

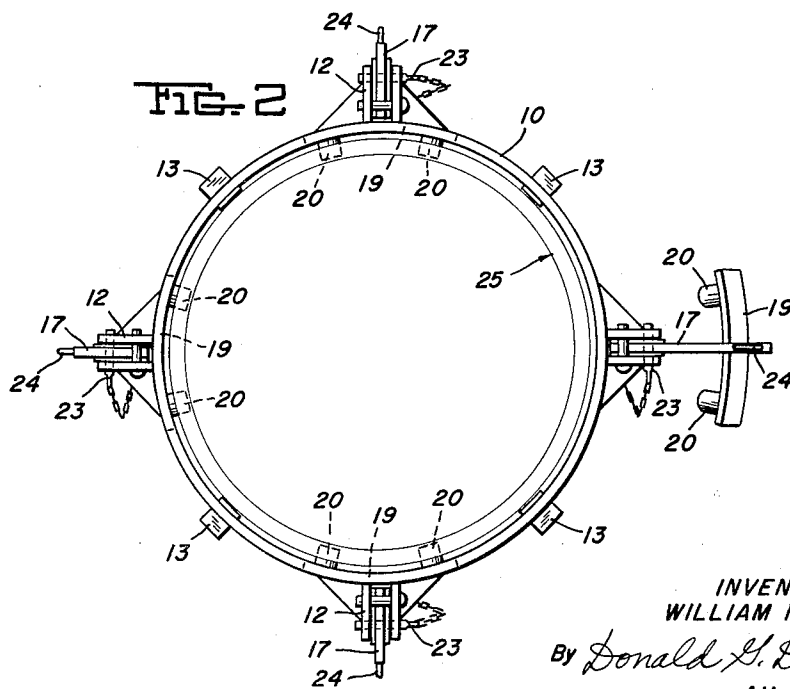
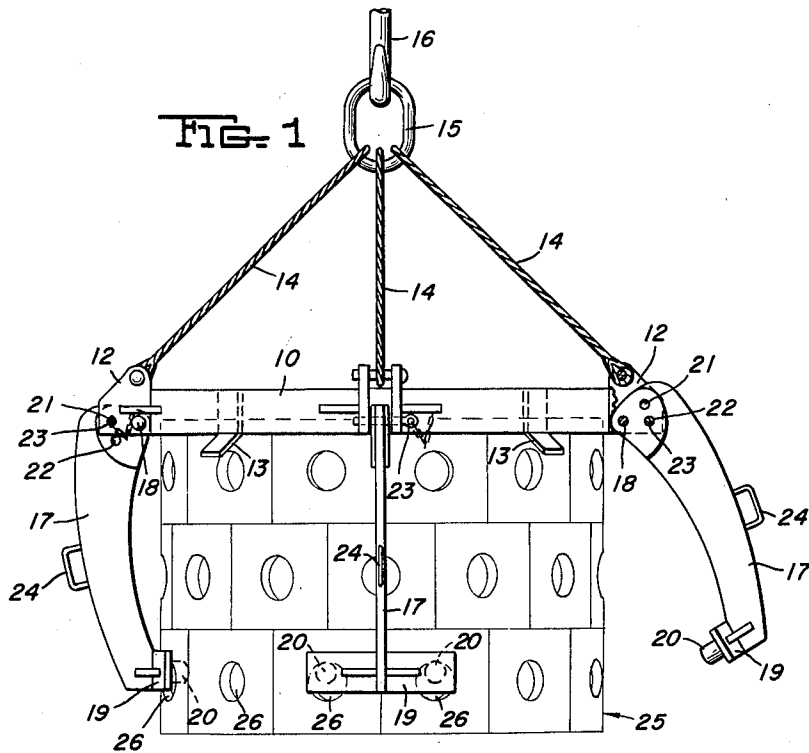
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GRAPPLE FOR LIFTING CYLINDRICAL ARTICLES

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GRAPPLE FOR LIFTING CYLINDRICAL ARTICLES

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1 Claim. (Cl. 294-63)

This invention relates to a grapple for lifting cylindrical articles, such as sectional ceramic columns used in supporting coils in an annealing furnace.

An object of the invention is to provide a grapple of simple construction for positively engaging apertured cylindrical articles and thus enabling them to be transported without damage and positioned accurately and conveniently.

A more specific object is to provide a grapple which includes a ring adapted to encircle and thus steady the upper portion of a cylindrical article, slings adapted to suspend the ring from a crane or the like, and arms pivoted with respect to the ring and having means for positively engaging the lower portion of the article, whereby the article is supported securely and yet readily engaged or released.

In accomplishing these and other objects of the invention, I have provided improved details of structure, a preferred form of which is shown in the accompanying drawing, in which:

FIGURE 1 is a side elevational view of my grapple engaging a sectional ceramic column; and

FIGURE 2 is a top plan view of my grapple with the slings removed.

My grapple comprises a rigid metal ring 10 a plurality of brackets 12 rigidly fixed to the outer circumferential face of the ring, and a plurality of guide plates 13 rigidly fixed to the ring and extending downwardly and outwardly therefrom. Brackets 12 are formed in spaced pairs, and the pairs themselves are equally spaced around the ring, being illustrated as four in number spaced 90° apart. The guide plates 13 are located in the spaces intermediate the pairs of brackets. Slings 14 of wire rope or the like are attached at their lower ends to the brackets of each pair, and converge upwardly, where they are attached to a lifting ring 15. A crane hook 16 can engage the lifting ring for transporting the grapple and its load.

Respective downwardly extending arms 17 are pivoted between the pairs of brackets 12 on pins 18. The lower end of each arm carries an arcuate grip plate 19 rigidly fixed thereto. The inner face of each grip plate carries a pair of rigidly fixed knobs 20. The pivoted upper portion of each arm between the brackets 12 contains upper and lower openings 21 and 22. A pin 23 can be inserted through openings in the brackets and through the upper opening 21 to hold each arm in a lowered position or through the lower opening 22 to hold the arm in a raised position. Preferably pin 23 is chained to the bracket, as illustrated, to prevent its loss. The outer edge of each arm carries a handle 24 rigidly affixed thereto for raising and lowering the arm about its pivot.

I have illustrated by grapple as specially constructed to handle sectional ceramic columns 25, such as are used in supporting a coil of strip metal in an annealing furnace. Nevertheless it is apparent that grapples of generally similar construction can be used to handle other types

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of cylindrical articles; hence the illustration is not intended to limit the invention. Columns 25 contain openings 26 through which gases circulate in the furnace.

In operation, arms 17 of my grapple initially are held in their raised positions, and the grapple is lowered over an article 25. The guide plates 13 serve to guide ring 10 into a position encircling the upper portion of the article. Arms 17 next are moved to their lowered positions in which knobs 20 are received in openings 26 in the lowermost section of the article. Grip plates 19 engage the outer face of the lower section and are of the same curvature. Thus the grip plates and knobs positively engage the lower portion of the article to permit the article to be lifted and placed conveniently and accurately. Ring 10 cooperates to steady the upper portion of the article, thus preventing individual sections of the article from coming loose during handling. When the article in its desired position, arms 17 are raised and the grapple lifted away.

While I have shown and described only a single embodiment of my invention, it is apparent that modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claim.

I claim:

A grapple for lifting sectional ceramic columns having apertures in their side walls comprising a continuous rigid ring which has an open central portion and is located to encircle closely the upper portion of a column and steady the column around its full circumference and thereby prevent individual sections of the column from coming loose, means attached to said ring for suspending it from above, a plurality of uniformly spaced pairs of brackets fixed to the outside of said ring, arms pivoted to the respective pairs of brackets and extending downwardly therefrom, a plurality of guide plates fixed to said ring intermediate said pairs of brackets and projecting downwardly and outwardly for guiding the ring into position around a column as the ring is lowered, arcuate grip plates fixed to the lower ends of the respective arms and being located to engage the lower portion of the column, knobs projecting inwardly from said grip plates and being located to fit within apertures in the lower portion of the column, said brackets and arms having openings which mate when the arms are in a raised position and openings which mate when the arms are in a lower position, and pins inserted in said openings for holding said arms in a raised position in which the grapple can be placed on or removed from the column or in a lowered position in which the grapple can transport the column.

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