

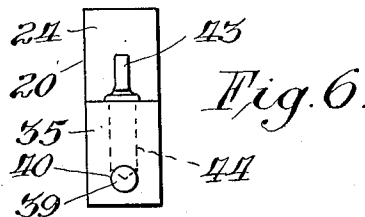
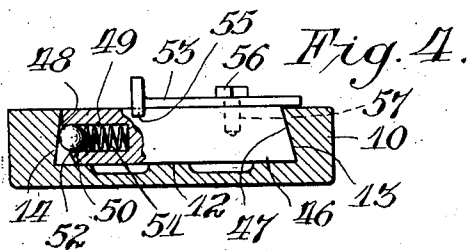
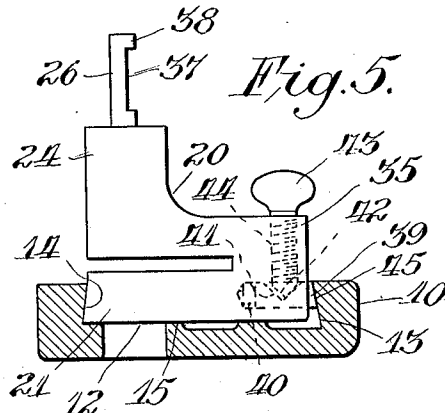
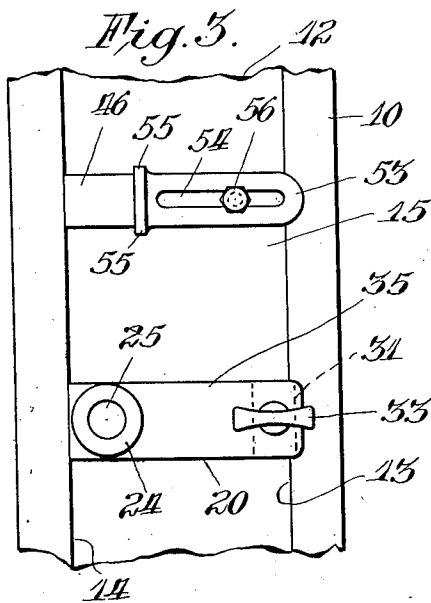
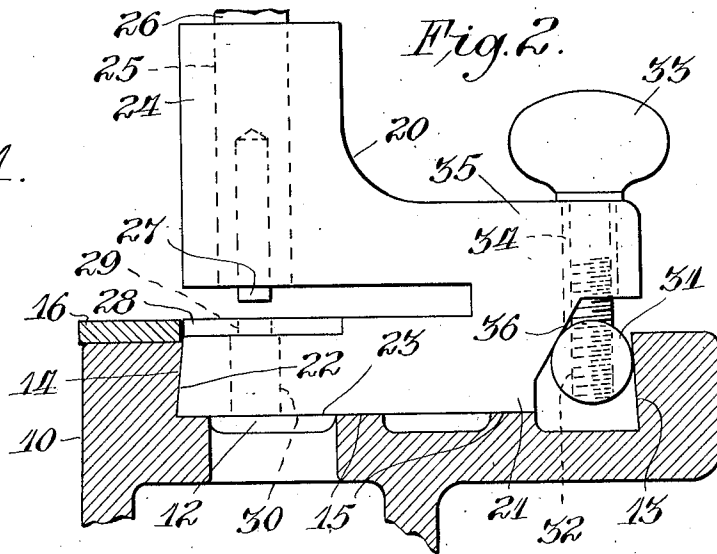
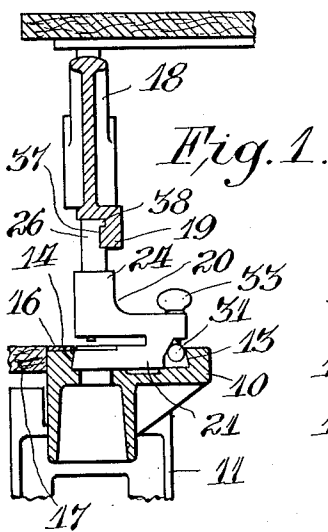
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PUNCHING MACHINE

Filed Nov. 22, 1926



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UNITED STATES PATENT OFFICE.

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PUNCHING MACHINE.

Application filed November 22, 1926. Serial No. 149,835.

This invention relates to a punch, and more particularly to a quick detachable and adjustable punch block and guide.

One of the objects of the present invention is to provide a novel and improved form of a quick detachable punch block and guide which can be easily and securely mounted in or detached from the bed or frame of the punch.

A further object of the invention is to provide a novel and improved form of punch block which is simple in construction and is provided with means which engage the bevelled finished surface of the bed or frame of the punch for securely fastening the punch in various positions of adjustment in the bed or frame.

A still further object of the invention is to provide a novel and improved form of guide which may be quickly and readily adjusted within the bed or frame and is provided with means for automatically locking the guide in various positions of adjustment.

These and other objects are accomplished by providing construction and arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

Referring to the drawings,

Figure 1 is a fragmentary cross-sectional view showing a fragmentary portion of a punch, which includes the head and bed or frame having my improved punch block mounted therein;

Figure 2 is an enlarged side elevational view of my improved punch block, showing a portion of the punch bed or frame in cross-section;

Figure 3 is a top plan view showing a fragmentary portion of the bed or frame having my improved punch block and guide mounted therein;

Figure 4 is a cross-sectional view of a portion of the punch bed or frame showing my improved form of guide mounted therein, with the same shown partly in cross-section;

Figure 5 is a side elevational view of a modified form of securing means for locking the punch block in the bed or frame; and

Figure 6 is a rear elevational view of the punch block shown in Figure 5.

In illustrating one embodiment of my invention, I have shown the same in connection with a punch which consists of the usual bed or frame 10 supported on side frame members 11. The bed or frame 10 is provided with the usual longitudinally extending channel 12, which is formed by the inclined or bevelled finished surfaces 13 and 14 so as to form substantially a dove-shaped channel throughout the entire length of the bed or frame. The bed or frame is further provided with spaced apart finished surfaces 15. Secured to the forward end of the bed or frame adjacent the front bevelled surface 14 is the usual scale 16 and table 17. Operably connected with the punch in a manner well understood in the art is the usual reciprocating head 18, which in turn is provided with a downwardly extending reverse L-shaped finished portion 19 for engaging the punch in the manner hereinafter described. This reverse L-shaped portion 19 extends longitudinally across the head of the punch and permits the engagement of the plunger so that the same may be adjusted in various positions across the punch head.

One of the essential features of my invention is the provision of a novel form of punch block, which cannot only be readily adjusted within the bed or frame of the punch, but which at the same time can be quickly detached and removed from the bed or frame with the reciprocating plunger firmly secured in the bed or frame in such a manner that the accidental movement of the punch block with respect to the bed or frame is prevented.

My improved punch block, as shown at 20, comprises a base or frame engaging portion 21, which is provided with a forward tapered finished portion 22, which engages the inclined or bevelled portion 14 of the bed or frame 10 when the finished or bottom surface 23 is seated on the finished surfaces 15 of the bed or frame. The punch block 20 is provided with a reciprocating plunger supporting portion 24, which in turn is provided with a vertically extend-

ing bore 25. Mounted within the bore 25 is a reciprocating plunger 26. The reciprocating plunger 26 is provided with a hardened punch 27 mounted in a longitudinally extending socket formed in the plunger. The base 21 of the block 20 is provided with a die 28, which in turn is provided with an aperture 29 for receiving the punch 27 therein. Located below the aperture 29 and concentrically therewith is a bore 30 which extends through the base portion 21 of the block for permitting the punched material to be dropped therethrough.

My improved means for securely fastening the punch block to the beds comprises a locking pin 31 which is cylindrical in shape and of a width substantially the width of the punch block. Extending through the diametral center of the locking pin 31 is a threaded bore 32, in which is mounted a threaded thumb screw 33. The thumb screw 33 is loosely mounted in a vertically extending bore 34 mounted in a rear extension 35 of the block 20. The rear end of the block 20 is provided with a bevelled surface 36 which assumes an angle of substantially 60 degrees with respect to the horizontal and is positioned with respect to the bevelled surface 13 of the bed so that the locking pin 31 forms substantially a wedge and securely locks the block 20 when the thumb screw is turned in a direction to draw the locking pin upwardly with respect to the block.

With this construction it will readily be seen that by having the locking pin 31 of substantially the same width as the block 20, the curved surfaces of the locking pin afford a large locking or wedging surface between the inclined wall 13 of the bed and the inclined wall 36 of the block, thereby positively assuring a rigid clamping fit so as to prevent any accidental movement of the block after once the thumb screw 33 has been securely tightened. At the same time, it will be noted that a few turns of the thumb screw will release the locking pins against the surfaces and permit the ready removal of the block from the bed or frame of the punch.

In order to further facilitate the removal of the block from the bed or frame so that additional blocks may be inserted, or if necessity requires certain blocks to be removed, I have provided a novel form of plunger which has its upper portion provided with a transverse slot as shown at 37 forming substantially an overhanging flange 38. The flattened slot 37 on the plunger is adapted to engage the forwardly projecting portion 19 on the head 18 so that the plunger is prevented from revolving when the block is secured in the bed or frame. This construction also permits the blocks to be inserted or

removed from the punch without any loss of time.

In the modified form of my invention shown in Figure 6, I have shown a locking pin 39 which is reciprocally mounted in a bore 40 which extends longitudinally in the rear end of the beds 21 of the block 20. This pin 39 is provided with a bevelled or conically shaped bore 41, which is adapted to engage the bevelled or conically shaped end 42 of a thumb screw 43, the thumb screw 43 being mounted in threaded engagement with the bore 44 formed in the tail end 35 of the block 20. The threaded bore 44 in the block 20 is arranged at right angles with respect to the bore 40 so that the tapered or conically shaped portion 42 of the thumb screw 43 is adapted to engage the conically shaped concavity or aperture 41 in the pin 39. The rear end of the pin 39 is bevelled as shown at 45, so as to engage the bevelled portion 13 of the bed or frame 10.

From the above description it will be seen that as the thumb screw is adjusted downwardly with respect to the block, the conically shaped portion 42 of the thumb screw 43 engages the conically-shaped concavity 41 in the pin 39 and forces the same outwardly with respect to the block so that the inclined surfaces 45 of the locking pin 39 engage the inclined surface 13 of the bed and thereby clamp the block in the bed or frame and secures it from removal therefrom.

With this construction it will readily be seen that I have not only provided a construction which securely fastens the punch block to the bed or frame of the punch, but one in which additional punch blocks may be quickly inserted in or removed from the bed or frame.

Another important feature of my invention is the provision of a novel form of guide which may be removed or adjusted and which at the same time automatically locks itself in the bed or frame of the punch. This comprises a block 46 which is provided with a rearwardly tapered portion 47, which in turn is adapted to engage the rearward tapered wall 13 of the bed or frame. The forward end of the guide block 46 is slightly curved, as shown at 48, in a direction reverse to the tapered wall 14 of the forward wall of the bed or frame 10. Located in the forward end of the guide block 46 in a longitudinally extending bore or socket 49 is a ball 50. Mounted between the ball 50 and the base of the socket 49 is a compression spring 51 which normally forces the ball outwardly with respect to the guide block 46. In order to prevent the ball from being discharged from the socket 49, I have upset the material as shown at 52 so that only a portion of ball 50 pro-

trudes from the outer end of the socket 49. Mounted on top of the guide block 46 is a back gauge 53, which in turn is provided with a longitudinally extending slot 54 and 5 overhanging flanges 55 which engage the opposite sides of the block. The back gauge may be adjusted longitudinally with respect to the block by means of a bolt 56 which is mounted in a threaded bore 57 of the block 10 46.

From the above description it will be seen that the guide block may be adjusted longitudinally within the bed or frame of the punch to various positions of adjustment, 15 or may be readily removed from the bed or frame by merely withdrawing it from the channel formed in the bed or frame.

It will also be noted that when the gauge block is inserted in its normal operative 20 position in the bed or frame, the spring actuated ball 50 automatically locks the gauge block when thus inserted.

While in the above specification I have described one embodiment of one modification of my invention, it will of course be understood that the same is capable of further 25 modification without departing from the spirit and scope of the invention as defined by the following claims.

30 What I claim as my invention and desire to secure by Letters Patent is:

1. In combination with a punching machine, a frame having a longitudinally extending channel formed therein, the walls of 35 said channel inclined at an angle with respect to the vertical, a punching block mounted in said channel and having its front end engaging one of the inclined walls of said channel, said block having an inclined wall, and means slidably mounted on 40 the inclined wall of said block and engageable with the other inclined wall of the channel, for detachably securing said block to said frame.

45 2. In combination with a punching machine, a frame having a longitudinally extending channel formed therein, the walls of said channel inclined at an angle with respect to the vertical, a punching block 50 mounted in said channel and having its front end engaging one of the inclined walls of said channel, a threaded member mounted on one end of said block, and an adjustable locking pin supported on said threaded member and engageable with the other of said 55 inclined walls of said channel for detachably securing said block to said frame.

3. In combination with a punching machine, a frame having a longitudinally extending channel formed therein, said channel formed by upwardly inclined walls, a 60 block mounted in said channel having its forward end engageable with one of the inclined walls of said channel, an adjustable member mounted on one end of said block, a

second member suspended by said first-named member and engageable with the other inclined wall of said channel for detachably fastening said block to said frame.

4. In combination with a punching machine, a frame having a longitudinally extending channel formed therein, said channel formed by upwardly inclined walls, a block mounted in said channel having its forward end engageable with one of the inclined walls of said channel, a locking member and a threaded member mounted in said 70 block having said locking member suspended therefrom, said locking pin being engageable with one of the inclined walls of said block for adjusting said locking member for detachably securing said block to said frame. 80

5. In combination with a punching machine, a frame therefor having a longitudinally extending channel therein, said channel 85 formed by upwardly inclined walls, a punching block mounted in said channel having one end thereof engaging one of said inclined walls, a threaded member carried by the other end of said block, and a locking pin mounted on and in threaded engagement 90 with said threaded member and engageable with the other inclined surface of said channel for detachably securing said block to said frame. 95

6. The combination of a punching machine, a frame having a longitudinal channel formed therein by upwardly inclined walls, a punching block having an inclined wall 100 and mounted in said channel having one end thereof engaging one of the inclined walls of said channel, a movable locking pin positioned transversely of said block and engageable with the other inclined wall of said channel and the inclined wall of said 105 block, and means including a threaded member carried by said block and in threaded engagement with said locking pin for moving said pin to detachably secure said block to said frame. 110

7. In combination with a punching machine, a frame having a longitudinally extending channel formed therein, said channel formed by having upwardly inclined walls, a punching block mounted in said channel and having one end thereof engageable with one of said inclined walls, a threaded member mounted in the other end 115 of said block, and a locking pin in threaded engagement with said threaded member and engageable with the other bevelled wall of said channel for detachably securing said block to said frame. 120

8. In combination with a punching machine, a frame having a longitudinally extending channel formed therein, the opposite walls of said channel converging toward each other at the upper end thereof, a punching block mounted in said channel, having 125 one end engageable with one of said inclined 130

walls, the other end of said block being provided with an inclined bevelled surface, a threaded member extending through an aperture in said block adjacent said inclined wall, and a locking pin in threaded engagement with said threaded member and engageable with the bevelled surface of said block and

the other bevelled wall of said channel for detachably fastening said block to said frame.

In testimony whereof I have signed my name to this specification.

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PETER A. JUUL.