W. S. GOODING.

PUNCH PRESS.

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1,305,461.

Patented June 3, 1919.

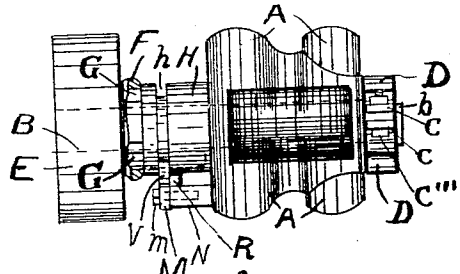


Fig. 1.

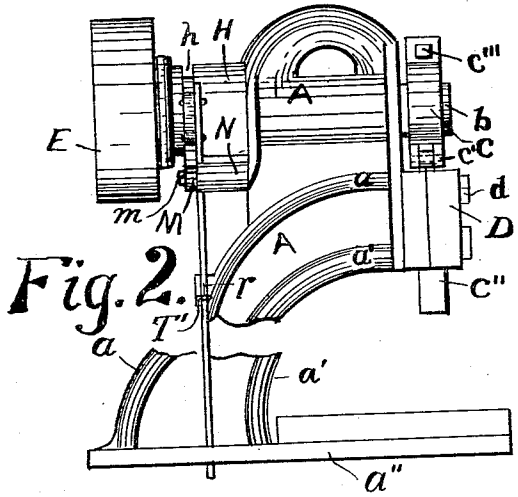


Fig. 2.

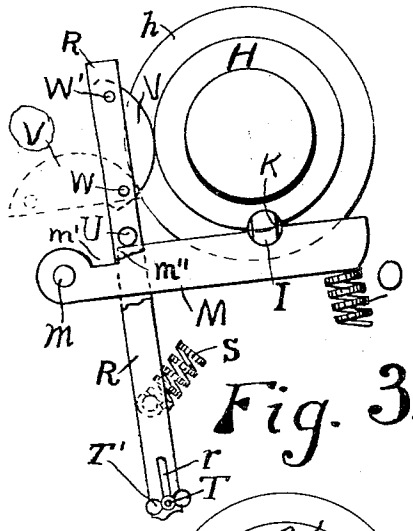


Fig. 3.

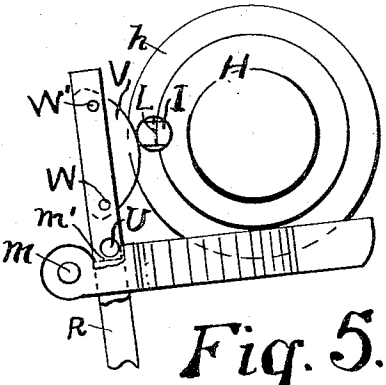


Fig. 5.

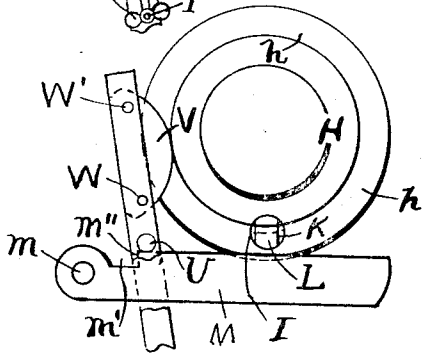


Fig. 4.



Fig. 6.

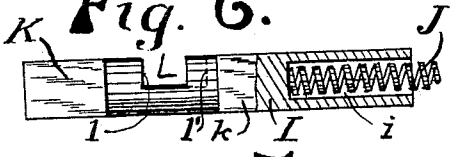


Fig. 7.

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PUNCH-PRESS.

1,305,461. Specification of Letters Patent. Patented June 3, 1919.

Application filed April 1, 1918. Serial No. 226,047.

To all whom it may concern:

Be it known that I, WILLIAM S. GOODING, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Punch-Presses, of which the following, when taken in connection with the drawing accompanying and forming a part hereof, is a full and complete specification.

This invention relates to what are termed power presses and are especially adapted for blanking, forming, bending, trimming, punching, perforating, cutting, etc.

The objects of this invention are to obtain a power press which may be run continuously upon the pressing down and release of a pedal, whether the said pedal is continuously held pressed down, or whether it be released subsequent to its being pressed down, and also to obtain a power press which may be so adjusted that upon the pressing down of a pedal a single stroke will be delivered and thereupon said press will automatically stop whether said pedal be continuously depressed or released subsequent to its depression.

Additional objects are to obtain a power press of the kind named which will not require a loose pulley on the crank or cam shaft thereof additional to the driving pulley, and which will permit the adjustment of the die on the bed thereof without throwing the belt from the pulley thereon.

Further objects are to obtain an economically made power press of considerable capacity that is particularly adapted to do what is known in the art as small work; to obtain a power press of the kind described which is durable, not liable to break, easily understood, and operable by persons not particularly skilled in die press work without liability of injury to said person.

In the drawing referred to illustrating a power press embodying this invention,

Figure 1 is a top plan view; and Fig. 2 a side elevation of said press.

Figs. 3, 4 and 5 respectively are diagrammatic views illustrating the relative positions of the driving elements of the press.

Fig. 6, is a top plan view of a cam knife which is one of the elements illustrated in Figs. 3, 4 and 5, and

Fig. 7, is a view partly in elevation and partly in section of a driving pin or bolt also illustrated in said Figs. 3, 4 and 5.

A reference character applied to designate a given part indicates said part throughout the several figures of the drawing, wherever the same appears.

A, represents the standard; *a*, *a'* strengthening ribs to said standard, and *a''* the base thereof. B, indicates the crank or cam shaft of the press (see broken lines in Fig. 1), *b* the crank or cam on said shaft; C, a clamp for said crank or cam *b*. C' a pin or pivot connecting said clamp to the punch holder C'' and C''' a bolt to adjust clamp C to said crank or cam *b*. D represents the two part guideway of punch holder C'', and *d* bolts joining the parts of said guideway. E is a pulley which is loosely mounted on shaft B, and F is a hollow hub to pulley E. G, G, are pins in hub F. H, is a hub or collar which is mounted on shaft B, and rigidly secured thereto. Hub H is provided with the annular groove *h* and with a recess or well extending alongside of and parallel to the shaft B, when said hub or collar is mounted on said shaft. Said recess or well is fitted to receive pin I therein, and to permit longitudinal, but not turning, movement of said pin. J, Fig. 7, represents a spring which is mounted in the recess *i* of pin I and arranged so that the end thereof abuts against the bottom of the recess or well in hub or collar H in which said pin is placed, to yieldingly hold said pin in advanced position. The pin I is provided with the flat side K against which one, or the other, of the driving pins G, in hub F, is brought into contact by the revolution of the driving wheel E when said pin is in advanced, (driven or driving), position. Said pin is also provided with a flat side or face *k* which is in contact with a corresponding face in hub or collar H (to prevent said pin turning as hereinbefore mentioned). Said pin is also provided with a recess (L) on one side thereof, said recess having one end thereof at right angles to the axis of the pin as at *l*, and the other end beveled as at *l'*, Fig. 7. M is a cam knife one end whereof is pivotally mounted on bolt *m* in abutment N, said abutment being illustrated as integral with standard A. The member M is also provided on the upper face thereof with a recess *m'* to obtain step *m''*. O, Fig 3, represents a spring which yieldingly holds lever M in an operable position. The cam knife M is made,

at the free end thereof, (lettered P, Fig. 6), so thin that when said cam knife is in the position which is illustrated in Figs. 3 and 5, the rotation of hub or collar H, carrying pin I therewith and said pin being in an advanced position, will carry said pin onto said cam knife with said end P in said recess L and the continuous rotation of said hub or collar H will move the end l' of said recess onto the inclined face Q of said cam knife, said face forming a cam, and said cam in the continuous rotation of said collar or hub H forces pin I into a retracted position (against the resilience of spring J) out of the path of movement of pins G, in hub F. Rotation of the hub or collar H and shaft B will thereupon cease and driving wheel E becomes a loose pulley on said shaft B.

To control the position of the cam knife M and provide for either a single stroke of the punch C'' or a succession of strokes thereof, when desired, I provide the longitudinally movable member R, having slot r, spring S, guide bolt T, with wing nut T' thereon, stop or abutment U on said member R, and adjustable cam V. The spring S yieldingly holds the member R raised on guide bolt T with the face of cam V against the bottom of annular groove h, as is illustrated in Figs. 3 and 4 of the drawing. Slot r limits the vertical movement of member R. Guide bolt T is mounted on a projecting abutment of standard A.

The cam V is mounted on member R by pins W, W' and when said cam is desired to be placed in an inoperative position the pin W' (which I prefer to be a cotter pin), is withdrawn and said cam turned pivotally on pin W into substantially the position which is indicated by broken lines in Fig. 3. When said cam is in said inoperative position, upon the depression of member R, as by a pedal, knife M is depressed, by abutment U, into substantially the position thereof which is illustrated in Fig. 4, thereby bringing cam Q out of engagement with end l' of recess L, and pin I is thereupon forced in an advanced and driving position (to be in the path of travel of one or the other of abutments G in hub F), and continuous rotation of hub or collar H and shaft B occurs with corresponding continuous operation of the member C''.

The operation of the last above described elements, said cam V being in the position on member R illustrated by full lines in Fig. 3 is as follows:

On the depression of member R the abutment U forces the lever M into substantially the position illustrated in Fig. 4, releases the pin I, as above described, and said pin is forced forward by spring J into position where one of the abutments G will engage therewith, and hub or collar H with shaft B is turned or rotated by said abutment G engaging pin I. The rotation of said hub or collar H will actuate the member C'' as above described, and will also carry said pin I into engagement with cam V and said pin will force said cam and member R to the left, as viewed in Figs. 3, 4 and 5, thereby forcing the abutment U off of the step m'', and into recess m'. Said recess m' is made sufficiently deep so that whether the member R is maintained in a depressed position or whether it be released and automatically raised by spring S the cam knife M may be turned on its pivot m by spring O into its initial position, as illustrated in Fig. 5, and on the pin I being again brought around and onto cam knife M, as hereinbefore described, the pin I will be again retracted by said cam knife as hereinbefore described. To obtain an additional stroke of member C'' the raising of said member R, by spring S and renewed depression of said member R is required.

When it is desired to set a punch in member C'' to register with a die on base a'' the butterfly nut T' is turned on bolt T, and thereby forced down onto member R, so that, although being in a raised position, with bolt T in the lower end of slot r, said member R is locked to the standard A, and cannot be moved either by design or by accident. Hence, no revolution of the shaft B and corresponding downward movement of member C'' will occur.

I claim:

1. A cam shaft rotatably mounted, a pulley having a hollow hub provided with abutments therein and looosely mounted on said shaft and a collar provided with an annular groove rigidly mounted on said shaft, a longitudinally movable pin provided with a recess mounted in said collar, means to yieldingly hold said pin in an advanced position and with the end thereof in the path of movement of said abutments, in combination with a longitudinally movable member provided with an abutment and cam thereon, means to yieldingly hold said member in a raised position with said cam in said groove and in the path of movement of said recessed pin, a pivotally mounted cam knife provided with a recess, means to yieldingly hold the free end of said cam knife in the path of movement of said recessed pin, said abutment on said movable member arranged to move said cam knife out of the path of movement of said recessed pin on the depression of said longitudinally movable member and said cam arranged to be forced by said recessed pin out of the path of movement thereof, thereby moving said longitudinally movable member to force the abutment thereon into the recess in said cam knife, to permit the free end of said cam knife to be automatically moved into the

path of movement of said recessed pin by the hereinbefore named yieldingly holding cam knife means.

2. A cam shaft rotatably mounted, a pulley having a hollow hub provided with abutments therein and loosely mounted on said shaft and a collar provided with an annular groove rigidly mounted on said shaft, a longitudinally movable pin provided with a recess mounted in said collar, means to yieldingly hold said pin in an advanced position and with the end thereof in the path of movement of said abutment, in combination with a longitudinally movable member provided with an abutment and a cam thereon, said cam movable to an operable and to an inoperable position, means to yieldingly hold said member in a raised position with said cam in said groove and when in an operable position in the path of movement of said recessed pin, a pivotally mounted cam knife provided with a recess, means to yieldingly hold the free end of said cam knife in the path of movement of said recessed pin, said abutment on said movable member arranged to move said cam knife out of the path of movement of said recessed pin on the depression of said longitudinally movable member and said cam arranged when in an operable position to be forced by said recessed pin out of the path of movement thereof, thereby moving said longitudinally movable member to force the abutment thereon into the recess in said cam knife, to permit the free end of said cam knife to be automatically moved into the path of movement of said recessed pin by the hereinbefore named yieldingly holding cam knife means.

WILLIAM S. GOODING.

In the presence of—

CHARLES TURNER BROWN.