April 23, 1968 A. N. BURNS ET AL 3,379,083

MACHINEABLE HEADED PUNCH

Filed Nov. 19, 1965

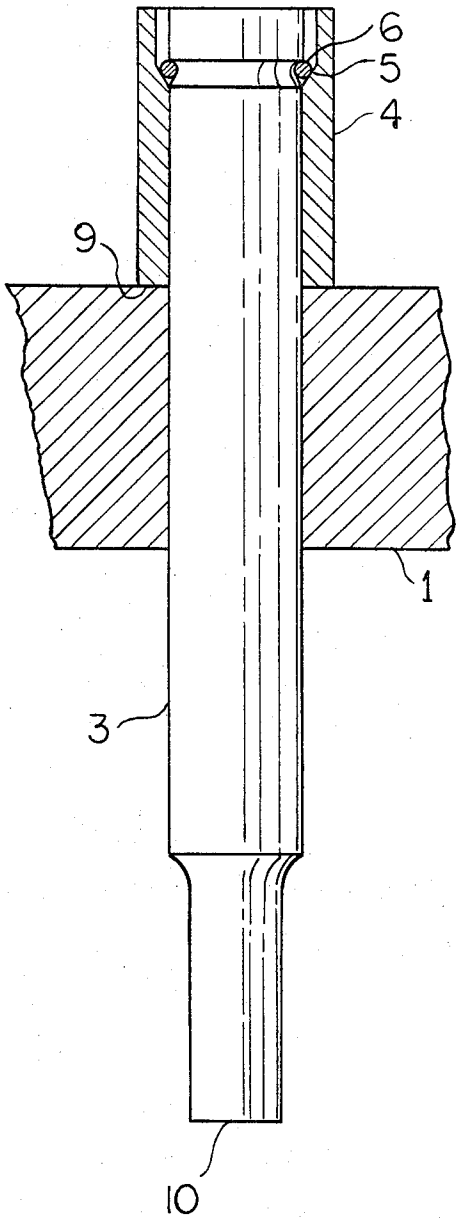



Fig. 1

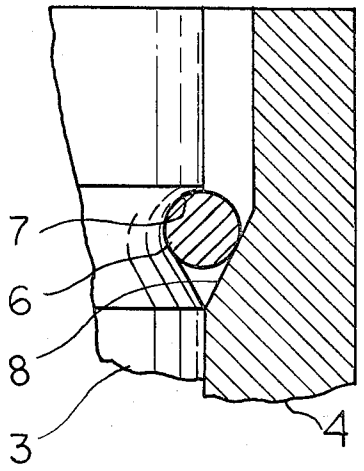



Fig. 2

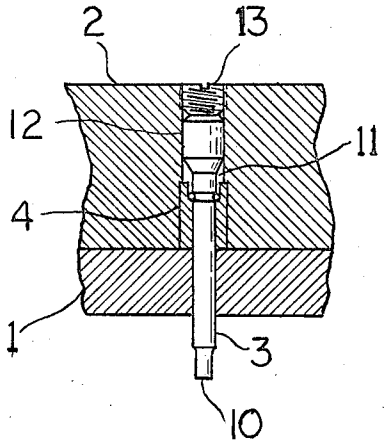



Fig. 3

INVENTOR.
ALFRED NORMAN BURNS
and JOHN CALISTO VECCHI

United States Patent Office

3,379,083

Patented Apr. 23, 1968



3,379,083

# MACHINEABLE HEADED PUNCH

Alfred Norman Burns, Cheswick, and John Calisto Vecchi, Natrona Heights, Pa., assignors to Oberg Manufacturing Co., Inc., Freeport, Pa., a corporation of Pennsylvania

Filed Nov. 19, 1965, Ser. No. 508,721

2 Claims. (Cl. 83—686)

## ABSTRACT OF THE DISCLOSURE

This application discloses improvements in machineable heads for piercing punches, and the present invention is a modification of the piercing punches disclosed in Patent 3,149,524 granted Sept. 22, 1964.

In the former patent, the piercing punches were mounted in punch blocks and if the cutting face of a punch was worn or broken, it would have to be removed from the punch block and re-ground and then be reinserted in the block. The patent discloses the use of grooves in the shank of the punch having predetermined spacing with a spring wire for locking the position of the punch so that if the end of the punch were refinished, it would be ground off a distance corresponding to the spacing of the grooves so that all of the ends of all of the punches would be in alignment when mounted in the punch block.

In accordance with the present invention, the adjustable ring type punch is eliminated and a machineable steel head is used to mount the punch in the punch block, and it is among the objects of the invention to provide an adjustable piercing punch with a machineable steel head that is pressed on the punch for aligning the cutting end of the piercing punch with other piercing punches that are mounted in the punch block.

The invention will become more apparent from a consideration of the accompanying drawing in which like reference characters designate like parts and in which:

FIGURE 1 is a cross-sectional view of a punch block with a piercing punch in elevation and having a machineable steel head for aligning the cutting face of the piercing punch relative to the punch block;

FIGURE 2 is an enlarged detail of the piercing punch and machineable head illustrating the manner of retaining the punch by a retaining ring and groove; and

FIGURE 3 is a vertical cross-sectional view of a punch block and punch holder showing the piercing punch in elevation with means for locking the piercing punch head in a punch holder.

With reference to the several figures of the drawing, the numeral **1** designates a punch block and the numeral **2** a punch holder. A piercing punch **3** is mounted in the punch block and is provided with a machineable steel head **4** having a groove **5** for a retaining ring **6**. As shown in FIGURE 2, the retaining ring **6** is disposed in a curved groove **7** of the piercing punch **3** and seats on a conical face **8** of the steel head **4** which has a press fit with the piercing punch **3**. The steel head **4** rests on the punch block **1**, and may be machined on its end **9** to lower or extend the piercing punch **3** in a downward direction, that is in the direction of the cutting face **10**. As shown in FIGURE 3, the steel head **4** is disposed in a bore **11** of the punch holder **2** by means of a spacer block **12** and a set screw **13**. If, for example, the piercing punch is repaired, as by grinding the cutting face **10**, the machineable steel head **4** is likewise cut back at the end **9** an amount equal to the material removed from the end of the piercing punch, so that when it is mounted in the punch block **1**, the cutting edge **10** will be the same distance from the lower face of the punch block as it was before it was repaired, thereby aligning itself with all the other piercing punches that are mounted in the block **1**.



When the piercing punch, to which the steel head has been secured by a press fit, is dropped in the bore **11** of the punch holder **2**, a spacer block **12** is inserted so that the set screw **13** will be screwed into the punch holder the same amount as was removed from steel head end **9**. In this manner, a solid connection between the piercing punch, punch holder and punch block is maintained. The construction is deemed extremely practical, because any punch shop has the facilities for renewing the punching faces of the piercing punches and also for machining the steel head in which the piercing punch is pressed and held.

Although one embodiment of the invention has been herein illustrated and described, it will be evident to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth.

We claim:

**1.** A piercing punch assembly consisting of a punch block and punch holder having bores in alignment for receiving piercing punches, piercing punches having a cylindrical body with a cutting face extending below said punch block and means for aligning said cutting face relative to said punch block consisting of a machineable steel head of tubular shape having a press fit with the cylindrical body of the piercing punch terminating short of the head end of said punch, said head being disposed in the bore of said punch holder and having an end abutting the punch block, and said head having a chamfered inner bore and said punch having a groove and a retaining ring disposed in the chamfer of the bore and groove, and means for securing said steel head and punch in the punch holder, said steel head being machineable at the end abutting the punch block to adjust the position of the cutting face of the punch.

**2.** A piercing punch assembly as set forth in claim **1** in which the means for securing the steel head and punch in the punch holder, comprises a spacer block disposed in the bore of the punch holder and a set screw disposed in a threaded portion at the end of said bore in the punch holder for engaging said spacer block and displacing the same against the head end of the piercing punch.

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,197,349 | 6/1939 | Ruthven | 83—686 |
| 3,149,524 | 9/1964 | Vecchi | 83—687 |

WILLIAM S. LAWSON, *Primary Examiner.*