

Oct. 16, 1923.

1,471,094

W. R. BLOSS

CRANE HOOK

Filed April 10, 1922

2 Sheets-Sheet 1

*Fig. 1.*

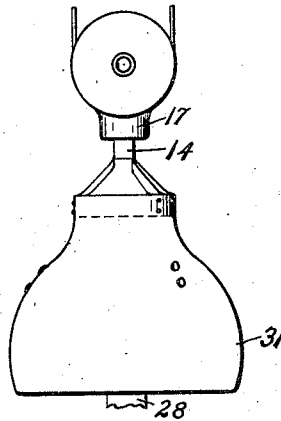
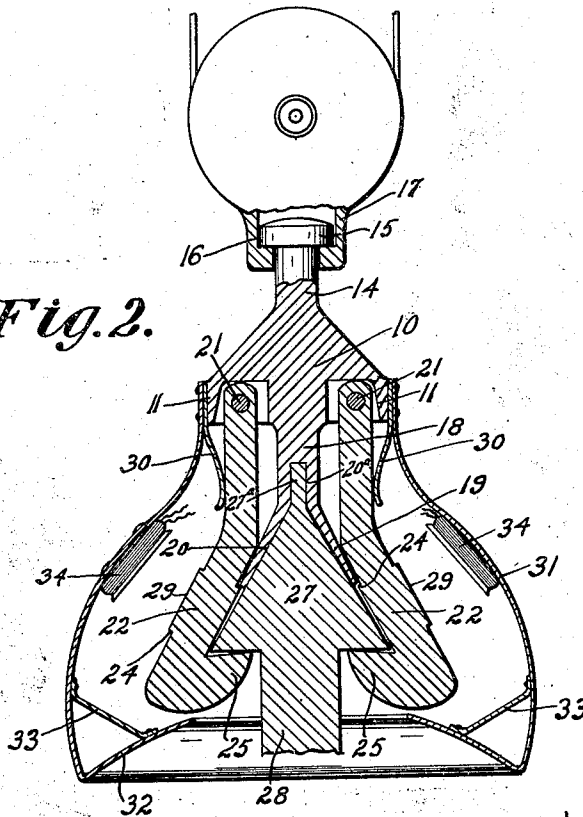


*Fig. 2.*



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*Fig. 3.*

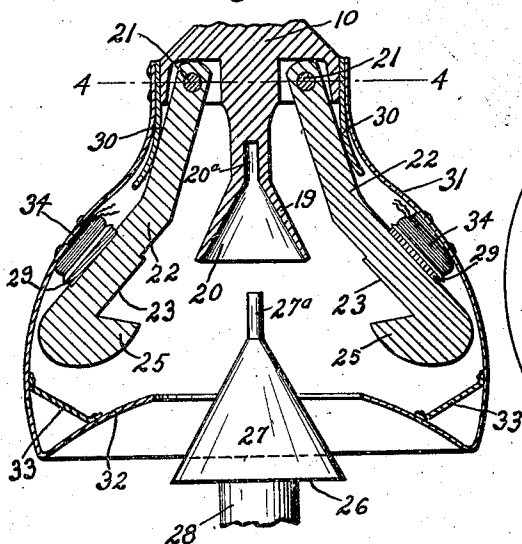


*Fig. 4.*

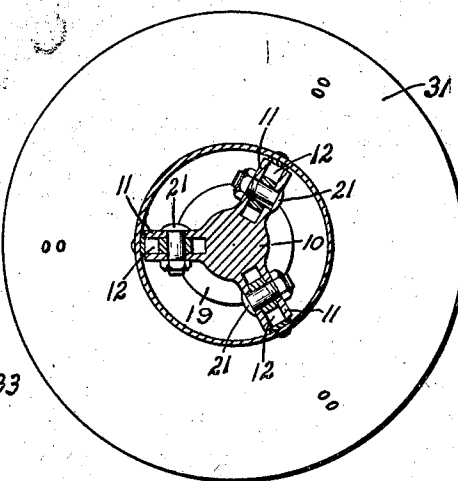


*Fig. 5.*

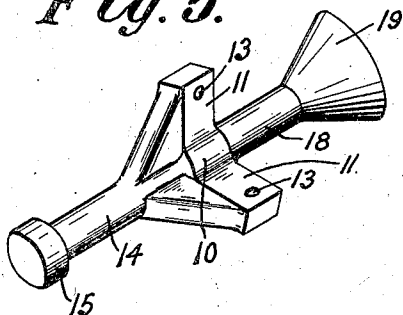
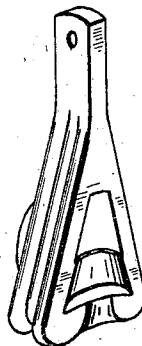
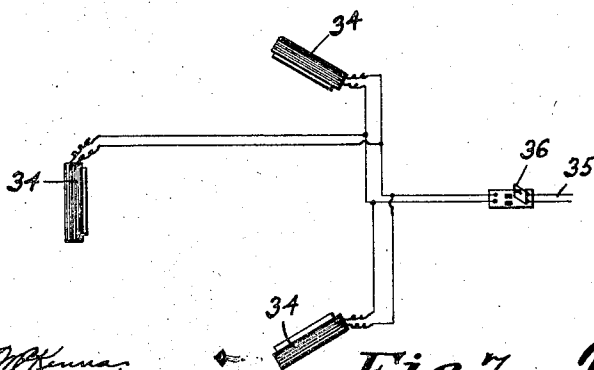


*Fig. 6.*



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*Fig. 7.*

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## UNITED STATES PATENT OFFICE.

WALTER R. BLOSS, OF MUSCLE SHOALS, ALABAMA.

## CRANE HOOK.

Application filed April 10, 1922. Serial No. 551,098.

*To all whom it may concern:*

Be it known that I, WALTER R. BLOSS, a citizen of the United States, residing at Muscle Shoals, in the county of Colbert and State of Alabama, have invented new and useful Improvements in Crane Hooks, of which the following is a specification.

This invention relates to hoisting machinery, particularly to crane hooks, and has for its object the provision of a novel crane hook which is so constructed that it will automatically grip the load to be carried and which is provided with releasing means which may be operated from a remote point as for instance by an operator within the control tower.

An important object is the provision of a device of this character equipped with spring means for effecting the gripping action and provided with electromagnetically operated releasing means to effect disengagement of the hook from the load, the structure thus operating efficiently without it being necessary for any one to perform the hazardous operation of engaging the hook with the load or performing other incidental work around ladles containing molten metal or any fixed body, carried, or receptacle holding stock or material for storage, heating or cooling, the device being also capable of advantageous use in certain branches of general crane work.

An additional object is the provision of a device of this character which will be simple and inexpensive in manufacture, highly efficient and durable in use and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the details of construction to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of my device,  
Figure 2 is a vertical section therethrough, showing the parts in gripping relation.

Figure 3 is a similar view showing the parts in released position,

Figure 4 is a horizontal section,

Figure 5 is a detail perspective view of the main casting,

Figure 6 is a perspective view of one of the jaws and

Figure 7 is a diagram of the electric support.

Referring more particularly to the drawings the numeral 10 designates the main casting or supporting frame which is formed with three equidistant arms 11 bifurcated as shown at 12 and provided with transverse holes 13. Formed at the top of this body is a stem 14 carrying a head 15 swivelly received within a bearing 16 which might be formed on the cable wheel housing 17 of the hoisting device or upon some other equivalent element. Formed on the underside of the body is a depending stem 18 terminating in a conical portion 19 having a tapered socket 20 leading into a centering hole 20<sup>a</sup>.

Pivoted by bolts 21 within the bifurcations 12 of the arms 11, are depending jaws or hooks 22 which have their lower ends inclined at their inner edges as shown at 23 and formed with shoulders 24 which engage the lower edge of the conical member 19. The lower extremities of the jaws are formed with inwardly directed hooks 25 adapted to engage with a circumferential shoulder 26 formed on a conical head 27 carried by a shank 28 which is secured to the load by any means. The head 27 terminates in a pin 27<sup>a</sup> adapted to enter the hole 20<sup>a</sup>. In case of a ladle for molten metal the shank 28 will probably be formed thereon at some convenient point. In any event the mounting of the shank 28 carrying the head 27 is immaterial. Intermediate their ends the jaws are formed at their outer edges with pole pieces or armatures 29. The jaws are normally urged into operative position, that is against the conical member 19 by means of leaf springs 30 which are suitably secured to the body 10 and which engage the jaws.

The above mentioned parts are enclosed within a shell 31 of bell form having its upper end constricted and secured to the body 10 and having its lower end formed with or secured to a rim 32 which curves upwardly and inwardly and which has its center open. The rim is reinforced with respect to the shell by means of inclined braces 33.

Mounted within the shell opposite the pole pieces or armatures 29 on the jaws are electromagnets 34 which are connected in parallel with a suitable source of current 35, a control switch 36 being interposed in the circuit and being located of course within reach of the operator within the crane tower or at any other point.

In the operation of the device it will be seen that the springs 30 normally operate to hold the jaws together so that when the crane is operated to bring the device over the load and the device is subsequently lowered by whatever means is provided, the jaws will pass down outwardly of the head 27 which is carried by the load. As the inner edges of the hooks 25 are rounded as shown it is apparent that when they engage and slide along the head 27 the jaws will move outwardly against the resistance of the spring 30 until the shoulders of the jaws can snap into engagement with the shoulder 26. The load may then be lifted and carried to any desired point with absolute safety. In order to effect release of the load it is merely necessary that the operator throw the switch 36 to close the circuit whereupon the energization of the electromagnets 34 will cause attraction of the jaws and pull them out of engagement with the shoulder 26 on the lifting head 27.

A very important feature is the provision of the upwardly and inwardly curved flange 32 which operates to guide the head 27 to the center of the hook device even though the craneman be inexperienced or careless. The tapered socket 20 and the centering pin and hole 27<sup>a</sup> and 20<sup>a</sup> also operate in the same way so that the parts will be properly centered.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simply constructed and consequently inexpensive crane hook in which the gripping action is automatic and in which the release is effected from a remote point by electromagnetic means, the device thus operating as a safety appliance and reducing the risk of injury to workmen employed in handling the apparatus. Owing to the simplicity of the construction and the fewness of the parts it is apparent that there is nothing to get out of order and that the device should consequently have a long life and satisfactorily perform all the functions for which it is intended.

While I have shown and described the preferred embodiment of the invention, it is of course to be understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention I claim:—

1. A crane hook comprising a body formed with a supporting element, a plurality of depending jaws pivoted upon the body and terminating in hooks engageable with an annular shoulder on a lifting head, springs urging said jaws into clamping relation, and a series of electromagnets posi-

tioned in spaced relation to the jaws and energizable to effect retraction thereof into releasing position.

2. A crane hook comprising a body formed with a supporting element, a plurality of depending jaws pivoted upon the body and terminating in hooks engageable with an annular shoulder on a lifting head, springs urging said jaws into clamping relation, and a series of electromagnets positioned in spaced relation to the jaws and energizable to effect retraction thereof into releasing position, and an enclosing shell secured to the body and surrounding said parts and forming a support for the electromagnets.

3. A device of the character described comprising a body formed with a swivel head and including a plurality of bifurcated radial arms, depending jaws pivoted within said bifurcations and terminating in hooks, said jaws being formed with pole pieces, springs carried by the body and engaging said jaws for urging them toward each other, and a plurality of electromagnets located opposite said pole pieces for effecting movement of the jaws outwardly.

4. A device of the character described comprising a body formed with a swivel head and including a plurality of bifurcated radial arms, depending jaws pivoted within said bifurcations and terminating in hooks, said jaws being formed with pole pieces, springs carried by the body and engaging said jaws for urging them toward each other, and a plurality of electromagnets located opposite said pole pieces for effecting movement of the jaws outwardly, a depending stem formed on the body and terminating in a conical portion having a tapered socket therein.

5. A crane hook comprising a support, a plurality of pivoted jaws depending from said support and terminating in hooks, and electromagnets carried by the support and energizable to effect outward movement of the jaws, in combination with a lifting head having a shoulder engageable by said hooks.

6. A crane hook comprising a support, a plurality of pivoted jaws depending from said support and terminating in hooks, and electromagnets carried by the support and energizable to effect outward movement of the jaws, in combination with a lifting head having a shoulder engageable by said hooks, said lifting head being tapered whereby to move the jaws outwardly when engaged thereby and being formed with a retaining shoulder.

7. A crane hook comprising a support, a plurality of pivoted jaws depending from said support and terminating in hooks, and electromagnets carried by the support and energizable to effect outward movement of the jaws, in combination with a lifting head having a shoulder engageable by said hooks,

and means carried by the support and engageable with the lifting head whereby to center the body with respect thereto.

8. A crane hook comprising a support, a  
5 plurality of pivoted jaws depending from said support and terminating in hooks, and electromagnets carried by the support and energizable to effect outward movement of the jaws, in combination with a lifting head

having a shoulder engageable by said hooks, 10 and means carried by the support and engageable with the lifting head whereby to center the body with respect thereto, the centering means consisting of a depending socket of tapered formation and the head be- 15 ing tapered to be received within the socket.

In testimony whereof I affix my signature.

WALTER R. BLOSS.