 and the roller 42. The cam 52 on the shaft 6 now commences to raise the lever 50 and through the medium of the link 49, bell crank lever 47 and link 46 operates the pivoted blade 45 of the cutting mechanism and cuts off the proper length of paper to form one wrapper the paper falling into the pocket in the apron, and held in proper position by the projections 78 on the frames 1 and 2. As the hooked plate 22 engages the bottom of the apron the cam 61 on the shaft 3 rocks the bell crank lever 58 upon its pivot 59 and through link connection 57 causes the plunger 56 to move forward in the flattened tube 53 and discharge the tobacco therefrom through the discharge spout 55 into the wrapper on the apron. As the carriage 21 carrying the hooked plate 22 moves forward it engages the under side of the apron and forms a fold or bight therein and its continued movement rolls the wrapper and tobacco within the fold into cylindrical shape upon the table 7 to form the cigarette. As before described the movement of the carriage is effected through the medium of the cam 27 mounted on the shaft 6 lever 24 and link 23 and the cam 27 is so adjusted that when the carriage has reached the extreme limit of its forward movement it will have no effect to either raise or lower the lever 24 and hence the hooked plate 22 will, for an instant, remain stationary, holding the cigarette between the tuckers 62 and 63. The said tuckers through the medium of the shaft 73 geared to the shaft 3 and the cams 72, lever 70, connecting rods 69 and compound levers 68, are given an oscillating or compound curved movement toward and from the ends of the cigarette, tucking or folding in the ends of the wrapper. As the carriage is moved in the reverse direction and after it has passed from off the table 7 a cam upon the shaft 3 operates the levers 13, 12 and 10 and swings the clamp bar to straighten out the apron taut whereupon the finished cigarette rolls off the apron into a suitable receptacle.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cigarette machine the combination of an apron, and means for forming and traveling the "bight" in the apron, with mechanisms for feeding wrappers and tobacco on to the apron at the proper time, and mechanism for tucking the ends of the rolled cigarette while it is held in the bight of the apron, substantially as described.

2. The combination of tobacco and paper feeding mechanisms, with an apron, a reciprocating plate for forming and moving the "bight" in the apron in which the cigarette

is rolled, and tuckers adapted to tuck the ends of the cigarette before it is released from the bight, substantially as described.

3. In a cigarette machine, the combination with an apron in which to roll the cigarette, and mechanisms for feeding the wrapper and tobacco thereto, of means for forming the bight in the apron and causing such bight to travel and tuckers adapted to fold or tuck in the ends of the wrapper while the cigarette is held in the bight, substantially as described.

4. In a cigarette machine, the combination with an apron a tobacco feed mechanism and means for feeding and cutting from a paper roll the wrappers, of means for forming a bight in the apron and moving such bight and tuckers adapted to fold or tuck in the ends of the cigarette while held in the bight, substantially as specified.

5. In a cigarette machine the combination with the wrapper and tobacco feeding mechanisms, of a table, an apron disposed above said table, a reciprocating plate arranged beneath said apron and adapted to engage the bottom of said apron to form a fold or bight in the same and operating to roll the cigarette in said bight or fold, and tuckers located at one end of the table adapted to tuck or fold in the ends of the rolled cigarette while they are held in the bight of the apron, substantially as described.

6. In a cigarette machine the combination with the wrapper and tobacco feeding mechanism, of a table, an apron disposed above said table, a reciprocating plate arranged beneath said apron and adapted to engage the bottom of the apron to form a fold or bight in the same and roll the cigarette in said fold or bight, tuckers located at one end of the table adapted to tuck or fold in the ends of the cigarette while it is held in the bight of the apron and means for stretching said apron taut to discharge the cigarette after it is tucked, substantially as described.

7. In a cigarette machine the combination with the tobacco and wrapper feeding and rolling mechanism, of tuckers adapted to engage the ends of the cigarette and tuck or fold in the ends of the wrappers, said tuckers consisting of reciprocating bars a swinging link and a connecting rod arranged substantially as described and means for reciprocating said rod whereby the tuckers are given an oscillating or swinging movement as they reciprocate substantially as described.

8. In a cigarette machine, the combination with the wrapper and tobacco feeding mechanism, the inclined table, the apron disposed above said table and the reciprocating plate arranged beneath the apron, of the tuckers consisting of reciprocating bars provided with suitable guides, the swinging links pivotally secured to the bars and means for communicating to said tuckers an oscillating or swinging movement simultaneously with their reciprocation to cause said tuckers to alternately engage the ends of the cigarette and

tuck or fold in the ends of the wrappers, substantially as described.

9. In a cigarette machine the combination with the wrapper and tobacco feeding mechanism, the inclined table the apron disposed above said table, and the reciprocating plate arranged beneath the apron, of the tuckers consisting of the slotted bars, the swinging links pivotally connected thereto and the guide pins engaging the slots of the bars, the lever pivoted to said tuckers, the connecting rod, the pivoted lever and the cam engaging said lever and carried by a shaft suitably mounted in the frame and geared to the drive shaft whereby the bars are swung laterally and simultaneously moved longitudinally toward the cigarette, substantially as described.

10. In a cigarette machine, the combination of an inclined table, an apron disposed above the same, a carriage traveling upon guides secured beneath the table and a curved or hooked plate attached to said carriage working between the apron and table to form and travel the bight therein, and means for reciprocating said carriage, and tuckers adapted to operate on the cigarette while held in the bight, substantially as described.

11. In a cigarette machine, the combination with the inclined table, of the apron disposed above the same, the carriage traveling upon guides secured beneath the table and the hooked plate pivotally attached thereto working beneath the apron to form and travel the bight therein and hold the cigarette in the bight during the tucking, the link, the lever secured at one end to said link and at its other end pivoted to the machine frame, and carrying a friction roller, and the cam mounted on the main shaft and engaging said friction roller and the tuckers arranged to operate, substantially as described.

12. In a cigarette machine, the combination with the tobacco and cigarette rolling mechanism, of the paper feed mechanism consisting of an intermittently rotating cylinder, guides for a vertically movable paper roll above said cylinder, a guide plate, a guide roller journaled in said plate, a fixed and a pivoted cutting blade attached to said plate, a link pivotally connected to one end of the pivoted blade a bell crank lever a link and a lever pivoted at one end to the frame and at its other end carrying a friction roller all arranged substantially as described, and a cam mounted on the main shaft, engaging said roller, substantially as described.

13. The combination of mechanism for rolling the cigarette and holding it when rolled, and the opposite pairs of tucking devices adapted to tuck in the ends of the cigarette wrapper while it is held; each device consisting of a pair of reciprocating tucker bars a lever pivotally connected to the adjoining bars, and swinging links pivotally connecting the opposite bars to a stationary support; with mechanism for reciprocating said connecting levers lengthwise, whereby the connected

tucker bars are given both a longitudinal and lateral movement and caused to alternately operate on the adjoining end of the cigarette, substantially as described.

5 14. The herein described tucking mechanism for cigarette machines, consisting of the opposite slotted tucker bars 62, 63; guide pins 64; the swinging links 66, 67; the lever 68 connecting bars 62, 63, and means for reciprocating said lever whereby the bars are given both
10 an oscillatory and longitudinal movement, all substantially as specified.

15 15. In a cigarette rolling machine, the combination of the table, the apron thereover, fastened at the top to the upper end of table, and at bottom to a movable support; and a blade adapted to form a bight in the apron working

beneath the apron and move the bight away from said support but above the table; with mechanism for reciprocating said blade, and
20 mechanism whereby the movable support is first moved so as to slack the apron sufficiently to enable the blade to form the bight therein, then held stationary until the cigarette is completed and then moved so as to tighten
25 the apron and discharge the cigarette over said support, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HUGHES.

Witnesses:

WM. M. EDGAR,
J. B. PHIPPS.