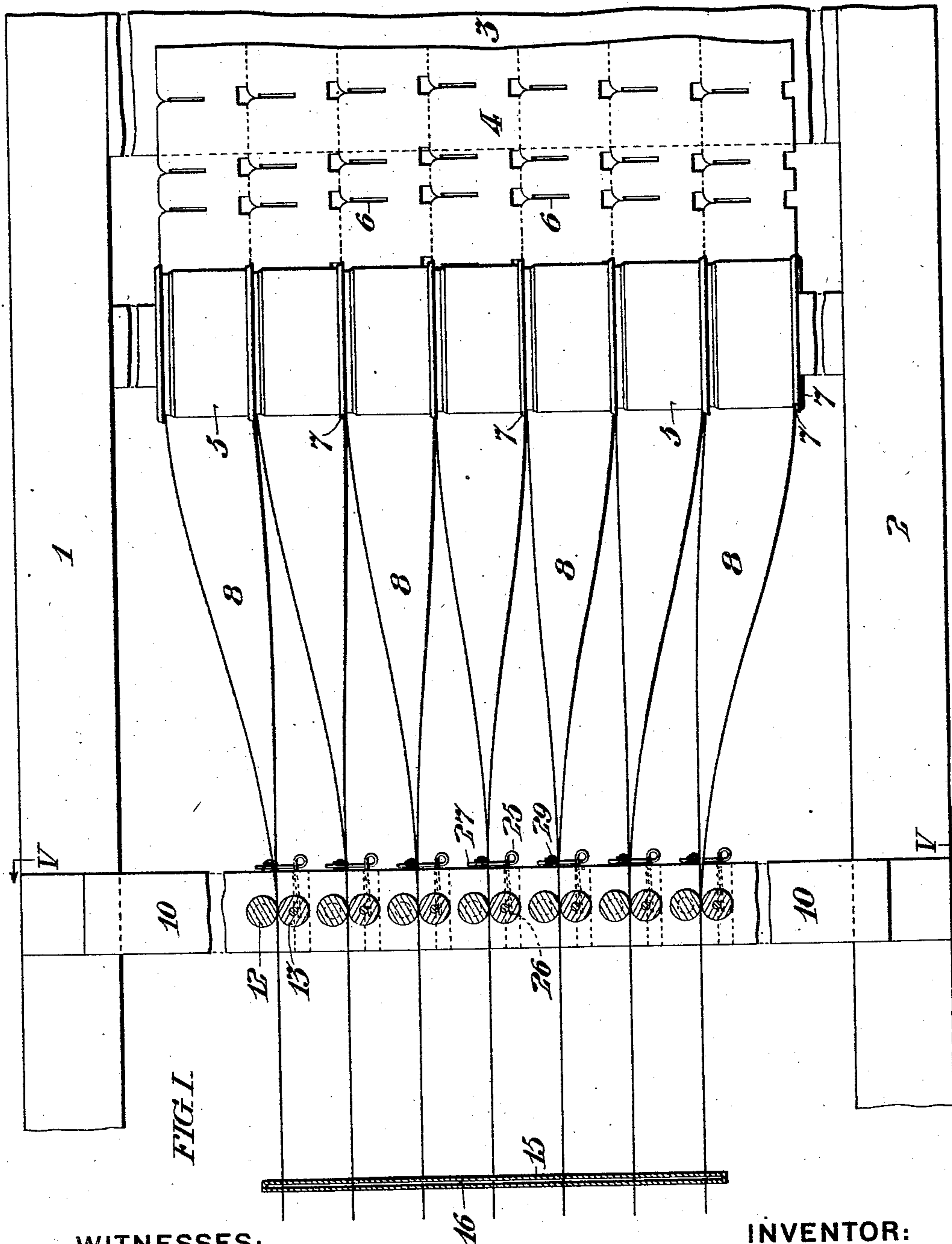


No. 889,643.

PATENTED JUNE 2, 1908.

G. W. SWIFT, JR.
CELL CASE MACHINE.
APPLICATION FILED MAY 15, 1903.

5 SHEETS—SHEET 1.



WITNESSES:

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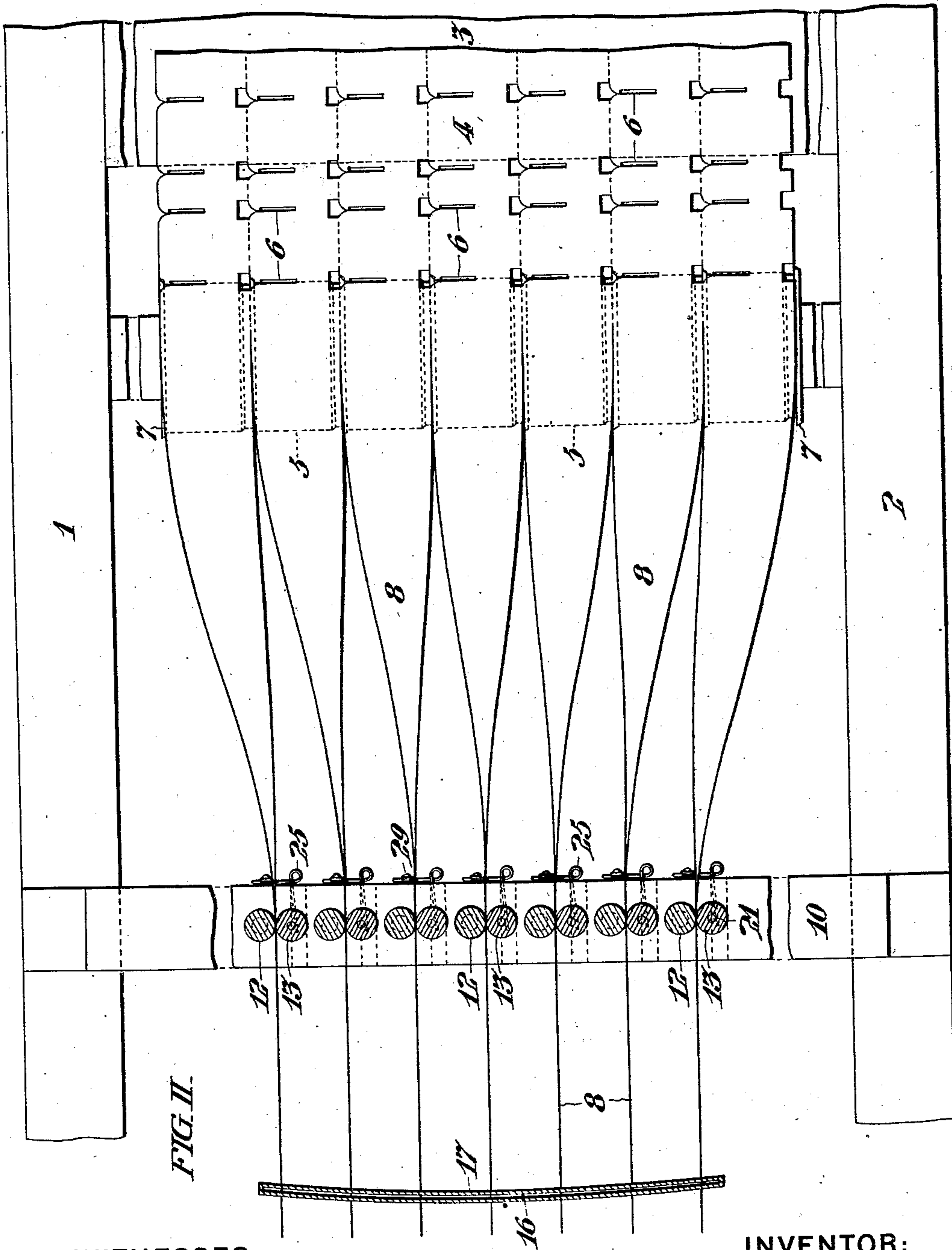
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5 SHEETS—SHEET 2.



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6 SHEETS—SHEET 3.

FIG. III.

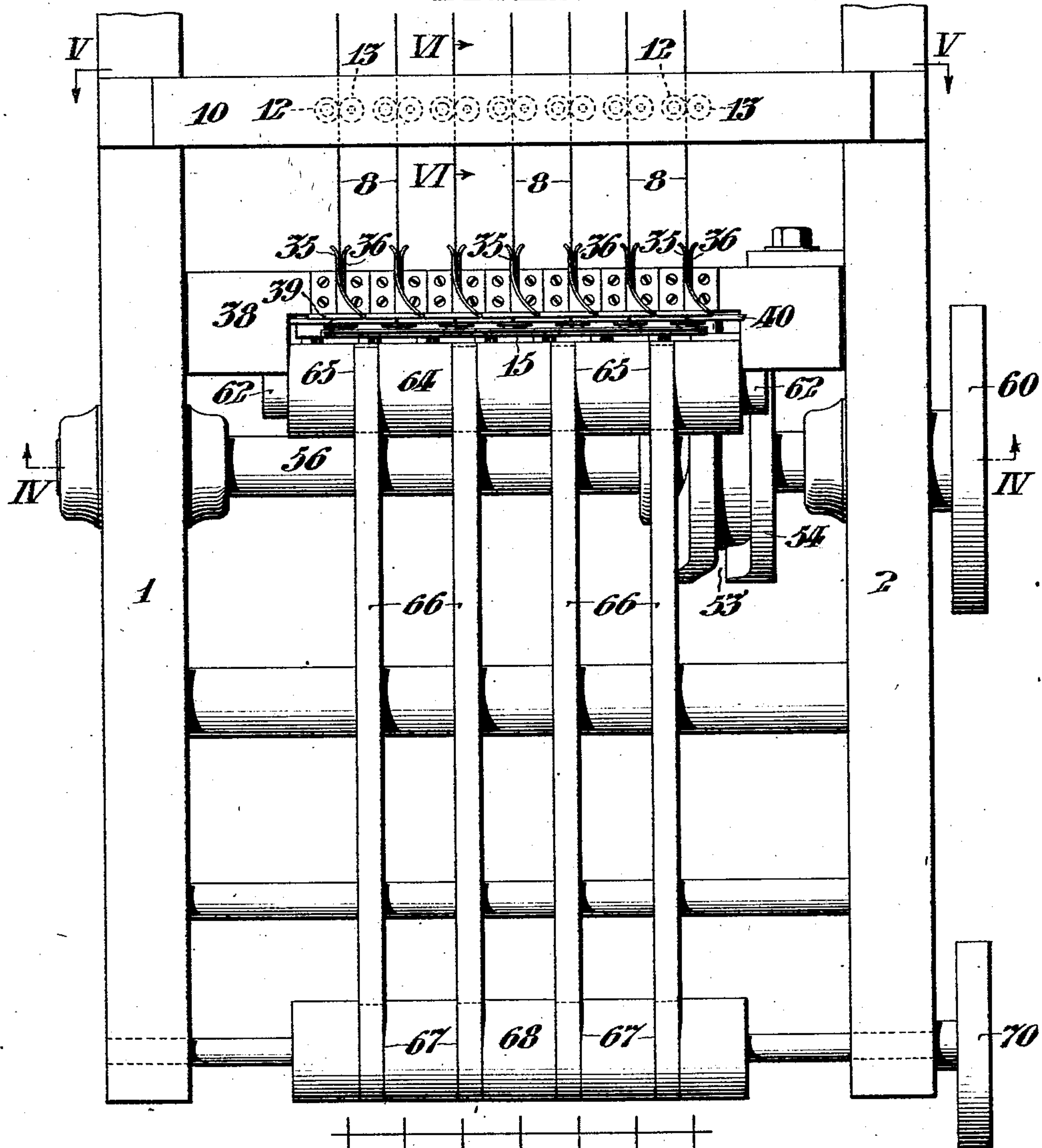
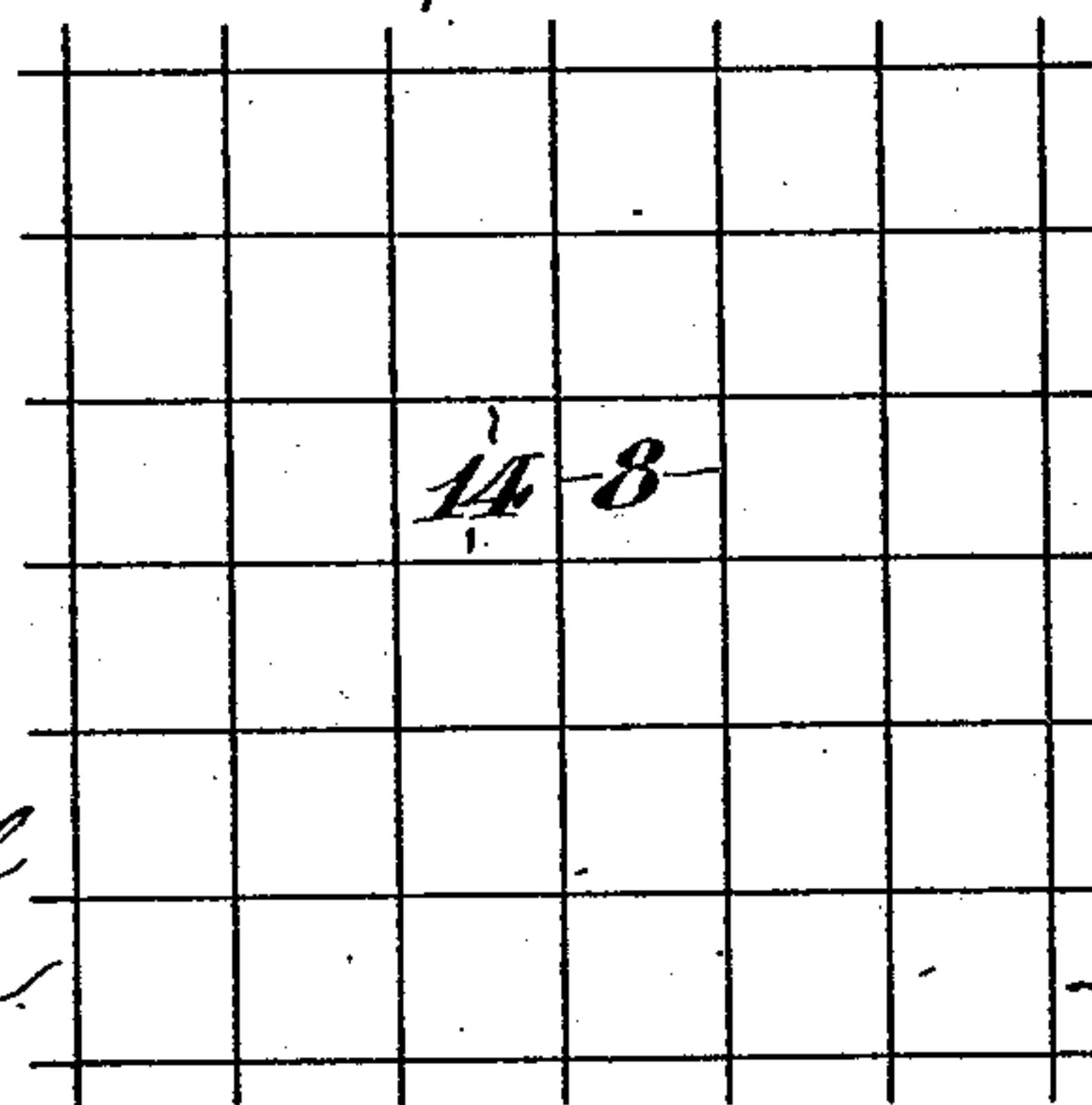


FIG. IX.



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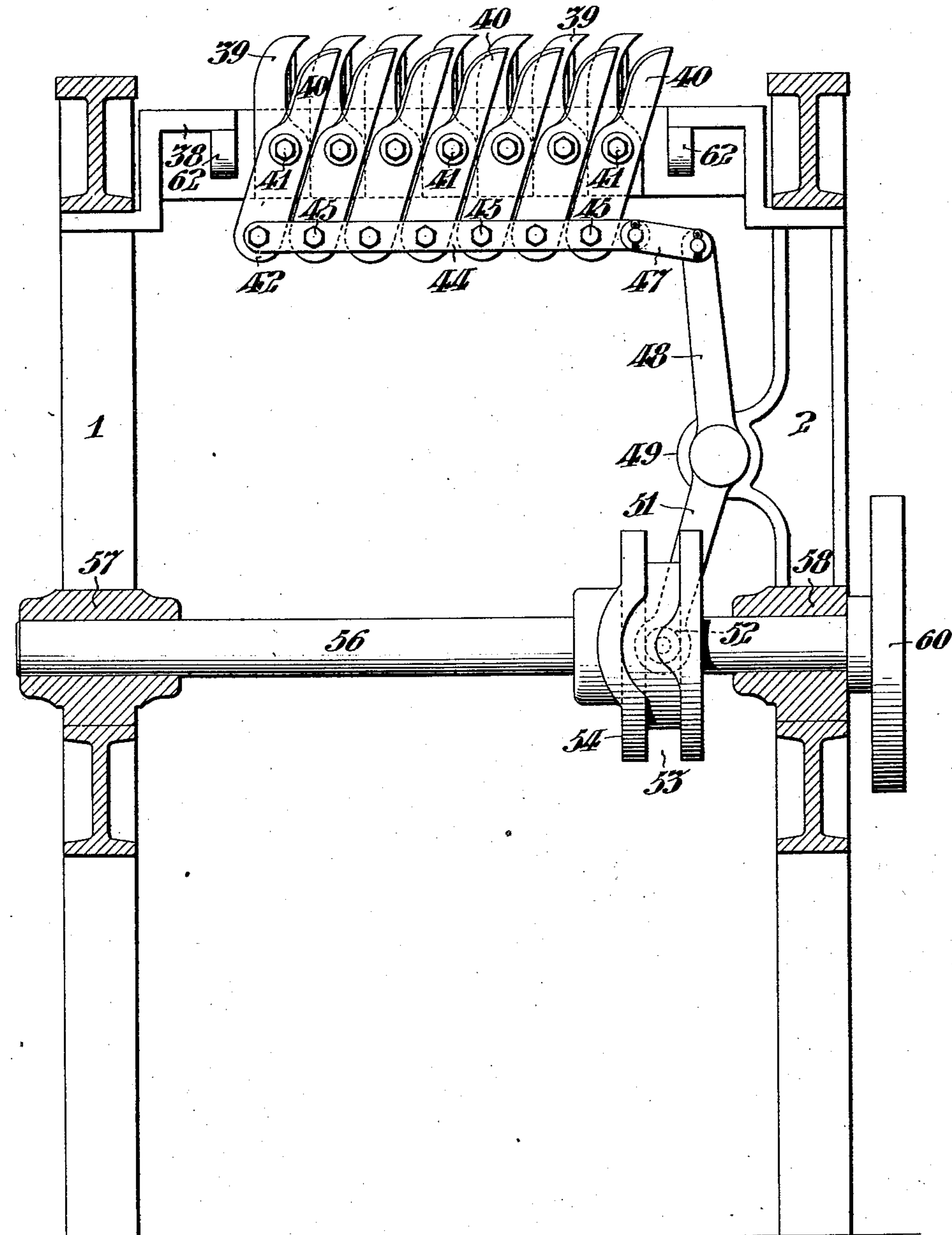
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5 SHEETS—SHEET 4.

FIG. IV



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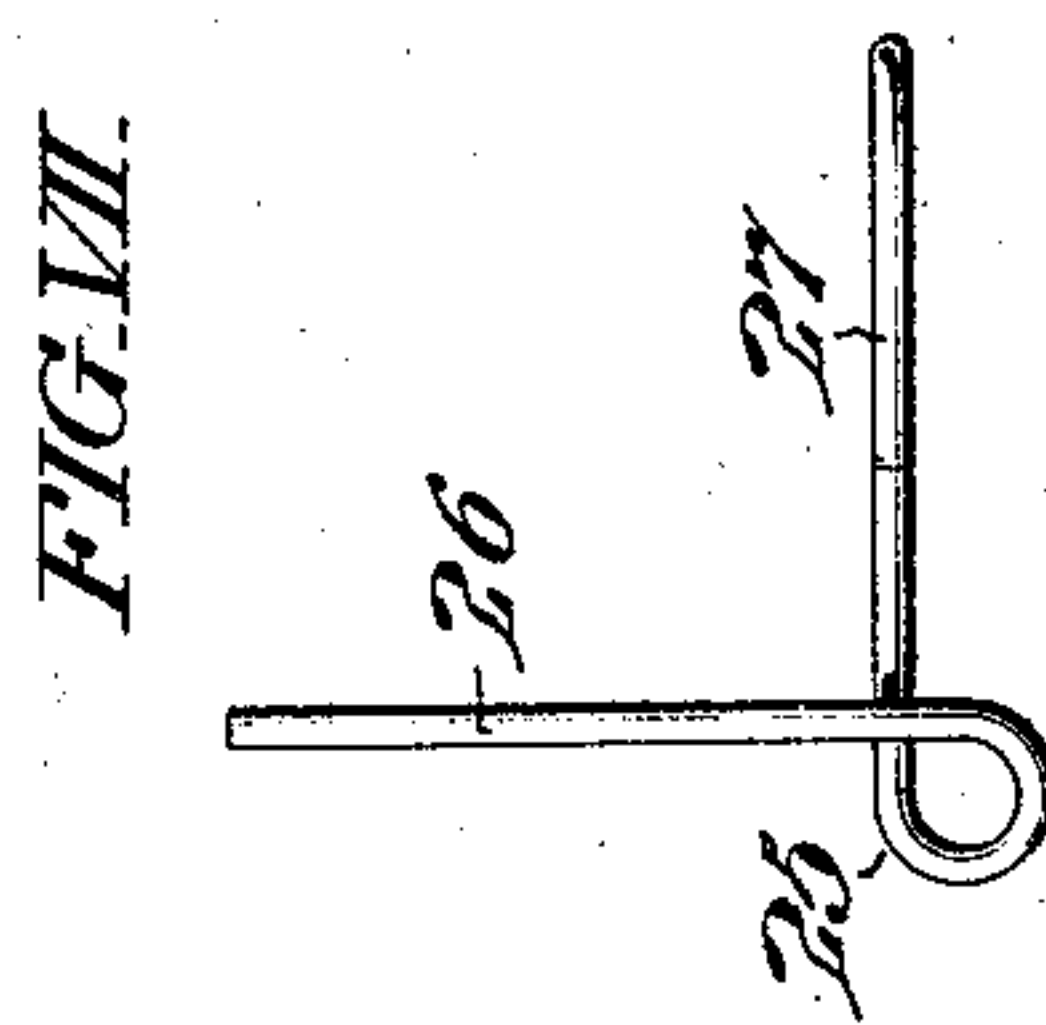
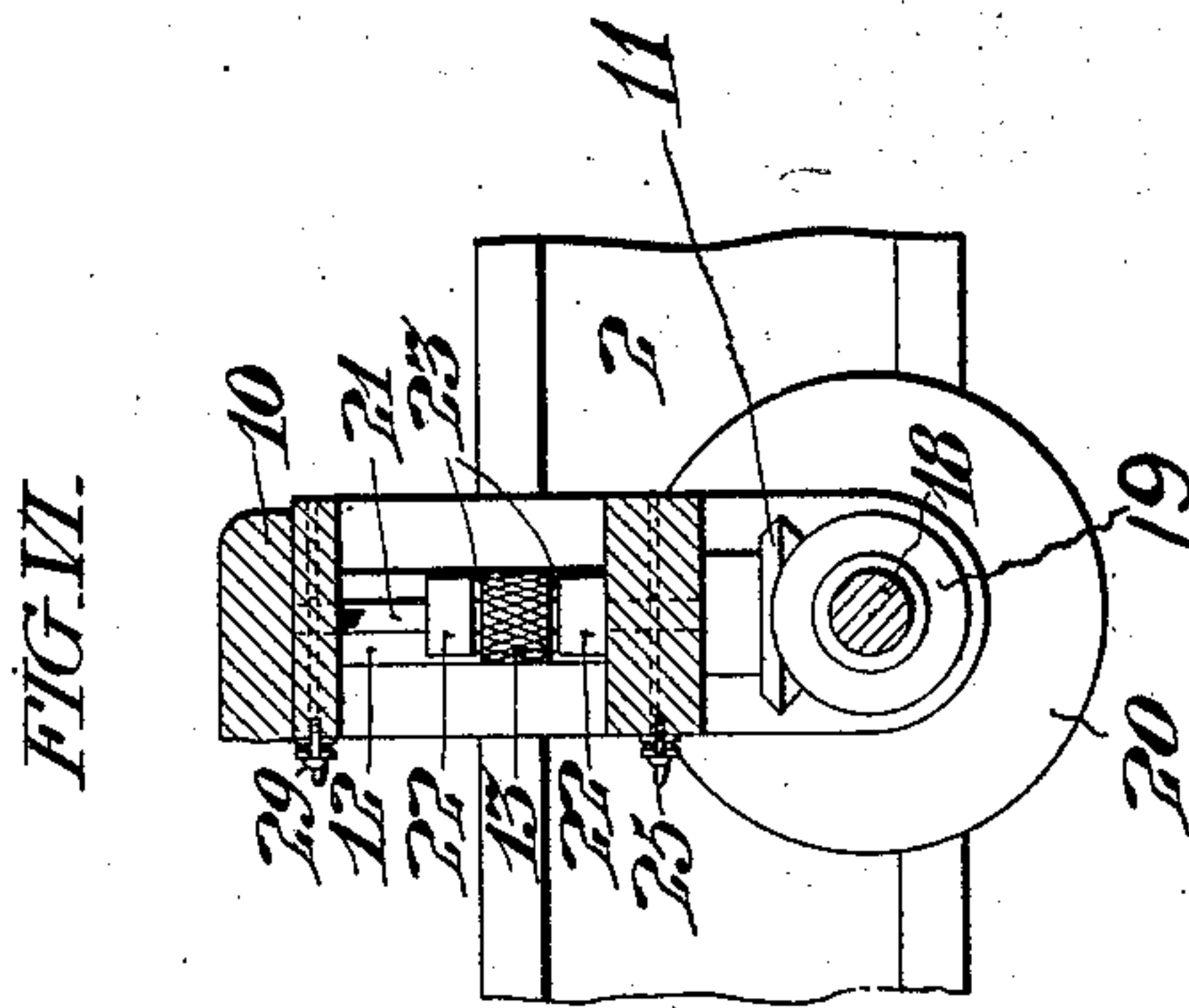
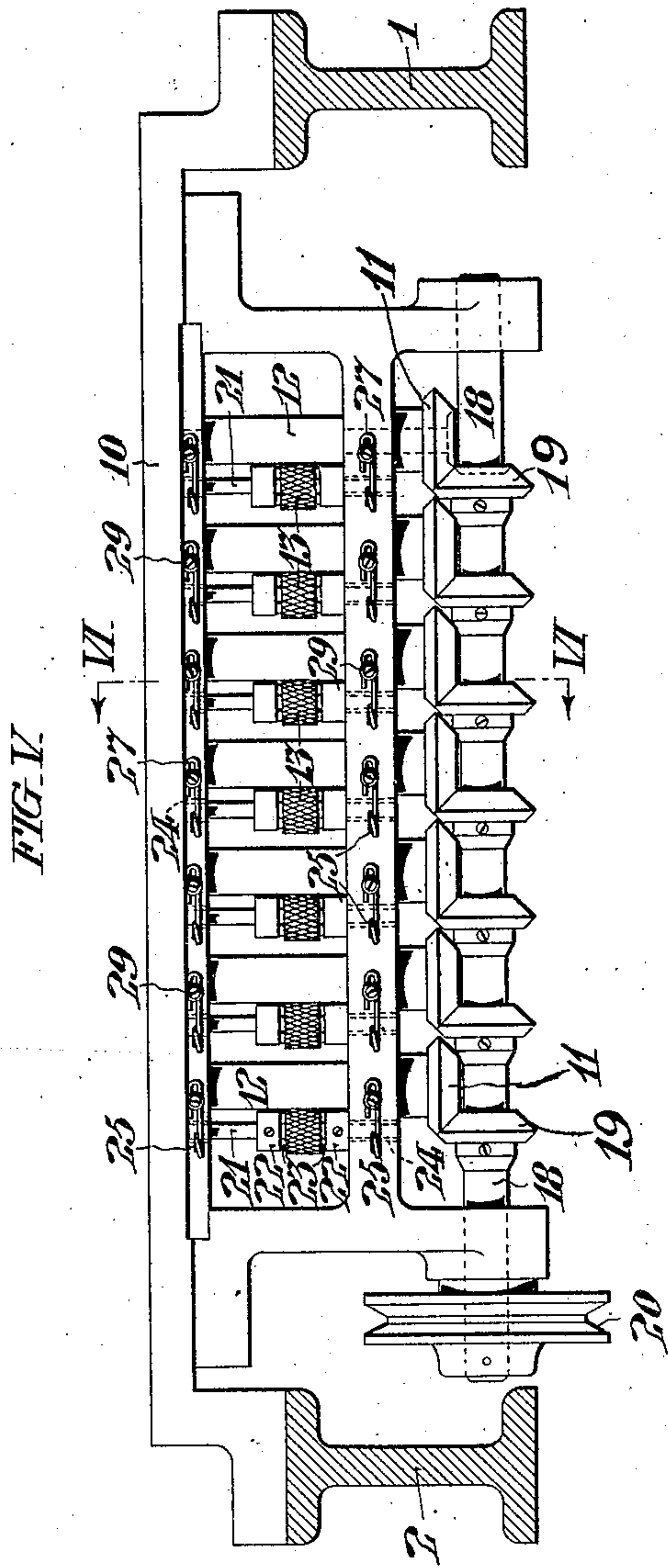
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APPLICATION FILED MAY 15, 1903.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

GEORGE W. SWIFT, JR., OF BORDENTOWN, NEW JERSEY.

CELL-CASE MACHINE.

No. 889,643.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed May 15, 1903. Serial No. 157,269.

To all whom it may concern:

Be it known that I, GEORGE W. SWIFT, JR., of Bordentown, in the State of New Jersey, have invented certain new and useful Improvements in Cell-Case Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates generally to machines of the class shown in Letters Patent of the United States, 622,403, granted to myself, April 4th, 1899, and adapted to form cell cases or partition fillers, of paper or similar fabric, for crates used in the transportation of fruit, eggs, etc. My improvements relate particularly to the paper feeding guiding and shearing mechanism comprised in such machines.

It is characteristic of said patented machine that two separate flat webs of paper are supplied thereto and so manipulated as to respectively form the longitudinal and transverse partition strips of the cell case fabric made by the machine. One of said webs of paper being first perforated with transverse series of similar slots or notches, is then, while in a horizontal plane, divided to form a plurality of longitudinal strips, each provided with similar slots or notches for engagement with the transverse strips, which latter are subsequently inserted therein by the automatic action of the machine. Subsequent to said longitudinal division of said web, the strips are separately twisted into parallel vertical planes, by separate pairs of vertical feed rollers which present said strips with their slots or notches in position to receive the transverse strips, and cooperate with guide matrices to insure their proper engagement with the transverse strips.

The web from which the transverse strips are to be formed being passed vertically downward, by suitable feed rollers, is perforated with transverse series of similar slots, and the forward edge of said vertically descending web is then fed into engagement with the notches of the longitudinal strips; thereupon, a strip of said web, as wide as the longitudinal strips with which it is engaged, is then cut transversely from said web and passes thence as a portion of the cell case fabric. Said fabric is then automatically sheared transversely to form separate blocks or fillers each comprising thirty-six cells.

My invention comprises the various novel features of construction and arrangement by which certain of the foregoing operations are

effected or facilitated as hereinafter described.

In the drawings, Figure I, is a fragmentary plan view of a machine embodying my improvements; wherein the web which forms the longitudinal partition strips of the cell case fabric is provided with successive transverse series of slots arranged with the slots for the outer strips preceding the slots for the inner strips. Fig. II, is a plan view similar to Fig. I, but showing a modified arrangement of the slots in the web which forms the longitudinal partition strips. Fig. III, is another fragmentary plan view of said machine showing the mechanism for severing the longitudinal strips of the cell case fabric, to form separate blocks each comprising thirty-six cells. Fig. IV, is a vertical cross sectional view of said machine, taken on the line IV, IV, in Fig. III. Fig. V, is a vertical cross sectional view of said machine, taken on the line V, V, in Figs. I, and III. Fig. VI, is a fragmentary longitudinal sectional view taken on the line VI, VI, in Figs. III, and V. Figs. VII, and VIII, are respectively plan and edge views of one of the feed roller springs indicated in the other figures. Fig. IX, is a plan view of one of the blocks or fillers severed from the cell case fabric by the automatic action of the machine.

In said figures,—1, and 2, are the side frames of the machine, in which is supported the table 3, traversed by the horizontal web 4. Said web is drawn into the machine by a pair of feed rollers 5, and said web is punched by suitable mechanism, with similar slots or notches 6, arranged in successive series; each series extending transversely in the web. Said rollers 5, are provided with circular shear blades 7, which divide the web 4, to form the seven longitudinal strips 8. Said vertical frame members 1, and 2, are connected by the transverse frame member 10, in which are mounted seven pairs of vertically disposed feed rollers 12, 13, each pair being adapted to embrace one of the strips 8, of the web 4, and serving to separately and independently progress the same in proper position to receive the lower edge of the vertically descending transverse web 14, presented through the guide chute 15.

As shown in Figs. V, and VI, each of the vertical rollers 12, is provided with a bevel gear 11, engaged by a bevel gear 19, upon a shaft 18, which latter is common to all of said gears 19, and arranged to be rotated by

the belt wheel 20. The rollers 13, which are opposed to said positively driven rollers 12, are loosely mounted upon shafts 21, between adjustable collars 22, provided with ball bearings 23. Said shafts 21, are mounted in the frame member 10, in slots 24, which are elongated in the direction of the radius vector of said rollers 12, and 13; and said shafts 21, and rollers 13, are continuously pressed toward the respective rollers 12, by springs 25, so as to insure the proper frictional engagement of the strips 8, to progress the latter. As shown in Figs. VII, & VIII, each of said springs 25, comprises a free end 26, projecting through its slot 24, in engagement with its shaft 21, and each spring has a shank member 27, which is adjustably engaged by a set screw 29, as shown in Fig. V; the arrangement being such, that each of said springs may be adjusted laterally and clamped by its screw 29, in its adjusted position, to give any desired spring pressure between the rollers 12, and 13.

As shown in Fig. I, the slots 6, in the web 4, are not disposed in straight transverse alinement but are so disposed that the slots upon both sides of the central slots respectively precede the latter to such extent that when the strips 8, are converged by the action of the rollers 12, 13, the notches of all of said strips come in straight transverse alinement beneath the straight chute 15, to receive the transverse strips 14, but from the web 16 delivered through said chute. It is to be noted however, that as shown in Fig. II, the slots 6, may be arranged in straight transverse alinement in the web 4, which will cause the slots in the strips 8, upon each side of the central strip, to fall behind the slots in the central strip, in accordance with the respective convergence of said strips toward the central strip; but, the transverse strips 14, may be presented in proper relation for engagement with such unaligned slots in the longitudinal strips 8, by means of the guide chute 17, shown in Fig. II, which chute is so curved transversely as to register with such slots in said longitudinal strips 8. Said chute 15, or 17, is supported in stationary relation to the frames 1, and 2, and the web 16, progressed vertically downward there-through by any convenient means, to engage said longitudinal strips. It is to be understood that upon the engagement of said vertical web 16, with the strips 8, of the longitudinal web 4, the vertical web may be sheared transversely by any convenient means for instance such as are disclosed in my Letters Patent aforesaid.

As indicated in Fig. III, the feed rollers 12, 13, deliver the strips 8, of the web 4, beneath said chute 15, through matrices each comprising opposed sheet metal guide plates 35, 36, mounted upon the transverse frame member 38. The convex guide plates 35, of

said matrices flex the upper edges of the strips 8, and thus open the notches therein so that they may more readily receive and engage the transverse web 16, which is thrust therein through the chute 15. Said guide plates 35, are respectively associated with shear blades 39, which are in fixed relation with said frame member 38, and provided with opposed shear blades 40, each mounted to rotate upon a stationary stud 41. The shanks 42, of said shear blades 40, are coupled by the bar 44, to which they are respectively pivoted by studs 45, and, said bar 44, is connected by the link 47, with the lever 48, mounted to oscillate in the bearing 49, in the vertical side frame 2. The lower arm 51, of said lever 48, is provided with a roller 52, entered in the groove 53, of the cam 54, which latter is mounted upon the shaft 56, having bearings 57, 58, in the respective side frames 1, and 2, and provided exterior to the latter with the disk 60, by which it may be conveniently rotated.

As shown in Fig. III, the frame member 38, comprises bearings 62, for the roller 64, which is provided with a series of circumferential recesses 65, respectively engaging belts 66, which are also engaged in the recesses 67, of the roller 68; which latter is mounted to rotate in the frames 1, 2, and may be conveniently actuated by means of the wheel 70. Said belt 66, serves to receive and discharge the cell case fabric comprising the longitudinal strips 8, and transverse strips 14, the operation of said shears 39, 40, being so effected in definite relation to the web feeding means, as to divide said fabric into separate blocks or fillers comprising 36 cells each, arranged as shown in Fig. IX.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim:—

1. In a cell case machine, the combination with means arranged to progress a paper web which is perforated with a series of slots, in straight transverse alinement in said web; mechanism arranged to divide said web longitudinally in strips; a series of pairs of feed rollers, each pair arranged to separately engage one of said strips and twist it at right angles to the plane of the web; respective matrices, through which said strips are fed, arranged to flex the edges of said strips independently of the body portion thereof; stationary shear blades respectively adjoining the discharge ends of said matrices; movable shear blades respectively in operative relation with said stationary blades; cutting edges on said blades coincident with the edges of said matrices; and, means arranged to simultaneously operate said movable

shear blades to shear said longitudinal strips, in definite relation to the feeding operation, substantially as set forth.

2. In a cell case machine, the combination
5 with means arranged to progress a paper web which is perforated with a series of slots, in straight transverse alinement in said web; mechanism arranged to divide said web longitudinally in strips; mechanism arranged to
10 twist said strips at right angles to the plane of the web, comprising a series of pairs of feed rollers, each pair separately engaging one of said strips; a series of stationary matrices respectively adapted to receive said strips; a
15 curved chute arranged to present transverse strips in engagement with said longitudinal strips; and, mechanism arranged to shear said longitudinal strips between said chute and said matrices, substantially as set
20 forth.

3. In a cell case machine, the combination with means arranged to progress a paper web which is perforated with a series of slots, in straight transverse alinement in said web;
25 mechanism arranged to divide said web longitudinally in strips; mechanism arranged to twist said strips at right angles to the plane of said web, comprising a series of pairs of feed rollers, each pair separately engaging
30 one of said strips; a series of stationary matrices respectively adapted to receive said strips and flex the latter in their passage therethrough; a curved chute arranged to deliver transverse strips in engagement with
35 said longitudinal strips; mechanism arranged to shear said longitudinal strips between said chute and said matrices; and, means arranged to positively discharge the sheared cell case fabric by continuous engagement
40 therewith, substantially as set forth.

4. In a cell case machine, the combination with means arranged to progress a paper web which is perforated with a series of slots, in straight transverse alinement in said web;
45 mechanism to divide said web longitudinally in strips; mechanism arranged to twist said strips at right angles to the plane of said web, comprising a series of pairs of feed rollers, each pair separately engaging one of said
50 strips; a series of stationary matrices respectively adapted to receive and flex said strips; a curved chute arranged to present transverse strips for engagement with said longitudinal strips; and, mechanism arranged to
55 shear said longitudinal strips between said feed rollers and said chute, in definite relation to the feeding operation, substantially as set forth.

5. In a cell case machine, the combination
60 with means arranged to progress a paper web which is perforated with a series of slots, in straight transverse alinement in said web; mechanism to divide said web longitudinally in strips; mechanism arranged to twist said
65 strips at right angles to the plane of said web,

comprising a series of pairs of feed rollers, each pair separately engaging one of said strips; a series of stationary matrices respectively adapted to receive and flex said strips; a transversely curved chute arranged
70 to present transverse strips for engagement with said longitudinal strips; and, mechanism arranged to shear said longitudinal strips between said feed rollers and said chute, in definite relation to the feeding op-
75 eration, comprising a pair of shear blades for each of said longitudinal strips, each pair comprising a stationary blade and a movable blade; and, means operatively connecting all of said movable shear blades, substan-
80 tially as set forth.

6. In a cell case machine, the combination with feeding mechanism for cell case fabric; of means arranged to flex said fabric; shearing mechanism comprising a pair of shear
85 blades for each of the longitudinal strips of said fabric; each pair of shear blades comprising a stationary blade and a movable blade, arranged to shear said fabric while flexed; and, means operatively connecting
90 all of said movable shear blades, substantially as set forth.

7. In a cell case machine, the combination with feeding mechanism for cell case fabric; of mechanism arranged to divide said web
95 longitudinally in strips; convex guide plates for the individual strips; shearing mechanism comprising a pair of shear blades for each of the longitudinal strips of said fabric; each pair of shear blades comprising a stationary
100 concave blade and a movable convex blade; and, means operatively connecting all of said movable shear blades, substantially as set forth.

8. In a cell case machine, the combination
105 with mechanism to feed a paper web, having a series of slots disposed in straight transverse alinement, and to slit the same in longitudinal strips; of mechanism to twist and converge said strips in parallel planes at right
110 angles to the plane of the web, and with their slots out of alinement; and means to present transverse partition strips in proper registry with the unaligned slots in said longitudinal strips, substantially as set forth.
115

9. In a cell case machine, the combination with mechanism to feed a paper web, having a series of slots disposed in straight transverse alinement, and to slit the same in longitudinal strips; of mechanism to twist and
120 converge said strips in parallel planes at right angles to the plane of the web, and with their slots out of alinement; and, means to present transverse partition strips in proper registry with the unaligned slots in said longitudinal strips, comprising a chute curved transversely with respect to said longitudinal strips, substantially as set forth.
125

10. In a cell case machine, the combination with mechanism to feed a paper web,
130

having a series of slots disposed in straight transverse alinement, and to slit the same in longitudinal strips; of mechanism to twist and converge said strips in parallel planes at right angles to the plane of the web, and with their slots out of alinement; and means to present transverse partition strips in proper registry with the unaligned slots in said longitudinal strips, comprising a chute

having parallel walls, substantially as set forth.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this 24th day of April 1902.

GEORGE W. SWIFT, JR.

Witnesses:

ARTHUR E. PAIGE,

CLIFTON C. HALLOWELL.