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T. S. HOSE

1,548,603

METHOD OF MAKING CLAW HAMMERS IN ONE HEAT

Filed April 16, 1925

2 Sheets-Sheet 1

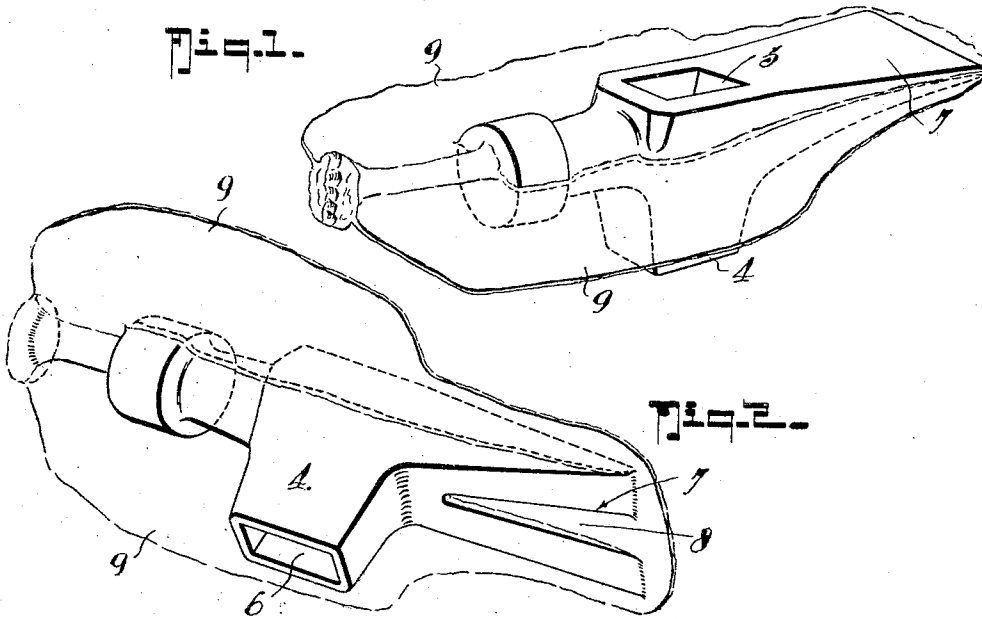


Fig. 3.

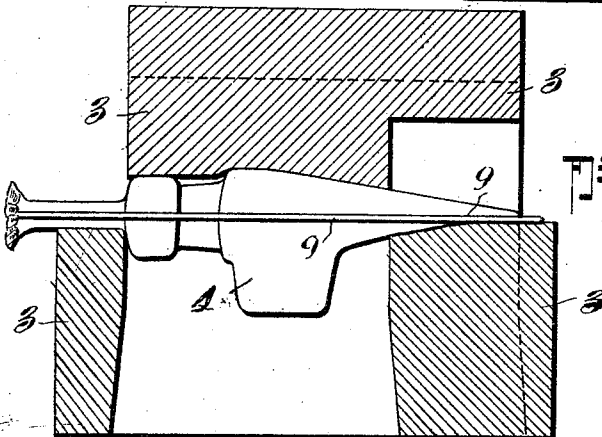
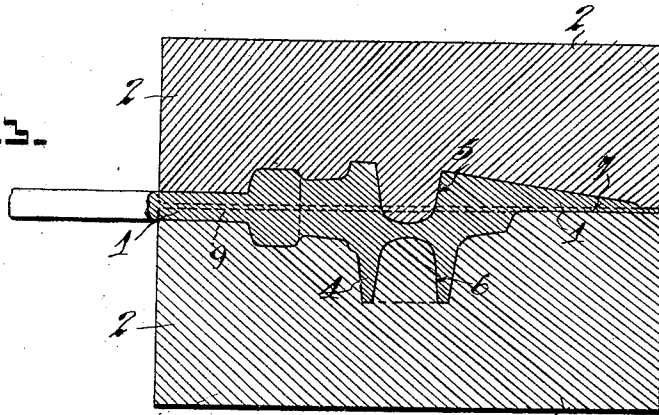


Fig. 4.

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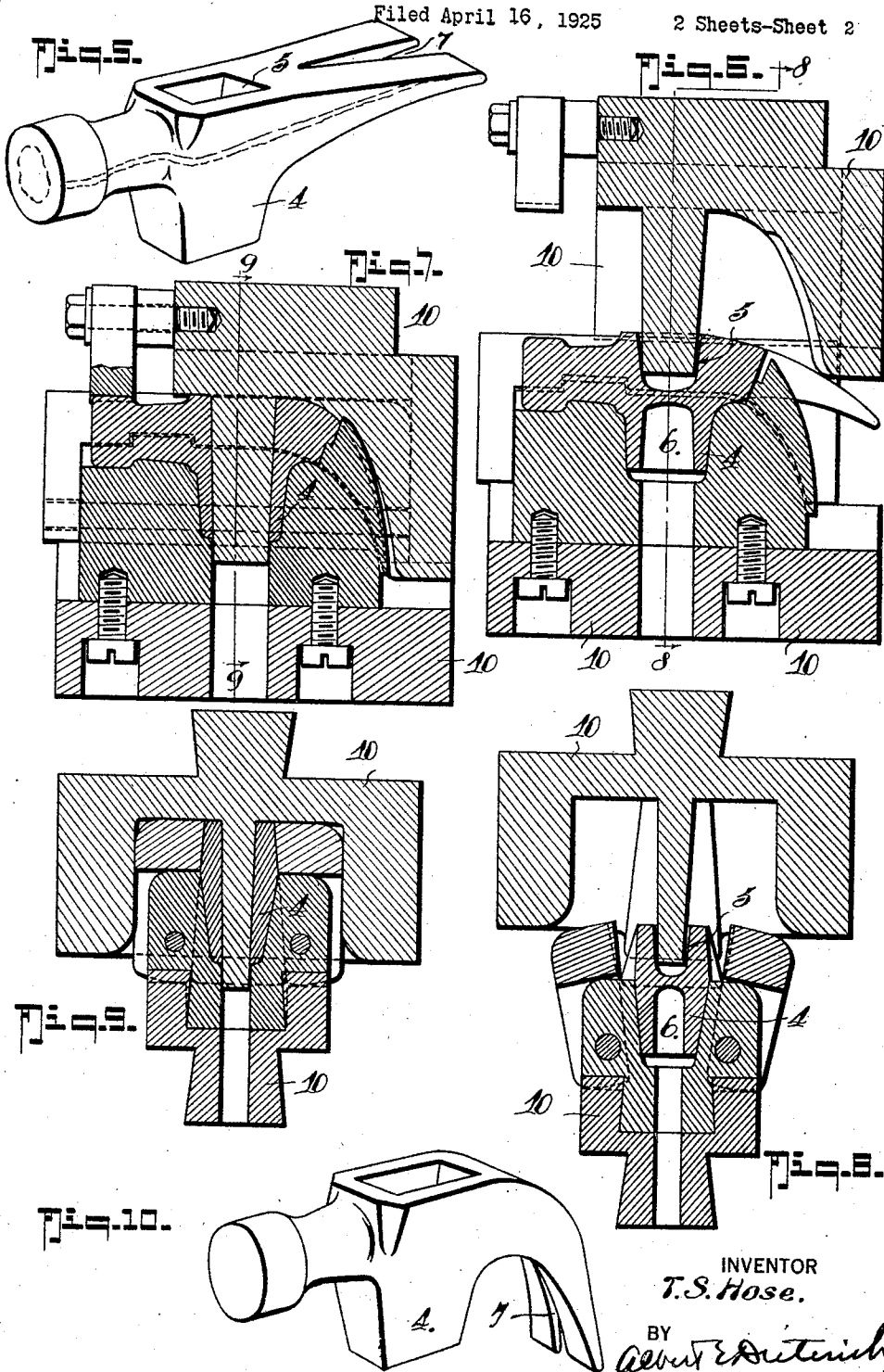
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE.

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## METHOD OF MAKING CLAW HAMMERS IN ONE HEAT.

Application filed April 16, 1925. Serial No. 23,665.

*To all whom it may concern:*

Be it known that I, **TITUS S. HOSE**, a citizen of the United States, residing at Little Falls, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Methods of Making Claw Hammers in One Heat, of which the following is a specification.

My invention relates to the art of making claw hammers and especially has for its object to provide a method whereby the hammer may be forged without weakening its structure. It is well known that the more steel is heated the more its structure is weakened; therefore it is of great advantage in preparing claw hammers that they be completed with as few heats as possible. It is the principal object of my invention to provide a method whereby the hammer may be completely made in one heat.

Another object is to provide a method of die forging claw hammers by which the forging operations may be completed with a lower degree of heat than has heretofore been possible, i. e., my method will allow the stock to flow without being excessively heated, thus eliminating what is known as "burning steel" and reduces rejections, because of burned steel, to a very large extent.

Again, it is a well known fact that the structure of steel is injured by quick intensive heat caused by grinding operations which are usually required in trimming the body; therefore it is another object of my invention to provide a method whereby the necessity of grinding operations is reduced to the minimum by finishing the hammer with smooth surfaces that will not require any considerable grinding.

The invention resides in those novel steps, combinations and operations, all of which will hereinafter be first fully described, then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Figure 1 is a perspective view looking from above showing the article produced by the first step of my method.

Figure 2 is a perspective view looking from beneath the same.

Figure 3 is a diagrammatic longitudinal section of a primary forging die such as used in carrying out the first step of my method.

Figure 4 is a diagrammatic longitudinal section of a trimming punch-die used in performing the second step of my method.

Figure 5 is a perspective view of the article or hammer blank after it has left the trimming die.

Figures 6 and 7 are vertical longitudinal sections of a finishing and bending die used in carrying out the third or last step of my method of forging, the die being opened in Figure 6 and closed in Figure 7.

Figures 8 and 9 are cross sections on the lines 8—8 and 9—9 respectively of Figures 6 and 7.

Figure 10 is a perspective view of the completed hammer.

In the drawings like numerals of reference indicate like parts in all the figures.

In carrying out my method I first place the heated stock 1 in a blank forging die 2 where it is given a sufficient number of blows to bring the body to the shape shown in Figures 1 and 2. This body is then trimmed to remove the flash 9 and punch out the web 8 between the claws by means of an ordinary male and female punching die 3 indicated in Figure 4 of the drawings.

In operating on the stock 1 to produce the article shown in Figures 1 and 2, the forging die forms the eye body 4 shorter than the finished hammer is to have and does not punch the eye opening clear through but simply forms recesses 5 and 6 in either end of the eye body; the claws-split 7 is made at the same time (see Figures 1, 2 and 3). The web 8 between the claws is, as before intimated, removed by the trimming punch at the same time it removes the flash or fin 9. The article shown in Figure 5 is then placed in an eye elongating and punching and claw bending and shaping die 10 (Figures 6 to 9 inclusive) where, in one and the same operation, the eye is punched open and elongated to the final size, the claws bent over and shaped to the final form and dimension, thereby producing the hammer shown in Figure 10. It thereafter requires little or no grinding to give it a finished surface.

In the first step of my method, I give the eye body side walls above and below the flash a sharp inclination, say of about ten degrees, and in the third step I reduce this inclination by squeezing the blank sidewise as the

male and female dies come together to about one and one-half degrees, i. e. producing approximately parallel walls.

As the claws are bent over by the bending die in the third step of my method they are also properly shaped in cross section, thus making unnecessary any further operation in this respect.

For the foregoing it will be seen that my method embodies the following advantages.

(First) The die claw hammer is completed, so far as forging is concerned, in one heat.

(Second) Instead of forging the eye out to its complete length as shown in Figure 10, a shallow eye body shown in Figures 1, 2 and 3 is forged, and because of this the primary drop die will last about twice as long as is the case where they have to draw the eye to the finished length.

(Third) By my method I can also give to the primary drop die a greater degree of inclination than would be possible to use in other methods, since by the die used in the third step this inclination is straightened out without difficulty.

Practice has demonstrated that by the use of my method I can save between twenty and twenty-five per cent of the grinding cost, eliminate practically all defects caused by grinding, and reduce the labor cost to the minimum since one man by one heat can complete the hammer by exercising my method.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that my invention and its advantages will be clear to those skilled in the art.

What I claim is:

1. In a method of forging claw hammers which comprises the following steps, namely (1) taking a rod and shaping it into a blank by means of a suitable forging die, said blank being composed of a head portion, a neck portion, a relatively short eye portion and a relatively short claws portion, and at the same time recessing the eye portion from both ends, thereby leaving a web between the recesses, and at the same time forming the split between the claws; (2) trimming off the flash around the outside of the blank and over the split; (3) punching and shaping the eye, elongating the eye-body to its final size, bending over, elongating and shaping the claws to their final form and size, substantially as specified.

2. In a method of forging claw hammers which comprises the following steps, namely (1) taking a rod and shaping it into a blank by means of a suitable forging die, said blank being composed of a head portion, a neck portion, a relatively short eye portion and a relatively short claws portion, and at the same time recessing the eye por-

tion from both ends, thereby leaving a web between the recesses, and at the same time forming the split between the claws; (2) trimming off the flash around the outside of the blank and over the split; (3) punching and shaping the eye, elongating the eye-body to its final size, bending over, elongating and shaping the claws to their final form and size, all the foregoing operations taking place in one heat, substantially as specified.

3. In the manufacture of claw hammers, the steps in the process which consists in first producing a hammer blank with a finished head and neck portion, an eye-body of shorter length than the finished hammer eye-body and with preliminary eye recesses entered from each end of the eye-body, and with the claws portion straight and split apart; (2) bending over the claws portion, punching out the eye-body while laterally squeezing the eye-body and claws portion to elongate the same by displacement of the excess metal from the eye, and imparting the final shape and dimension to the hammer, substantially as specified.

4. In the manufacture of claw hammers, the steps in the process which consists in first producing a hammer blank with a finished head and neck portion, an eye-body of shorter length than the finished hammer eye-body and with preliminary eye recesses entered from each end of the eye-body, and with the claws portion straight and split apart; (2) bending over the claws portion, punching out the eye-body while laterally squeezing the eye-body and claws portion to elongate the same by displacement of the excess metal from the eye, and imparting the final shape and dimension to the hammer, all said operations being done in one heat, substantially as specified.

5. The method of forging claw hammers which consists in taking a bar, in one heat, forming it into a blank with a finally shaped head and neck portion, a short eye-body with eye recesses separated by a relatively thin web, and a short claw blank with the claws split; then by one operation forming and elongating the eye, bending and forming the claws to the final shape and form desired, all being done in one heat substantially as specified.

6. The method of forging claw hammers in a single heat which consists in forging a blank with a short claw and a short eye-body with eye recesses in opposite ends separated by a relatively thin web, then in one operation punching the eye and bending the claws while squeezing the material to elongate the eye and claws parts to the final shape and size desired, whereby to form a substantially finished article.

7. The method of forging claw hammers which consists in taking a bar, in one heat,

forming it into a blank with a finally shaped head and neck portion, a short eye-body with eye recesses separated by a relatively thin web, and a short claw blank with the claws split; trimming off the flash and then by one operation forming and elongating the eye, bending and forming the claws to the final shape and form desired, all being done in one heat substantially as specified.

8. The method of forging claw hammers in a single heat which consists in forging a blank with a short claw and a short eye-body with eye recesses in opposite ends separated by a relatively thin web trimming off the flash and then in one operation punching the eye and bending the claws while squeezing the material to elongate the eye and claws parts to the final shape and size de-

sired, whereby to form a substantially finished article.

9. The method of forging claw hammers which consists in forging a blank with a short claw and a short eye-body with eye recesses in opposite ends separated by a relatively thin web, the eye-body sides being inclined at a greater degree than desired on the finished article, trimming off the flash and then in one operation punching the eye and bending the claws while squeezing the material to elongate the eye and claws parts to the final shape and size desired and reducing the degree of inclination of the sides to the degree desired on the finished article, whereby to form a substantially finished article.

TITUS SHEARD HOSE.