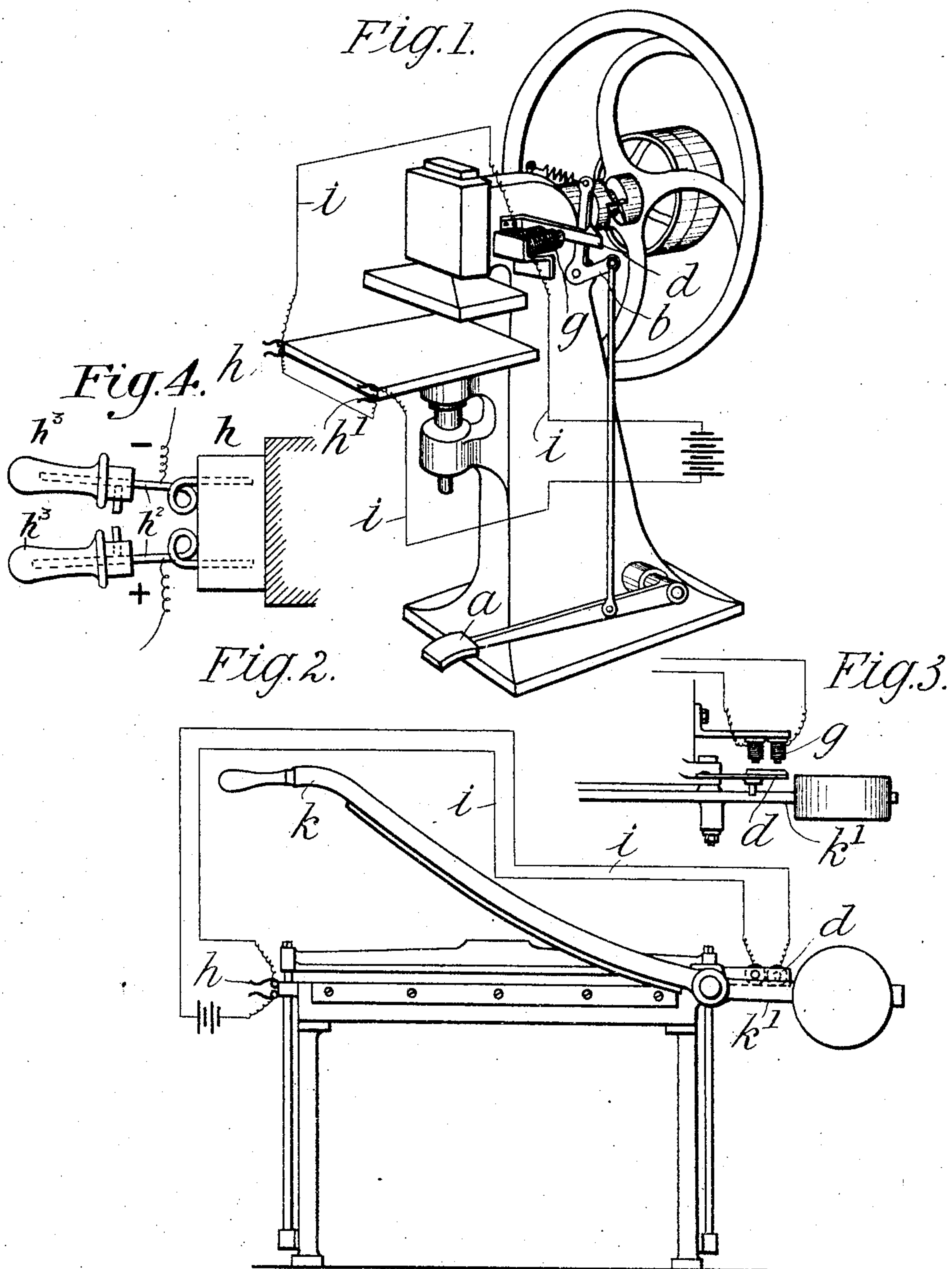


No. 786,473.

PATENTED APR. 4, 1905.

C. WENIGMANN.
SAFETY DEVICE FOR MACHINE TOOLS.
APPLICATION FILED MAY 9, 1904.



WITNESSES.

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CARL WENIGMANN, OF LEIPSIK-STÖTTERITZ, GERMANY.

SAFETY DEVICE FOR MACHINE-TOOLS.

SPECIFICATION forming part of Letters Patent No. 786,473, dated April 4, 1905.

Application filed May 9, 1904. Serial No. 207,167.

To all whom it may concern:

Be it known that I, CARL WENIGMANN, a subject of the German Emperor, residing at 50 Schönbachstrasse, Leipsic-Stötteritz, Germany, have invented certain new and useful Improvements in Safety Devices for Machine-Tools; 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 safety devices for work-tools which require both hands for starting them.

The object of the invention is to facilitate the starting of the machine notwithstanding the presence of the safety device, so that the workman is not required to expend any greater degree of power than is necessary for starting ordinary working machines without any safety device.

With the known safety devices for machine-tools which compel the workman, when the machine-tool is started, to remove his hands out of reach of the machine-tool the workman is obliged to move his hands to a considerable extent and to perform a certain amount of labor by operating a spring lever or slide, which of course occupies time and considerably reduces the amount of effective work performed by the machine-tool. This disadvantage is obviated by the present invention, the controlling-lever being released by the safety device, in connection with which operation magnets, solenoids, or the like are employed, so that it is only necessary to press buttons which close the circuit leading to the electromagnet and can be so arranged that the workman does not need to make any special movements for operating them. Thus, for instance, in the case of stamping-machines, which are operated by means of a foot-lever, the electrical contacts may be placed on the parts of the machine-table on which the workman supports his hands when operating the foot-lever. As the workman has only to make the customary movements, he is able to follow the action of the machine in the usual manner without being obliged to direct his attention to other mechanism, so that in spite of the existence of

the protecting device the effective work of the machine remains undiminished.

In the accompanying drawings two forms of the invention are shown.

Figure 1 is a perspective view of a stamping-machine fitted with the improved safety device. Fig. 2 is a front elevation of bench-shears for cutting cards with the safety device applied thereto. Fig. 3 a part plan of the electrically-released safety device as shown in Fig. 2. Fig. 4 is an enlarged detail view.

The stamping-machine illustrated in Fig. 1 is provided with a clutch, which is operated to put the machine in and out of gear by a treadle *a*, connected with a bell-crank lever *b*, held when the machine is inoperative by a spring-catch *d*. Behind the spring-catch *d* is an electromagnet *g*, which on being energized attracts the spring-catch *d* and releases the lever *b*. The circuit *i*, in which the magnet is placed, is interrupted in two places, and the push-buttons, contact-springs, or the like *h h'*, employed for closing the circuit, are so placed that both hands are required for operating them simultaneously. As shown in Fig. 4, the contacts *h* or *h'* comprise insulated spring-arms *h²*, provided with insulating-handles *h³*, adapted to be gripped with one hand to close the circuit. In consequence of this arrangement of the circuit-closing devices in combination with the double interruption of the circuit the workman can only set the machine in operation after he has removed both hands out of dangerous proximity to the machine-tool. With the shears illustrated in Fig. 2, in which the lever *k* is operated with one hand, a single interruption of the circuit *i* is sufficient, as in this case the left hand only is exposed to danger from the machine-tool, which danger, however, is obviated, as the spring-catch *d*, which engages above the weighted lever *k'*, only allows the lever *k* to act after the circuit has been closed by means of the contact *h*, so that while the contact is closed with the left-hand the lever *k* may be operated with the right hand.

What I claim, and desire to secure by Letters Patent, is—

1. A safety device for machine-tools which compels the operator to move his hands out of

danger before the tool can be operated, comprising locking means adapted to automatically lock the starting lever or handle of the machine, an electromagnet adapted when energized to operate said locking means to release the starting lever or handle, and an electric circuit with normally open contacts arranged at a suitable distance from the machine-tool and closed by the operator to energize the magnet, but adapted on being released to break contact and enable the locking means to again act on the handle or lever.

2. A safety device for machine-tools which compels the operator to move his hands out of danger before the tool can be operated, comprising a spring-armature having a catch adapted to automatically lock the starting lever or handle of the machine, an electromagnet mounted adjacent to the armature and when energized arranged to attract the armature to withdraw the catch to free the starting-lever, and an electric circuit with normally open contacts arranged at a suitable distance from the machine-tool and closed by the operator to energize the magnet, but adapted on being released to break contact and free the locking-catch.

ver or handle of the machine, an electromagnet mounted adjacent to the armature and when energized arranged to attract the armature to withdraw the catch to free the starting-lever, and an electric circuit with normally open contacts arranged at a suitable distance from the machine-tool and closed by the operator to energize the magnet, but adapted on being released to break contact and free the locking-catch.

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

CARL WENIGMANN.

Witnesses:

RUDOLPH FRICKE,
P. V. C. DUNN.