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WORKHOLDING DEVICE

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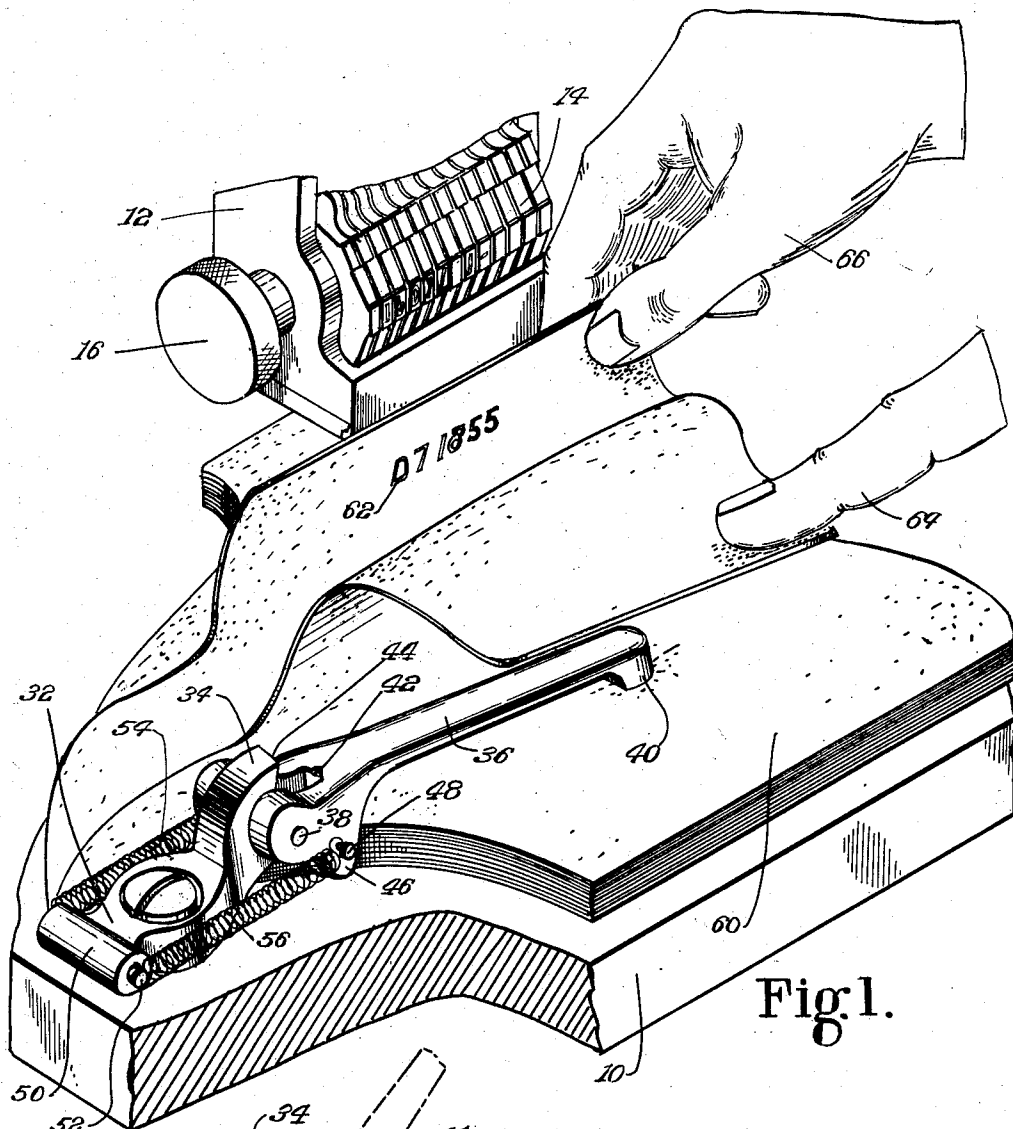


Fig. 1.

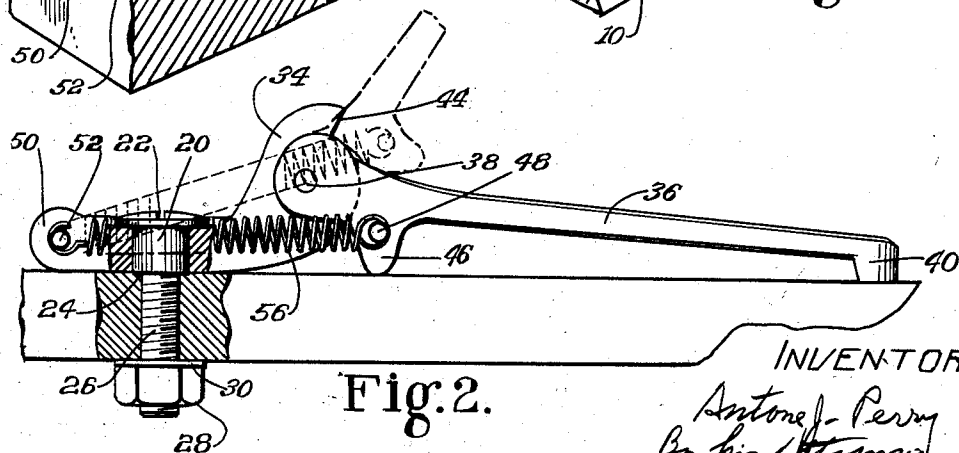


Fig. 2.

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## WORKHOLDING DEVICE

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This invention relates to work-holding devices and is illustrated as embodied in a device designed for temporarily retaining a stack of similar flexible pieces of work while they are being operated upon by a marking machine. It is to be understood that the invention is not limited to use in connection with such a machine.

In the manufacture of shoes, collars, shirts and various articles, it is found convenient to apply identifying marks such as lot marks, case marks, etc., and in some instances to apply size marks to component pieces of work. In large scale production of such articles it is customary to cut any particular part from a plurality of pieces of material, and this stack of identical pieces is commonly moved as a unit as it is transferred to a marking machine for the application of suitable identifying marks to each of the component pieces of the stack. In the use of such a machine, it is common for the operator to place the whole stack on a self-adjusting supporting table of a marking machine and then to cause the machine to mark the top piece of the stack after which this top piece is folded back to allow the machine to mark the next piece of the stack which is folded back and the operation continued. Preferably, the symmetrical arrangement of the stack is not disturbed so that it may be again transferred as a compact unit.

With this in view, the object of the present invention is to provide a simple and convenient work-holding device by means of which a stack of pieces of work may be mechanically held in position upon the table of the machine or readily removed.

In order that the work may be inserted under or removed from beneath the holding device without disturbing the symmetrical arrangement of the stack, the illustrated embodiment of the invention provides novel means positively to determine the work-receiving position of a work-holding finger, and resilient means constructed and arranged impositively to maintain it in this position. Preferably, the resilient means is constructed and arranged to serve also for pressing the finger against the work.

To provide for the unusual case in which

the work-holding or holddown finger is not desired, the invention also contemplates the provision of a novel arrangement for supporting the work-holding finger upon the work table of the machine constructed and arranged so that the finger may be moved laterally as well as vertically to move substantially the whole device into an inoperative position out of the way of the operator while leaving it in condition so that it may be readily returned to operative position adjacent to the hands of the operator.

In the illustrated embodiment of the invention, a holddown finger is pivotally mounted upon a support which in turn is so mounted upon a stud secured in the table of the machine that the whole device can be turned aside around the axis of the stud as desired. Movement of the finger is limited positively in the upward direction by a shoulder upon the support and in the downward direction by the table. Suitable springs are provided, extending between the support and the finger, which are constructed and arranged to hold the finger either in its upright position for the insertion of a stack of work or, as the center line of the springs passes the pivot of the finger, in its lowered position to clamp the work against the table.

In the accompanying drawings, Fig. 1 is a perspective view showing the device attached to the table of a marking machine; and

Fig. 2 is a side elevation partly in section of the same device.

The illustrative marking machine comprises a work-supporting table 10 and a movable marking head 12 provided with rotatable type wheels 14 and a handle 16 by means of which these type wheels may be rotated to bring the desired figures or letters into operative position.

The work-holding device shown in the drawings comprises a headed stud 20 having a screw driver slot 22 in its head and a shoulder 24 bearing against the upper surface of the table. A reduced lower end 26 of the stud 20 is threaded and the device is clamped in position by means of a nut 28 between which and the lower side of the table there is pref-

erably interposed a washer 30. A support 32 is clamped to the table by means of the stud 20 and preferably is held by properly designing the length of the stud above the shoulder 24 in such fashion that it may be pivoted or rotated against the friction between itself and the table 10 when it is desired to turn the whole device out of the way. This support 32 is provided with a narrow forward extension 34, which projects upwardly from the table, and to this extension 34 there is pivotally attached a holddown finger 36 by means of a pin 38 carried by the extension 34 and arranged to extend through the bifurcations formed in the rear end of the finger 36. The pin 38 is at right angles to the pivot stud 20. The forward end of the finger 36 is provided with a work-contacting extension 40 and upward movement of the finger is limited by the engagement of its upper surface at a point 42 with a shoulder 44 formed on the vertical extension 34 of the support. The holddown finger 36 is provided adjacent to its pivot 38 with forwardly extending, oppositely disposed, similar ears 46 each of which is provided with a pin 48. The support 32 is provided with a rearward extension 50 in which are laterally extending pins 52. Tension springs 54 and 56 have their opposite ends connected to the pins 48 and 52. It will be noted from an inspection of Fig. 2 that the center line of the springs 54 and 56 passes the center of the pivot 38 as the finger 36 is raised or lowered so that said springs are effective either to hold the finger 36 against the work or to hold said finger in an upright position, as indicated by dotted lines in Fig. 2, to allow the insertion of a stack of pieces of work between said finger and the table of the machine.

In the use of the device, a stack 60 of similar pieces of work is placed upon the table of the machine while the finger 36 is occupying an elevated inoperative position and the finger is then lowered resiliently to engage said stack and hold it in position upon the table. Prior to this engagement of the stack by the holddown finger, the stack will have been properly positioned so that marks 62 may be applied by the machine in the desired position upon the work. The machine may then be set in motion to apply a mark to the uppermost piece after which the marked portion of said piece will be moved forward and held out of the way by a finger 64 of one hand of the operator and the machine again operated to apply a mark to a succeeding piece. As this piece is lifted out of the operating path of the machine by the other hand 66 of the operator, the finger 64 is lifted to receive the folded-over edge of the second piece and the operation repeated until the whole stack has been marked. It will be understood that marking machines of this type are usually provided with a table which auto-

matically adjusts itself to the changing thickness of the stack. The holddown finger 36 may then be moved about one pivot pin to raise it to its upright position, as determined by the shoulder 44 and indicated in Fig. 2, and it will be resiliently held in this position to allow the removal of the stack of work by the operator and the insertion of the new stack at will. As the finger is then turned into engagement with the new stack of work, the springs 54 and 56 pass the center of the pivot 38 and bring said finger into engagement with the stack of work with sufficient force to retain it in position during the operation of the machine.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A work-holding finger pivotally mounted on the table of a machine for movement from work-clamping position adjacent to the table to opened work-receiving position remote from the table, means positively to determine the latter position, and a spring acting on said finger arranged to hold it in opened work-receiving position after it has been turned on its pivot.

2. A work-holding finger movably mounted on the table of a machine for movement into work-clamping position adjacent to the table and into opened work-receiving position, means positively to determine the latter position, and a spring acting on said finger arranged to hold it resiliently against the work as well as to hold it in opened work-receiving position.

3. A work-holding device for application to the work-supporting table of a machine comprising a stud to be passed through said table, a work-holding finger operatively connected to said stud, said finger being movable toward and away from the table, and resilient means urging said finger toward the table, said finger being also movable around the center line of said stud to turn it aside to an inoperative position.

4. A work-holding device for application to the work-supporting table of a machine comprising a supporting member, a work-holding finger pivotally attached to said supporting member, resilient means constructed and arranged to hold said finger either in engagement with the work or in upright position to allow the convenient insertion of the work beneath said finger, and means for attaching said supporting member to the table of the machine constructed and arranged to allow the supporting member and the finger to be turned bodily aside to an inoperative position.

5. A work-holding device for application to the work-supporting table of a machine comprising a supporting member, a work-holding finger pivotally attached to said supporting member for movement from a sub-

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stantially horizontal work-engaging position adjacent to the table to an upright position remote from the table, and resilient means constructed and arranged to hold said finger  
 5 either in engagement with the work or in upright position to allow the convenient insertion of the work beneath said finger.

6. A work-holding device for application to the work-supporting table of a machine  
 10 comprising a supporting member, a work-holding finger pivotally attached to said supporting member, said supporting member being constructed and arranged to limit the movement and determine the position of said  
 15 finger when the same has been turned to an upright position away from the work-supporting table, and resilient means constructed and arranged to retain said work-holding finger in engagement with the work or in its  
 20 upright position as determined by said supporting member.

7. A work-holding device for application to the work-supporting table of a machine comprising a supporting member, means for attaching said supporting member to the table  
 25 of the machine, said supporting member being provided with a narrow, upright, forward extension having a shoulder, a work-holding finger pivotally attached to said forward  
 30 extension and constructed and arranged to engage said shoulder when moved to an upright position for the positioning of the work on the table of the machine, and means for holding said finger in either its operative work-  
 35 engaging position or its upright inoperative position in engagement with said shoulder.

8. A work-holding device for application to the work-supporting table of a machine comprising a supporting member, means for  
 40 pivotally attaching said member to the table of the machine, a laterally extending pin on said supporting member, said supporting member being provided with a forward extension to which there is pivotally attached a  
 45 work-holding finger, means for limiting the upward movement of the work-holding finger to an upright position, said finger being provided with a laterally extending pin, and a tension spring extending from said pin on  
 50 the finger to the pin on the supporting member constructed and arranged so that its force is exerted to hold the finger in engagement with the work and, when the finger is moved to upright position in engagement with said  
 55 shoulder, to pass the center line of the pivot between the finger and the support and to hold the finger in upright position in engagement with the shoulder.

9. A work-holding device for clamping a  
 60 stack of pieces on the table of a marking machine comprising a pivotally mounted arm the outer end of which is arranged to move toward the table to clamp the stack of pieces of work, said pivoted arm being arranged to  
 65 be turned into an upright inoperative posi-

tion out of the way of the operator when a stack of pieces is to be removed and replaced, means for determining said upright position, and resilient means for holding said arm  
 70 either in its upright position or its depressed work-clamping position.

10. A work-holding device for clamping a stack of pieces of material upon the table of a marking machine comprising a supporting  
 75 member adapted to be secured to said table, an arm pivotally mounted upon said supporting member and adapted to be moved either to an inoperative upright position to allow the removal and replacement of the stack of pieces or to a depressed position so that the arm  
 80 bears against and holds the pieces, and resilient means for holding said arm in either of said positions.

11. A work-holding device for holding a stack of pieces of work upon the table of a  
 85 marking machine comprising a supporting member adapted to be secured to said table, an arm pivotally mounted upon said supporting member, said supporting member being provided with an abutment adapted to deter-  
 90 mine an upright position of said arm when the latter is moved away from the table to allow the removal and replacement of the work, and a spring for holding said arm in depressed position in engagement with the stack  
 95 of pieces upon the table, said spring being so attached to the supporting member and the arm that it passes the pivot of the arm and serves to hold the arm against the abutment when the arm is turned to its upright position.  
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12. A work-holding device comprising a support provided with a plurality of positively located pivot pins extending at right angles to each other, a work clamping finger  
 105 pivotally mounted on one of said pins and having a portion engaging the work, and means for securing the support upon a machine for movement about the other pin.

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

ANTONE J. PERRY.

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