(No Model.)

4 Sheets—Sheet 1.

S. A. SHEPARD.

MACHINE FOR MAKING CIGAR BUNCHES.

No. 591,361. Patented Oct. 5, 1897.

Fig. 1.

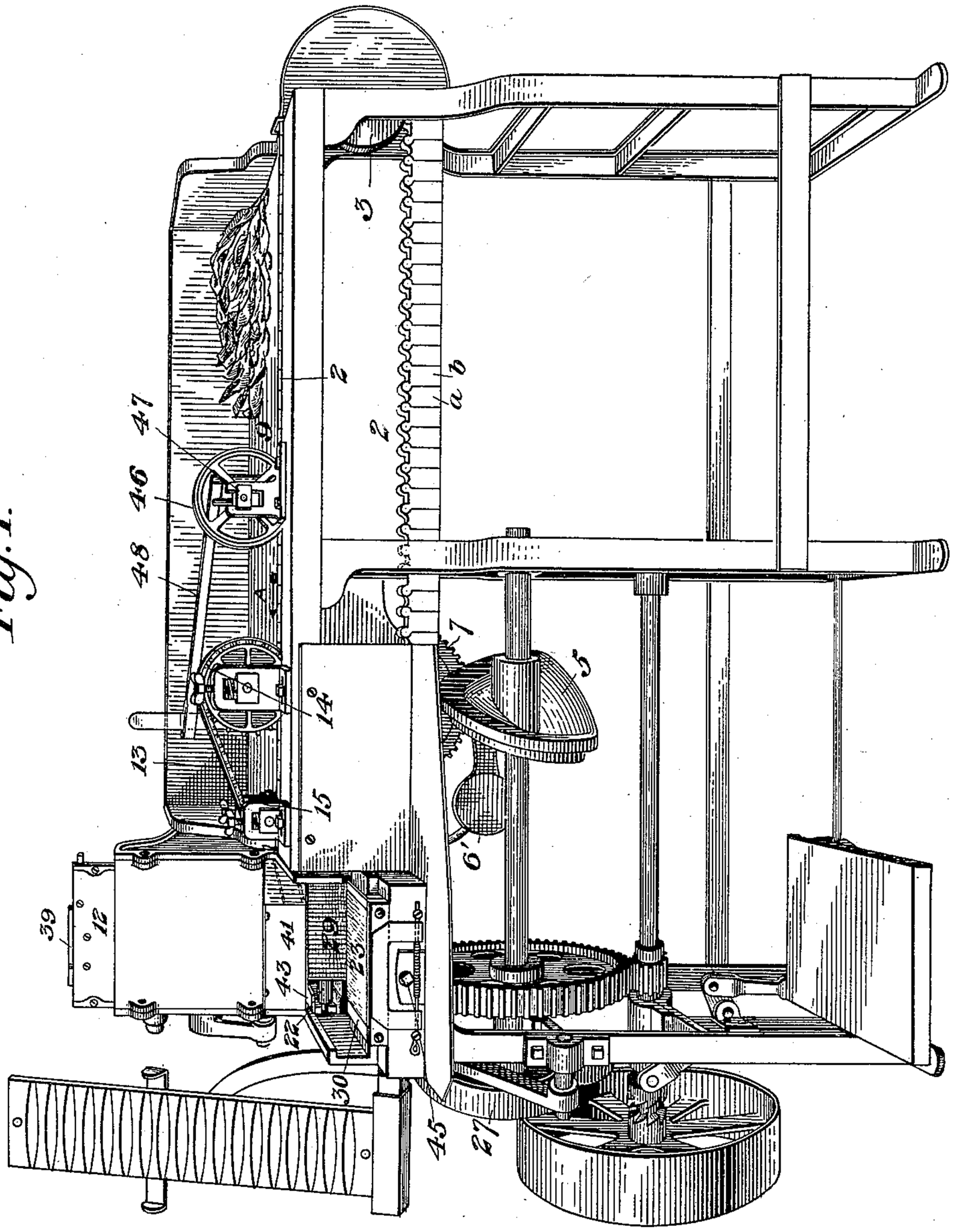
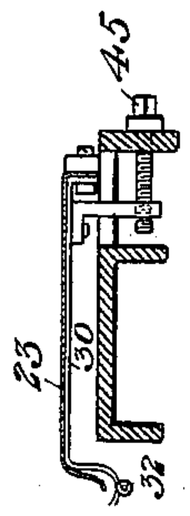


Fig. 8.



WITNESSES

C. E. Mackown

F. A. Connell

INVENTOR

S. A. Shepard

by Baxewell & Baxewell

his Attorneys.

(No Model.) 4 Sheets—Sheet 2.

S. A. SHEPARD.

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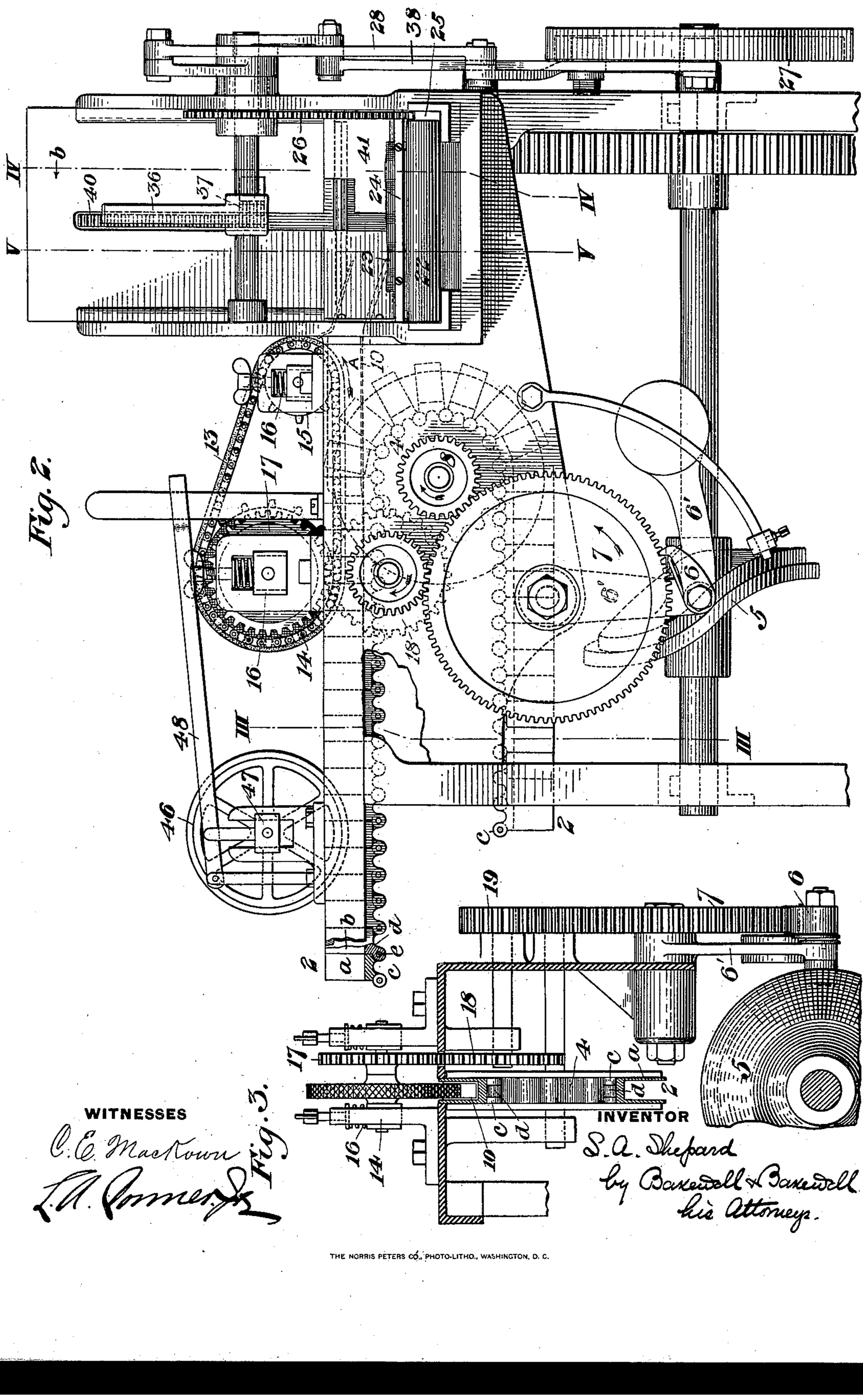

Fig. 2.

Fig. 3.

WITNESSES

C. E. Mackown

T. A. Somers

INVENTOR

S. A. Shepard

by Bakewell & Bakewell

his Attorneys.

(No Model.)

4 Sheets—Sheet 3.

S. A. SHEPARD.

MACHINE FOR MAKING CIGAR BUNCHES.

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Fig. 4.

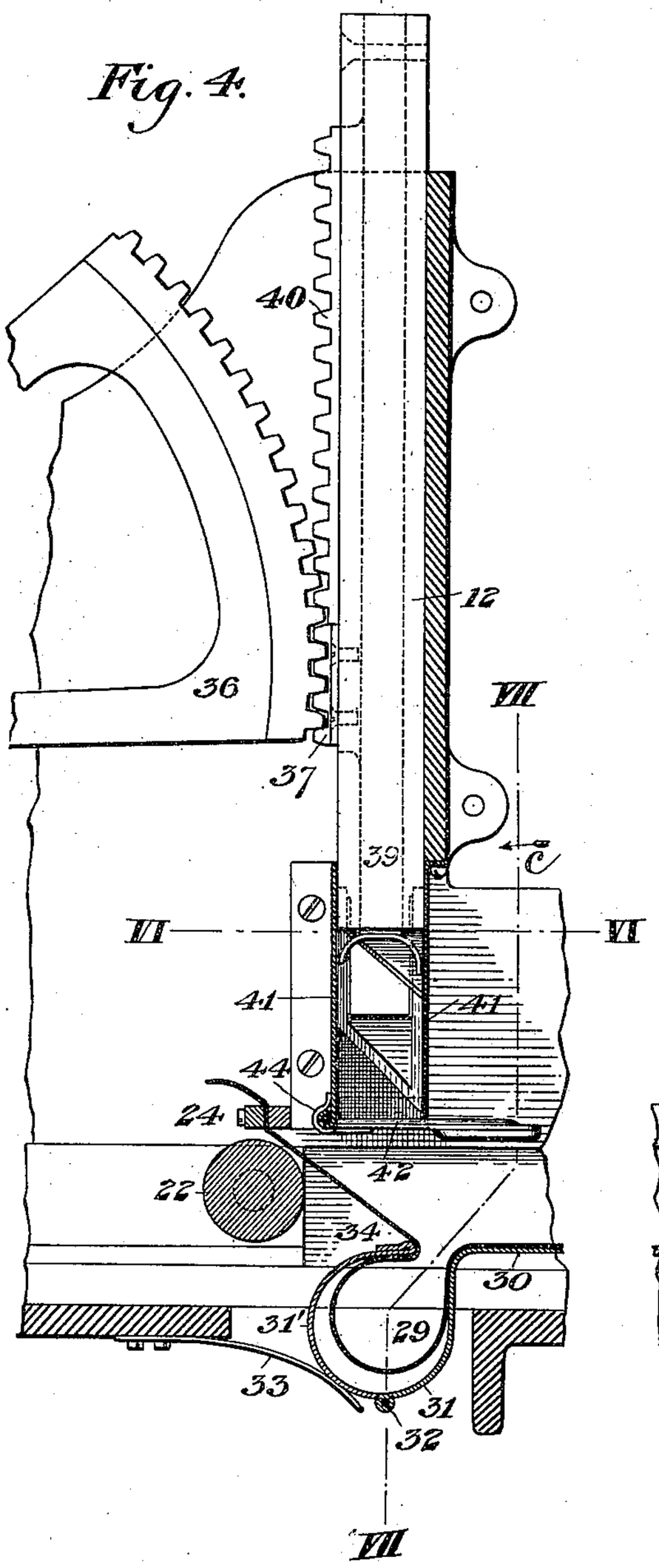
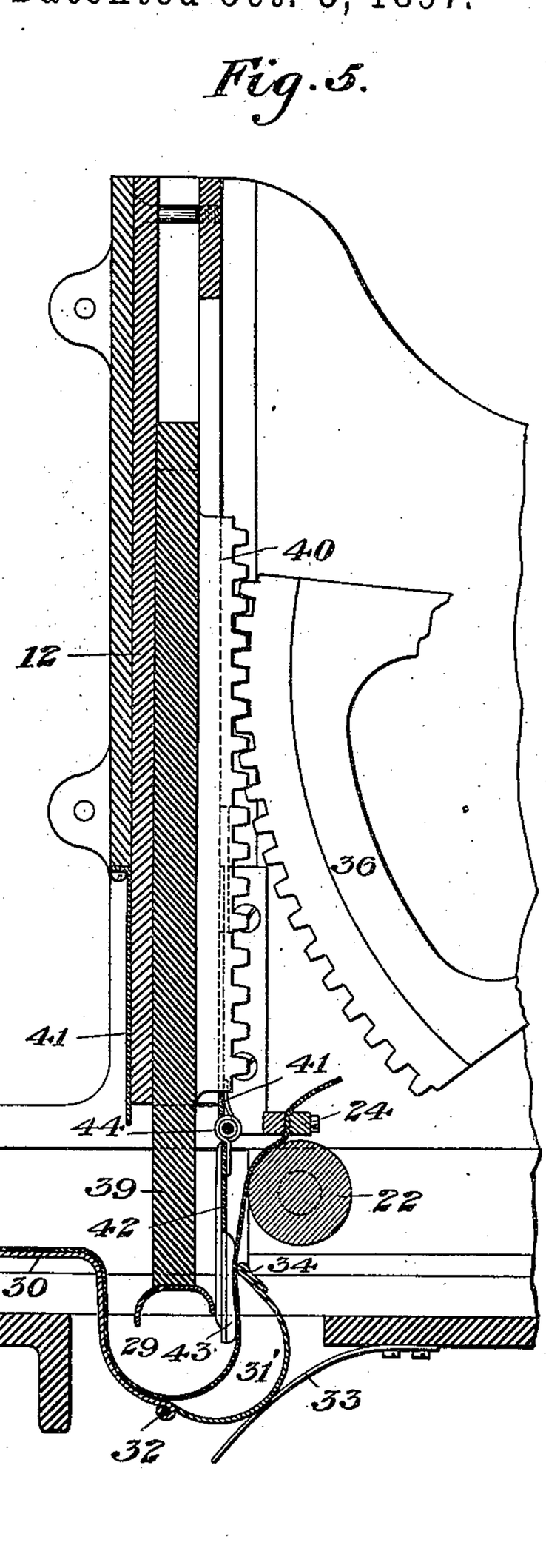


Fig. 5.



WITNESSES.

C. E. MacTown

T. A. Sommerdyk

INVENTOR

S. A. Shepard

by Bakewell & Bakewell

his Attorneys.

(No Model.) 4 Sheets—Sheet 4.

S. A. SHEPARD.

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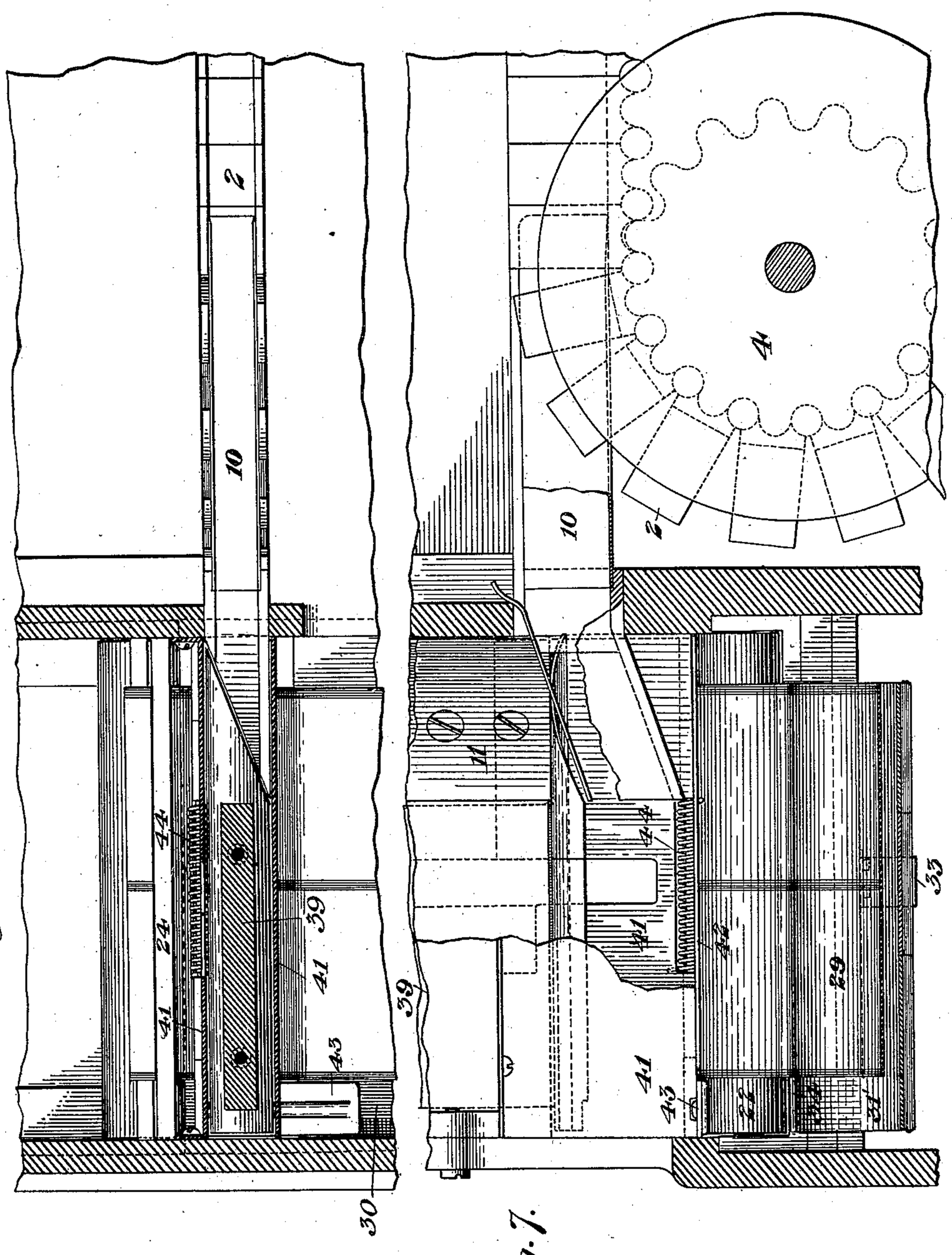

Fig. 6.

Fig. 7.

WITNESSES.

C. E. MacTowne.

T. A. Sommerville

INVENTOR.

S. A. Shepard

by Bakewell & Bakewell

his Attorneys.

UNITED STATES PATENT OFFICE.

STEPHEN A. SHEPARD, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR OF THREE-FIFTHS TO CHARLES C. SCAIFE AND WILLIAM E. TAYLOR, OF SAME PLACE.

MACHINE FOR MAKING CIGAR-BUNCHES.

SPECIFICATION forming part of Letters Patent No. 591,361, dated October 5, 1897.

Application filed November 9, 1896. Serial No. 611,469. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN A. SHEPARD, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Making Cigar-Bunches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of my improved cigar-machine viewed from the front of the machine. Fig. 2 is a rear elevation showing the feeding and rolling mechanism. Fig. 3 is a vertical section on the line III III of Fig. 2, showing particularly the feeding mechanism. Fig. 4 is a vertical section on the line IV IV of Fig. 2, viewed in the direction of the arrow *b* and showing the plunger elevated and the pocket closed. Fig. 5 is a similar section on the line V V of Fig. 2, viewed in the direction opposite to the arrow *b* and showing the plunger depressed and the pocket open. Fig. 6 is a sectional plan view on the line VI VI of Fig. 4, and Fig. 7 is a vertical sectional view on the line VII VII of Fig. 4 and viewed in the direction of the arrow *c*. Fig. 8 is a detail view of the pocket-adjusting mechanism.

In the drawings, 2 represents the traveling sectional mold, which is made up of trough-shaped sections *a b*, provided at their bases, respectively, with a fork *c* and tongue *d*, which constitute an interfitting male and female joint. The sections *a b* are arranged alternately and pivotally connected by pins *e*. Each of the sections *a* has two forks *c*, and each of the sections *b* has two tongues *d*, and when the sections are fitted together they constitute an endless flexible trough or mold. This endless mold passes around wheels 3 4. The function of this mold is to receive the tobacco filler fed thereto by an operative or by suitable feeding mechanism and to convey it to the knife, which cuts it to a suitable length for a cigar-bunch, after which it is delivered to the rolling mechanism and is rolled with a binder. The sectional mold is moved in the direction of the arrow A by driving mechanism consisting of a cam 5, which operates through a pawl 6 on a weighted arm 6′ upon a gear-wheel 7, which engages a gear-wheel 8 on the shaft of the chain-wheel 4. Each rotation of the cam moves the wheel 7 through, say, about one-sixth of a revolution and moves the endless mold accordingly. The pawl 6 is retracted by gravity.

9 is a table at which the operative sits who feeds the tobacco filler to the endless sectional mold, the cavity of which is rectangular, laying it in lengthwise in depth proper to form a cigar of the desired thickness, as indicated by the wheel hereinafter described.

At the delivery end of the upper branch of the endless sectional mold is a trough-shaped conductor 10, which fits within the trough or cavity of the endless mold, so that the tobacco filler carried by the latter may be delivered to and into the conductor. The end of the conductor, as shown in Fig. 6, is beveled in shape in order to conform to the shape and position of a beveled knife 11, fixed to a vertically-reciprocating knife-head 12, so that when the knife descends it shall shear off the tobacco filler projecting beyond the end of the conductor. To deliver the tobacco filler from the sectional mold to the conductor, I employ a feeder, consisting, preferably, of an endless chain 13, adapted to fit within the mold and having its under surface roughened preferably by being faced with a rubber band so as to bite upon the tobacco. The wheels 14 15 of this chain are preferably journaled in vertically-yielding bearings 16 and are adjustable longitudinally when desired to take up the slack of the chain. The chain is driven in the direction of the arrow A simultaneously with the driving of the sectional mold by gear-wheels 17 18 19, connecting the chain-wheel 14 operatively with the pinion 7, so that as said pinion is turned the feeder shall be moved forward simultaneously with and at the same rate of speed as the sectional mold, and shall thus carry the tobacco forward from the sectional mold along the conductor. For this purpose the chain 13 extends beyond the end of the sectional mold into the conductor 10.

I shall now describe the mechanism by which the tobacco is fed to the rolling-apron

and is rolled. The rolling mechanism may be of any suitable construction. I show a longitudinally-reciprocating slide 21, carrying a bunching-roller 22, which moves under an apron 23, attached at one end to the frame of the machine and at the other end to suitable clamps 24. The slide is reciprocated lengthwise by a rack 25 in gear with a segmental pinion 26, driven by a cam 27 and connecting-rod 28, and the apron forms a pocket 29 for the tobacco between the forward end of the slide and the rear edge of a rolling-table 30 when the slide is retracted. At the end of the table is a trough composed of sections 31 31′, jointed transversely by a hinge 32 and adapted to receive the pocket 29 of the apron. The trough-sections 31 31′ are normally held by a spring 33 in the position shown in Fig. 4, at which time the upper edge 34 of the trough bearing upon the apron draws it taut between said edge and its place of attachment at the clamp 24, so as to insure the presence of a sufficient length of the apron in the trough to form a proper pocket. The section 31′ of the trough is the operative section and acts as an apron-tightener for the pocket. The cigar-bunch is formed by placing the binder on the apron at the pocket 29, depositing the filler upon the binder by operation of the machine as hereinafter described, and advancing the slide so as to cause the bunching-roller 22 to draw the apron into a bight over the tobacco and over the table in the ordinary manner. The knife-head 12 is reciprocated by means of a segmental pinion 36, which engages a rack 37 at the back of the knife-head and is oscillated by a connecting-rod 38 from the cam 27, and mounted within or on the knife-head so as to be capable of an independent sliding motion is a plunger 39 whose rack-bar 40 is longer than the rack 37 and also engages the teeth of the segmental pinion 36, the consequence of this construction being that during the first part of the motion of the segmental pinion the knife-head and plunger move down together until the segmental pinion leaves the rack 37, whereupon the knife-head stops and the descent of the plunger still continues. Its stroke is therefore considerably longer than the stroke of the knife-head.

Fixed to the frame of the machine on opposite sides of the knife-head 12 are vertical plates 41, between which the plunger and knife-head reciprocate. The space between these plates 41 is closed by a hinged tobacco-supporting plate or gate 42, which has an outward projection or finger 43, the function of which is to open the trough-section 31′ when the gate is opened by descent of the plunger. The gate is provided with a spring 44, which tends to close it, as shown in Figs. 4 and 7. In the operation of these parts of the machine the tobacco filler is pushed forward intermittently into the conductor 10 by the feeder-chain, and when it is advanced in this manner it projects from the end of the conductor into the space between the plates 41 and above the gate 42. When the knife-head and plunger descend, the knife first shears off the tobacco projecting from the end of the conductor and causes the sheared-off portion to rest in the space above the gate 42. The plunger and knife-head then descend together, the down pressure of the plunger opens the gate 42, and the finger 43 opens the trough-section 31′ into the position shown in Fig. 5, and thereupon the tobacco drops into the pocket 29 of the rolling-apron. Then the descent of the knife-head stops and the plunger 39 continues to descend within the same, passing into the pocket of the apron, as in Fig. 5, and compressing the tobacco therein. Then as the knife-head and plunger ascend the spring 33 closes the trough-section 31′ and narrows the mouth of the pocket, so as to form it into proper shape without wrinkling the cloth of the apron, preparing it for the advance of the roller 22.

I shall now describe the general operation of the machine. The machine which I have shown in the drawings is conveniently worked by two operatives, one of whom sits at the feeding-table 9 and the other opposite the rolling-table 30. The first-named operative feeds the tobacco filler in the form of long pieces or leaves into the sectional traveling mold to the proper depth, as shown by the index-wheel hereinafter described, placing the same therein, so as to charge the mold with tobacco in a continuous line as it passes. The second operative places the binder upon the apron at the pocket and also operates the clutch or other mechanism by which the machine is alternately stopped and started. Suppose that the parts are in the position shown in Fig. 1 and that the operative starts the machine. By action of the cam 5 the wheel 4 is rotated through the connecting-gearing and the sectional mold advances in the direction of the arrow A, and at the same time the feeder-chain advances with the mold in contact with the tobacco therein and carries the tobacco therefrom on into the conductor 10, in which the feeder also travels, so that the tobacco shall project past the end of the conductor between the plates 41 and past the vertical path of motion of the knife. The endless sectional mold and the feeder then stop, and the pawl 6 returns to its starting-point by action of the weighted arm 6′.

After the tobacco filler has been fed across the path of the knife, as above described, the knife descends and cuts off the filler with angling cut at the end of the conductor 10, causing the filler to drop within the space between the plates 41. Then as the knife-head descends tobacco is carried down into the apron-pocket. The further descent of the plunger opens the gate 42 and ejects the tobacco into the pocket upon the binder-leaf

which the operative has placed therein. The plunger and knife-head then ascend, whereupon the pinion 26 acts to advance the slide 21 and to roll the tobacco into the form of a bunch.

The shaping of the cams to effect the motions above described in their proper order is a matter of easy calculation by the skilled mechanic.

For the purpose of regulating the size of the bunch rolled by the machine I make the rolling-table 30 horizontally adjustable in the manner of a slide. The outer end of the apron is attached to the adjustable table, and the table is movable and adjustable by means of a screw-bolt 45. By moving the table outwardly the apron is tightened and the size of the pocket and the size of the bunch diminished. On the contrary, by adjusting the table inwardly the apron is slackened and the pocket and bunch are increased in size.

For the purpose of indicating to the operative the depth of tobacco in the sectional mold and to warn him if too much or too little is placed therein I employ a wheel 46, the lower periphery of which fits within the trough of the sectional mold. This roller is journaled in vertically-movable bearings 47, to which is connected a long index-lever 48. This wheel rests upon the tobacco in the mold, and if too much is placed therein it will raise the wheel and move the index conspicuously, so as to indicate the fact at once to the operative.

The advantages of my invention will be appreciated by those skilled in the art. By use of my improved machine I am able to manufacture rapidly and cheaply cigars with long fillers of excellent shape and of any desired degree of compactness. The traveling sectional mold enables the tobacco for the filler to be properly assembled and measured, and the use of the conductor fitting within the same affords a reliable means for receiving the tobacco from the mold and delivering it to the knife. I find that greatly-improved results are obtained when the mold and conductor are of rectangular cross-section, for they can then be fitted together neatly and the tobacco is more easily assembled and measured in the traveling mold. My broader claims relating to the feeder are not limited to the use of an endless chain for that purpose, since other longitudinally-movable devices may be employed for the same purpose.

I do not limit myself precisely to the details of construction shown in the accompanying drawings, which can be varied by the skilled mechanic in many respects without departure from my invention as stated in the claims; but

I claim as new—

1. In a cigar-machine, the combination of a traveling sectional mold made up of flexibly-connected sections with a trough-like cavity of rectangular cross-section, and a conductor-trough of like cross-section which fits neatly into the end of one of the branches of the mold and is adapted to receive tobacco therefrom; substantially as described.

2. In a cigar-machine, a traveling sectional mold made up of flexibly-connected sections, in combination with a conductor, a moving feeder situate above the mold and adapted to convey the tobacco therefrom, and mechanism for moving the feeder simultaneously with the sectional mold, said feeder extending beyond the mold; substantially as described.

3. In a cigar-machine, an endless sectional mold, mechanism for moving the same, a conductor-trough fitting into the end of one of the branches of the endless mold and adapted to receive the tobacco therefrom, a moving feeder set in the mold above the position of the tobacco, extending beyond the mold and adapted to convey the tobacco therefrom through the conductor, and mechanism for actuating said feeder; substantially as described.

4. In a cigar-machine, a traveling sectional mold made up of flexibly-connected sections, in combination with a conductor leading therefrom, and a moving feeder adapted to convey the tobacco from the mold, said feeder consisting of an endless moving flexible band or chain extending beyond the delivery end of the mold; substantially as described.

5. In a cigar-machine, an endless sectional mold, mechanism for moving the same, a conductor-trough fitting into the end of one of the branches of the endless mold, and adapted to receive the tobacco therefrom, a feeder adapted to convey the tobacco from the mold through the conductor, mechanism for moving the feeder, and a knife situate at the limit of the forward motion of the feeder, said feeder extending beyond the mold; substantially as described.

6. In a cigar-machine, a traveling sectional mold made up of flexibly-connected sections, in combination with a conductor leading from the mold, a moving feeder set in the mold above the position of the tobacco therein and extending beyond the delivery end of the mold, said feeder being adapted to convey the tobacco from the mold, and mechanism for moving the feeder and mold intermittently, but simultaneously with reference to each other; substantially as described.

7. In a cigar-machine, the combination of a stationary conductor-trough, a feeder adapted to bear upon the tobacco therein, mechanism for moving the feeder to advance the tobacco in the trough, a knife situate at the limit of motion of the feeder, and mechanism constructed to actuate the knife when the feeder has advanced and when the tobacco is held thereby in the trough; substantially as described.

8. The combination with the apron, of a trough composed of sections 31 31′, situate below the same and hinged together, a spring which bears upon the section 31′, a vertically-

moving plunger, and means whereby the plunger on its descent opens the said section 31'; substantially as described.

9. In a cigar-bunching machine, the combination with an apron, of a rolling-table to which one end of the apron is attached, and means for adjusting said table horizontally to vary the length of the slack of the apron and the size of the pocket produced, said adjusting means being applied to the end of the table to which the apron is attached, and the other end of the apron being unattached to the table; substantially as described.

In testimony whereof I have hereunto set my hand.

STEPHEN A. SHEPARD.

Witnesses:
THOMAS W. BAKEWELL,
C. E. MACKOWN.