June 2, 1931. J. I. McCORD 1,807,998

REVERSIBLE SELF SHARPENING CHISEL

Filed Dec. 26, 1929

Fig. 2

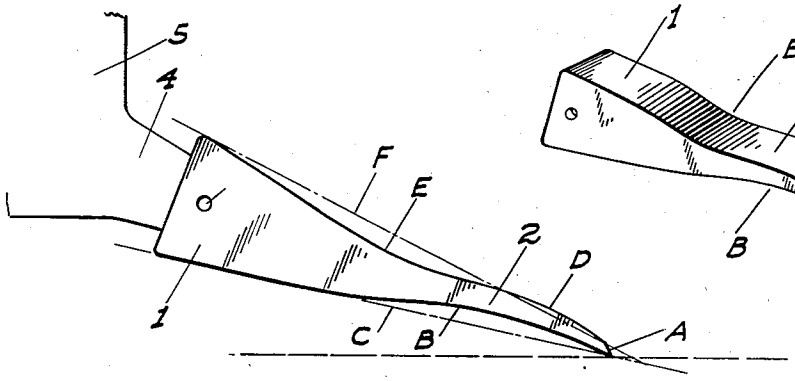


Fig. 1

Fig. 3

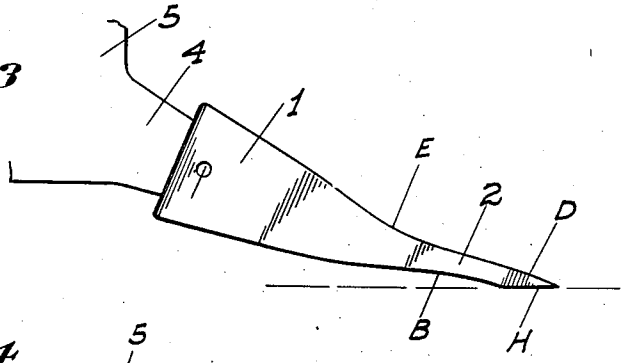


Fig. 4

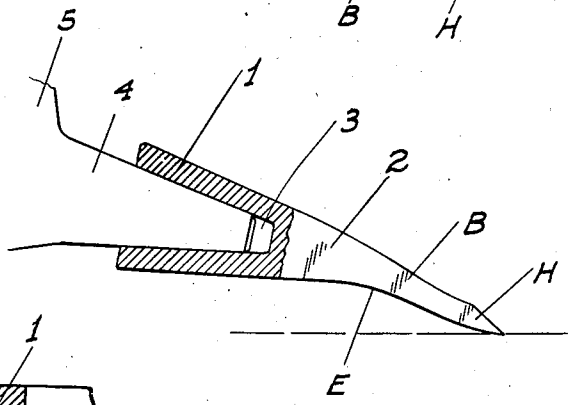
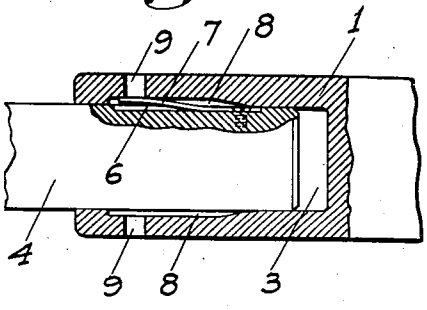


Fig. 5



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UNITED STATES PATENT OFFICE

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REVERSIBLE SELF-SHARPENING CHISEL

Application filed December 26, 1929. Serial No. 416,431.

This invention relates to ground working implements, and particularly to the chisel points adapted for use on sub-soilers, road plows and chisel cultivators, my improved point being particularly useful where dry work is necessary or hard ground must be penetrated.

All such chisels as are now in use as far as I am aware are constructed in such a manner that as soon as the cutting edge becomes dull and wears down the chisel has a decided tendency to work out of the ground, and of course does not then function as it should. This condition is reached so quickly that chisels cannot be used without being resharpened for even one hour of continuous work. The labor and overhead costs due to the continuous resharpening and refitting operations necessary, and the consequent tie-up of the machine, are therefore considerable.

The principal object of my invention is to avoid the above very objectionable features by so shaping the chisel as to cause the same to properly hold in the ground for a long time as compared to the present type of chisel, and so that when the cutting edge becomes dull and the point has been worn back, reversing of the chisel changes this dull edge into a sharp one. This last edge in turn becomes dull in time and upon again reversing the chisel or returning the same to its original position a sharp point is again pressed into the ground. My improved chisel can therefore be efficiently used until the available wearing portion of the same is entirely worn away, without any manual resharpening or other attention being necessary except to reverse the setting of the chisel when required.

To enable this reversing of the chisel to be easily carried out I have provided what I believe is a novel and automatic but easily releasable locking connection between the chisel and its supporting standard.

A further object of the invention is to provide a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a perspective view of my improved chisel.

Fig. 2 is a side elevation of the chisel in its normal ground engaging position and before any wear has taken place.

Fig. 3 is a similar view showing the chisel as somewhat worn away and the cutting edge dulled from continued use in said original position.

Fig. 4 is a similar view of the chisel partly in section showing the chisel as in the condition illustrated in Fig. 3 but reversed in position relative to the ground.

Fig. 5 is a fragmentary longitudinal plan section of the chisel showing the locking connection with the standard.

Referring now more particularly to the characters of reference on the drawings, the chisel may be considered as constituting a relatively thick base portion 1 and a relatively thin point portion 2; said portions being however the same width in a transverse plane from end to end as shown in Fig. 1. The base portion is provided with a tapered socket 3 into which removably fits a similarly shaped tongue 4 which projects with a slight downward angle from the supporting standard 5 of any suitable character. This tongue is disposed so that the chisel will extend toward the ground at a relatively small slope or angle and is symmetrical in form relative to its longitudinal axis so that the chisel will have substantially the same slope whether in its normal or reversed position. The chisel is removably locked on the tongue by a special device which will be fully described later.

The trouble with the ordinary chisel points is that there is so much friction underneath the same that the point is forced out of the ground as soon as the initial chisel or wedge-shaped cutting edge A becomes dulled and practically reversed as to its angular relation to the ground.

This objectionable feature I have entirely eliminated by forming the under side of the point portion, for substantially the full length of the same, with a curvature B which is concave relative to a straight line C extending between the bottom of the base and the bottom of the point at the tip or edge A; said curved portion being entirely above said line. On the upper surface of the chisel on the other hand the point portion is formed with a convex curve D, extending rearwardly from the cutting edge a certain distance, and then with a reversed or concave curve or flat bend E. The convex curve D is mainly above and the bend or concave curve E is below, a straight line F drawn from the top of the edge A to the back of the base at the top. This arrangement or shape of the upper and lower contours of the chisel is what gives my improved chisel its advantages over the ordinary form of chisel. By reason of the concave curvature of the under surface of the point portion, there is no material friction on the under side of the chisel in operation such as would tend to raise the point and cutting edge out of the ground. This in turn keeps all the weight of the chisel on the cutting edge, and this remains true as the edge wears back along the point, owing to the length of said concave curvature. The holding of the point in the proper digging position in the ground is aided by the raised or convex top curvature D, whose frictional contact with the ground tends to cause the forward portion of the chisel to be depressed. Also, this raised tortion being subjected to a relatively great friction, it wears down as the cutting edge wears back. Therefore by the time the chisel has worn back until the setting of the cutting edge relative to the ground is substantially parallel to the ground, as shown at H, the height or thickness of the chisel at that point has also been reduced a certain amount, so that the thickness of the chisel at the cutting edge wherever this may be, is maintained substantially constant.

The bend or curve E serves two ends. The upper surface of the chisel having a downward slope from the base toward the cutting edge, relative to the direct line F between the ends of the chisel, enables the point portion of the chisel to enter the ground at a flatter angle as is desired, while maintaining the desired convex curvature at the front end of the chisel, than would otherwise be possible. Also when the chisel is reversed in position this curve or bend E takes the place of and serves the same purpose as does the curve or undercut B when the chisel is disposed in its normal position. This will be evident from a comparison of Fig. 4 (the chisel when reversed) with Fig. 2 (the chisel in its normal position). The point of major depression of the bend E is disposed some distance rearwardly of the corresponding curve B. Thus when the chisel is worn down considerably or as far is the edge H, and the chisel is then reversed, said bend E occupies approximately the same position relative to the new cutting edge H as the curve B occupies relative to the original cutting edge A. The chisel is preferably maintained in its reverse position only long enough to reverse the angle of the cutting edge to one having the same relative setting to the chisel as that originally provided. Upon this condition being reached the chisel is again returned to its original or normal position.

The means for locking the tongue to the chisel is constructed as follows:

Extending lengthwise of and disposed in a recess 6 formed in one side of the tongue is a flat spring 7, secured to the tongue at the end nearest the outer end of the same and normally projecting outwardly from the recess at its opposite or free end, as shown in Fig. 5.

The free end of the spring is adapted to project into either one of the opposed recesses 8 formed in the sides of the socket 3, holes 9 being drilled to communicate with said recesses from the opposite sides of the base portion of the chisel. When the chisel is slid onto the tongue the spring is first depressed until it reaches the corresponding end of the recess 8 when it will snap out into said recess, and will thus prevent withdrawing movement of the chisel from the tongue. Such withdrawal however can be easily accomplished when desired by depressing the spring by means of a nail or other tool inserted through the corresponding hole 9, and holding the spring depressed while the chisel is drawn outwardly sufficient to move the free end of the spring beyond the adjacent end of the socket recess.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A chisel for ground working implements comprising a base portion adapted for attachment to a standard and a point portion having a transversely extending cutting edge; said point portion having its under surface concavely curved from the cutting edge rearwardly a certain distance, and having its upper surface formed with a convex curvature extending rearwardly from the cutting edge.

2. A chisel for ground working implements

comprising a base portion adapted for attachment to a standard and a point portion having a transversely extending cutting edge; said point portion having its under surface concavely curved from the cutting edge rearwardly a certain distance, and having its upper surface formed with a convex curvature extending rearwardly from the cutting edge, said convex curvature merging into a concave curve disposed some distance rearwardly of the plane of the concave curvature on the under side of the point.

3. A chisel for ground working implements comprising a base portion adapted for attachment to a standard and a point portion having a transversely extending cutting edge; said point portion having its under surface concavely curved from the cutting edge rearwardly a certain distance, and having its upper surface formed with a convex curvature extending rearwardly from the cutting edge, said convex curvature merging into a concave curve disposed entirely below a straight line projected from the cutting edge to the rear end of the base at the top.

In testimony whereof I affix my signature.

JOHN I. McCORD.