

No. 677,504.

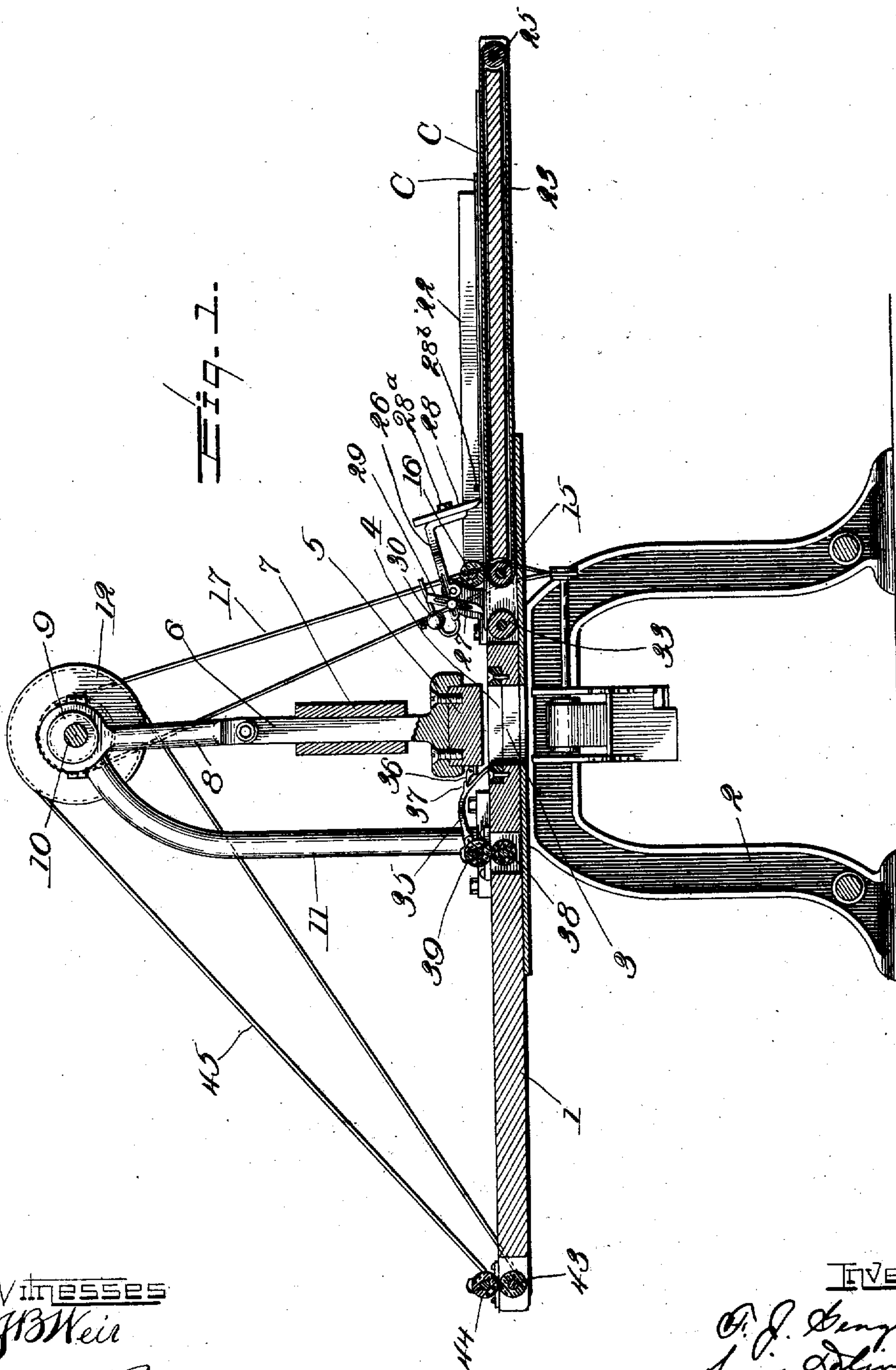
Patented July 2, 1901.

F. J. GEORGE & L. DELIVOUK.
CARD CUTTING MACHINE.

(Application filed Mar. 5, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

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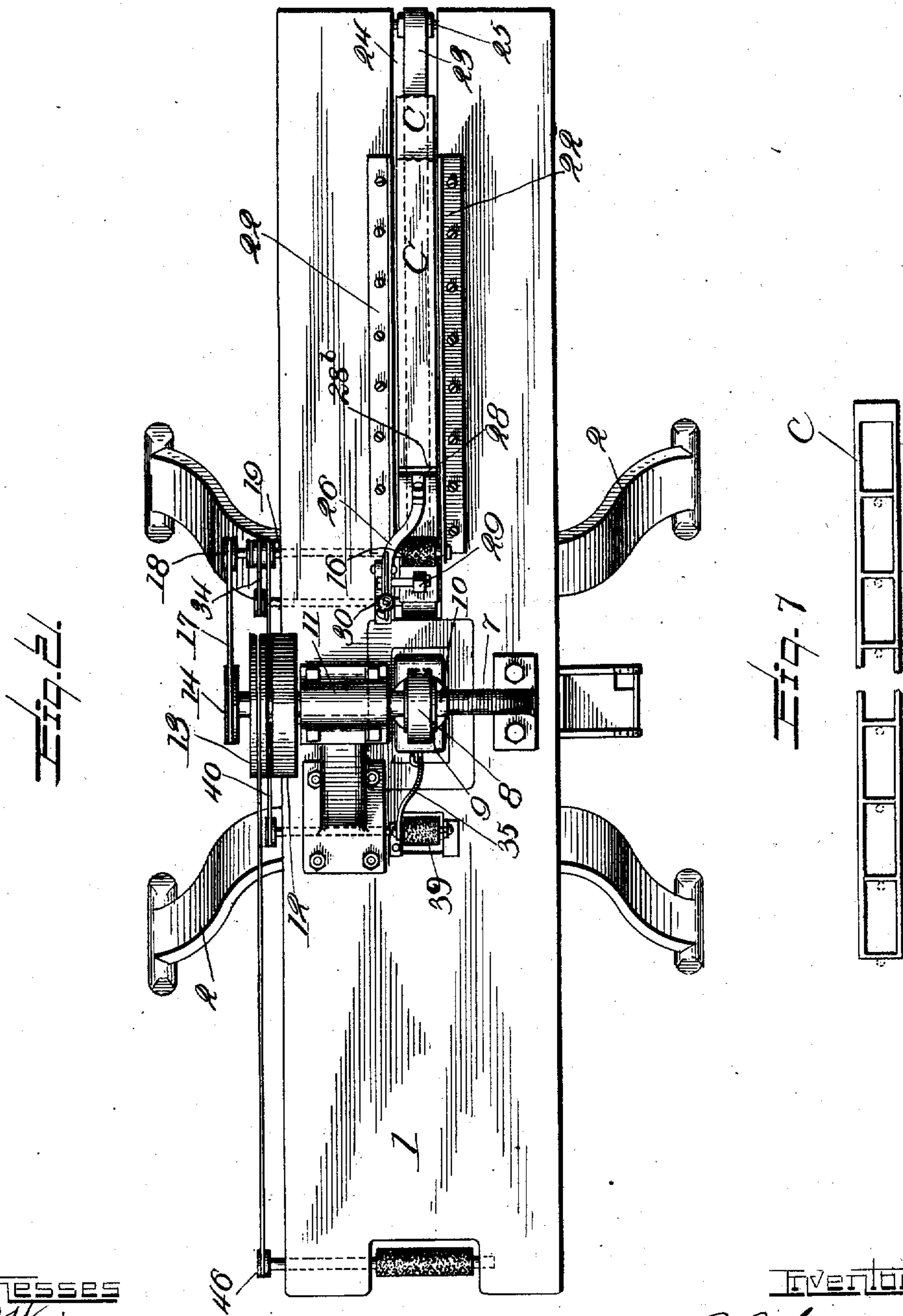
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(No Model.)

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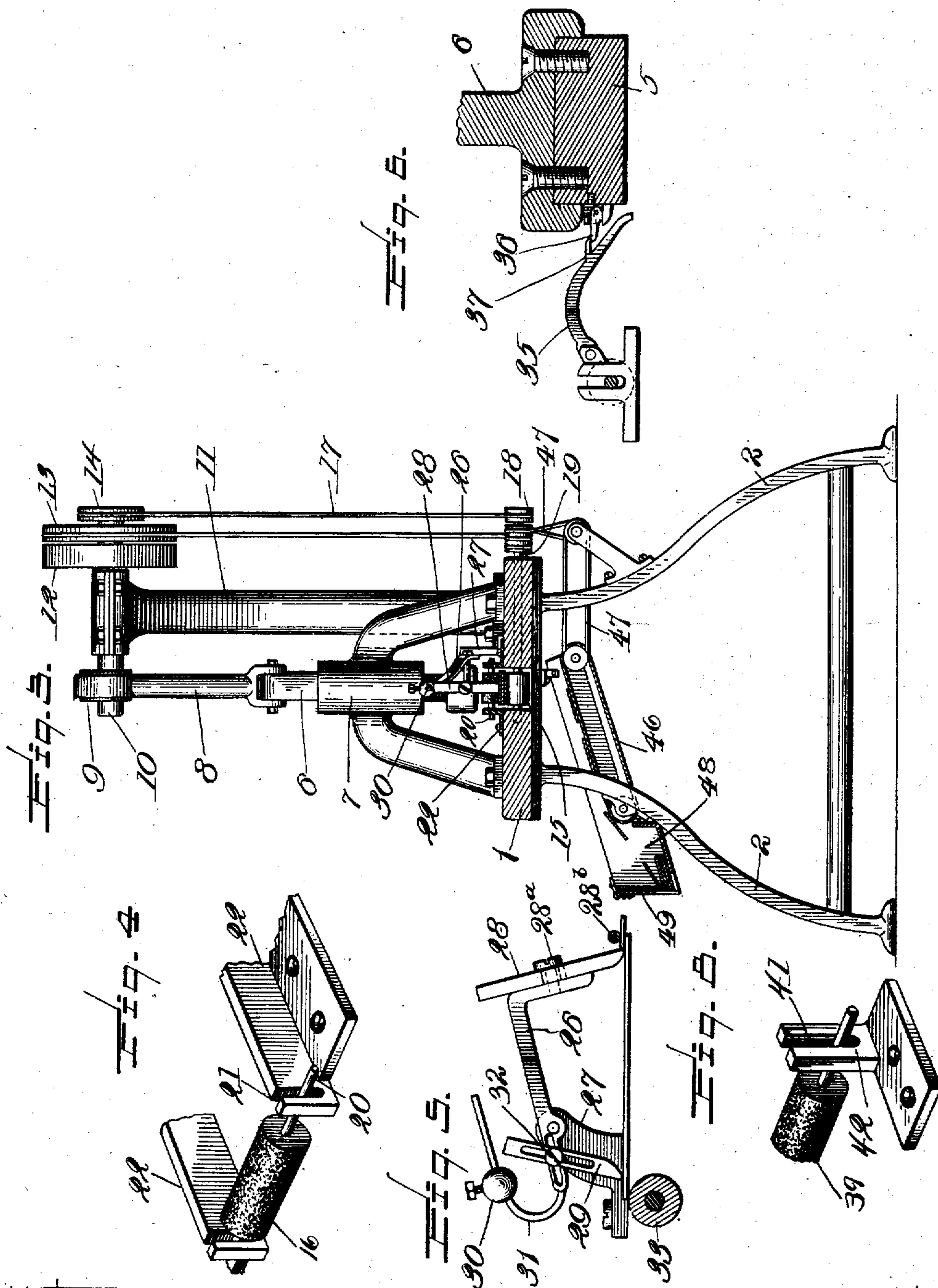
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CARD CUTTING MACHINE.

(No Model.)

(Application filed Mar. 5, 1900.)

3 Sheets—Sheet 3.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK J. GEORGE, OF ELGIN, AND LOUIS DELIVOUK, OF CHICAGO, ILLINOIS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO FREDERICK A. OWEN, OF DANSVILLE, NEW YORK.

CARD-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,504, dated July 2, 1901.

Application filed March 5, 1900. Serial No. 7,298. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK J. GEORGE, a citizen of the United States, residing at Elgin, in the county of Kane, and LOUIS DELIVOUK, a citizen of the Republic of Switzerland, residing at Chicago, in the county of Cook, State of Illinois, (the post-office address of both being No. 141 South Clinton street, Chicago, Illinois,) have invented certain new and useful Improvements in Card-Cutting Machines, of which the following is a specification.

This invention relates to machines for punching or cutting cards from a sheet of cardboard or for other similar purposes, its object being to provide an improved construction in devices of this character; and it consists in the matters hereinafter set forth, and particularly pointed out in the appended claims.

The invention will be fully understood from the following detailed description of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a sectional side elevation of a card-cutting machine embodying our invention in one form. Fig. 2 is a top plan view thereof. Fig. 3 is a sectional front elevation thereof. Fig. 4 is a perspective detail showing the manner of mounting one of the forwarding-rollers. Fig. 5 is a detail in side view of the automatic stop for preventing one sheet of cardboard from entering the rollers before the preceding sheet has been carried sufficiently forward. Fig. 6 is a sectional detail of the automatic stop for correctly limiting the advance of the cardboard. Fig. 7 shows a sheet of cardboard as it would appear after passing through the machine. Fig. 8 is a perspective detail showing the manner of mounting one of the middle forwarding-rollers.

In said drawings, 1 designates the machine bed or table, which is supported upon suitable legs 2 and is provided about midway between its ends with an aperture 3.

4 designates the die-plate, which is countersunk in the table around the aperture 3, and 5 is a punch mounted on a reciprocating plunger 6 to work up and down through the

die-plate. Said plunger 6 is mounted within a guide-bracket 7, which rises above the table, and the plunger is reciprocated through the medium of a pitman 8 by an eccentric 9 on a shaft 10, the latter being journaled in the upper end of a standard 11, which also rises above the bed to support the shaft. The drive-pulley 12 on the shaft 10 enables the latter to be rotated from any suitable source of power, and additional pulleys 13 and 14 on said shaft serve to transmit motion to the other working parts of the machine presently to be described. It will, however, be understood that the features thus far mentioned constitute in themselves no part of our improvements and may be otherwise constructed than as herein illustrated without in any way affecting the merits of the invention claimed.

The cardboard C is fed beneath the punch by a pair of rollers 15 and 16, the lower roller 15 of which is positively driven by a belt 17, that leads from the pulley 14 on the shaft 10 down to a pulley 18 on the end of the shaft 19, which carries the roller. The upper roller 16, on the other hand, is not positively driven, but rests freely upon the roller 15, the ends of its shaft 20 passing loosely through slots 21 in the adjacent guide-plates 22 on the bed, so that the roller is free to rise and fall as the cardboard enters or passes from beneath it. The object of this construction is to provide a drive which will readily carry the cardboard forward until it is checked by the stop mechanism, but will thereafter revolve freely without forcing or injuring the cardboard until said stop mechanism permits the cardboard to again advance, the rollers simply slipping on the cardboard, while its movement is checked, owing to the lack of any positive pressure between them. The lower roller 15 furthermore serves to carry and drive one end of an endless feed-belt 23, which is mounted in a longitudinal groove 24 in the table and is supported at its other end by a roller 25, journaled at the outer end of the slot. The guide-plates 22, heretofore referred to, extend along the opposite sides of this belt, and the strips of cardboard C when placed upon the belt between the guides are immediately carried forward toward the feed-

rollers. To prevent a second sheet of cardboard from passing between the feed-rollers before the first sheet has been carried properly through them, a stop mechanism is provided in the shape of an unbalanced lever 26, which is pivoted at a point near the feed-rollers to a side bracket 27 on the bed and is provided at its front and rear ends with terminal points 28 and 29, of which the former extends down into close proximity to the carrier-belt upon the entering side of the feed-rollers, while the latter projects downwardly into the path of the cardboard on the leaving side of said rollers. A weight 30 is mounted on an arm 31 of the lever in such position that it can be adjusted in either direction with relation to the pivotal point of the lever, designed to be so placed that the terminal point 28 constantly tends to be swung up, while its terminal point 29 tends to be swung down, except as the latter point is supported by the passing sheet of cardboard, the adjustment of said points being, furthermore, such that the point 28 will be held down low enough to prevent the advance of a succeeding sheet until the preceding sheet has passed from beneath the point 29 and enabled the point 28 to rise. Lateral as well as longitudinal adjustment of the point 29 is provided for by the slot and clamping-screw connection shown at 32, and an auxiliary feed-roller 33 is shown as provided a short distance in front of the feed-roller 15 to support the end of the cardboard beneath the point 29 and is driven at the same rate of speed as the roller 15 by a belted connection 34 between pulleys on the ends of the roller-shafts. The point 28 is furthermore shown as so secured to the lever 26 by means of a loose screw-and-slot connection 28^a as to have a limited longitudinal sliding movement on said lever, so that when the end of the passing sheet is withdrawn from beneath this point the latter will slip down in front of the succeeding sheet and still prevent its forward movement until the withdrawal of the passing sheet from beneath the point 29 permits the lever 26 to oscillate far enough to lift the point 28 again. A stop or cross bar 28^b prevents the end of the succeeding sheet from rising with the point 29, as it might otherwise tend to do, and leaves it free to be carried forward by the belt as soon as it is clear of said point.

The passage of each sheet of cardboard beneath the punch must necessarily be a step-by-step movement, with intermediate dwells long enough to permit the punch to descend, cut out the card, and then rise again free from the sheet. To this end a stop device for the sheet is provided on the other side of the punch from the feed-rollers 15 and 16, which advance the sheet, this device consisting, as herein shown, of a pivoted stop-pawl 35, the extremity of which projects to within a short distance of the edge of the punch and normally rests upon the bed in position to prevent the cardboard from moving beyond that

point. A pivoted latch 36 is then provided on the punch or plunger in position to engage a lug 37 on the stop-pawl in such manner that said pawl will be lifted momentarily when the punch rises, while the pivoted latch will slip readily by the lug 37 and pass again beneath the same when the punch descends. When the sheet is advanced by the feed-rollers, its end strikes the stop-pawl 35 and checks its movement, while the punch descends to cut out the first card. The rising of the punch then lifts the pawl momentarily and permits the sheets to move forward again under the action of the feed-rollers until the pawl as it is released by the latch drops into the opening cut out of the cardboard by the previous stroke of the punch and by contact with the rear edge of said opening again stops the movement of the sheet. The dotted circles shown in Fig. 7 indicate the points where the end of the pawl thus comes in contact with the several transverse edges of the sheet in the passage of the latter beneath the punch.

The feed movement of the sheet after it leaves the feed-rollers 15 and 16 is continued by a pair of similar feed-rollers 38 and 39, of which the lower roller 39 is positively driven at the same rate of speed as the first feed-roller 15 by a belt connection 40 between pulleys on the ends of the roller-shafts, while the shaft of the upper roller 38 simply revolves loosely and is free to play vertically in slots 41, provided in adjacent lateral brackets 42 on the bed. These rollers 38 and 39 receive the forward end of the sheet before its rear end leaves the rollers 15 and 16, and because of their uniform speed the sheet passes from one set of rollers to the other without interference or friction, the stop-pawl obviously continuing to act when the card is advanced by the second set of rollers in the same manner as when it is advanced by the first set.

The mechanism thus far described takes care of operations perfectly until the last card has been punched from the sheet; but when this occurs it is necessary to instantly withdraw the skeleton sheet remaining, so as to prevent its interfering with the advance of the succeeding sheet. To this end a third pair of feed-rollers 43 and 44 are provided at the end of the bed beyond the feed-rollers 38 and 39 and are rotated at a high rate of speed by a belt connection 45 from the pulley 13 on the shaft 10. This third set of rollers is placed at a distance from the punch slightly less than the length of the cardboard sheets supplied to the machine, so that when the sheet has been advanced to the position where the last card is being punched from it its forward end will be in close proximity to said rollers. Then as the sheet moves forward for the last time under the action of the middle rollers 38 and 39 as the stop-pawl is lifted by the punch the front end of the sheet will be seized between the rollers 43 and 44 and by reason of their high speed will be instantly snatched from beneath the punch and from

between said rollers 38 and 39, the yielding grip of the latter permitting the sheet to slip through and be thrown off from the bed without serious resistance.

5 An endless carrier 46, arranged transversely beneath the central aperture 3 of the bed and driven by a belt connection 47 from the roller-shaft 18, receives the cards as they fall through the die and conveys them into a box 48, where they are deposited in a pile. A hinged end 49 in the box then permits the cards thus collected to be removed as desired.

It will be understood that various changes may be made in the construction shown without departing from the invention claimed.

We claim as our invention—

1. The combination of a frame and bed, a punch and die, a pair of feed-rollers in front of the punch, a pair of feed-rolls behind the punch, a pawl pivotally supported behind the punch and having its engaging end normally resting on the bed closely adjacent to the die-opening and in the pathway of the feed, whereby said engaging end will normally engage the rear edge of each opening made in the material by the punch, and means for automatically lifting the engaging end of the pawl upon each upward stroke of the punch, for the purpose set forth.

2. The combination with a pair of feed-rollers and a carrier for advancing the sheet to said feed-rollers, of a stop mechanism consisting of an unbalanced lever arranged with its normally down-swinging end resting upon the passing sheet and with its other end held down thereby in front of the succeeding sheet, substantially as described.

3. The combination with a pair of feed-rollers and a carrier for advancing the sheet to said feed-rollers, of a stop mechanism consisting of an unbalanced lever arranged with its normally down-swinging end resting upon the passing sheet and with its other end held down thereby in front of the succeeding sheet, the latter end of the lever being provided with a loosely-attached point having a limited independent movement, substantially as described.

4. In a card-cutting machine, a frame and bed, a punch and die, feed-rolls in front of

the punch, feed-rolls in the rear of the punch, rapidly-revolving feed-off rolls beyond these latter rolls, a pawl pivotally supported behind the punch and having its engaging end normally resting on the bed adjacent to the rear edge of the die-opening and in the line of the feed, whereby said engaging end will normally engage the rear edge of each opening made in the card as it passes beneath the punch and thereby intermittingly retard the sheet, and a pivoted latch carried by the punch to automatically lift the pawl with each upward stroke of the punch, substantially as and for the purpose set forth.

5. The combination with feeding devices, a carrier for advancing sheets to said devices, and a stop or regulator mechanism for permitting the sheets to be fed in succession from the under side of a stack mounted upon the carrier, said mechanism embracing a gravitating device for automatically engaging the forward edge of the lowermost stationary sheet and a movable part for raising said gravitating device the distance of one sheet, said movable part engaging the passing sheet and being operated automatically by the complete passage of the sheet, substantially as set forth.

6. The combination of a pair of feed-rolls, a carrier for advancing the sheets thereto, and a stop or regulator mechanism for permitting the sheets to be carried to the feed-rolls intermittingly, said mechanism consisting of a movable part adapted to normally rest on the passing sheet on the leaving side of the rolls and a gravitating part adapted to normally rest upon the passing sheet on the other side of the rollers adjacent to the stack of sheets being fed, this gravitating part being automatically raised the distance of one sheet upon the complete passage of the passing sheet under the movable part.

In testimony that we claim the foregoing as our invention we affix our signatures, in presence of two subscribing witnesses, this 20th day of February, A. D. 1900.

F. J. GEORGE.
LOUIS DELIVOUK.

Witnesses:

HENRY W. CARTER,
N. R. BAILEY.