(No Model.)

C. H. WILLIAMS.

PROCESS OF AND MACHINE FOR MAKING CAR COUPLING PINS.

No. 249,281. Patented Nov. 8, 1881.

Fig. 1

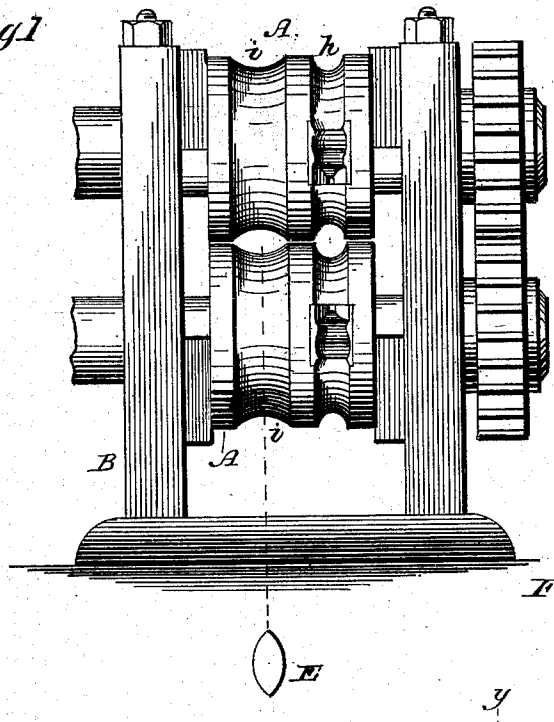


Fig. 10.



Fig. 3.

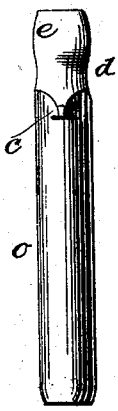


Fig. 4.



Fig. 5.

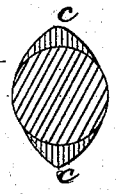


Fig. 2.

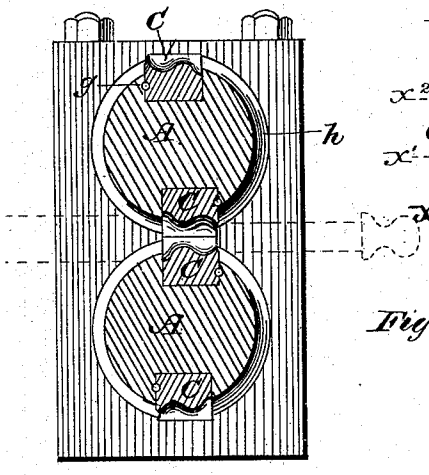


Fig. 6.

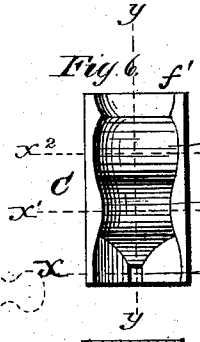


Fig. 7.

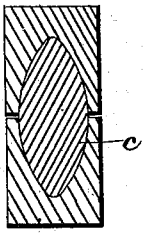


Fig. 8.

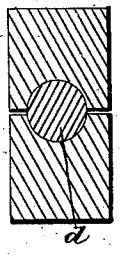
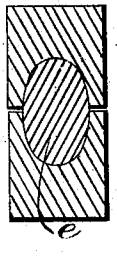


Fig. 9.



WITNESSES

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PROCESS OF AND MACHINE FOR MAKING CAR-COUPLING PINS.

SPECIFICATION forming part of Letters Patent No. 249,281, dated November 8, 1881.

Application filed June 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WILLIAMS, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Processes of and Machines for Making Car-Coupling Pins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to make car-coupling pins in a rapid and economical manner by means of rolls.

Figure 1 is a side view of a pair of rolls upon which I make my car-coupling pins and prepare or roll the blank or bar. Fig. 2 is a cross-section of the rolls through the dies and circular groove. Fig. 3 is an edge view of my car-coupling pin. Fig. 4 is a side elevation of the pin shown in Fig. 3. Fig. 5 is a cross-section of bar from which the pins are made, showing the rounded section of the shaft of the pin as reduced from the oval, the flanges *c c* being indicated also at *c c*, Figs. 3 and 4. Fig. 6 is a plan view of one of the dies, which is a die for forming one-half the lugs, neck, and head of the pin and the point of an adjoining pin. *x x* and x^2 x^2 and x' x' indicate lines of cross-sections through the die. Fig. 7 is a cross-section through the dies at the point where the lugs are left on the bar, as on line *x x*, Fig. 6, showing the bar slightly reduced on the sides and lengthened vertically, for a purpose hereinafter set forth. Fig. 8 is a cross-section of the dies, as on line x' x', Fig. 6, at the point where the neck *d* of the pin is formed. Fig. 9 is a cross-section of the dies, as on line x^2 x^2, Fig. 6, where the head is enlarged. Fig. 10 is a longitudinal section of Fig. 6 on line *y y*.

A A indicate a pair of rolls, one above the other, in bearings in a suitable housing, B, on the journals of which rolls are the usual gears. These rolls each carry two or more dies, C, which are made to register by the adjustment of the gears, or otherwise. The dies C are preferably made separate from the rolls, so that they can be adjusted, replaced, or repaired, and can be made in whole or part of steel, or otherwise, as may be desired.

g indicates a pin or bolt for holding the die in its proper place in the roll. The purpose of these dies is to form the lugs *c c*, the neck *d*, enlarged head *e*, and point *f* of pin *o*. The parts of the dies corresponding with these parts of the pin are lettered as follows:

c' represents the parts that form the lugs; *d'*, the neck; *e'*, the head; *f'*, the point.

It is, of course, understood that where the pin shown in Figs. 3 and 4 has enlargements the dies have corresponding depressions to form them, and so, also, where the pin has depressions—as, for instance, at the neck—the die is made correspondingly convex, as at *d'*.

The part *c'* of the die represents an oval concavity. *e'* is an oblong concavity in the dies, and leads to a cavity, *f'*, in which latter the point of a pin is made. *d'* represents a concavo-convex cavity in the dies. The dies C C in the rolls exactly register as the rolls rotate, and they are exact counterparts of each other.

i indicates two corresponding grooves in the rolls, in which an oval bar of metal may be rolled to the exact proportions desired.

h indicates a semicircular groove in each roll, which together form a circular cavity, whose office it is to reduce the oval bar E to a round bar. The oval bar E is inserted between the rolls, with its longest diameter in a vertical position, as shown in Figs. 5, 7, and 9, and it is of just such a size and form that when reduced vertically it will fill the cavity and complete the rounded bar or shank of the pin *o*. In order to support and direct this oval bar to the grooves *h* in the rolls, I use the ordinary guides.

I am aware that attempts have been made to produce car-coupling pins by means of rolls, and that patents have been granted therefor, but that these attempts have proved wholly unsuccessful, owing principally to the over displacement of the metal in one instance at the head laterally and the extreme contraction above the head to produce the point, which contraction is in a greater ratio than two to one laterally, and in the other instance the extreme reduction and consequent draft on the metal will not allow the rolls and cavity to perform their functions, as intended. More-

over, the means employed with these rolls, referred to, for punching the heads and spreading the metal at the same time, and while the rolls are still rotating and the metal leaving them in a straight line, is complicated.

I find in reducing metal by means of rolls, where extreme draft or spread is to take place, that it is desirable first to produce a bar approximating in cross-section to that of the object to be produced.

I have also found that a continuous collar on a car-coupling pin is wholly unnecessary, so I simply produce lugs on two opposite sides of the shank of the pin, which support it on the draw-bar and fully answer the purpose. There is also a large saving of metal, and the pin is more easily handled.

By using an oval bar, and by the use of my particular grooves and dies, it is evident, first, that the shank of the pin is produced by simply rolling down the bar from an oval to a round form; secondly, that the lugs *c c* are produced by simply leaving the blank in its original form—*i. e.*, oval, or changed therefrom as little as possible; thirdly, that the metal displaced by the dies to form the neck *d* is simply changed from an oval to a round form. I form the head by gradually enlarging the bar from the round portion at the neck, so as to cause the metal to assume an oblong form and to approach the original oval in cross-section.

In Fig. 3 the neck of the pin is shown slightly flattened at *d*, but it can be rolled without flattening at that point, if desired, merely increasing its size. The pointing cavity is formed with slightly-inclined sides, and the junction between it and the heading portion of the die *e'* being of smaller section than the head-forming die, it easily forms the point.

It will be seen from the foregoing that I produce these parts of a pin, generally so difficult to form, more by displacement than by reduction or draft, which is important.

Owing to the cross-section of the blank approximating to that of the prominent parts of the completed head of the pin, and to the enlargement of the die at *f'*, where the point of the pin is formed, it will be seen that no radical change in the metal is made, but that all the work of the die is natural and easy.

It will be understood by any one skilled in the art of rolling metal that a car-coupling pin of an oblong form in cross-section can be produced by merely increasing the width of the oval and deepening the circular cavities of the rolls to correspond therewith.

It is evident that slight changes may be made in the form of my dies without departing from the spirit of my invention.

The dotted lines in Fig. 2 represent a pin being rolled. The rolls in this case will operate in either direction, owing to the construction of the dies. The pins come from the rolls in a continuous bar, and when severed at the point of junction, between the head of one pin and point of the next, are complete.

What I claim, and desire to secure by Letters Patent, is—

1. The method herein described, of making the neck and knob of car-coupling pins, which consists in rolling down a bar, oval in cross-section at and above the shoulders of the pin, to form a cylindrical neck above the said shoulders, and to form an oval knob above said neck of a size somewhat smaller than the oval bar.

2. The dies C C, for forming the heads, necks, and shoulders of car-coupling pins, having deep oval-sided cavities *c'*, the contracted-sided concavo-convex cavities *d'*, and the enlarged concavo-cavities *e'*, all substantially as described.

3. The dies C C, for forming the heads, necks, and shoulders of one pin and the point of the next adjoining pin, consisting of the deep oval-sided cavities *c'*, the contracted sided concavo-convex cavities *d'*, enlarged concaved cavities *e'*, and large inclined-sided cavities *f'*, all substantially as shown, and for the purpose specified.

CHARLES H. WILLIAMS.

Witnesses:
JNO. A. STOCKMAN,
W. R. KEYWORTH.