

No. 683,363.

Patented Sept. 24, 1901.

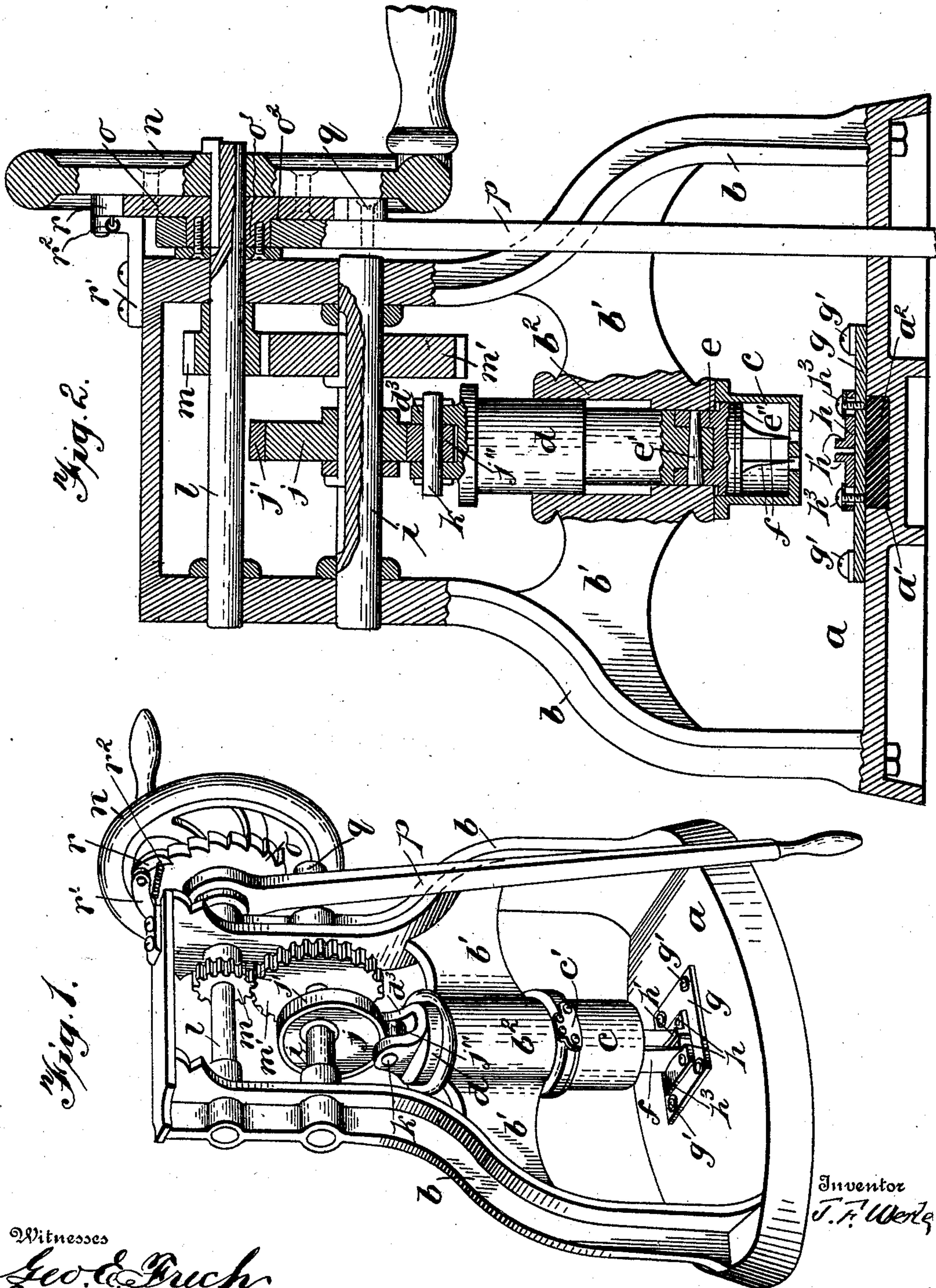
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CHECK CUTTING OR PUNCHING MACHINE.

(Application filed Apr. 2, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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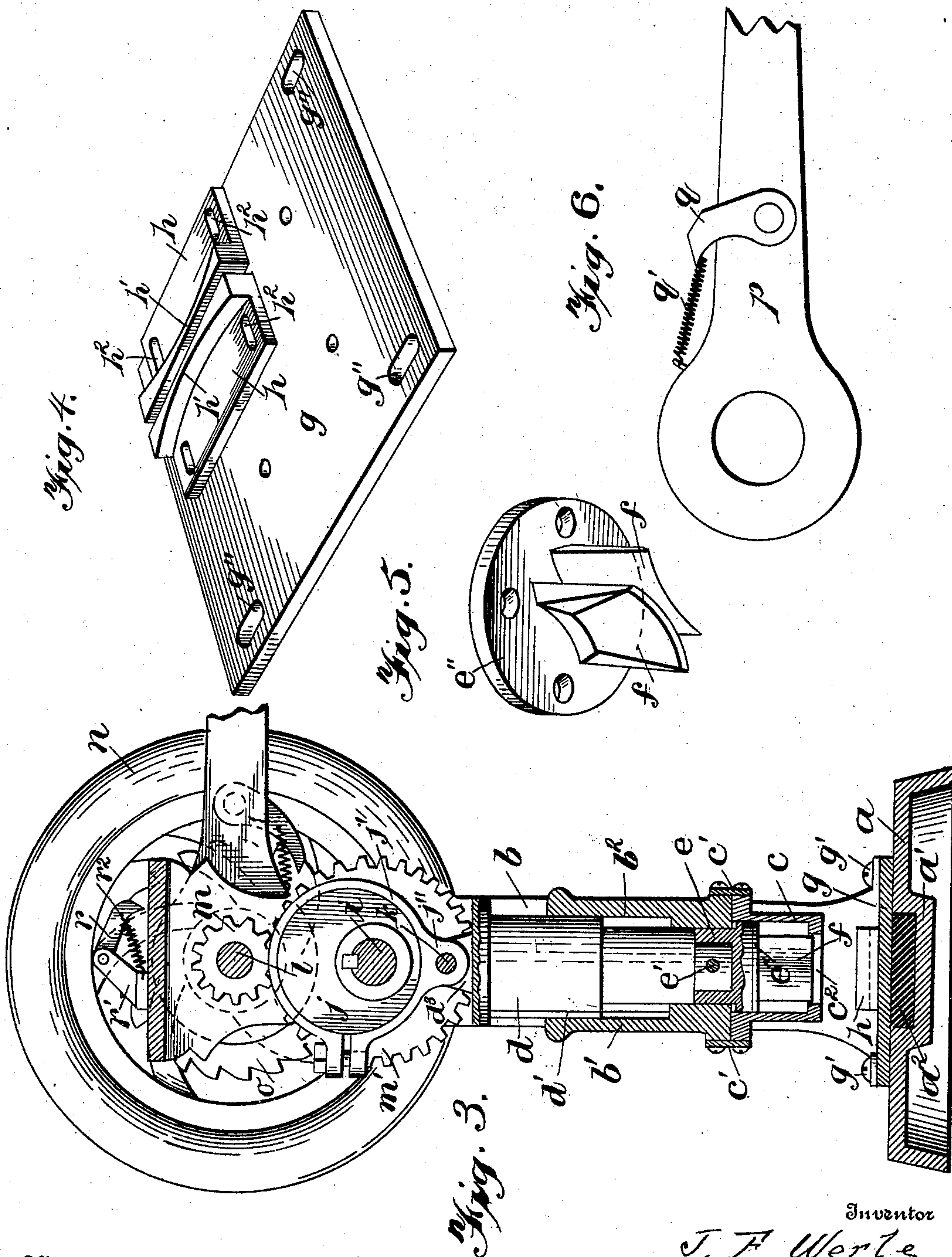
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UNITED STATES PATENT OFFICE.

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CHECK CUTTING OR PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 683,363, dated September 24, 1901.

Application filed April 2, 1901. Serial No. 54,037. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. WERLE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Check Punching or Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in punching or cutting machines, and more particularly relates to improvements in devices peculiarly adapted for perforating, cutting, or canceling bunches or large numbers of bank-checks and the like; and the objects and nature of the invention will be readily understood by those skilled in the art in view of the following explanation of the construction shown in the accompanying drawings as an example from among other devices within the spirit and scope of my invention.

My invention consists in certain novel features in construction and in combinations and arrangements of parts, as more fully and particularly pointed out and specified hereinafter.

Referring to the accompanying drawings, Figure 1 is a perspective view, the punch being shown in its depressed position. Fig. 2 is a sectional elevation, the punch shown in its elevated position, parts being broken away. Fig. 3 is a central vertical cross-section, parts being broken away and the punch shown elevated. Fig. 4 is a detail perspective view of the adjustable die-plate or platen, with the cutting-dies shown above and separated therefrom. Fig. 5 is a detail detached perspective of the head and knives or punches carried thereby. Fig. 6 is a detail perspective of the hand-lever.

In the drawings, a is a strong suitably-constructed base of any desirable form and construction. In the example illustrated the base is formed of a suitable casting having a plane horizontal top surface. If desired, the base can be formed with a depression or socket a' beneath the cutting-point and the die-plate, receiving a bed or cushion a^2 of any suitable

material—such, for instance, as a block of rubber—beneath the central portion of and on which the die-plate rests. A suitably formed and constructed frame is erected on the said base. In the example shown this frame comprises rigid uprights b , at their lower ends rigid with the base and at their upper ends rigidly connected by a cross-piece. At a distance below their upper ends and a suitable distance above the base said uprights are rigidly connected by the cross head or piece b' . If desired, said upright frame as so far described can be cast or otherwise formed integral, although I do not so wish to limit my invention.

The cross-head b' is formed with a central vertical opening, guide, or cylinder b^2 , open at the upper end and also open at the lower end except for a stripping cap or cup c , forming a downward continuation of the cylinder b^2 and having the annularly-flanged upper end abutting against the under edge of said cylinder or cross-head and detachably secured thereto by suitable clips c' , so as to be normally rigid with said cross-head. The lower end of said cap is formed with openings c^2 for the passage of the cutting-knives or other devices carried by the punch-head, as hereinafter more fully set forth.

d is a reciprocating vertical plunger located and vertically movable in the said guide or cylinder b^2 . If desired, this plunger can be provided with suitable means to hold the same against axial movement. For instance, the plunger can be provided with a radial projection d' , moving in a vertical slot in the inner face of the cylinder or guide b^2 . Shoulders or stops can also be provided on the plunger if desirable to limit the downward movement thereof. A head e of any suitable and desirable construction is secured to the lower end of the plunger, and said head carries one or more suitable downwardly-projecting cutting or perforating devices. In the example shown the shank of the head is formed with a mortise detachably receiving a downwardly-projected tenon from the lower end of the plunger, and the parts are detachably secured together in any suitable manner, as by a cross-pin e' , passed through the interlocking portions of the plunger and

head, as more clearly seen in Figs. 2 and 3. If it is not desired to remove the entire head from the plunger, the knives can be carried by a plate e'' , (see Fig. 5,) fitting against the under face of the head and detachably secured thereto in a suitable manner by machine-screws. The head is usually located below the cylinder b^2 and reciprocates within the cap c , so that on removal of the cap access is gained to the head and knives. In the form shown in the drawings the head is provided with two rigid depending knives f , oppositely convexed at their cutting portions and beveled at their outer concave edges. However, I do not wish to limit myself to any peculiar cutting or perforating device or devices.

The lower end of the cap c is formed with openings for the passage of the knives, each opening generally conforming in outline to the contour of a knife in cross-section. The length of the cap c is generally so proportioned with respect to the length of the knives or stroke of the plunger that when the plunger is at its limit of upward movement the cutting edges of the knives will be withdrawn into the cap or above the lower face of the cap.

g is the platen or die-plate, resting on the base, with its central portion beneath the knives and over the cushioned portion or platen of the base. This plate is adjustably and usually removably secured to the base in any suitable manner, as by machine-screws g' , passing through slots g'' in the plate into holes tapped in the base. The slots g'' are elongated and are preferably all parallel, so that by loosening the screws the plate can be shifted laterally in either one of two opposite directions and then be locked by tightening the screws.

h are the dies, located under the knives and on the portion of the plate over the cushioned plate. In the instance shown two independent dies are employed coinciding, respectively, with the knives and adjustable toward and from each other in a plane at right angles to the plane in which the die-plate is adjustable. Each die consists of a flat base resting on the die-plate, having a raised rib along its top face, the inner edge of which forms the cutting or shearing edge h' , shaped to correspond to and coincide with the knife coacting therewith. The arrangement is such that the knives coact with said dies with a shearing cut or action, the material to be cut resting on the top surfaces of said ribs and the knives passing down through the same and beside and past said cutting edges h' . It is hence obvious that careful adjustment of the parts is desirable to take up wear and maintain the proper relative position of the knives and dies.

The die-plate adjustment hereinbefore described provides means whereby the dies can be properly centered with respect to the knives. The knives are rendered adjustable toward and from each other by elongated par-

allel slots h^2 in the flat or base portions of each die, through which machine-screws h^3 pass into tapped holes in the die-plate, whereby the dies can be adjusted independently of each other and clamped in the desired positions.

It is obvious that I do not wish to limit myself to the form of dies shown, as the dies can be changed to correspond with changes in the knives or perforating devices employed.

Suitable actuating mechanism is provided to reciprocate the plunger with the necessary force and power to perform the punching, cutting, or perforating operation. I have provided exceedingly simple and effective means for this purpose, wherein i is a rotary shaft arranged above the plunger and at its ends suitably mounted in the frame-uprights. A suitable crank or eccentric connection is established between this shaft and the upper end of the plunger, whereby the rotation of the shaft reciprocates the plunger. For instance, I show an eccentric j rigidly secured to the shaft and provided with eccentric-strap j' , having a depending perforated lug j'' located in the bifurcated upper end d^3 of the plunger. The legs or ears formed by the bifurcation are perforated to coincide with the perforation of said lug j'' , and a pin k is passed through said perforations of the plunger and eccentric-strap lug to loosely join the parts, whereby the rotation of the eccentric raises and depresses the plunger. The eccentric-strap can be split, as usual, with its projecting ends united by a screw or bolt to tighten or loosen the strap, as conditions require. Manually-operated actuating means are applied to said shaft, either directly or indirectly, through a counter-shaft and gearing. In the drawings a power-shaft l is shown mounted in the frame-uprights and connected with the eccentric-shaft through the medium of reducing-gearing m m' . One end of the shaft l is extended beyond the frame, and a hand crank or wheel n is rigidly secured thereto. The machine can be operated through the medium of said hand-crank to punch or perforate a certain number of checks or other material where excessive force is not needed.

I provide additional lever means which can be employed to rotate the plunger-actuating mechanism where excessive power is needed to drive the knives through the material operated on. As an example of means which can be employed for this purpose, I show a ratchet-wheel o , rigid with the shaft to which the hand-crank is secured. This ratchet-wheel in the example illustrated is secured to and at the inner side of the hand-wheel and is provided with an inwardly-extending smooth-faced hub o' , with a projecting edge or annular shoulder o^2 at its inner end. p is an elongated power hand-lever having an opening at its inner end loosely receiving said hub o' , so that the hub is free to rotate within and independently of the lever, and the lever

is confined on the hub between the inner face of the ratchet-wheel and the shoulder o^2 . The lever normally hangs by gravity inactive about in the position shown in Fig. 1 when the machine is idle or is being operated by the hand-wheel. q is a pawl pivoted to the hand-lever, so that its free or toothed end can swing into and out of engagement with the teeth of the ratchet-wheel, to which the toothed end of the pawl is yieldingly held by spring q' . The arrangement is such that when the lever is swung upwardly the pawl will run loosely over the ratchet-teeth without rotating the parts, but when the lever is forced down said pawl will engage a tooth of the ratchet-wheel and rotate the same and actuate the parts connected therewith and driven thereby.

r is a pawl pivoted to a bracket r' , secured to the upright frame, said pawl being held to the ratchet-wheel teeth by a spring r^2 . This pawl prevents backward rotation of the parts by the hand-wheel, which would cause the hand-lever to swing up by reason of the engagement of its pawl with the ratchet-wheel. When the parts are rotated forwardly by the hand-wheel, the hand-lever pawl merely runs loosely over the ratchet-teeth, and the same is true of the pawl r .

Banks usually balance up the pass-books of depositors and then cancel by perforations, cuts, or other mutilations all the checks and return them with the books. It is usually a slow and tedious operation to cancel the large number of checks and other vouchers returned with each balanced pass-book. With my machine a comparatively small number of checks can be canceled at a time when the machine is actuated by the hand-crank. If the knives should stick or wedge in a bunch of checks, it is only necessary to raise and depress the hand-lever one or more times to supply the power needed. If it is desired to mutilate a large number of checks at once, the hand-lever can be employed to quickly accomplish the work at a very slight expenditure of labor on the part of the operator. One or two hundred checks, more or less, can be mutilated simultaneously by means of the simple mechanism I have described. The bunch of checks is inserted, when the knives are elevated between the dies and the cap, and the knives pass down through them and then back again into the cap, said cap holding the checks down and stripping them from the knives.

It is evident that various changes might be made in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit my invention to the exact device set forth, but consider myself entitled to all such changes as fall within the spirit and scope of my invention.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A check-punch comprising a base having a die, rigid uprights from the base provided with a rigid cross-bar having a vertical guide therethrough, a cap secured to the cross-bar at the lower end of said guide and over said die, a reciprocating plunger confined in said guide and provided with a cutter adapted to cooperate with said die and to project through and be withdrawn within said cap, and a rotary shaft mounted in said uprights and provided with eccentric operating means pivotally joined to the upper end of said plunger, substantially as described.

2. A check-punch comprising a base provided with a die, uprights rigid with the base, a cross-bar rigid with and connecting the uprights and provided with a vertical guide opening therethrough above the die, a reciprocating plunger confined in said opening and having a cutter at its lower end, a rotary shaft mounted in said uprights, an eccentric rigid on said shaft above said plunger and provided with an eccentric-strap having a depending lug, a pivot-pin pivotally joining said lug to the upper end of said plunger, and manually-operated means for rotating said shaft, substantially as set forth.

3. In combination, a reciprocating cutter, operating means therefor, a bed having a recess, cushioning material in said recess opposite said cutter, a die-plate removably secured on the bed and over said cushioning material, and a removable die on said plate to cooperate with said cutter, substantially as described.

4. A check-punch comprising, a bed, a die-plate thereon, adjustable securing means therefor rendering said plate adjustable, independently-adjustable dies on said plate, clamping and adjusting means securing said dies on said plate, and an opposing reciprocating cutter adapted to cooperate with said dies, substantially as described.

5. In combination, a bed, independent dies adjustable toward and from each other, each die comprising a base portion having a raised rib one edge of which forms the cutting edge, clamping means for said dies, and reciprocating cooperating cutters provided with operating means, substantially as described.

6. In combination, a bed, a die-plate thereon having parallel slots therethrough, clamping means passing through said slots into the bed, dies on the plate having parallel slots, clamping means passing through said slots into the plate, and a reciprocating cooperating cutter-head having operating means, substantially as described.

7. In combination, a bed, a support comprising a fixed guide, a fixed stripping-cap at the lower end of the guide opposite the bed, a reciprocating plunger in said guide provided with a cutter-head in said cap having a cutting device adapted to project through the bot-

tom of the cap and to be withdrawn above the bottom of the cap, and actuating means for said plunger, substantially as described.

8. In combination, a support comprising a cross-head formed with a vertical guide-opening, a reciprocating plunger confined therein, and provided with a detachable cutter-head at its lower end, a detachable cap secured to said cross-head beneath said opening and having a bottom opening for the passage of the cutter, a bed beneath said cap having a die to cooperate with said cutter, and means to reciprocate said plunger, substantially as described.

9. In combination, a bed, an upwardly-extending frame rigid with the base and having a rigid cross-bar formed with a vertical guide above the base and below the upper end of the frame, a stripping-cap secured at the lower end of said guide, a reciprocating plunger confined in said guide and provided with a cutter at its lower end, a rotary shaft mounted in said frame above said plunger, an eccentric pivotal connection between said shaft and plunger whereby the plunger is reciprocated by the rotation of the shaft, and manually-operated means for rotating said shaft, substantially as described.

10. In combination, a bed, a frame having a guide, a reciprocating plunger confined therein, a rotary shaft, an eccentric rigid on the shaft having a strap provided with a rigid projection fitting in and directly hinged to the upper end of the plunger, and means for rotating said shaft, substantially as described.

11. In combination, a bed, a frame having a guide, a reciprocating plunger confined in said guide, rotary means, an eccentric actuating connection between said means and said plun-

ger, and manually-operated actuating devices for said means comprising a rotary hand-crank, and a swinging hand-lever loosely mounted with respect to the hand-crank, and a pawl-and-ratchet connection between the lever and said crank, substantially as described.

12. In combination, a frame, a reciprocating plunger having a cutter, actuating means for said plunger comprising a rotary shaft, a ratchet-wheel rigid with the shaft and having a hub, a pawl engaging said ratchet-wheel to prevent retrograde rotation thereof, a hand-lever at one end loosely confined on said hub, said lever provided with a pawl engaging the teeth of said wheel and arranged to run loosely over the teeth in one direction and to lock the lever and wheel together when either is moved in the opposite direction, substantially as described.

13. In combination, a bed, an upright support, a reciprocating plunger carrying a cutter, a rotary shaft, an eccentric operating connection between said shaft and said plunger, a counter-shaft, reducing-gearing from said counter-shaft to said first-mentioned shaft, a hand-crank rigid with said counter-shaft, a ratchet-wheel rigid with said counter-shaft, a hand-lever at one end loosely mounted with respect to said counter-shaft, and a swinging spring-held pawl carried by said lever and engaging the teeth of said ratchet-wheel, substantially as described.

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

JOHN F. WERLE.

Witnesses:

EDWIN J. SCHNEIDER,
ALBERT G. HOFFMAN.