

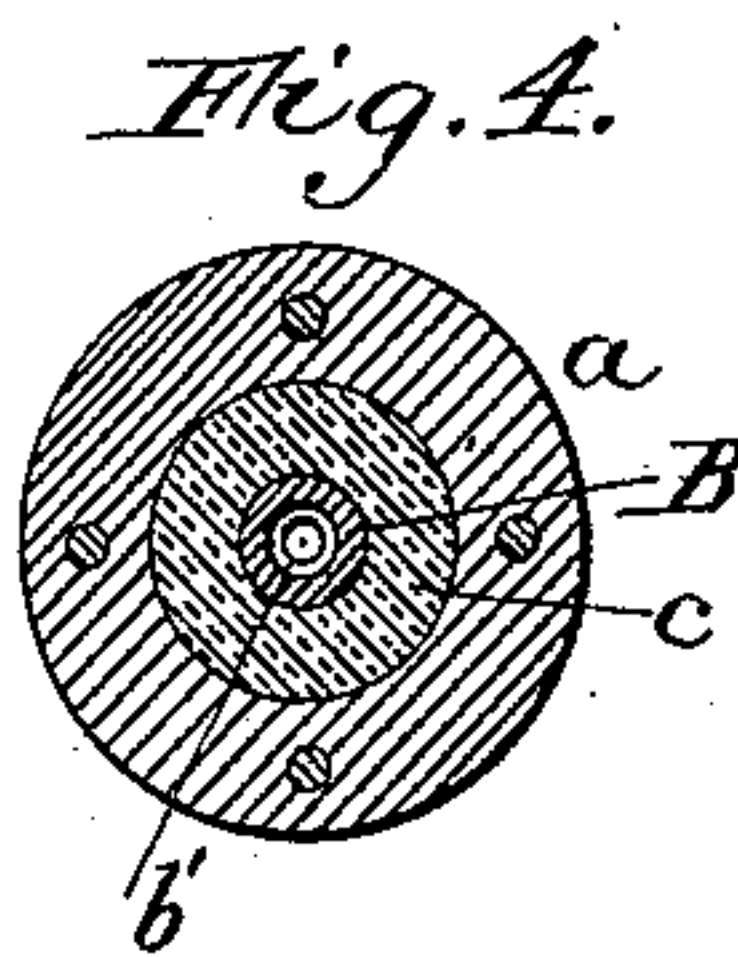
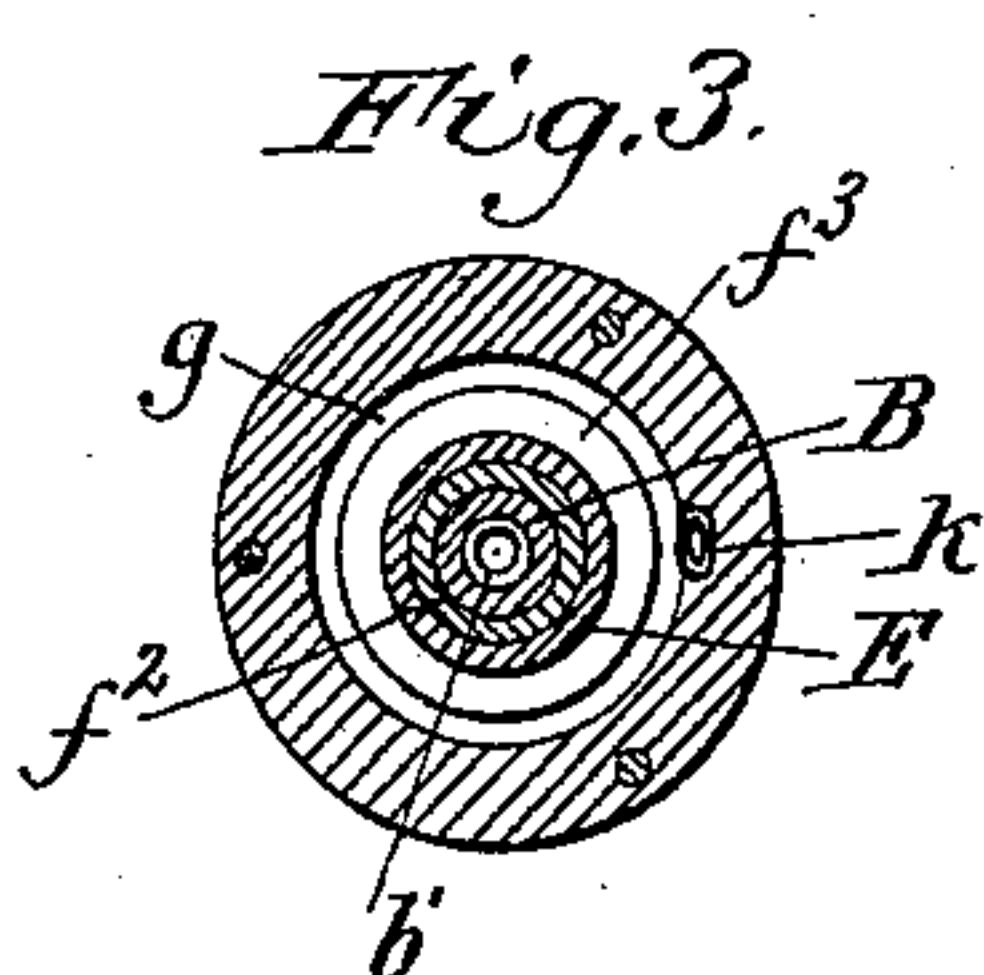
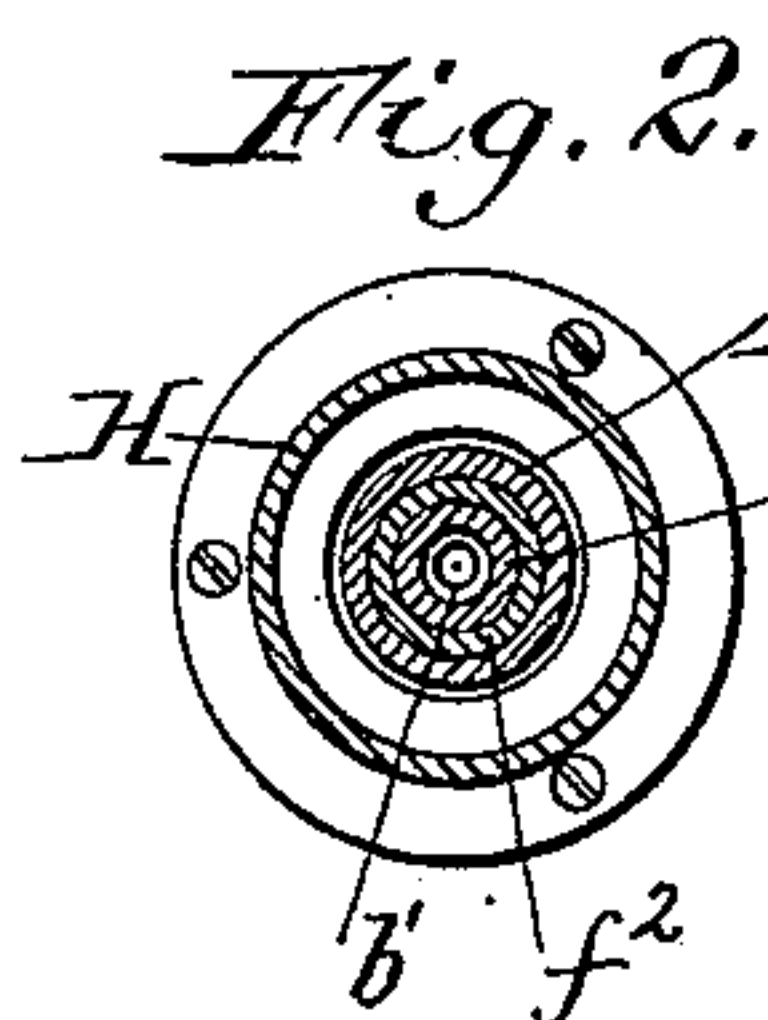
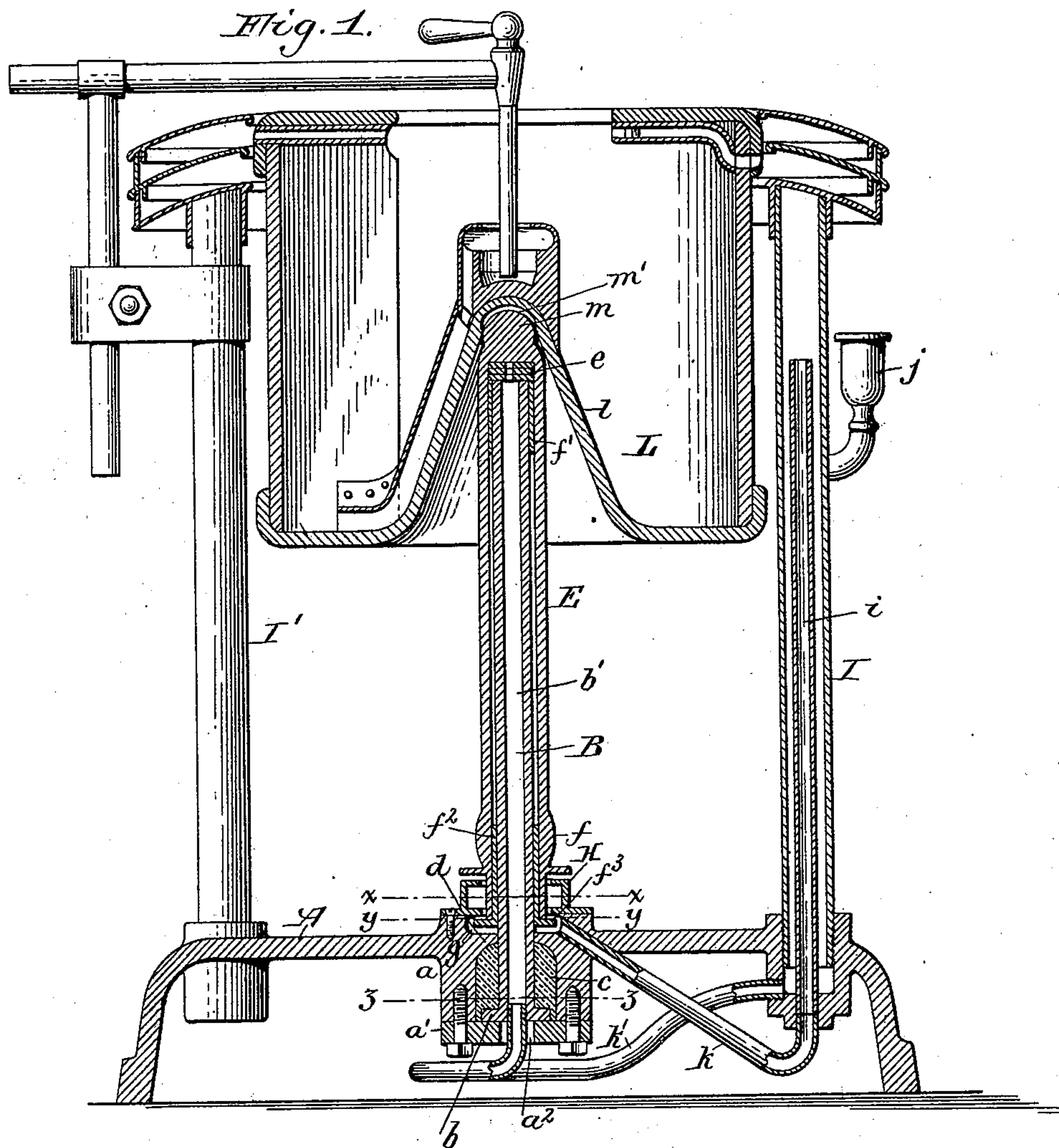
(No Model.)

F. HART.

MEANS FOR LUBRICATING CENTRIFUGAL SEPARATORS.

No. 405,212.

Patented June 11, 1889.



Witnesses:
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UNITED STATES PATENT OFFICE.

FREDERICK HART, OF POUGHKEEPSIE, ASSIGNOR TO D. H. BURRELL & COMPANY, OF LITTLE FALLS, NEW YORK.

MEANS FOR LUBRICATING CENTRIFUGAL SEPARATORS.

SPECIFICATION forming part of Letters Patent No. 405,212, dated June 11, 1889.

Application filed September 10, 1888. Serial No. 284,978. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK HART, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain
5 new and useful Improvements in Means for Lubricating Centrifugal Separators, of which the following is a specification.

My invention relates to that class of centrifugal separators, which are provided with
10 a drum or bowl resting on a spindle, by which the drum or bowl is supported and rotated.

The object of my invention is to improve the construction of the parts by which the drum is rotated and supported, so as to render such parts self-oiling and dust-proof.
5

My invention consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is
20 a vertical section of a centrifugal separator provided with my improvements. Figs. 2, 3, and 4 are horizontal sections in lines xx , yy , and zz , Fig. 1, respectively.

Like letters of reference refer to like parts
25 in the several figures.

A represents the base or bed plate of the machine, provided with a depending central hub or socket a , to the lower end of which is secured a plate a' , having a central opening a^2 .
30

B is a vertical standard, secured with its lower end centrally in the base-plate A. The lower end of the standard is provided with a flange b , which rests upon the plate a' , and the cavity of the socket a is filled with an
35 elastic cushion c of india-rubber or other suitable material, which fits snugly around the lower portion of the standard. The upper portion of the socket a is provided with an inwardly-projecting collar d , which fits
40 snugly around the standard B. The elastic cushion c holds the standard securely in an upright position, and at the same time permits the standard to yield slightly and adapt itself to any slight lateral movement of the
45 parts resting on the standard. The standard is made hollow or otherwise provided with an oil-duct b' , running lengthwise of the standard.

E represents a hollow spindle, which rests
50 upon the hollow standard and extends down-

wardly over the standard nearly to the base-plate A. Perforated washers e are interposed between the top of the spindle E and the top of the standard B, to adjust the spindle vertically when required.

f represents the belt-pulley formed on the spindle E, near the lower end thereof. 55

f' represents a bearing-sleeve secured within the upper portion of the spindle E and turning on the standard B, and f^2 is a
60 similar bearing-sleeve secured within the lower portion of the spindle. The lower bearing f^2 is provided with a flange f^3 , which projects into an internal annular groove or oil-receiver g , formed in the socket a of the
65 base above the collar d thereof.

H is an annular oil guard or receptacle, secured to the upper side of the socket a and projecting inwardly over the flange f^3 of the lower bearing-sleeve f^2 . 70

I I' represent hollow posts secured to the base A on diametrically-opposite sides of the central standard B. The post I is provided with an internal oil-tube i , which ascends within the post to a level slightly above the
75 top of the standard B.

j represents an oil-cup secured to the post I and communicating with the interior of the post I below the top of the oil-pipe i .

k is a pipe connecting the lower end of the
80 pipe i with the annular groove g in the upper portion of the socket a , and k' is a pipe which establishes communication between the lower end of the bore of the standard B and the lower end of the cavity of the post I. 85

The cavities of the post I and connecting parts are filled with oil through the oil-cup j to the level of the oil-cup, so that the oil stands in the hollow standard B in contact with the washers e . The rotation of the spindle E
90 upon the standard B causes the oil to flow outwardly from the top of the standard B between the rings or washers e , thence downwardly between the standard and the spindle E and into the annular receiver g , in which
95 the oil is acted upon by the rotating flange f^3 , which drives the oil outwardly and through the pipe k , and upwardly through the pipe i within the post I. The oil flows over the top of the pipe i , descends in the post I, and re- 100

turns to the lower end of the hollow standard B through the pipe k' . In this manner a continuous circulation of the oil is maintained while the machine is running.

5 The parts are so arranged and fitted that dust is excluded from the bearing-surfaces. The cavity of the annular guard or receptacle H holds the surplus oil when the machine is at rest. The collar d of the base fits
10 against the standard so snugly as to prevent the oil from descending to the elastic cushion c . The return-pipe k' is preferably coiled or bent to render it sufficiently yielding to follow the slight lateral movement of the
15 lower end of the standard, which occurs when the standard adapts itself to the rotating parts above.

L represents the bowl or drum, which is mounted upon the upper portion of the spindle E, and l is the raised hub formed centrally
20 on the bottom plate of the drum.

m is a spherical knuckle formed at the upper end of the spindle E, and m' is a spherical socket formed in the apex of the
25 hub l and resting on the knuckle m . The drum is rotated by the friction between this knuckle and socket, and is free to oscillate to a limited extent on this spherical joint.

I do not wish to claim in this application
30 the construction of the separating-drum and the self-adjusting feature of the supporting-spindle, as these form the subject-matter of a pending application for patent filed by me on the 21st day of February, 1888, Serial No.
35 264,756.

I claim as my invention—

1. The combination, with the drum, of a supporting-standard provided with an ascending oil-duct, a hollow spindle surrounding the
40 standard, and an elevated oil-reservoir connected with the lower end of the oil-duct of the standard, substantially as set forth.

2. The combination, with the drum, of a supporting standard provided with an ascending
45 oil-duct, a hollow spindle surrounding the standard, a base provided with an oil-receiver below the lower end of the spindle, an elevated oil-reservoir, and pipes connecting said

reservoir with the oil-duct of the standard and with the oil-receiver below the spindle, 50 substantially as set forth.

3. The combination, with the base provided with an oil-receiver g , of a hollow supporting-standard B, a hollow spindle E, surrounding said standard, a hollow post I, provided with
55 an upright oil-pipe i , arranged within the post, a pipe k , connecting the receiver g with the lower end of the pipe i , and a pipe k' , connecting the lower end of the cavity of the post with the lower end of the hollow stand-
60 ard, substantially as set forth.

4. The combination, with the base provided with an oil-receiver g , of a standard B, provided with an oil-duct, a hollow spindle E, surrounding said standard and provided with
65 an outwardly-projecting flange within the receiver g , an elevated oil-reservoir, and oil-circulating pipes connecting the oil-reservoir with the receiver g and the oil-duct of the standard, substantially as set forth. 70

5. The combination, with the drum, of a supporting-standard provided with an oil-duct, a hollow spindle surrounding the standard, a base provided with an oil-receiver below the lower end of the spindle and with a
75 receptacle for the surplus oil above said oil-receiver, an elevated oil-reservoir, and circulating-pipes connecting the oil-reservoir with the oil-receiver and the oil-duct of the standard, substantially as set forth. 80

6. The combination, with the drum, of a base provided with an annular oil-receiver g , a standard E, provided with an oil-duct, a hollow spindle surrounding the standard, an
85 elevated oil-reservoir, circulating-pipes connecting said reservoir with the oil-duct of the standard and with the oil-receiver, and an annular receptacle H for the surplus oil, secured to the base above the oil-receiver g , substantially as set forth. 90

Witness my hand this 30th day of August, 1888.

FREDERICK HART.

Witnesses:

GEO. H. SHERMAN,
J. W. RUST.