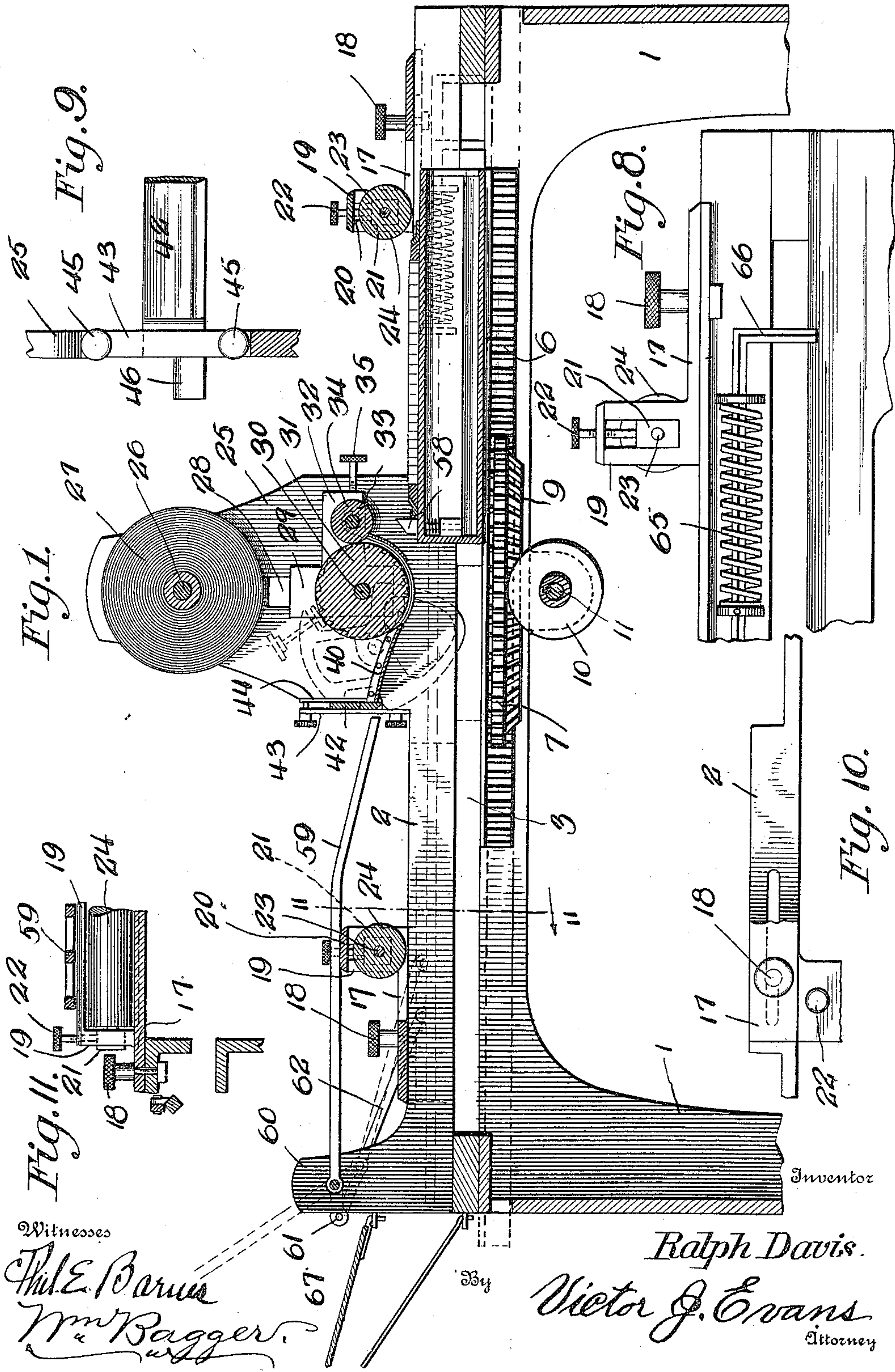


993,966.

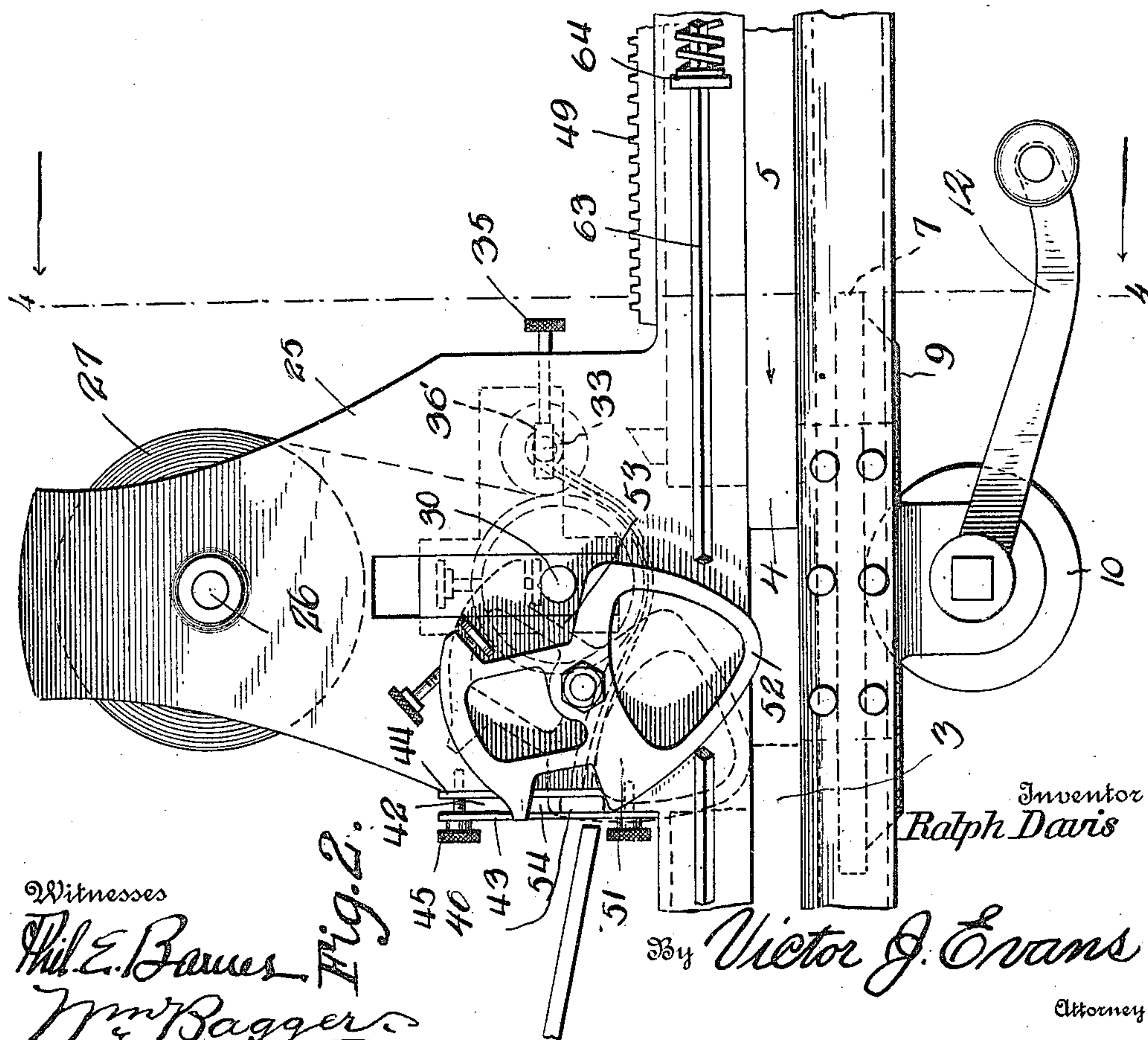
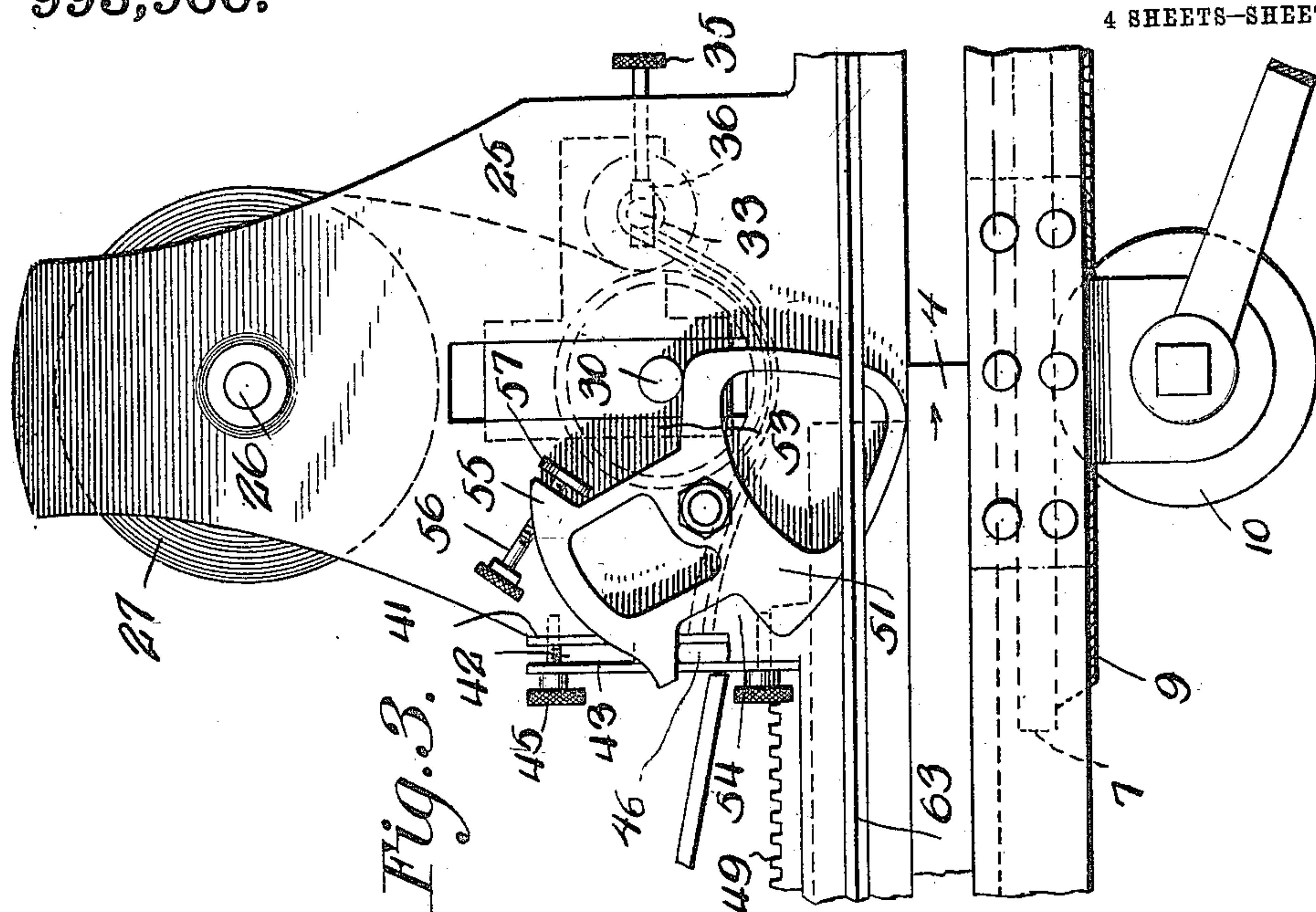


R. DAVIS.
PRINTING PRESS.
APPLICATION FILED APR. 2, 1910.

Patented May 30, 1911.

4 SHEETS—SHEET 2.

993,966.



Witnesses

Phil E. Barnes
Wm Bagger

Inventor
Davis

By *Victor J. Evans*
Attorney

993,966.

Patented May 30, 1911.

4 SHEETS—SHEET 3.

Fig. 4.

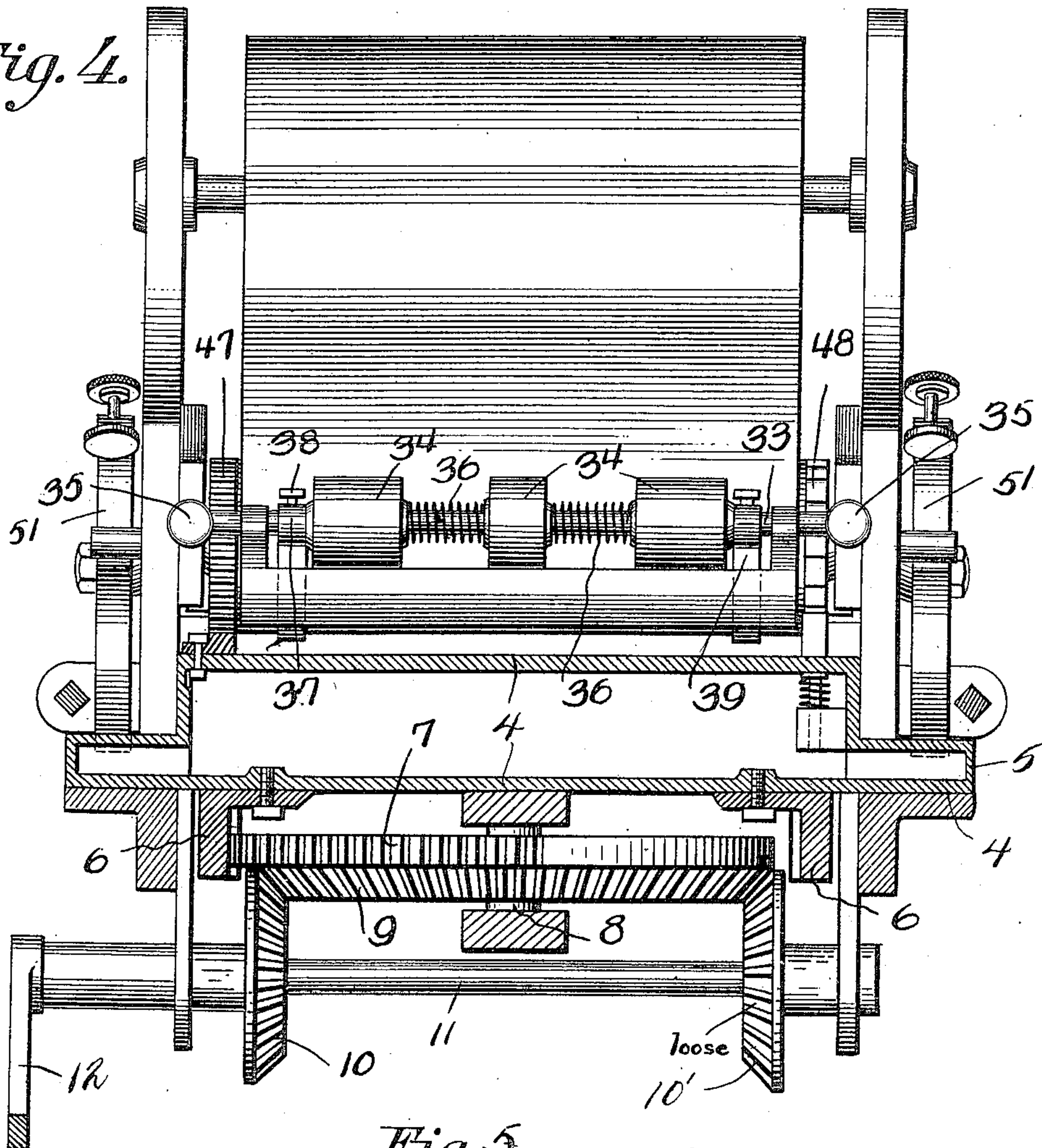
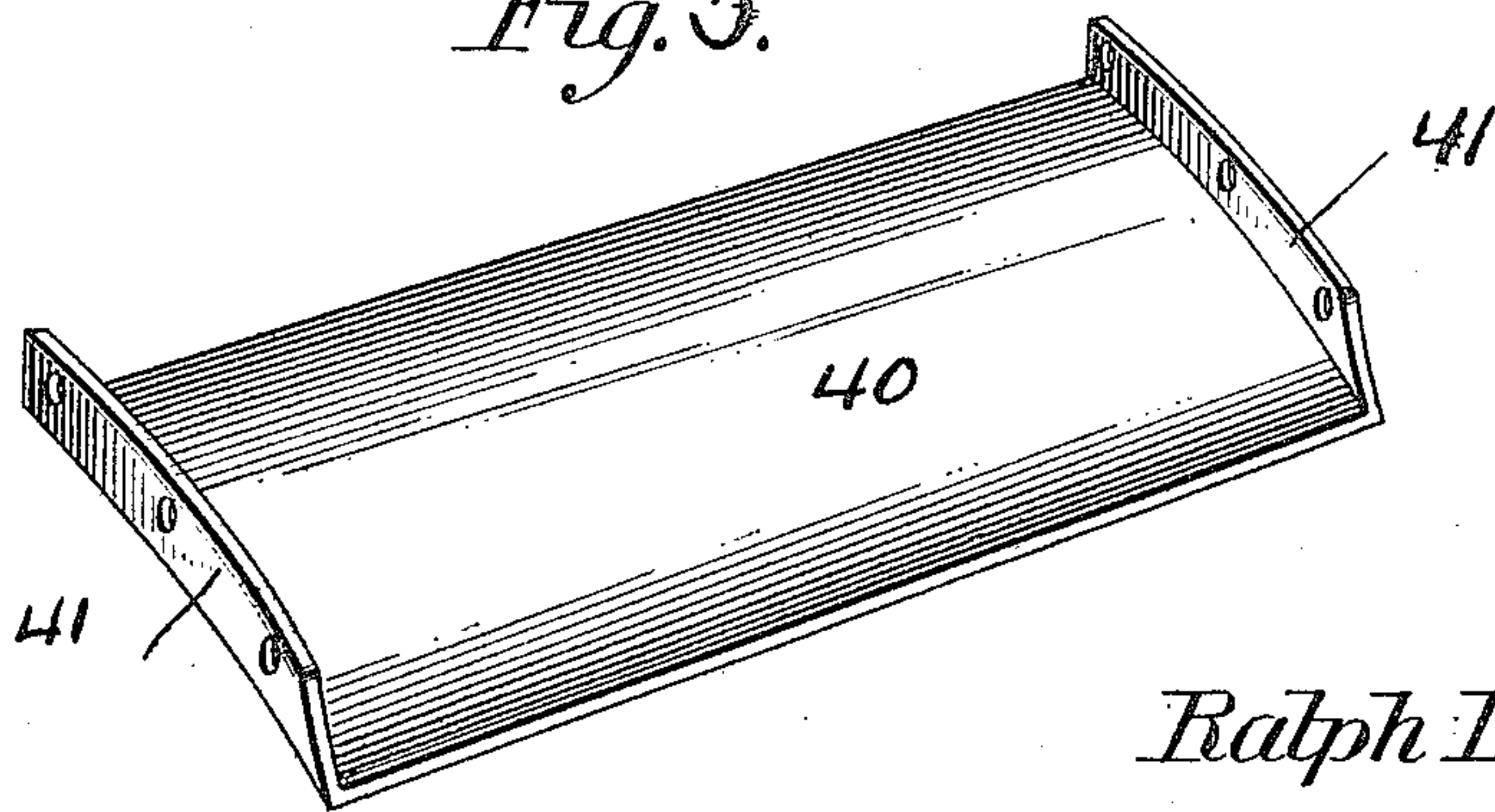


Fig. 5.



Witnesses

Phil. E. Barnes
Wm. Bagger

Inventor
Ralph Davis

By *Victor J. Evans*
Attorney

993,966.

R. DAVIS.
PRINTING PRESS.
APPLICATION FILED APR. 2, 1910.

Patented May 30, 1911.

4 SHEETS-SHEET 4.

Fig. 6.

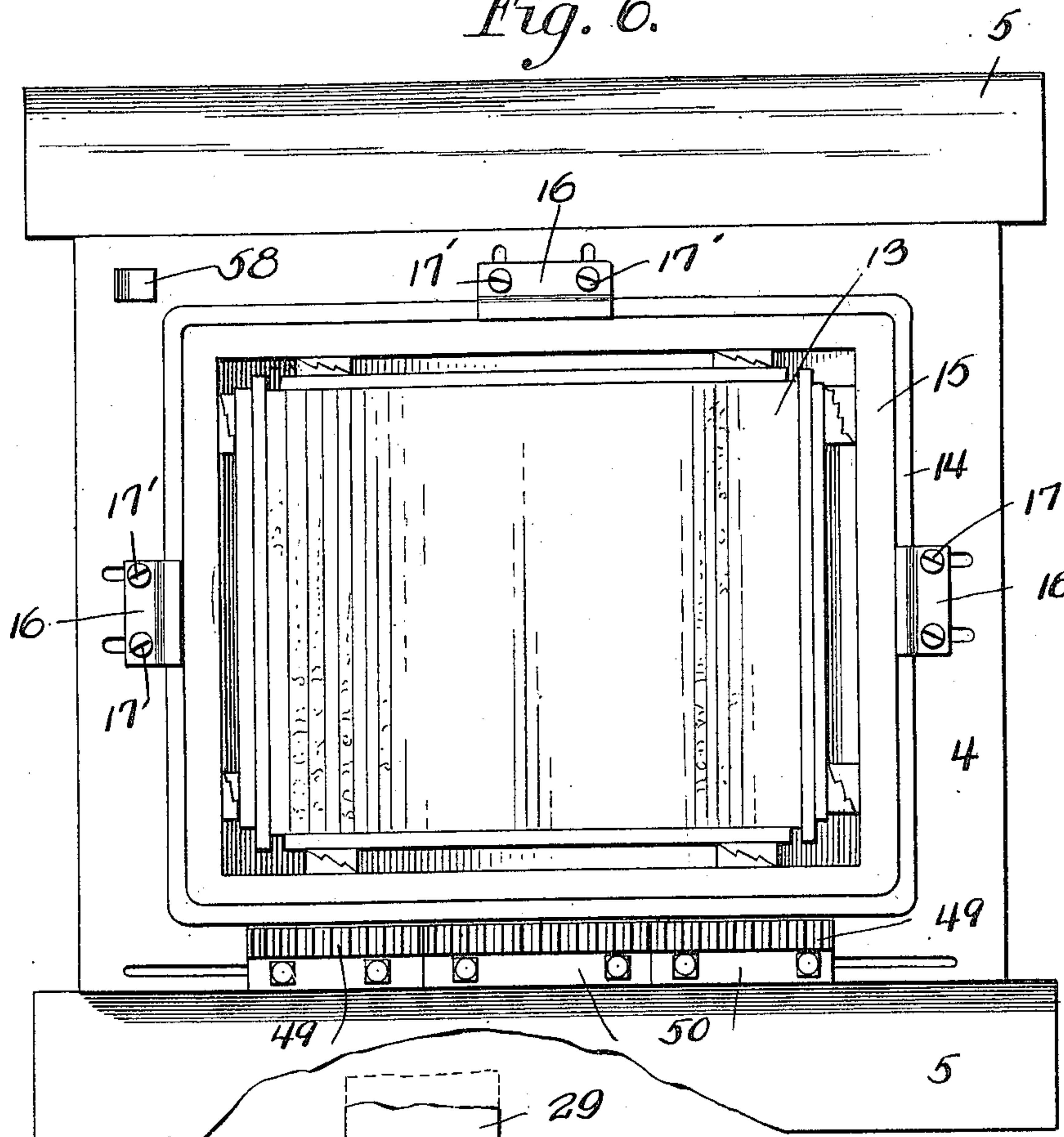
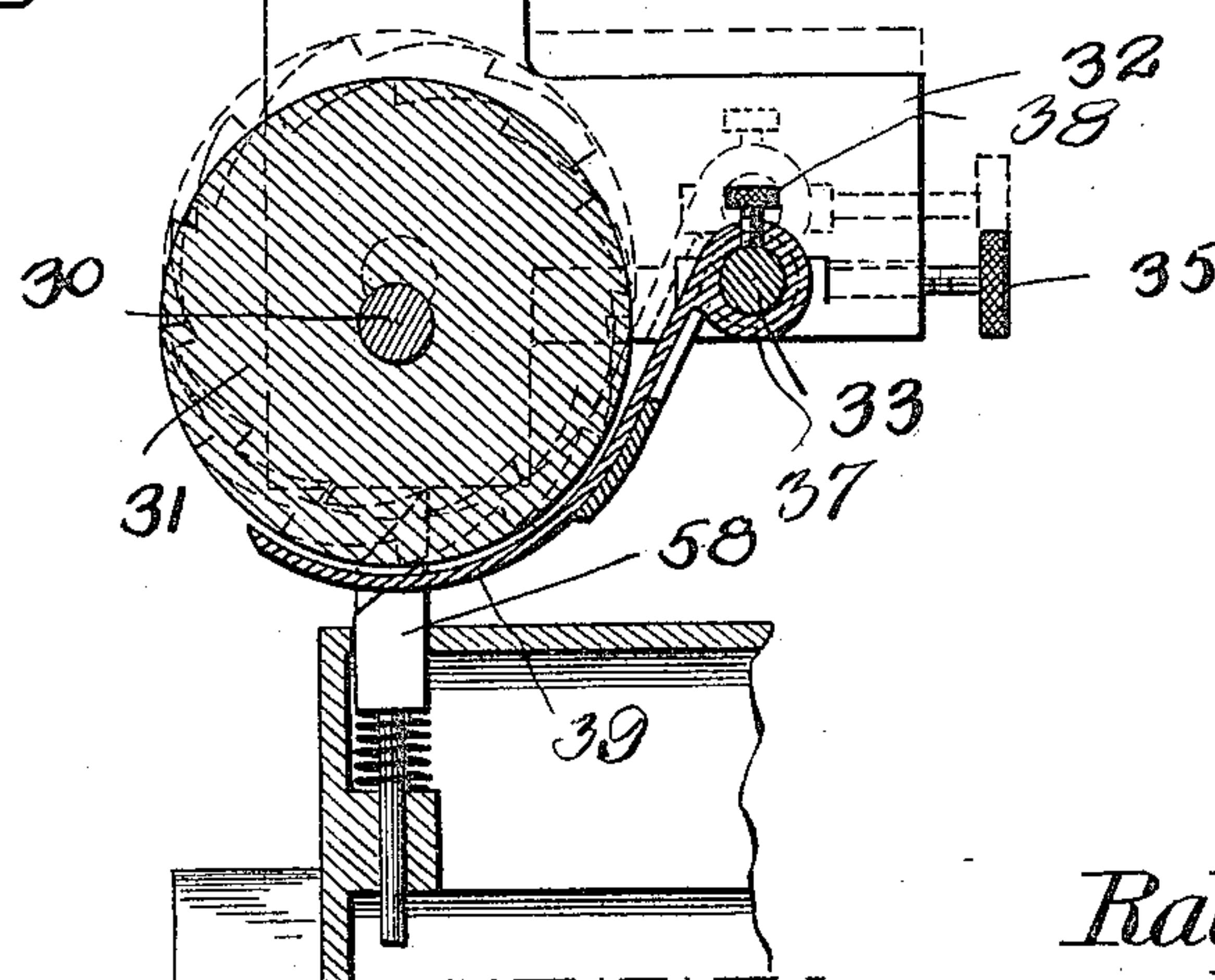


Fig. 7.



Witnesses

Phil. E. Barnes
Wm. Bagger

Inventor

Ralph Davis

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

RALPH DAVIS, OF SIDNEY, OHIO.

PRINTING-PRESS.

993,966.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed April 2, 1910. Serial No. 552,992.

To all whom it may concern:

Be it known that I, RALPH DAVIS, a citizen of the United States of America, residing at Sidney, in the county of Shelby and State of Ohio, have invented new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates to an improved printing press or machine for printing circulars, circular letters, bills and the like, and it has for its prime objects to simplify and improve the construction and operation of this class of devices.

A special object of the invention is to provide a machine of simple and efficient construction, whereby circular letters may be printed, the letter head in one color and the body of the letter in another color.

A further object of the invention is to provide simple and improved means for feeding paper from a continuous roll over a rotary cylindrical platen or impression roller to receive an impression from a reciprocatory type bed.

A further object of the invention is to provide simple and improved means for elevating the impression roller from engagement with the type bed when the latter moves in one direction and for simultaneously actuating a knife or cutter for separating the printed sheet from the roll.

A further object of the invention is to provide simple and improved means for actuating the impression roller in a reverse direction for the purpose of lessening the unprinted margin at the head of each sheet previous to making the impression.

Further objects of the invention are to provide a machine of the character outlined above which shall possess superior advantages in point of simplicity, durability and general efficiency.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifica-

tions within the scope of the invention may be resorted to when desired.

In the drawings,—Figure 1 is a sectional elevation of a machine constructed in accordance with the invention. Fig. 2 is a view in side elevation of the central portion of the machine including particularly the cam for effecting vertical adjustment of the impression roller and for actuating the cutting device in position to be engaged by the type-carrying bed just prior to making the impression. Fig. 3 is a similar view, showing the cam as it appears when engaged by the type bed moving in the opposite direction. Fig. 4 is a vertical transverse sectional view taken on the line 4—4 in Fig. 2. Fig. 5 is a perspective detail view of the guide over which the printed paper passes from the impression roller. Fig. 6 is a top plan view of the type bed. Fig. 7 is a sectional detail view of the impression roller, showing the means whereby the same is engaged to be moved in a reverse direction. Fig. 8 is a detail view in elevation of one end of the machine frame, showing one of the ink- ing rollers and one end of the rod or slide whereby the sheet delivery mechanism is actuated. Fig. 9 is a detail view of one end of the knife or cutter, showing also the supporting means for the same. Fig. 10 is a detail top plan view of a corner portion of the frame. Fig. 11 is a sectional detail view taken on the line 11—11 in Fig. 1.

Corresponding parts in the several figures are denoted by like characters of reference.

The bed or frame of the machine, which is supported upon legs or uprights 1, 1, includes side members 2 having longitudinal slots 3 that afford guides for the reciprocatory type bed or carriage 4 which is provided with flanges 5 engaging said guide slots. The carriage 4 is provided with downwardly extending rack bars 6, 6 which are toothed upon their inner opposed faces for engagement with a mutilated spur wheel 7 which is toothed approximately upon one half its perimeter, said spur wheel being mounted upon a vertical shaft 8 supported for rotation intermediate the sides of the frame. The spur wheel 7 is formed with a bevel gear 9 meshing with a bevel pinion 10 upon a shaft 11 which is supported for rotation transversely beneath the frame of the machine and equipped with suitable means, such as a crank 12, whereby it may be ro-

tated; it being understood that power may be used for driving the shaft 11 when desired. A loose pinion 10' may be arranged upon the shaft 11 to support the bevel gear 9 opposite to the pinion 10. It is evident that when rotary motion is conveyed to the mutilated gear 7 through the medium of the bevel gearing 9, 10, the spurs or cogs of said wheel will alternately engage the racks 6, 6 at opposite sides of the carriage, thus imparting to the latter a reciprocatory movement upon the bed or frame of the machine, such movement being obviously predetermined according to the dimensions of the machine.

The carriage or type bed is adapted to support a form of type, as shown at 13 in Fig. 6, said form being of any desired dimensions within the capacity of the machine, and said form being held in position by a frame 14 inclosing the chase 15, said frame being adjustably secured upon the bed of the carriage 4 by means of clips 16 secured by screws or bolts 17'. It is desired to be understood, however, that the form may be mounted and secured in any suitable and well known manner.

Supported upon the frame adjacent to the ends of the latter are slides 17, two at each end, said slides being secured for adjustment longitudinally of the frame by means of set screws 18. Each of the slides 17 is provided with uprights 19 having vertical slots 20 wherein bearing blocks 21 are vertically movable, said bearing blocks being adapted to be forced downwardly by means of set screws 22. The bearing blocks serve to support shafts 23 carrying inking rollers 24 which latter may thus by the pressure exerted by the set screws 22 be forced downwardly under varying degrees of pressure. Fonts may be provided to supply ink to the rollers 24, or the latter may be supplied with ink in any well known manner. Different colored inks may be supplied to the inking rollers when it shall be desired to print a letter or circular in two contrasting colors.

Rising from the side members 2 of the frame intermediate the ends of the latter are uprights 25 affording bearings adjacent to their upper ends for a shaft 26 carrying a roll 27 of printing paper. The uprights 25 have slots 28 affording guides for vertically movable slides 29 wherein the shaft 30 carrying the impression roller or platen 31 is supported for rotation. The shaft 30 extends terminally through the slides or bearing members 29, as will be best understood by reference to Figs. 2 and 3 of the drawings. The slides 29 have laterally extending arms 32 provided with slots 36' affording bearings for a shaft 33 carrying pressure rollers 34 which by means of set screws 35 may be forced in the direction of the platen

so as to impact upon the latter with varying degrees of pressure. The pressure rollers 34 may be spaced apart by means of interposed coiled springs 36 which admit of the outermost rollers 34 being moved in an inward direction upon the shaft, said outermost rollers being retained against outward movement by means of collars 37 having set screws 38, said collars being also provided with curved or arcuate paper guides 39 that extend in the direction of the platen and partly underneath the latter. Paper of different widths may be used by proper adjustment of the rollers 34 and the collars carrying the paper guides 39, it being obvious that the web is guided from the roll 27 between the platen 31 and the impact rollers 34 and over the guides 39 adjacent to the platen. The paper as it leaves the platen is guided over a plate 40, shown in detail in Fig. 5 of the drawings, said plate being provided with side flanges 41 which are apertured for the passage of means, such as screws or bolts, whereby it may be secured upon the frame of the machine. From the platen the paper is guided over the plate 40 in the direction of the knife or cutter 42 which is supported for vertical reciprocation between suitable guides 43, 44 which are detachably connected with the uprights 25 of the frame by means of set screws 45, thus rendering the cutter readily accessible for sharpening and for other purposes. The cutter 42 is provided at the ends thereof with laterally extending arms, one of which is clearly shown at 46 in Fig. 9 of the drawings.

The shaft carrying the impression roller or platen is provided adjacent to one end of said platen with a spur wheel 47 and adjacent to the other end with a ratchet wheel 48, as best seen in Fig. 4 of the drawings. The reciprocatory carriage 4 is equipped with a rack made up of a plurality of short sections 49 which are secured in position by means of clamps 50, said rack being adapted to engage the spur wheel 47 for the purpose of rotating the platen to feed the paper when the carriage moves in one direction, as will be presently more fully described.

Pivotally mounted upon the uprights 25 are cams 51, one at each side of the machine. Each of said cams is formed with a downward extension or toe 52 adapted to lie in the path of a side flange 5 of the reciprocatory carriage. Each of said cams is also provided at opposite sides thereof with recesses 53 and 54, the former of which receive the ends of the platen-carrying shaft 30, while the recesses 54 receive the arms 46 extending from the ends of the cutter 42. The shoulder or offset 55 of each cam adjacent to the upper end of the recess 53 affords a bearing for a set screw 56 having a terminal plate or follower 57 which may be adjusted

to engage the projecting ends of the platen-carrying shaft and to exert upon the latter a predetermined degree of pressure. The toe 52 of each cam 51, as before stated, extends in the path of a flange 5 of the reciprocatory carriage 4. When the latter moves in the direction indicated by the arrows in Fig. 2, the cams will be tilted to the position indicated in dotted lines in said figure, thus causing the adjustable follower 57 to engage the projecting ends of the platen-carrying shaft, forcing the latter in a downward direction, together with the slides 29 and related parts, thus carrying the printing sheet into engagement with the type form, as the latter passes beneath the platen, the form having previously been inked by passing under the inking rollers.

After the carriage passes out of engagement with the cams, the latter by gravity assume the position indicated in full lines in Fig. 2, the form is partially inked by the roller supported at the left hand end of the machine in Fig. 1, and the carriage now starts its movement in the opposite direction, which is indicated by the arrow in Fig. 3. When the cams are engaged by the flanges of the carriage moving in this direction, they will be tilted to the position shown in full lines in Fig. 3; the platen carrying shaft will be elevated by contact with the shoulders at the lower ends of the recesses 53, and the cutter will be lowered by contact of its arms 46 with the shoulders at the upper ends of the recesses 54, thus severing the printed portion of the sheet while the carriage completes its movement in the direction of the inking roller at the right hand end of Fig. 1, where the inking of the form is completed in the same or in a contrasting color, as may be desired. The carriage 4 is provided with a vertically movable spring-actuated pawl 58 which by the movement of the carriage in the last named direction will engage the ratchet wheel 48 upon the platen-carrying shaft, thus turning the latter a short distance in a reverse direction, and partly backing the paper, thus reducing the margin at the top edge of the sheet when the next impression is made. When the carriage again moves to the left of the machine, as shown in Fig. 1, the spring-actuated pawl 58 will recede from engagement with the ratchet wheel, and will not interfere with the feed movement imparted to the platen by the rack 49 engaging the spur wheel 47.

The printed severed sheet is delivered from the guide plate 40 on to a frame 59 connected with a shaft 60 which is supported for rotation in suitable bearings adjacent to one end of the frame of the machine, said shaft being provided with arms or cranks 61 that are connected by links 62 with reciprocatory slide rods 63 supported in bearings

64 upon the sides of the frame of the machine, said slide rods being pressed by suitably arranged springs 65 in the direction of the delivery end of the machine. The opposite ends of the slide rods are provided with depending arms 66 that lie in the path of the side flanges 5 of the carriage 4 so as to be engaged thereby when the carriage moves away from the delivery end of the machine, which movement, as above stated, results in the severing of that portion of the web of paper which has just received an impression. The delivery frame 59 will be thereby swung to the position indicated in dotted lines in Fig. 1, and the printed sheet will be delivered on to a receiving table or platform 67. When the carriage returns in the direction of the delivery end of the machine, the delivery frame and related parts will be restored to initial position by the action of the springs 65.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains.

The improved machine is simple in construction and may be successfully utilized for various classes of printing, although it is particularly intended and adapted for use in offices and the like where circular form letters are largely used, such letters being capable of being printed with the headings and the bodies of letters in contrasting colors.

The operation of the device is simple, and the improved machine is thoroughly efficient for the purposes for which it is provided.

Having thus described the invention what is claimed as new, is:—

1. In a machine of the character described, a frame having slotted uprights, slides movable vertically in the slots, a roller-carrying shaft journaled in the slides and extending through the latter, a vertically movable cutter having terminal arms, pivotally supported cams having recesses engaging the ends of the roller-carrying shaft and the terminal arms of the cutter, and a type carrier supported for reciprocation beneath the impression roller and having laterally extending flanges, the cams being formed with toes normally gravitating to lie in the path of the flanges of the type carrier.

2. In a machine of the character described, a type carrier supported for reciprocation, a rack associated with said carrier, a vertically movable spring-actuated pawl associated with the carrier, an impression roller supported for movement toward and from the face of the carrier, and a spur wheel and a ratchet wheel associated with

the impression roller for engagement, respectively, with the rack and the pawl associated with the carrier.

3. In a machine of the character described, a type carrier supported for reciprocation, an impression roller, and a cutter supported for reciprocation in a plane approximately at right angles to the face of the carrier, means actuated by the carrier for alternately moving the impression roller and the cutter in opposite directions, paper feeding means including an impact roller associated with the impression roller, means associated with the type carrier for imparting feed movement to the impression roller when the carrier moves in one direction, and means associated with the type carrier for imparting a limited movement in a reverse direction to the impression roller upon the return movement of the carrier.

4. In a machine of the character described, a type carrier supported for reciprocation, pivotally supported cams having toes for normally gravitating in the path of the carrier to be actuated thereby, said cams being provided with recesses and with set screws having followers moving in said recesses, and a roller-carrying shaft supported for reciprocation in a plane approximately at right angles to the face of the type carrier, said shaft being extended into the recesses of the cams to lie in the path of the followers.

5. In a machine of the character described, a frame having slotted uprights, slides supported for vertical movement in the slots and having laterally extending arms, a shaft supported by the slides and

carrying an impression roller, a shaft supported in the laterally extending arms, a plurality of impact rollers upon the last mentioned shaft, springs interposed between the impact rollers, and collars adjustably secured upon the shaft adjacent to the outermost impact rollers, said collars being provided with guide arms curved in the direction of and adjacent to the impression roller.

6. In a machine of the character described, a type carrier supported for reciprocation, means for actuating said type carrier, means for applying ink to a portion of the form supported on said carrier when the latter approaches the limit of its movement in either direction, an impression roller, a cutter supported adjacent to the plane of movement of the type carrier for alternate movement in opposite directions with reference to the face of the carrier, means associated with the impression roller for feeding a web of paper, said means including an impact roller, and means for regulating the pressure of the same, means for guiding the paper web between the impression roller and the cutter, and means actuated by the type carrier for imparting reciprocatory movement in opposite directions to the impression roller and the parts associated therewith and to the cutter.

In testimony whereof I affix my signature in presence of two witnesses.

RALPH DAVIS.

Witnesses:

JAMES W. DOREN,
HARLEY YOUNG.