(No Model.)

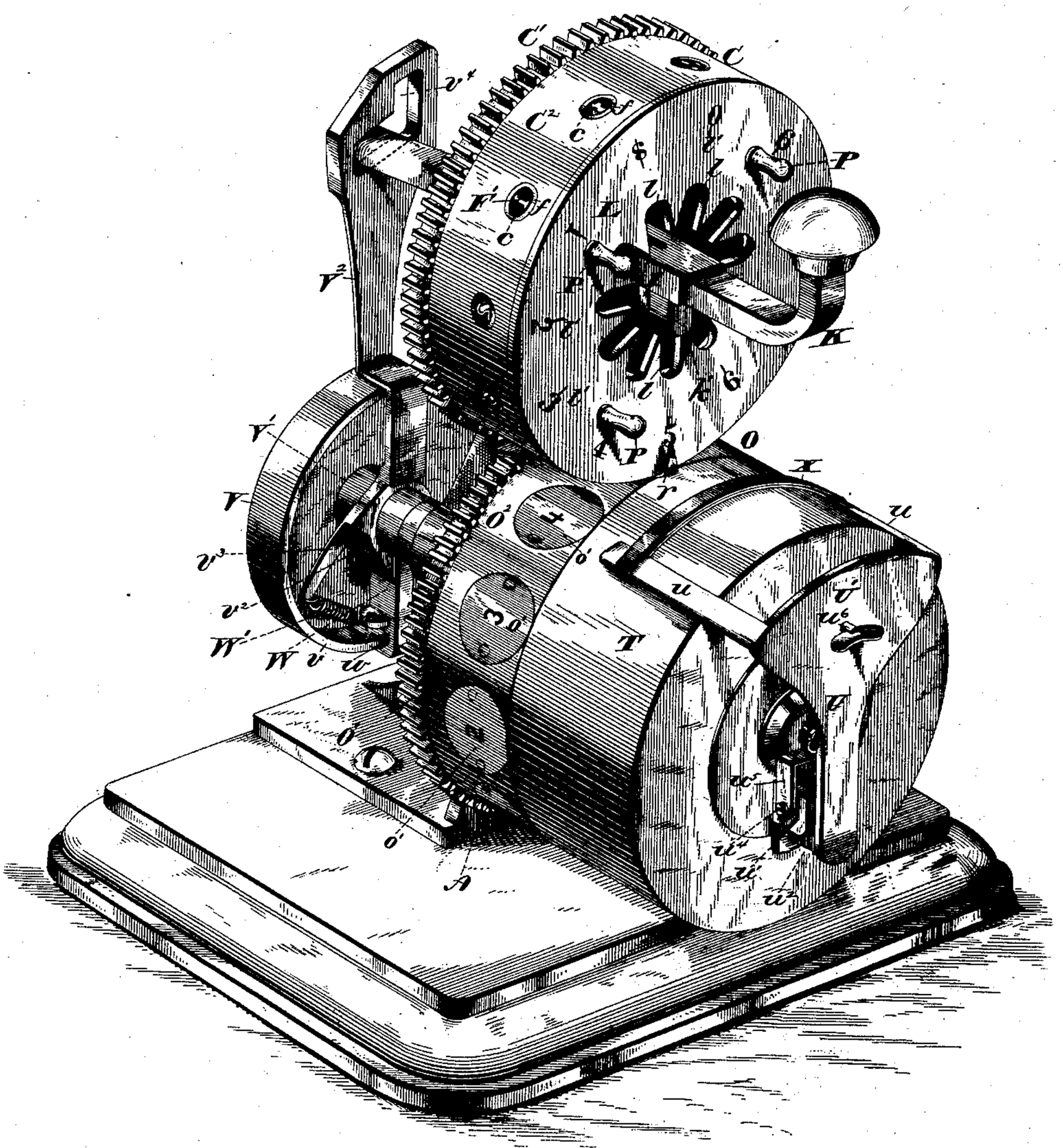
3 Sheets—Sheet 1.

J. T. ALDRICH.

MACHINE FOR PUNCHING CHECKS.

No. 367,691. Patented Aug. 2, 1887.

Fig. 1.



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by Prindle and Russell
his Attorneys

(No Model.) 3 Sheets—Sheet 2.

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MACHINE FOR PUNCHING CHECKS.

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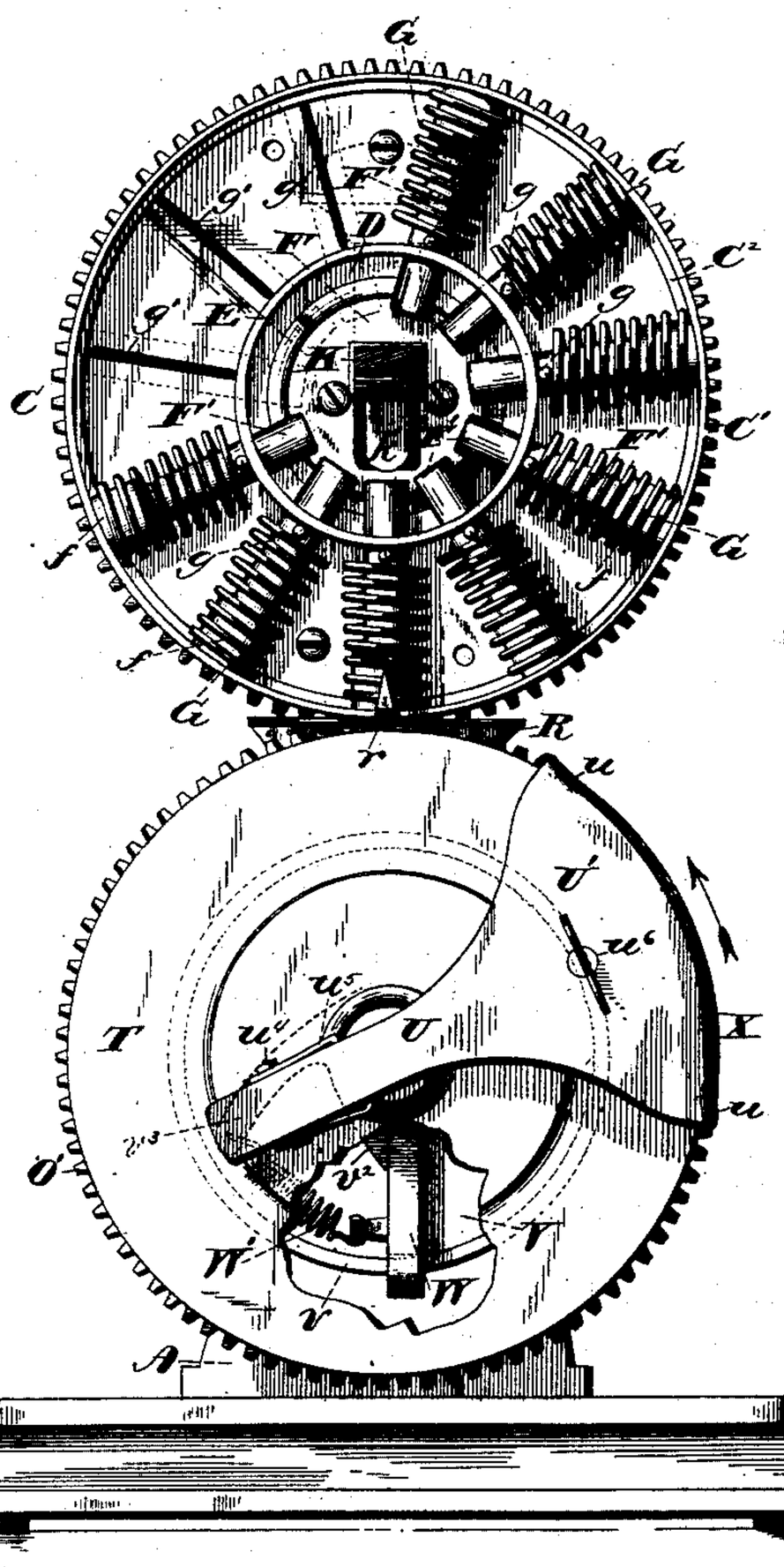
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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MACHINE FOR PUNCHING CHECKS.

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Fig. 3.

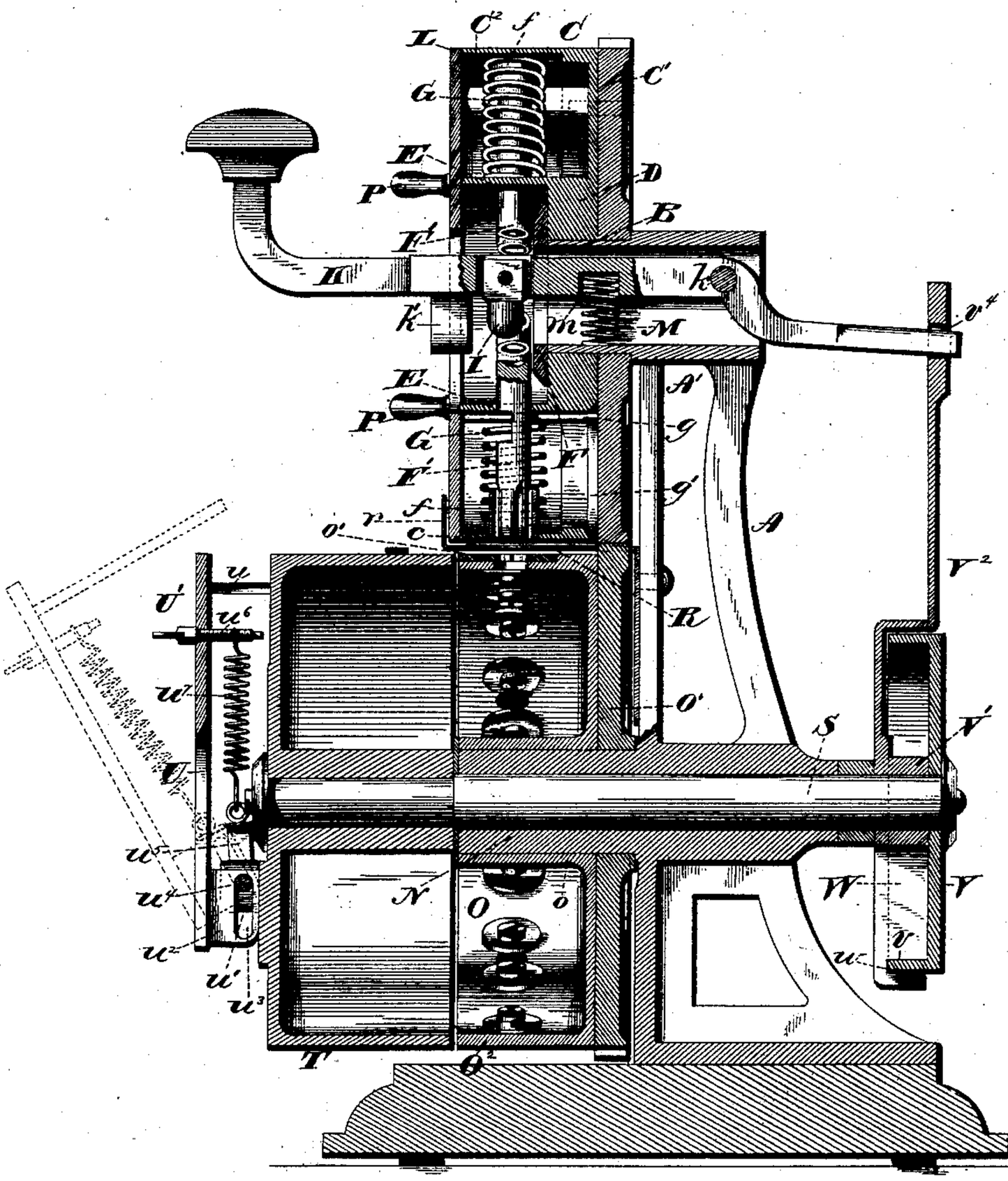
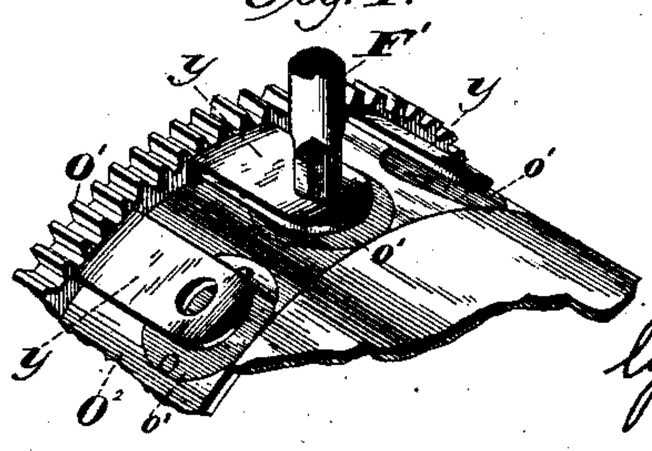


Fig. 4.



Witnesses:
Chas. J. Williamson.
Henry C. Hazard.

Inventor:
James T. Aldrich
by Pindle & Russell
his attorneys

UNITED STATES PATENT OFFICE.

JAMES T. ALDRICH, OF NORWICH, CONNECTICUT.

MACHINE FOR PUNCHING CHECKS.

SPECIFICATION forming part of Letters Patent No. 367,691, dated August 2, 1887.

Application filed March 18, 1886. Serial No. 195,659. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. ALDRICH, of the city of Norwich, in the county of New London, and in the State of Connecticut, have invented certain new and useful Improvements in Machines for Punching Checks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a view in perspective of my improved check-punching machine; Fig. 2, a view in front elevation of the same with the face-plate of the punch-wheel removed; Fig. 3, a vertical sectional view of the machine, and Fig. 4 a detail perspective view of a modified form of die wheel.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improved machine or apparatus for punching numbers or figures on checks; and to this end my invention consists in the machine and the construction, arrangement, and combination of the parts thereof, substantially as hereinafter specified.

In the drawings, A designates the standard or supporting-frame upon which the various operative parts of the machine are supported. At the top of the upright portion A′ of this frame is the forwardly-extending cylindrical stud B, upon which is journaled the punch-carrying wheel C. Such wheel is composed of the gear-wheel C′ and the short cylinder C^2, screwed or otherwise fastened at its rear end to the wheel. If desired, the gear-wheel and cylinder can of course be cast or otherwise made in one piece. Within this cylinder is the central hub-like portion, D, and around this the concentric forwardly-extending flange E, for a purpose to be hereinafter described.

To the forward end of the journal-stud B is fastened, preferably by means of screws, the plate F, engaging the hub B, so as to hold the combined cylinder and gear-wheel in place on the stud.

The cylindrical portion C^2 of the punch-wheel C is provided with the series of openings *c c* for permitting the outward thrust of the series of punches F′ F′, radially arranged within the cylinder and guided at their outer ends in the short hollow studs *f f*, surrounding and forming inward continuations of the openings *c c*. The inner ends of the punches project through and are guided in openings in the flange E. The series of punches, eleven in number, are, as usual, adapted to punch, respectively, a cipher, a dollar-mark, and the unit figures from one to nine, inclusive. A spiral spring, G, surrounds each punch and bears at its outer end against the inner face of cylinder C′, and at its inner end engages the pin *g*, passing through the punch. With this construction each punch is normally kept pressed inward by its spring, so that the pin *g* engages the flange E, and the outer end of the punch is a little below the periphery of the cylinder. To keep the punches from possibility of turning, each pin *g* extends rearward and engages a radial groove, *g′*, in the face of the cylinder end. With this construction, while the punches are free to be moved in and out, they cannot be rotated axially, so as to get their figure-cutting outer ends out of proper relation to their appropriate dies, to be described hereinafter. The inner ends of the punches are cupped or concaved, as shown, for the proper engagement of the short plunger I, pivoted to lever K. Such lever passes axially through the journal-stud B on the frame, and is pivoted thereto at *k*. The opening through the stud is formed so as to allow suitable vertical movement of the lever on its pivot to bring the plunger I into engagement with a punch end and force the punch downward a sufficient distance.

Obviously any one of the punches desired can be brought by rotation of the punch-wheel into position below plunger I, to be properly operated thereby when the lever K is depressed.

To insure the bringing of the punch into exactly the right position, I have provided the punch-carrying wheel with a front face-plate, L, having a central opening through which the lever K passes, and around such opening provided with the series of radial notches *l l l*, eleven in number, adapted to be engaged by the downwardly-extending lug *k′* on the lever when said lever is depressed.

Each of said notches is in line with one of the punches. The lower end of lug *k'* is preferably rounded or made inclined on both sides, so as to be wedge-shaped. With this construction, if the punch-carrying wheel should not be turned so as to bring the punch exactly in line with the operating-plunger on the lever or exactly in the plane of the movement of the lever, the lug engaging one side or the other of the notch in the face-plate will turn such plate, and consequently the punch-wheel, so as to bring the notch and the punch into exactly the proper position.

The lever is so pivoted as to have some motion before the plunger strikes the punch, and it is during such first part of the movement of the lever that the lug will act upon the notch in the face-plate to properly position the punch, as described above, if the punch-wheel should not be turned just right to bring the punch into its proper operative position.

To keep the lever K normally elevated with its short plunger I above the path of the inner ends of the punches, I provide the spring M, situated within the passage through the journal stud B and engaging a recess, *m*, in the lever.

If desired, instead of making each radial notch *l* with its sides substantially parallel, I contemplate making the sides of the slots near their inner ends flaring toward the center of the plate to facilitate the proper turning of the face-plate and wheel by the lug, if the wheel should not be turned exactly right before the lever is operated. The outer portions of the notches *ll* are preferably to have straight and parallel sides, as shown, so that the lug *k'* will engage both sides of any notch and hold the plate and wheel stationary while the lever descends and forces the punch downward.

On the face-plate is a series of division or index marks, *l' l' l'*, corresponding with the central lines of the notches *l l*, and each of these marks is provided with a figure marked on the plate indicating which one of the punches is in line with or in the same plane with such mark.

On the upright A' of the frame is a second journal-stud, N, vertically below stud B, already described. Such stud N is cylindrical and hollow, and upon it is journaled the rotary die, carrying wheel O, preferably made up, like the punch-wheel, of two parts—a gear-wheel, O', and a cylinder, O^2—screwed or otherwise fastened together. As suggested with reference to the punch-wheel, this die-wheel can, if desired, be made in one-piece. The cylindrical portion O^2 of this wheel has the hub *o* surrounding and journaled on the stud N. The gear-teeth on the die-wheel mesh, as shown, with those on the punch-wheel, so that both must rotate together and an equal amount.

In recesses in the cylindrical portion O^2 of the die-wheel are placed the dies *o' o' o'*, corresponding in number and relative position with the outer ends of the punches carried by the punch-wheel. As the two wheels are geared to rotate together an equal amount, the dies are placed the same distance apart as the punch-holes in the punch-wheel.

To cause the proper corresponding die to be brought up into position below the punch to be operated, the arrangement of the dies for the different figures and dollar-mark is the reverse of that of the dies. As the wheels rotate in opposite directions as the punch-wheel is turned by grasping it with the hand or taking hold of one or more of the handle-studs P P on the face-plate L, and the punches are brought successively into operative position below the lever, the corresponding dies will also be brought successively below the lever into position to act with their respective punches.

The dies can be attached or fastened to the die-wheel in any desired way. In the drawings I show them fastened by means of washers engaging the inner face of the cylindrical portion of the wheel and passing through the cylinder-wall into the die-plates.

To prevent the check or other paper from being raised or lifted as the punch rises, I provide the stripper-plate R, extending between the cylindrical portion of the punch and die-wheels and in close proximity to the periphery of the former. Such plate has an opening for the punch to pass down through, and is provided with an upturned point, *r*, extending up in front of the face-plate, so as to act as an index or pointer in connection with the numbered marks on the plate. It will then indicate not only when a punch is brought into operative position, but what punch is in such position. This plate R is attached to the frame-upright A', and, extending in between the punch and die wheels, is widened and slotted to permit the gear-teeth of such wheels to properly mesh with each other.

Within the journal-stud N and an extended bearing in the frame-upright is journaled the shaft S, carrying on its forward end the rotary cylinder T, constituting a revolving feed-table or carrier for the check to be punched. This feed-cylinder is of substantially the same diameter as the die-wheel, so that as a check is held thereon with the portion to be punched projecting in between the die and punch-wheels and below the stripper-plate such portion will lie smoothly upon the surface of the die-wheel, being bent or curved to correspond with the curvature of such surface, and as the feed-wheel is revolved will be fed evenly and smoothly along.

To properly and conveniently hold the check upon the feed-wheel, I provide the holder U, having the two arms *u u*, adapted to rest flat upon the peripheral surface of the wheel or upon a check placed thereon. These arms, which, when down in holding position, are substantially parallel with the axis of the cylinder forming the feed-wheel, are a distance apart somewhat greater than the space probably to

be taken up by the figures to be punched in the check. These arms are attached to or formed in one piece with the plate U′.

On the front face or end of the feed-wheel cylinder are the two lugs or ears u' u', between which fits and plays the slotted lug u^2 on the plate U′. Through such ears and through slot u^3 in the lug passes the pin u^4. Pivoted on this pin outside of the ears is the loop or short yoke u^5, and connecting this yoke with a stud or screw, u^6, on the plate U′ is the spring u^7, tending always to pull the stud u^6 toward the ears, and so move the plate U′ that the inner end of the slot in its lug is in contact with the stud u^6. The end of the lug then projects beyond the pivot-pin, so as to lock the holder from swinging by engaging the side of the feed-wheel, as shown best in Fig. 3 of the drawings.

In order to swing the holding-arms u u up and back from the surface of the feed wheel or cylinder, the plate U′ is drawn outward longitudinally against the stress of the spring until the outer end of the slot in the lug u^2 engages the pivot-pin u^4. The corner of the lug is so rounded that said lug can then be swung outward on the pin as a pivot. If, now, a check be placed on top of the feed cylinder or wheel and the holder be swung inward to bring the holding-arms u u over the check, the spring u^7 will draw the holder down, so as to cause the arms u u to bear firmly and squarely upon the check, so as to clamp it closely to the surface of the feed-wheel. As the holder is positively locked against being swung away from the feed-wheel until it has been raised a certain distance, as already herein described, the power of the spring is simply exerted to press the arms u u down upon the check.

To rotate the feed-wheel intermittingly, so as to properly feed the check along to leave the desired spaces between the figures punched, I provide means whereby the feed-wheel will be driven from the operating-lever K during the first part of each downstroke thereof and before the punch is struck and operated by the plunger I on the lever. On the rear end of shaft S is fixed the wheel V, dished or having the annular flange v around its periphery. Journaled on the shaft is the pivot sleeve or hub V′ of the lever V². On the lower side of this sleeve is the projection v^2, having its front face substantially in line with the center of motion of the sleeve. From the rear side of the sleeve the rigid arm v^3 extends backward and downward.

Resting against the forward or front face of projection v^2 is the upper end of the bar W, which has near its lower edge the recess or notch w, to loosely receive the flange v of the wheel V, as shown in the drawings. This notch or recess has square edges, in order to grip the flange when the bar is swung out of its normal position parallel with the front face of the projection v^2 and so parallel to a radius of the wheel V. A spring, W′, attached to the arm v^3 and to the lower portion of bar W on its rear side, serves to keep the bar normally pressed with the rear side of its upper end squarely against the forward face of projection v^2, as shown in Fig. 2. The upper end of the bar then rests against the pivot sleeve or hub V′ of the lever V², and the forward edge of the upper side of the notch or recess w is in contact with the inner side of the flange v. With this construction, if the upper end of the lever be swung to the left, the projection v^2 on the lever-hub will bear the upper end of the bar W forward until the sides of recess w therein bind against the sides of the flange v. Further movement of the lever will then move the bar and flange v together toward the right, thus causing the wheel V, and consequently the feed-wheel, to rotate in the direction indicated by the arrow in Fig. 2. Upon swinging the lever in the other direction the spring W′ returns the bar W to its original normal position, the notch slipping over the flange on wheel V as the bar swings back. The upper end of the lever V² is provided with the slot v^4, inclined upward at a slight angle from its left-hand side or end and then turned and extending upward. The rear end of lever K engages and plays in this slot and is preferably inclined on its upper side, as shown, so as to act best in connection with the inclined upper side of the slot v^4. When this rear end of the lever K is depressed, as it normally is by the action of the spring M upon the lever, it bears upon the inclined lower side of slot v^4, and consequently throws and holds lever V² normally in the position shown in Fig. 1. If, now, the lever K be depressed to actuate a punch, as hereinbefore described, during the first part of its movement and before the punch is actuated, the rear end of the lever, bearing against the inclined upper edge of the inclined portion of slot v^4, will throw the upper end of lever V² over to the left, so as to turn the feed-wheel a sufficient distance through the friction-pawl mechanism described above. By this movement of lever V² the upright portion of the slot will be brought above the rear end of lever K, so that such end is free to swing up vertically to allow the punch-actuating end to descend and force the punch downward.

Obviously, instead of the form of connection between the feed-lever and the feed-wheel shaft shown and described, any of the well-known friction-clutch or ratchet-and-pawl mechanisms can be used for the same purpose without departure from my invention.

With the feed-lever slotted and engaging the end of lever K, as shown and described, obviously there can be no failure in the automatic feed, and the motion of the feed-wheel to feed the check along properly must be completed before a punch is operated, because the rear end of the lever K cannot rise sufficiently to let the plunger on the forward part of the lever strike and actuate the punch until

the vertical part of slot v^4 comes over such rear end of the lever, and at that time the swing of the feed-lever is completed.

The arms *u u* of the check-holder I have found to be sufficient to hold the check down smoothly and firmly upon the feed-wheel periphery. Between them I contemplate, however, when desired, stretching a flexible strip, X, preferably of elastic material. This strip pressing upon the check between the arms supplements their action and aids in keeping the portion of the check between the arms smoothly down upon the feed-wheel surface. An ordinary elastic band placed over the arms, as shown in Fig. 1, can be used to advantage. Where the strip is not elastic, it should have sufficient length between the arms to allow the arms to bear firmly upon the check, while being short enough to also bear thereon throughout the space between the arms.

If desired, the die-wheel can, as shown in Fig. 4, be provided with a series of plates or shields, *y y*, extending forward over the dies, each one of such plates being provided with an opening, through which the punch is to pass before reaching the die. The punch engaging the sides of the opening will then insure the bringing of the die into exact position below the punch end.

In case of defect in the gear-teeth or play between the teeth on the punch and die-wheels arising from wear or inaccuracy in their make, these guard-plates will always correct the position of the die before the punch reaches it. I find, however, with my machine made as already hereinbefore described the meshing gears of the punch and die-wheels can easily be so made that there is no need of these guard-plates with their guiding or centering openings. Where such plates are used, the cylindrical portion of the die-wheel in which the dies are seated is made of less diameter in order that the check can be easily introduced under such plates and between them and the die-carrying surface.

If desired, I contemplate providing the feed-cylinder with a suitably-closed opening, through which the small bits of paper punched from the checks can be removed. As, however, such bits or pieces are very small, no clearing out would be necessary for an indefinitely long period, as the accumulation of bits of paper within the die-wheel and feed-wheel could obviously interfere in no way with the working of my apparatus.

The operation of my machine is, briefly, as follows: The holder or clamp is raised and then swung back. The check to be punched is then placed on the feed-wheel with the part to be punched between the punch and die-wheels, and the holder is swung up again to bring its holding-arms over the feed-wheel surface. The spring w^1 then draws the holder quickly downward, as described hereinbefore, so that the holder-arms press upon and clamp the check firmly against the feed-wheel periphery. The punch-wheel is then rotated to bring the figure on the face-plate which corresponds with the figure which is to be punched around to the index point. The punch-actuating lever is then depressed and the figure is punched in the check. The punch-wheel is then rotated again to bring the proper punch for the next desired figure into operative position. As the actuating-lever is depressed, its rear end, rising and engaging the inclined portion of the slot in the pawl-lever, throws such lever over a certain distance, thus revolving the feed-wheel and feeding the check along before the punch is operated. The feed is thus made automatic and positive, so that there is no danger of punching the figures too near together, and is completed before the action of the punch, so that there is no danger of binding or tearing. Obviously the feed-wheel is free to be turned forward by the hand as desired in bringing the requisite part of the check below the punch. The pawl mechanism described admits such turning freely. The punch-wheel and consequently the die-wheel with it are free to be rotated in either direction, except when the actuating-lever is depressed to actuate a punch, when both wheels are locked in position by the engagement of the lug or stud on the lever with one of the radial notches in the face-plate.

Obviously my punching-machine constructed, arranged, and operating as shown and described can be used to advantage for punching other things besides checks, the punches and dies being changed or altered, as desired, to suit the purpose for which the machine is to be used.

Having thus described my invention, what I claim is—

1. In a check-punching machine, a rotary wheel, in combination with the series of radially-movable punches carried thereby, adapted to punch different numbers or marks, and the movable supporting-surface for the check being punched, provided with the series of different openings to act in conjunction with the punch ends, substantially as and for the purpose specified.

2. In a check-punching machine, in combination with the punch-carrying wheel and the series of radially-arranged punches carried thereby, the pivoted lever extending axially through the wheel and adapted to engage and operate the punches as they are successively brought below it by the revolution of the wheel.

3. In a check-punching machine, in combination with the punch-carrying wheel and the series of radially-arranged punches thereon, springs for holding the punches normally retracted within the wheel, and a lever passing through the center of the wheel within the circle of travel of the inner ends of the punches as the wheel revolves, provided with means for engaging and forcing outward any one of the punches brought into line with it by the rota-

tion of the wheel, substantially as and for the purpose described.

4. In combination with the rotary punch-wheel and the series of radially-arranged punches carried thereby, a plate carried by the wheel, provided with a central opening and with the radial notches around such opening, the punch-actuating lever extending axially through the wheel, and the opening in the plate, provided with a lug or projection adapted to engage one of such notches when the lever is moved to actuate one of the punches, substantially as and for the purpose set forth.

5. In combination with the punch-wheel carrying the series of radially-arranged punches, the face-plate provided with a central opening and with radial notches around such opening corresponding in location with the punches on the wheel, the lever extending through the wheel and plate, provided with means for engaging any one of the punches brought below it by rotation of the wheel, and the projection to engage the notch corresponding with such punch, substantially as and for the purpose described.

6. In combination with the rotary punch-carrying wheel and a plate carried thereby, provided with radial notches, the punch-operating lever, and a projection on the same to engage the notches in the plate, having its engaging end rounded or inclined on opposite sides, substantially as and for the purpose shown.

7. In a check-punching machine, in combination with a suitable frame and the journal-stud thereon, the rotary punch-wheel, the series of radial punches carried thereby, the face-plate provided with the series of radial notches, the lever pivoted to the journal-stud, provided with the punch-actuating piece or plunger, and the notch-engaging lug, substantially as and for the purpose set forth.

8. In combination with the rotary punch-wheel carrying the series of radially-movable punches, the rotary die-wheel geared thereto and carrying the series of dies corresponding to the punches, substantially as and for the purpose described.

9. In combination with the rotary punch-wheel carrying the series of punches, and the die-wheel geared to the punch-wheel and carrying the series of corresponding dies, the lever adapted to actuate each punch as it is brought into line between the axes of rotation of the two wheels, substantially as and for the purpose specified.

10. In a machine for punching checks, in combination with rotary feed table or wheel and the punch-operating lever, connecting mechanism, substantially as described, between the lever and the feed-table, whereby the latter is moved during the first part of the motion of the lever before the punch is reached and actuated, substantially as and for the purpose set forth.

11. In combination with the feed-clutch lever provided with the slot having one portion inclined upward at an angle and its other portion vertical, the punch-actuating lever engaging such slot, substantially as and for the purpose specified.

12. In combination with the punch-actuating lever of a punching-machine, the feed-lever provided with the slot, of which one portion extends in line with the motion of the punch-lever and the other portion is at an angle thereto, the rotary feed-wheel, and connecting mechanism between such wheel and the feed-lever, substantially as and for the purpose shown.

13. In a check-punching machine, in combination with the punching mechanism, the movable feed-table and a clamp to hold the check down thereon, substantially as and for the purpose described.

14. In combination with the rotary feed-table, the clamp or holder provided with the two arms adapted to press down upon the table at different points with relation to the direction of travel of the table, substantially as and for the purpose shown.

15. In a check-punching machine, in combination with the die-wheel, the rotary feed-table alongside the same, and a holder provided with two arms adapted to engage a check at different points and hold it smoothly down upon the table, substantially as and for the purpose described.

16. In combination with the rotary cylindrical feed-table, the holder consisting of the plate or bar having the holding-arms and the slotted lug, the ears on the side of the feed-table, the pin passing through such ears and the slot in said lug, and the spring adapted to draw the holder so as to bring its arms down upon the table, substantially as and for the purpose set forth.

17. In a check-punching machine in combination with the die-wheel and the punch-wheel geared therewith, provided with the face-plate marked to indicate the positions of the different punches carried by the wheel, the stripper extending between the wheels, and at its forward end turned up to form an index-point, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of February, 1886.

JAMES T. ALDRICH.

Witnesses:
LAWRENCE COX,
SAML. N. SHREVE.