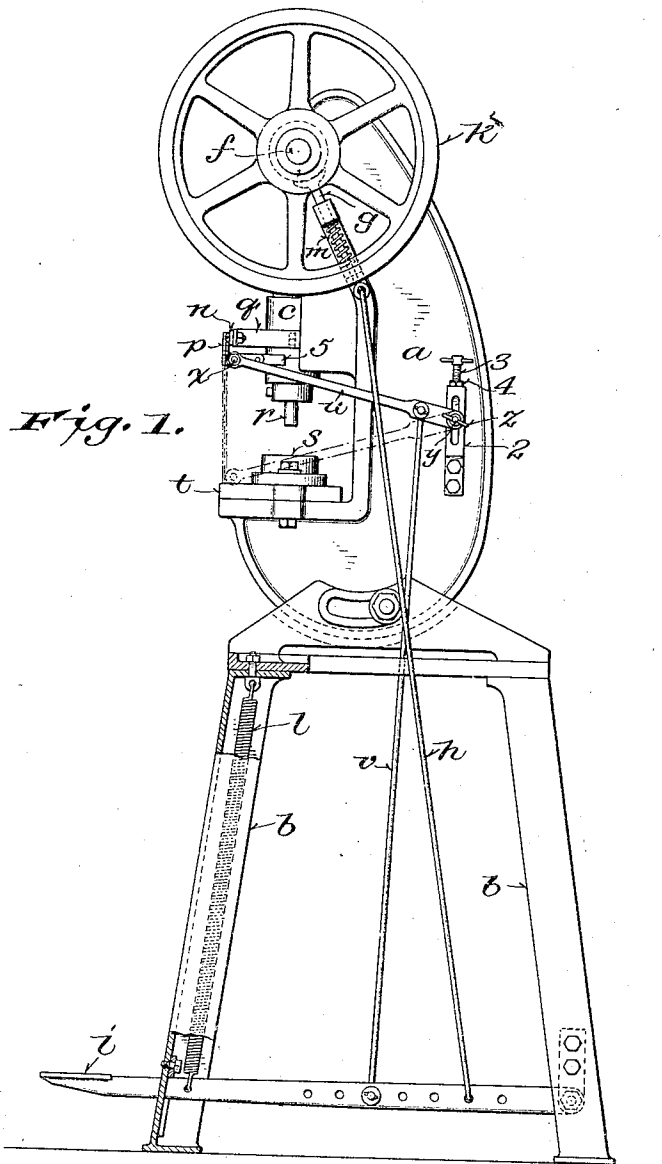


P. KEMPTER.
 GUARD FOR PRESSES AND THE LIKE.
 APPLICATION FILED APR. 22, 1912.

1,049,102.

Patented Dec. 31, 1912.

3 SHEETS—SHEET 1.



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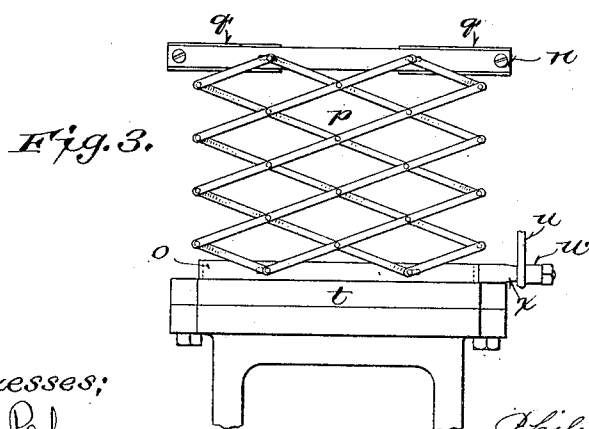
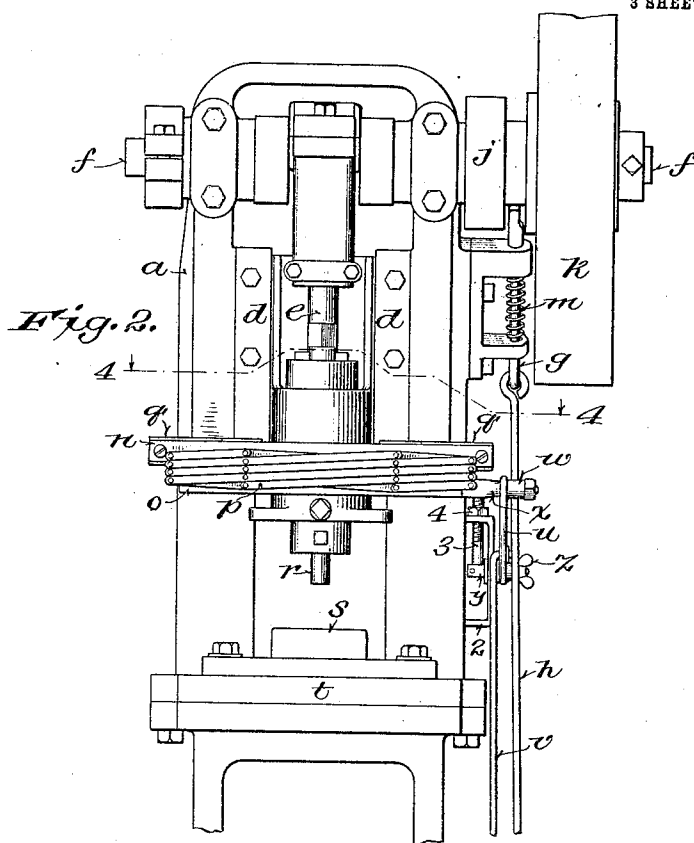
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3 SHEETS—SHEET 2.



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3 SHEETS-SHEET 3.

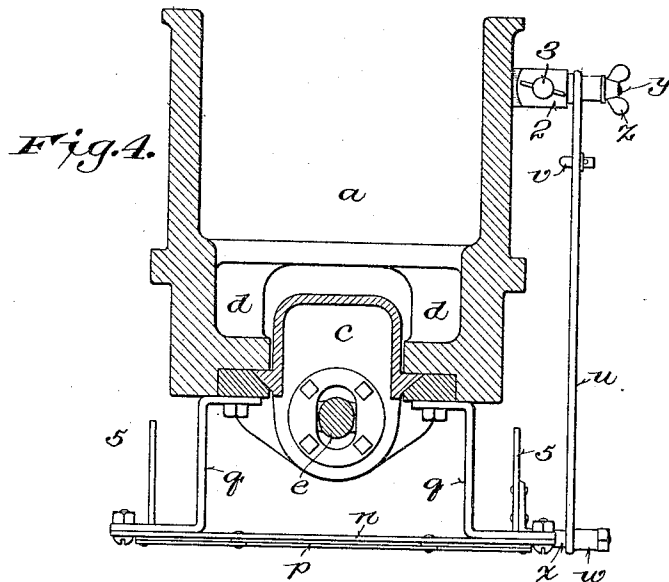


Fig. 5.

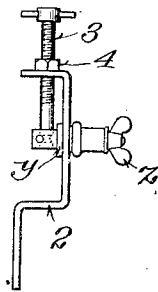


Fig. 6.

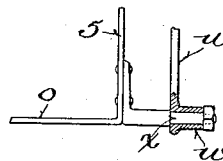
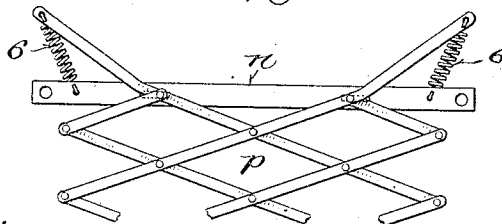


Fig. 7.



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UNITED STATES PATENT OFFICE.

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GUARD FOR PRESSES AND THE LIKE.

1,049,102.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Continuation of application Serial No. 606,475, filed February 4, 1911. This application filed April 22, 1912. Serial No. 692,295.

To all whom it may concern:

Be it known that I, PHILIP KEMPTER, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Guards for Presses and the Like, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

This invention relates more particularly to attachments for presses or machines having reciprocating or intermittently operating tools, such as punching, cutting and stamping machines. Its main object is to prevent injury to the hands of the operatives of such machines without interfering with the adjustments and proper operation of the machines.

It consists in the construction, arrangement and combination of parts as hereinafter particularly described and pointed out in the claims.

In the accompanying drawing like characters designate the same parts in the several figures.

Figure 1 is a side elevation of a punching press to which the tool guard is applied in accordance with the invention; Fig. 2 is an enlarged front elevation of the upper portion of the press showing the guard folded; Fig. 3 is a front elevation of the guard and the bed of the press showing the guard unfolded or extended to block the approach to the tool; Fig. 4 is a cross section on the line 4—4, Fig. 2, showing the guard in plan view; Figs. 5 and 6 are detail views of parts of the guard operating connections; and Fig. 7 is a partial front elevation of the preferred form of the guard.

For the purpose of illustration a guard embodying the invention is shown as applied to a punching machine or press, but it is applicable with little or no change to other machines having reciprocating or intermittently operating tools and treadles or other means for controlling the operation of the tools, such as stamping, cutting, embossing and drawing presses or similar machines.

Referring to the drawing, *a* designates the upper part of the frame of a punching machine or press which in the present case is pivotally or adjustably mounted on the base or lower part *b* of the frame so as to set

the punch in a vertical position or at any desired inclination thereto. The machine has the usual vertically reciprocating cross head and tool holder *c*, guided in ways *d* on the frame *a* and connected by a pitman *e* with a horizontal crank or eccentric shaft *f* mounted above it in bearings on the frame *a*, in the usual or any suitable manner.

The press has a trip *g* connected by a rod *h* with a treadle or foot lever *i* for operating a clutch *j* by which the drive wheel *k* loosely mounted on the shaft *f* is locked thereon when the treadle or foot lever *i* is depressed. A retracting spring *l* connecting the treadle or foot lever *i* with the frame section *b* aided by a spring *m* on the trip *g*, automatically disconnects the shaft *f* from the drive wheel *k* when the treadle or foot lever *i* is released by the operator.

The machine thus briefly described, is of a common well known type to which no claim *per se* is made herein.

The guard constituting the present invention is adapted to unfold up or down across the approach to the tool of the press or other machine, and when folded to completely clear the approach to the tool both from the front and the sides of the press or machine. It consists of two parallel bars *n* and *o*, which are connected with each other by lazy-tongs *p*, as shown in Figs. 2 and 3. In the present case the lazy-tongs are shown as double to afford when extended or unfolded, a more effective barrier across the approach to the tool and a more substantial support and guide for the movable bar *o*. The upper bar *n* is stationarily fastened in a horizontal position by angular bars or brackets *q* to the frame *a*, two of the bolts with which the machine is provided for holding the gibs of the ways *d* in place being utilized for this purpose, as shown in Fig. 4. The upper and lower members of the lazy-tongs *p* have horizontally slotted pivot connections with the bars *n* and *o*, as shown in Fig. 3, to permit of the folding and unfolding of the lazy-tongs, which fold compactly, permitting the lower movable bar *o* to approach close to the upper stationary bar *n*, as shown in Fig. 2. When thus folded, the guard is entirely out of the way and does not interfere in the least with the operation of the machine, or with the removal, replacement and adjustment of tools or dies therein.

In the present case the machine is shown as furnished with a punch *r* in the cross head or tool holder *c* and with a die *s* on the bed or work support *t*. The guard is so applied to the machine that when it is closed or folded and the cross head or tool holder *c* with the punch or tool *r* is in its upper position as shown in Figs. 1 and 2, the space between the cross head and table *t* will be entirely clear and unobstructed for feeding the machine in front or at the sides. When the guard is unfolded or extended across the space in front of the punch *r* and die *s*, it forms in effect an open lattice work gate or barrier which effectually blocks the approach to the punch and die, preventing the operator from thrusting his hands or fingers into dangerous proximity with the punch and at the same time affording a clear and practically unobstructed view of the work.

A lever *u*, pivoted at its front end to one end of the bar *o* and fulcrumed at its rear end on the side of the frame *a*, is connected by a rod *v* with the treadle or foot lever *i* in such a way as to unfold or extend the guard downwardly in advance of the tripping of the clutch *j* and the descent of the cross head *c* with the punch *r* or other tool carried thereby when the treadle or foot lever *i* is depressed by the operator to start the machine.

The operating connections of the trip *g* and the lever *u* with the treadle *i* are so arranged and adjusted that the guard will be extended and the bar *o* carried into contact or close proximity with the bed *t* as shown in Fig. 3, before the trip is moved into position to engage the clutch and start the tool, so that if the descent of the bar *o* is arrested before it reaches the bed *t*, the operation of the tool will be prevented, thereby absolutely avoiding injury to the hands and fingers of the operator without interfering in the least with the proper operation of the machine.

To aid in holding the movable bar *o* parallel with the stationary bar *n* of the guard, the lever *u* is formed at its front end with an extended sleeve *w* fitting upon an extended pivot pin *x* formed with or attached to the bar *o*, as shown in Fig. 6.

For varying the limits of the movement of the lever *u* in applying the guard to different machines and to compensate for changes in the inclination or adjustment of the upper part *a* of the frame with relation to the base or lower part *b*, the fulcrum connection of the lever with the frame is made adjustable. For this purpose the fulcrum pin *y* is adjustably fastened by a nut *z* in a vertical slot of a looped keeper or angular bar 2, which is bolted to one side of the frame section *a*, as shown in Figs. 1 and 5. The pin *y* is adjusted up or down in the keeper or bar 2 by a screw 3, having a swivel

connection with said pin and threaded in the upper part of the keeper or bar in which it is locked in adjusted position by a nut 4.

The treadle *i* is formed with a number of holes, as shown in Fig. 1, for adjustably connecting the rod *v* therewith, to vary the extent of unfolding or spreading of the guard for adapting it to different machines or to limit the downward movement of the bar *o* at different points for different kinds of work, as, for example, work which when placed in position in the machine projects forwardly beyond the path of the guard.

To prevent the operator from reaching around the ends of the guard into the path of the tool and at the same time starting the machine, the movable bar *o* of the guide is formed or provided at or adjacent to its ends with rearwardly extending arms 5, as shown in Figs. 1, 4 and 6.

When the guard is made of considerable length, to insure its unfolding alike at both ends and to keep the movable bar *o* parallel with the stationary bar *n*, two corresponding upper members of the lazy-tongs *p* are extended, as shown in Fig. 7, beyond the pivots between them and the bar *n* and are connected with said bar by springs 6, which take up play or lost motion in the pivot joints of the lazy-tongs and cause the bar *o* to move parallel with the bar *n* and the bed *t* when the guard is unfolded and folded.

In the operation of the machine the attendant having placed a blank or piece of material to be punched on the die *s*, depresses the treadle *i* which operates through the lever *u* to first spread or extend the guard and carry the bar *o* thereof down against the bed *t*, as shown by dotted lines in Fig. 1 and by full lines in Fig. 3, and then after the approach to the punch and die is effectively blocked by the unfolding or spreading of the guard, to operate the clutch *j* and thereby cause the punch to descend. When the treadle is released by the operator the retracting spring *l*, drawing it back into its original position as shown in Fig. 1, operates through the connections hereinbefore described to close or fold the guard upwardly out of the way and to disengage the clutch and stop the cross head *c* and punch after they have been withdrawn to their upper position.

With the construction and arrangement of the operating connections of the clutch, trip and tool guard as herein shown and described, the operator cannot start the machine or set the tool in motion without first causing the guard to descend across and block the approach to the tool, and as long as the treadle is depressed and the tool continues to operate, the guard will remain extended and obstruct the approach thereto.

A repetition of the operation of the punch cannot take place without extending

the guard in advance thereof or its being held extended so as to effectually prevent the operator from thrusting his hands or fingers into dangerous proximity with the punch.

Various changes in the details of construction and arrangement of parts of the device in adapting and applying it to different machines for different purposes and under varying conditions may be made without departing from the principle and scope of the invention.

The term "press" as employed in the following claims is intended to designate any of the class of machines hereinbefore mentioned to which a guard of the character herein described is applicable.

This application is made as a substitute for and continuation of application Serial No. 606,475, filed February 4, 1911.

I claim:

1. The combination with a press or the like, comprising means for controlling the operation of its movable tool or member, of a guard attachable to a stationary part of the press out of the approach to the tool, movable up and down across the approach to the tool and adapted to fold into small compass clear of the approach to the tool both in front and at the sides of the press, and when unfolded to obstruct the approach to the tool, and means connected with said guard and with said controlling means and adapted to cause the unfolding of the guard in advance of the operation of the tool.

2. The combination with a press comprising means for controlling its operation, of a folding guard attachable to the press above the approach to the tool and adapted to fold upwardly into small compass and to unfold downwardly across and obstruct the approach to the tool, and means connected with said guard and controlling means and adapted to cause the unfolding of the guard in advance of the operation of the tool and prevent the operation of the tool when the unfolding of the guard is obstructed.

3. A tool guard for presses, consisting of parallel bars one of which is adapted to be attached to the frame of the press, and the other is movable across the approach to the tool, and lazy-tongs connecting said bars.

4. In a tool guard for a press having a reciprocating tool and a lever for controlling its operation, the combination of parallel bars one of which is adapted to be attached to the frame of the press, and the other is movable across the approach to the tool, lazy-tongs connecting said bars, a lever connected with the movable bar and adapted to be fulcrumed on said frame, and a rod for connecting said lever with the tool controlling lever, the parts being arranged and connected to unfold the guard in advance of the operation of the tool and to prevent

the operation of the tool when the unfolding of the guard is obstructed.

5. In a tool guard for a press, having a reciprocating tool and a lever for controlling its operation, the combination of a folding guard attachable to the frame of the press and extensible downwardly in unfolding across the approach to the tool, a lever connected with the lower part of said guard and provided with an adjustable fulcrum for attachment to the frame of the press and a rod for connecting said lever with the tool controlling lever.

6. The combination with a press having a reciprocating tool and a lever for controlling its operation, of a folding tool guard attached at the upper side to the frame of the press and extensible downwardly across the approach to the tool, a lever fulcrumed on the frame of the press and connected with the lower part of said guard, and a rod adjustably connecting said lever with the tool controlling lever so as to extend the guard in advance of the operation of the tool and to prevent the operation of the tool if the unfolding of the guard is obstructed.

7. In a tool guard for a press having a reciprocating tool and a lever for controlling its operation, the combination of a folding guard consisting of parallel bars connected by lazy-tongs, means for attaching the upper bar to the frame of the press above the approach to the tool, a lever pivoted to one end of the lower bar and adapted to be fulcrumed on the frame of the press and a rod for connecting said lever with the tool controlling lever to unfold the guard in advance of the operation of the tool and to prevent the operation of the tool if the unfolding of the guard is obstructed.

8. A tool guard for presses, comprising parallel bars one of which is attachable to a stationary part of the press out of the approach to the tool and the other is movable across the approach to the tool and provided with rearwardly extending arms arranged to protect the approach to the tool at the sides, and lazy-tongs connecting said bars.

9. A tool guard for presses, comprising parallel bars one of which is attachable to a stationary part of the press out of the approach to the tool and the other is movable across the approach to the tool, lazy-tongs connecting said bars, and springs connecting one of said bars with members of the lazy-tongs and tending to keep the movable bar parallel with the stationary bar.

10. A tool guard for presses comprising a vertically movable horizontal bar provided with rearwardly projecting arms arranged to protect the approach to the tool at the sides, lazy-tongs connecting said bar with a stationary part of the machine, and means for unfolding said lazy-tongs and carrying said bar across the approach to the

tool in advance of the operation of the tool and preventing the operation of the tool when the extension of the guard is obstructed.

- 5 11. A tool guard for presses, comprising a horizontal bar movable vertically across the approach to the tool, lazy-tongs connecting said bar with a stationary part of the press, means for unfolding said lazy-tongs
10 and carrying said bar across the approach to the tool in advance of the operation of the tool and preventing the operation of the tool

when the extension of the guard is obstructed; and spring means connected with members of the lazy-tongs and tending to advance and withdraw said bar alike at both ends. 15

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

PHILIP KEMPTER.

Witnesses:

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F. J. FREY.