Oct. 26, 1937. G. LOEWENBERG 2,097,031

STRIP SERVING MACHINE

Filed April 11, 1934 6 Sheets-Sheet 1

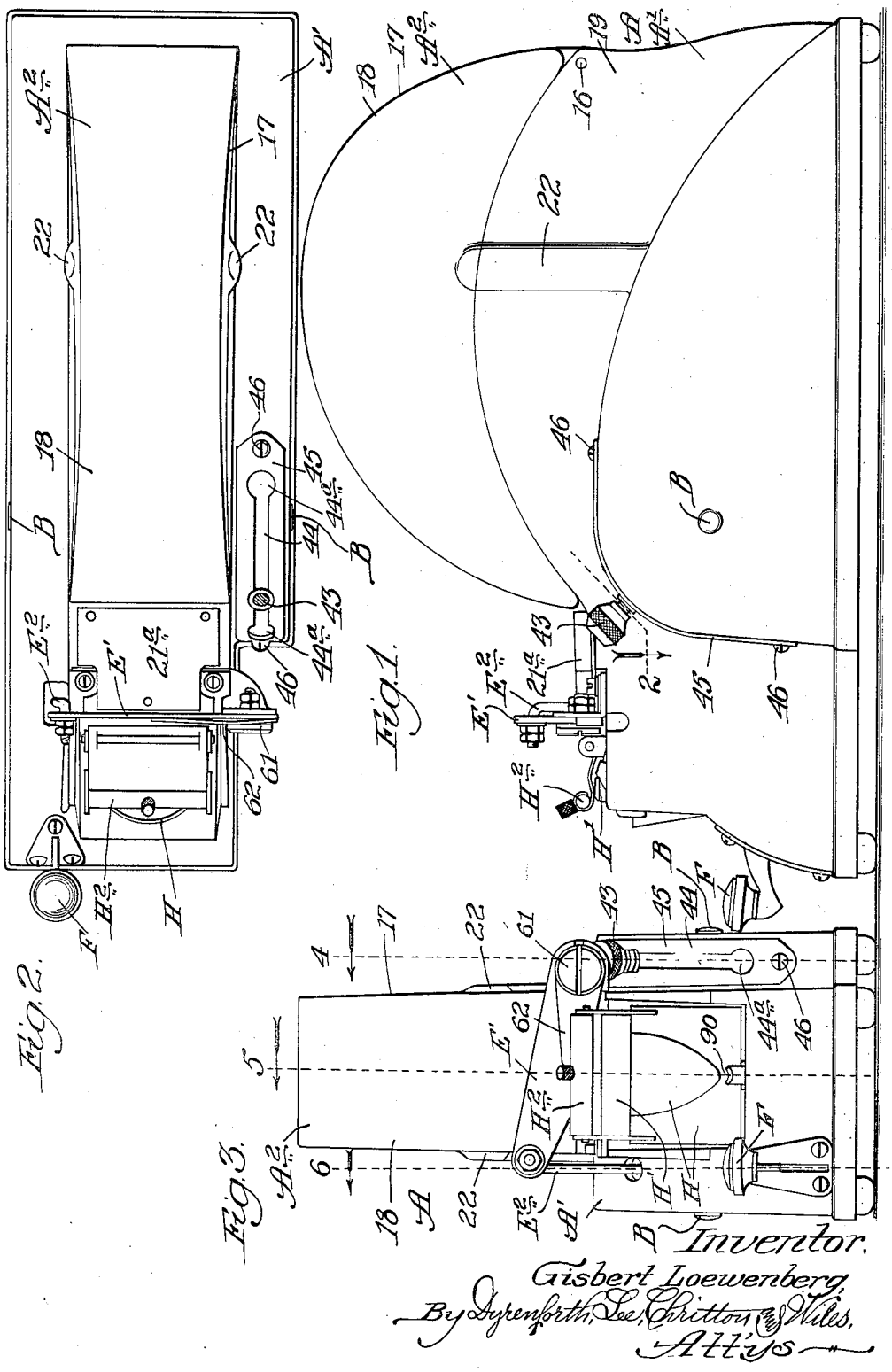


Fig. 1.

Fig. 2.

Fig. 3.

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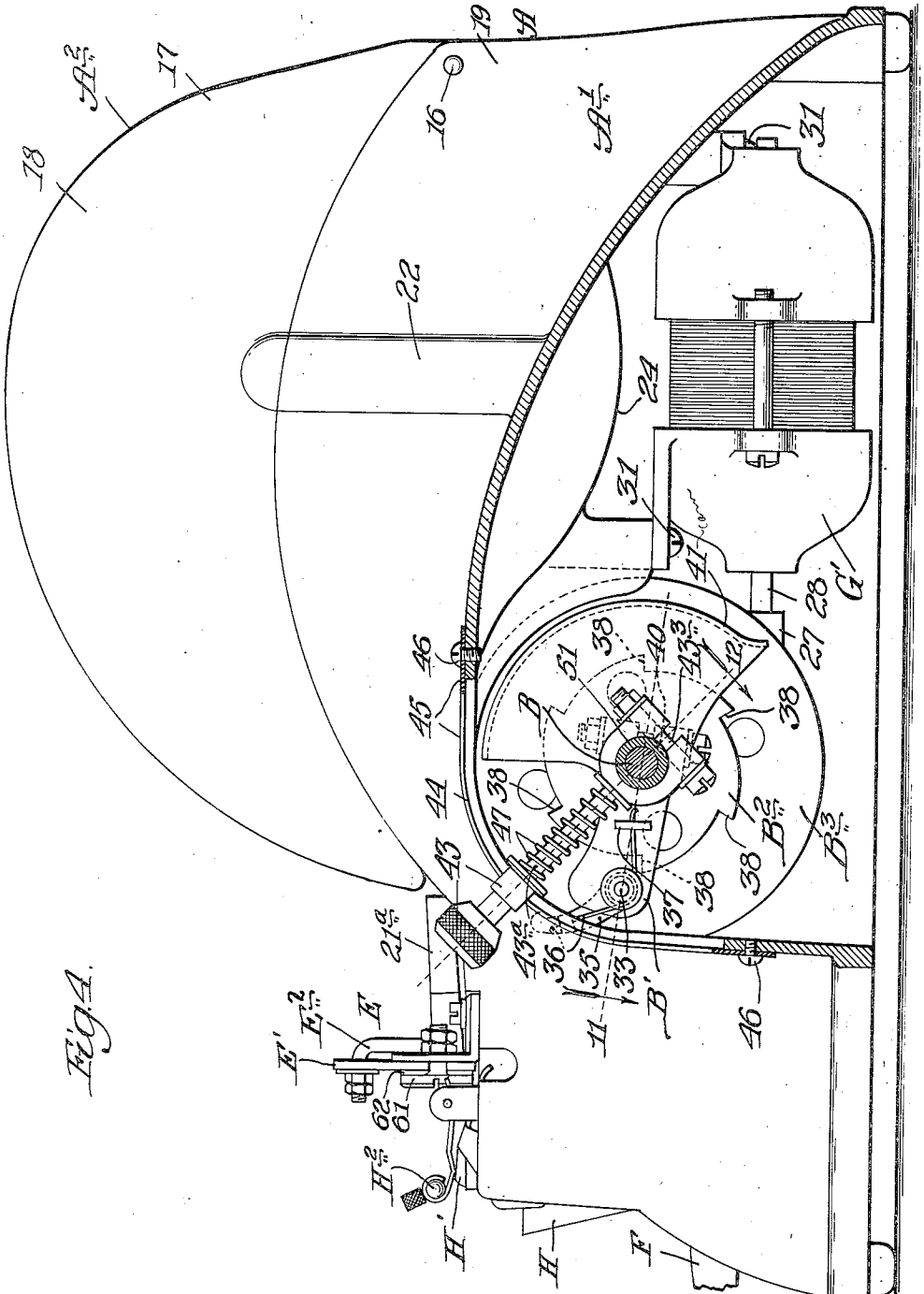


Fig 4.

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STRIP SERVING MACHINE

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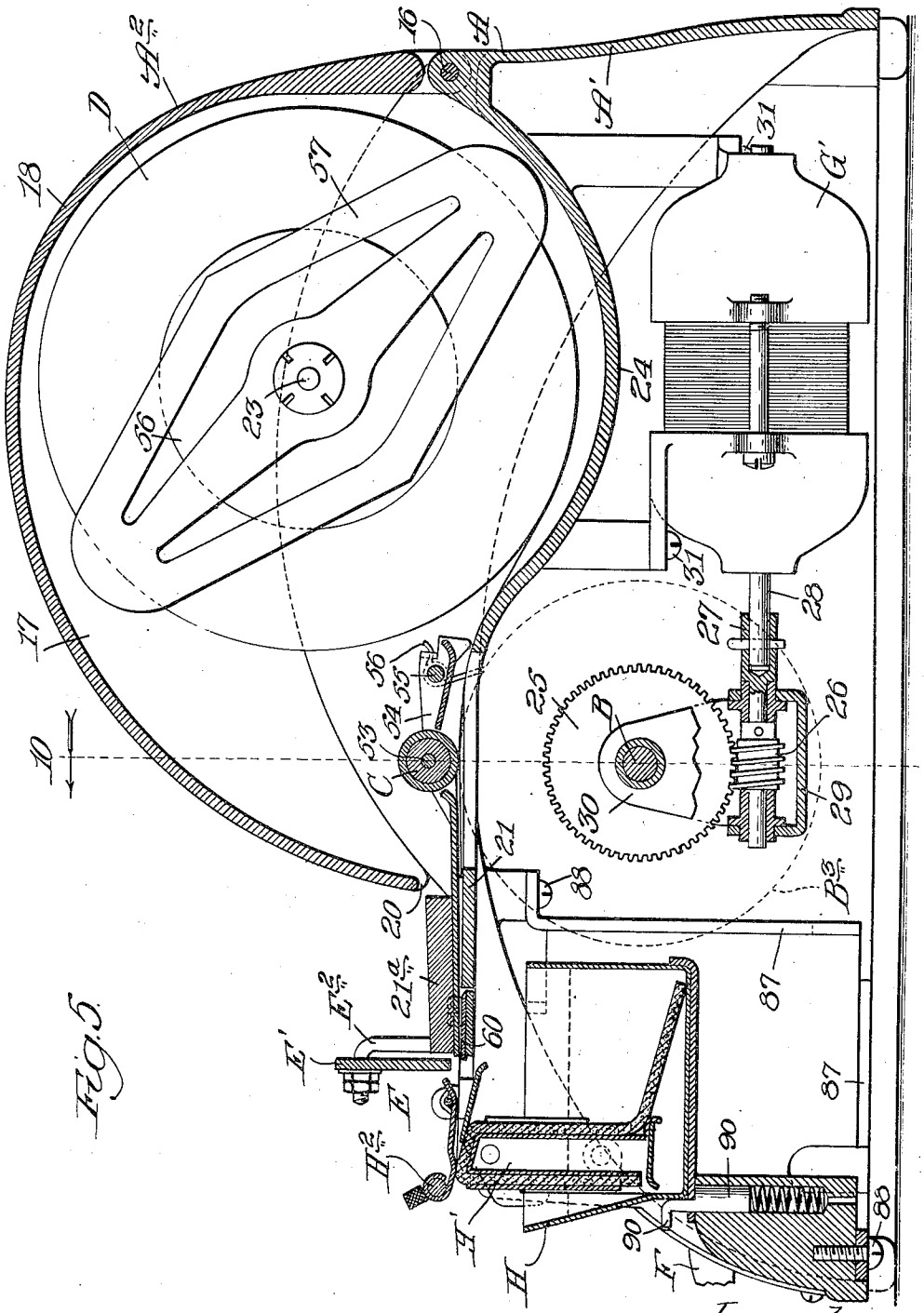


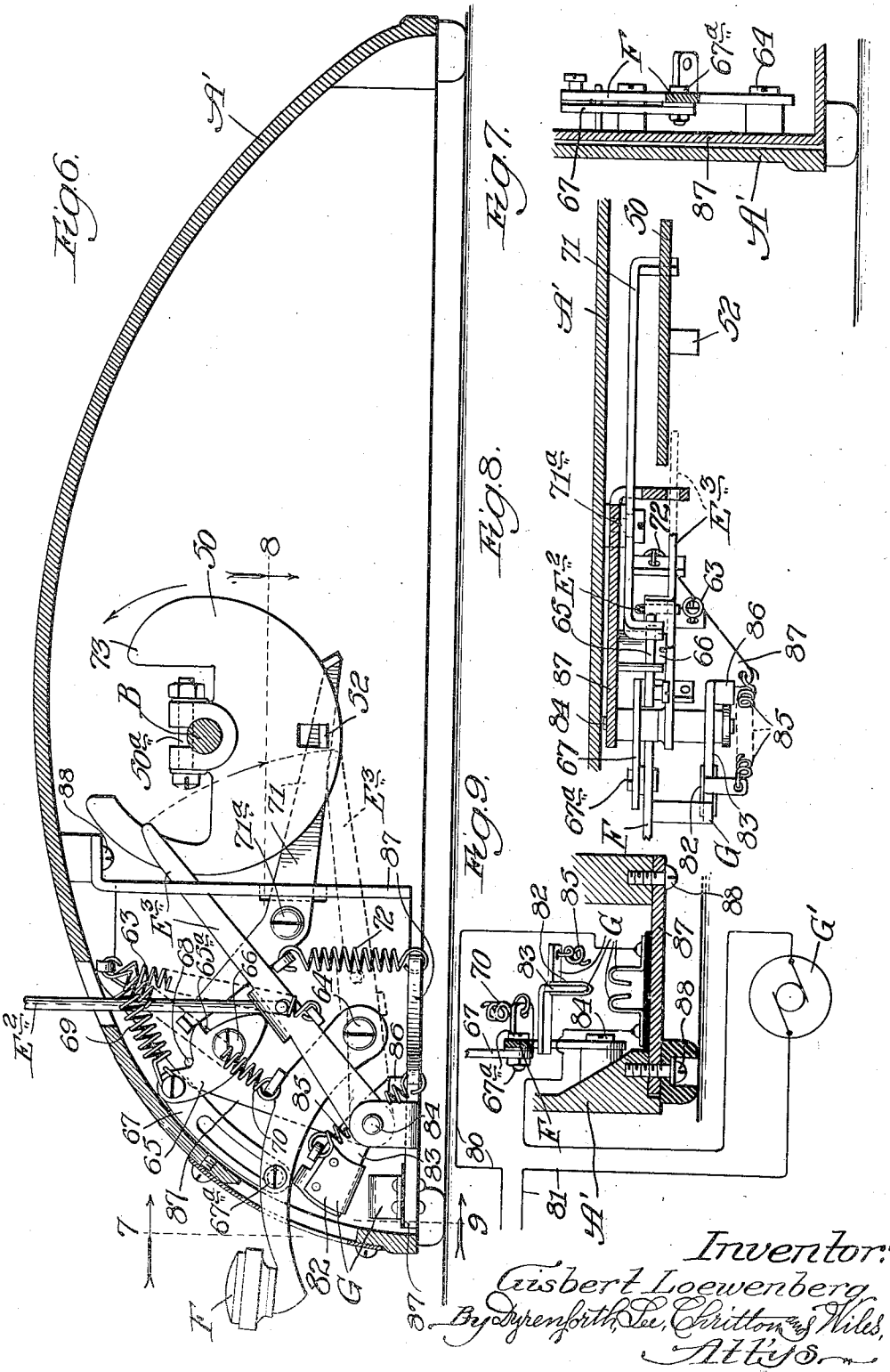
Fig. 5

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STRIP SERVING MACHINE

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Fig. 10.

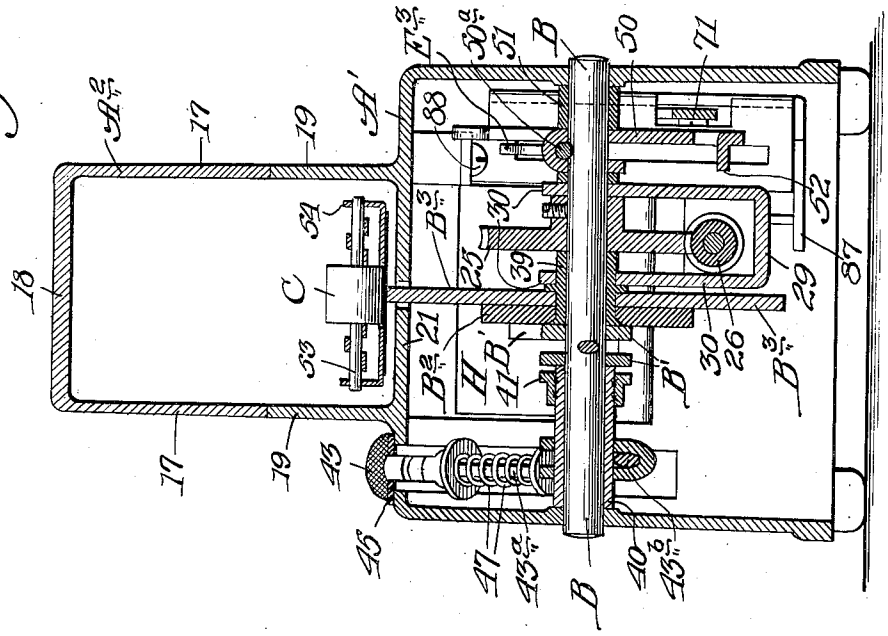


Fig. 11.

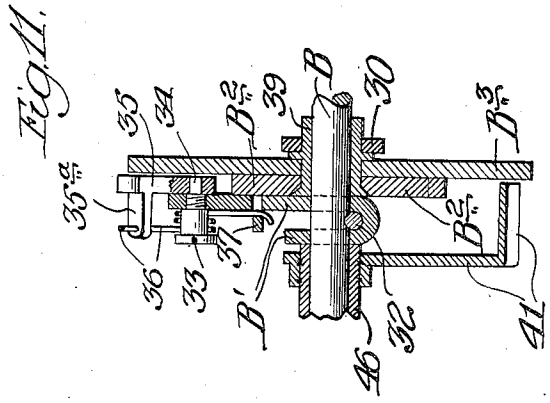
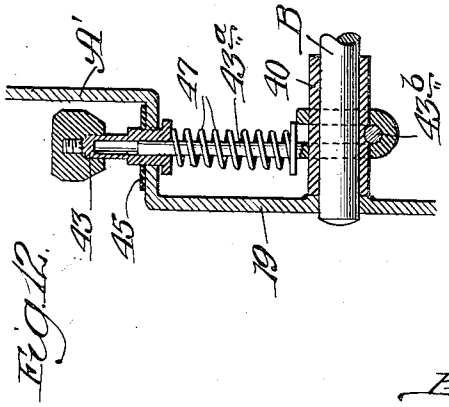


Fig. 12.



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STRIP SERVING MACHINE

Filed April 11, 1934 6 Sheets-Sheet 6

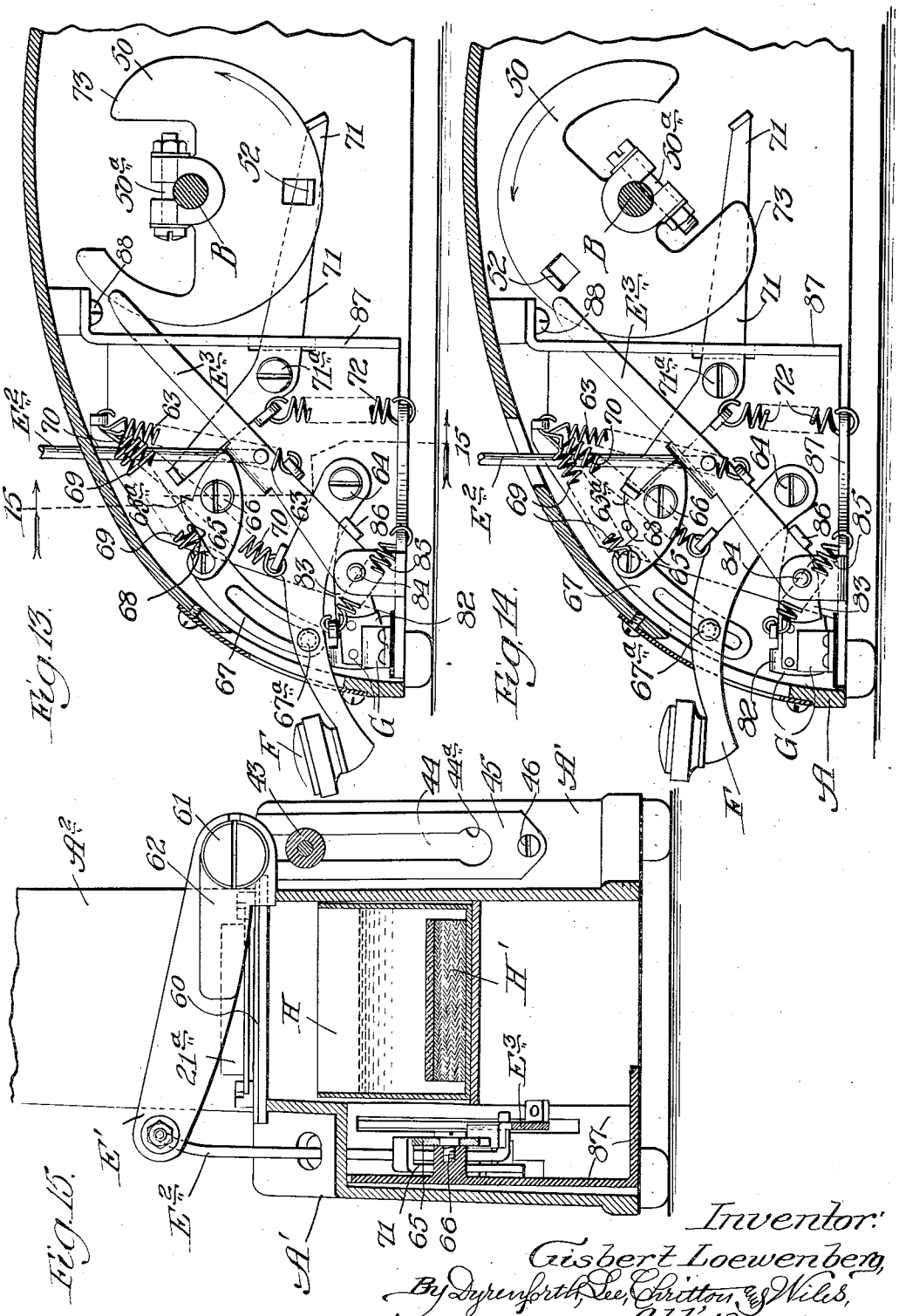


Fig. 13.

Fig. 14.

Fig. 15.

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Patented Oct. 26, 1937 2,097,031

UNITED STATES PATENT OFFICE

2,097,031

STRIP-SERVING MACHINE

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Application April 11, 1934, Serial No. 720,108

7 Claims. (Cl. 164—42)

This invention relates particularly to strip-serving machines, especially adapted to the purpose of serving gummed tape. If desired, the machine may be used to serve ungummed tape, in which case the moistening device illustrated may be replaced by any suitable adhesive-applying device.

The primary object is to provide a strip-serving machine of improved general construction which may be power-driven and is adapted to serve tape and sever the same in any desired length.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which:

Fig. 1 is a side elevational view of a machine embodying the invention; Fig. 2, a plan view of the same; Fig. 3, a front elevational view of the same; Fig. 4, a vertical sectional view, taken as indicated in line 4 of Fig. 3; Fig. 5, a vertical sectional view taken as indicated at line 5 of Fig. 3; Fig. 6, a vertical sectional view, taken as indicated at line 6 of Fig. 3; Fig. 7, a fragmentary sectional view, taken as indicated at line 7 of Fig. 6; Fig. 8, a broken plan sectional view, taken as indicated at line 8 of Fig. 6; Fig. 9, a fragmentary sectional view, taken as indicated at line 9 of Fig. 6 and showing diagrammatically the wiring diagram for an electric motor; Fig. 10, a vertical sectional view, taken as indicated at line 10 of Fig. 5; Fig. 11, a fragmentary sectional view taken as indicated at line 11 of Fig. 4; Fig. 12, a fragmentary sectional view of the cam-adjusting lever, taken as indicated at line 12 of Fig. 4; Fig. 13, a broken vertical sectional view, similar to Fig. 6, showing the starting lever in switch-closing position; Fig. 14, a similar view showing the operating mechanism in position to serve a strip longer than required by the cam adjustment; and Fig. 15, a vertical sectional view showing the knife mechanism, taken as indicated at line 15 of Fig. 13.

In the preferred construction, which is illustrated, A designates a frame, or casing, comprising a base-member A′ and a cover-member A^2 pivotally connected at its rear end-portion with the base A′; B, a rotatable main shaft journaled in the member A′ and equipped with a rigidly connected pawl-carrier B′ adapted to drive a ratchet wheel B^2 which is rigidly connected to a feed-wheel B^3 journaled on the shaft B; C, a spring-pressed additional feed-roll which co-acts with the feed-wheel B^3; D, a roll of gummed tape mounted in the rear portion of the casing A, from which a strip of paper passes to the feed-roll; E, cutting mechanism comprising a cutter-equipped lever E′, a link E^2, and a trip-lever E^3, which has its lower end pivoted to the frame A′; F, a finger-operated starting lever; G, a knife-switch wired to a motor G′; H, a water-fount removable through the open front end of the casing, and equipped with a capillary member H′ adjustably mounted therein; and a pivotally mounted pressure-member H^2 which coacts with the upper end of the member H′.

In the embodiment of the invention shown, the frame A is composed of elongated hollow castings mounted one upon another. The main part of the frame comprises the base casing A′, and the cover A^2 is used to enclose the chamber which holds the roll of tape, and may be omitted, if desired. The casing A′ comprises a perimetral wall which provides side walls and end walls. The casing is open at the top and bottom.

The cover A^2 is connected at its rear end by a pivot 16 with the upper rear portion of the casing A′. The cover is in the form of a hollow casting which is provided with side walls 17 and a curved top wall 18 which also form the front and rear walls of the cover. The lower edges of the side walls 17 of the cover rest upon the upper edges of the side walls 19 of the casing A′. The front wall of the cover is cut away to provide a space 20 which forms with the top wall of the base casting 21, a throat through which the paper strip is fed. A gravity presser member 21^a is provided to press the strip of tape flat against the top wall 21 of the frame A′.

As shown in Fig. 1, the side walls 17 and 19 are struck outwardly at 22 to provide vertical slots in which the shaft 23 of the web roll may travel vertically. As shown in Fig. 5, the member A′ is equipped with a curved top wall 24 on which the roll of gummed tape may rest. The main drive-shaft B, as shown in Fig. 5, is equipped with a gear 25 which is engaged by a worm 26 provided on a shaft 27 which is driven by shaft 28 of the motor G′. The shaft 27 is journaled in the gear box 29, which is suspended from the shaft B by means of a pair of upwardly extending arms 30. The motor is suspended from the frame member A′ by means of screws 31 in such manner that in case it is desired to examine the motor, said screws may be removed and the motor swung downwardly out of the casing, without disconnecting the gears from the shaft B.

The pawl-carrier B′ is rigidly connected to the shaft B by means of a bolt 32. The outer end

of the pawl-carrier is equipped with a pivot-member **33** which provides a stud **34** upon which the pawl **35** is journaled. A coil spring **36** is wrapped about the pivot member **33** and has one end connected to a projection **35a** on the pawl and the other end with a projection **37** on the pawl-carrier. Said spring urges the pawl into engagement with teeth **38** provided on the ratchet wheel B^2. As best shown in Figs. 10 and 11, the feed-wheel B^3 and the ratchet B^2 are mounted on a bushing **39** which is journaled on the shaft B.

A bushing **40** is also journaled on the shaft B and carries a rigidly connected cup-shaped arcuate cam-member **41** which is adapted to be engaged by the outer end-portion of the pawl **35**, upon rotation, and disconnect the pawl from engagement with the ratchet teeth. The cam may be adjusted angularly by means of a finger-member **43** which may be adjusted in a slot **44** provided in a member **45** which is secured to the side walls of the casing A' by means of screws **46**. The slot is provided with enlarged portions **44a** to hold the member in a desired position. In order to move the member the finger piece **43** is depressed on its arm **43a**, which is rigidly connected to the shaft B, against a compression spring **47** and swung to a desired position where the member **43** is allowed to project from one of the openings **44a**. Thus it will be understood that by angularly adjusting the member **43** the length of the arc through which the ratchet is engaged may be determined, and accordingly the length of strip served by the feed-wheel during each revolution of the shaft B may be adjusted as desired.

At the right-hand end of the shaft B, shown in Fig. 10, a cam member **50** is rigidly connected by means of a bolt **50a**. A spacing collar **51** is provided between the cam-member and the wall of the machine. The cam is provided with a projection **52** which is adapted to engage the arm E^3, as will be explained below.

The spring-pressed idle-feed roll C is journaled on a horizontal pin **53**, as shown in Fig. 10, carried by a sheet-metal member **54**, which is provided at its lateral edges near its rear end with upturned lugs pivotally mounted on a shaft **55** (Fig. 5). A spring **56** encircles the shaft **55** and urges the roll C into engagement with the feed-wheel B^3, as will be readily understood.

As shown in Fig. 5, the roll of gummed tape, preferably, is wound on a core **56**, carried by shaft **23** upon which are disposed a pair of spring plates **57** which can be adjusted to provide the desired amount of friction on the sides of the core **56**. The plates **57** are of elongated form and fit freely within the cover A^2, but do not rotate when the tape is withdrawn.

The cutting mechanism E will be understood by reference to Figs. 1—5 and 15. The front portion of the top wall **21** of the casing A' is cut away and provided with a knife-edge **60**. The horizontally disposed blade-carrying lever E' has one end connected to the frame A' by means of a pivot **61**. A leaf spring **62** urges the blade into sharpening engagement with the member **60**. The lever E' is normally held in elevated position by means of the link E^2 which is pivotally connected at its lower end to the trip member E^3 which is urged upwardly by means of a tension spring **63**. As indicated in Fig. 6, the trip-member is normally in a position to be engaged by the stud **52** provided on the cam member **50** and, accordingly, it will be understood that when the cam is rotated counter-clockwise the arm will be depressed to the dotted position indicated in Fig. 6 and the cutter blade will be actuated to sever the tape.

When the operating lever F, which is pivoted to the frame A' at **64**, is depressed, it forces the knife-switch G to complete the motor circuit (as shown diagrammatically in Fig. 9) and the shaft B is put in motion. As shown in Figs. 6, 13 and 14, the trip-arm E^3 may be held in the path of the projection **52** by means of a cam-member **65** which is pivoted to the frame A' at **66**. The cam makes a lost motion connection with the lever F by means of a link **67** and pivot-member **67a**. The cam is urged against a stop **68** by means of a tension-spring **69**. The starting-lever F is urged upwardly by means of a tension spring **70**.

In case it is desired to serve a strip of tape of a greater length than the machine happens to be adjusted for, the operator may hold down the operating arm F. This will move the arm E^3 out of the path of the projection **52** and permit the ratchet wheel to be re-engaged by the pawl on each revolution without operating the cutter. As a safety measure, to prevent the arm E^3 from being permitted to swing back into the path of **52** by inadvertent release of the arm F, a latch-arm **71** is pivoted to the frame at **71a**. The purpose of this latch-arm is to prevent the projection **52** from striking the end of the lever E^3 and jamming the machine on center. The front end of the latch is urged into engagement with a tooth **65a** of the cam **65** by means of a tension spring **72**. The cam **50** has a cut-away portion diametrically opposite from the projection **52** and has a curved portion **73** to engage the rear end of the latch-arm and release the cam **65** when the projection **52** has passed the danger point.

Referring now to the switch G, it will be understood that it is wired in series with a source of power and the motor by means of wires **80** and **81**. The knife of the switch **82** is mounted on an insulated arm **83** which is pivoted to the frame at **84** and is equipped with a tension spring **85** which is mounted in toggle-fashion so as to urge the blade into open or closed position. The lower end of the arm **83** is provided with a projection **86** which is engaged by the member E^3. Thus, it will be understood that when the projection **52** depresses the trip-member E^3 the switch will be thrown open automatically.

The lever-mechanism described above is made up in a unit enclosed in a housing **87**. This housing is removably secured within the frame A' by means of screws **88**.

The water fount G and moistener H' as well as the pivotally mounted presser-member H^2, are of the same type shown in Herman patent 1,849,759. The fount may be removed from the machine by depressing a finger-member **90** provided in the front of the casing A'.

To operate the machine the finger-member F is depressed. This action closes the switch G and starts the motor G' which causes the pawl-carrying member B' to rotate. The pawl is urged into engagement with the teeth in the ratchet wheel B^2, and the feed-wheel B^3, cooperating with the roll C, feeds forwardly a strip of tape until the tail of the pawl **35** comes into engagement with the arcuate cam **41**, which releases the pawl from driving the feed-wheel. The projection **52**, rigidly connected to the shaft B, continues to rotate, however, and engages and depresses the lever E^3. The latter action causes the

cutter blade to sever the projecting strip and opens the switch G. The momentum of the motor is sufficient to carry the projection 52 far enough to permit the member E^3 to resume its normal position shown in full lines in Fig. 6. In case an additional length of unsevered tape is desired, the operator may either hold the finger-member F depressed or may again trip it before the cutter blade is actuated. This will cause the pawl-carrier to continue to rotate and the feed-wheel will continue to feed the strip in spurts. During each revolution the feed-wheel is partially rotated and then disconnected, which causes the intermittent or spurty feeding action.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I claim as new and desire to secure by Letters Patent is:

1. In a machine of the character set forth: a a frame; a shaft journalled in said frame and provided with a projecting arm; a strip-feeding wheel journalled on said shaft; a ratchet and pawl device interposed between said shaft and strip-feeding wheel; means for releasing said pawl from the ratchet during part of each revolution of the shaft; cutter-means for severing a length of strip advanced by said feeding wheel; a lever disposed in the path of said projecting arm to actuate said cutter-means; and means for moving said lever out of the path of the projecting arm to avoid operation of the cutter means.

2. A device as specified in claim 1, including timing means for preventing return movement of the lever into the path of the projecting arm during a portion of the cycle of rotation of the shaft.

3. A machine of the character set forth: a frame; a shaft journalled in said frame and provided with a cam and a projecting arm; a strip-feeding wheel journalled on said shaft; a ratchet and pawl device interposed between said shaft and strip-feeding wheel; means for releasing said pawl from the ratchet during a part of each revolution of the shaft; cutter means for severing a length of strip advanced by said feeding wheel; a lever disposed in the path of said projecting arm to actuate said cutter-means; an electric motor geared to said shaft; a switch for controlling said motor; a finger-operated member for closing said switch; a latching-dog connected to said finger member and pivotally mounted on said frame so as to move said lever into and out of the path of the projecting arm; and a latching member pivotally mounted on said frame with one end engaging said cam and the other adapted to engage said latching-dog to prevent the lever from returning into the path of the projecting arm during a portion of the cycle of rotation of said shaft.

4. A device as specified in claim 3, in which the switch comprises a pair of contact members, a pivotally mounted contact closing member adapted to be thrown open by the operation of the cutter lever, and spring-means mounted in toggle-fashion for urging said contact closure member into either open or closed position.

5. In a strip-serving machine: a frame; a shaft journaled in said frame and equipped with a strip-feeding wheel and a gear wheel; a worm wheel journaled in a gear box pivotally suspended from said shaft so that said worm wheel and gear are in driving engagement; an electric motor in driving engagement with said worm; and means for releasably supporting said motor within the lower portion of said frame so that the motor and gear box may be swung about the shaft without being disconnected from each other.

6. In a machine of the character set forth: a frame; a shaft journaled in said frame; a strip-feeding wheel journaled on said shaft; a ratchet and pawl device interposed between said shaft and strip-feeding wheel; an electric motor geared to the shaft; a knife switch for controlling said motor; cam-means, adjustable circumferentially of said shaft, for releasing said pawl from driving engagement with said ratchet device during part of each revolution of the shaft; and means, operable by said shaft, for automatically opening said switch after a complete rotation of the shaft.

7. In a machine of the character set forth: a frame; a driving shaft journaled therein; a feed-wheel provided with ratchet teeth, journaled on said shaft; a driving arm mounted on said shaft and provided with a pivotally mounted pawl adapted to engage said ratchet teeth; an electric motor geared to said shaft; a knife-switch for controlling said motor; arcuate cam-means adjustable circumferentially of said shaft for releasing said pawl from driving engagement with the ratchet teeth during part of each revolution of the shaft; a finger-operated member for closing said switch; and tripping-means actuated by said shaft for automatically opening said switch after disengagement of the pawl.

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