(No Model.)

4 Sheets—Sheet 1.

J. N. WILLIAMS.

CHECK PUNCHING MACHINE.

No. 298,648. Patented May 13, 1884.

FIG. I.

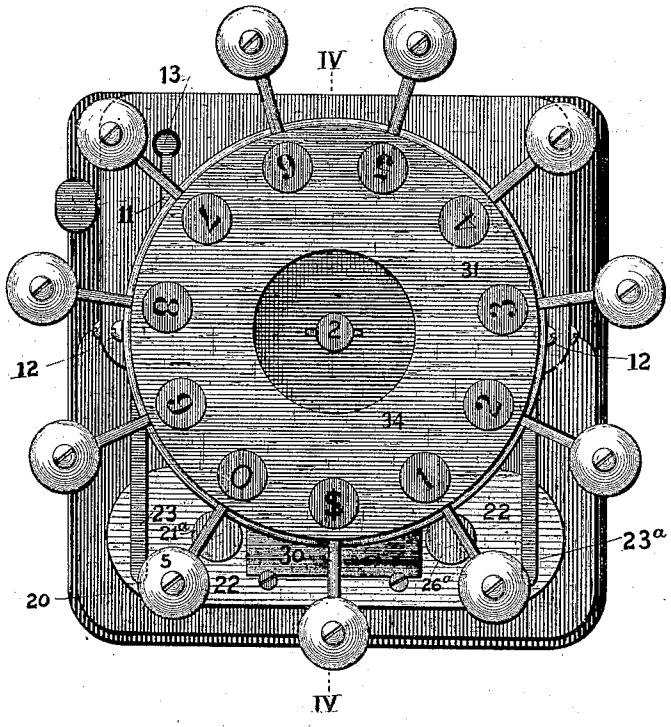
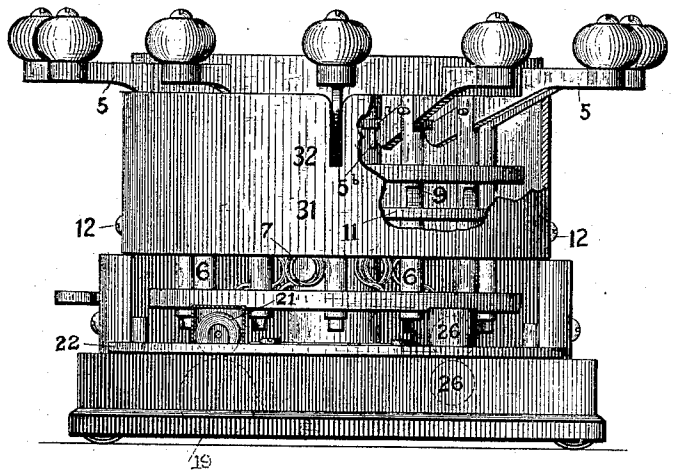


FIG. II.



ATTEST

Geo. T. Smallwood.

J. Henry Kaiser.

INVENTOR.

John N. Williams

By Knight Bros

Attys

(No Model.) 4 Sheets—Sheet 2.

J. N. WILLIAMS.

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FIG. III.

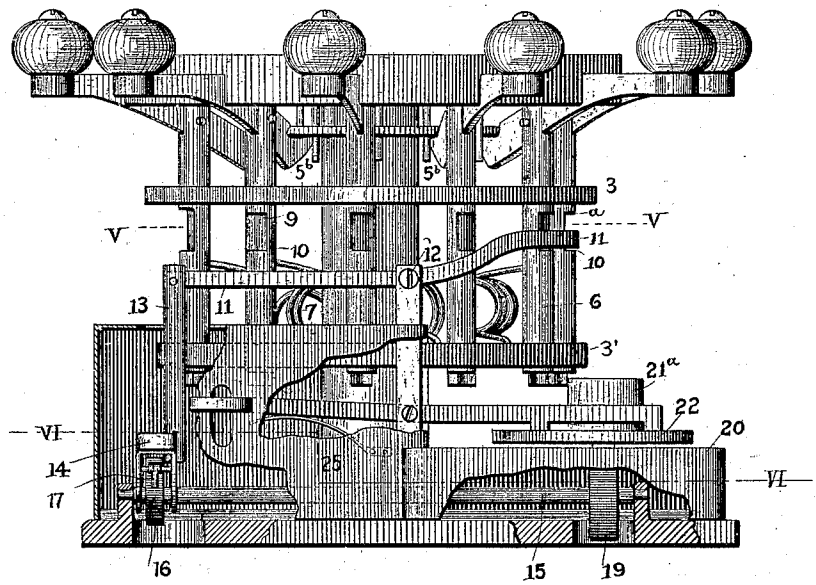
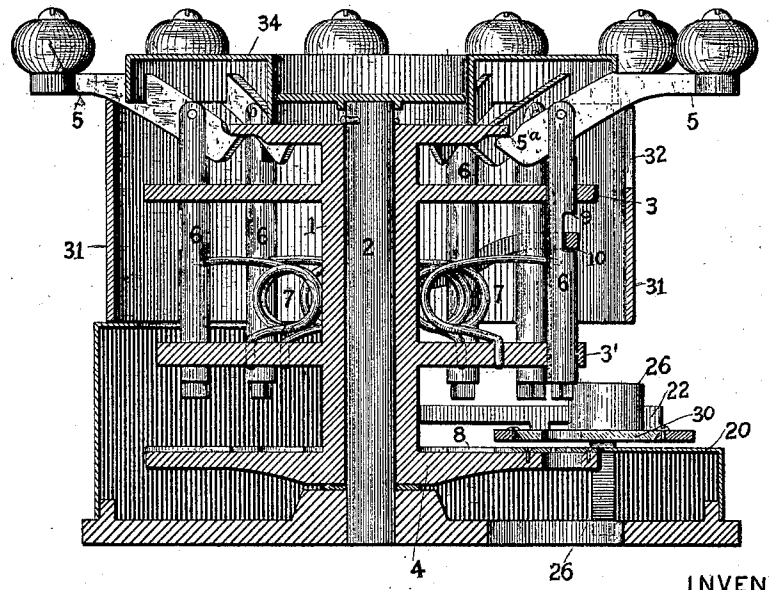


FIG. IV.



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attys

(No Model.)

4 Sheets—Sheet 3.

J. N. WILLIAMS.

CHECK PUNCHING MACHINE.

No. 298,648. Patented May 13, 1884.

FIG. V.

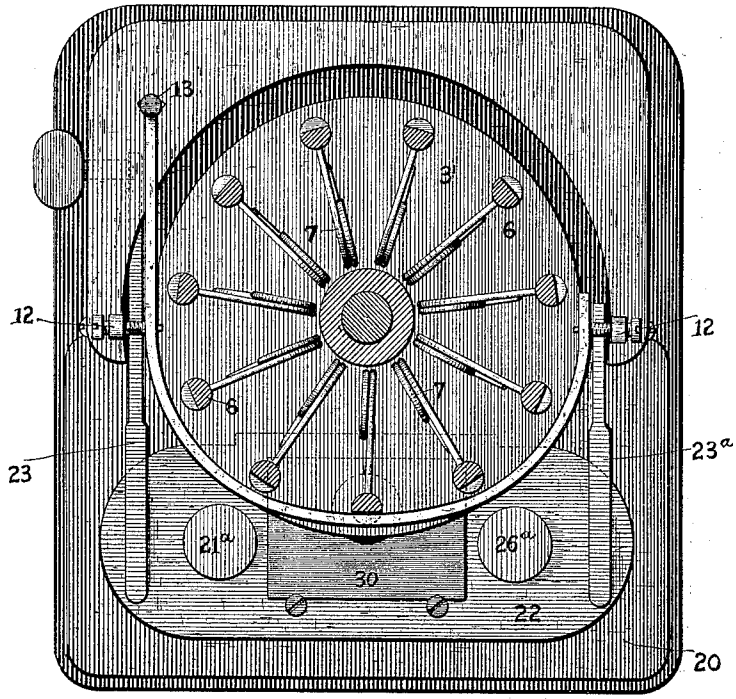
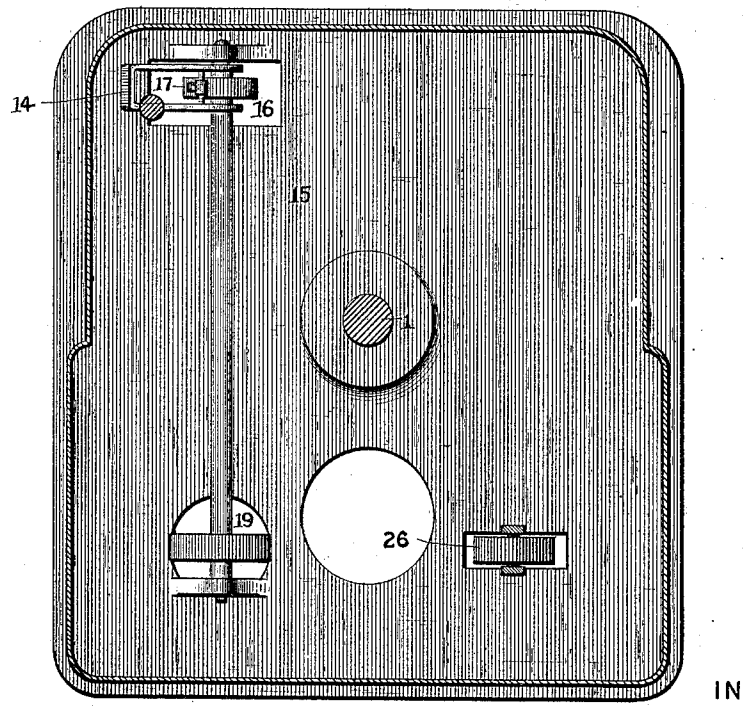


FIG. VI.



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(No Model.) 4 Sheets—Sheet 4.

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FIG. VII.

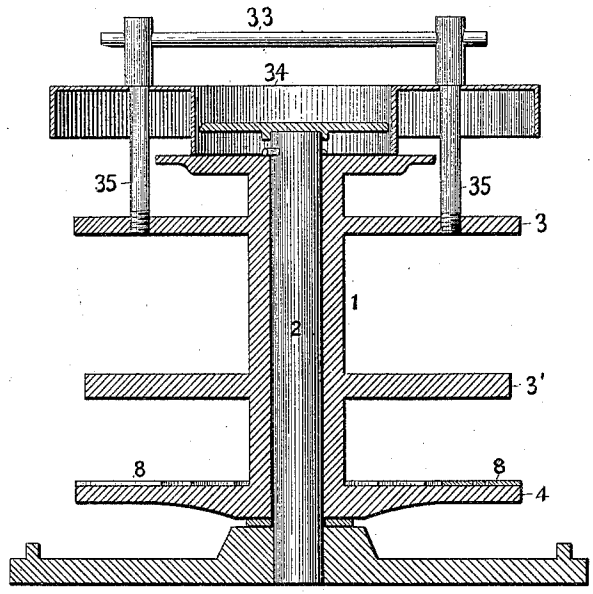
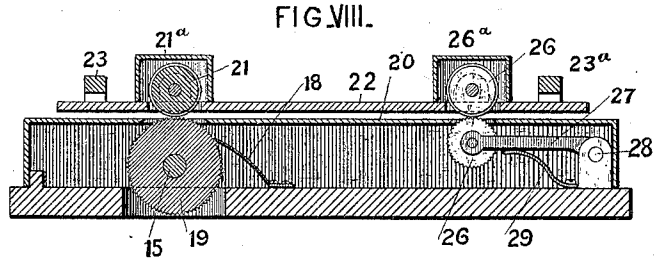


FIG. VIII.



ATTEST

Jos. T. Smallwood,

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John N. Williams

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UNITED STATES PATENT OFFICE.

JOHN N. WILLIAMS, OF ST. PAUL, MINNESOTA.

CHECK-PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 298,648, dated May 13, 1884.

Application filed September 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. WILLIAMS, a citizen of the United States, residing at St. Paul, in the State of Minnesota, have invented certain new and useful Improvements in Check-Punching Machines, of which the following is a specification.

The object of my invention is to afford greater security to the drawers of checks, drafts, receipts, money-orders, and similar vouchers; and to this end my invention relates to a machine for cutting the amount or face-value of the bill or voucher out of the body thereof, so that the amount cannot be raised or otherwise altered.

My invention consists of a central hub journaled on a vertical axis, and having a number of annular flanges or collars formed integrally therewith or attached thereto. To the upper part of the hub are fulcrumed the ends of the operating-levers, one of which is provided for each character to be punched out. To each of these horizontal operating-levers is pivoted the upper end of a downwardly-projecting type bar or punch which passes through guide-openings in the two upper flanges. These type-bars are pivoted to the operating-levers at such distances from their fulcrum-points as will allow said type-bars the necessary vertical play. Each type-bar is returned to its upper or normal position by a spring of any suitable form. The lowermost flange of the hub carries female dies or counters corresponding with the male characters on the faces of the bars immediately over them. Each type-bar is provided on its outer face with two shoulders—one above and one below an oscillating feed-lever with which the type-bar being operated upon engages for the purpose of imparting motion to the feed. The lower shoulders are all placed at the same distance from the end of the type-bars, so that each of the said bars, when elevated by its spring, will carry the feed-lever to the same normal position. The upper shoulders are formed at different distances from the end of the bar, so as to impart a greater or less motion to the feed, according to the width of the character operated upon, as will be hereinafter more fully explained. The feed-lever encircles the punch-carriage at the front part of the machine, and is journaled on pivots at diametrically-opposite points of the circular case. One end of the lever projects beyond the fulcrum-point, and is loosely connected to a vertically-moving staff, the lower end of which is connected with a link whose arms straddle a smooth or serrated wheel and loosely surround a horizontal shaft, to which said wheel is keyed. Between the arms of this link is a cam or otherwise formed pawl, which rides freely over the face of the wheel when raised, and which engages therewith when depressed. This imparts rotation to the shaft, the other end of which carries a serrated feed-roller whose upper periphery works through a slot in a bed-plate or table upon which the check or other paper is placed. Any retrograde motion of the feed-roller is prevented by a spring-dog. This lower feed-roller is grooved or serrated on lines parallel with its axis, and works against an idle-roller mounted on and having its lower periphery working through an opening in the holding-plate under which the paper passes. This upper roller is grooved or serrated circumferentially, so that the two rollers working together effectually hold the paper between them from slipping, while not in any way injuring or defacing it. A second pair of grooved or serrated idle guide-rollers works on the other side of the machine, to assist in holding the paper. The special advantage of this arrangement of a feed-table upon which the check is placed, and a hinged feeding-plate above it, with the two pair of guide-rollers, between which and by which the check is guided and moved or fed, is the opportunity afforded of placing any portion of the check under the operating-punch, thereby permitting the use of any form of check or draft as now printed, the holding-plate being raised by its lever. A stripper of glass enables the operator to readily place the paper so that the perforated figures will not interfere with any printed or written matter.

In punches as heretofore constructed there has been an equal amount of feed given to the paper each time a character is used; hence when two narrow characters come together there is enough space left between them for the insertion of another narrow character. To overcome this important objection I locate such narrow characters—"1," for example—to one side of the center of the type-bar, so that

it will strike near to the character last struck. Then, in order to reduce the distance that the paper is fed through the machine when the character is raised, I locate the upper shoulder on the type-bar nearer to the top thereof, so that a less motion will be imparted to the feed-lever. In this way I may also overcome the difficulty of crowding larger characters by locating the character to the other side of the center of the type-bar and imparting a greater motion to the feed-lever; but in practice it is found expedient to make all the characters except 1, uniform in width.

In order that my invention may be more fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a plan of the machine with a portion of the cap removed. Fig. II is a front elevation with part of the casing removed. Fig. III is a side elevation with the casing partly broken away, exposing the interior mechanism. Fig. IV is a vertical section on the line IV IV, Fig. I. Fig. V is a horizontal sectional view of the instrument on the line V V, Fig. III. Fig. VI is a horizontal sectional view on the line VI VI, Fig. III. Fig. VII is a detail sectional view of the supporting-handle. Fig. VIII is a detail sectional view of the feed and guide rollers.

1 represents the hub of the machine, which is journaled on a vertical stud, 2, and is formed integrally with or has rigidly attached thereto three annular metallic flanges or disks, 3 3′ 4. The punch-operating levers 5 are fulcrumed beneath the upper flange, 5^a, of the hub, between pins 5^b, in such manner as to have freedom of endwise movement, and project radially outward therefrom beyond the edge of the casing. One of the levers 5 is provided for each character to be punched. Pivoted to each of the operating-levers 5, at a distance from its fulcrum sufficient to afford the necessary movement, is the upper end of a type-bar, 6, which is guided in a vertical path by the two upper flanges, 3 3′, of the hub, through which it passes. Each type-bar is provided with an independent spring, 7, of any desired form for returning it to its normal or upper position after the operating-lever has been depressed and liberated. This spring is preferably of the form shown, and consists of a coil-spring placed in a vertical position, and having one end securely anchored to the flange 3′ or other stationary part of the hub, and the other end connected to the type-bar. The lower annular flange, 4, has secured to it the female dies, each of which is preferably formed in a separate metallic plate, 8, screwed or otherwise secured to the flange 4. Set-screws are, however, preferably employed for convenience of adjustment. All the flanges being formed integrally with the hub, they will of course rotate in unison. Each type-bar is provided with a pair of lugs or shoulders, 9 10, respectively above and below a feed-lever, 11, common to all the punches. These shoulders may be formed in any desirable or well-known manner, but are preferably made by cutting a groove of the requisite length in the outer edge of the type-bar. The upper shoulders, 9, are placed at different distances from the ends of the bars, so that they will impart a greater or less motion to the feed-lever, according to the desired amount of space between characters, while the lower shoulders, 10, are all located in the same positions relatively, so that each bar will return the feed-lever to the same normal height. The distance between the shoulders 9 10 is made such that the punch will have well cleared the paper in rising before the feed-lever 11, being struck by the shoulder 10, shifts the paper. The lever 11 encircles the front of the type-reel, and is fulcrumed at diametrically-opposite points 12 12 on the stationary frame. One end of this lever projects beyond the fulcrum-point 12, and is pivoted to the upper end of a vertical staff, 13, the lower end of which is loosely pivoted to a link, 14, the arms of which loosely surround a horizontal shaft, 15, on each side of a wheel, 16, which is keyed thereto. Between the arms of this link 14 a cam or other formed pawl, 17, is placed, which rides freely over the face of the wheel 16 when the free end of the link is raised, but which engages therewith when it is depressed, thus causing the shaft 15 to rotate. I preferably employ in this place a friction or silent ratchet, in which a smooth-faced wheel, 16, is arranged to be turned by an eccentric-pawl, 17, hung from the link 14, an advantage of such a clutch mechanism being that the wheel may be seized at any point, thus enabling a more accurate graduation of the distance of feed than is possible with a ratchet-wheel. Any retrograde motion of the shaft 15 is prevented by a spring-dog, 18, which is here shown engaging with that side of the feed-roller 19, opposite the pawl 17. It is evident, however, that instead of bearing on the feed-roller 19, such a pawl may be made to engage with the ratchet-roller 16 with equal facility.

19 is the feed-roller, which is mounted on the forward end of the shaft 15. Its upper periphery works through a slot in the feed-table 20 and against the under periphery of an idle-roller, 21, mounted in bearings on a paper-holding plate, 22. This plate is provided with arms 23 23^a, which are pivoted to the sides of the casing. One of these arms, 23, projects beyond the pivot-point, and has its end bent outward to pass through the casing, on the outside of which it is provided with a thumb-piece for operating it.

25, Fig. III, is a spring, the upper end of which engages under the end of arm 23, serving to elevate it, and thus depress the holding-plate 22, between whose rollers and those in the feed-table the paper is clamped and fed.

26 26 are a pair of idle-rollers, the upper one being formed and mounted exactly in the same manner as is the roller 21, and the under one mounted in a yoke, 27, fulcrumed at

28 to a lug on the under side of the feed-table or upon the base of the machine. A spring, 29, is placed under the free end of this yoke for holding the roller upward against the paper as it moves under the roller above, the pressure between the two being just sufficient to guide the paper. The lower feed and guide rollers are grooved or corrugated in lines parallel with their axles, and the upper guide-rollers are grooved circumferentially, so that they will bite the paper and effectually prevent its slipping, while not in any way injuring the body thereof.

Caps 21ª 26ª may be screwed down over the upper idle-rollers, 21 26, to protect them from dust and hide them from sight.

30 is a glass plate set in the holding-plate 22, and provided with a hole, through which the punches pass. This plate 30 serves the purpose of a stripper, and as it constitutes a part of the holding-plate it operates therewith without separate manipulation. It is made of glass, to enable the operator to properly adjust the paper.

The cylindrical casing 31 is formed on the front with a notch, 32, which permits the depression of either of the operating-levers, and also serves to guide it in its descent and hold the punch with which it is connected accurately in the proper position while cutting. The downward movement of any of the levers except that for the time being over the notch 32 is prevented by the circular rim 31.

33 is a handle by means of which the machine may be lifted or carried.

The top of the machine is covered with a cap, 34, which revolves with the punch-reel, and bears raised characters opposite the levers 5, corresponding with and indicating the position of the characters on the respective punches and counters. Bolts 35 on the ends of the handle 33 pass through the cap 34, and are fixed to the flange 3. They are provided with a shoulder above the cap, and are thus adapted to hold the cap firmly down on the upper flange, 5ª, of the hub. These bolts serve the double purpose of holding on the cap and connecting the handle 33 to the machine.

My machine affords great facility in operation by the direct manipulation of levers connected with the respective punches—one to each. The operator, after using one punch, imparts a sufficient throw to the reel to bring to his hand the next punch he may wish to use, and the whole operation is thus performed with great rapidity.

It is manifest that radial arms may be substituted for the annular plates 3 and 3′, for guiding the punches, without departing from the invention.

The guide and feed rollers having grooves therein at right angles to each other, and the holding-plate having a glass stripping-plate, are not herein claimed as new, being reserved for a claim in a future original application.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A check-punching machine having a rotary hub, a circular series of punches supported thereon, and separate hand-levers pivoted to the said punches and fulcrumed on the rotary hub, so as to have liberty of endwise movement.

2. A check-punching machine having a revolving series of punches with two lugs or shoulders on their faces, in combination with an oscillating feed-lever adapted to be engaged by both of said lugs or shoulders when either of the punches is brought into position for use, so as to be positively actuated by said punches in both directions of their movement, for the purpose set forth.

3. The combination of the series of punches 6, bow-shaped lever 11, staff 13, clutch or ratchet movement 14 16 17, feed-shaft 15, and feed-wheel 19, as set forth.

4. The combination of a rotary series of punches, an oscillating feed-lever common to all, a feed-table having feed and guide rollers, and a hinged holding and stripping plate having idle-rollers located above the rollers in the feed-table on both sides of the punch, for the purpose set forth.

5. In a check-punching machine, the combination, with a rotary series of punches and a plate having corresponding matrices, of a hinged plate perforated for the passage of the punch and serving as a holder and stripper.

6. In a check-punching machine, flanged rotary hub-cap 34, shouldered bolts 35, and bar or handle 33, for the purpose set forth.

JOHN N. WILLIAMS.

Witnesses:
HARRY E. KNIGHT,
EDWARD STEER.