March 13, 1956 W. H. LOVELACE 2,737,709

APPARATUS FOR HANDLING WORK

Filed Dec. 8, 1952 2 Sheets-Sheet 1

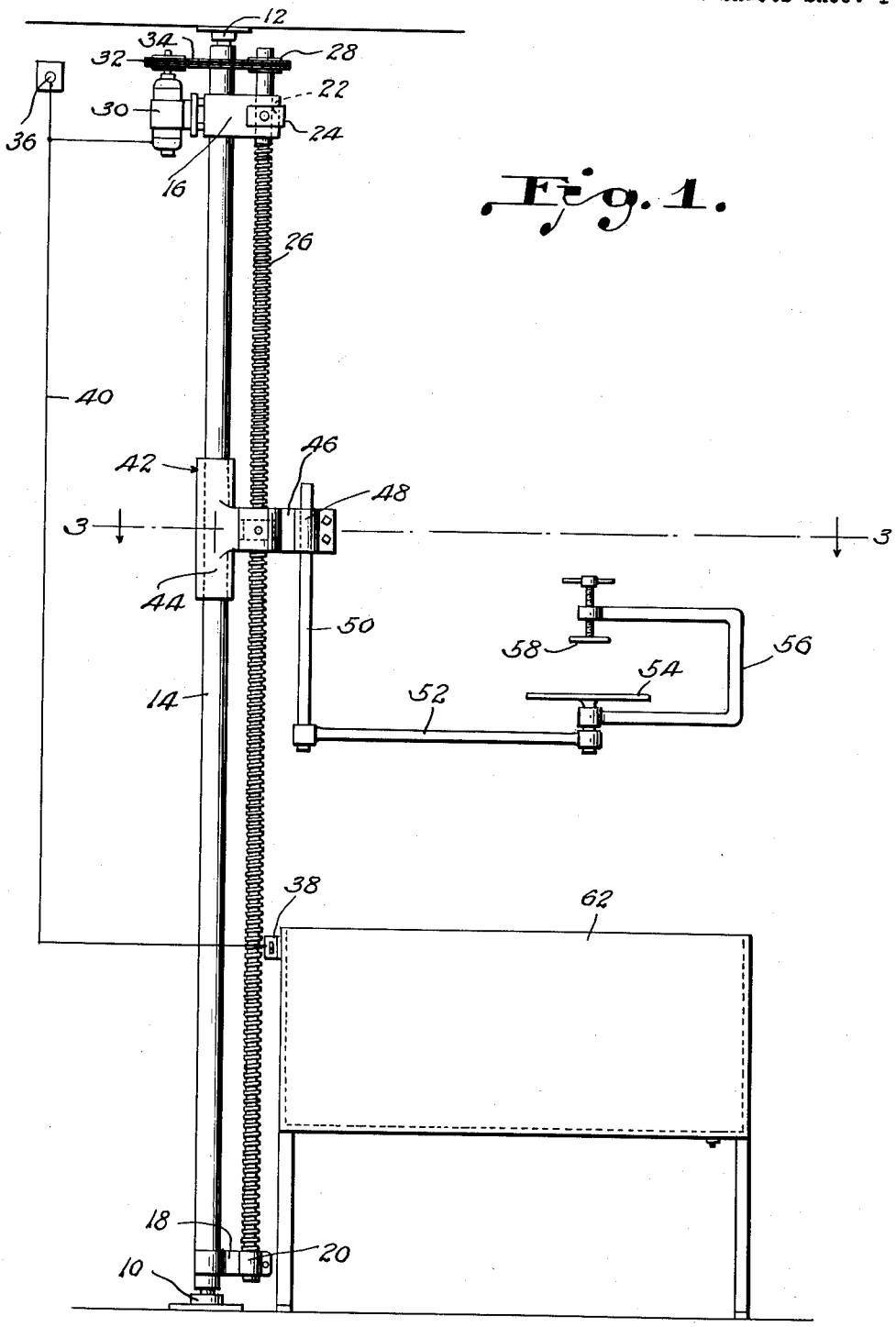


Fig. 1.

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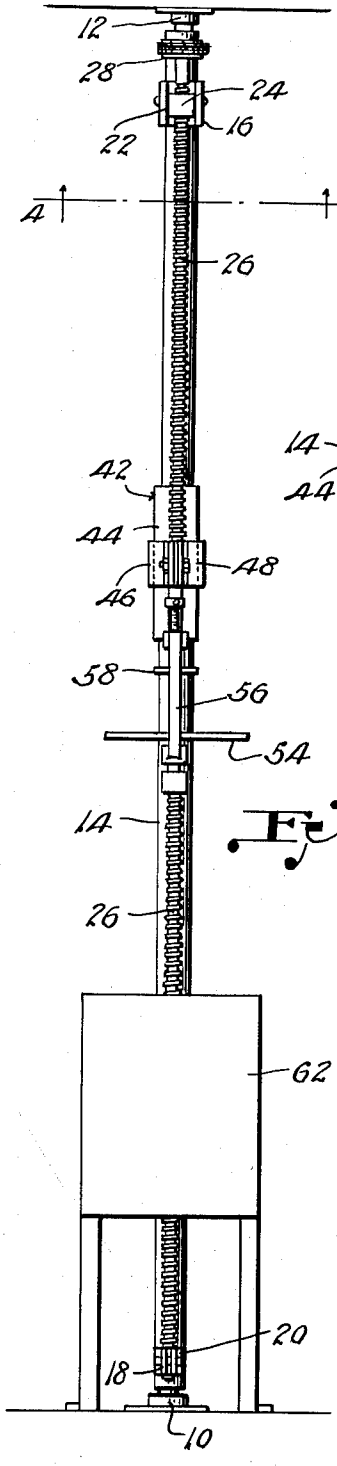


Fig. 2.

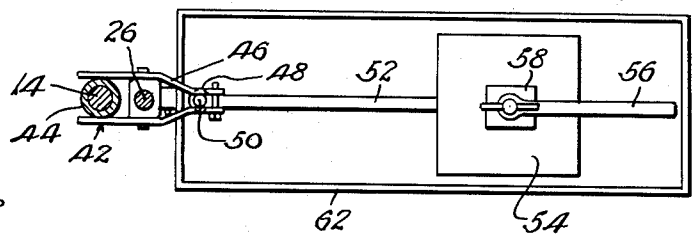


Fig. 3.

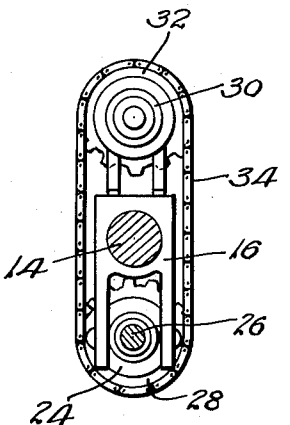


Fig. 4.

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2,737,709

APPARATUS FOR HANDLING WORK

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2 Claims. (Cl. 29—290)

This invention relates to apparatus for handling work and more particularly to a device for raising and lowering radiators of the type employed in the automotive field.

The primary object of this invention is to support a radiator in a position to be worked upon and yet enable the radiator to be lowered into a testing tank by which it may be tested for leaks.

Another object is to facilitate the lifting of the radiator from the floor adjacent a testing tank to a position above the testing tank and then enable the radiator to be lowered into the testing tank for testing purposes.

Still other features include means for clamping the radiator on the work handling device in order to avoid danger of dropping the radiator during the various operations.

The above and other objects may be attained by employing this invention which embodies among its features a vertically extending column mounted to rotate about its axis, a carriage mounted on the column to move vertically thereon, an elongated externally screw threaded shaft carried by the column for rotation about its own axis, said shaft mounted in spaced parallel relation to the column, a nut fixed to the carriage and threadedly engaging the threads on the shaft, work supporting means mounted on the carriage and extending laterally therefrom and means carried by the column and operatively connected with the shaft for rotating the shaft on its own axis and raising or lowering the carriage according to the direction of rotation of the shaft.

Other features include a clamp carried by the work supporting means for clamping a radiator thereon and a water tank mounted adjacent the column into which the radiator may be submerged for the purpose of detecting leaks therein.

Still other features include a reversible electric motor carried by the column and movable therewith and operatively connected with the shaft for rotating the shaft and raising or lowering the carriage and the work carried thereby.

In the drawings

Fig. 1 is an elevation of my work handling apparatus embodying the features of this invention,

Fig. 2 is a side elevation of the device illustrated in Fig. 1,

Fig. 3 is a plan view in section along the line 3—3 of Fig. 1, and

Fig. 4 is an enlarged bottom plan view in section along the line 4—4 of Fig. 2.

Referring to the drawings in detail a bearing plate **10** is secured to the floor of the building structure in axial alignment with a similar bearing plate **12** carried by the ceiling of the building structure. Mounted to rotate about its longitudinal axis in the bearing plates **10** and **12** is a column **14**. Carried by the column **14** adjacent its opposite ends are laterally extending supporting arms **16** and **18** which are fixed to the column to rotate therewith and project laterally therefrom as will be readily understood upon reference to the drawings. The lowermost

arm **18** is provided with a bearing sleeve **20** while the uppermost arm **16** is bifurcated as at **22** to receive the thrust bearing **24** which aligns axially with the bearing sleeve **22**. Mounted in the thrust bearing **24** and extending parallel to the column **14** is an externally threaded shaft **26** which carries adjacent its upper end a driven sprocket **28**, for rotating the shaft when the sprocket is rotated. Mounted on the arm **16** on the side of the column **14** remote from the thrust bearing **24** is a reversible drive motor **30** to which is operatively connected a drive sprocket **32** and trained over the drive sprocket **32** and the driven sprocket **28** is a drive chain **34**. It will thus be seen that when the motor **30** is energized the shaft **26** will be rotated and inasmuch as the motor **30** is reversible, it is obvious that the direction of rotation of the shaft **26** may be controlled. Power is supplied to the reversible motor **30** through a conventional outlet **36** and connected to the motor and outlet **36** is a BX reversing switch **38** through the medium of a conventional cable **40**.

Mounted for vertical sliding movement on the column **14** is a carriage designated generally **42** which comprises an elongated sleeve **44** carrying intermediate its ends a laterally extending arm **46**. This arm is provided adjacent its end remote from the sleeve **44** with a clamp collar **48** for receiving and clampically engaging a leg **50** which extends parallel to the shaft **26** in spaced relation thereto. Carried adjacent the lower end of the leg **50** is a laterally extending supporting arm **52** carrying a work table **54** and a C-clamp **56** having a clamp jaw **58** which aligns axially with the work table **54** in order to cooperate therewith in clamping work thereon. Carried by the arm **46** between the clamp collar **48** and the sleeve **44** is a threaded nut **60** which engages the threads of the shaft **26** so that as the shaft is rotated, the carriage **42** will be moved longitudinally along the column **14** in accordance with the direction of rotation of the shaft. A suitable tank **62** is mounted adjacent the column **14** so that a radiator or other work supported on the table **54** may be submerged in the tank, in testing for leaks.

In use when an article such as a heavy automotive radiator is to be worked on, the column **14** is rotated about its vertical axis to move the table **54** and clamp **58** clear of the tank **62** whereupon the supporting arm **52** is lowered by rotating the motor **30** to move the carriage downwardly until the arm **52** rests on or adjacent the floor. The radiator is then placed on the table **54** and clamped thereon by the clamp **58** with a minimum of exertion on the part of the workman. Upon operating the switch **38** to cause the motor **30** to rotate the shaft **26** in a direction to elevate the carriage **42**, it will be obvious that the work may be moved to a desired height and upon swinging the column **14** about its vertical axis, the work may be moved into a position above the tank **62** and lowered thereinto to be submerged in water therein. This will enable the radiator to be tested for leaks, and upon elevating the carriage **42**, it is obvious that the work can be supported at a level suitable for operating thereon. Obviously if so desired the work may be transferred to or from the table **54** directly from a hand truck or the like, and since the table **54** and work may be swung about the vertical axis of the column **14** it is evident that it not only may be elevated to a suitable height, but moved to various positions about the axis of the column according to the desires of the user.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What is claimed is:

1. Apparatus for handling an object comprising an elongated vertically extending column mounted at the ends thereof to rotate about its axis, a carriage mounted on the column to move vertically thereon, arms fixed on the column for rotative movement therewith about the axis of said column, said arms extending laterally from the column, an elongated externally screw threaded shaft rotatably mounted in the arms, a nut fixed on the carriage and threadedly engaging the shaft for moving the carriage lengthwise of said column by rotation of the shaft, a laterally rotatable work supporting clamping means carried by the carriage and extending laterally therefrom, and a reversible motor carried by one of the arms and operatively connected to the shaft for rotating said shaft and raising or lowering the carriage.

2. Apparatus for handling an object comprising an elongated vertically extending column rotatably mounted at the ends thereof to rotate about its axis, a carriage mounted on the column to move vertically thereon, arms fixed on the column for movement therewith about the longitudinal axis of said column, said arms extending laterally from the column, an elongated externally screw threaded shaft rotatably mounted in the arms, a nut fixed to the carriage and threadedly engaging the shaft for moving the carriage lengthwise of said column by rotation of the shaft, laterally rotatable work supporting clamping means carried by the carriage and extending laterally therefrom, a reversible motor carried by one of the arms and operatively connected to the shaft for rotating said shaft and raising or lowering the carriage, and a reversing switch electrically connected to the motor for governing the direction of rotation of the shaft.

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