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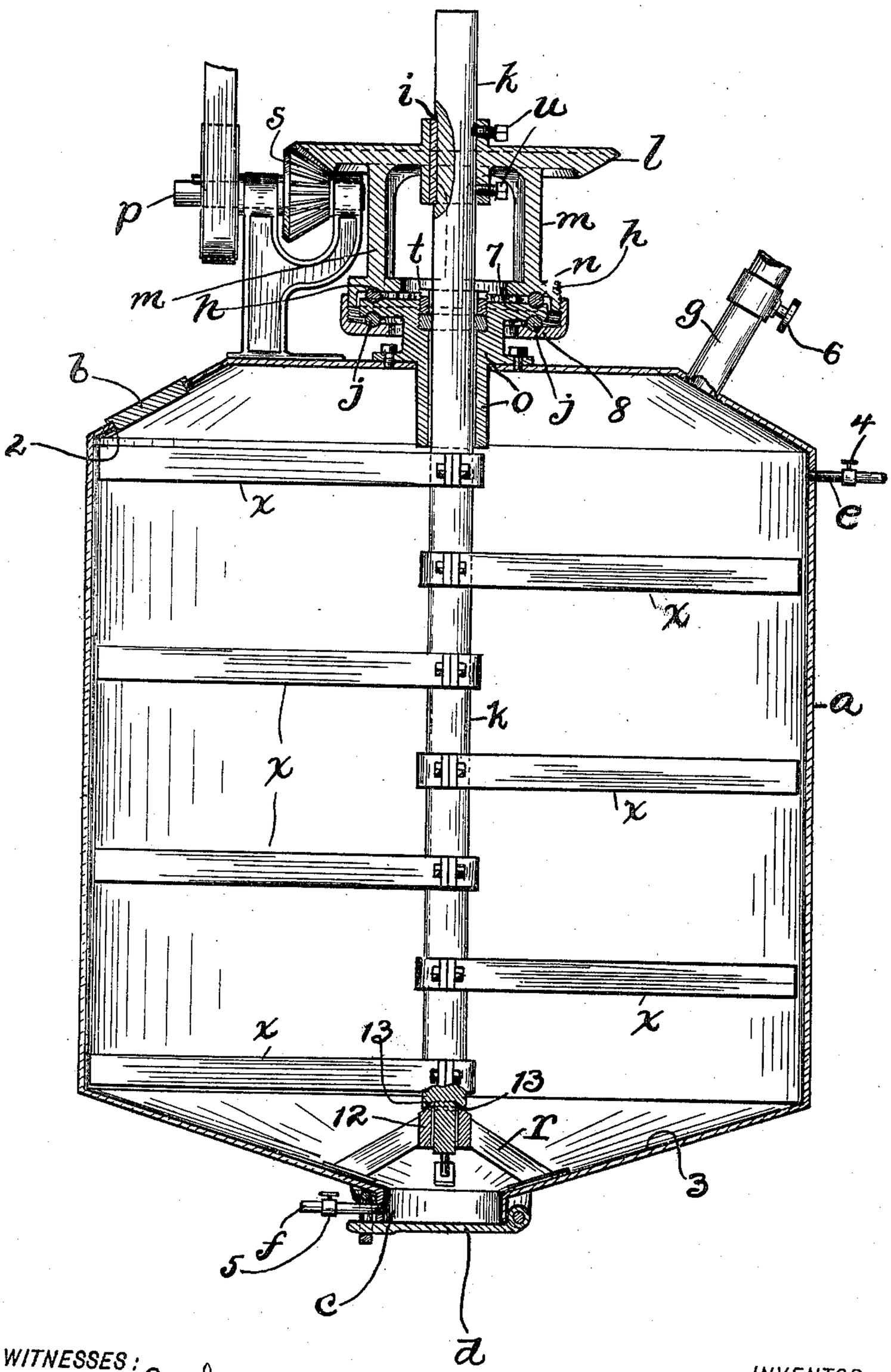
E. R. EDSON.

SHAFT SUPPORT.

APPLICATION FILED DEC. 26, 1901.

NO MODEL.



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UNITED STATES PATENT OFFICE.

EUGENE R. EDSON, OF CLEVELAND, OHIO, ASSIGNOR TO THE EDSON REDUCTION MACHINERY COMPANY, OF AUGUSTA, MAINE, A CORPORATION OF MAINE.

SHAFT-SUPPORT.

SPECIFICATION forming part of Letters Patent No. 736,508, dated August 18, 1903.

Application filed December 26, 1901. Serial No. 87,297. (No model.)

To all whom it may concern:

Be it known that I, EUGENE R. EDSON, a citizen of the United States of America, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Shaft-Supports; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This improvement relates to improvements in shaft-supports, and pertains more especially to improved means for carrying and preventing wabbling of a vertically-arranged stirring-shaft employed in stirring material which is being rendered or reduced and avoiding detrimental objectionable friction within the receptacle wherein the material is treated, and thereby avoid the ignition of inflammable or explosive gases or vapors.

With this general object in view and to realize other advantages hereinafter appearing the invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

The accompanying drawing is a side elevation, largely in central vertical section, of apparatus embodying my invention.

Referring to the drawing, *a* designates a normally closed tank or receptacle which is cylindrical and provided at the top and one side with a charging-aperture 2, at which the material which is to treated within the receptacle is introduced into the receptacle. The aperture 2 is normally closed by a suitably-applied cover *b*.

The receptacle *a* is provided at the bottom and centrally with a downwardly-extending tube or duct *c*, arranged to discharge downwardly, and the bottom 3 of the chamber of the receptacle declines toward the outlet-forming duct, so as to facilitate the flow of oil or liquid extracted from material treated within the receptacle to the said outlet and to equally facilitate the discharge of the residue. The duct *c* is normally closed at its lower and discharging end by a suitably-applied door *d*.

A pipe *e* for supplying naphtha or other solvent to the chamber of the receptacle *a* is arranged to discharge into the said chamber and has a valve 4, which is normally closed.

A suitably-applied drain-pipe *f* is arranged to conduct liquid which has been extracted within the receptacle *a* from the said receptacle. The pipe *f* is provided with a valve 5, which is normally closed. The pipe *f* has its inner end in open relation with the duct *c*, and consequently with the chamber of the receptacle *a*. The liquid which is extracted from the material treated within the receptacle *a* gravitates to the bottom of the said receptacle and flows adown the latter into the duct *c* and thence through the drain-pipe *f*.

The receptacle *a* is provided at its upper end with a vapor-conducting pipe or flue *g*, which has a normally closed valve 6.

The stirring-shaft *k* is arranged vertically and centrally of the receptacle *a* and extends from above and near the duct *c* upwardly and through and a suitable distance above the top of the receptacle *a*. The shaft *k* is provided within the receptacle *a* with any suitable number of laterally-projecting and radially-extending arms *x*, arranged at suitable intervals vertically and adapted to stir or disintegrate or otherwise act upon any material which is undergoing treatment in the receptacle *a*. The shaft is subjected, therefore, to considerable strain endwise, as well as laterally, of the shaft, and means which will adequately support the shaft with little or no friction upon the shaft is quite important.

A bevel-gear *l* is operatively mounted upon the shaft *k* a suitable distance above the top of the receptacle *a*. The gear *l* is rigid and preferably integral with the upper end of an upright frame or stand *m*, formed upon and preferably integral with a turn-table *n*, which is mounted upon the upper side of a table-forming flange 7, formed upon and externally of the upper end of a vertically-arranged tubular guide and shaft-steadying piece *o*, which is rigid with the top of the receptacle *a* and loosely embraces the shaft *k*. Preferably the gear *l* and the stand or frame *m* are operatively connected with the shaft by the

well-known means of groove and feather *i* and are fixed to the shaft by set-screws *u*. The shaft-steadying piece *o* is provided at its upper end with an external annular table-forming flange 7, which bears the turn-table *n*. Antifriction-balls *h* are interposed between the tables *n* and 7 and are arranged within registering annular recesses formed in the opposing sides of the said tables. The table *n* is provided with an annular rim or member 8, which extends in under the table 7, and antifriction-balls *j* are interposed between the rim 8 and the table 7 and arranged within registering annular recesses formed in the opposing sides of the said members 7 and 8. The turn-table *n* is therefore adequately supported, and vertical displacement of the said table is rendered impossible, and the balls *h* and *j* also afford lateral bearing to the table. It will be observed, therefore, that the shaft *k* is suspended from the turn-table, and by the construction hereinbefore described displacement of the shaft is prevented without wear upon the shaft, twisting or wabbling of the shaft is reduced to a minimum, and the necessity of snugly-fitting bearings for the shaft within the receptacle *a* is avoided.

A shaft-steadying frame *r*, mounted upon and secured to the bottom of the receptacle *a* around the upper end of the duct *c*, is provided centrally with an annular member 12, which loosely embraces and is adapted to steady the shaft *k*. The shaft *k* has its lower end reduced in diameter where it extends into the shaft-steadying piece *r* to reduce any friction between the said member *r* and the shaft *k* to a minimum. The shaft *k* at the upper end of the central member 12 of the shaft-steadying frame *r* is provided with a downwardly-facing and downwardly-flaring external annular shoulder 13, which overlaps, but does not bear upon, the correspondingly-shaped upper edge of the said member 12. It will be observed that the shaft *k* is suspended or supported from the elevated table 7 through the medium of the turn-table *n*, and the frame *r* does not participate in bearing the load of the shaft, but performs the function of steadying the shaft. The gear *l* meshes with the bevel-pinion *s*, operatively mounted upon a shaft *p*, to which power is suitably applied. Obviously, therefore, power is transmitted to the turn-table *n* and the shaft *k* from the shaft *p* through the medium of the intergearings *l* and *s*.

It is evident, of course, that all joints where leakage might occur in the absence of proper packing must be suitably packed—as, for instance, a stuffing-box *t* is provided around the shaft *k* at the upper end of the shaft-steadying member *o;* but the application of stuffing-boxes and the packing of joints are too well known to require description or further illustration in this application. The separation of the bevel-gear *l* a suitable distance from the table *n* by the frame or stand *m* is, however, not unimportant, because thereby convenient access is afforded to the stuffing-box *t*.

What I claim is—

1. The combination, with an upright shaft, of a shaft-steadying tubular member surrounding the shaft, and provided with a stationary table; a stuffing-box around the shaft at the upper end of said shaft-steadying member; a turn-table mounted on said stationary table, and means for rotating the said shaft, comprising a wheel supported from and a suitable distance above the turn-table and operatively connected with the shaft.

2. The combination, with an upright shaft, of a shaft-steadying tubular member *o* surrounding the shaft and provided with a stationary table 7; a stuffing-box *t* around the shaft at the upper end of the said shaft-steadying member; a turn-table mounted upon the said stationary table; a gear supported from and a suitable distance above the turn-table and operatively connected with the shaft, and a driving-shaft operatively provided with a pinion meshing with the said gear.

Signed by me at Cleveland, Ohio, this 10th day of December, 1901.

EUGENE R. EDSON.

Witnesses:
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TELSA SCHWARTZ.