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CURRENT CONNECTION RING

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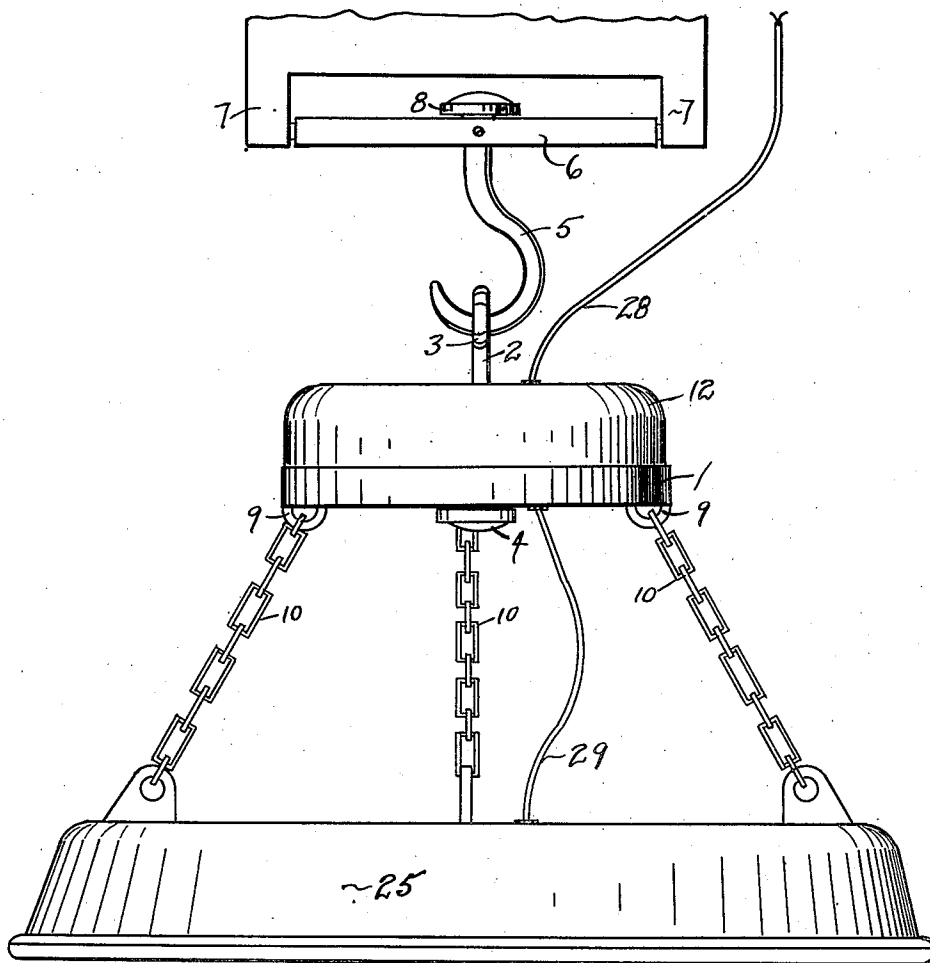


FIG 4

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CURRENT CONNECTION RING

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nineteen per cent to James Jennings, Niles,
Ohio, and eighty-one per cent to said Ritter

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2 Claims. (Cl. 294—65.5)

This invention relates to a current connection ring and more particularly to such a device adapted to be used in connection with an electro-magnetic crane.

5 The principal object of this invention is the provision of a current connection device adapted to be positioned between the hook of an electro-magnetic crane and the magnet thereof.

10 A further object of this invention is the provision of a current connection device, compact in form, adapted to be placed directly on the hook of an electro-magnetic crane and to support an electro-magnet from the lower portions thereof in such manner that the electro-magnet may revolve freely in relation to the said hook of the crane without interrupting the electric current supply to the said electro-magnet.

15 The current connection device shown and described herein has been designed to provide a suitable electric current connection means positioned between the hook structure of a crane and an electro-magnet supported thereby. Such electro-magnetic cranes are commonly used in industry and especially in handling metal, in metal manufacturing and fabricating establishments. Herebefore the current connection means of the electro-magnets utilized has comprised simply a pair of cables attached to the electro-magnet and passed upwardly alongside the hook to the crane structure. When it is considered that the crane structure provides for various rocking and rotating movements of the electro-magnet, it is obvious that the life, and hence the utility of these current connection cables is often affected by the constant twisting and turning of the electro-magnet in relation to the crane structure. When it is further considered that in the event of the failure of one of these current connection cables, the electro-magnet will immediately drop any load it may be carrying, it is apparent that the dangerous condition exists at all times when such relatively direct cable connections are utilized between the electro-magnet and the crane structure itself. In order to avoid these various objections and to provide an electro-magnetic crane current connection means that will free the electro-magnet from interruptions in its current supply, the device shown and described herein has been designed. It has been compactly formed so that it may be positioned directly upon the crane hook which will then be preferably pinned or otherwise blocked in order to stop its normal rotating motion and the electro-magnet suspended directly below and from the current connection device. In this position, it will provide

an effective means of establishing positive current supply to the magnet and at the same time will provide for the rotation of the magnet due to the structure of the current connection device itself. Its size and shape cause it to take up no more space than would ordinarily be occupied by the connecting chains from the electro-magnet to the hook of the crane for it may be easily attached to any electro-magnet and any crane hook. It will thus be seen that no changes in the construction of the crane structure or in the electro-magnet will be necessary and that thru the utilization of the current connection device shown and described herein a practical and efficient means has been provided to insure positive electric current connections to the electro-magnet of an electro-magnetic crane.

20 With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed without departing from the spirit of the invention.

25 The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of the current connection device positioned upon the hook of a crane; dotted lines in Figure 1 indicating the supporting connections to an electro-magnet.

30 Figure 2 is a top plan view of a portion of the current connection device showing the annular arrangement of contact strips thereof.

35 Figure 3 is an enlarged detail of one of the plurality of brushes used in the current connection device.

40 Figure 4 is a side elevation of the current connection device shown positioned on the hook of a crane and supporting an electro-magnet.

45 By referring to the drawings and Figure 1 in particular it will be seen that the invention comprises a circular base portion 1 rotatably positioned upon a vertical support member 2. This vertical support member 2 has an eye 3 formed at the top thereof and a suitable supporting shoulder 4 formed at the bottom thereof. The eye 3 of the vertical support member 2 is adapted to be placed over a hook 5 of a crane structure which comprises the usual pin 6 and depending crane structure 7. The hook 5 has a supporting shoulder 8 formed at its upper end which in this instance has been affixed to the pin 6 by any suitable means so that the hook 5 will not rotate

therein. Positioned around the outer edge of the circular base portion 1, there are a plurality of supporting eyes 9 which are adapted to support an electro-magnet 25 by means of suitable chains or cables 10. The position of the chains or cables 5 are indicated by the dotted lines 10 in Figure 1. The circular base portion 1 is provided with an annular ledge 11 which is in turn adapted to receive a cover portion 12 which may be formed in 10 one or more parts as desired. This cover 12 is provided with a central opening 13 thru which the upright support member 2 is passed. The circular base portion 1 is also provided with an upstanding annular flange 14 immediately adjacent to a central opening therethru in which the 15 vertical support member 2 is positioned. A circular band of suitable insulating material 15 is positioned on the upper surface of the base portion 1 by any suitable means and serves to carry a pair of annular contact strips 16 and 17 (see 20 Figures 1 and 2). These annular contact strips 16 and 17 are affixed by any convenient means to the insulating material 15. This structure comprises the base portion 1, the insulating material 15 and the annular contact strips 16 and 17 25 together with the cover 12, and is adapted to rotate about the vertical support member 2 when the electro-magnet rotates. In order that the device be workable, it is necessary to position a plurality of brushes on the annular contact strips 30 16 and 17 and maintain the brushes in fixed relation with the vertical support member 2. In order to do this effectively a disc of insulating material 18, provided with a downturned annular flange 19 has been provided which is 35 adapted to rest upon the base portion 1 by means of the downturned annular flange 19. This disc 18 carries a plurality of suitable contact brushes 20 (see Figure 3) each of which comprises a pair of supporting brackets 21 each of which incorporates a tension spring 22 and which are adapted to slidably support the brush 20. In our invention we preferably provide two such brushes contacting each of the annular contact 40 strips 16 and 17 thus insuring positive current connection between the movable sections of the device. In order that the disc of insulating material 18 be held in relation with the vertical support member 2 an arm 23 has been positioned thru the vertical support member 2 and is 50 adapted to engage a plurality of pins 24 positioned in the disc 18. It will thus be seen that as the electro-magnet tends to rotate, the base portion 1 of the device will rotate about the vertical support member 2 and carry with it the contact strips 16 and 17 while the arms 23 and pins 24 55 will cause the disc 18 to remain stationary in relation with the vertical support member 2, while the brushes 20 establish suitable current connection between these moving parts of the device. A suitable cable 28 is connected to the brushes 20 and leads upwardly to the power source of the crane and another suitable cable 29 is attached to the annular strips 16 and 17 60 and leads downwardly thru drilled openings in

the base portion 1 of the device to the electro-magnet 25. It will be seen that the current connection device shown and described herein forms a convenient practical means for establishing flexible current connections between the crane 5 structure and the electro-magnet thus insuring a positive current supply at all times to the electro-magnet and avoiding the dangers associated with current failure to the electro-magnet. The current connection device is so formed that it occupies space ordinarily taken up by the span of chains supporting the magnet from the hook and thus in no way affects the positioning nor use of the electro-magnet. It will be seen that the current connection device may be readily installed on any existing crane and readily connected to any existing electro-magnets. The only change in the crane structure being the blocking of the hook to stop its rotation in relation to the crane structure so that all rotation takes place in the current connection device. It will be obvious that the current connection structure shown and described herein can be formed on the pin portion 6 of the crane structure which then in effect becomes the base portion 1 of the device and the hook 5 of the crane structure allowed to rotate and becomes in effect the vertical support member 2 of the device. This form of the device would make it a part of the crane structure. 30

What we claim is:

1. The combination of an electro-magnet and a supporting device therefor comprising a base portion rotatably positioned upon a vertical support member; a section of insulating material 35 positioned on the said base portion; a pair of annular contact strips positioned on the said insulating material together with a disc having an annular flange formed about a central opening therein and positioned on the said base portion in a rotatable manner; a plurality of brushes carried by the said disc adapted to contact the said annular contact strips; means for positioning the said disc in horizontal relation to the said upright support member together with a 45 plurality of eyes formed on the lower surfaces of the said base portion and adapted to carry the electro-magnet.
2. The combination of an electro-magnet and a supporting device therefor comprising a vertical support member adapted to be positioned on a crane hook; a base portion rotatably positioned on the said vertical support member; a pair of electrical connection strips mounted upon and insulated from the said base portion; a disc having a downturned flange formed thereon positioned on the said base portion and adapted to rotate thereon; a plurality of brushes carried on the said disc adapted to engage the said electrical connection strips; pin means for positioning the said disc in stationary relation to the said vertical support member. 50 55 60

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