

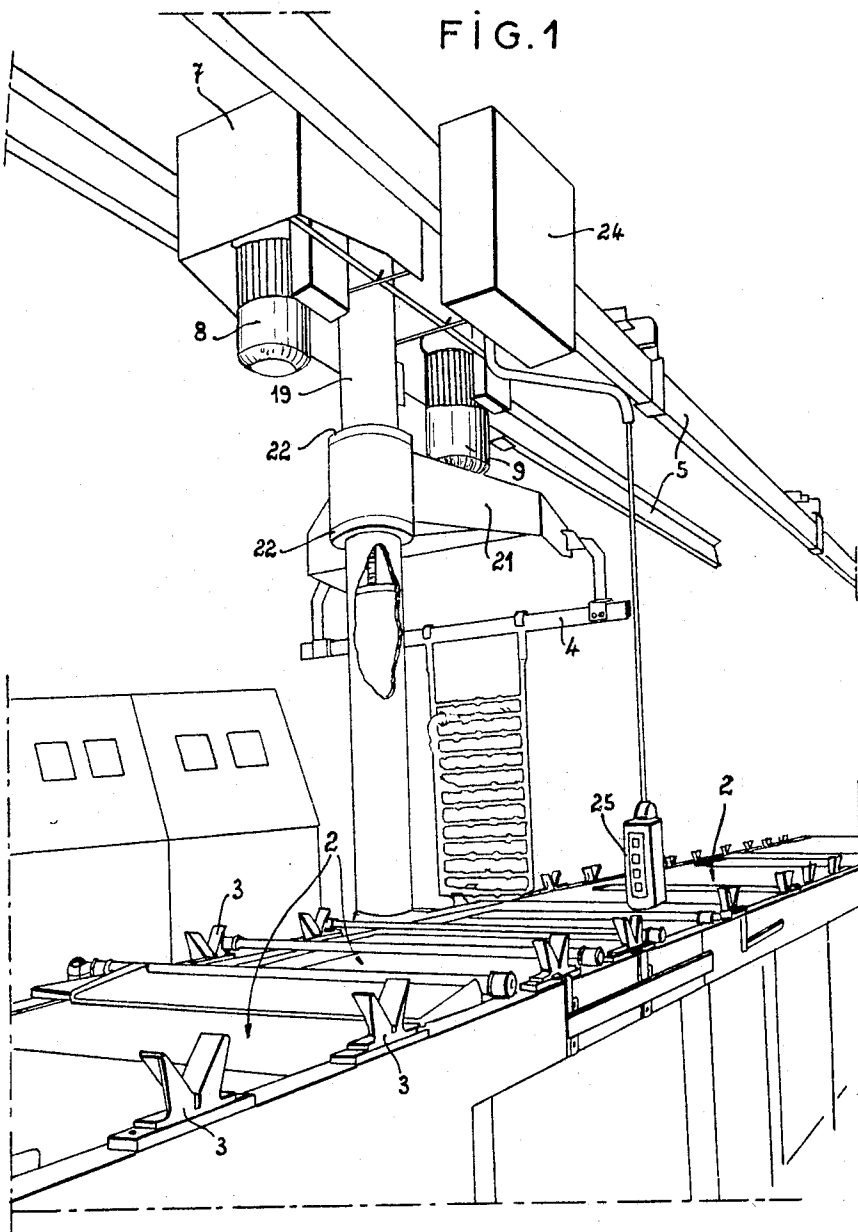
Nov. 29, 1966

R. FLEISCH
HANDLING APPARATUS

3,288,309

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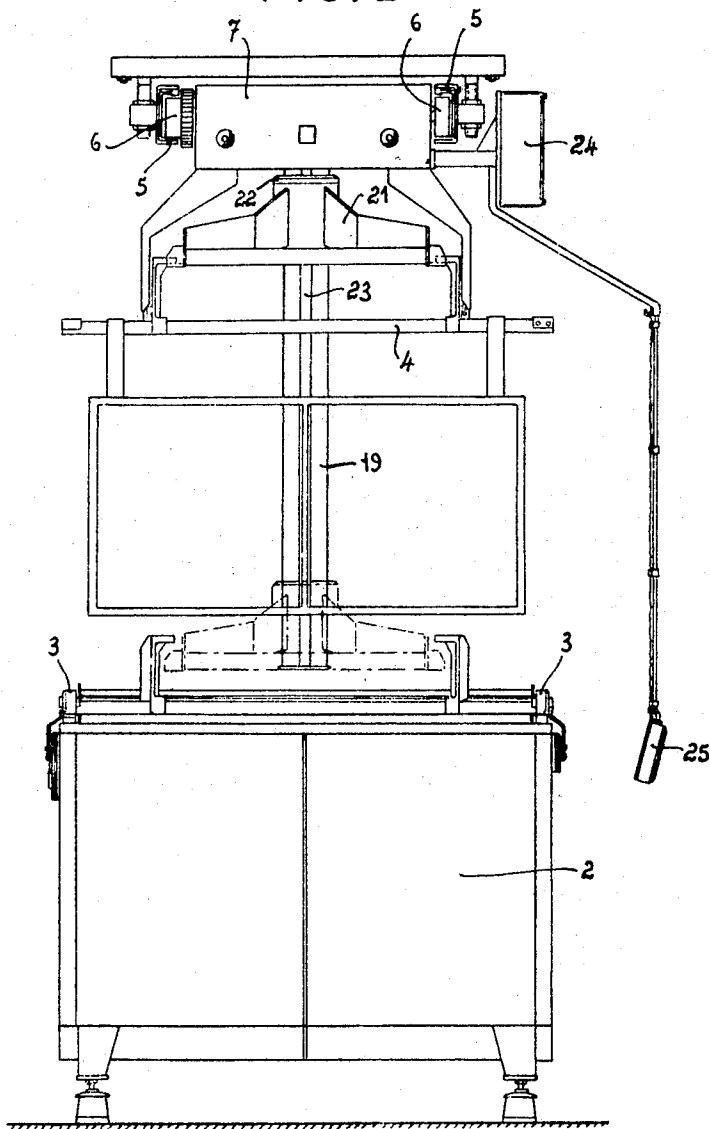
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FIG. 2



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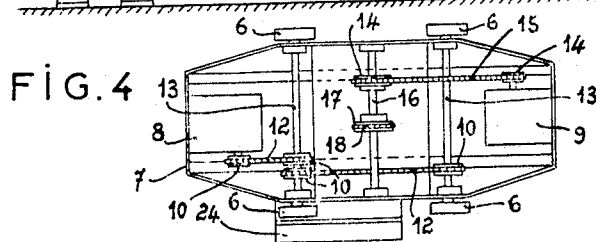
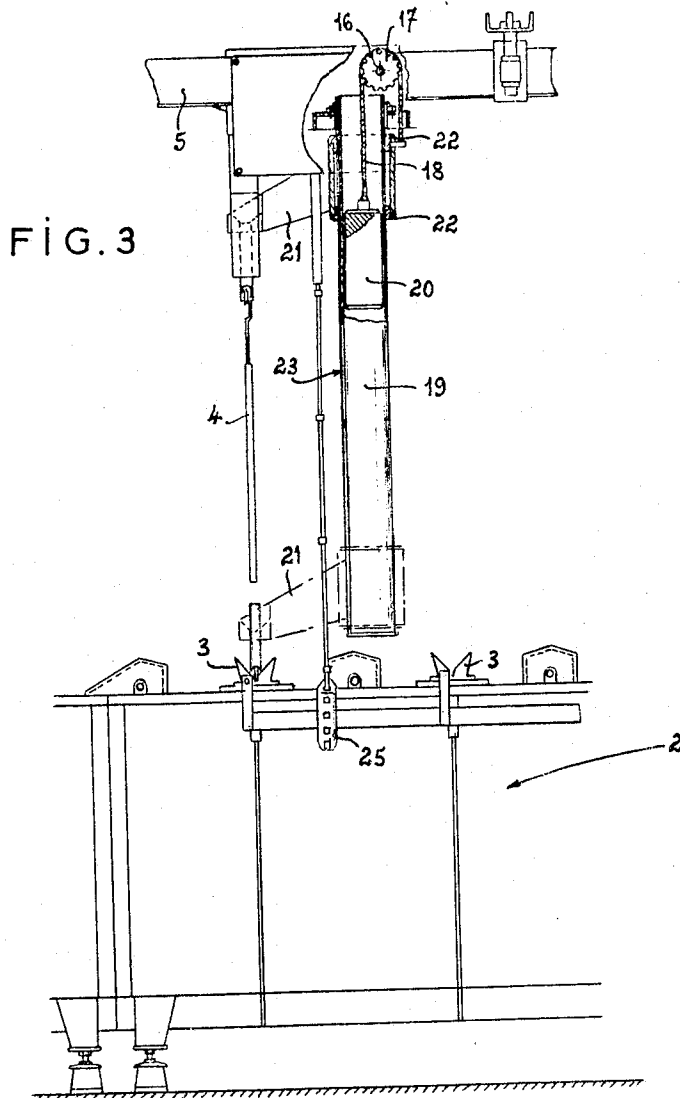
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HANDLING APPARATUS

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2 Claims. (Cl. 212-128)

My invention has for its object to provide handling apparatus adapted to transfer parts from one working station to another and more specifically to transfer the parts out of one vat into another in a plant in which electrolytic or chemical treatments are effected.

My improved apparatus includes a suspended raceway serving as a supporting surface for a carriage rigid with a vertical column depending downwardly and acting as a guide for a counterweight and for a handling fork, which counterweight and fork are interconnected by a chain or the like, passing over a wheel or pulley fitted on the carriage which is provided with two power units incorporating speed reducing means one of which power units drives said wheel while the other actuates means controlling the translational movements of the carriage along said raceway.

In the attached drawings, I have illustrated diagrammatically by way of example and in a non-limiting sense, a preferred embodiment of my improved apparatus. In said drawings:

FIG. 1 is a perspective view of the arrangement,

FIGS. 2 and 3 are respectively front and side elevational views thereof and

FIG. 4 is a plan view of the carriage as seen from above.

In FIGS. 1 to 3, 2 designates the treating vats positioned in sequence; their upper longitudinal edges are provided with bearings 3 adapted to receive horizontal bars 4 when lowered. The parts to be treated in the vats or the assemblies serving as supports for such parts are suspended from said bars 4.

5 designates an upper raceway along which move the four rollers 6 of a carriage 7, each roller being constituted by a hub and an annulus fitted on the hub. The carriage 7 carries two power units incorporating speed reducing means and illustrated at 8 and 9. The first power unit 8 drives through its speed reducing means, the chains 12 and the pinions 10 controlling the two shafts 13 carrying the rollers 6 ensuring the translational movement of the carriage (FIG. 4). The cooperating unit 9 drives through the chain 15 the pinion 14 rigid with a shaft 16 carrying a toothed wheel 17 over which passes a chain 18 extending in a vertical plane.

Secured to the carriage 7 is a depending hollow column 19 extending vertically. One of the sides of the chain 18 is adapted to move inside said column, said side being secured to a counterweight 20 adapted to slide inside said column 19.

The other side of the chain 18 extends outside said column 19 and its end is secured to a fork 21 releasably engaging the bar 4 and in turn slidably carried alongside the column 19 through the agency of a collar including two rings 22 which surround the column. The fork includes arms which diverge outwardly and downwardly from the collar as shown in FIGS. 1 and 3. A key 23 extends longitudinally of the column and provides vertical guiding of said fork while preventing the latter from rotating.

The operation and use of said handling apparatus will be easily understood: it is sufficient to energize the electric motor of the power unit 9 so that the fork 21 may

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be shifted vertically through the agency of the chain 18 alongside the column 19, the direction of movement depending on the direction of rotation of said power unit. Means (not shown) are also provided for automatically stopping the fork 21 when it reaches its lowermost position and its uppermost position.

The translational movement of the bar 4 is obtained by the translational movement of the carriage 7 along the raceway 5. This is effected by energizing the electric motor of the other power unit 8.

All the electric parts of the apparatus are housed inside a casing 24 carried at the front surface of the carriage 7, said casing enclosing chiefly the reversing switches ensuring the rising and sinking movements of the fork 21 and the translational movements of the carriage, together with the corresponding transformers. Furthermore and with a view to ensuring perfect safety for the user, a remote control box carrying knobs 25 which ensure the control of the apparatus, is fed only with low voltage current.

The following are the chief advantages of my improved handling apparatus:

By reason of its design, it allows high rising and translational speeds, which results in a saving of time, for instance throughout a cycle of electrolytic treatment;

It may be accommodated in structures in which the ceiling is comparatively low;

Since the raceway is secured to the ceiling, it is possible to clear completely the space surrounding the vats while their upkeep becomes an easy matter, in the case of a chemical or electrical treating plant.

What I claim is:

1. Handling apparatus comprising an overhead horizontal raceway, a carriage adapted to run along said raceway, a rigid centrally mounted hollow column secured to the carriage for movement therewith, said column extending vertically downwards from the carriage, a counterweight supported within the column for guided vertical displacement therein, load support means outside said column for supporting a load, said load support means comprising a collar encircling said column, a pair of arms mounted on and diverging outwardly and downwardly from said collar, load engaging means at the ends of the arms, first and second driving means supported on the carriage for movement therewith, means connecting said first driving means and the carriage in driving relation, flexible connection means between said counterweight and the collar, and a drive wheel on said carriage, said flexible connection means passing around the drive wheel for being driven thereby, said second driving means being connected to the drive wheel in driving relation to drive the latter and correlatively raise and lower the counterweight and load support means, said load support means being guided on said column by said collar.

2. Handling apparatus as claimed in claim 1, comprising means supporting the collar on said column for axial displacement therealong without rotation.

References Cited by the Examiner

UNITED STATES PATENTS

1,697,538	1/1929	Moore	212-126
1,837,718	12/1931	Kendall	212-127
2,522,147	9/1950	Todd	248-162
2,869,734	1/1959	Ernestus.	
2,947,426	1/1960	Cotesworth	212-128

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