Sept. 12, 1944. L. C. HAUER 2,357,797

DIE WHEEL

Filed Aug. 31, 1940

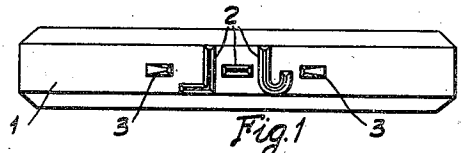



Fig. 1

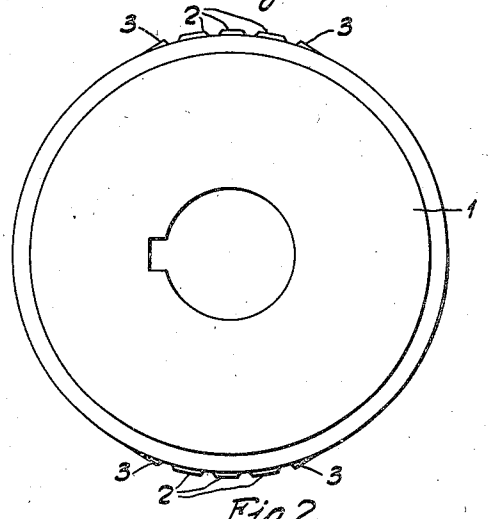



Fig. 2

Fig. 3

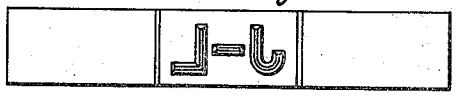


Fig. 5.

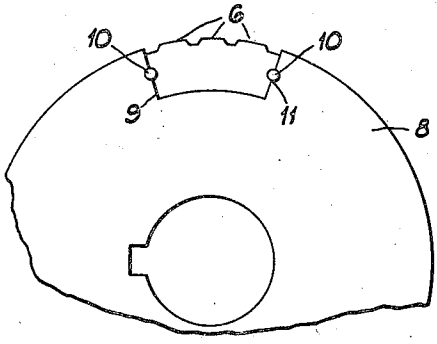
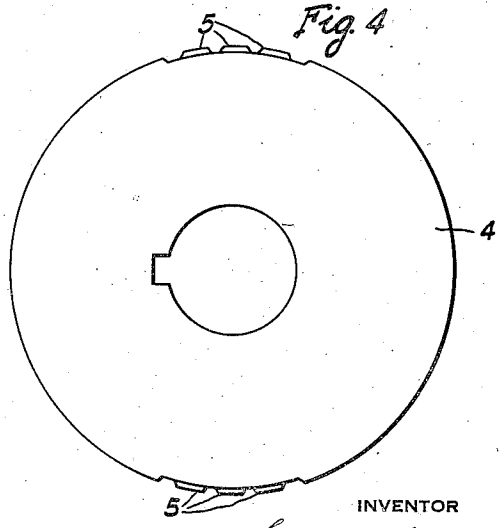



Fig. 4




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Patented Sept. 12, 1944 2,357,797

# UNITED STATES PATENT OFFICE

2,357,797

## DIE WHEEL

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Application August 31, 1940, Serial No. 355,071

2 Claims. (Cl. 101—28)

This invention relates to die wheels, and while not necessarily so limited, pertains more particularly to an improvement in dies of this character which are used for marking elongated tubes, rods, and the like along the axis thereof while the workpieces are in motion.

One object of the invention is to provide a die wheel of the type referred to which is so constructed that it improves the perfection of the die impressions produced both from the standpoint of clarity and uniformity, while at the same time decreasing the cost of manufacture.

Another object is to provide a die which has a greater useful life than the present dies used for similar purposes and a lower maintenance cost.

In addition it is also a feature of this invention that it improves the physical effect of the engraving and eliminates undesirable wheel marks and die scratching on the pieces being marked.

These and various other objects, as well as the various other novel features and advantages of the invention, will be apparent when the following detailed description is read in conjunction with the accompanying drawing of which Figures 1 and 2 are plan and side elevational views respectively of a conventional die wheel, Figures 3 and 4 similar views of an embodiment of this invention, and Figure 5 a fragmentary view of a modification of the invention.

Referring in detail to this drawing and first to Figures 1 and 2 which show a conventional wheel, the numeral 1 designates the die wheel itself and the numeral 2 the die characters. Such a wheel is normally mounted on a supporting shaft not shown and so located that the periphery of the wheel runs under pressure on the workpiece, also not shown, so that the dies bite into the surface of the latter to form their impression. In such a wheel it will be observed the radius of the raised characters is greater than the radius of the wheel proper. Due to this the characters when hitting the workpiece hit it at an angle and move relative to it while in engagement therewith. This subjects the characters to very severe grief in operation and rapidly destroys them; also because of the relative movement between the characters and the workpiece, there is a tendency for the impressions to be slurred. In an effort to relieve the stress on the characters, bumper bosses 3 are frequently provided adjacent the characters 3. This, however, does not correct the disadvantage incidental to the use of the raised characters and gives rise to the production of undesirable marks on the workpiece.

Another and important disadvantage to such a construction is that the wheel blank must be provided with an outside diameter which is equal to or greater than the peripheral diameter of the characters and the whole wheel periphery must be turned down to the root diameter of the characters which is a costly operation.

According to this invention referring to Figures 3 and 4, a die wheel 4 is provided which differs primarily from the older wheels in that the characters 5 are carved from the periphery of the wheel proper and not formed as projections on the surface of the wheel.

In operation the mounting and use of this wheel is the same as the old wheels, but by reason of the characters being inset in the face of the wheel, they are not subjected to nearly as much grief due to impact and movement relative to the workpiece as the old type characters. In other words they engage the workpiece under more uniform pressure, being of the same or substantially the same radia as the wheel and have very much less tendency to move relative to the workpiece and slur the impression they produce or to gouge into the workpiece, causing the exposed edges to wear out or break down rapidly as they do in the older type construction.

By reason of the characters engaging the workpiece under more uniform pressure which they do because the pressure on them and the wheel is the same, the resulting impressions are much clearer and their useful life is greatly increased. In addition, such a wheel is considerably cheaper to make. In making such a wheel turning down of the wheel face is limited to merely getting an accurate face, and the only cutting otherwise required is incidental to the formation of the letters, which is not unlike the work required in the older wheels except in this no bumper bosses 3 are required, as the service of such projections are performed to much better advantage by the surface proper of the wheel, and due to such omissions as well as the insetting of the characters, undesirable marking of the workpiece due to the operation of the die is eliminated.

In the modification of the invention shown in Figure 5, the characters 6 are formed on an insert separate from the wheel proper and adapted to be removably mounted in the wheel 8 which functions as a carrier. The mounting of this insert may be effected in various ways, but as shown it is adapted to seat snugly in the opening 9 and be retained in place by a removable key 10 which fits in a groove 11, half of which is in the

insert and half in the wheel, the characters 6 lying as shown with relation to the wheel periphery about the same as in Figures 3 and 4.

This latter modification permits of the use of fewer wheels for different markings because of the character insert being interchangeable. In both embodiments, however, there are present the same operating cast and quality features, and as will be readily appreciated, while more particularly devised for marking metal pipes, rods, etc. it may be used on any type of material where such marking is desired.

According to the provisions of the patent statutes, the principle and mode of operation of this invention has been illustrated and described in accordaince with what is now considered as its preferred form. However, it is to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. In the combination of a rigid die wheel having a work engaging surface substantially equal in width to the height of a die character and a die character located in the periphery of the wheel the improvement which comprises having the die character so positioned with respect to the work engaging surface of the wheel that the surface of the die wheel immediately adjacent the character has an effective radius across its width which is substantially the same as the peak radius of the character and whereby the character is protected against creepage and injurious impact with a workpiece when rolling contact between the wheel and workpiece is established.

2. A die wheel and die character according to claim 1 in which the die character is detachably mounted in a recess in the periphery of the die wheel with the root of the character lying below the surface of the die wheel and the peak thereof having substantially the same radius as the radius of the die wheel periphery.

LEON C. HAUER.