

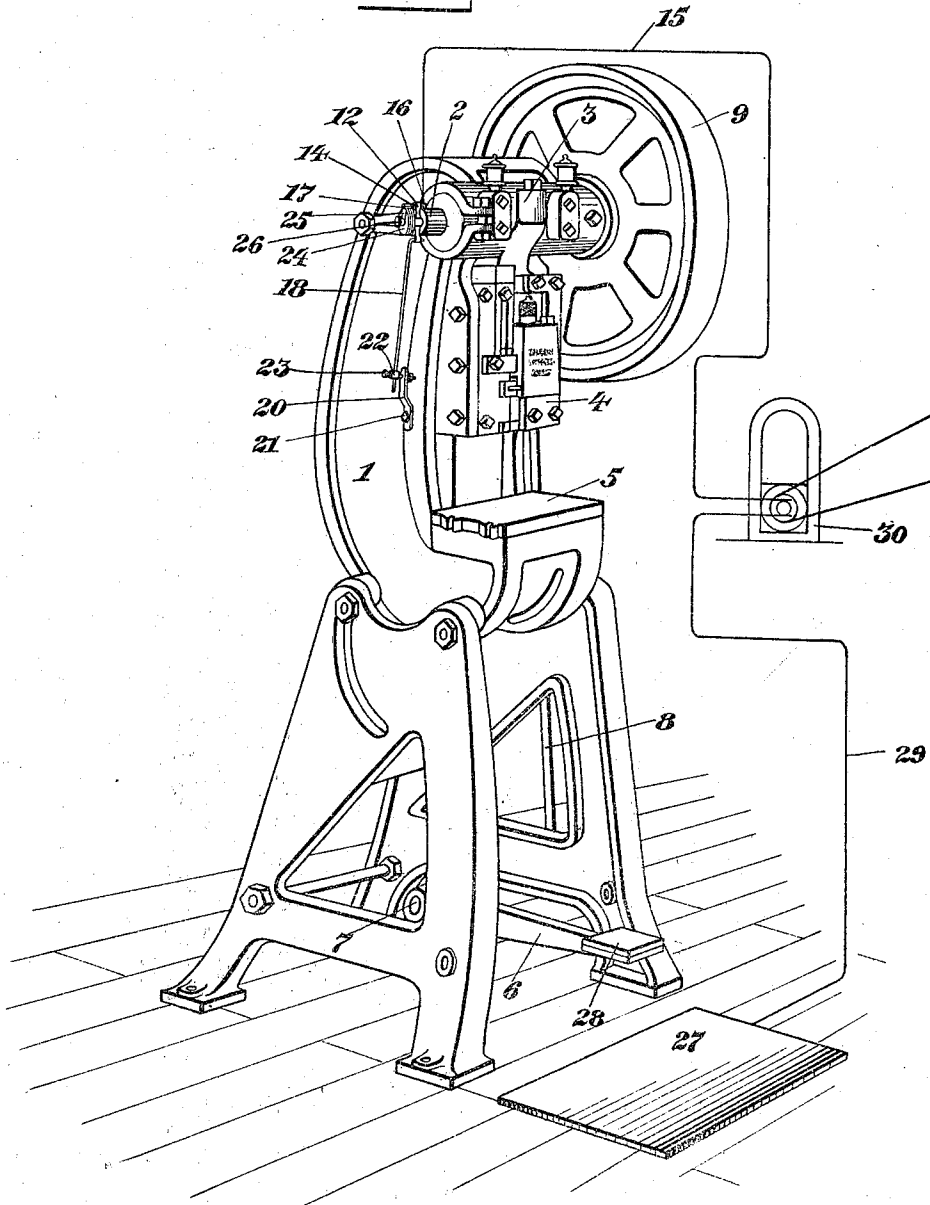
A. J. MEIER.
 MEANS FOR PREVENTING ACCIDENTS.
 APPLICATION FILED SEPT. 24, 1909.

984,587.

Patented Feb. 21, 1911.

5 SHEETS-SHEET 1.

Fig. 1



Witnesses:
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Inventor:
 Albert J. Meier.

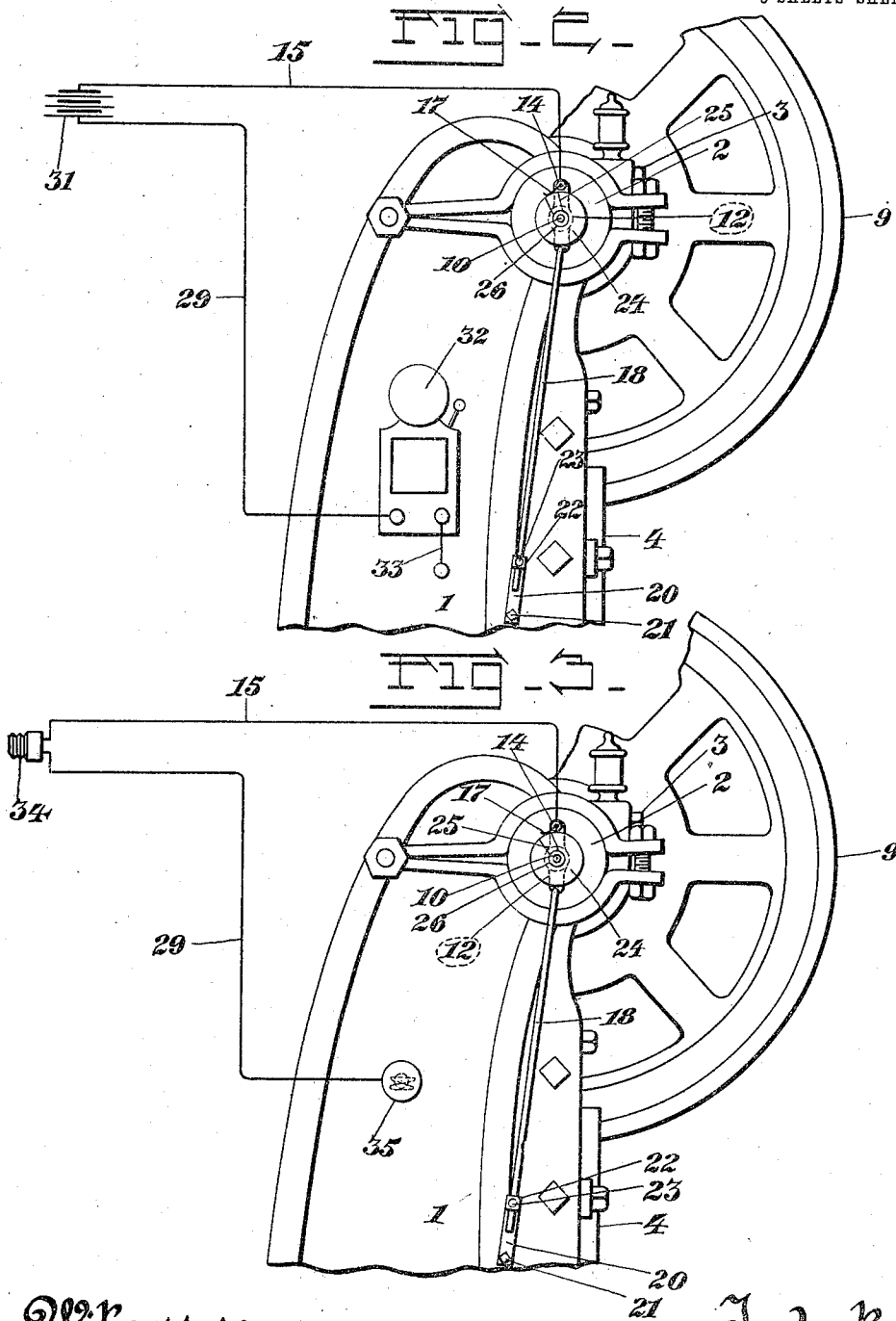
George G. Anderson. By Hugh N. Wagner,
 His Attorney.

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5 SHEETS—SHEET 2.



Witnesses:
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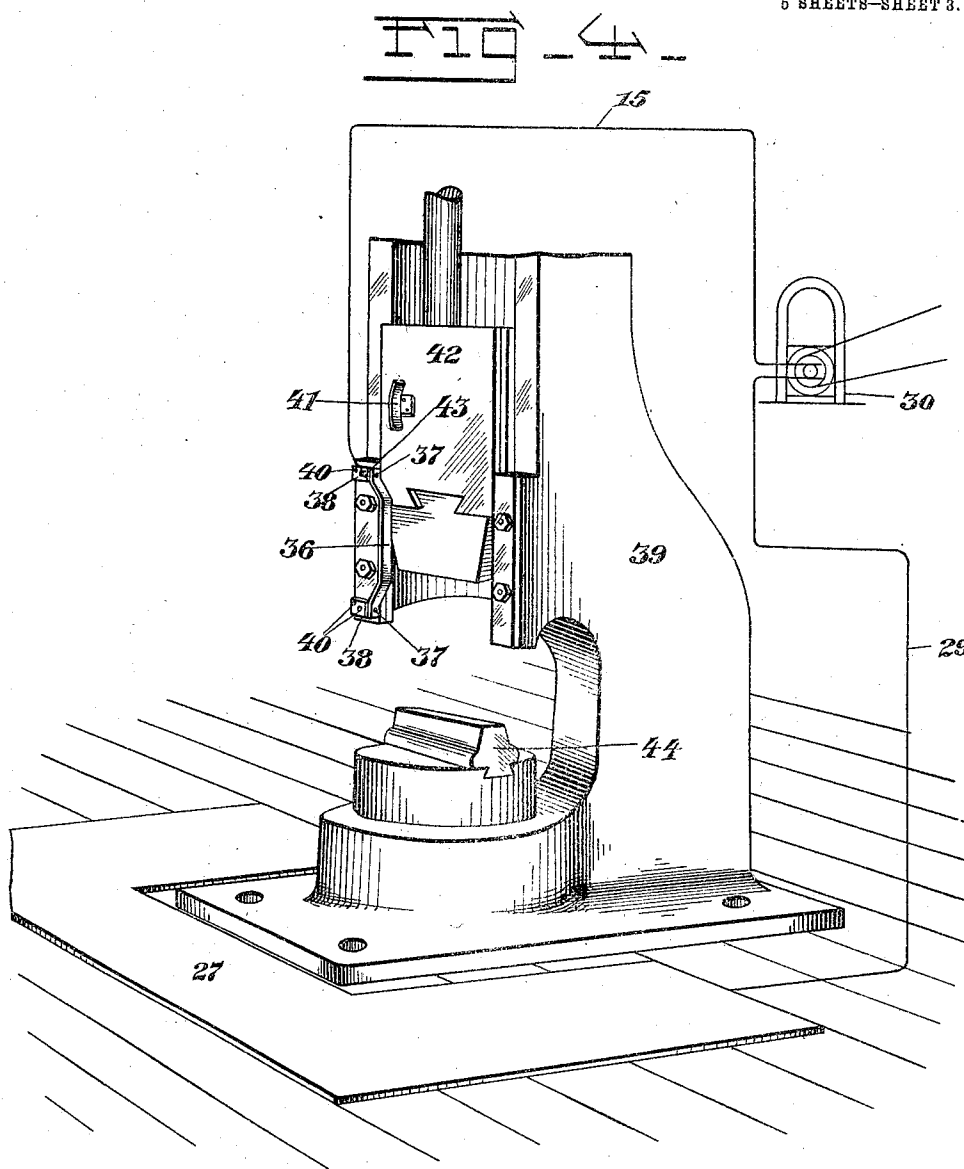
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5 SHEETS—SHEET 3.



Witnesses:

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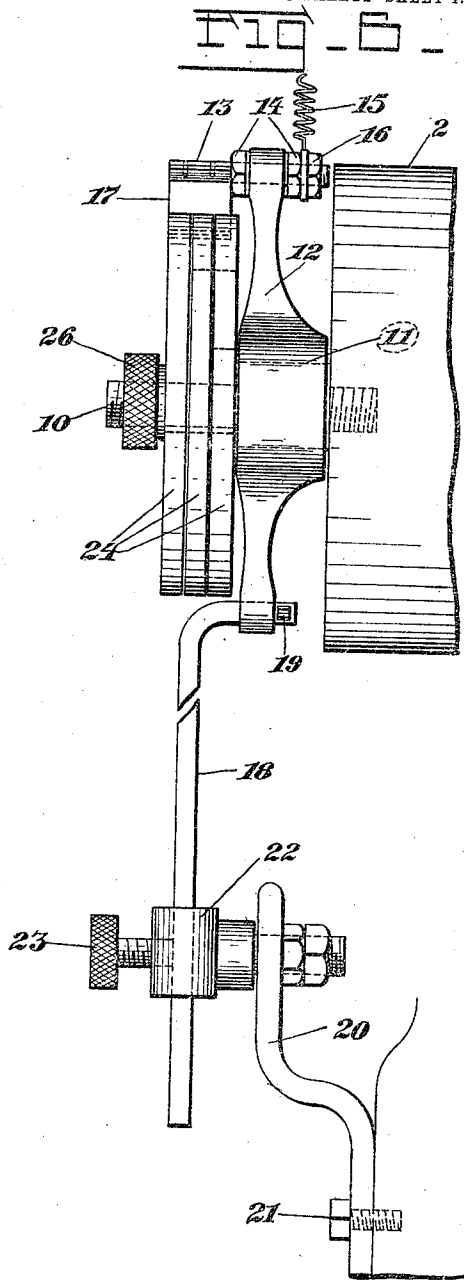
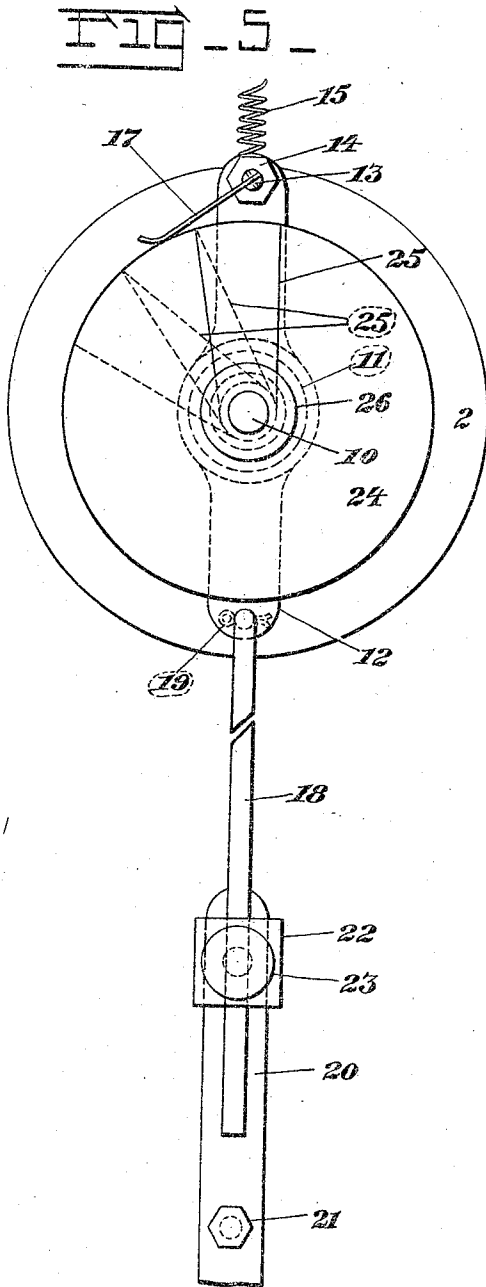
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5 SHEETS-SHEET 4.



Witnesses:

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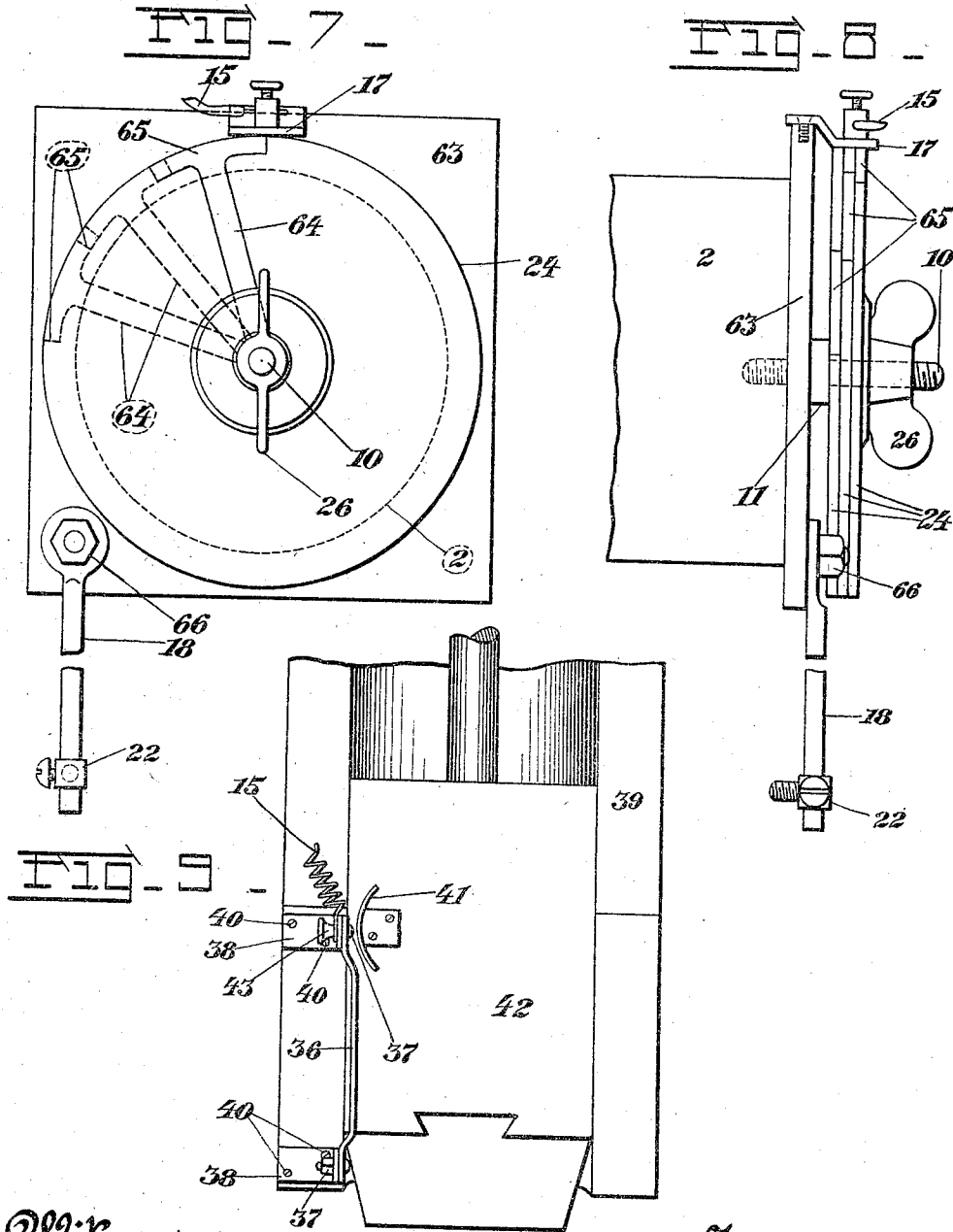
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5 SHEETS-SHEET 5.



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UNITED STATES PATENT OFFICE.

ALBERT J. MEIER, OF GLENDALE, MISSOURI.

MEANS FOR PREVENTING ACCIDENTS.

984,587.

Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed September 24, 1909. Serial No. 519,350.

To all whom it may concern:

Be it known that I, ALBERT J. MEIER, a citizen of the United States, residing at Glendale, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Means for Preventing Accidents, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this invention is to prevent accidental death or mutilation of persons employed adjacent to machinery. While the following description deals more particularly with machinery which in operation endangers workmen's fingers and apparatus for insuring the safety of the fingers of workmen, yet, *mutatis mutandis*, this invention can be applied to any kind of machine and is adapted to preserve workmen from all kinds of accidental injury arising from contact with the moving parts of machinery near or in connection with which their work is performed.

The invention resides in the provision of accident-preventing means, and further novelty will be found in the apparatus for that purpose, of which the preferred form and some alternative forms are herein shown and described, which apparatuses are adapted to be attached to any kind of machine in which the operator is in danger of mutilation or other injury.

In the drawings forming part of this specification, like numbers of reference denote like parts wherever they occur, and Figure 1 is a perspective view of a machine equipped with a rotary form of an electrical device for the above-mentioned purpose; Figs. 2 and 3 are partial elevations of a machine equipped with alternative forms of the same device; Fig. 4 is a perspective view of a machine equipped with a sliding form of such an electrical device; Figs. 5, 6, 7, 8, and 9 are detail views of the electrical forms of the device.

The power press 1, depicted in Figs. 1, 2, and 3, is provided with the operating shaft 2, upon which is mounted the eccentric 3, which actuates the tool-carriage 4, and with the table 5, to which the die (not shown in the drawings) is secured. The foot-lever 6, fulcrumed at 7 to said press, operates, by means of connecting rod 8, a clutch (not shown in the drawings) adjacent to the band-wheel 9, mounted on said shaft, and, when depressed, causes the actua-

tion of said tool-carriage. A finger-saving device is secured to one end of said shaft 2 by the pin 10, which is in threaded connection with said shaft and is provided with the enlarged portion 11, which fits against the extremity of the end of the shaft 2. Loosely mounted on said enlarged portion is the brush-holder 12, which is made of a non-conducting material and to which is secured the metal rod 12 by the nuts 14. The wire 15 is attached to one end of said rod by the nut 16, and the other end of said rod is grooved to receive and hold brush 17. Said brush-holder 12 is provided with an adjusting rod 18, which is fastened thereto by the cotter pin 19 or other suitable means. The bracket 20 is secured to the machine by the bolt 21, and is provided with a swivel 22, in which said adjusting rod 18 is slidably mounted and held in place by the thumb-screw 23. The disks 24, which are formed of non-conducting material, are mounted on said pin 10 so as to rotate therewith, and each engages said brush. Each of said disks is provided with a metal segment 25, which encircles said pin 10 and extends to the periphery of said disk. The set nut 26 holds said disks against said enlarged portion 11 on said pin 10 and permits, when loosened, said disks to be adjusted independently of each other, whereby the length of metallic surface in the periphery of said disks exposed to contact with brush 17, can be increased or diminished. The operator stands upon the plate or sheet of metal 27 when he presses the foot-lever 6, said lever being provided with an insulated tread 28. The wire 29 is connected to said plate and, also, to constantly-driven magneto 30 or any other suitable generator, and wire 15 is, also, connected thereto. If the operator's hand or other part of his body touches any part of the machine except the foot-treadle 28, he will receive a shock.

In the form shown in Fig. 2, the wires 15 and 29 are connected to the battery 31, and are, respectively, connected to said brush 17 and the bell 32, which is secured to said machine and connected thereto by the wire 33. In Fig. 3, said wire 15 connects said brush and the plug 34, which is connected by wire 29 to the lamp 35, secured to and having an electrical connection with said machine. Said plug is adapted to be inserted into a light socket (not shown in the drawings).

For machines in which the rotary form of the electrical device would be inapplicable, a slidable form of same is provided, in which the metal contact 36 is secured by the bolts 5 37 to the brackets 38, which are formed of non-conducting material and are secured to the machine 39 by the screws 40, as shown in Figs. 4 and 8, in which a drop-hammer and anvil 44 are depicted for the purpose of 10 illustrating one of the types of machines upon which said slidable form would be preferable. The metal brush 41 is secured to the tool-carriage 42 in such manner as to engage said contact 36 during a portion 15 of the travel of said tool-carriage. Wire 15 is fastened to one of said bolts 37 by the thumb-screw 43, and is connected, as in the rotary form, to the magneto 30, which is connected to the floor-plate 27 by the wire 20 29. Said floor-plate 27 extends partly around the base of said machine.

If it is not desirable for the operator to receive a shock, when operating a machine equipped with the slidable form of the device, above described, a signaling device can 25 be provided as in the rotary form, *i. e.*, a bell or a lamp can be secured to the machine and operated in the same manner when the circuit is closed by said brush 41 engaging 30 said slide 36.

In the modified form of the electrical device shown in Figs. 7 and 8, the brush-holder is formed of a plate 63, of non-conducting material, to which the brush 17 is secured. 35 Each disk 24 is provided with a metal spoke 64, which engages said pin 10 and is provided with a sector 65, which forms a portion of the periphery of said disk, to which the adjusting rod 18 is secured by the bolt 66.

40 The operation of the device is as follows: When operating the type of machine shown in Fig. 1, the operator will stand on plate 27 in front of the machine, in order to press the foot-lever 6, after placing the material 45 to be worked on the die secured to the table 5. The pressing of said foot-lever causes the rotation of the operating shaft 2, which actuates the eccentric 3, whereby the tool-carriage 4 is forced to descend and cause the tool carried thereby to cut, form, or work the material on the die on said table. The rotation of the operating shaft 2 causes the disks 24 to rotate therewith and the metallic portions of the peripheries of said disks to 55 engage brush 17, which is electrically connected by wire 15 to the magneto 30. Said brush is so adjusted by the rod 18 that the segments 25 engage same after the starting of the machine, and said disks are so set as 60 to cause said segments to remain in engagement with said brush until the moving tool has engaged the material to be worked, or until just previous thereto, or during any other danger period. Should the operator 65 fail to remove his hand from the material on

the die on table 5, or if he should have his hand in any dangerous position on the machine after starting same, his body would close the electric circuit generated by the magneto 30, between the machine 1 and the 70 plate 27, and he would receive a shock, which would cause him immediately to withdraw his hand from its dangerous position, and prevent the probable mutilation thereof. The insulated tread 28 on said foot-lever 75 prevents the current from passing through the foot of the operator when operating the machine.

In the type of machine depicted in Fig. 4, the operation of the drop-hammer causes 80 brush 41 to engage contact 36, and the operator will receive a shock while standing on the plate 27 if his hand is in a dangerous position on the machine after same has been 85 put into operation.

When it is necessary to hold the material to be worked in the machine, the electrical form of the device in which the operator receives a shock might be objectionable, and a means of signaling the operator, after the machine is put in operation, is provided in 90 Figs. 2, 3. In Fig. 2, the signaling form of the device is the electric bell 32, which is rung when the circuit is closed by said segments 25 engaging said brush 17, and, in 95 Fig. 3, the lamp 35 is lighted in the same manner, thus warning the operator in time to remove his hand from a dangerous position before the moving tool engages the material. 100

Various changes in the details of construction may be made without departing from the spirit of the invention herein disclosed and defined by the following claims.

I claim:

1. The combination of a power machine having opposing work members, and having a revoluble drive member, a support secured to said member, a brush-holder mounted on said support, a brush secured to said 110 brush-holder, and a disk mounted on said support and engaging said brush, said brush and disk being adapted to close an electric circuit when said opposing work members are brought into close relation. 115

2. The combination of a machine having opposing work members, and having a revoluble drive member, a support secured to said member and adapted to rotate therewith, a brush-holder mounted on said support, a 120 brush secured to said brush-holder, and a disk mounted on said support and engaging said brush, said disk and brush being adapted to close an electric circuit when said work members approach one another. 125

3. The combination of a machine having opposing work members, and having a revoluble drive member, a support secured to said member and adapted to rotate therewith, a brush-holder loosely mounted on said 130

support, a brush secured to said brush-holder, a disk mounted on said support and engaging said brush, and means for adjusting said brush-holder, said disk and brush being adapted to intermittently close a circuit.

4. The combination of a machine having opposing work shaping members, and having a revoluble drive member, a support secured to said member and adapted to rotate therewith, a brush-holder loosely mounted on said support, a brush secured to said brush-holder, an adjusting rod secured to said brush-holder and said machine, and a disk mounted on said support and engaging said brush, said disk and brush being adapted to close an electrical circuit through the machine.

5. The combination of a machine having opposing work shaping members, and having a revoluble shaft member adapted to reciprocate one of said members, a support secured to said member, a brush-holder mounted on said support, a brush secured to said brush-holder, and a plurality of disks mounted on said support and engaging said brush, said brush and disk being adapted to close an electrical circuit when said moving member is reciprocated toward the opposite work member.

6. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor secured to said non-conducting member, and a disk mounted on said support and engaging said conductor whereby an electrical circuit is closed when said coacting work members approach one another.

7. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor secured to said non-conducting member, and an insulated conductor secured to said support and adapted intermittently to engage said first-mentioned conductor whereby an electrical circuit is closed when said coacting work members approach one another.

8. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor secured to said non-conducting member, and a plurality of insulated conductors secured to said support and adapted intermittently to

engage said first-mentioned conductor whereby an electrical circuit is closed when said coacting work members approach one another.

9. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor secured to said non-conducting member, a fiber disk secured to said support and engaging said conductor, and a conductor secured to said disk and adapted to engage said support and intermittently to engage said first-mentioned conductor whereby an electrical circuit is closed when said coacting work members approach one another.

10. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor secured to said non-conducting member, a plurality of fiber disks secured to said support and engaging said conductor, and each of said disks having a conductor secured thereto, said last-mentioned conductor being adapted to engage said support and intermittently to engage said first-mentioned conductor whereby an electrical circuit is closed when said coacting work members approach one another.

11. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor secured to said non-conducting member, a fiber disk secured to said support and engaging said conductor, a segmental conductor secured to said disk and engaging said support, said segmental conductor being adapted intermittently to engage said first-mentioned conductor, means for generating an electric current, a plate adjacent said machine, means for connecting said first-mentioned conductor with said generating means, and means for connecting said plate with said generating means whereby, when said coacting members approach one another a current is set up through the circuit described.

12. The combination of a machine having coacting work shaping members, and having a revoluble member adapted to cause said work shaping members to coact, a metal support secured to said member and adapted to rotate therewith, a non-conducting member mounted on said support, a conductor

- secured to said non-conducting member, a plurality of fiber disks secured to said support and engaging said conductor, each of said disks having a segmental conductor secured thereto and engaging said support, said segmental conductor being adapted intermittently to engage said first-mentioned conductor, means for generating an electric current, a plate adjacent to said machine, and said first-mentioned conductor and said plate being, each, connected with said generating means whereby, when said coacting members approach one another, a current is set up through the circuit described.
13. The combination of means for generating an electric current, a machine having coacting work members and having a revoluble member adapted to cause said work members to coact, a finger-saving device secured to said revoluble member and having an electrical connection with said generating means, an electric signaling means secured to said machine and having an electrical connection with said generating means, and said finger-saving device being adapted intermittently to open and close the circuit, whereby said signaling means is energized.
14. The combination of means for generating an electric current, a machine having a movable member, a conductor secured to said machine and insulated therefrom, a conductor secured to said movable member and adapted to engage said first-mentioned conductor, a plate adjacent to said machine, and said first-mentioned conductor and said plate being, each, connected with said generating means whereby, as said movable member is actuated the circuit described is energized.
15. The combination of means for generating an electric current, a machine having a reciprocably slidable member, a metal slide secured to said machine and insulated therefrom, a conductor secured to said movable member and adapted intermittently to engage said slide, a plate adjacent said machine, and said slide and said plate being, each, connected with said generating means whereby, as said slidable member is reciprocated, the circuit described is energized.
16. A device for preventing accidents, comprising, in combination with a machine having coacting work members and means for causing said members to coöperate, a circuit adapted to include the operator and including said machine, a current source, and means actuated by said machine for closing said circuit.
17. A device for preventing accidents, comprising, in combination with a machine

having coacting work members and means for causing said members to coöperate, a make and break means carried by said driving means and actuated thereby, said make and break means being located in a circuit including a current generator and a contact plate, and adapted to include the operator.

18. A device for preventing accidents, comprising, in combination with a machine having coacting work members and means for causing said members to coöperate, a rotatable make and break means carried by said driving means and actuated thereby, said make and break means being located in a circuit including a current generator and a contact plate, and adapted to include the operator.

19. A device for preventing accidents, comprising, in combination with a machine having coacting work members and means for causing said members to coöperate, a make and break device mounted upon the driving means and adapted to be rotated thereby, means for adjusting said make and break device, said make and break device being located in a circuit including a current generator and a contact plate, and adapted to include the operator.

20. A device for preventing accidents, comprising, in combination with a machine having coacting work members and means for causing said members to coöperate, means actuated by said machine to send an electrical shock through the operator of the machine by energizing said machine, in circumstances of dangerous proximity of said operator to said coacting work members.

21. A device for preventing accidents, comprising, in combination with a machine having coacting work members and means for causing said members to coöperate, means actuated by said means for actuating the work members to send an electric shock into the body of an operator by electrically energizing said machine.

22. A device for preventing accidents, comprising, in combination with a machine having coacting work members and means for causing said members to coöperate, means actuated by the means for causing the work members to coöperate, to send intermittent signals to the body of an operator by causing said machine to conduct a current of electricity.

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

ALBERT J. MEIER.

Witnesses:

GEORGE G. ANDERSON.
GLADYS WALTON.