Dec. 9, 1947. A. A. SCHUBRING 2,432,176

PUNCH

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Fig. 1.

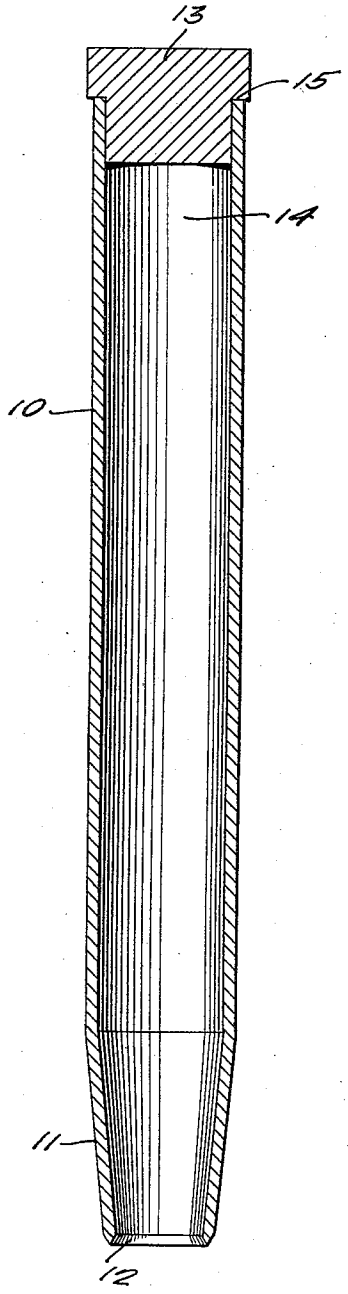
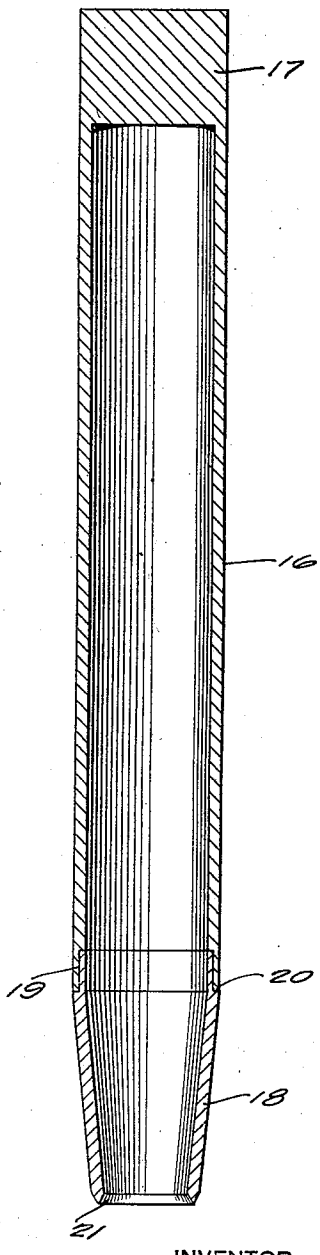


Fig. 2.



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PUNCH

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4 Claims. (Cl. 164—124)

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This invention relates to punches and especially to hand punches for cutting paper, leather, cloth, and the like.

One of the objects of the invention is to provide a hand punch with a sharp cutting edge which will remain sharp over long periods of use.

Another object of the invention is to provide a hand punch which will collect the punched material inside of the punch and prevent such material from being discharged and getting in the way as the punch is used.

Another object of the invention is to provide a hand punch which may be made very easily and inexpensively on automatic machinery.

Still another object of the invention is to provide a hand punch in which the cutting edge may be made of special cutting material while the remainder of the punch is made of cheaper stock.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a longitudinal sectional view of one embodiment of my improved punch; and

Figure 2 is a longitudinal section view of a modified form of the punch shown in Figure 1.

Referring now to Fig. 1, I have illustrated a punch comprising a tubular member 10 of relatively thin stock which is substantially uniform in inside and outside diameter for a major portion of its length. However, the lower portion 11, for an appreciable distance from the cutting end is tapered inwardly, both the inside and outside surfaces being tapered. The cutting edge 12 is beveled both inside and outside, as indicated. At the other end of the tubular member, I provide a plug 13 which may have a portion 14 of suitable diameter to fit with a friction fit into the end of the tubular member 10 and a shoulder 15 which will fit against the end. The plug 13 should be heavy enough to provide a striking surface for the blows of a hammer.

In using the punch the tubular member 10 may be held in one hand and the cutting edge 12 may be placed against a sheet of material to be punched which may be placed upon some smooth surface, such as a fiber block. The plug 13 is then struck with a hammer which cuts out a disc from the material. Since the inner beveled surface of the punch is smaller in diameter than the cutting edge, as may be seen from Fig. 1, the punched disc or punching will be held by friction just inside of the cutting edge. Each additional punching that is cut out is driven up inside of the punch and when these punchings have moved ⅛ of an inch or so above the cutting end they are freed from frictional engagement with the sides of the punch because of the increasing diameter of the tapered portion. Thus only two or three of the punchings will be held by friction adjacent the cutting edge, while the rest will be free inside of the body of the punch. When sufficient punchings have accumulated inside of the punch the plug 13 may be removed and the punchings may be poured out.

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I have found that the punch of Fig. 1 may be made out of cold rolled steel on an automatic machine, the tapered portion 11 being reduced in diameter by a suitable swaging tool, after which the tapered portion is hardened. The double bevel on the cutting edge aids in maintaining the sharp edge in use, because there is no tendency for the edge to feather in either direction.

In Fig. 2 I have shown a modified form of the invention, in which the tubular member 16 has an enlarged solid portion 17 at the top thereof to receive the hammer blows, while a shorter tapered element 18 is fitted frictionally into the lower open end. The tapered element 18 may be the same shape as the tapered portion 11 of Fig. 1 and it may be provided at its upper end with a reduced diameter portion 19 for fitting into the tubular member 16, the end of the tubular member 16 resting against a shoulder 20 thus formed in the tapered element 18. The narrow end 21 of the tapered member 18 may be beveled both inside and outside to form a sharp cutting edge.

The advantage of the construction of Fig. 2 is that the tapered element 18 may be made of tool steel or other special cutting material while the tubular member 16 forming the handle for the punch may be made of softer, cheaper material.

As illustrated, the striking end 17 of the punch of Fig. 2 is integral with the tubular member 16, but it will be understood that if desired this may be made as a separate plug, similar to the plug 13 of Fig. 1.

While the invention has been described in connection with a hand punch, it will be understood that power driven punches may also be made in this manner.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the

scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A punch comprising a tubular member of uniform inside and outside diameter for the major portion of its length having an appreciable portion thereof adjacent one end with both the inside and outside surfaces tapered inwardly and with the end beveled inside and outside to form a sharp cutting edge.

2. A punch comprising a tubular member of uniform inside and outside diameter for the major portion of its length, having an appreciable portion thereof adjacent one end with both inside and outside surfaces tapered inwardly and with the end beveled inside and outside to form a sharp cutting edge, and means at the other end of said member to receive the blows of a hammer.

3. A punch comprising a tubular member of uniform inside and outside diameter for the major portion of its length, having an appreciable portion thereof adjacent one end with both inside and outside surfaces tapered inwardly and with the end beveled inside and outside to form a sharp cutting edge, and a removable plug in the other end of said member to receive the blows of a hammer.

4. A punch comprising a tubular member of uniform inside and outside diameter having an enlarged portion at one end thereof to receive the blows of a hammer, a tubular tapered cutting member secured to the other end of said tubular member, said cutting member having both the inside and outside surfaces tapered inwardly toward its outer end, and the outer end of said tapered member beveled inside and outside to form a sharp cutting edge.

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