

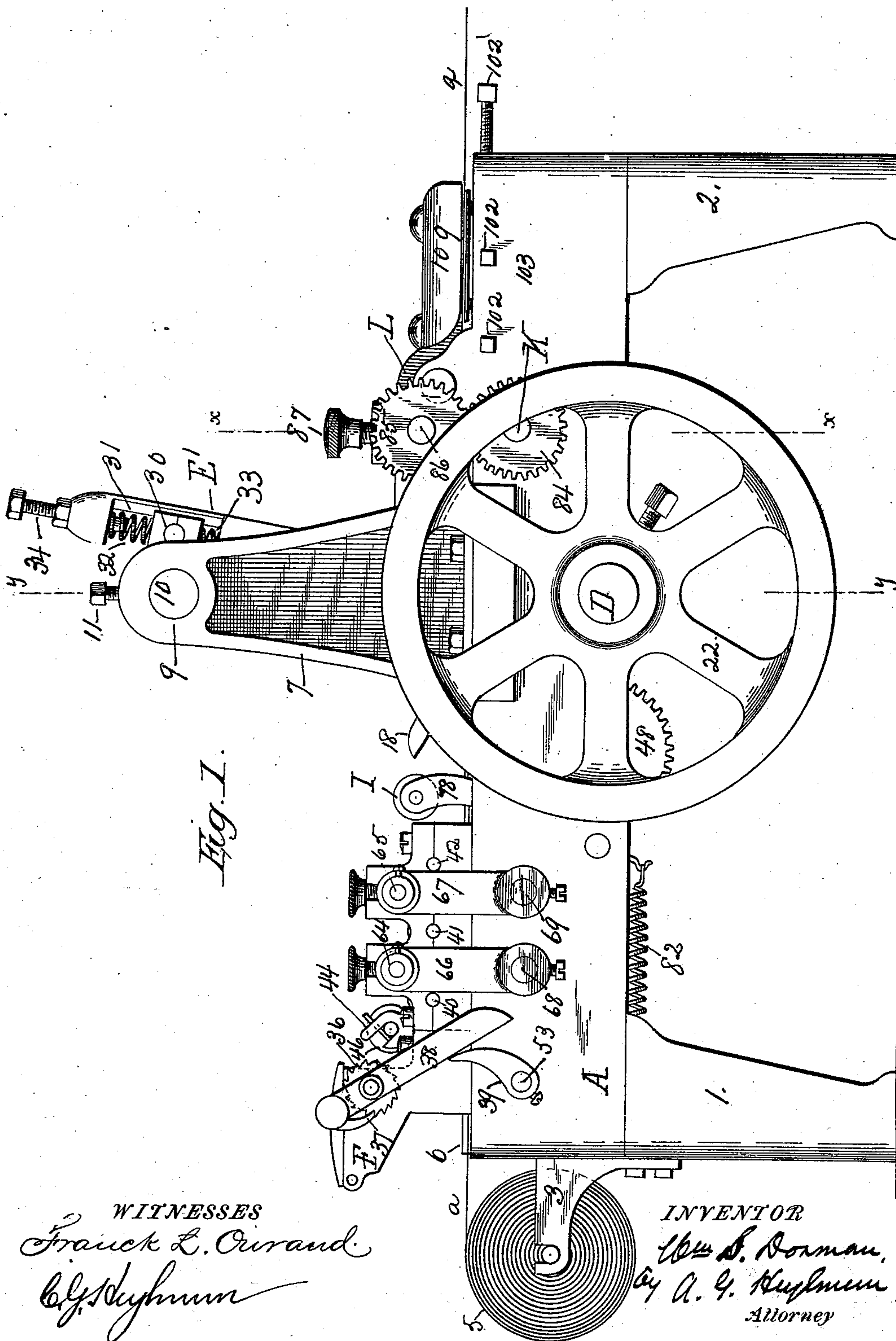
(No Model.)

8 Sheets—Sheet 1.

W. S. DORMAN.
MACHINE FOR PRINTING LABELS.

No. 548,702.

Patented Oct. 29, 1895.



WITNESSES

Frank L. Orvand
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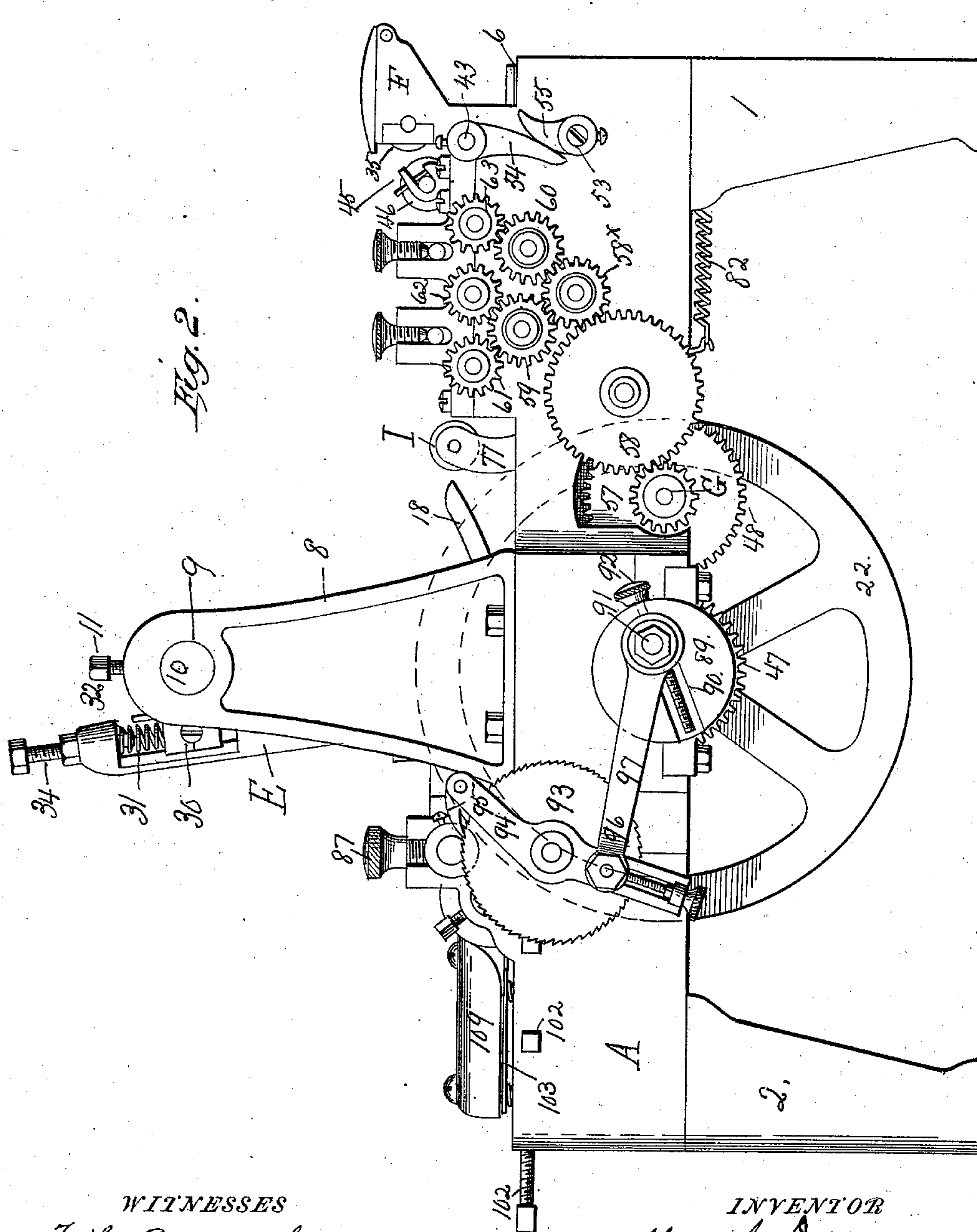
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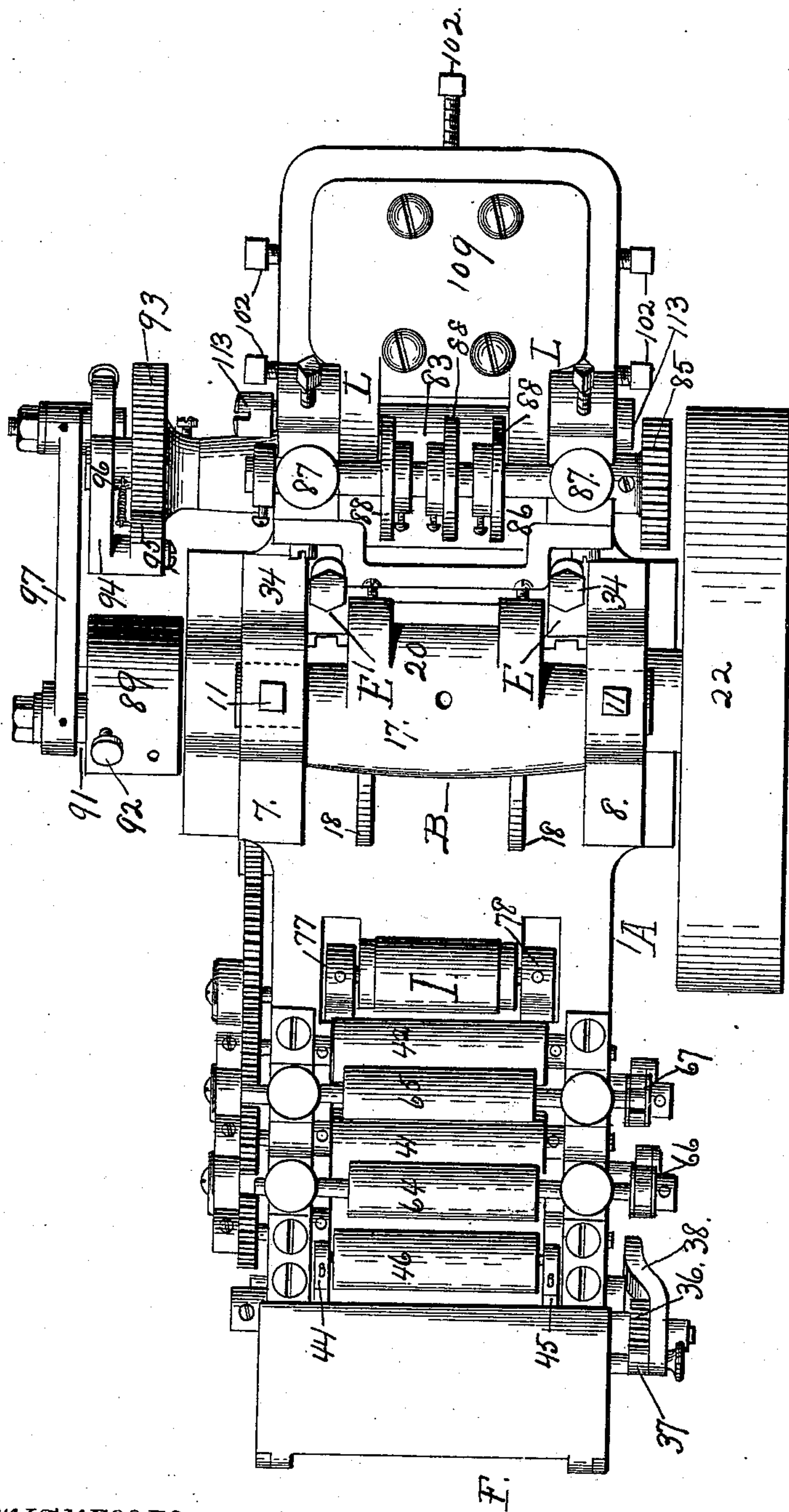
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Fig. 3.



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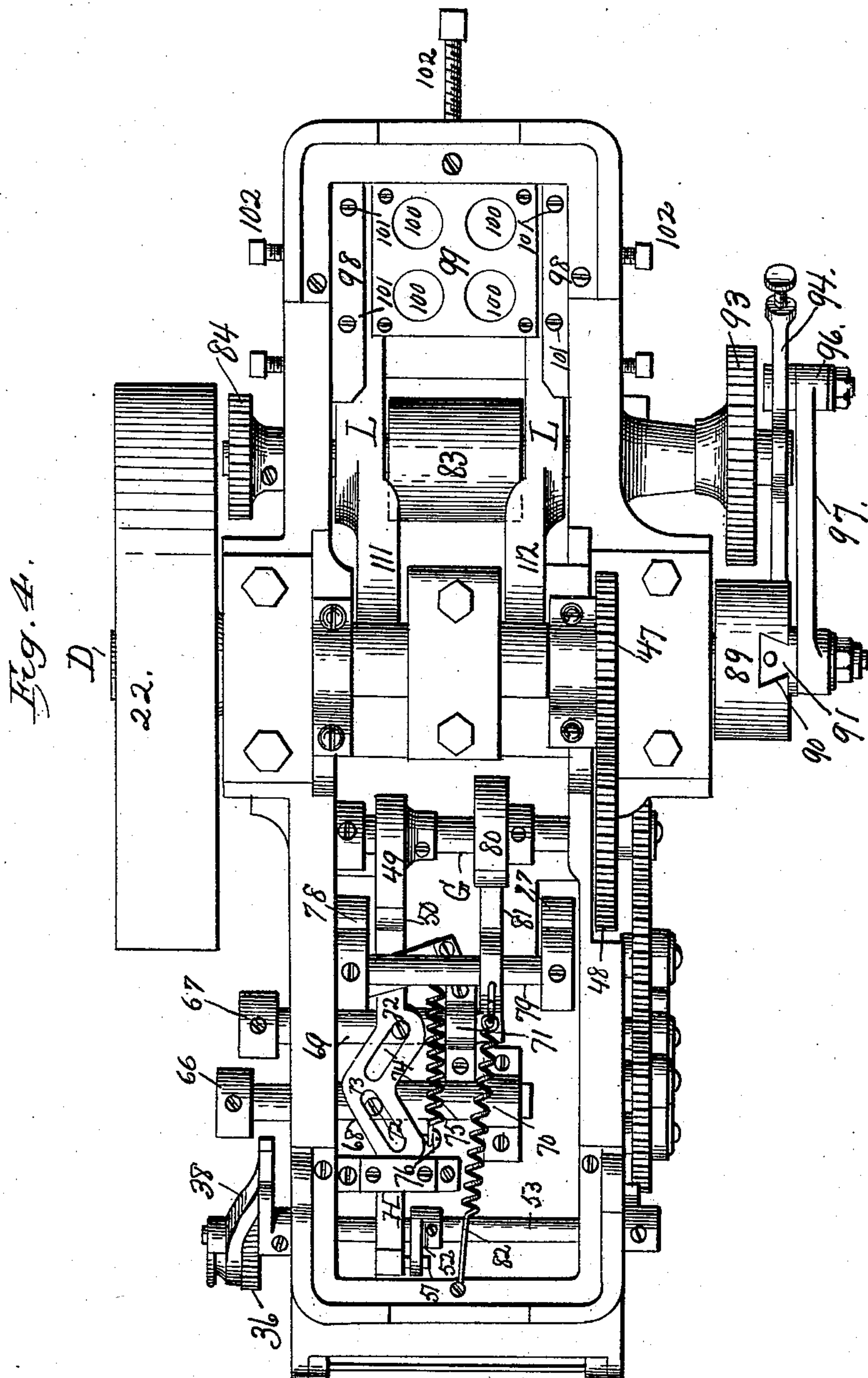
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(No Model.)

8 Sheets—Sheet 5.

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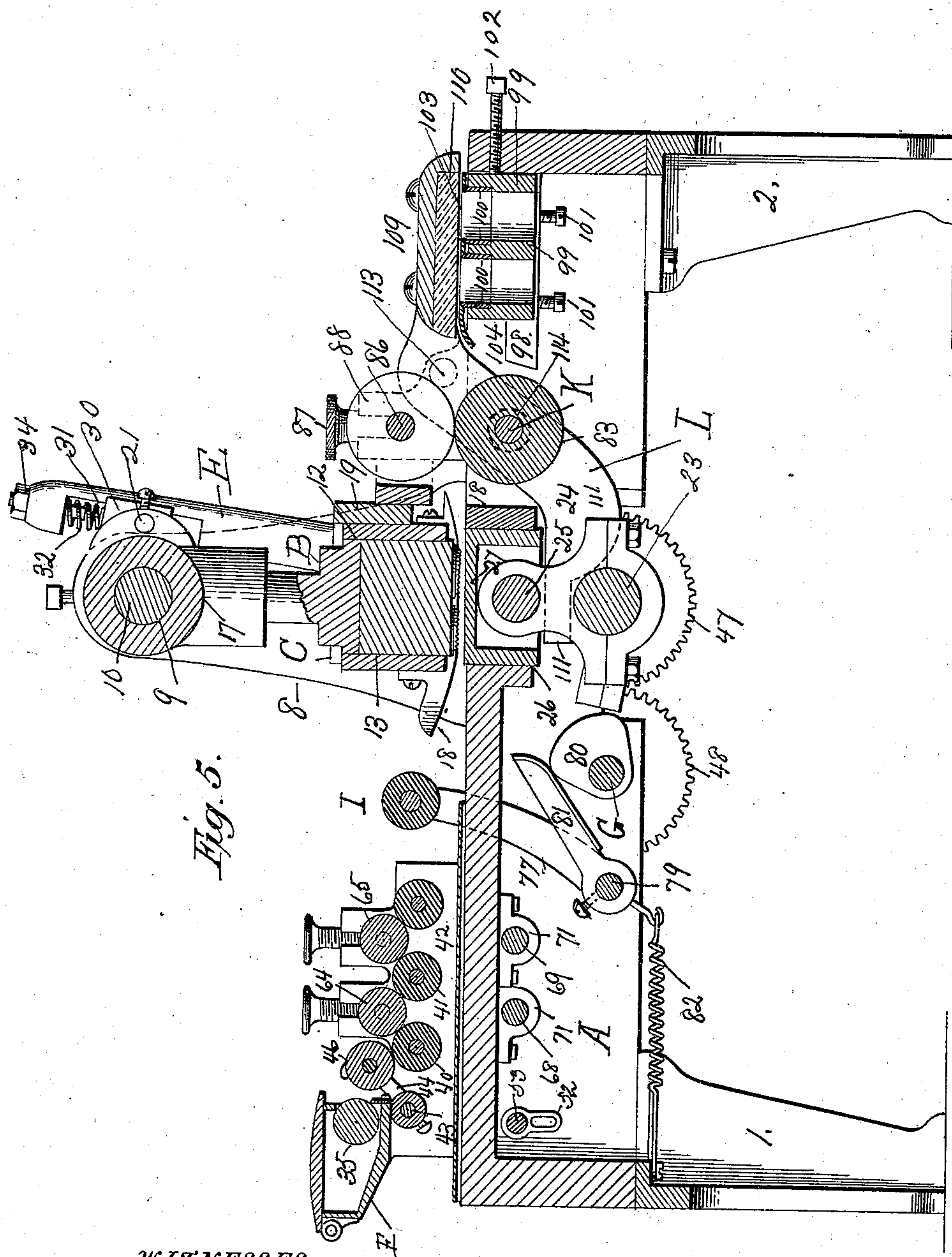


Fig. 5.

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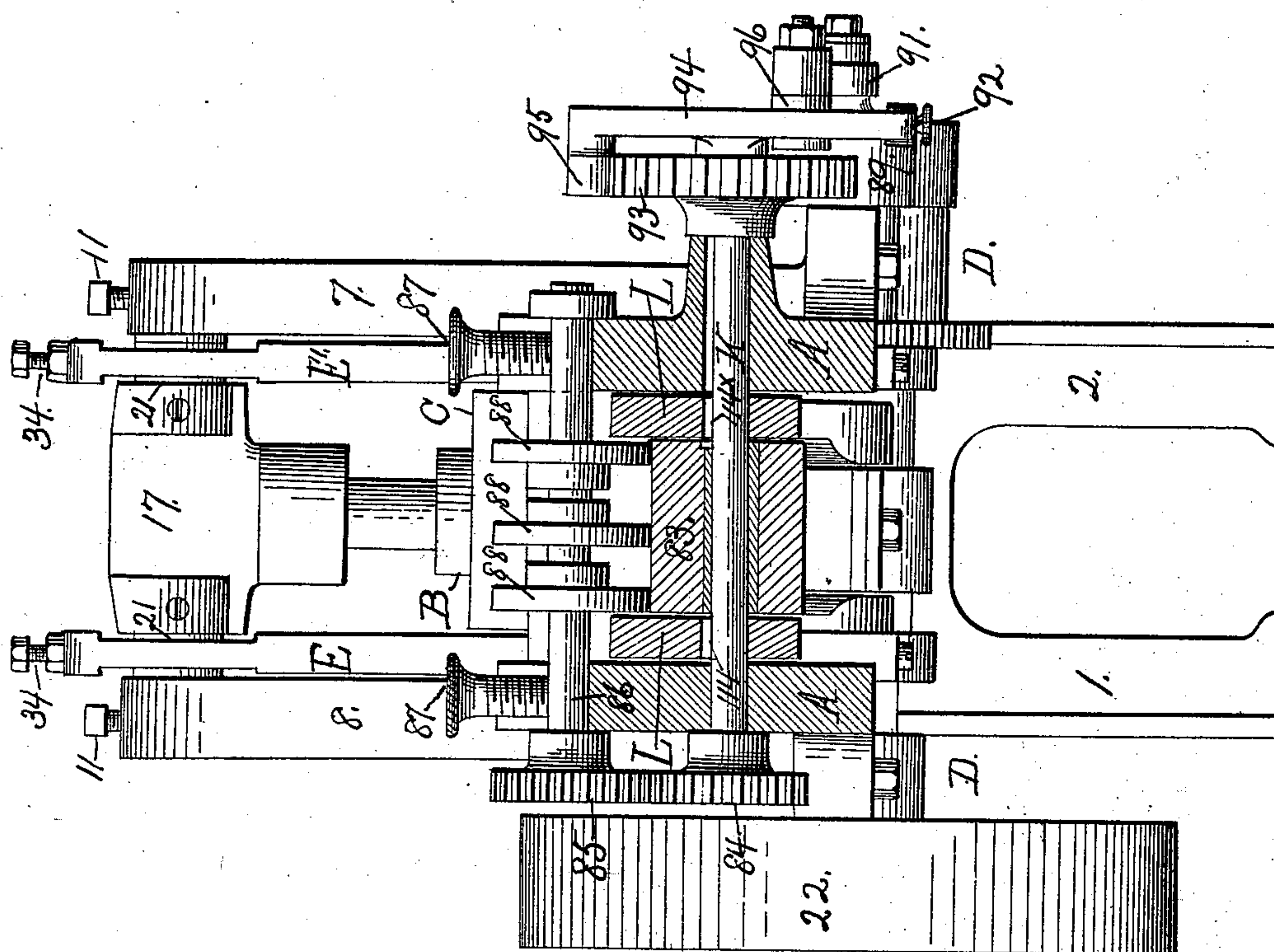


Fig. 6.

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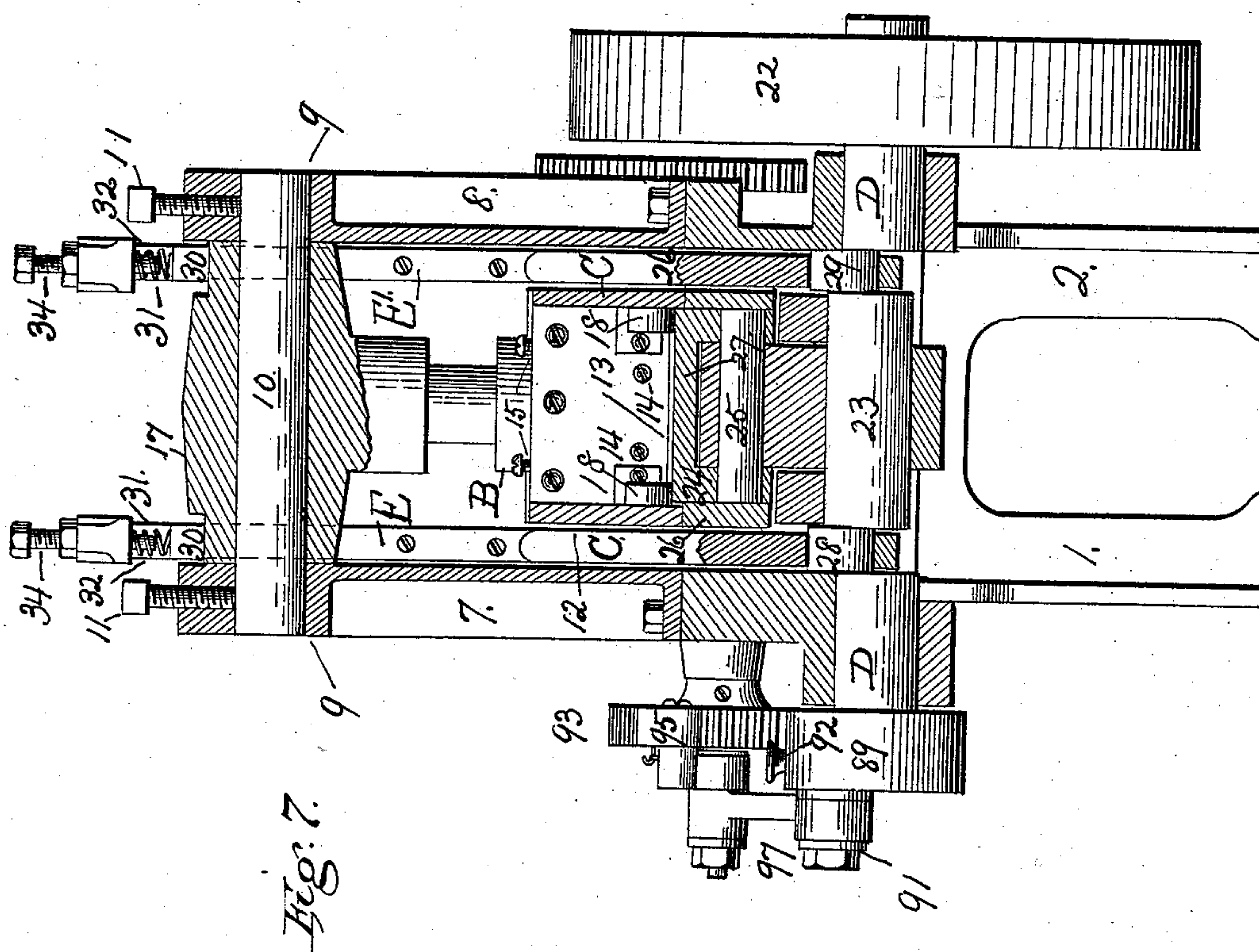
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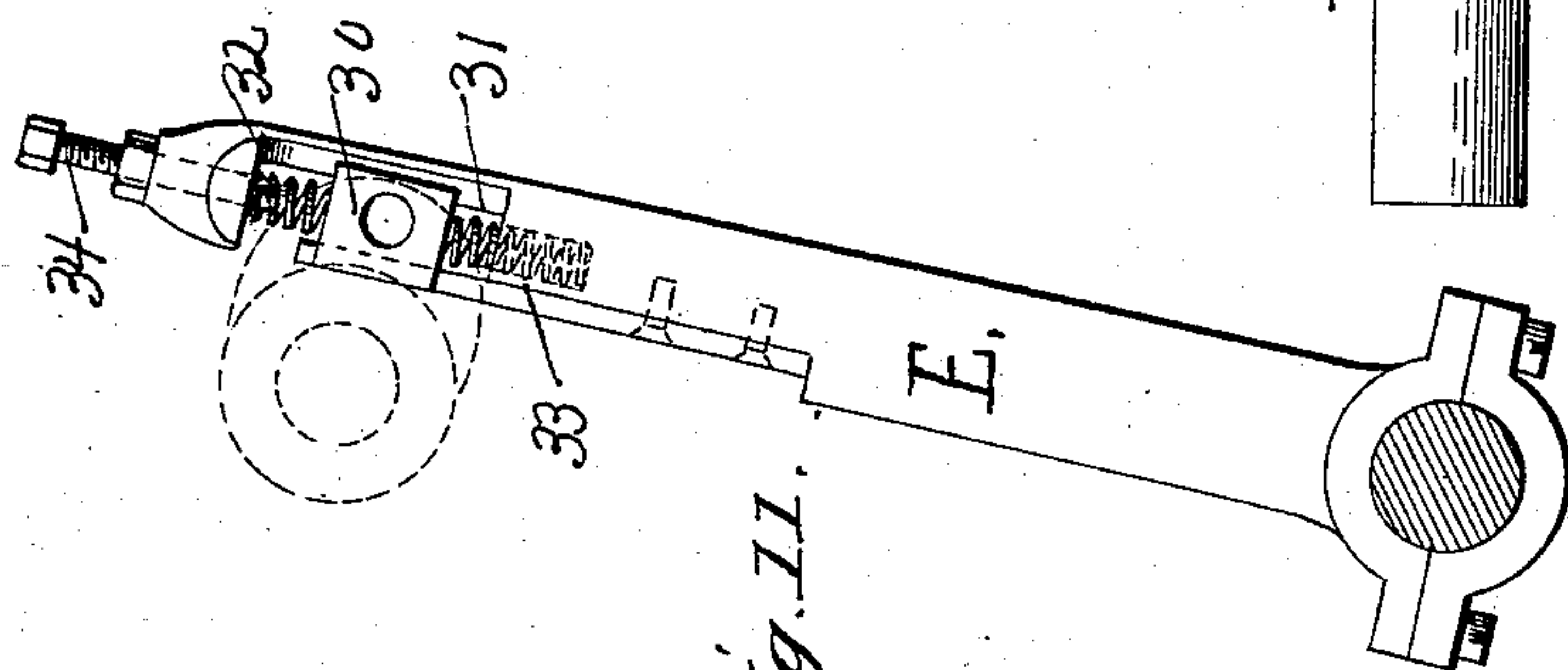
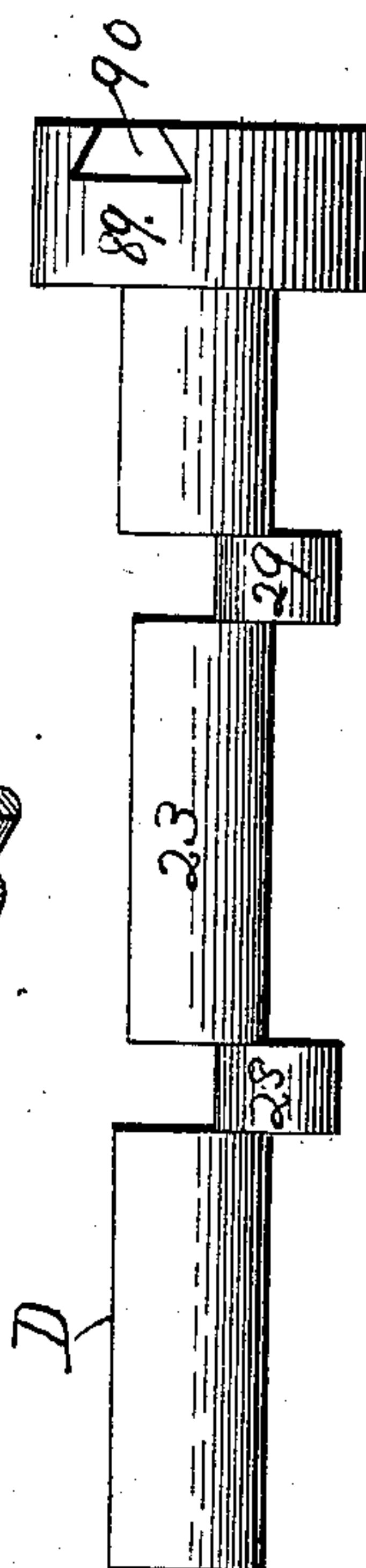
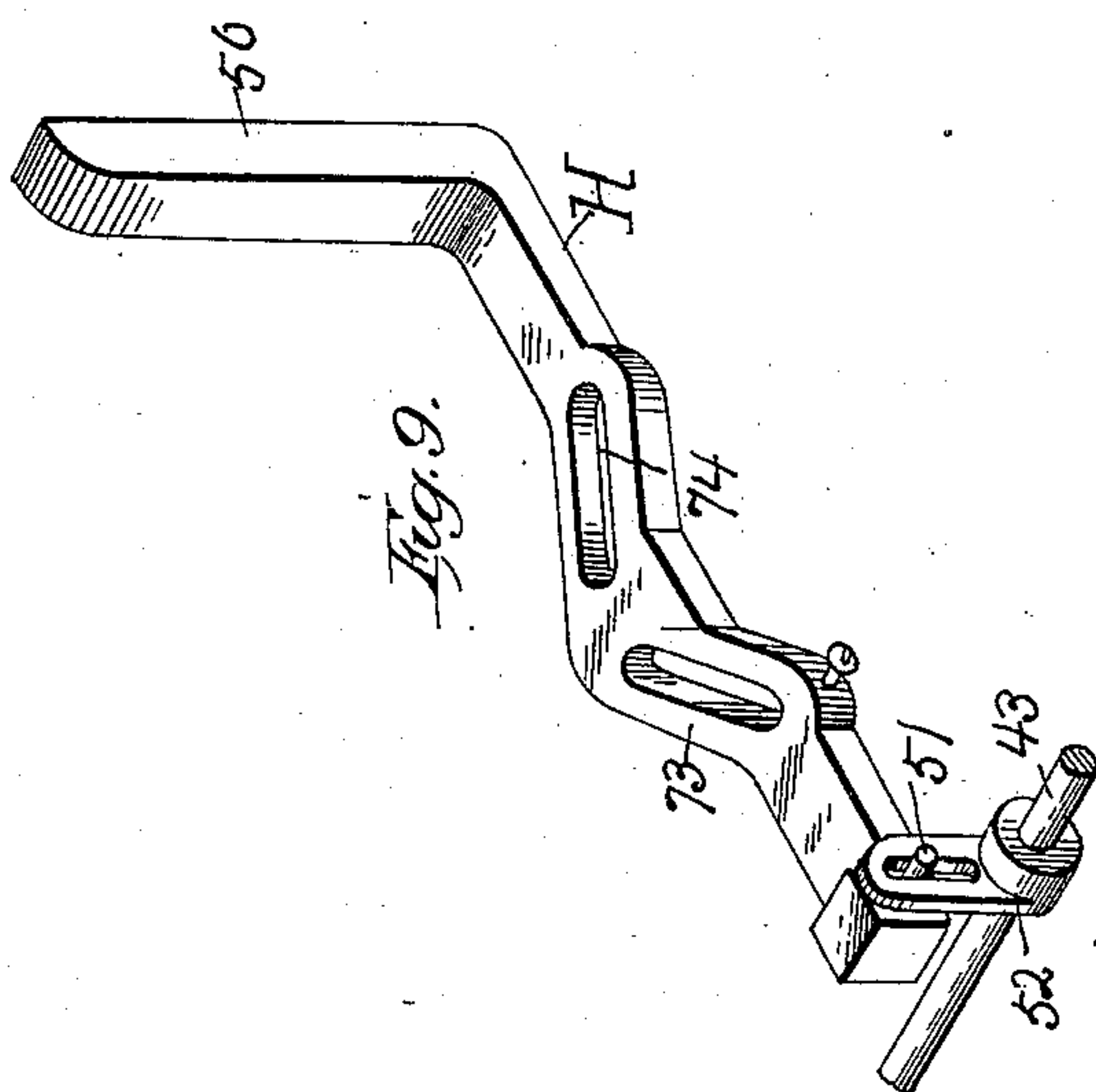
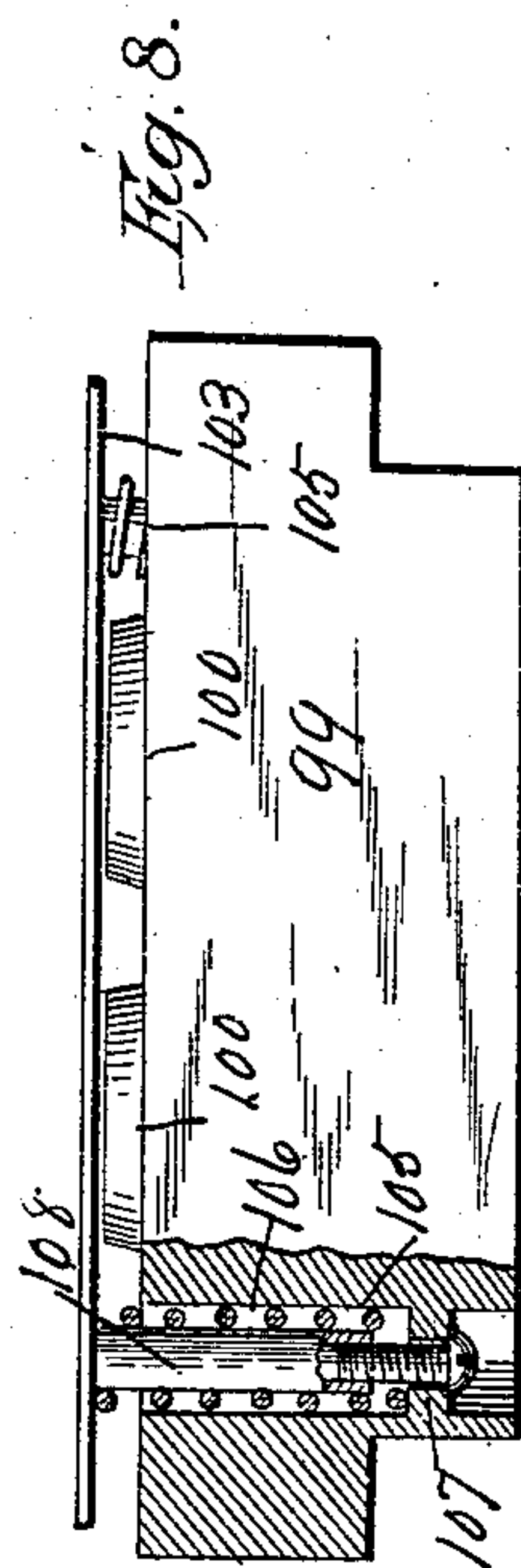
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Patented Oct. 29, 1895.



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UNITED STATES PATENT OFFICE.

WILLIAM S. DORMAN, OF BALTIMORE, MARYLAND, ASSIGNOR TO ALAN COLE, OF SAME PLACE.

MACHINE FOR PRINTING LABELS.

SPECIFICATION forming part of Letters Patent No. 548,702, dated October 29, 1895.

Application filed February 6, 1895. Serial No. 537,435. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. DORMAN, a citizen of the United States of America, residing in the city of Baltimore, in the State of Maryland, have invented a new and useful Machine for Printing Labels, of which the following is a specification.

My invention has relation to improvements in machines for printing labels from a fed strip or web of paper and for cutting the printed labels from the strip; and the object is to construct an efficient, simple, and accurately-operating machine to effect the purposes, as will be hereinafter fully specified, and particularly pointed out in the claims.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a side elevation of the pawl connections of the ink-well roller, the shifting-arms of the longitudinally-moving distributing-roller, the driving-pulley, and the gearings of the feed-rollers. Fig. 2 is a side elevation reverse from that shown in Fig. 1, showing the pawl-adjusting means between the driving-shaft and the feed-rollers and the pawl-arms for moving the ink-receiving roller from and against the ink-well roller. Fig. 3 is a top plan view of the machine. Fig. 4 is a bottom plan view. Fig. 5 is a longitudinal central vertical section. Fig. 6 is a transverse vertical section on the line xx of Fig. 1. Fig. 7 is a transverse vertical section on the line yy of Fig. 1. Fig. 8 is a detail end view, partly in section, of the cutting-bed. Fig. 9 is a detail of the lever which moves the ink-distributing rollers endwise and also ink-receiving roller to and from contact with the ink-well roller. Fig. 10 is a detail of the eccentric-shaft. Fig. 11 is a detail of one of the pitmen which swing and operates the platen carrying the forms.

A designates a suitable cast-metal frame of such dimensions and strength as may be required to support the mechanism. The table or frame is supported by legs 1 2 at the corners, which may have any suitable flanges or other usual means whereby they may be secured to a supporting-floor, stand, or foundation. At the end of the table are secured or cast integral therewith brackets 3 4, formed

with bearings, in which are arranged the journals of a shaft projected through and supporting the web or roll of paper 5, the paper being fed from the roll by being loosely carried under a plate 6, over the platen, between the feed-rollers, and out under the cutters, as indicated in Fig. 1 of the drawings, the line of paper being indicated by a . To about the middle of the table, on opposite sides thereof, are secured the standards 7 8, having bearings 9 in their upper ends, in which is mounted and carried the journals 10 of the swinging printing-head, fixed in the bearings by means of set-screws 11, the swinging printing-head thus being arranged to swing on the journal or shaft.

B designates the printing-head, made of a substantial piece of metal. The printing-head 12 consists of an open-end rectangular box or casing, in which is fitted the body 13 of the electrotpe, carrying on its face the cuts or forms of the printing matter to be impressed on the label. The form may be held in the casing by means of set-screws 14, let through the casing to bear with their inner ends against the form, and to adjust the position of the electrotpe or plate, adjusting-screws 15 are let through the top of the box, which bear against a plate 16, loosely but accurately fitted to the interior of the box. On the upper end of the stem of the printing-head is formed a cross-head 17, cored out to take the shaft or journal 10, fixed in the bearings 9 in the standards.

On the sides of the printing head or box are secured tracks or riders 18, having their ends projecting beyond the casing and curved upward. These tracks ride on the ends of the inking-roller and prevent the forms from mutilating the material of the roller. The printing-head swings into and out of a three-sided casing C, secured to the frame or table, the rear side 19 of the casing being made shorter in the vertical direction than the sides, so that the projecting ends of the rider-pieces on the printing-head may pass under the lower edge of this rear side. This case C also serves as a guide for the printing-head and also for the platen in its vertical reciprocations, as hereinafter specified. The cross-head 17 is enlarged or extended at 20 and has

sockets formed therein in which are secured stud-bearings 21, which carry the upper ends of the pitmen. This arrangement or construction is intended to give to the printing-head and pitmen a resilient or yielding function, so that the contacts of the printing-head may be devoid of jeopardy to the mechanism involved when the oscillating movements of the printing-head reach their respective limits.

D designates the main shaft of the machine mounted in suitable bearings at about the middle of the table and carrying on one end the driving-pulley 22. This driving-shaft has the middle portion 23 made eccentric to the axis of the bearings, and on this middle eccentric portion is arranged the link-arm or push-bar of the vertically-reciprocating platen 24, the upper end of the link or connecting-bar being hung on a shaft 25, fixed across the hollow bottom portion of the platen. The platen is arranged in a casing or guide-box 26, mounted and secured in the frame, the upper face of the platen being the pressing-surface, which impacts the paper against the forms carried by the swinging or oscillating printing-head. The platen 24 consists of a rectangular box, in the opposite side of which is mounted the bearing or shaft 25, and the upper face of the platen may be a detachable plate secured thereon by any proper means.

On the main or driving shaft D immediately adjacent to the middle eccentric 23, which operates the platen, are formed two eccentrics 28 29, to which are journaled the lower ends of the pitmen E E', having their upper ends journaled to the stud-bearings 21, projecting from the cross-head, as heretofore specified. The bearing-boxes 30 are held in ways or seats 31, formed in the upper part of the pitmen and are cushioned above and below by means of springs 32 33, as shown in Figs. 1, 2, and 11. The upper spring 32 is arranged about an adjusting-screw 34. The purpose of this resilient connection between the cross-head and the pitmen is that when the printing-head is moved into vertical position and the impression is being made the pitmen may still be moved up without further strain on the printing-head and that when the pitmen have reached their upper movement the strain on the printing-head may be gradual, yet effectual to swing it out and into position to be inked. It will thus be perceived that the middle eccentric operates the platen in upward movement to effect the impression during a time that the pitmen do not exert any substantial force on the swinging printing-head, the arrangement and relative position of the eccentrics being such that while the platen is moved up to make the impression the pitmen are not exerting a strain on the printing-head.

F designates the ink well or trough, mounted on the front end of the table and formed with an inclined bottom and open rear end, across which is journaled an ink-roller 35,

preferably of metal, and the lower surface of which closes the side or opening and prevents the ink from leaking from the well. The ink-roller 35 carries on its extended journal a ratchet-wheel 36, which is engaged by a pawl 37, hung on an arm or lever 38, which lever is fulcrumed on the journal of the roller 35, and is engaged by a finger or lug 39 to give the ink-roller a limited rotation, as hereinafter specified. The ink-distributing rollers 40 41 42 are journaled in the frame or table, their journals being arranged on the same plane, as shown in the drawings. Across the table is mounted a rock-shaft 43, from which project two arms 44 45, in the ends of which is journaled the ink-receiving roller 46. The shaft 43 is given its rocking movement by the following-described means: On the driving-shaft D is a gear-wheel 47, which meshes with a gear-wheel 48 on a shaft G, journaled across the table, and carrying a cam 49, which engages with an arm 50, extending from a slide-bar H, mounted in suitable keepers and carrying on its end a lateral lug or pin 51, which engages in an arm 52, secured or formed on a rock bar or shaft 53, mounted across the table and carrying on one end a tappet 55, which engages with a tappet-arm 54 on the shaft 43, whereby when the slide-bar H is reciprocated, the shaft 43 is rocked, and the roller 46 carried to and from contact with the ink-roller 35. On the other end of the rock-bar 53 is a tappet-arm 39 which engages with the pawl-lever 38, so that when the pawl 37 is engaged with the ratchet 36 on ink-roller 35 that roller will be given a limited turn and thus present a new or fresh inked surface to the ink-receiving roller 46. The ink-rollers 40 41 42 are given synchronous rotation by means of a gear-wheel 57 on the shaft G, meshing with a larger gear-wheel 58 on a stud-bearing, and which gear 58 meshes with a smaller gear 58^x, which in turn meshes with two gears 59 60, the former of which meshes with the gears 61 62 on the rollers 41 42 and the latter with the gear 63 on the roller 40, as shown in the drawings in Fig. 2. In order that the ink may be thoroughly, completely, and evenly distributed over the train of ink-rollers, I mount two rollers 64 65 across the table, having their journals lengthened, so that they may be given a longitudinal movement as well as rotary. These rollers 64 65 are arranged in the hollows between the ink-rollers, as shown, and are rotated by frictional contact with the ink-rollers. To give the rollers 64 65 a longitudinal movement an arm, as 66 67, has one end attached to the extended journal of the rollers, the ends of the arms being in the form of a bearing arranged in an annular groove in the journal and the other end of the arms being fixed to the end of sliding rods 68 69 let through the bearings in the side of the table with their inner ends supported in bearings 70 71, fixed to the outer side of the table. On each of these sliding rods is a lug 72, which takes in diagonally-arranged slots 73 74 in

the slide-bar H, as shown in Fig. 4 of the drawings, the bar H being shown in detail in Fig. 9. When the slide-bar has been pushed forward by the cam, it is drawn back by means of a spring 75, having one end fastened to the slide-bar at 76 and the other end fastened to the rear keeper of the bar, as shown. It will now be perceived that when the slide-bar H is moved forward the engagement of the lugs in the slots therein moves the rods 68 69 outward and with them drawing the rollers 64 65 lengthwise a distance over the ink-rollers, and that the reverse movement is accomplished by the pull of the spring 75, which returns the slide-bar H back to be positively engaged by the cam.

I designates the form-inking roller. This roller is arranged adjacent to the swinging printing-head, so that when that element is moved out of the box it will ride over the roller and the forms receive the ink therefrom. The roller I is journaled in arms 77 78, having their lower ends adjustably fixed on a rock-bar 79, substantially as indicated in the drawings. The roller I is moved into contact with the ink-roller from which it receives its supply of ink by means of a cam 80 on the shaft G, which bears against an arm 81 fixed on the rock-bar 79, so that when the cam bears on the arm the roller I is swung or moved up into contact with the adjacent ink-roller, and by such contact is rotated to receive a supply of ink, and this being accomplished and the cam turned a spring 82 keeps the arm down on the cam and at the same time draws the roller I away from the ink-roller into position for inking the forms. Across the frame to the rear of the driving-shaft is journaled a shaft K, carrying the lower feed roller 83, suitably secured on the shaft and consisting of some elastic material mounted on a spool or sleeve. On one end of this shaft is secured a gear-wheel 84, which meshes with a gear-wheel 85 on the shaft 86 of the upper feed-roller. The shaft of the upper feed-roller is held adjustably in its bearings, the pressure on the lower roller being adjusted by means of screws 87. The upper feed-roller is composed of two or three metal disks 88, having adjustable hubs fitted to the shaft, substantially as shown in the drawings. By making this roller to consist of metal disks adjustable on the shaft the disks may be arranged in relation to the freshly-inked printed strip, so that they will travel on the edges of the strip and the center one in the uninked space between the impressions, and thus leave the imprints clean. It is essential that the feed of the paper stop while the impression is being made and then proceed as the printing-head is released from contact, and also that while the paper is stopped the labels be cut. To accomplish these requirements I employ the following-described mechanism:

On the driving-shaft D is mounted a crank-head 89, having a groove 90 cut across its face,

in which is fitted a wrist-pin 91, adjustable in the groove by an adjusting-screw 92 let through the standing metal at one end of the groove, substantially as shown. On the end of the shaft of the lower feed-roller is fixed a ratchet-wheel 93, and on a stud or projecting end of this shaft is hung a lever 94, carrying a pawl 95, which engages the ratchet-wheel. The lower arm of the lever 94 is provided with a wrist-pin 96, made adjustable in a slot in the lever, and on this wrist-pin is journaled one end of a connecting-rod 97, the other end thereof being suitably connected to the wrist-pin 91 in the crank-head 89. It will be seen that by adjusting the wrist-pin of the lever 94 the movement of the pawl will be increased or lengthened, and that by adjusting the wrist-pin 91 in the crank-head the engagement of the pawl is effected at the proper time to give the feed-roller rotation; and also by means of these adjustments the distance to which it is necessary to draw the paper to register the imprints under the cutters is accurately determined.

As heretofore mentioned, the cutting out of the labels from the strip must be done simultaneously with the stroke that makes the impression, and this is effected by the following-described mechanism: In the bottom of the frame at the end are formed or secured substantial flanges 98, on which rests the punch-bed 99, provided with the requisite number of hollow punches 100, seated on shoulders formed in correspondingly-formed holes in the punch-bed. The punch-bed is vertically adjustable by screws 101 let through the flanges, and is held in adjusted position by set-screws 102 let through the metal of the frame, as shown in Figs. 4 and 5 of the drawings. Over the punches is arranged a clearing and cutting plate 103, the end of which projects beyond the punch-bed and is turned downward, as at 104, so that the paper may be conveniently inserted and guided. The plate 103 is supported on springs 105, arranged in sockets 106 in the corners of the punch-bed, and is adjusted by screws 107, threading in sleeves 108, projecting down in the sockets and engaging the screws, as seen in Fig. 8 of the drawings. L designates the punch-lever formed with a platen or plate 109, having fitted in a suitable seat formed in the under surface, an elastic bed-piece 110 which engages or presses down on the punch-plate. From the rear of the punch-lever extend two substantial arms or levers 111 112, bent downward, substantially as shown, and then having their free ends directed substantially horizontal, and adapted to rest on the ends of the middle eccentric 23 of the driving-shaft D. This punch-lever is fulcrumed on conical bearings 113 let through the table and engaging in sockets in the lever, substantially as indicated. It will thus be seen that the disposition of this lever with the ends resting on the middle eccentric of the driving-shaft, which reciprocates the platen 24 vertically,

insures synchronous or simultaneous movement of both the platen and the punch-lever when the paper is stopped in its progress through the machine. In the arms of the punch-lever are two holes 114 114^x, through which the shaft K projects, the holes being made larger than the shaft, so the lever may have the requisite movement.

The particular functions of the groups of mechanism operating in their respective relations have been specified as part of the description, but the operation as a whole is as follows: The strip of paper is first arranged in the machine by passing it under the plate lying under the ink-rollers, and from thence over the platen and out over the punch-plate and under the punch-lever head. The machine may now be started into operation and impression taken. At the next revolution of the driving-shaft the paper is carried out the distance requisite to bring the printed labels over the punch-bed and to register with the punches when the next impression is made and the punching effected, the feed-rollers during these simultaneous operations standing still because the pawl which turns them the determined distance is retreating to take a new engagement preliminary to the next feed of the paper.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the driving-shaft provided with a cam, a slide bar to engage the cam, a spring to hold the slide-bar against the cam, a rock-bar having an arm connected to the slide-bar, and provided with a tappet 39, the ink-well, a metal roller journaled to close the inner side of the ink well, a ratchet wheel on the journal of the roller, a pawl-lever fulcrumed on the journal of the ink-well roller, and adapted to be moved by the tappet of the rock-bar, and a pawl on the upper limit of the pawl-lever to engage the ratchet and turn the ink-well roller, as described.

2. The combination with a driving-shaft provided with a cam, a slide-bar to engage the cam, a rock bar connected to the end of the slide-bar, and provided with a tappet arm 55, a rock-bar mounted across the machine and formed with arms provided with bearings, and a tappet on the end of the rock-bar, an ink-receiving roller journaled in the bear-

ings, an ink-well, and an ink-roller in the ink-well, substantially as and for the purpose specified.

3. The combination with the ink-distributing rollers, of the auxiliary ink-distributing roller 64, having an extended journal, an arm on the journal, a slide-rod secured to the other end of the arm and arranged to slide in its supports and provided with a lug, a slide-bar formed with a cam slot to engage the lug on the slide-rod of the roller, and means to move the slide-bar as described and specified.

4. The combination with the driving shaft having pitmen eccentrics 28, 29, the vertically reciprocating platen, and the swinging printing-head of the pitmen E, E', having their lower ends journaled on the eccentrics 28, 29, and their upper ends formed with slots, sliding bearing boxes in the slots, springs above and below the boxes, and journals for the boxes in the cross-head of the swinging printing-head, substantially as and for the purpose specified.

5. The combination of the swinging printing-head formed with a cross-head having an extension provided with journals, the driving shaft having eccentrics, and the pitmen having their lower ends journaled to the eccentrics of the driving-shaft, and their upper ends yieldingly connected to the journals of the extension of the cross-head of the swinging printing-head, whereby when the printing-head is in vertical position, the movement of the pitmen may be continued, as and for the purpose specified.

6. The combination of the swinging printing-head formed with a cross-head suitably mounted on bearings, pitmen having their upper ends yieldingly connected to the cross-head, a guide-case having an open side to take in the printing-head, a vertically reciprocating platen, a guide-case for the platen, a punch-bed, punches therein, a punch-plate over the punch-bed, a punch-platen formed with lever arms, and a driving shaft formed with eccentrics to reciprocate the platen, the punch-platen and the pitmen, as specified.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

WILLIAM S. DORMAN.

Attest:

A. G. HEYLMUN,
G. M. COPENHAVER.