

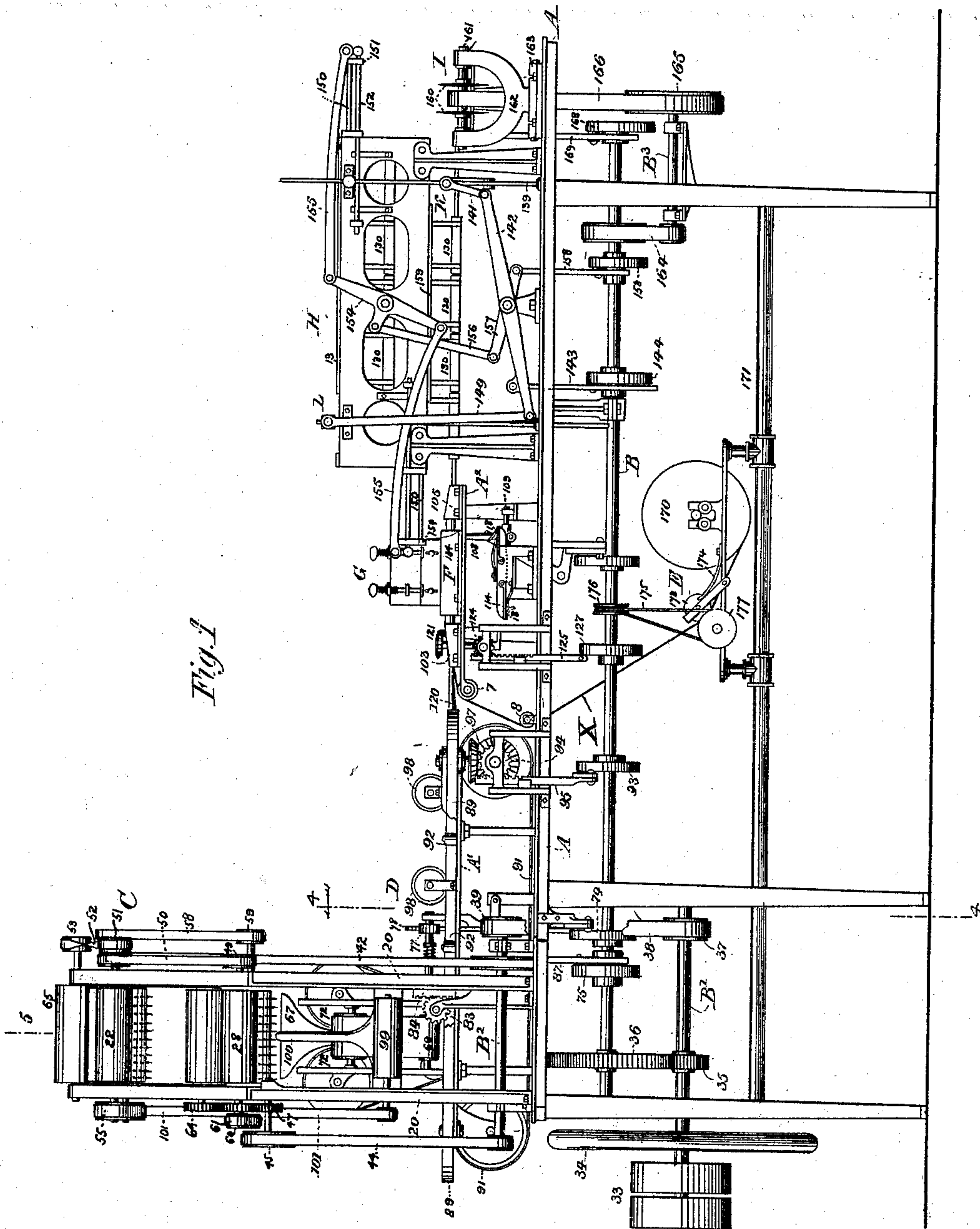
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10 Sheets—Sheet 1.

A. L. MUNSON.
CIGARETTE MACHINE.

No. 505,630.

Patented Sept. 26, 1893.



2 Witnesses
H. Marler.
C M Jorley.

Inventor
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By his Attorney
Geo. H. Graham

(No Model.)

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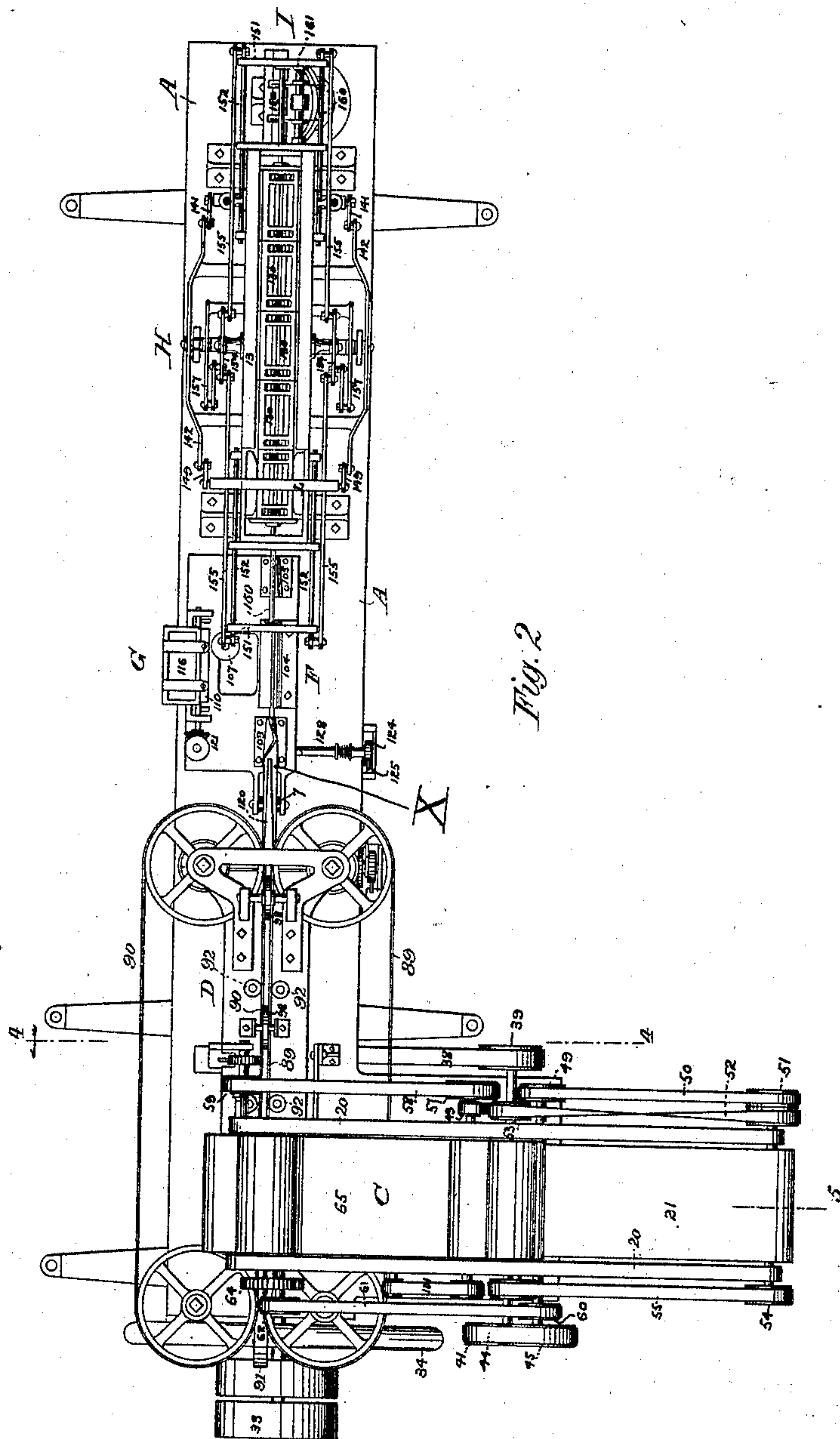


Fig. 2

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(No Model.)

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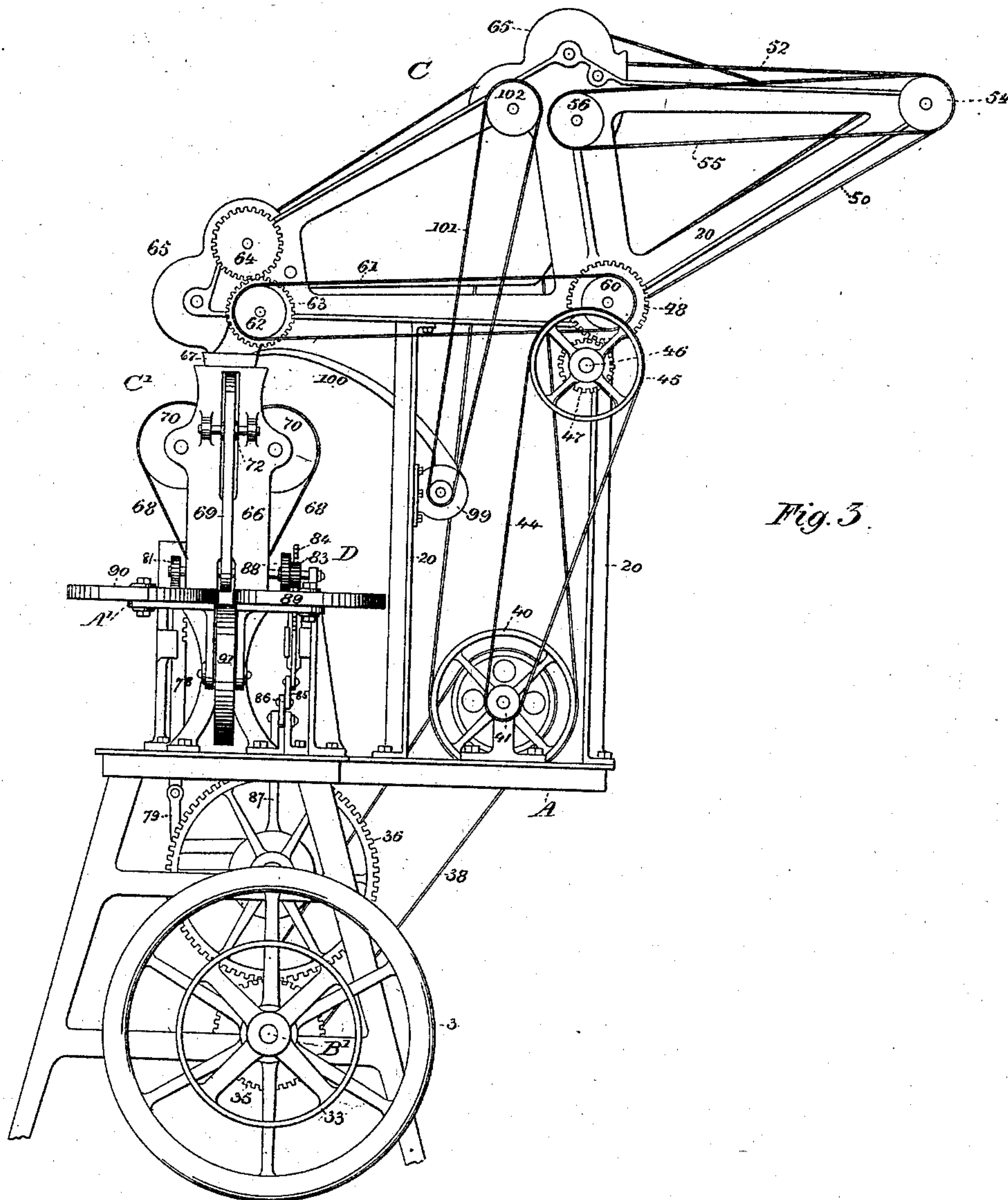


Fig. 3.

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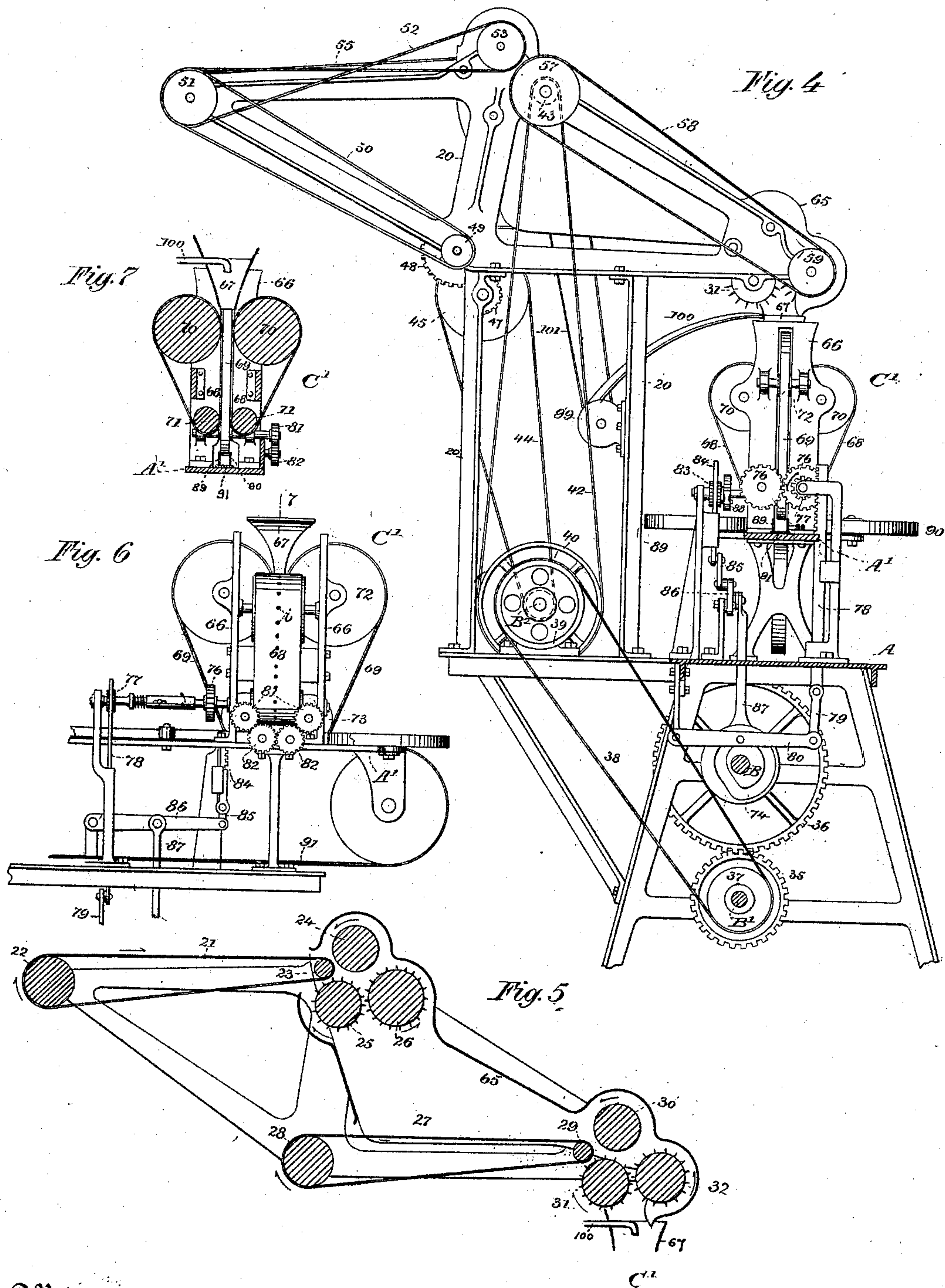
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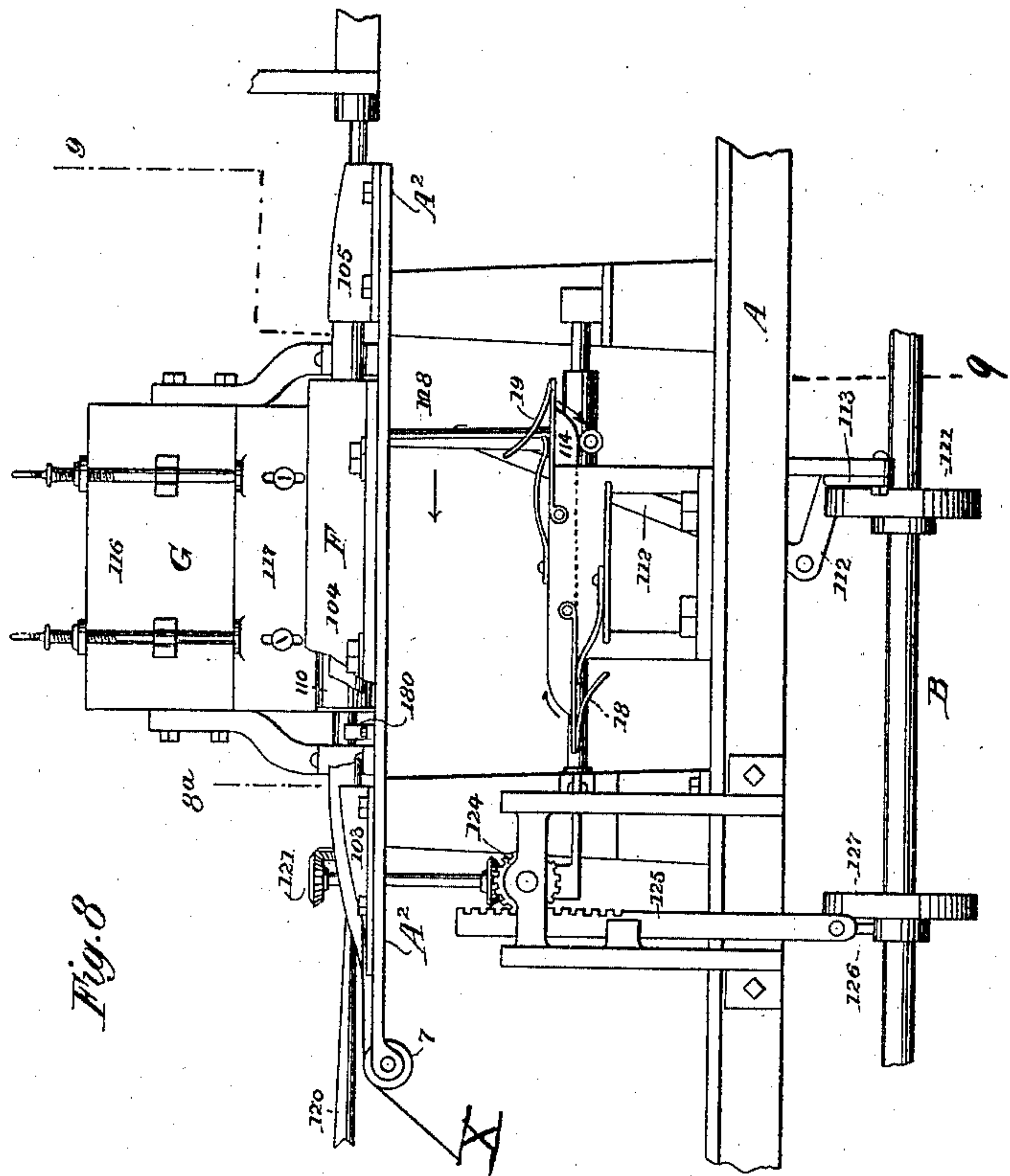


Fig. 8

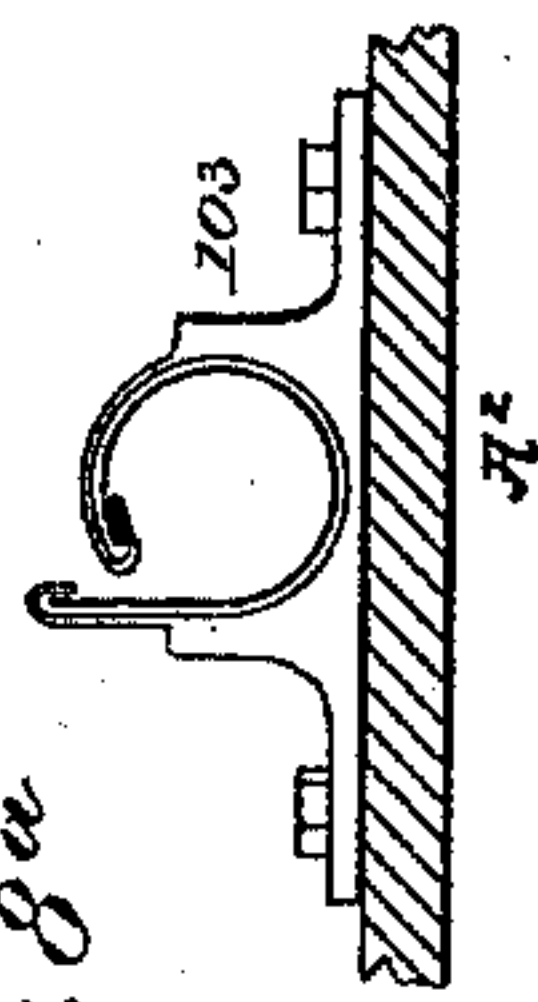


Fig. 8a

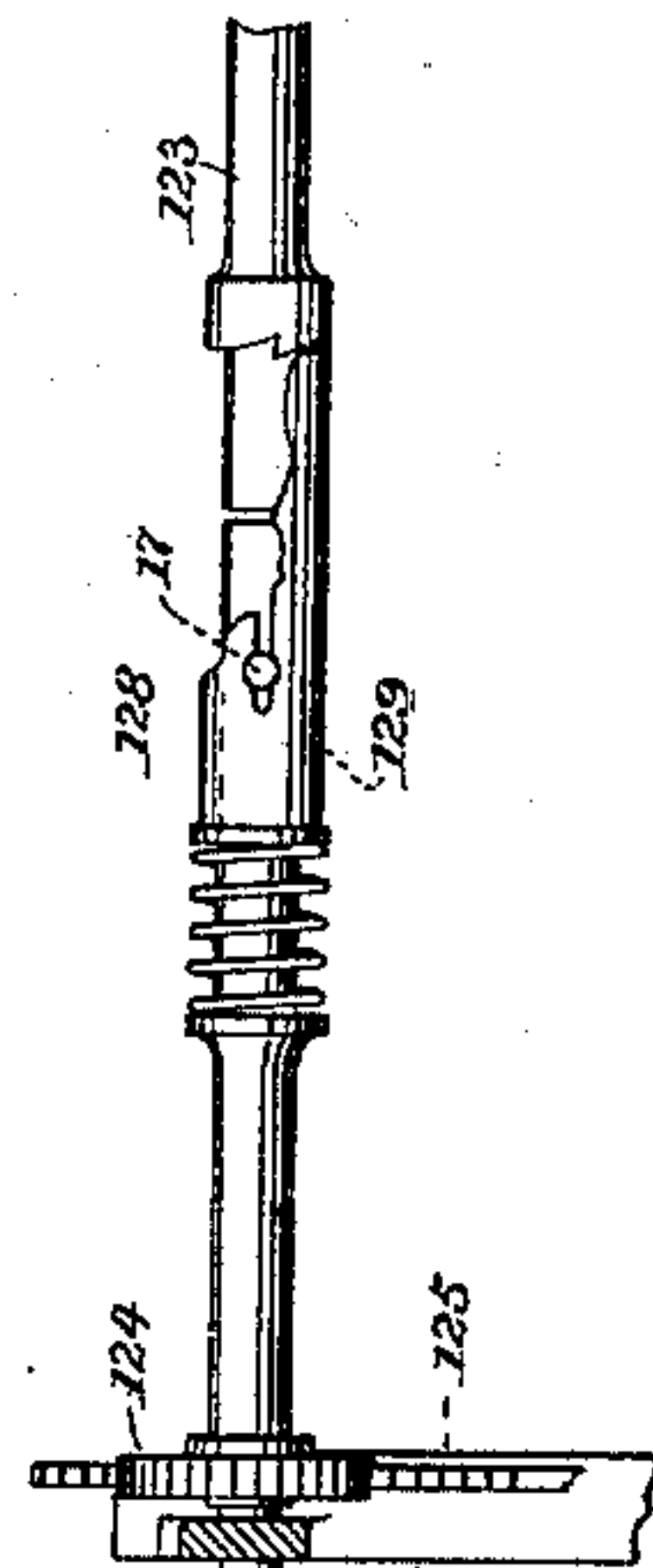


Fig. 10

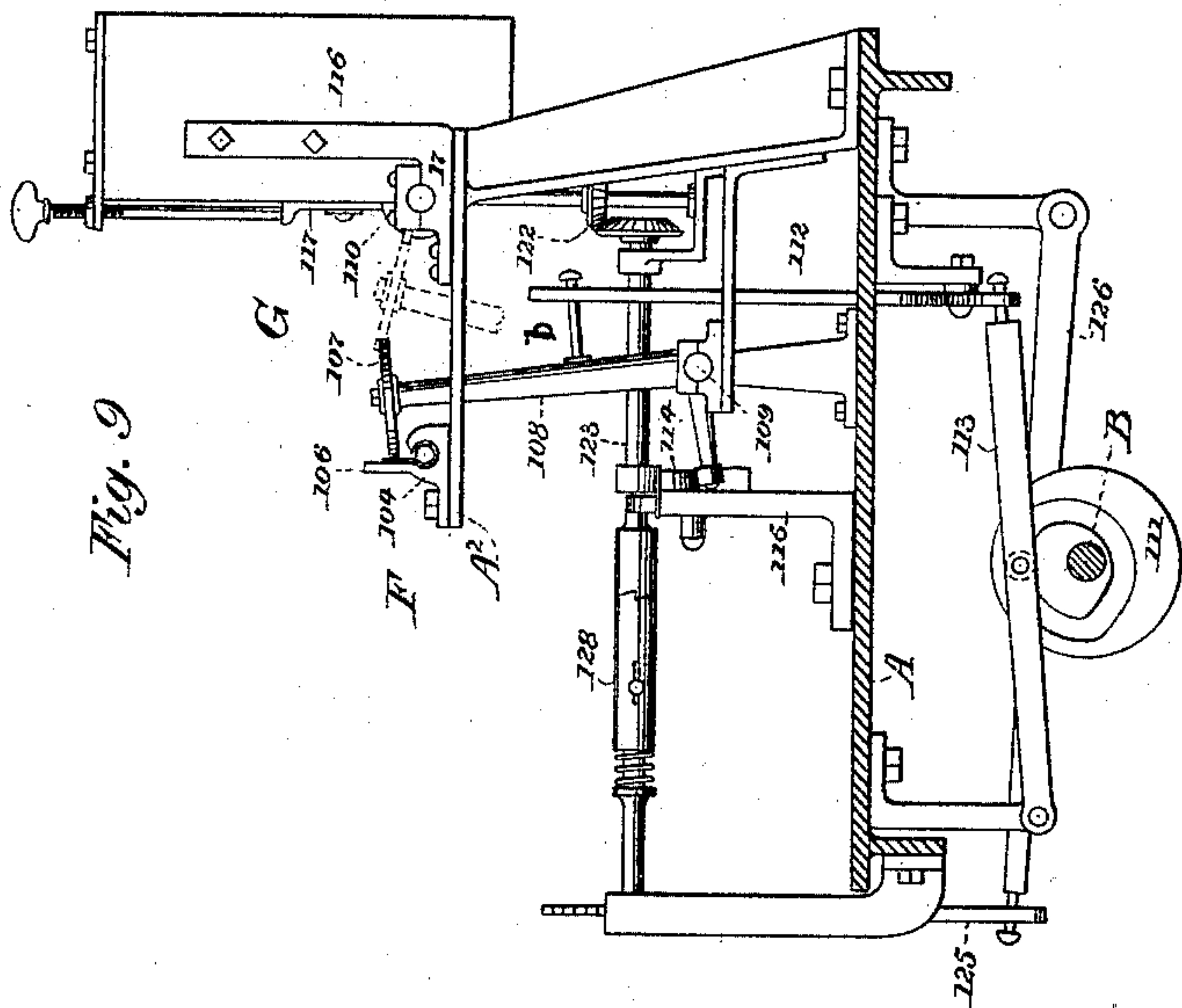


Fig. 9

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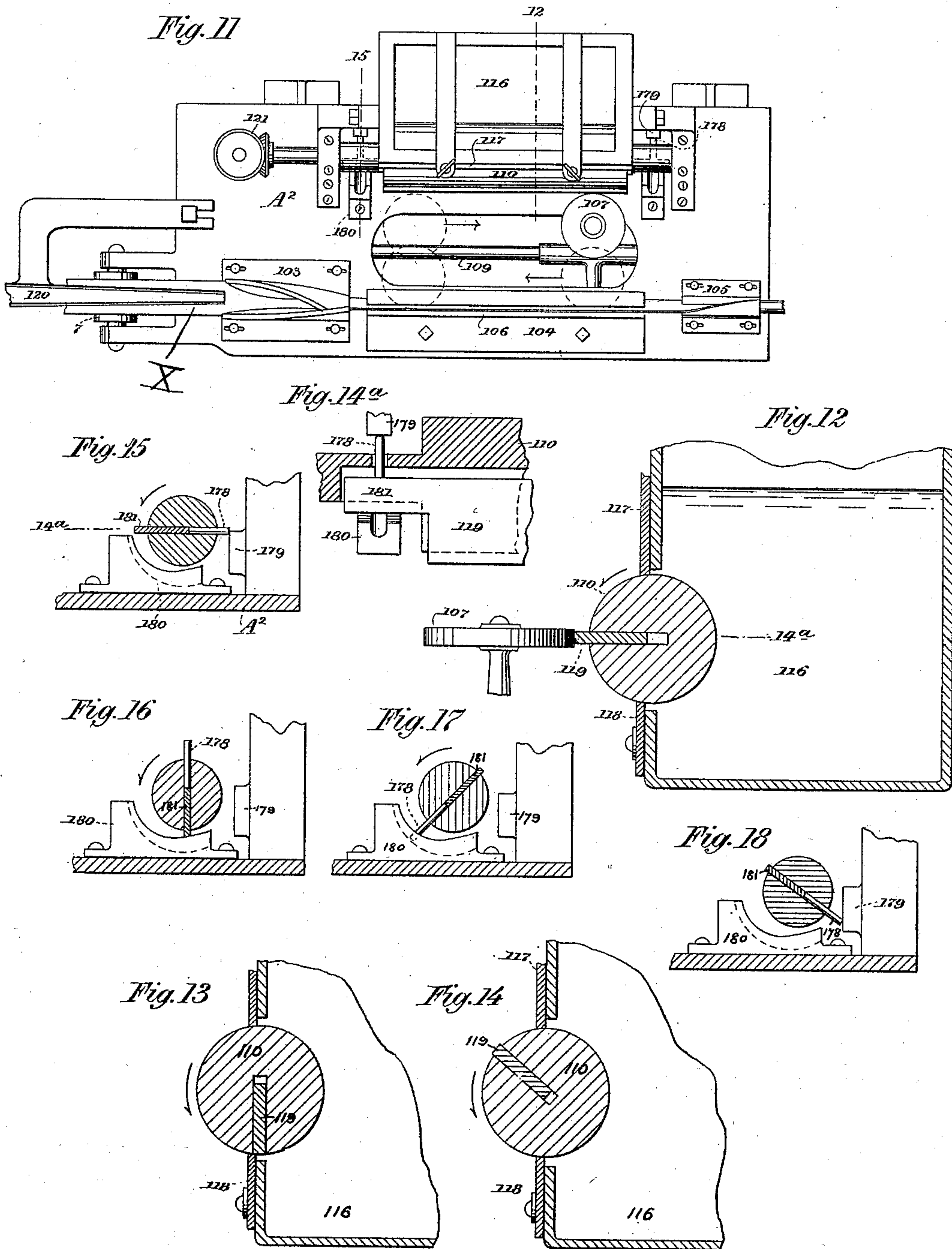
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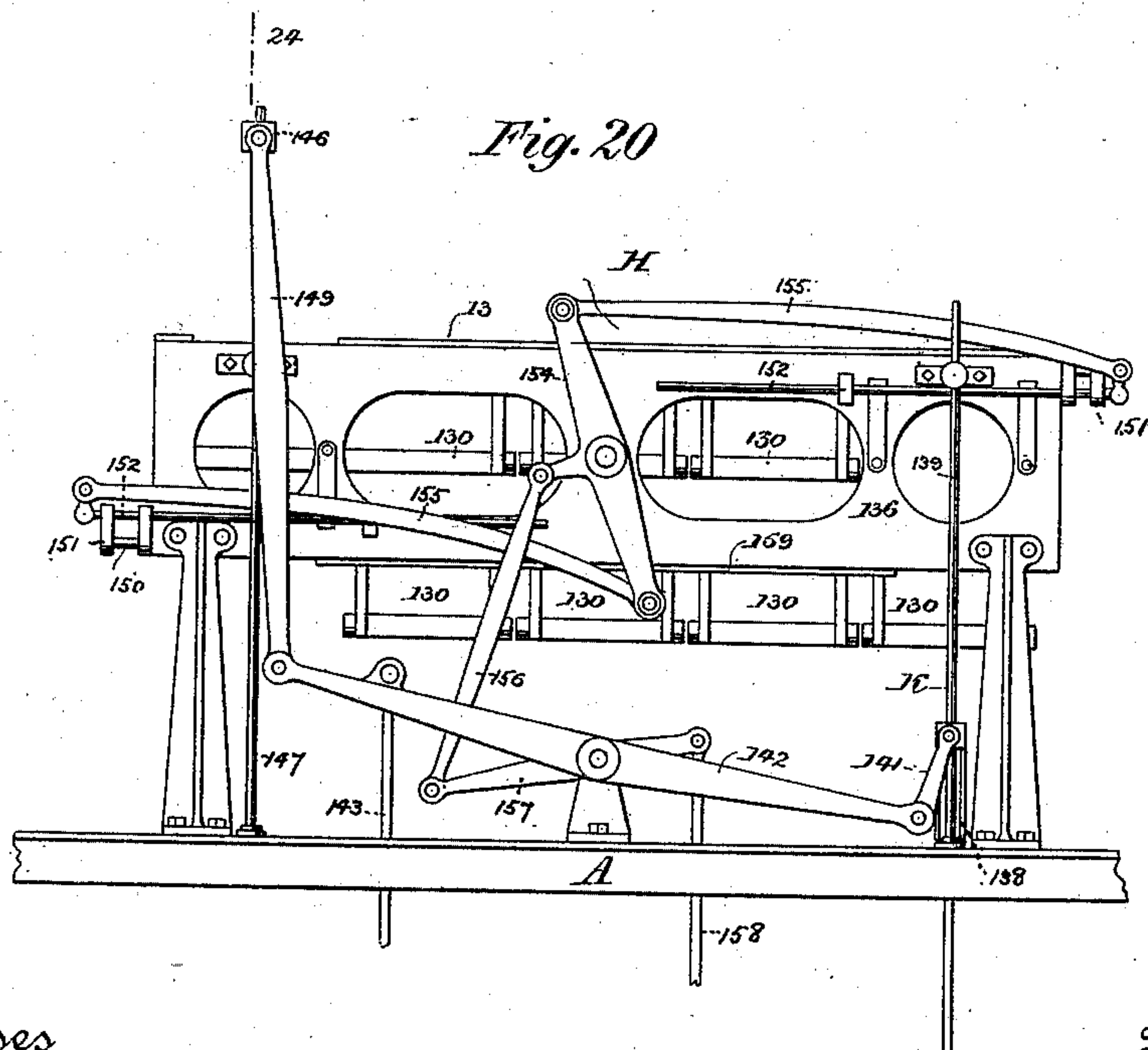
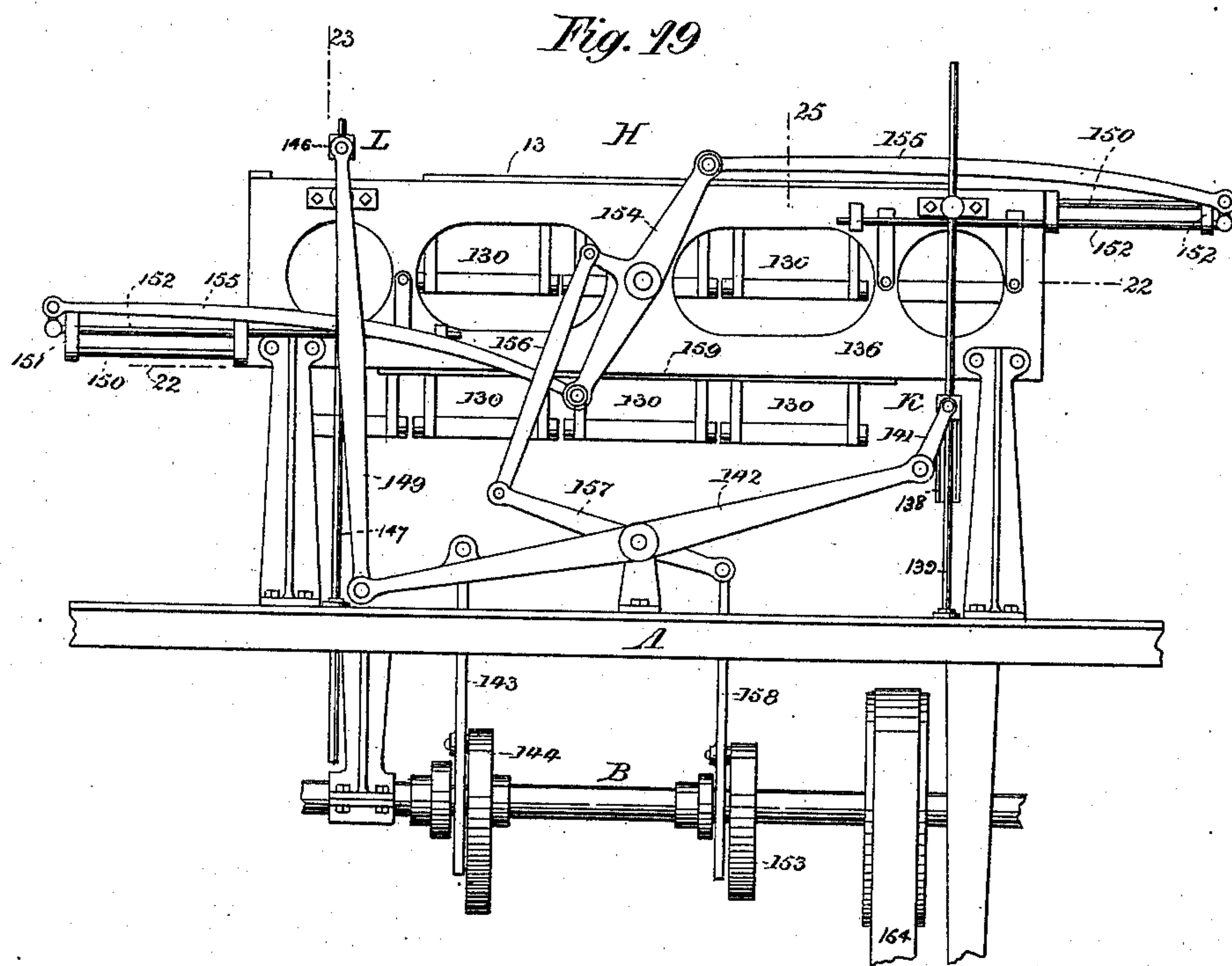
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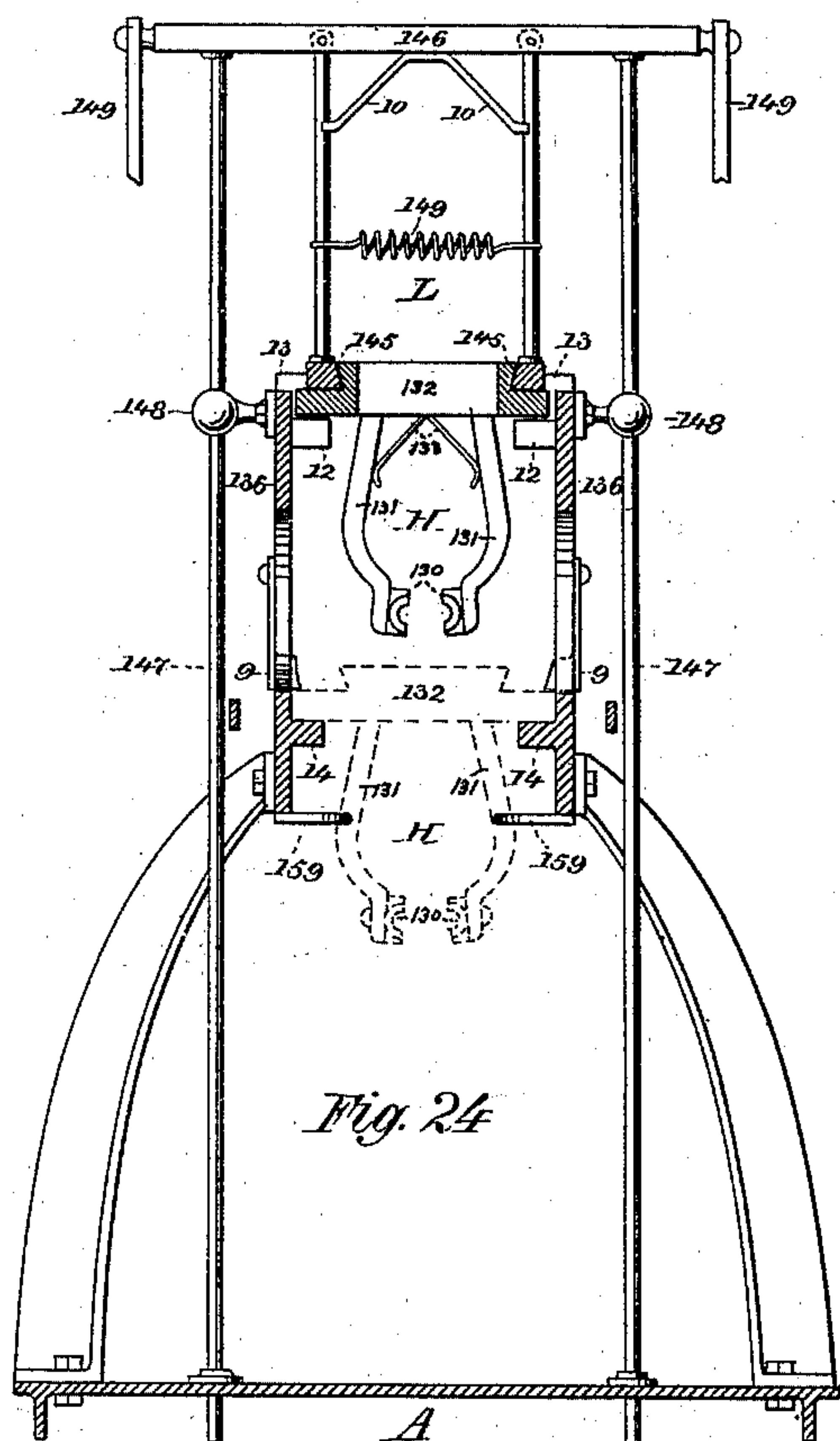


Fig. 24

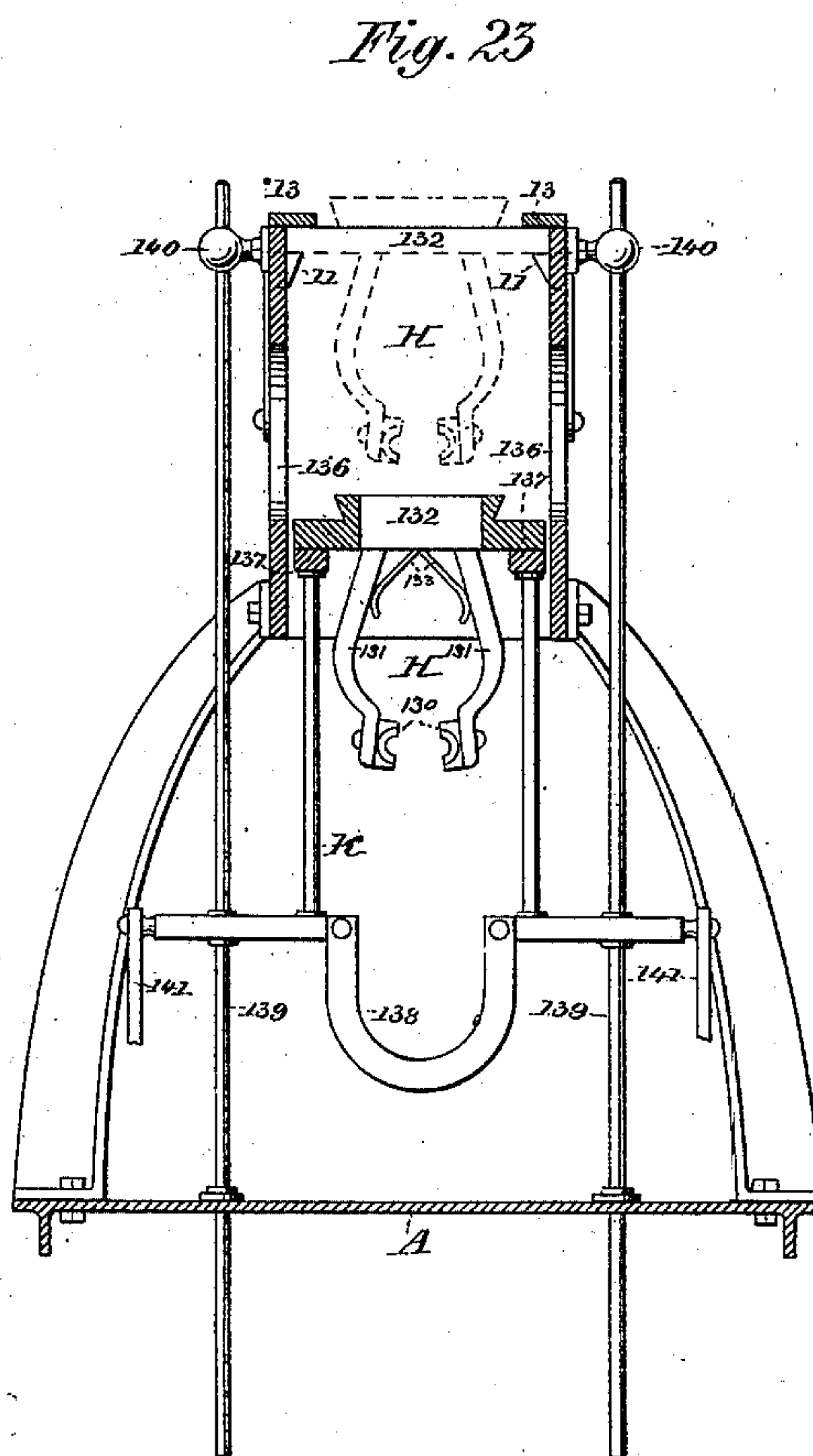


Fig. 23

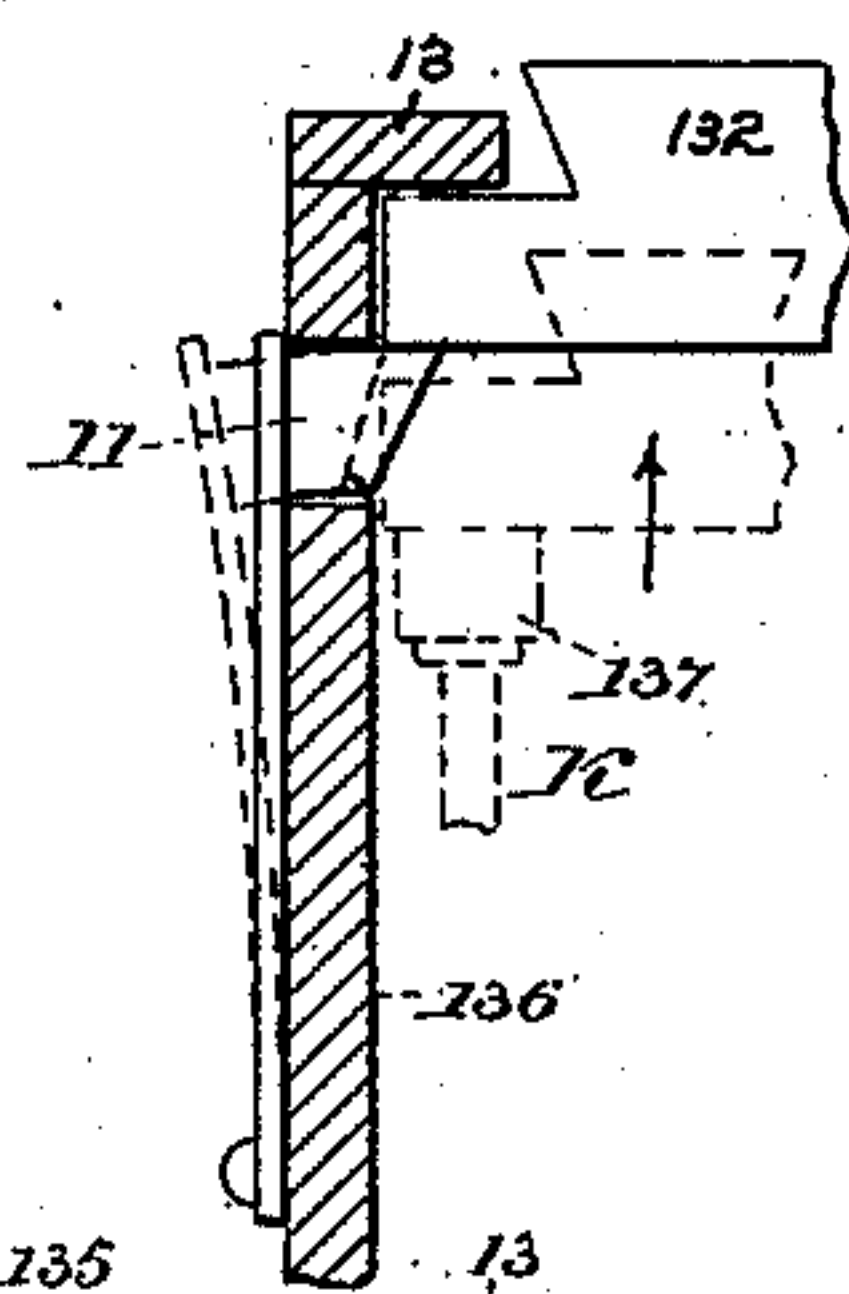
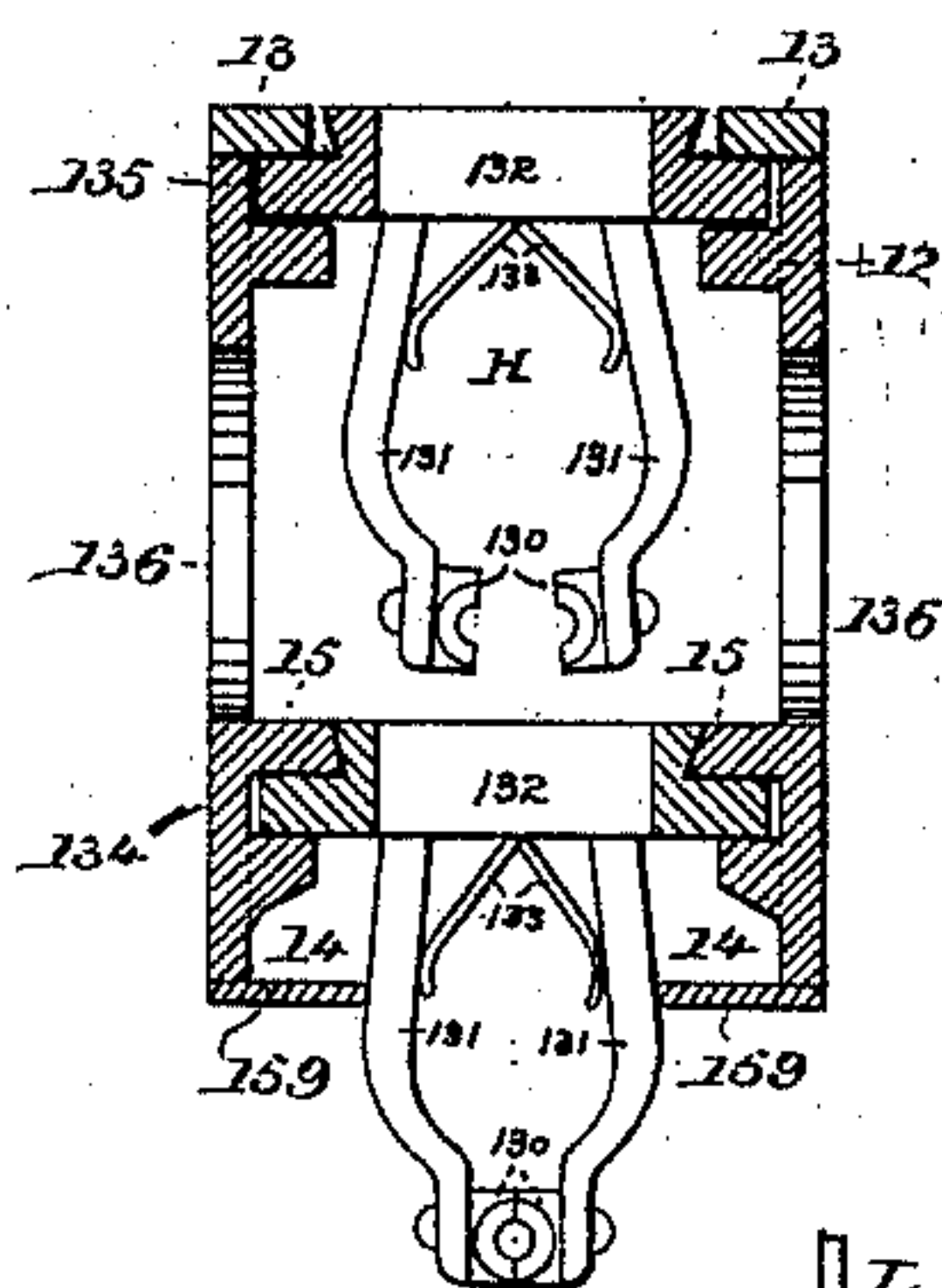
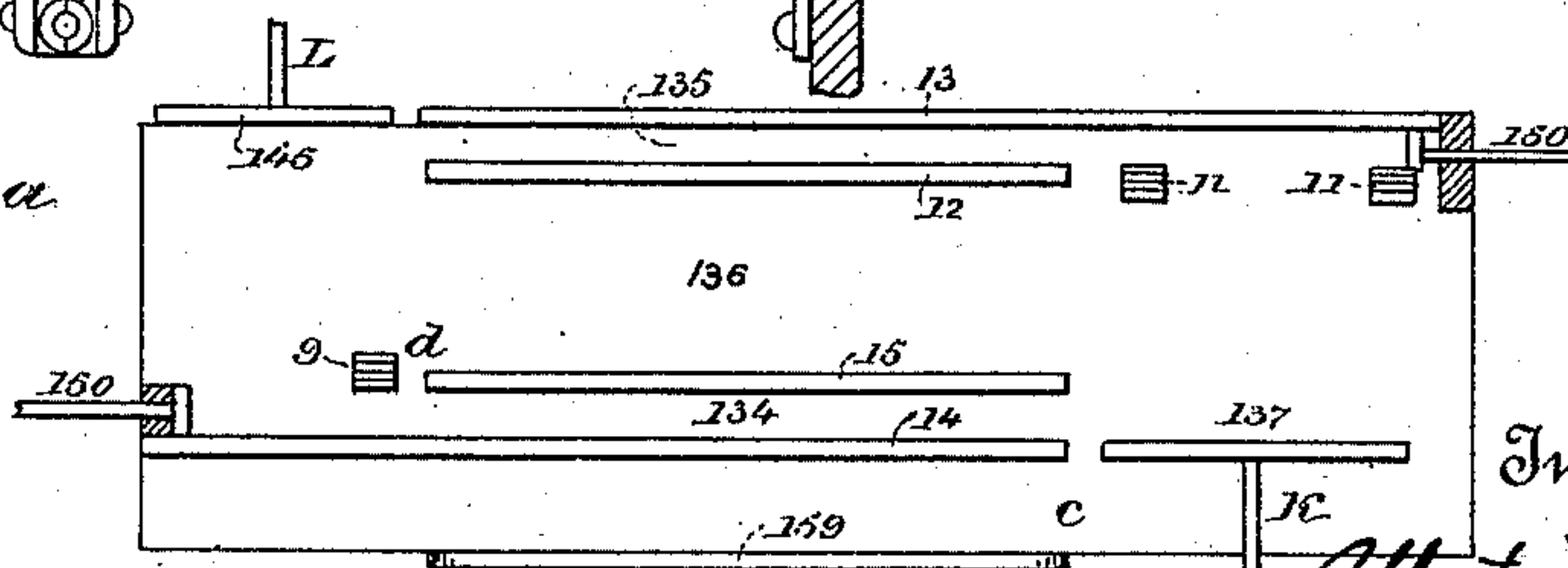


Fig. 26



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Fig. 21

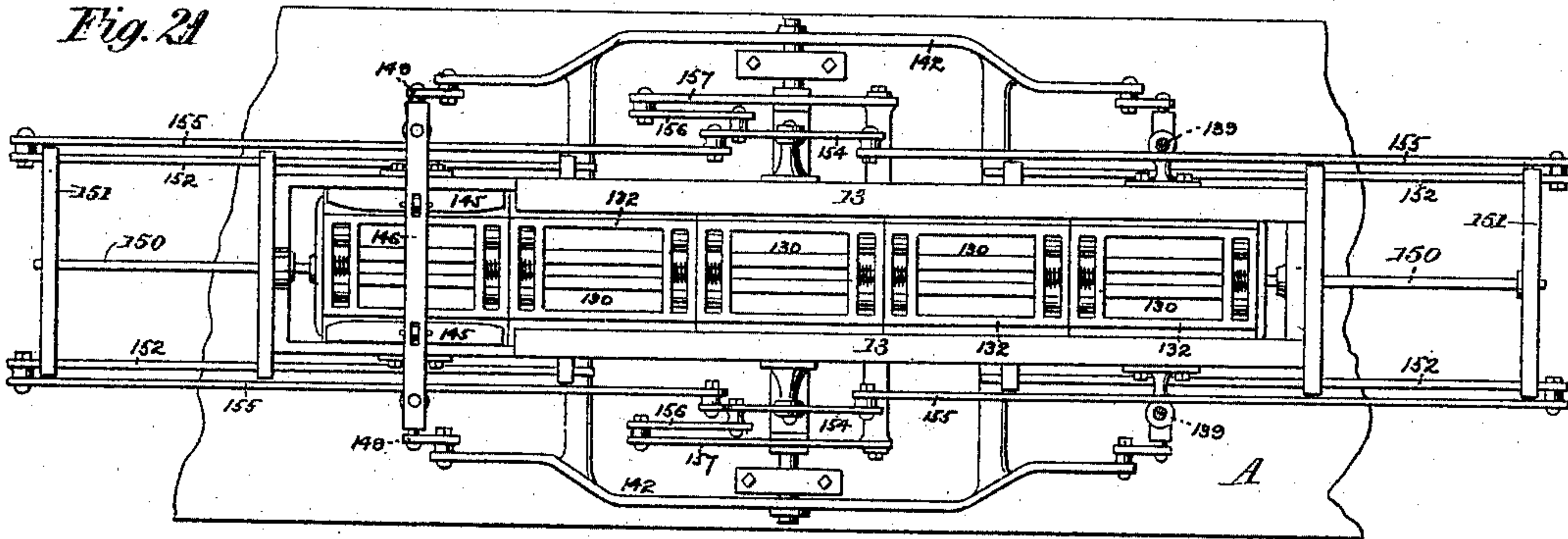
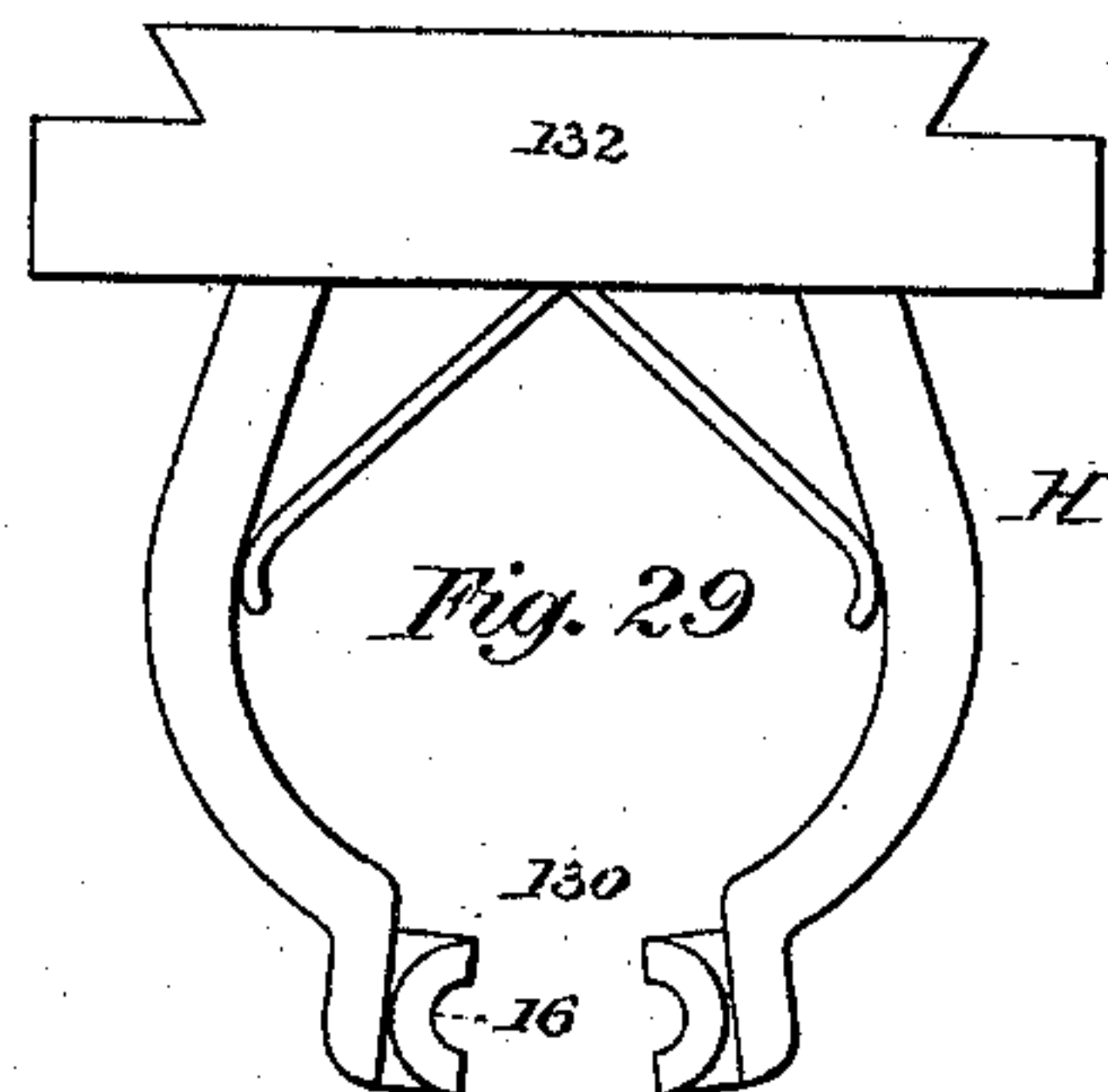
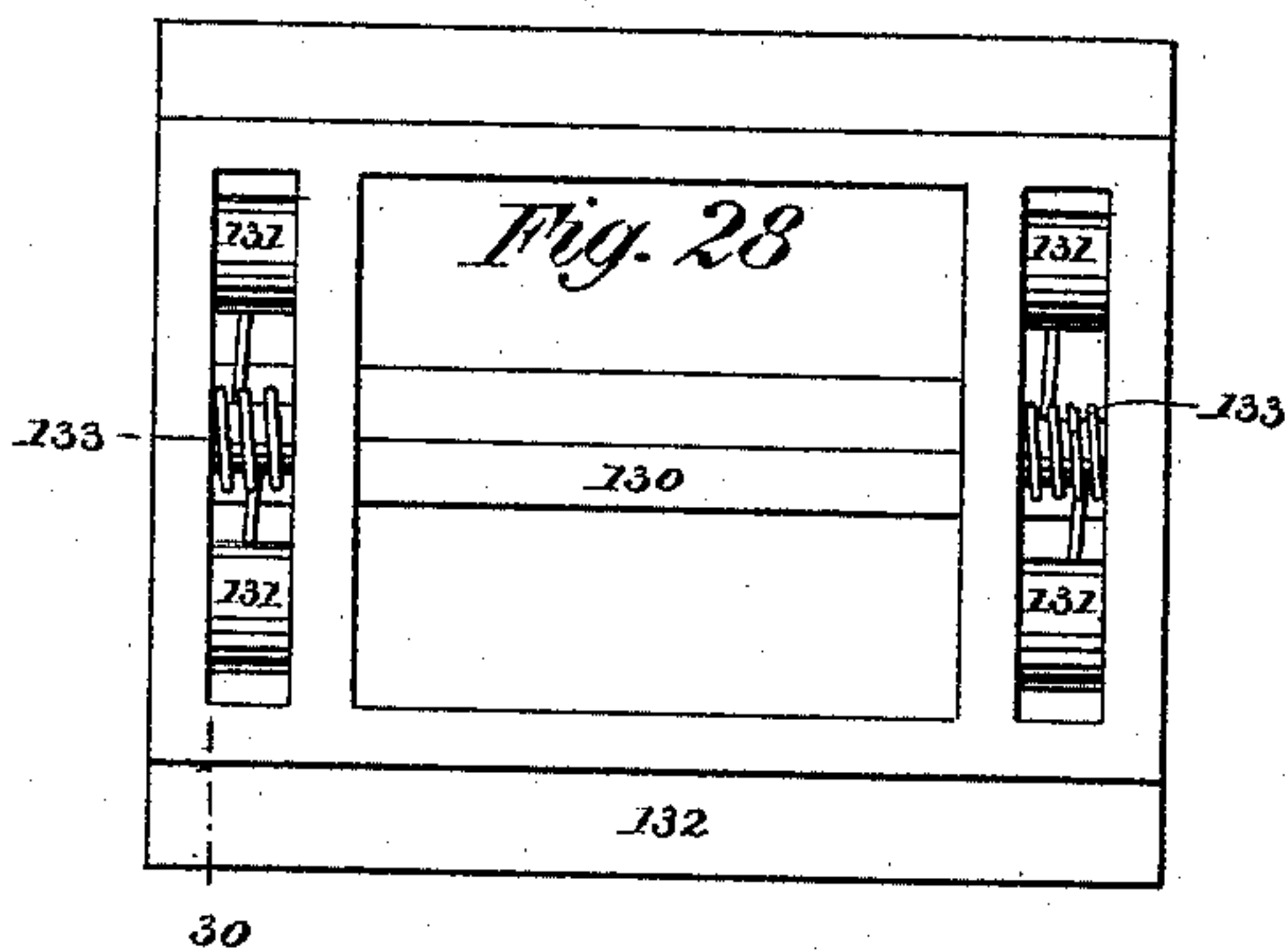
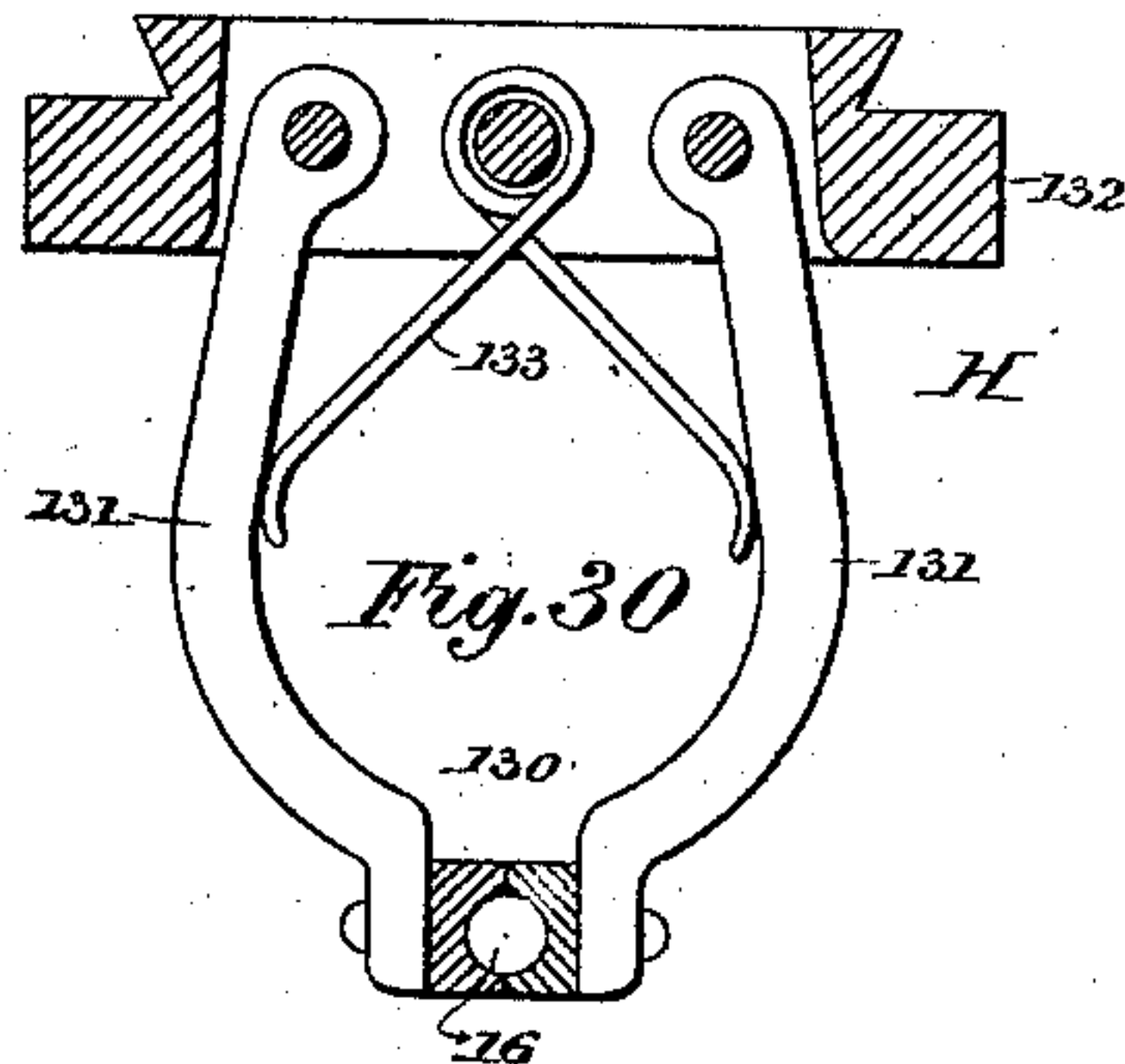
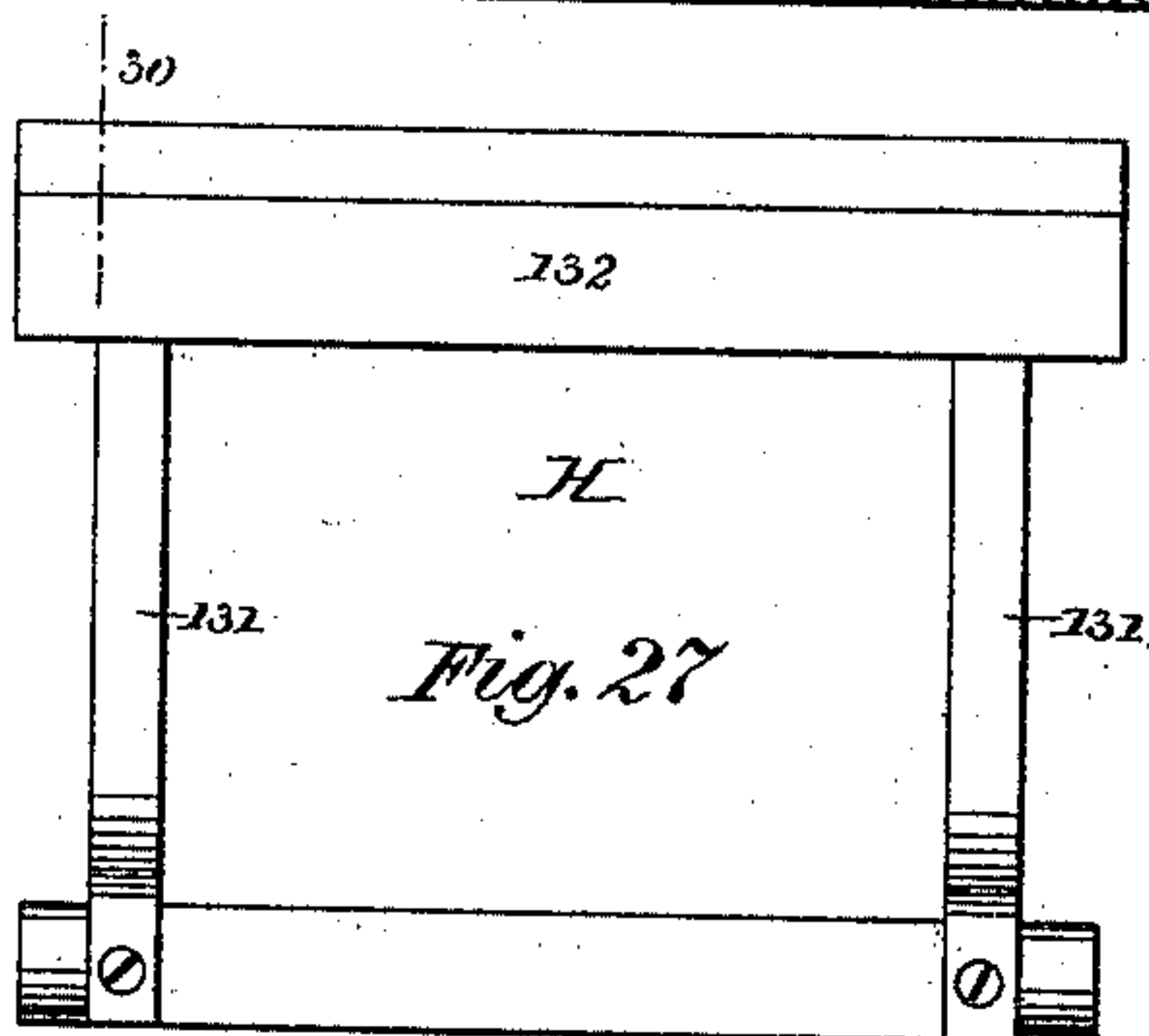
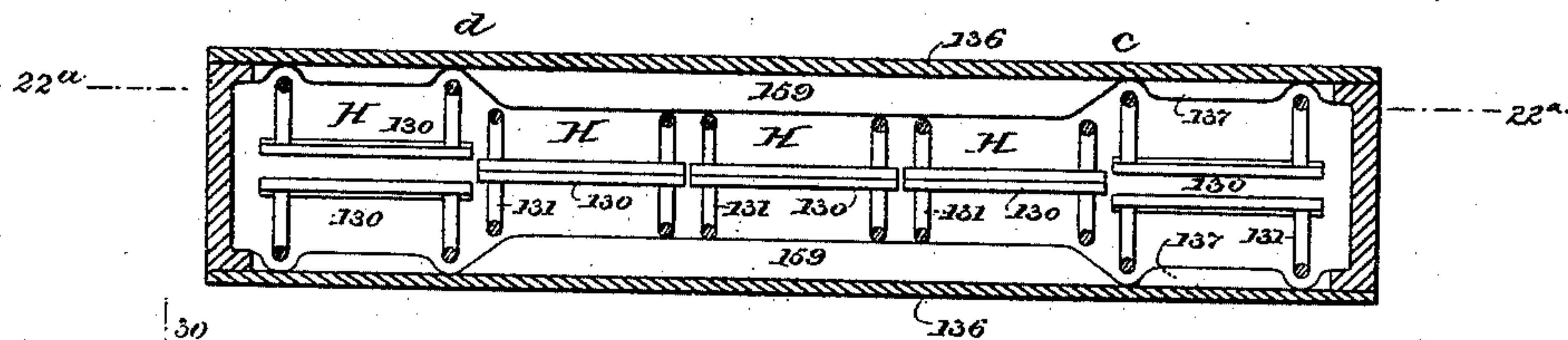


Fig. 22



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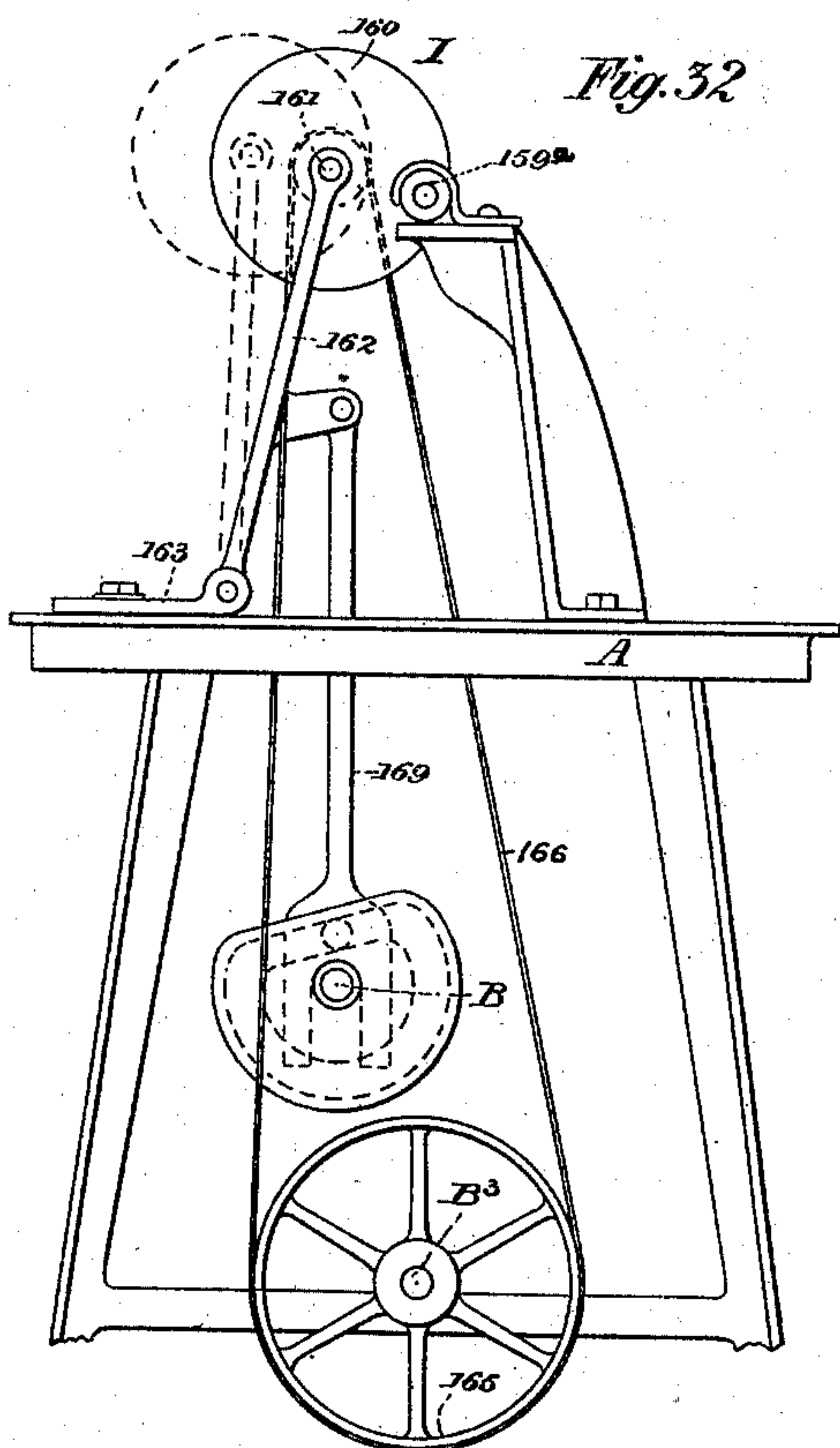


Fig. 32

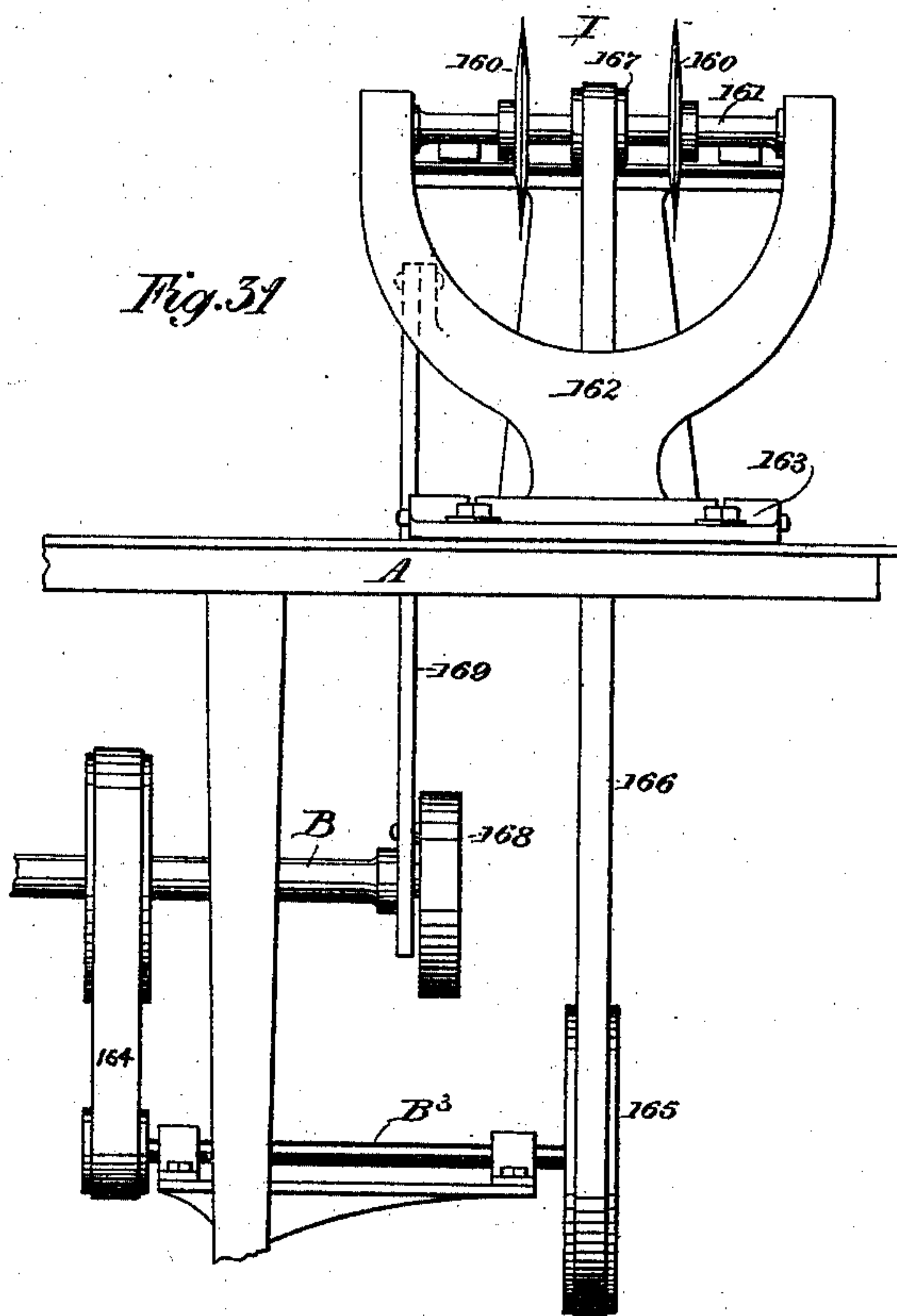


Fig. 31

Fig. 34

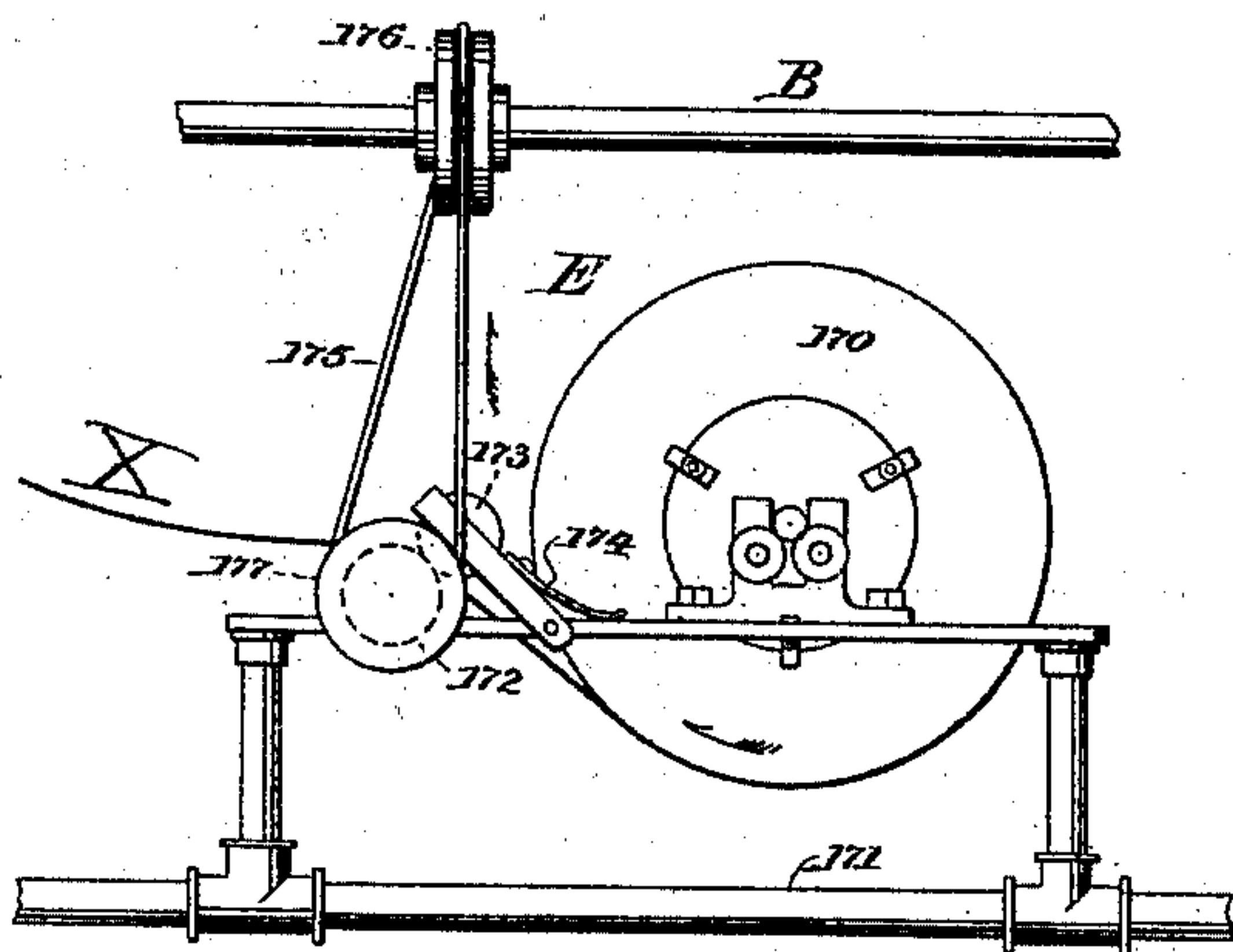
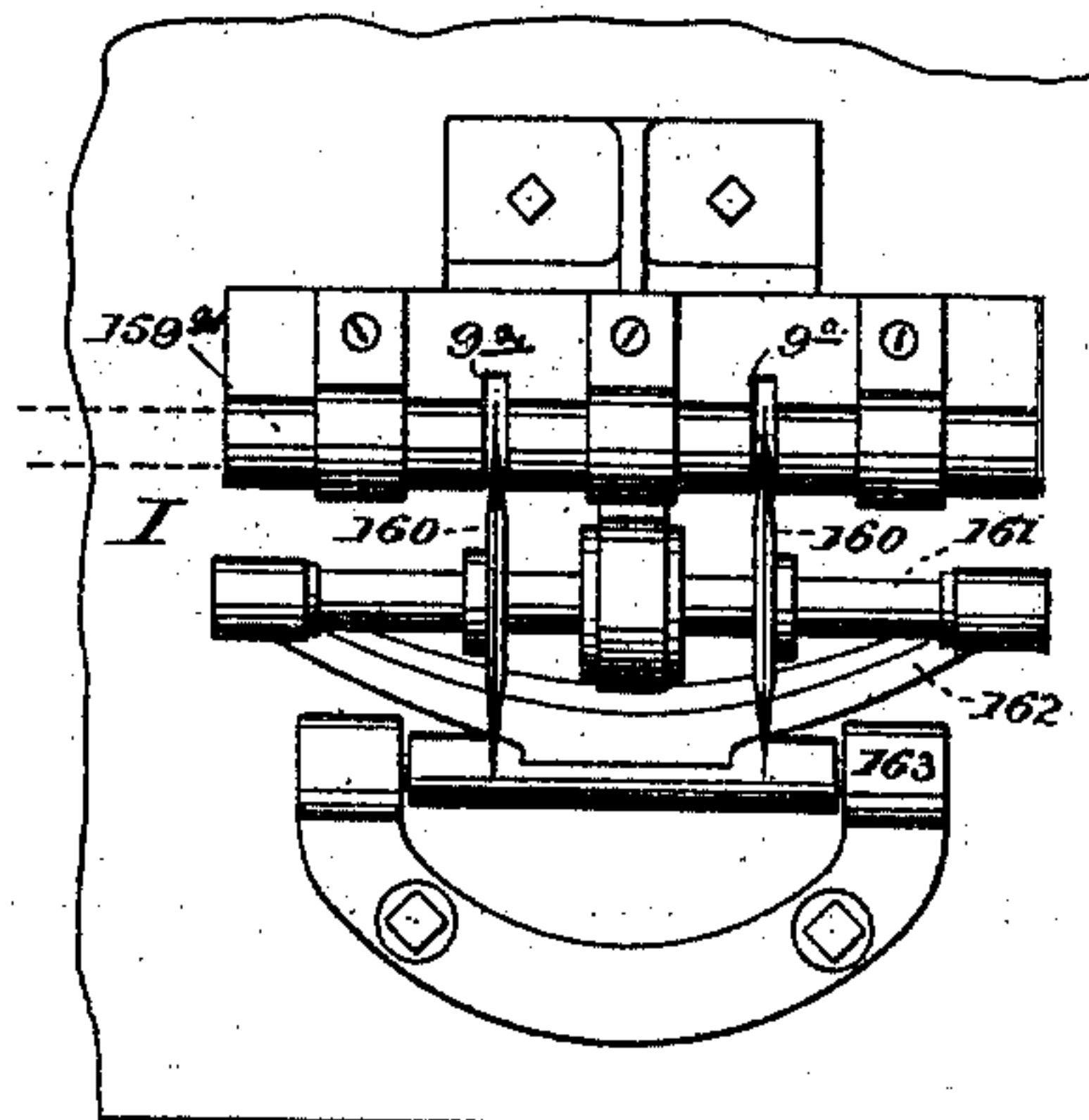


Fig. 33



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UNITED STATES PATENT OFFICE.

ALBERT L. MUNSON, OF NEW YORK, N. Y.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,630, dated September 26, 1893.

Application filed April 3, 1891. Serial No. 387,570. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. MUNSON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Cigarette-Machines, fully set forth in the following description and represented in the accompanying drawings.

This invention relates generally to machines for making cigarettes; and particularly to that class of such machines wherein the tobacco in the form of a continuous filler is enveloped by a continuous wrapper strip to one edge of which a line of cement is applied so that when the edges of the strip overlap and meet they will unite completely enveloping the filler to form a continuous cigarette ready to be severed into short lengths or cigarettes.

The object of the present invention is, among other things, to provide an automatically operating machine for the production of cigarettes and by which cigarettes are speedily and economically made; and to this end the invention consists in the novel structure, arrangement and combination of parts hereinafter fully set forth.

A special difficulty heretofore experienced in the manufacture of cigarettes from a continuous filler or rod has been that in cutting the cigarettes from such a rod, which latter preferably moves continuously in order that it may receive its tobacco more regularly and be formed more homogeneously throughout its length, the knife actuating mechanism must be very quick acting and perfect in its construction in order to avoid the stoppage of the cigarette rod and the injury of it or the crumpling of its end as the knife or knives pass across its line of movement. The mechanism necessary for this purpose becomes worn in a short time so as not to act with perfect accuracy unless it is repeatedly and carefully adjusted, the result being that many cigarettes are formed the ends of which are more or less crumpled or abraded by the cutting action.

It is one of the important objects of my improvement to enable the cutting to be performed so as to leave the cigarettes in the most perfect, satisfactory, and merchantable condition, and at the same time so feed the

tobacco initially to the forming devices as to make the filler perfectly homogeneous throughout its length without more tobacco being deposited or collected at one point of the filler than at another. I attain this useful result by combining with the filler forming devices means for operating it or them intermittently, permitting the cut off knives to sever the cigarette at the times when it is stationary; at the same time I combine with the devices by which the tobacco is supplied to the paper or filler forming devices, means for operating them intermittently so that the tobacco is deposited equally along the intermittently moving filler forming devices or cigarette paper, the said delivering devices being stationary and inoperative at the same time that the forming devices are stationary as already mentioned to permit the severing of the cigarette; with such elements I furthermore combine a continuously operating tobacco feeding device which without intermission of any kind regularly deposits tobacco in a finely distributed condition in the devices which, composed of four belts forming a conduit, deliver the tobacco as aforesaid to the cigarette paper or filler, thus avoiding the objectionable clogging or choking of said delivering devices which would be experienced if tobacco were fed into it in separate bulks intermittently.

In the accompanying drawings which illustrate a practical embodiment of the present improvements:—Figure 1, is a side elevation of the complete machine. Fig. 2, is a plan view thereof. Fig. 3, is an enlarged end elevation, looking from the left hand of the machine, as seen in Figs. 1 and 2, showing particularly the tobacco feeding and filler forming devices. Fig. 4, is an enlarged cross sectional elevation of the same taken on the lines 4, 4, of Figs. 1 and 2, looking in the direction of the arrows. Fig. 5, is a vertical cross section taken on the line 5, of Figs. 1 and 2, showing particularly the tobacco feeding aprons and feeding rolls. Fig. 6, is a side elevation of a portion of the tobacco feeding devices and the filler forming devices looking from the side opposite that shown in Fig. 1. Fig. 7, is a central vertical cross section taken on the line 7 of Fig. 6. Fig. 8, is an enlarged side elevation of the devices for applying a

line of paste to the edge of the wrapper strip together with the devices for partially wrapping and completely wrapping the wrapper strip around the tobacco filler, and for supporting the edge of said strip during the pasting operation; and Fig. 8^a is a sectional end elevation of the primary wrapper guide taken on the line 8^a Fig. 8. Fig. 9, is a cross sectional elevation taken on the line 9, of Fig. 8. Fig. 10, is an enlarged detailed elevation of one of the parts shown in Fig. 9. Fig. 11, is a plan view of the devices shown in Figs. 8 and 9, the paste applying wheel being shown in a different position from that indicated in Fig. 9, and by dotted lines in other positions. Fig. 12, is an enlarged cross section of the paste fountain and its roll, and the paste applying disk, taken on the line 12, of Fig. 11. Figs. 13 and 14, are similar views showing the paste roll in different positions, the disk being omitted; and Fig. 14^a is a horizontal section taken on the line 14^a Fig. 12. Figs. 15, 16, 17 and 18, are cross sections taken on the line 15, of Fig. 11, showing the parts in different positions. Fig. 19, is an enlarged side elevation of a portion of the devices shown in Fig. 1, illustrating particularly the cigarette carrier devices. Fig. 20, is a similar view, the parts being shown in a different position. Fig. 21, is a plan view of the devices shown in Fig. 19. Fig. 22, is a horizontal section taken on the irregular line 22, 22, of Fig. 19; and Fig. 22^a is a vertical sectional elevation taken on the line 22^a of Fig. 22. Fig. 23, is an enlarged cross section taken on the line 23, of Fig. 19. Fig. 24, is a similar view taken on the line 24 of Fig. 20. Fig. 25, is a similar view taken on the line 25, of Fig. 19. Fig. 26, is an enlarged detail of a catch hereinafter referred to, and a portion of the structure shown in Fig. 23. Figs. 27, 28 and 29, are respectively enlarged side, plan and end views of one of the cigarette carriers removed from the machine. Fig. 30, is a vertical section of the same taken on the line 30 of Figs. 27 and 28. Fig. 31, is an enlarged elevation of a portion of the devices shown in Fig. 1, illustrating particularly the cutter by which the continuous cigarette is severed into proper lengths. Fig. 32, is an end elevation thereof; and Fig. 33, is a plan view. Fig. 34, is an enlarged elevation of the wrapper strip roll and the feeding or paying off devices for the strip.

Before entering into a detailed description of the construction and operation of the various instrumentalities which go to form the complete organization illustrated, it may be stated that such organization embraces first, a means by which the tobacco is prepared and fed in condition to be operated upon by the cigarette forming devices, and hereinafter called the tobacco feeding devices, which includes one or more tobacco feeding apron or aprons, means for continuously operating it or them so that a sufficient quantity of tobacco may be supplied in a given time in a finely divided and homogeneous condition,

which also includes a downward conduit or passage-way receiving the tobacco so continuously fed and the walls of which, being formed by devices such as belts, are movable to carry downward at the required times the contained tobacco, and are adapted while stationary to receive a gradually increasing charge of the continuously fed tobacco, and which lastly includes mechanism for intermittently moving the walls of said conduit; second, means by which the loose tobacco thus delivered by said feeding devices is prepared in the form of an endless filler and fed forward, and hereinafter called the filler-former or filler forming devices; third, means by which a wrapper strip is fed in position to be delivered forward from a roll or other source of supply in position to meet the filler to envelop the latter, and hereinafter termed the wrapper strip paying off or feeding devices; fourth, means by which the wrapper strip is curved and turned over the continuous filler to envelop the same, and hereinafter termed the wrapper former or guide, which also includes the cigarette former; fifth, means by which a line of paste is applied along the edge of the wrapper strip, and hereinafter called the pasting device; sixth, means by which the continuous cigarette or wrapper strip with inclosed filler rod is fed or carried positively forward, and hereinafter called the cigarette carrier; and seventh, means by which the continuous cigarette is severed into cigarette lengths, and hereinafter called the severing device.

As herein combined the above mentioned several devices co-operate to feed the loose tobacco to the machine, prepare such tobacco in the form of a continuous cigarette filler, feed said filler forward to the wrapper strip, feed the wrapper strip forward to meet the filler, partially envelop the filler with the wrapper strip, apply a line of paste to one edge of the wrapper strip, complete the wrapping of the wrapper strip around the filler, and to carry the continuous cigarette thus made forward and sever it into cigarette lengths forming complete cigarettes ready for the market.

Referring now to the drawings, it is to be understood that these various instrumentalities are all mounted upon or carried by a supporting table A, from which is also supported a main driving shaft B that imparts the necessary movements to the operative parts of the machine.

As a detailed description of the construction, arrangement and operation of the various devices forming the machine illustrated may be best had by describing each of the devices hereinafter mentioned forming the complete organization, such method of description will be adopted, at the same time indicating at the proper times the relation of each of said devices with the others and their manner of co-operation in the construction and function of the entire organization.

The tobacco feeding devices.—The tobacco

feeder C is mounted in a suitable framework 20, rising from the machine table at the left hand end of the machine as shown in Figs. 1 and 2, and is arranged to prepare and feed the loose tobacco forward at right angles to the ultimate direction the prepared filler, wrapper strip and completed cigarette move. These devices (see particularly Figs. 3, 4 and 5) consist of a horizontally arranged primary apron 21, that is stretched around rolls 22, 23, journaled in said framework. At the inner end of the apron where it turns around the roll 23, which is shown of less diameter than its companion roll, there is provided a plain roll 24, also mounted to turn in bearings in said framework, the under surface of which is slightly below the upper surface of the primary apron. Below this roll there is provided a pair of picker rolls 25, 26, in position to take the loose tobacco, as it falls from between the end of the primary apron and the roll 24, and by their peculiar picking operation separate or loosen the tobacco so that it will fall loosely upon a secondary apron 27, located below the picker rolls. This secondary apron is likewise stretched around rolls 28, 29, also mounted to turn in bearings in said framework, and at the inner end of said secondary apron there is likewise provided a plain roll 30, and below it a pair of picker rolls 31, 32. Suitable motion, in the present case continuous motion, is imparted to these aprons and rolls from a counter-driving shaft B', mounted in bearings at the left hand side of the machine, that carries fast and loose pulleys 33, and a balance wheel 34. Said shaft is also provided with a driving pinion 35 which meshes with a gear wheel 36 secured to the main shaft B, by which said shaft is driven. The counter-shaft is provided with a pulley 37 from which, through a belt 38 stretched around said pulley 37 and another pulley 39, motion is imparted to an intermediate shaft B² that is mounted in bearings rising from the machine table A and to which said latter pulley is secured. This intermediate shaft supports two other pulleys 40, 41; from the larger one 40 there is stretched a belt 42 that passes around a pulley 43 secured to the end of the shaft of the picker roll 26; and from the smaller pulley 41 there passes a belt 44 that is stretched around a pulley 45 mounted on a short shaft 46 that also carries a gear wheel 47 that meshes with a similar wheel 48 on the end of the shaft of the secondary apron roll 28. The shaft of this apron roll at its opposite end carries a pulley 49 from which a belt 50 is stretched around a pulley 51 secured to the end of the primary apron roll 22; and from this same pulley there is stretched a cross belt 52 that passes around a pulley 53 secured to the end of the shaft of the plain roll 24. At the opposite end of the shaft of the roll 22 there is also provided a pulley 54 around which passes a belt 55 that is stretched around a pulley 56 fast to the end of the shaft of the picker roll 25. Upon the opposite side of the

frame, the shaft of the picker roll 26 is provided with a second pulley 57 around which passes a belt 58 that is stretched around a pulley 59 secured to the end of the shaft of the picker roll 32; and the shaft of the secondary apron roll 28, which also carries the gear wheel 48, carries a pulley 60 from which is stretched a belt 61 which passes around a pulley 62 on the end of the shaft of the picker roll 31. This shaft also carries a gear wheel 63 that meshes with a similar wheel 64 secured to the end of the plain roll 30. The motion of the counter-driving shaft B' is transmitted to the intermediate shaft B² and from thence by the several belts and pulleys described to each of the aprons 21, 27, and to the several rolls and picker rolls so that the tobacco that is spread upon the primary apron 21 by the attendant is fed forward beneath the roll 24 into the bite of the picker rolls 25, 26, which pick, loosen and otherwise operate upon the tobacco so that it will fall in a separate or loose state upon the secondary apron 27, and this tobacco will again be fed forward by said secondary apron beneath the roll 30 into the bite of the second set of picker rolls 31, 32 and by them again picked and loosened and fed therefrom. Owing to the scattering action of the pair of picker rolls, this portion of the tobacco feeding device is provided with a shield 65 which is of such shape as to cover the pairs of rolls and the space at the sides of the frame between the first pair and the secondary apron so that the tobacco is confined within the machine. Located immediately under the picker rolls 31, 32, and in position to catch the tobacco as it falls from said rolls—or from the apron 27 in the absence of the rolls—or from the funnel 67 there is provided a tobacco conduit or passage-way C' (see particularly Figs. 3, 4, 6 and 7). A vertically arranged frame 66 rising from the supplemental table A', supported from the machine table A, supports at its upper end a funnel or hopper 67, and two pairs of vertically arranged belts 68, 69. The belts of each pair are opposed to each other and one pair is arranged at right angles to the other so as to form a central channel or conduit of definite size, forming a continuation of the funnel 67 and extending from a point adjacent to its apex downward. The pair of belts 68 are comparatively broad belts and are stretched around rolls 70, 71, mounted in the framework; and the belts 69 are similarly stretched around rolls 72, 73. These latter belts are narrower than the belts 68 and are mounted so that they lie and move between the operative faces of the belts 68. Suitable motion, in this instance intermittent motion, is imparted to the belts 68, 69, from cams 74, 75, fast to the driving shaft B. For this purpose the shafts of the belt rolls 71 are each provided with intermeshing gears 76, and the shaft of one of said rolls is also provided with a pinion 77, that is engaged by the teeth of a vertically arranged rack bar 78, the

lower end of which, through a link 79 is connected with a lever 80 having a roll engaging with the groove of the cam 74. The connection between the pinion 77 and the shaft of the roll which supports it is through a spring clutch, shown in Fig. 6, and of the same character as that shown in the enlarged view Fig. 10, to be hereinafter described, so that motion only in the direction of the arrow is imparted to the belts 68. The shafts of each of the rolls 73 of the other pair of belts 69 are provided with gear wheels 81 adapted to move in unison through intermediate gears 82. Upon the opposite end of the shaft of one of the rolls 73 there is provided a pinion 83 that is engaged by the teeth of a vertical rack bar 84, the lower end of which through a link 85 and a lever 86 is connected with a rod 87 bearing a roll engaging with the groove of the cam 75. The lower end of the rod 87 is forked to straddle the driving shaft B so that it is guided vertically in the usual manner. The connection between the pinion 83 and the shaft of the roll which drives it is through a pawl and ratchet 88, see Fig. 4, by which only a movement in one direction is imparted to the rolls 73 and thence to the belts 69. The tobacco falling from the picker rolls 31, 32, is directed by the funnel 67 into the upper end of the conduit, formed by the pairs of belts 68, 69. While the belts are at rest, the tobacco will, owing to the restricted character of the conduit, or passage-way, pile up therein. The bottom of such pile rests on the belt 91 which is beneath said conduit (see Fig. 3). The feed into the funnel 67 being of fine tobacco, a little at a time, will not choke the funnel or conduit. As soon as the belts are moved through the connections described, the tobacco thus accumulated in the conduit or passage-way will be discharged from its lower end until substantially all the accumulated tobacco has been discharged. The said belts again rest and the tobacco accumulates in said conduit or passage-way as before described, and the operation will be repeated. In some conditions of the loose tobacco fed into the machine it has a tendency to clog at the base of the funnel so that it would not enter the conduit evenly. In order to prevent this defective operation there is employed a blast of air that is led to the top of and into the funnel 67 and directed downward so that the loose tobacco passes down freely just as fast as it drops into the funnel. This blast may emanate from any suitable source as, for instance, a rotary blower 99 fast to the side of the framework 20 and having a conducting tube 100 leading into the top of the funnel 67. Motion is imparted to the blades or fan of the blower by a belt 101 that is stretched from a pulley 102 on the end of the shaft of the picker roll 26 and around a pulley of the blower shaft, as shown in Fig. 3. In order to provide a vent for the air blast the wider belts 68 of the conduit C' are each provided with a central series of perforations i, (see

Fig. 6) so that it will not tend to force the tobacco therefrom ahead of the feeding movement of the belts.

The filler rod former.—The filler forming devices D are located immediately below the exit of the conduit formed by the pairs of belts 68, 69, so as to receive the tobacco discharged therefrom. In construction and operation this former is substantially that shown in the Trowbridge Patents Nos. 99,372 and 143,545, and need not therefore be specifically described. It may be stated, however, that it consists of three endless belts, preferably of metal, 89, 90, 91, stretched around and guided by suitable rolls so as to form a horizontal trough or channel, the sides of which are formed by the belts 89, 90, and the bottom thereof by the belt 91. The operative portion of the belts forming the sides of the channel are kept to duty and prevented from spreading by rolls 92 located at intervals between the rolls of the respective belts, as shown in Figs. 1 and 2, and the belt forming the bottom of the channel is supported by and moves over the supplemental table A', as seen in Figs. 4 and 7. The tobacco, as before explained, intermittently fed from the vertical conduit C' is received by the horizontal channel of the filler-former so that it is carried onward in the movement of the filler-forming belts. This movement, which is an intermittent one, is derived from a cam 93, secured to the driving shaft B, by means of a pinion 94 carried by the shaft of the inner roll of the belt 91. This pinion is engaged by the teeth of a rack 95, the lower end of which is connected with the lever 96 having a roll that engages with the groove of the cam 93. The connection between the pinion 94 and its shaft is through an ordinary pawl and ratchet or spring clutch, of the character hereinbefore referred to, so that only a forward motion is imparted to said roll and the belt 91. Similar motion is transmitted from the shaft of said roll to the contiguous rolls of the belts 89, 90, by means of pairs of bevel gears 97, only one pair of which is shown in Fig. 1, so that the three belts move in unison. The tobacco fed into the filler former is pressed or otherwise shaped into proper rod form by means of one or more rolls 98, the peripheries of which are arranged to extend into the channel and between the belts 89, 90. It may be here stated that while the tobacco is fed intermittently into the channel of the filler-former the resultant filler is in the form of a continuous and compact rod, as the tobacco does not assume the complete rod form until after passing the pressing rolls 98. This feature is of considerable importance in that the completed cigarette will not be liable to break as it would be were the filler to be formed in sections and an attempt be made to overlap or connect the contiguous ends.

The wrapper strip folder and cigarette forming devices.—The wrapper strip folder and

cigarette former F is located in line with the direction of movement imparted to the tobacco filler by the filler forming belts so that the filler in passing from the filler-former will be received by the wrapper strip folder and cigarette formers. These devices consist, in the preferred construction, of three portions which may be entirely independent of each other or formed in one or two pieces. These portions consist of a primary former guide and folder 103, a supporting or intermediate flanged guide 104, and a final guide and folder or former 105. These guides are shown secured to the upper surface of a supplemental table A² supported by legs from the table A. The primary folder 103 is of a form adapted to gradually curve the wrapper strip from a substantially flat condition, in cross section, to a circular or tubular condition with one edge of the strip standing vertical in position to lap over onto the other edge, as shown in the detail, Fig. 8^a. The supporting or intermediate guide 104 is substantially a continuation of the final form of the primary folder 103, but preferably formed with a stiff vertical ledge 106 against which the vertical or unlapped edge of the paper strip lies in position to be borne upon by the paster hereinafter to be described. The final folder 105 is in position to receive the partially formed cigarette from the intermediate guide 104, and complete the cylindrical or tubular formation of the wrapper strip so that the pasted edge thereof is turned down and overlapped upon the under-lying edge and be thereby united thereto to complete the formation of the cigarette. This guide and the folders may be of any of the usual forms requisite to effect this folding down of the edge of the strip and complete the cigarette. The space between the end of the filler rod former and the primary folder 103 is bridged by a conical trough shaped guide 120, the forward end of which projects partially onto the folder 103 so as to deliver the filler well onto the center of the wrapper strip beyond the point where it loses its flat condition.

The paste applying devices.—These devices, so far as other features of the organization are concerned, may be of any preferred form, but as herein embodied the paster G (see Figs. 8, 9 and 11) consists of a traveling and oscillating doctor-disk 107 mounted at the upper end of the long arm of a bell crank 108 adapted to move or reciprocate horizontally and rock on a rod 109 that is supported in rigid bearings from the table A. The disk travels between the inner face of the intermediate guide 104 and a paste supply roll 110 (that extends along parallel with said intermediate guide), and is adapted at the end of one movement to come in contact with the paste roll, or some paste supplying means, and at the end of the other movement in contact with the longitudinal edge of a portion of the paper strip that is then lying against the face of the intermediate guide. Con-

stant horizontal forward and back movement is imparted to the bell crank and disk from a cam 111, fast to the main shaft B, through a bell crank 112, the long arm of which is loosely connected as at *b* to the long arm of the bell crank 108, and the other arm of the bell crank 112 connected to the end of a lever 113 that is provided with a roll engaging with the groove of said cam. The rocking motion of the disk 107 and its carrier bell crank is imparted by means of a stationary cam 114 that is fixed to the upper end of a bracket 115 rising from the machine table. This cam is engaged by the short arm of the carrier bell crank 108, and is so arranged that in the forward motion of the disk 107, the end of said short arm of the bell crank will travel in contact with the upper face of the cam 114 thereby holding the disk in contact with the paste supplying means, as the roll 110, and be thereby supplied with paste. As it reaches the end of said motion, said short arm will strike a yielding deflector plate 19 which causes the bell crank to be rocked on the rod 109, thus removing the disk 107 from the paste roll and moving it in contact with the edge of the wrapper strip so that in its return reciprocation the end of said short arm will pass to the under side of the cam 114 and travel in contact therewith with the disk in contact with the wrapper strip until it reaches the opposite end where it will strike a similar deflector plate 18 that deflects the end of said short arm to pass in the repetition of its reciprocation to the upper side of the cam 114, moving the disk from the wrapper strip and again into contact with the paste roll. The paste supplying means may obviously be of any suitable construction that will present at the proper time sufficient paste for the disk 107 to take to afterward apply to the edge of the wrapper strip. It is shown in the form of the roll 110, before referred to, mounted in an opening in the side of a paste fountain 116 so as to project partially into the fountain; the space between the face of the opening and surface of the roll being guarded by a pair of plates 117 118 by which the escape of paste is prevented; the upper plate being adjustable and capable of being forced by means of thumb screws more or less firmly against the roll. The fountain 116 is suitably mounted on framework from the table A, and the paste roll is journaled in bearings 17 supported by the supplemental table A². The roll is provided with a radial slot extending its length, in which is seated a paste carrying blade 119, capable of radial reciprocation with respect to the roll so that in passing the plates 117, 118, and while at the fountain side of the roll the outer surface of the blade will be flush with the surface of the roll and after passing to the outside of the fountain will be projected beyond the surface of the roll as shown in Figs. 12 and 14. The means by which this reciprocation of the blade is effected is shown in Figs. 14^a, 15 to 18 inclusive, and consists of

a pin 178 projecting from the rear side of the radial blade 119, and a projection 179 against which the pin moves in the rotation of the paste roll to project the radial blade, and an eccentric surface 180 in the path of a longitudinal off-set 181, against which the blade 119 bears so that said blade is reciprocated inwardly in the further rotation of the shaft. These parts are duplicated at each end of the paste roll shaft and hence a description of those located in one end will suffice for both. The projection 179 is formed on the framing of the paste fountain in rear of the paste roll shaft. The eccentric surface 180 is formed by a short bracket supported upon and secured to the supplemental table A², so as to partially underlie the paste roll shaft, as shown. The center of this bracket is grooved to permit the passage of the pin 178. In the operation of the devices, the paste roll 110 normally rests in the position shown in Fig. 12, with its blade projecting, having been moved outwardly by the contact of the pin 178 against the projection 179, as shown in Fig. 15, during the reciprocation of the paste applying disk in contact with the edge of the blade. Upon the rotary movement of the paste roll, the off-set 181 moves in contact with the eccentric surface 180, and by reason of its eccentricity moves said off-set and its blade inwardly, as shown in Figs. 13 and 16; continuing to rotate, the pin 178 passes through the groove of the eccentric surface 180, as in Fig. 17, until it again strikes the projection 179, as in Fig. 18, when the off-set and blade are moved outwardly until the paste roll arrives in the position shown in Fig. 12, when they come to rest, the operations being then repeated. Rotary motion, in this instance intermittent motion, is imparted to the paste roll 110 by a pair of bevel gears 121 one of which is fast to the paste roll shaft, and by a second pair 122 one of which is secured to the end of a horizontal cross shaft 123 bearing at its end a pinion 124 that is engaged by the teeth of a vertical rack 125, the lower end of which is engaged by the end of a lever 126 carrying a roll that enters the groove of a cam 127 secured to the main shaft B. In order that only a forward motion will be imparted to the shaft 123 and through it to the paste roll, the connection between the pinion 124 and said shaft is had through a spring clutch 128 shown in enlarged view, Fig. 10. As therein shown, the shaft 123 is made in two parts one part carrying one part of the clutch formed integral therewith; the other part carries a sliding sleeve 129, one end of which forms the other part of the clutch which is held to duty against the first named part by means of a spring, and is kept from turning independent of its portion of the shaft by means of a pin 17 projecting through a slot in the sleeve. The motion imparted to the roll 110 is such that at the time the paste applying disk 107 is rocked from contact with the wrapper strip, the roll will

have come to rest with the radial blade 119 in position to be borne against by the disk, in which position the blade remains until the completion of the reciprocating movement of the disk; the diameter of the disk with respect to the length of the blade being such that its entire periphery will have received a supply of paste from the blade in the forward movement of the disk; and upon the return movement of the disk in contact with the wrapper strip that amount of paste will be applied to its edge. The wrapper strip having been partially wrapped around the filler and one longitudinal edge of the strip supplied with a line of paste, said edge of the strip in passing through the guide 105 will be folded down or lapped over so as to be united with the under-lying edge of the strip and thus complete the inclosing of the filler as the filler and wrapper issue from said guide in the form of a continuous cigarette. While the paste applying disk is shown as acting upon the wrapper strip between the guides 103, 105, the strip having been partially curved around the filler, it is obvious that so far as the action of the disk is concerned it might apply the line of paste previous to the partial curving of the strip, it simply being necessary to support the edge of the strip to meet the action of the disk.

Cigarette carrying devices.—The cigarette, carrier H is located immediately beyond the end of the final guide 105 and in position to grasp and carry the continuous cigarette forward in a straight line with the filler-former and the inclosing or wrapping guides. The cigarette carrier (see particularly Figs. 19 to 25 inclusive) consists essentially, of a plurality of longitudinally movable pairs of grasping jaws 130 adapted to close upon and grasp the continuous cigarette, and while grasping it carry it positively forward thus at the same time drawing the wrapper strip X through the guides 103, 104, 105, and with it the filler (as soon as it is sufficiently inclosed by the wrapper to be within its control) and simultaneously with the movement of the traveling belts forming the filler-former by which the filler is fed forward to the wrapper strip. The grasping jaws of each carrier consist in the construction which I prefer and which I have illustrated of a pair of bars provided upon their inner and adjacent faces with a longitudinal semi-circular groove 16, which when the jaws are closed together, forms a structure that will entirely surround the cigarette and bear with substantially equal pressure thereon. These bars are carried at the ends of pairs of arms 131 (see Figs. 27 and 29) that are pivoted at their upper ends in a head 132. Each pair of arms is borne upon by the ends of a spring 133 held in the head 132, the tendency of which is to cause the jaws to open and remain open as shown in Fig. 29. This structure, of what may be termed a practically continuous carrier, presents a means by which the continuous cig-

arette is grasped through a considerable portion of its length; and as a number of these carriers are preferably employed, acting simultaneously, the combined holding effect thereof extending along the major portion of the length of the cigarette is utilized to draw or carry the completed cigarette, the partially formed cigarette and the wrapper strip onward, in this manner preserving the form of the cigarette and reducing the chance of straining or breaking to a minimum. Each pair of grasping jaws forms in itself a carrier independent of the other jaws, which starting at its initial position and after having grasped the cigarette carries it bodily forward to the limit of its movement, is then adapted to release its hold on the cigarette, be temporarily withdrawn or moved from operative relation with the cigarette and be again placed in or moved into initial position to repeat the operation. Thus, while each carrier is distinct in itself, it is obvious that when a plurality of carriers are used, as in the present instance, two or more carriers will simultaneously act to carry the continuous cigarette forward. Many ways of mounting the carriers so that they will grasp and move longitudinally with the continuous cigarette, by which they will release their hold upon the cigarette and by which they may be moved or shifted into operative position and again grasp the cigarette will occur to those skilled in the art, and so far as this shifting movement of the carriers is concerned it may obviously be either vertically or laterally. As shown herein, the carriers are supported by a pair of side frames 136 that are held by suitable brackets from the machine table A. The inner faces of these side frames provide in this construction a lower and upper horizontal guide way 134, 135. At the forward end or terminus of the lower guide way and of the side frames 136 there is provided a shifting device or elevator K for receiving each succeeding carrier from said guide way and raising it into the upper guide way; and at the rear or initial end of the lower and upper guide ways there is provided a shifting or delivering device L for receiving each succeeding carrier in the upper guide way and delivering it downward into the lower guide way. In and along the lower guide way the carriers are adapted to be moved during their carrying operation with the continuous cigarette; and in and along the upper one the carriers move backward to be returned in operative position in the lower guide way. The carriers through their heads 132 are mounted to slide horizontally in a longitudinal direction in the lower and upper guide ways 134, 135. The lower guide way is formed by upper and lower flanges 14, 15, see Fig. 25, which confine the heads of the carriers to the guide way and prevent any uneven movement. The lower flanges 14 extend from a point substantially at the commencement of the guide way to a point *c*, Figs. 22 and 22^a, where it terminates

at the elevator K. The upper flanges 15 commence from a point *d*, and terminate at substantially the same point *c*, as do the lower flanges. The lower flange of the upper guide way 135 commences and terminates in substantially the same manner as does the upper flange of the lower guide way, extending from the elevator to the delivery device L; and the upper flange of the upper guide way extends from the forward ends of the side frames 136 up to the delivery device. The elevator K consists of a pair of rails 137 adapted in the normal position of the elevator to form a continuation of the lower flange 14 of the lower guide way. These rails are supported by vertical bars from a cross frame 138 that is in turn secured to vertical guide rods 139 adapted to slide through openings in the machine table A, and in guides 140 at the upper portions of the side frames 136, as seen in Fig. 23. As soon as a carrier arrives on the rails of the elevator it is in position to be elevated from coincidence with the lower guide way into line with the upper guide way 135. Motion is imparted to the elevator for effecting this result through a pair of links 141 connected to one end of a centrally pivoted lever frame 142 which, through a rod 143 is acted upon by a cam 144 secured to the main shaft B through a roll projecting from the rod 143 into the groove of said cam. See Figs. 1 and 19. In order to permit the elevator to immediately descend after delivering the carrier into position to pass along the upper guide way, there is provided a pair of spring or other suitable catches 11 having beveled faces (see Figs. 23 and 26) in the path of the sides of the head 132 of the carriers as they are moved upward by the elevator so that they will be moved to one side to permit the head of the carrier to pass, and as soon as the carrier has arrived at the limit of its movement stopped by the upper flange 13 of the upper guide way, the catches will return to their normal position holding the carrier in line with the upper guide way, as shown by dotted lines in Fig. 23. The delivery device L consists of a pair of rails 145 secured to the lower ends of a pair of vertical rods projecting from a cross bar 146 secured to the upper ends of a pair of guide rods 147 that are guided in the vertical reciprocating movement of the delivery device through openings in guides 148 at the upper ends of the side frames 136, and by openings in the table A. The rails 145 in the normal position of the delivery device coincide with and form a continuation of the upper rail 13 of the guide way 135; but have inclined faces adapted to coincide with undercut sides of the head 132 of the carriers, so that the carriers as soon as they are received upon the rails 145 are held thereby during the movement of the delivery device delivering the carrier into the position shown, upon the lower flanges 14 of the lower guide way in the position shown in dotted lines, Fig. 24. The

vertical rods supporting the rails 145 are pivoted in the cross bar 146 and are held normally against suitable stops 10 by means of a spring 149. The stops 10 limit the action of the spring and tend to hold the rails in proper alignment to receive the undercut portions of the head between them. In delivering the carrier into the lower guide way, the sides of the head 132 meet the inclined faces of a pair of spring or other suitable stops 9, push them to one side, and as soon as it reaches the position shown in dotted lines in said Fig. 24, the stops return to their normal positions above the head, thus holding the carrier down in place upon the flanges 14, so that upon the return upward movement of the delivery device, the rails 145 will yield laterally sufficiently to pass from engagement with the head 132 of the delivered carrier. Motion is communicated to the delivery device L from the lever frame 142 by links 149 connecting the opposite ends of the cross bar 146 to the ends of the lever frame 143 which is thus operated by the same cam 144 that operates the elevator K. From this arrangement of parts, the action of the elevator and the delivery device is substantially simultaneous: that is to say, while the elevator is raising a carrier to the upper guide way, the delivery device is delivering a carrier to the lower guide way; and as the elevator returns to its normal position the delivery device also returns to its normal position. Any suitable means may be employed for moving the carriers in the forward direction along the lower guide way and in the rearward direction along the upper guide way. Thus, at the head of each guide way there is provided a horizontally arranged plunger 150 secured to the outer ends of a pair of guide rods 152 that are guided in flanges projecting from the sides of the side frames 136. Motion is simultaneously imparted to each of the plungers from a cam 153 secured to the main shaft B through a pair of double bell cranks 154 located one on each of the side frames 136. The long arm of the bell cranks is connected by pairs of links 155 to the cross bar of the plunger, while the short arm of each bell crank is connected by a link 156 to one end of a lever 157, the opposite end of which is connected to a rod 158 having a roll engaging with the groove of the cam 153. The operation of the plungers is such that as soon as a carrier is delivered into the lower guide way and one is raised into the upper guide way, the plungers move inwardly thus moving along the respective guide ways a number of carriers, those in the lower guide way carrying the continuous cigarette forward; the extreme forward carrier in the lower guide way being moved onto the rails of the elevator, and in the other guide way the one moved into the embrace of the rails of the delivery device, when they return to their normal positions ready to again operate to move the carriers along in their respective guide ways

upon the raising and delivering of another carrier. The means for causing the grasping jaws of the carriers to move together to grasp the continuous cigarette may obviously be effected by many mechanical devices. In the preferred construction these means are arranged with respect to the jaws and to the carriers themselves in such manner that the jaws of the carrier just delivered into the lower guide way will not be closed to grasp the cigarette until the carriers are started in their forward movement, and then both jaws are acted upon simultaneously to grasp a length of the continuous cigarette immediately behind that portion thereof grasped by the preceding jaws, and these means are also so arranged as to permit the release of the jaws of the forward carriers simultaneously, immediately it arrives or just previous to its arrival wholly upon the rails of the elevator. These means for closing and keeping closed the jaws 130 of the carriers consists of a pair of inwardly projecting plates 159 secured to the lower ends of the side frames 136 in such position that said plates will bear against the sides of the arms 131 carrying the jaws. The opposite ends of the plates are inclined, as shown in Fig. 22, so that as the newly delivered carrier with its jaws open, with the preceding carriers in the lower guide way, move forward, the inclined ends of the plates will bear against the forward pair of arms of said carrier and simultaneously rock the jaws closed upon the cigarette. The forward carrier just as it is being moved wholly upon the elevator will be relieved from pressure by the rear pair of arms leaving the plates 159, so that the jaws will spring open under the force of the springs 139, as is also shown in Fig. 22, and the jaws will remain open while the carrier is being elevated, while it is being moved along the upper guide way and until it again reaches the initial position in the lower guide way and is again started in its movement along said lower guide way when they will close on the cigarette as just stated.

The severing device.—The severing device I, is located immediately beyond the ends of the cigarette carriers H, and in position to sever the continuous cigarette into cigarette lengths as it is fed or carried forward by the carriers. It consists of a fixed tubular guide 159^a that is in longitudinal alignment with the grasping jaws of the operative carriers so that the cigarette will pass in a straight line from the grasping jaws of the carriers into the guide 159^a. With this guide there coacts a revolving cutter 160 which in the present construction is in duplicate so that two cigarette lengths may be severed simultaneously. These cutters are mounted upon a shaft 161 journaled in the upper ends of a yoke shaped frame 162 that is pivoted at its lower end in a bracket 163 upon the table A. Rotary motion, continuous in this instance, is imparted to the cutters from a countershaft B³ driven from the main shaft B by means of

a belt 164 and carrying at its outer end a pulley 165 from which extends a belt 166 passing around a pulley 167 fast to the shaft of the cutters. In the normal position of the cutters they will lie as shown in dotted lines, Fig. 32, out of operative relation with the stationary guide 159; but as soon as the continuous cigarette has been projected or fed into or through the guide 159^a, the cutters and their frame will be rocked toward the fixed guide 159^a so that the edges of the cutters project past the ends of the guide or into slots 9^a partially dividing the guide, and thus sever the continuous cigarette contained by said guide into cigarette lengths. This rocking motion of the cutters and their frame is imparted by means of a cam 168 secured to the end of the main shaft B through a rod 169 having a roll that extends into the groove of the cam; the upper end of the rod being pivoted to an arm projecting from the inner side of the cutter frame 162. The time of motion of this cam will be such that the frame will be rocked back into the position shown in dotted lines, Fig. 32, as soon as the severing operation has taken place so that the cigarette carrier H may operate unobstructedly to carry or project forward another length of cigarette into the stationary guide 159^a. As soon as this has been effected and the continuous cigarette comes to rest, the cutters and their frame will be rocked into the position shown in full lines Figs. 32 and 33, thus severing the cigarette contained by the said guide. Each time the continuous cigarette is fed or carried forward, the two severed cigarette lengths will be discharged from the forward end of the guide 159 and may be caught by any suitable receptacle.

The present organization is designed to operate upon a continuous tobacco filler rod and a wrapper strip to make a continuous cigarette, and hence the wrapper strip will preferably be wound upon a roll having more or less capacity so that the machine may operate for a considerable length of time continuously without stoppage for renewal of the wrapper strip. And in order to remove all unnecessary strain from the wrapper strip, which is necessarily of a frail character, there is provided a feeding device E (see Figs. 1 and 34) adapted to feed or pay off the strip contained by a roll 170. This roll is hung loosely in suitable antifriction bearings supported from a longitudinal tie bar 171 of the machine frame and beneath the table A. The strip is led over a driven roll 172 also mounted in suitable bearings and upon the upper surface of which and the strip bears a weighted idle roll 173 whose weight may be augmented by a spring 174. The roll 172 is driven from the main shaft B by means of an endless belt 175 passing around a pulley 176 of the roll shaft. The wrapper strip is led from the roll 172 upward through an opening in the table A over a roll 8 and over another roller on the end of the supplemental table A²

and thence in the primary folder 103, and so on as before described.

While no detailed description of the operation of the machine as thus described is deemed necessary, as the same has already been given in describing the different devices embraced by the organization, it may be stated that as organized the machine, with the exception of that portion of the tobacco feeding devices constituted by the aprons 21, 27, and the picker rolls, is adapted to operate intermittently to form at each intermittent operation two cigarettes, the filler-rod former to form and feed forward a length of tobacco filler sufficient to form the filler of two cigarettes; the pasting device operating to apply a line of paste to the edge of the wrapper strip for a length suited to the making of two cigarettes; and the cigarette carrier adapted to draw and carry forward sufficient wrapper strip through the folding and forming guides, and to project and carry forward the completed continuous cigarette into the fixed guide of the severing device of a length suited to the making of two cigarettes; and the severing device adapted to sever the continuous cigarette into two cigarette lengths so that at each complete operation of the machine, as, for instance, upon each rotation of the main shaft B there will be formed two complete cigarettes while more or less of the continuous cigarette will be within the grasp or control of the cigarette carrier, more or less of the partially formed cigarette will be within the control of the forming guides, and a considerable amount of tobacco filler will be in process of formation and formed ready to be enveloped by the wrapper strip.

Without limiting the invention to the precise arrangement and details of construction shown, what is claimed is—

1. The combination of a tobacco feeding apron, means for continuously operating the same a conduit channel or passage-way the walls or sides of which are formed by belts, mechanism for intermittently moving said belts, a filler rod forming device adapted to receive the tobacco from said conduit, and means operating the filler rod forming device intermittently, substantially as set forth.

2. The combination of a tobacco feeding apron, a pair of picker-rolls situated at the end of said apron and operating upon the tobacco delivered therefrom, an apron receiving and conveying the tobacco from said rolls, means for continuously operating all of these parts a conduit adapted to receive the tobacco from the second apron and having its wall formed of belts, means for intermittently moving said belts, a filler rod forming device comprising a trough formed by belts and comprising also suitable pressers, and means for intermittently actuating the latter belts, substantially as set forth.

3. The combination of a tobacco feeding apron, means for moving the same continu-

ously, belts forming a conduit adapted to receive the tobacco from said apron, mechanism for moving said belts intermittently, filler rod forming belts and pressers co-operating with the first mentioned belts and adapted to receive, convey and complete the tobacco and filler, and means for actuating the latter belts intermittently, substantially as set forth.

4. The combination of a tobacco feeding apron, a pair of picker-rolls receiving and operating upon the tobacco delivered by said apron, a second apron receiving the tobacco from said rolls, a second pair of picker-rolls operating upon the tobacco delivered from the second apron, all operating continuously belts constituting a conduit adapted to receive the tobacco and convey the same downward, other belts and pressers adapted to receive the tobacco and form the filler-rod, and mechanism for operating all of said belts intermittently, substantially as set forth.

5. In a cigarette machine the combination, with the filler-rod forming devices, of a downwardly extending conduit the walls of which are formed by belts and which delivers its contained tobacco to said filler-rod forming devices, means for supplying tobacco to said conduit, a continuously operating drive mechanism for the machine, intermittently operating mechanism connecting said filler-rod forming devices and said belts with the said main drive mechanism for actuating the former intermittently, a severing device, and means for actuating the latter during the intervals between the operation of the filler-rod forming devices, substantially as set forth.

6. The combination of a tobacco feeding device, belts forming a conduit to receive the tobacco one or more of which belts being provided with a series of perforations, a funnel over the conduit and an air blast tube directing air in the funnel and in the direction of the movement of tobacco fed into the conduit, substantially as described.

7. The combination with a guide for a wrapper-strip, of a paste supplying means, a paste applying disk, a vibrating arm or frame carrying said disk, a guide or rod for said arm or frame extending transversely to the planes of vibration of the disk, and mechanism for vibrating said arm or frame and for reciprocating it on said guide transversely to its planes of vibration, substantially as set forth.

8. The combination with a guide for a wrapper strip, a paste supplying roll having a radially movable blade, and a reciprocating and vibrating paste applying disk, substantially as described.

9. The combination with a guide for a wrapper strip, a paste supplying means, a reciprocating paste applying disk, a fixed cam and connections extending from the disk for vibrating the same, substantially as described.

10. The combination of a guide for the wrapper-strip, a paste supplying means, and a paste applying device having mechanism for reciprocating it in one direction in con-

tact with said paste supplying means and in the opposite direction against said guide and for vibrating it, substantially as set forth.

11. The combination with a guide for a wrapper strip, a paste fountain, a roll intermittently rotating partially within the fountain and having a radially projecting and reciprocating blade, and a continuously operating reciprocating and vibrating paste applying disk, substantially as described.

12. The combination of a plurality of carriers having spring-actuated grasping jaws, means for closing the latter, two guide ways for said carriers, and means for moving the carriers in said guide ways and for transferring them from one guide way to the other in endless succession, substantially as set forth.

13. The combination with a plurality of carriers, having hinged spring-actuated grasping jaws means for closing the jaws two guide ways therefor, one above the other, an elevator for directing each carrier from the lower guide way into the upper, a delivery device for delivering each carrier from the upper guide way into the lower one, means for moving said carriers to and fro in the guide ways substantially as described.

14. The combination of a plurality of cigarette carriers having cigarette or filler-rod grasping devices, two guide ways therefor, extending in a direction parallel with that of the filler a shifting device at each end of the guide ways for shifting a carrier in each of the guide ways into the other, and means for moving the shifting devices simultaneously, substantially as described.

15. The combination with a plurality of cigarette carriers, two guide ways therefor, extending in a direction parallel with that of the filler-rod a shifting device at the ends of the guide ways for shifting a carrier from each guide way into the other guide way, and means for simultaneously moving the carriers along each guide way, in opposite directions substantially as described.

16. The combination of a plurality of cigarette carriers, two guide ways therefor, extending in a direction parallel with that of the filler-rod a shifting device at the ends of the guide ways, means for moving the shifting devices simultaneously, and means for moving the carriers along each guide way simultaneously in opposite directions, substantially as described.

17. A continuous cigarette carrier consisting of a head adapted to slide in a horizontal guide way, and having two grasping jaws each secured to the ends of a pair of pivoted arms, a cam for holding the jaws in one position, and a spring opposing the action of the cam, together with a second guide-way extending parallel with the direction of the filler, and an elevator for removing the carrier to the second guide-way substantially as described.

18. The combination of a plurality of cigarette carriers each having a pair of grasping

jaws, means for opening the latter, two guide ways for the carriers one above the other both extending in a direction parallel to that of the filler-rod, means for shifting the carriers from one guide way to the other mechanism for moving the carriers to and fro in the guide ways, and a cam adjacent to one of the guide ways for closing the grasping jaws of the carriers.

19. The combination with the filler-rod forming devices, of a plurality of cigarette carriers, two guide ways for the carriers parallel with each other, mechanism for actuating the carriers in one direction in one guide way and in the opposite direction in the other guide way, and a shifting or transferring device at each end of the guide ways for shifting said carriers from one guide way to the other in an endless series, substantially as set forth.

20. In a cigarette machine an actuating mechanism for moving the filler-rod, consisting of a plurality of carriers for grasping said rod, two separate and parallel guide ways therefor, mechanism for advancing and returning the carriers in the two guide ways, and transferring devices for shifting the carriers from one guide way to the other, substantially as set forth.

21. In a cigarette machine a means for moving the filler-rod, consisting of a plurality of carriers for grasping said rod, two separate and parallel guide ways therefor, mechanism for advancing and returning the carriers in the two guide ways, transferring devices or elevators for shifting the carriers from one guide way to the other, and connections between said elevators whereby they are caused to operate simultaneously in opposite directions, substantially as set forth.

22. The combination with a plurality of cigarette carriers, two guide ways therefor, and means for shifting the carriers from one guide way to the other consisting of a delivery device having movable rails for engaging and supporting a carrier, mechanism for moving the delivery device in directions transverse to said guide ways, and a catch or stop for holding the carrier while the delivery device is withdrawn and its rails disengaged, substantially as set forth.

23. The combination of a plurality of carriers having spring-actuated grasping jaws, means for closing the latter, two guide ways for said carriers, means for moving the carriers in said guide ways and for transferring them from one guide way to the other in endless succession, and a laterally movable ro-

tary severing device for severing the continuous cigarette into the cigarette lengths, substantially as described.

24. The combination with the filler-rod forming devices, of a plurality of cigarette carriers, two guide ways for the carriers parallel with each other, mechanism for actuating the carriers in one direction in one guide way and in the opposite direction in the other guide way, a shifting or transferring device at each end of the guide ways for shifting said carriers from one guide way to the other in an endless series, a slotted guide into which the cigarette is projected, and a pair of rotary cutters for severing the cigarette through the slots of the guide, substantially as set forth.

25. The combination with an intermittently feeding filler-rod former, fixed cigarette folders and a flanged guide, of a reciprocating and laterally movable pasting device for operating upon the wrapper strip while the same is supported by said flange and while the said strip and rod are stationary, substantially as set forth.

26. The combination with an intermittently feeding filler-rod former, a continuously operating feeding device for the wrapper strip, a fixed wrapper strip folder and a cigarette forming guide adapted to support an edge of the strip, a reciprocating and laterally movable paster for applying paste to the supported edge of the wrapper strip, a plurality of carriers for the continuous cigarette, and a severing device therefor, substantially as set forth.

27. The combination of a continuously operating tobacco feeding device, an intermittently operating delivering device arranged to receive tobacco from said feeding device, an intermittently feeding filler-rod former receiving tobacco from said delivering device, a continuously operating feeding device for the wrapper strip, a fixed wrapper strip folder and a cigarette forming guide, a pasting device for applying lines of paste to the wrapper strip, a plurality of separate and independent carriers for the continuous cigarette, and actuating mechanism therefor, and a cigarette severing device, substantially as described.

In testimony whereof I have set my hand, this 16th day of June, 1890, in the presence of two witnesses.

ALBERT L. MUNSON.

Witnesses:

GEO. H. GRAHAM,
N. MARLER.