(No Model.) 2 Sheets—Sheet 1.

J. H. FILBERT.

APPARATUS FOR DEODORIZING FATS OR OILS.

No. 535,792. Patented Mar. 12, 1895.

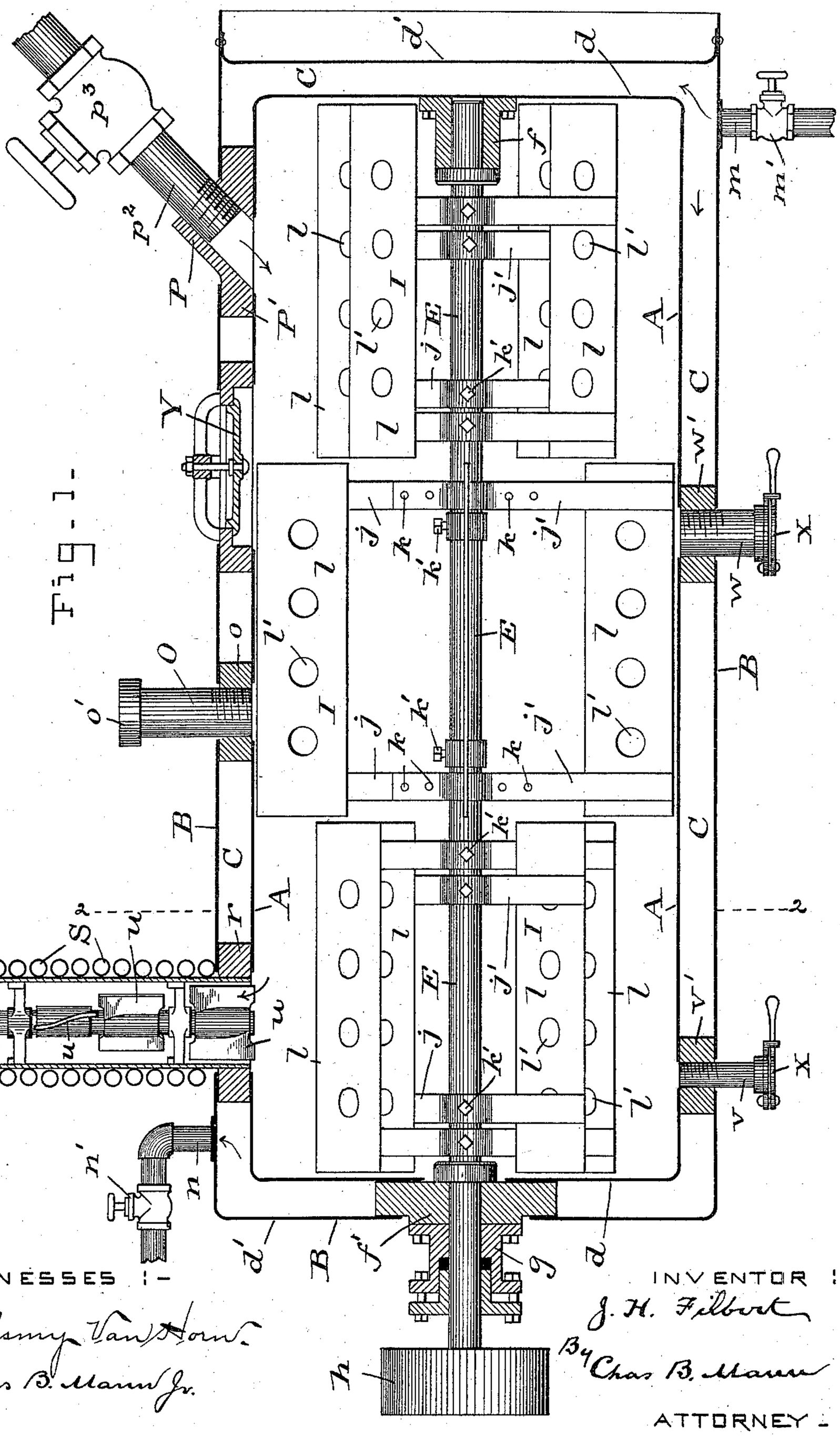

Fig. 1.

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Fig. 3.

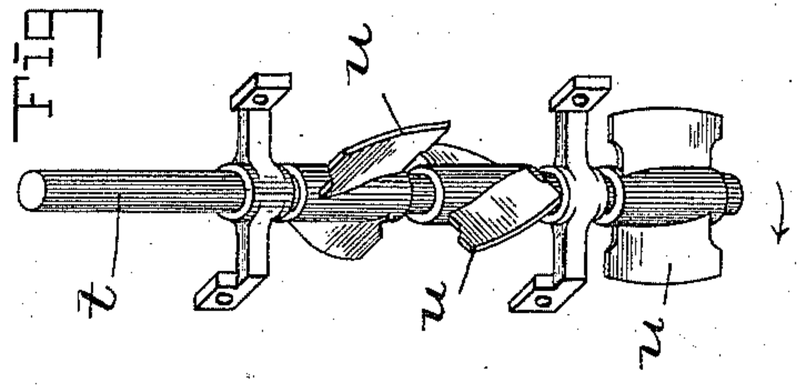
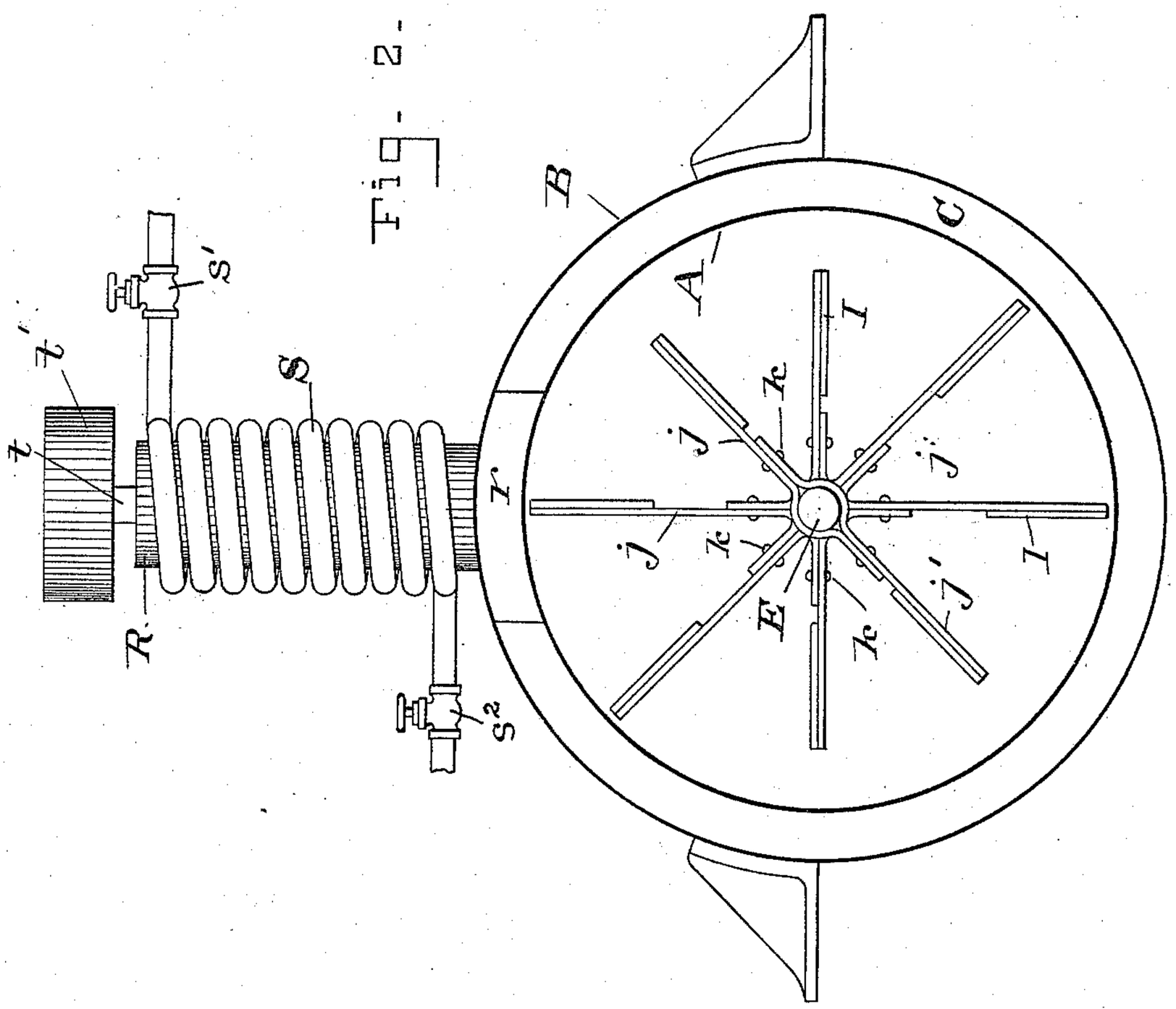


Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR DEODORIZING FATS OR OILS.

SPECIFICATION forming part of Letters Patent No. 535,792, dated March 12, 1895.

Application filed December 24, 1894. Serial No. 532,844. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. FILBERT, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in an Apparatus for Deodorizing Fats or Oils, of which the following is a specification.

This invention relates to certain improvements in apparatus for deodorizing fats and oils.

The object of this apparatus is to eliminate from fats and oils those gases held in suspension which produce objectionable odors.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of the apparatus. Fig. 2 is a view showing a cross-section of one part of the apparatus and a side view of another part. Fig. 3 is a perspective view of the shaft and revoluble blades of the stand-pipe.

The letter A designates an inside tank or cylinder, B a similar shaped outside or inclosing tank, and C a water-space between the two tanks. These tanks are made of suitable metal plates properly riveted together, with a circular head, *d*, at each end of the inner tank, and a circular head, *d'*, at each end of the outer tank.

A longitudinal shaft, E, extends through the center of the inside tank. One end of this shaft has a bearing, *f*, secured on the inner side of one head, *d*, of the inner tank, and the other end passes through a bearing, *f'*, which is fitted in the space between the two heads, *d*, *d'*. This end of the shaft turns in a stuffing box, *g*, attached to the bearing, and on the projecting end is a pulley, *h*, over which a driving belt may be placed to impart motion to the shaft. Three separate paddle wheels, I, in the present instance, are mounted on this shaft within the inner tank. Each of these wheels comprises radial arms made in pairs—two arms, *j*, *j'*, which overlap each other and at the same time clamp the shaft, E, the two lapped arms being secured together by bolts, *k*, and made fast to the shaft by a set-screw, *k'*. In Fig. 1 it will be seen that blades or paddles, *l*, extending parallel with the shaft, E, are secured to two of these radial arms. Each wheel thus has four paddles, *l*. The two sets of radial arms have position in a direction crosswise of each other, and the arms running one way, which carry two paddles, *l*, are shorter than the other arms running the transverse way. The paddles may have holes, *l'*, or not. Three wheels thus constructed are mounted on the shaft, E, and the wheels are placed so that the position of the paddles, *l*, of one wheel shall not be in the same plane as those of an adjoining wheel. This arrangement serves to stir and agitate the oil thoroughly and at the same time requires less power to operate the shaft. Of course the paddles and arms may have a construction varied from that shown.

A water-supply pipe, *m*, is attached to the lower side or bottom of the outer tank, B, and delivers heated water to the space, C, between the two tanks, and a draw-off or waste water pipe, *n*, is attached to the upper or top side of the outer tank. Each pipe has a valve, *m'*, *n'*, respectively. By this means a supply of water, warmed or heated to any desired temperature, may be maintained within the space or water-jacket, C, and thus the oil contents of the inner tank, A, may be kept in the desired condition of fluidity while under treatment.

A supply pipe, O, passes through the plates of both tanks and a block, *o*, in the space, C, and this supply-pipe serves for charging the inner tank with fats and oils to be treated. Any suitable device, *o'*, may be employed to close the supply pipe.

The tanks have on the exterior an inclined neck or tubulure, P, provided with a base-block, P', which fits into and fills the space, C. This inclined hollow neck is on top and near one end of the tank and the inclination is such as to point downward and also toward the other end of the tank. A pipe, p^2, is attached to this inclined neck and is provided with a valve, p^3. This pipe and neck communicate from a suitable source of air-supply, such as a rotary blower or air-pump, (not shown) and deliver a moderate air-blast into the inner-tank. An outlet for the escape of this air and the gases eliminated from the fats and oils, comprises a stand-pipe, R, fitted to the tanks and opening through a block, *r*, in the space, C, into the inner tank. Exteriorly this stand-

pipe, or air-outlet, R, has around it a steam coil, S, provided with valves, s', s^2, to regulate the supply and discharge of steam. This heater coil serves to maintain any desired degree of warmth or heat in the stand-pipe, for a purpose to be mentioned shortly.

A vertical shaft, *t*, is suitably mounted in the pipe, R, and is provided with a number of small twisted blades, *u*. These numerous twisted blades,—of which the drawings show six, though in practice I prefer to use a larger number, say ten,—all revolving in the upward passage through the pipe, serve two purposes: first, they operate to stop or check the spray and small particles of oil and fat that would otherwise pass out with the escaping air, and, second, they serve to scrape or remove from the inner wall of the stand-pipe the fatty spray which finds lodgment thereon. The best results both for stopping the spray of fat and oil and for scraping this pipe and freeing it of the spray which is constantly lodging on its walls, are obtained by having these twisted blades in pairs—one blade diametrically opposite the other—and mounting the several pairs one above another on the shaft, *t*, so that the two blades of one pair will project in a direction transversely to that of the two blades of the next adjoining pair. This relative position of the blades in the pipe allows of upward spaces, or upward passages, for the air to escape, and yet presents cross barriers in said passages on which the spray of fat and oil will lodge. As the steam coil, *s*, around the stand-pipe will keep the latter, and also the shaft and blades, warm, the lodgment of fatty spray referred to will be continually dropping off and down into the mass of fat and oil in the tank.

A pulley t', on the upper end of the shaft serves for a driving belt to cause the shaft and blades to revolve.

In the bottom of the tank are two openings and discharge nozzles, *v*, *w*. Each opening is through a block, v', w', respectively in the space, C. A suitable valve, *x*, is on each nozzle. These serve to draw off the oil after it has been treated.

A suitable man hole is in the top of the tank and this hole is closed by a cover, Y, of well-known form.

The operation of this apparatus is as follows: The fats or oils to be treated are placed in the tank until it is about half full only. The warm water jacket keeps the oil at the desired temperature best suited for treatment. The shaft, E, and paddles, *l*, rapidly revolving agitate and break up the mass of oil and cause spray which fills the upper portion of the tank. Now a blast of air entering at the inclined neck, P, acting on the agitated oil aerates it and also absorbs and takes up from the spray the liberated gages which were in the oil. Then this air, charged with the odors and gases, passes out at the stand-pipe, R, while the revolving twisted blades, *u*, without hindering the escape of air, prevent the fat spray from passing out, and also keep the stand-pipe scraped and free from any accumulation of fat. Oil thus treated will be free of odor.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for treating fats and oils, the combination of two closed tanks—one within the other, and a water space between the two; a shaft in the inner tank; separate paddle wheels on the shaft within the tank; a neck or tubulure, P, for an air blast and entering from the exterior into the inner tank; a stand-pipe, R, for the escape of air from the inner tank; and revoluble blades in said stand-pipe.

2. In an apparatus for treating fats and oils, the combination of two closed tanks—one within the other, and a water-space between the two; an inlet for an air-blast to enter the inner tank; a stand-pipe for the escape of air from the inner tank; a steam-coil around the stand-pipe; and revoluble blades in said stand-pipe.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN H. FILBERT.

Witnesses:

CHARLES B. MANN, Jr.,

C. CALVERT HINES.