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R. O. JONES.

MACHINE FOR REMOVING GATES AND RISERS FROM CASTINGS.

APPLICATION FILED MAR. 29, 1907.

Fig. 4.

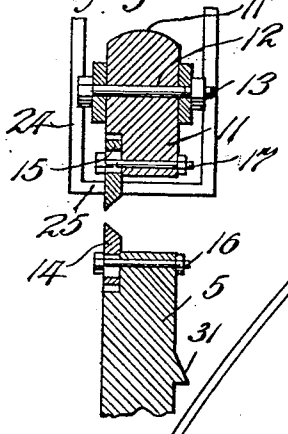


Fig. 1.

Fig. 2.

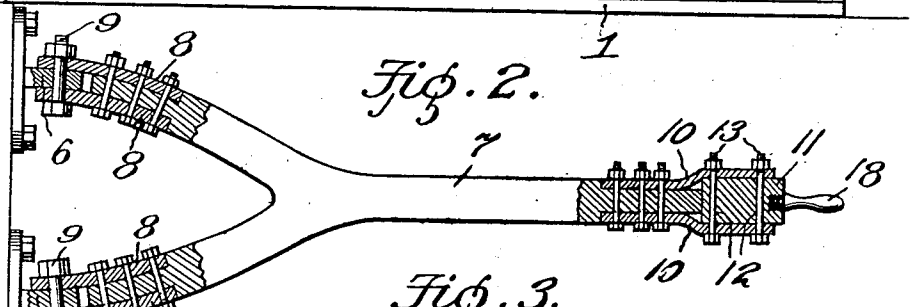


Fig. 3.

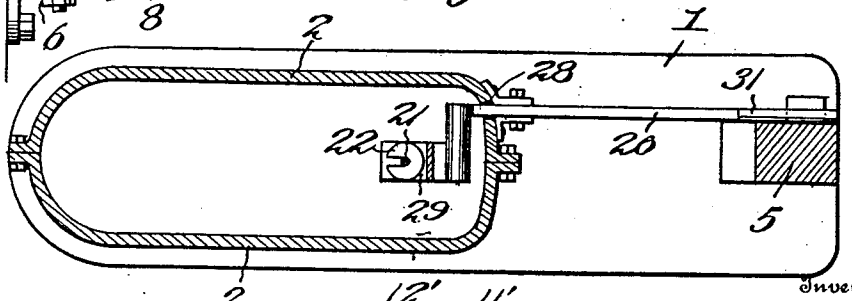
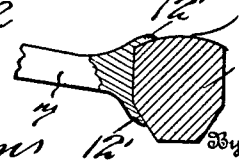


Fig. 5.



Witnesses

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MACHINE FOR REMOVING GATES AND RISERS FROM CASTINGS.

No. 867,884. Specification of Letters Patent. Patented Oct. 8, 1907.

Application filed March 29, 1907. Serial No. 365,391.

To all whom it may concern:

Be it known that I, RODNEY O. JONES, a citizen of the United States, residing at Granite City, in the county of Madison and State of Illinois, have invented new and useful Improvements in Machines for Removing Gates and Risers from Castings, of which the following is a specification.

This invention relates to machines for removing gates and risers from castings; and it has for its object to provide a machine whereby this may be accomplished in a convenient and expeditious manner.

The invention consists in an improved arrangement and combination of cutting dies with a steam hammer, the latter being disposed directly above the cutting dies one of which is movable and adapted to be operated by the impact of the hammer.

The invention further consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawings, Figure 1 is a side elevation partly in section of a machine constructed in accordance with the invention. Fig. 2 is a detail plan view, partly in section, of the arm carrying the movable cutting die. Fig. 3 is a horizontal sectional view taken on the plane indicated by the line 3—3 in Fig. 1. Fig. 4 is a transverse sectional detail view of the cutting dies and the means for supporting the same. Fig. 5 is a sectional detail view of the front end of the arm carrying the movable cutting die, showing the die carrying block.

Corresponding parts in the several figures are denoted by like characters of reference.

A suitable base 1 supports the body 2 of the machine which consists of a curved or arcuate arm or bracket carrying at its forward end the cylinder 3 of a steam hammer of conventional construction; the hammer head being shown at 4. An anvil block 5 is supported upon the base directly beneath the cylinder 3.

The body 2 of the machine is preferably made in the form of a hollow casting, the front wall of which is provided with brackets 6.

7 is an arched arm, bifurcated at its rear end, and provided at the rear ends of its side members with detachable lugs 8 for the passage of pivotal bolts 9 whereby the arm is hingedly connected with the brackets 6. By making the arm bifurcated, as shown, lateral vibration or wabbling will be prevented. The forward end of the arm 7 is likewise provided with lugs 10 carrying between them a block 11 having apertures 12 for the passage of bolts 13 whereby the block is secured between the lugs; the forward end of the arm 7 is provided with flanges 12′ engaging the upper and lower sides of the block 11 to brace the latter. Cutting dies 14 and 15 are adjustably secured by means of bolts 16 and 17 upon the anvil block 5 and the block 11 respectively, and the block 11 has a forward extending arm forming a handle 18 whereby the arm 7 may be manipulated, said handle being preferably mounted in a threaded recess or socket formed in the block 11, as shown. The upper face of the block 11 which in practice receives the blows of the hammer is curved or arched as shown at 11′ so that it will receive the blow at a central point, and the force or impact of the blow will thus be properly diffused.

The body or casing of the machine is preferably in the form of a hollow casting within which are supported guide pulleys 19 for a flexible element such as a wire cable 20, one end of which is connected with the arm 7 while the other end carries a rod 21 supporting a plurality of weights 22 whereby the arm 7 and its related parts will be approximately counterbalanced; the preponderance of weight being however slightly in favor of the arm, so that the cutting die 15 carried by said arm will naturally gravitate downwardly into engagement with its mate. The weights 22 are preferably of the kind generally known as scale weights which are so constructed with slots extending from the edges to the central portion thereof as to admit of convenient adjustment and removal for the purpose of properly counterbalancing the arm 7 when cutting dies of different dimensions and weight are being used. One side of the casing or body of the machine is provided with a door 23 through which access may be had to the interior for the purpose of adjusting the weights.

Suitably connected with the body of the machine, adjacent to the steam cylinder 3, is a downward projecting frame or bracket 24 having a horizontal portion 25 which lies in the path of the arm 7 for the purpose of limiting the downward movement of the latter and of the cutting die carried thereby, to prevent the edges of the two cutting dies from being injured by being brought forcibly into direct contact with each other.

A foot lever 26 is fulcrumed upon a lug or bracket 27 near the lower end of the body of the machine, one end of said foot lever being extended rearwardly through a slot 28, into the chamber or cavity of said body where it is provided with a frame 29 engaging the weight carrying rod 21 and the weights carried thereby; the forward end of the lever 26 which is provided with a suitable foot piece or treadle, is extended adjacent to the anvil block 5 which latter is provided with a laterally extending catch 31 lying in the path of the foot lever which latter may be rocked laterally upon its fulcrum sufficiently to enable it to be placed

into engagement with the underside of said catch, when the front end of said lever is depressed to elevate the weight carrying rod and the weights.

The machine is intended to be made of large dimensions and as it will be correspondingly heavy it is obvious that the various parts are to be constructed in such a manner that they will be fitted to resist any strain to which they are liable to be subjected. The various connecting bolts will be made with polygonal heads, and corresponding nuts, preferably hexagonal, are to be used. The arm 7 is upwardly arched as shown in order that large and heavy castings may be accommodated in the space beneath said arm without interfering with the operation thereof; and it is constructed as herein shown and described with the hinge lugs 8 and the die block carrying lugs 10 in order to enable any one of said members to be readily replaced at small expense in the event of breakage. The cutting dies 14 and 15 are conveniently adjustable and detachable according to the character of the work that is to be performed. The steam hammer used in connection with the machine, and forming a part thereof, may be of any well known approved pattern that will admit of a perfect regulation of the length as well as the force of the stroke delivered thereby.

The manner of using the machine will be readily understood from the foregoing description taken in connection with the drawings hereto annexed by those skilled in the art to which it appertains. The operator standing in front of the machine may easily raise the forward end of the arm 7 by means of the handle 18, the weight of said arm and the parts carried thereby being almost entirely counterbalanced. The casting that is to be operated upon is then adjusted and held with the gate or riser that is to be removed resting upon the stationary cutting die 14 beneath the movable cutting die 15 which latter, by gravity, will be sustained in position upon the part that is to be cut when the handle 18 is released by the operator. The forward end of the foot lever is then depressed and placed in engagement with the catch 31, thus lifting the balance weights in order to relieve stress upon the latter and upon the guide pulleys 19 when the blow of the hammer is delivered, thus rendering the blow more effective, as it will not be resisted by the gravity of the weights. While the weights are thus supported, the steam hammer is operated to deliver a blow upon the block 11 carrying the movable cutting die whereby the part that is to be cut will be quickly and effectively severed.

This machine is well adapted to special use in foundries where large and heavy castings are made, and it will be found thoroughly efficient and useful for the purposes for which it is provided.

Having thus fully described the invention, what I claim as new is:—

1. In a machine of the class described, a curved or arcuate bracket constituting a housing, a steam hammer carried thereby, an anvil block disposed beneath the hammer, an arm pivoted upon the housing, a die carrying block supported near the free end of said arm intermediate the anvil block and hammer, cutting dies connected adjustably with the anvil block and with the die carrier, and means within the housing for counterbalancing the arm and the parts carried thereby.

2. In a machine of the class described, a housing having a door through which access may be had to the interior, a steam hammer supported by the housing, a die carrying anvil disposed beneath the hammer, an arm pivoted upon the housing, a die carrying block mounted near the free end of the arm, a handle connected with the block, a flexible element connected with the arm and guided within the housing, and a weight carrying rod at the free end of the flexible element within the housing and accessible through the door in the latter.

3. In a machine of the class described, a pivoted arm having detachable pivot lugs and detachable lugs at its free end, a die carrying block supported between the lugs at the free end of the arm, and a handle connected with the die carrying block.

4. In a machine of the class described, a pivotally supported arm and a die carrying block supported at the free end of said arm, said block having a curved or arched surface, in combination with a steam hammer adapted to engage the curved surface of the die carrying block.

5. In a machine of the class described, an anvil block carrying a stationary cutting die, a pivotally supported arm carrying a movable cutting die, and means for limiting the movement of the die carrying arm under the impulse of a hammer stroke in the direction of the stationary cutting die.

6. In a machine of the class described, a pivotally supported arm carrying a movable cutting die, means for counterbalancing said arm including a flexible element and weights carried thereby, and means for supporting the weights to relieve the arm from the counterbalance.

7. In a machine of the class described, a stationary cutting die, a pivoted arm carrying a movable cutting die, a suitably guided flexible element connected with the arm and carrying weights for counterbalancing the arm, a foot lever having a weight engaging frame, and means for engaging the foot lever to support the weights in a raised position and to relieve the die carrying arm from said weights.

In testimony whereof, I affix my signature in presence of two witnesses.

RODNEY O. JONES.

Witnesses:
H. A. HAMM,
E. R. JONES.