

J. POWERS.

COMBINED TYPE WRITER AND PERFORATING MACHINE.

APPLICATION FILED OCT. 31, 1914.

1,271,614.

Patented July 9, 1918.

5 SHEETS—SHEET 1.

FIG. 2.

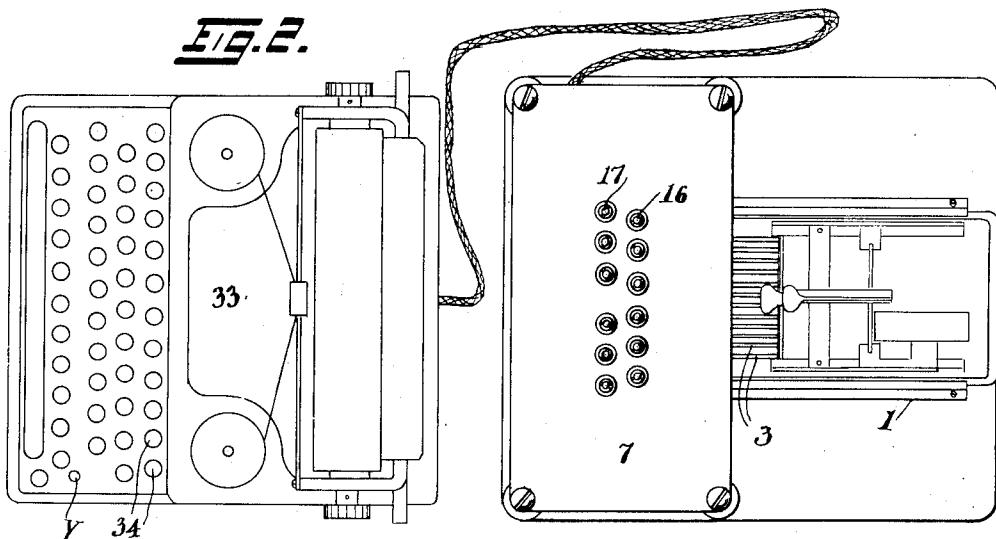
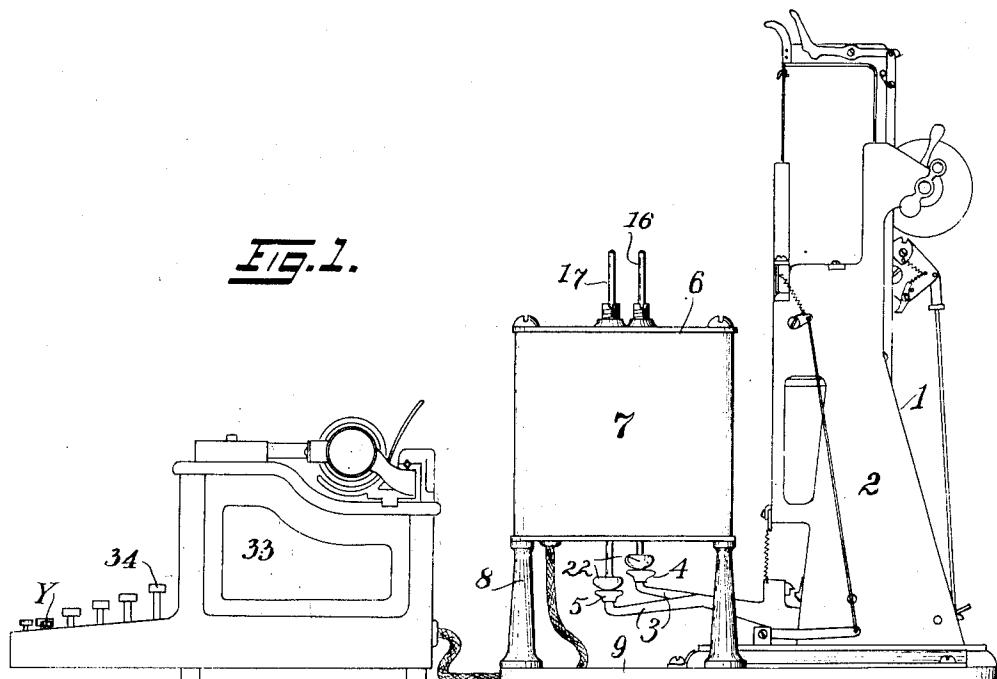


FIG. 1.



Witnesses:

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J. D. Penney

Inventor:

James Powers,

By his attorney, J. H. Richards,

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COMBINED TYPE WRITER AND PERFORATING MACHINE.

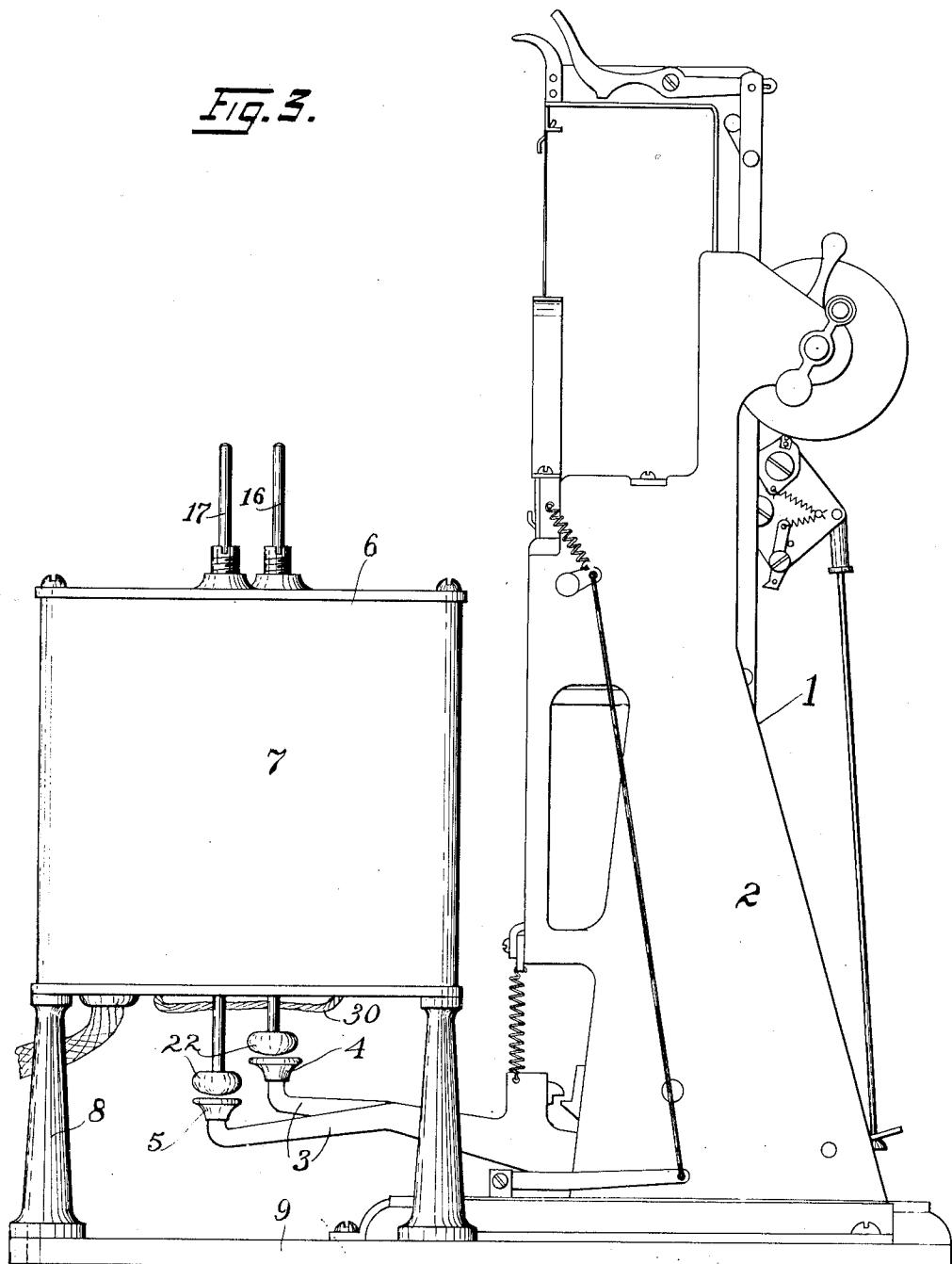
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5 SHEETS—SHEET 2.

Fig. 3.



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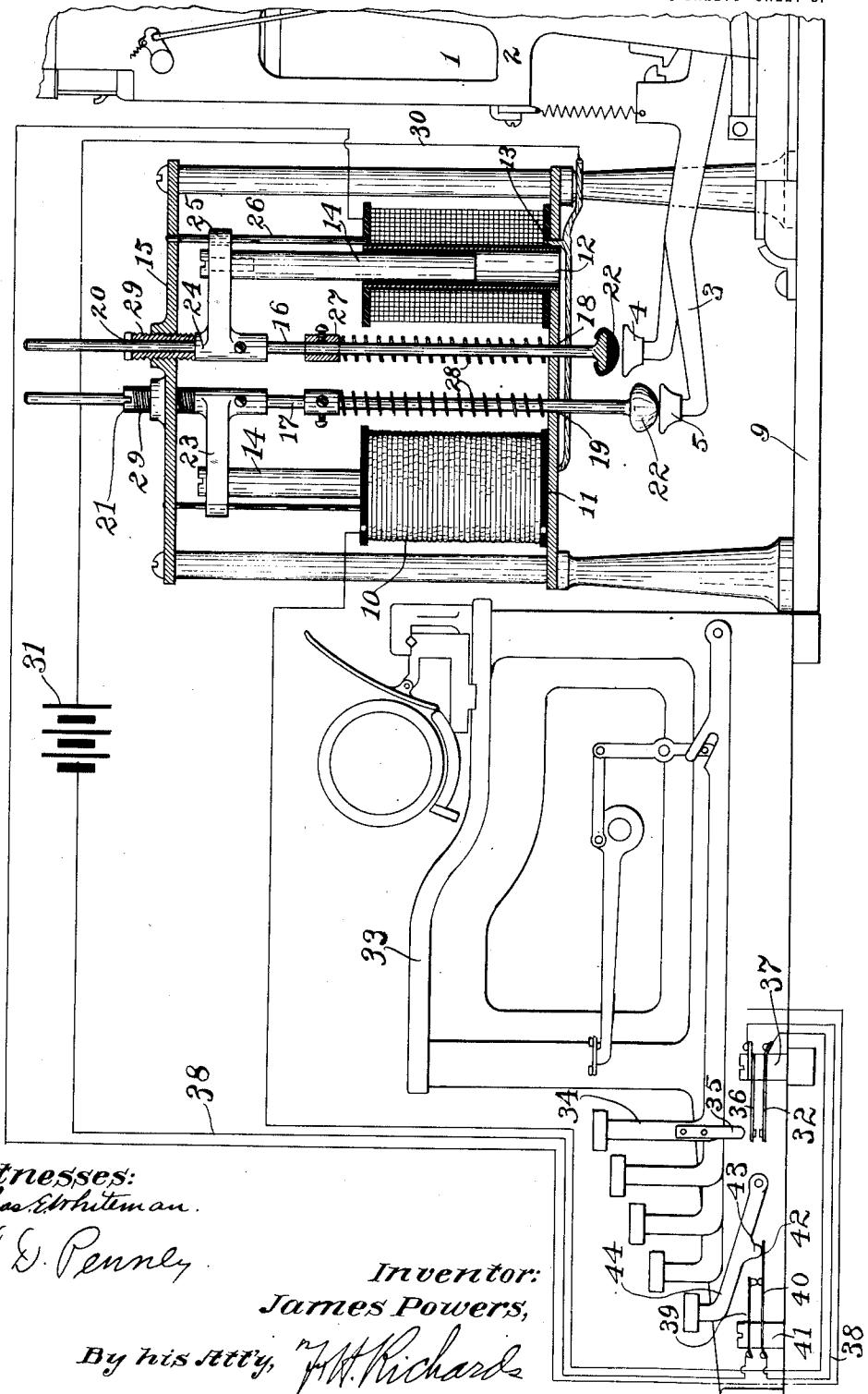
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5 SHEETS-SHEET 3.

FIG. 4.



Witnesses:

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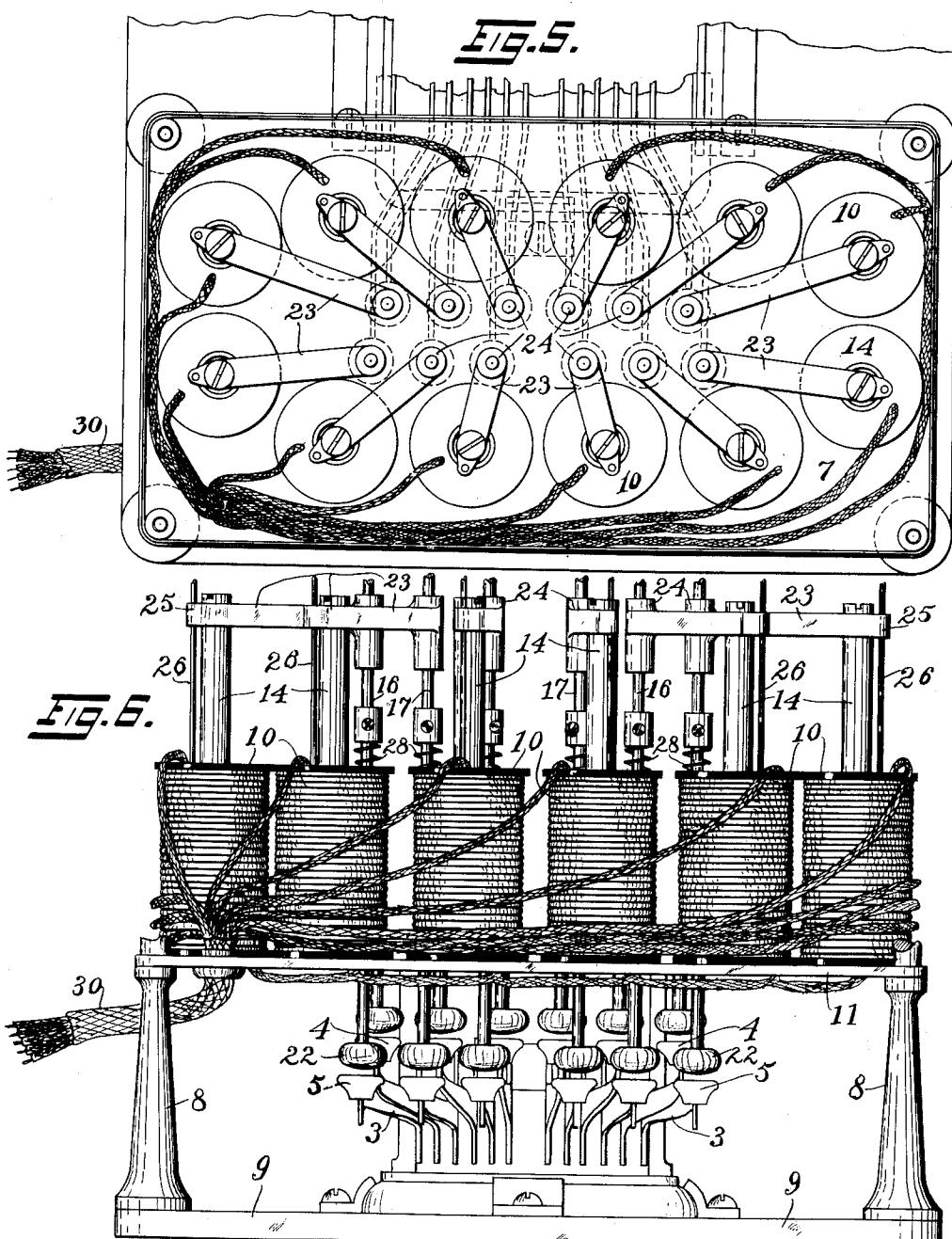
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5 SHEETS—SHEET 4.



Witnesses:  
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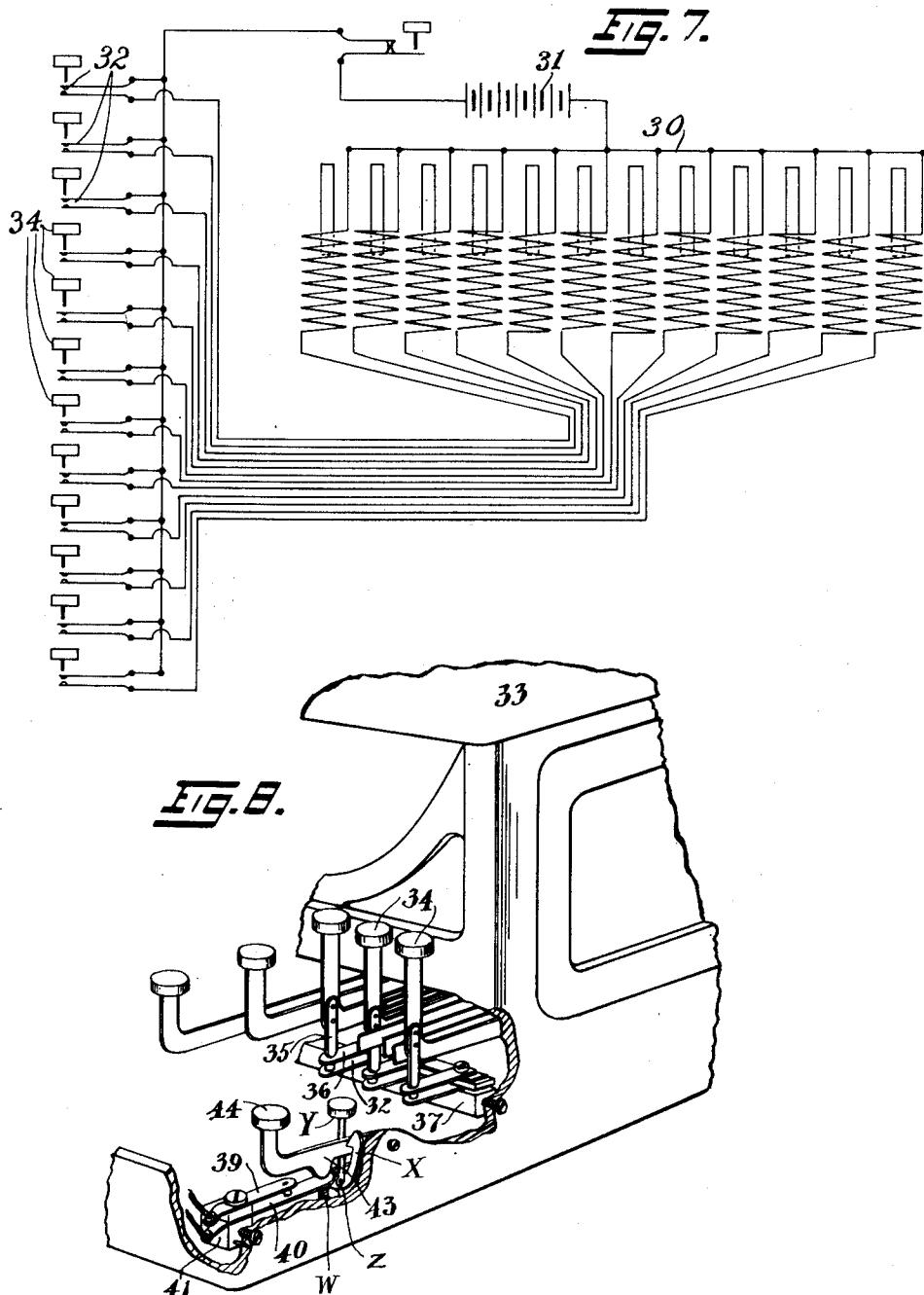
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COMBINED TYPE WRITER AND PERFORATING MACHINE,  
APPLICATION FILED OCT. 31, 1914.

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5 SHEETS—SHEET 5.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JAMES POWERS, OF NEW YORK, N. Y., ASSIGNOR TO POWERS ACCOUNTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

## COMBINED TYPE-WRITER AND PERFORATING MACHINE.

1,271,614.

Specification of Letters Patent.

Patented July 9, 1918.

Application filed October 31, 1914. Serial No. 869,539.

To all whom it may concern:

Be it known that I, JAMES POWERS, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Combined Type-Writer and Perforating Machines, of which the following is a specification.

This invention relates to a combined typewriter and perforating machine in which the operation of the keyboard of a typewriter will simultaneously operate the type of a typewriter and the punches of a perforating machine.

The main object of this invention is to provide such a combined typewriter and perforating machine in which the operation of the numeral keys of the keyboard of the typewriter are electrically connected to the punches of the perforating machine to thereby operate such punches, the other keys of the typewriter remaining disconnected.

Another object of the invention is to provide an improved connecting means for electrically connecting the numeral keys of a typewriter with the punches of a perforating machine.

Still another object of the invention is to provide connecting means for connecting the keys of a typewriter with the keys of a single acting perforator such as disclosed in my patent application, Serial No. 857,839, filed August 21, 1914.

And still another object of the invention is to provide a novel arrangement for connecting the keys of a typewriter to, and disconnecting them from the keys of the perforating machine.

And a still further object of the invention is to provide a connecting means for connecting the keys of a typewriter with the keys of a perforating machine which will be ready for use with a perforator such as illustrated in my patent application aforementioned, and to which such a perforator can be attached and again removed without the necessity of any assembling whatever.

These and other features, capabilities and advantages of the invention will appear from the subjoined detailed description of one specific embodiment of my invention illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of a type-

writer and perforator, and the connecting means for the keys of the typewriter with the keys of the perforator.

Fig. 2 is a plan of the view shown in Fig. 1.

Fig. 3 is an enlarged side elevation of the perforator and connecting means.

Fig. 4 is an enlarged side elevation of the typewriter and connecting means, part of the housing and the connecting means being removed.

Fig. 5 is a fragmentary plan view of the connecting means with the cover removed.

Fig. 6 is a fragmentary side elevation of the connecting means with the housing removed.

Fig. 7 is a diagrammatic view of the wiring for connecting the keys of a typewriter with the connecting means.

Fig. 8 is a fragmentary perspective showing keys of the typewriter and the electrical contacts with which they are provided.

In the embodiment shown, a perforating machine 1 is illustrated having a frame 2, and key bars 3, the key bars being provided with caps which are arranged in two rows, 80 the caps 4 of the rear row being disposed at a higher level than the caps 5 of the front row.

This perforating machine can be attached to or removed from the connecting means 85 6 without any assembling whatever. The connecting means comprises a casing or housing 7 supported on standards 8. The perforating machine 1 and connecting means when positioned to coöperate are preferably 90 supported on, and fastened to, a common base such as the bed plate 9, and the standards 8 are of sufficient length to support the casing or housing 7 above the caps 4 and 5.

In the housing 7 there are suitably 95 mounted a plurality of solenoids on a floor 11 one solenoid for each key bar 3. The floor 11 is provided with openings 12 registering with openings 13 in the solenoids 10, in which openings cores 14 are suitably 100 mounted, and thus such cores may be permitted to extend through the floor 11 when drawn down through the solenoids.

Between the roof 15 and the floor 11 of the housing 7 are suitably mounted plungers 105 16 and 17, a plunger 16 for each of the caps 4 and a plunger 17 for each of the caps 5. The floor 11 is provided with two rows of

openings 18 and 19 and the roof 15 is provided with two rows of openings 20 and 21, the openings 18 being in alignment with the openings 20 and the openings 19 in alignment with the openings 21, and the plungers 16 being suitably mounted in the aligned openings 18 and 20 and the plungers 17 in the aligned openings 19 and 21, which openings are so disposed that the plungers 16 and 17 will register with the caps 4 and 5 respectively.

Each of the plungers 16 and 17 is provided at its lower end with an engaging button 22 suitable for contacting with the caps 4 and 5, and each of said plungers is connected with one of the cores 14, by means of the cross heads 23, each having at one end a bushing 24 mounted on and secured to a plunger and at its other end connected to the upper end of a core by any suitable means, each of said cross heads extending beyond its connection with a core to form the extension 25 which is connected between the roof 15 and a solenoid 10 by a rod 26.

To normally maintain a plunger in raised position it is provided with a sleeve 27 between which sleeve and the floor 11 there is strained a coiled spring 28.

To permit adjustment of the distance the cores 14 and the thereto connected plungers may rise, the openings 20 and 21 are provided with sleeves 29 with which they have screw threaded connections, so that the sleeves may be adjusted in said openings 20 and 21 with their lower extremities extending down into the housing 7 the required distance, such lower extremities being in contact with the bushings 24 of the cross heads 23 when the plungers are in normal or raised position.

When the solenoids are energized, the cores in the usual manner will be attracted into such solenoids and draw down with them the thereto connected plungers against the force of the springs 28.

Each solenoid is connected to a main line 30 by which it is connected to a battery or other source of power indicated at 31, Figs. 4 and 7, and which solenoid is also connected to contacts 32 arranged on the typewriter 33, a plurality of such contacts being provided, one for each numeral key 34.

The typewriter 33 is of the usual construction in which the upper row of key bars of the keyboard are connected to the numeral types. Each of these key bars is provided at its lower end with an extension 35 (see Fig. 4) below which is disposed a contact 36 in position to be engaged by such extension 35 when such key bar 34 is depressed.

Each contact 36 is arranged above a contact 32 which contacts are normally spaced from one another at one end and at the other end secured to an insulating post 37. Each of the contacts 36 is connected by a main wire

38 with the battery 31. It will be seen that only the numeral key bars are connected to the solenoids, so that the other key bars may be operated to write independent of the perforating machine which is of particular advantage when preparing statistics, reports and the like.

Should, at any time, it be desired to disconnect the connecting means from the numeral key bars of the typewriter so that numerals can be typed on the typewriter without operating the perforating machine, it is only necessary to break the electrical connection. For this purpose, the main wire 38 is broken and provided with two spring contact pieces 39 and 40, being at one end connected to the respective adjacent ends of the wire 38, medially secured to an insulating post 41, and at the other end normally in contact with one another. The lower contact piece 40 is provided with an extension 42, disposed below and in position to be engaged by a projection 43 at the lower end of the key bar 44 so that when the key bar 44 is depressed, it will depress the extension 42 with it and thereby remove the contact piece 40 from the contact piece 39 to break such contact.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention.

I claim:

1. In a device of the class described, the combination of a machine for printing letters and numerals; and means for automatically causing the punching of a card when a numeral is printed and automatically causing the omission of punching when a letter is printed.

2. In a device of the class described, the combination of a means for printing letters and numerals; and means for automatically causing the punching of a card whenever and only whenever a numeral is printed by said means.

3. In a device of the class described, the combination of a typewriting machine comprising letter-producing elements and numerical-producing elements; a mechanism for producing record conformations on record members for reproducing records a number of times; and operative connections between said machine and mechanism for automatically causing the production of a record conformation when a numeral-producing element is actuated and for automatically causing the omission of the production of a record conformation when a letter producing element is actuated.

4. In a device of the class described, the combination of a typewriting machine comprising letter-producing elements and numerical-producing elements; a mechanism for producing record conformations on rec-

ord members for reproducing records a number of times; operative connections between said machine and mechanism for automatically causing the production of a record conformation when a numeral-producing element is actuated and for automatically causing the omission of the production of a record conformation when a letter producing element is actuated and 10 means for instantaneously rendering said connections operative or inoperative.

5. In a device of the class described, the combination of a typewriting machine comprising letter-producing elements and numerical-producing elements; a mechanism for perforating record cards; and operative connections between said machine and mechanism for automatically causing perforating when a numeral-producing element is actuated and 20 for automatically causing the omission of perforating when a letter producing element is actuated.

6. In a device of the class described, the combination of a typewriting machine comprising letter-producing elements and numerical-producing elements; a mechanism for perforating record cards; operative connections between said machine and mechanism for automatically causing perforating 30 when a numeral-producing element is actuated and for automatically causing the omission of perforating when a letter-producing element is actuated and means for instantaneously rendering said connections operative or inoperative.

7. In a device of the class described, the combination of a keyboard operated typewriting machine comprising letter-producing elements and numerical-producing elements; a mechanism for producing record conformations on record members for reproducing records a number of times; operative connections between said machine and mechanism for automatically causing the 40 production of a record conformation when a numeral-producing element is actuated and for automatically causing the omission of the production of a record conformation when a letter producing element is actuated; and keyboard operated means for instantaneously rendering said connections operative or inoperative.

8. In a device of the class described, an integral typewriting-mechanism; an integral perforating-mechanism; an integral removable-mechanism for actuating the perforating-mechanism when in proper position adjacent to such perforating-mechanism; and mechanism forming an operative connection between the typewriter-mechanism, and such integral removable perforator-operating-mechanism.

9. In a device of the class described, an integral typewriter mechanism; an integral perforating mechanism; an integral removable

able electrically-actuated-mechanism for actuating the perforating-mechanism, when in proper position adjacent to such perforating mechanism; and mechanism forming an operative electric connection between the typewriter-mechanism and such removable perforator electrically-actuated operating-mechanism.

10. In a device of the class described, the combination of a typewriting and a perforating-mechanism, the type-writer-mechanism having numeral key-bars, and the perforating mechanism having key-bars; mechanism for connecting said numeral key-bars of the typewriter-mechanism with the key-bars of said perforating-mechanism so as to simultaneously operate the key-bars of said perforating-mechanism, when said numeral key-bars are operated, said connecting means comprising a housing; means for supporting said housing above the key-bars of said perforating-mechanism; plungers operatively mounted in said housing and projecting from the bottom thereof and adjacent to the key-bars of said perforating-mechanism, one plunger for each of said latter key-bars; and means for actuating said plungers when said numeral key-bars are actuated.

11. In a device of the class described, the combination of a typewriting and a perforating-mechanism, the typewriter-mechanism having numeral key-bars, and the perforating mechanism having key-bars; mechanism for connecting said numeral key-bars of the typewriter-mechanism with the key-bars of said perforating-mechanism so as to simultaneously operate the key-bars of said perforating mechanism when said numeral key-bars are operated, said connecting means comprising a housing; means for supporting said housing above the key-bars of said perforating mechanism; plungers operatively mounted in said housing and projecting from the bottom thereof and adjacent to the key-bars of said perforating mechanism, one plunger for each of said latter key-bars; and means for actuating said plungers when said numeral key-bars are actuated; solenoids in said housing; cores in said solenoids, each connected to one of said plungers; a series of pairs of electrical contacts, normally out of contact, each pair disposed adjacent to a numeral key-bar and adapted to be moved into contact with one another, when its adjacent numeral key-bar is operated; wires connecting said contacts with said solenoids which are energized, whenever the numeral key-bars are depressed; said solenoids when energized operating to actuate said plungers to operate the key-bars of said perforating mechanism.

12. In a device of the class described, the combination with a typewriter-mechanism having numeral key-bars; of a perforator-mechanism; mechanism for connecting said

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numeral key-bars of the typewriter-mechanism with the key-bars of the perforating-mechanism, so as to simultaneously operate the key-bars of said perforating-mechanism 5 when said numeral key-bars are operated, said connecting means comprising a housing having a floor and roof; alined openings in said floor and roof; plungers operatively mounted in said alined openings, and projecting through the roof of said housing, and also projecting through the floor of said housing adjacent to the key-bars of said perforating-mechanism, one plunger for each of said latter key-bars; solenoids in said housing; cores in said solenoids; cross-heads each connecting one of said cores with one of said plungers; springs for normally maintaining said plungers in raised position out of engagement with the key-bars of said perforating-mechanism; sleeves in the openings of said roof having screw threaded connections therewith, whereby to be adjusted to extend to different distances into said housing, said sleeves forming limiting stops for the upward movement of said plungers, which plungers when in raised position engage with said sleeves; and means for energizing said solenoids to actuate said plungers, whenever said numeral key-bars of the typewriter-mechanism are operated.

13. In a device of the class described, the combination with a typewriter-mechanism having numeral key-bars, of a perforating-mechanism having like key-bars; mechanism for connecting said numeral key-bars with the key-bars of the perforating-mechanism when said numeral typewriter key-bars are operated; said connecting means comprising a housing; means for supporting said housing above the key bars of said perforating-mechanism, plungers operatively mounted in said housing and projecting from the bottom thereof and adjacent to the key-bars of said perforating-mechanism, one plunger for each of said latter key-bars; solenoids in said housing, cores in said solenoids, each connected to one of said plungers, a series of pairs of electrical contacts normally out of contact, each pair disposed directly below a numeral key-bar of the typewriter-mechanism, an extension on the lower end of said key-bar adapted to contact with a pair of electrical contacts to move them into contact with one another when such key-bar is depressed, and electric conductors connecting said contacts with said solenoids, which are energized whenever the typewriter numeral key-bars are depressed, said solenoids when energized, operating to actuate said plungers to operate the key-bars of said perforating mechanism.

14. In a device of the class described, the combination with a typewriter-mechanism having numeral key-bars; of a perforating mechanism having key-bars; mechanism for

connecting said typewriter-mechanism numeral key-bars, to the key-bars of the perforating-mechanism, so as to simultaneously operate the key-bars of said perforating-mechanism when said numeral key-bars are 70 operated; said connecting means comprising a housing, means for supporting said housing above the key-bars of said perforating-mechanism, plungers operatively mounted in said housing and projecting 75 from the bottom thereof and adjacent to the key-bars of said perforating-mechanism, one plunger for each of said latter key-bars; solenoids in said housing; cores in said solenoids, each connected to one of said plungers; a series of pairs of electrical contacts normally out of contact, each pair disposed adjacent to a numeral key-bar and adapted to be moved into contact with one another when its adjacent numeral key-bar is operated; wires connecting said contacts with said solenoids which are energized, whenever the numeral key-bars are depressed, said solenoids when energized operating to actuate said plungers to operate the key-bars of said perforating-mechanism; and means for disconnecting said solenoids from said numeral typewriter key-bars so that said numeral key-bars may be actuated without energizing said solenoids.

15. In a device of the class described, the combination with a typewriter-mechanism having numeral key-bars; of a perforating-mechanism having key-bars; mechanism for connecting said typewriter numeral key-bars to the numeral key-bars of said perforating-mechanism so as to simultaneously operate the key-bars of said perforating-mechanism when said typewriter numeral key-bars are operated; said connecting mechanism comprising a housing, means for supporting said housing above the key-bars of said perforating-mechanism; plungers operatively mounted in said housing and projecting from the bottom thereof and adjacent to the key-bars of said perforating-mechanism, one plunger for each of said latter key-bars; solenoids in said housing; cores in said solenoids, each connected to one of said plungers; a series of pairs of electrical contacts normally out of contact, each pair disposed adjacent to a numeral key-bar and adapted to be moved into contact with one another when its adjacent numeral key-bar is actuated; electric-conductor circuits connecting said contacts with said solenoids, which are energized, whenever the numeral key-bars are depressed, said solenoids when energized operating to actuate said plungers to operate the key-bars of said perforating mechanism, and mechanism for disconnecting said solenoids from said typewriter numeral key-bars, in such manner that said numeral key-bars may be actuated without energizing the solenoids; said disconnecting 130

means comprising contact-pieces interposed in said electric-conducting circuits normally in contact with one another; and a disconnecting electric-contact key-bar on said typewriter.

with and arranged to operate the cores to move the reciprocating members through the openings in the bottom of the housing and into engagement with the punching machine.

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16. In a device of the class described, the combination with a typewriter-mechanism having numeral key-bars; of a perforating-mechanism having key-bars; mechanism for connecting said typewriter numeral key-bars to the numeral key-bars of said perforating-mechanism so as to simultaneously operate the key-bars of said perforating-mechanism when said typewriter numeral key-bars are operated; said connecting mechanism comprising a housing, means for supporting said housing above the key-bars of said perforating-mechanism; plungers operatively mounted in said housing and projecting from the bottom thereof and adjacent to the key-bars of said perforating-mechanism, one plunger for each of said latter key-bars; solenoids in said housing; cores in said solenoids, each connected to one of said plungers; a series of pairs of electrical-contacts normally out of contact, each pair disposed adjacent to a numeral key-bar and adapted to be moved into contact with one another when its adjacent numeral-key-bar is actuated; electric-conductor circuits connecting said contacts with said solenoids, which are energized, whenever the numeral key-bars are depressed, said solenoids when energized operating to actuate said plungers to operate key-bars of said perforating mechanism, and mechanism for disconnecting said solenoids from said typewriter numeral-key-bars, in such manner that said numeral-key-bars may be actuated without energizing the solenoids; said disconnecting means comprising contact-pieces interposed in said electric-conducting circuits normally in contact with one another; a disconnecting electric-contact key-bar on said typewriter; and a projection on the lower end of said disconnecting key-bar adapted to engage one of said latter contacts when said disconnecting key-bar is depressed to remove one contact piece from the other, and thus break the electric circuit, at which time the numeral-key-bars of the typewriter-mechanism may be operated without operating the key-bars of the perforating-mechanism.

17. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing having alined openings in its top and bottom, reciprocating members operatively mounted in said alined openings, solenoids in said housing, cores in said solenoids, members connecting the cores and the reciprocating members, means for normally holding the reciprocating members in their uppermost position, and means for making and breaking the circuit of the solenoids to cause the cores to move the reciprocating members through the openings in the bottom of the housing, for the purpose described.

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18. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing having alined openings in its top and bottom, reciprocating members operatively mounted in said alined openings, solenoids in said housing, cores in said solenoids, members connecting the cores and the reciprocating members, means for normally holding the reciprocating members in their uppermost position, and means for making and breaking the circuit of the solenoids to cause the cores to move the reciprocating members through the openings in the bottom of the housing, for the purpose described.

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19. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing having alined openings in its top and bottom, reciprocating members operatively mounted in said alined openings, solenoids in said housing, cores in said solenoids, members connecting the cores and the reciprocating members, means for normally holding the reciprocating members in their uppermost position, means arranged in the openings in the top of the housing to limit the upward movement of the said reciprocating members, and means for making and breaking the circuit of the solenoids to cause the cores to move the reciprocating members through the openings in the bottom of the housing for the purpose described.

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20. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing mounted upon legs, said housing having alined openings in its top and bottom, reciprocating members operatively mounted in said alined openings, solenoids in said housing, cores in said solenoids, members connecting the cores and the reciprocating members, means for normally holding the reciprocating members in their uppermost position, and means for making and breaking the circuit of the solenoids to cause the cores to move the reciprocating members through the openings in the bottom of the housing for the purpose described.

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21. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing having alined openings in its top and bottom, plungers operatively mounted in said alined openings, solenoids in said housing and arranged parallel to the plungers, cross arms

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55 17. In a device of the class described, a punching machine, an operator therefor comprising a housing having alined openings in its top and bottom, reciprocating members operatively mounted in said alined openings, solenoids in said housing, cores in said solenoids, members connecting the cores and the reciprocating members, means for normally holding the reciprocating members in their uppermost position, a typewriter, the keys of the typewriter in circuit

connecting the cores and plungers, whereby a movement of the cores will reciprocate the plungers through the bottom opening in the housing; means for normally holding the solenoids in their uppermost position, and means for making and breaking the circuit through said solenoids.

22. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing, reciprocating plungers mounted in said housing, solenoids in said housing, cores in said solenoids, said cores and reciprocating plungers connected, whereby a movement of the said cores will cause a movement of the said plungers, means for making and breaking the circuit of the said solenoids, said means comprising a series of pairs of electrical contacts normally out of contact; electric conductor circuits connecting the contacts with said solenoids which are energized whenever the contacts are brought together, and means for forcing the contacts together.

23. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing, reciprocating plungers mounted in said housing, solenoids in said housing, cores in said solenoids, said cores and reciprocating plungers connected whereby a movement of said cores will cause a movement of said plungers, means for making and breaking the circuit of the said solenoids, said means comprising a series of pairs of electrical contacts separate and apart from the machine operator and normally out of contact, electric conductor circuits connecting the contacts with said solenoids which are energized whenever the contacts are brought together, means for forcing the contacts together and means for disconnecting the solenoids from

24. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing, reciprocating plungers mounted in said housing, solenoids in said housing, cores in said solenoids, said cores and reciprocating plungers connected whereby a movement of said cores will cause a movement of said plungers, means for making and breaking the circuit of the said solenoids, said means comprising a series of pairs of electrical contacts separate and apart from the machine operator and normally out of contact, electric conductor circuits connecting the contacts with said solenoids which are energized whenever the contacts are brought together, means for forcing the contacts together, means for disconnecting the solenoids from the said forcing means in such a manner that the said forcing means may be operated without energizing the solenoids.

the said forcing means in such a manner that the said forcing means may be operated 45 without energizing the solenoids.

24. In a device of the class described, a punching machine having keys adapted to be depressed by reciprocating members; an operator therefor comprising a housing, reciprocating plungers mounted in said housing, solenoids in said housing, cores in said solenoids, said cores and reciprocating plungers connected whereby a movement of said cores will cause a movement of said plungers, means for making and breaking the circuit of the said solenoids, said means comprising a series of pairs of electrical contacts separate and apart from the machine operator and normally out of contact, electric conductor circuits connecting the contacts with said solenoids which are energized whenever the contacts are brought together, means for forcing the contacts together, means for disconnecting the solenoids from the said forcing means in such a manner that the said forcing means may be operated without energizing the solenoids, said disconnecting means comprising contact pieces interposed in said electric conducting circuits normally in contact with one another, a disconnecting electric contact lever adjacent said forcing means and a projection on the lever end of said disconnecting lever adapted to engage one of said latter contacts when said disconnecting lever is depressed to remove one contact piece from the other, and thus break the electric circuit at which time the forcing means may be operated without energizing the solenoids.

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Witnesses:

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