(No Model.) 3 Sheets—Sheet 1.

F. X. NADON.

CENTRIFUGAL SEPARATOR.

No. 566,466. Patented Aug. 25, 1896.

Fig. 1.

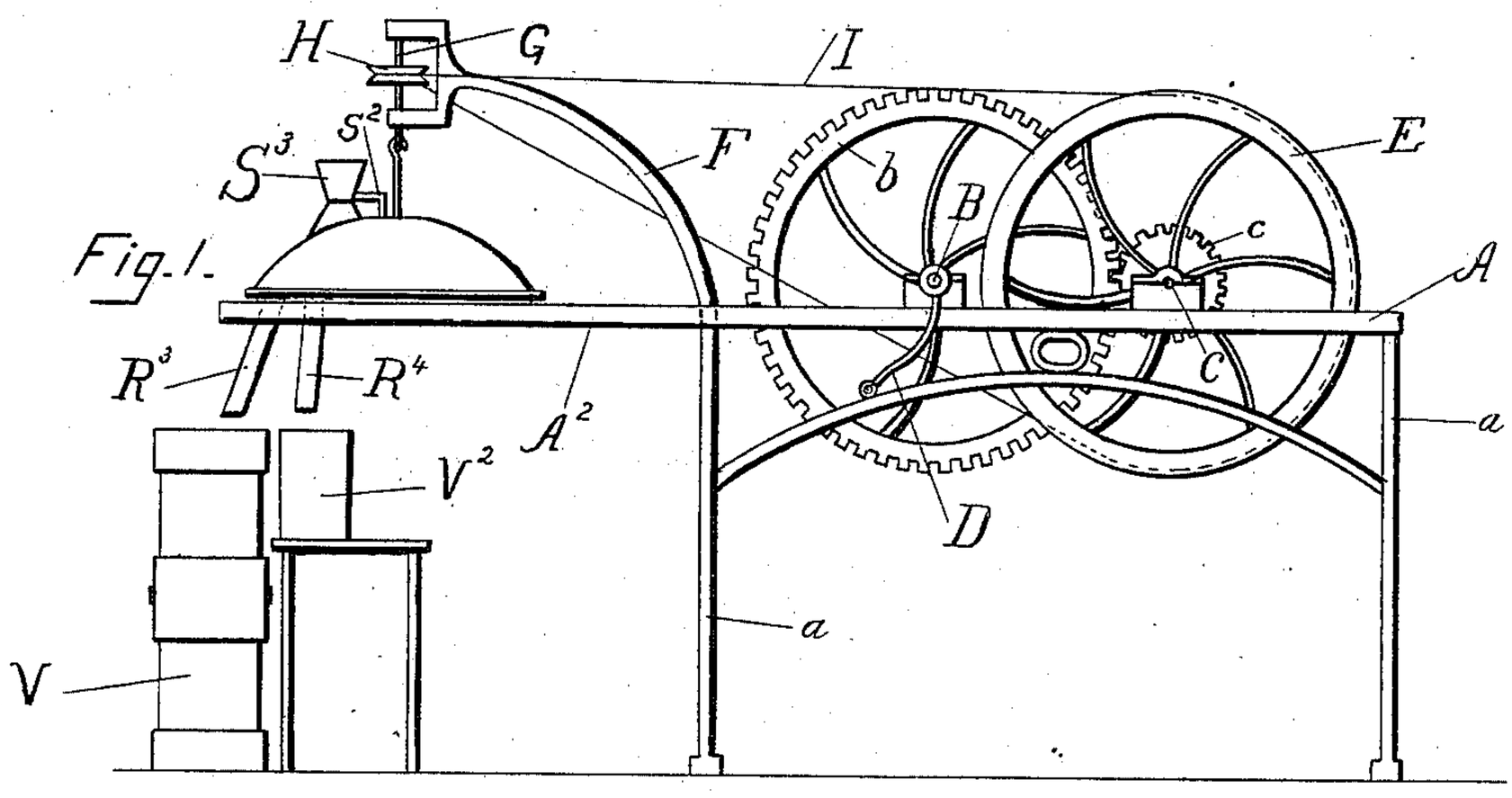


Fig. 2.

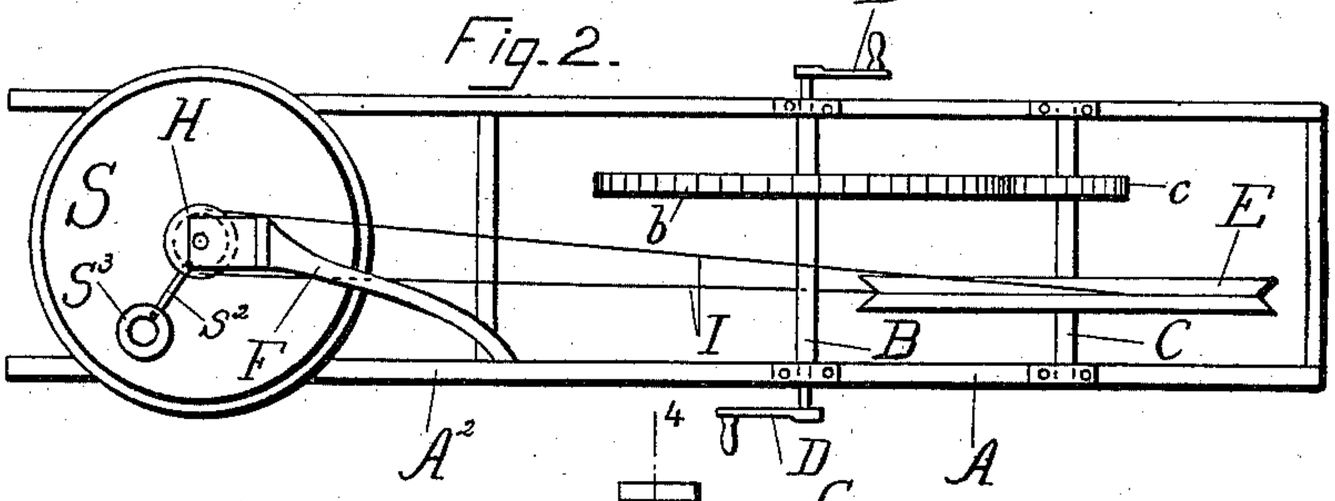
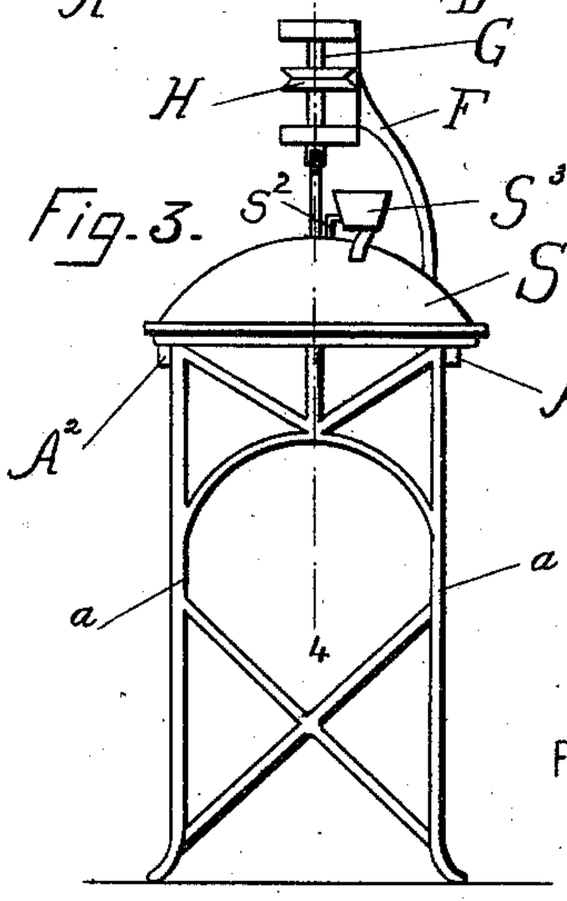


Fig. 3.



Witnesses
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A. J. Bachand

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(No Model.)

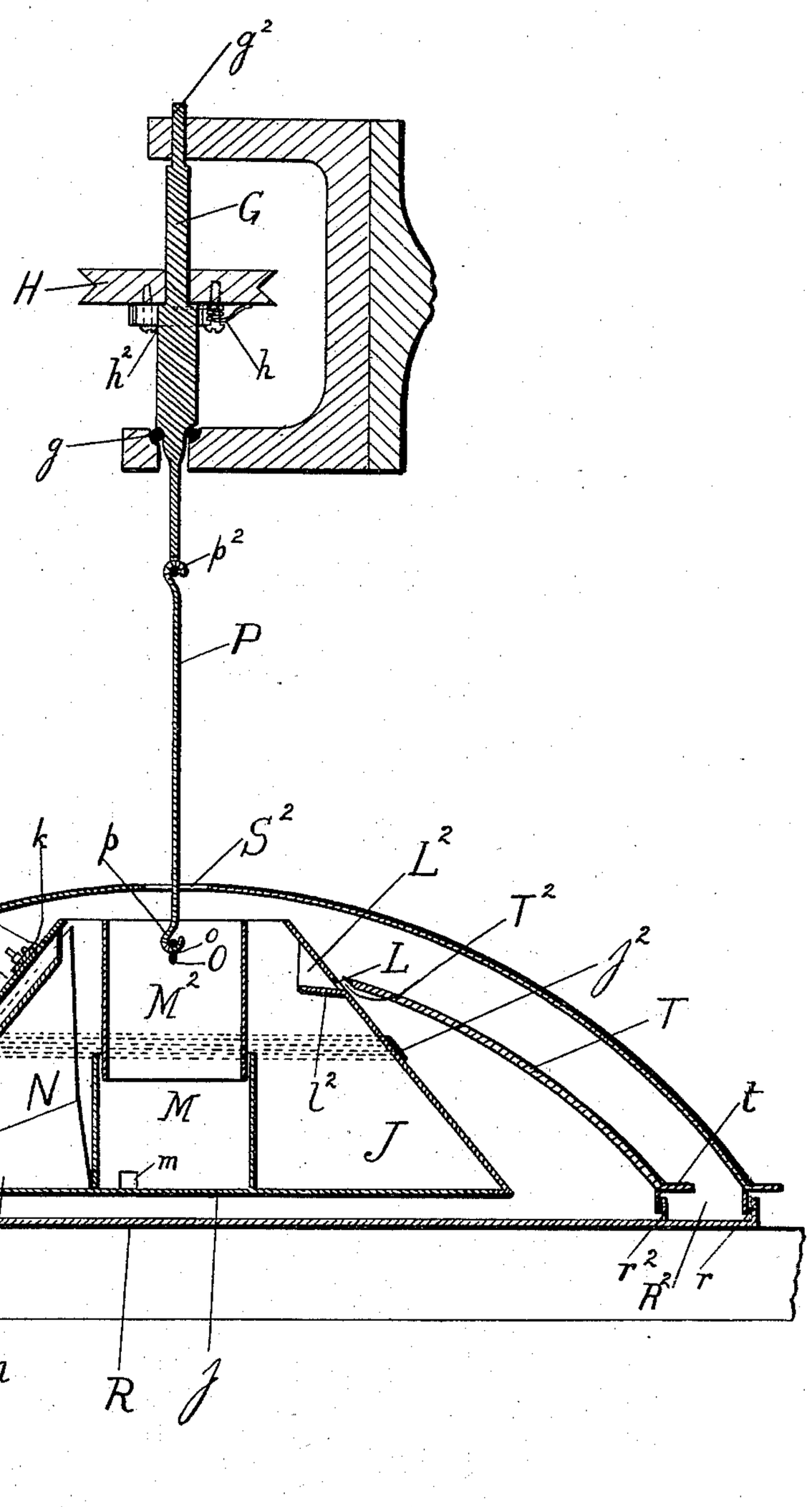
3 Sheets—Sheet 2

F. X. NADON.

CENTRIFUGAL SEPARATOR.

No. 566,466. Patented Aug. 25, 1896

Fig. 4.



Witnesses
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(No Model.) 3 Sheets—Sheet 3.

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CENTRIFUGAL SEPARATOR.

No. 566,466. Patented Aug. 25, 1896.

Fig. 5.

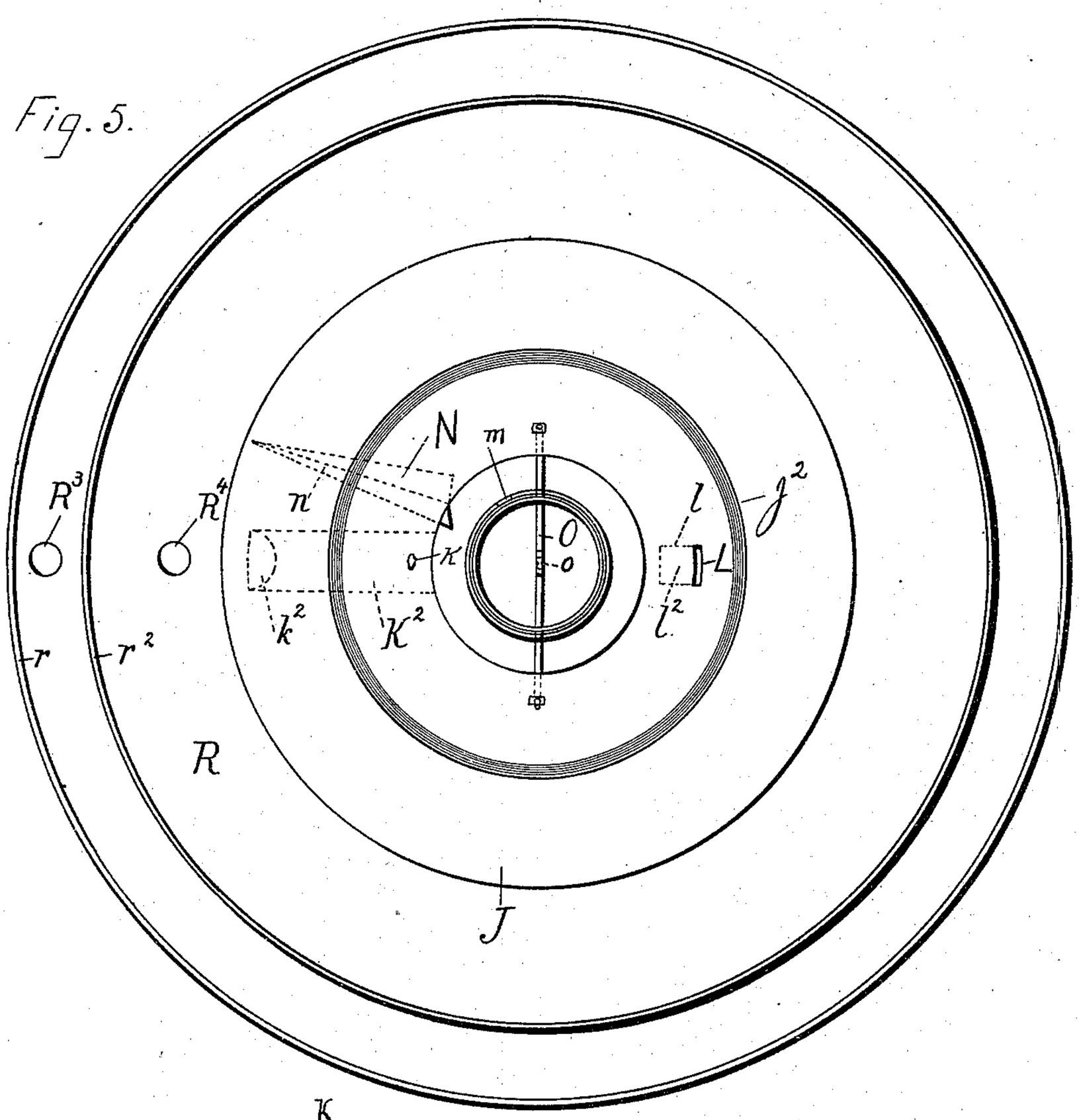


Fig. 6.

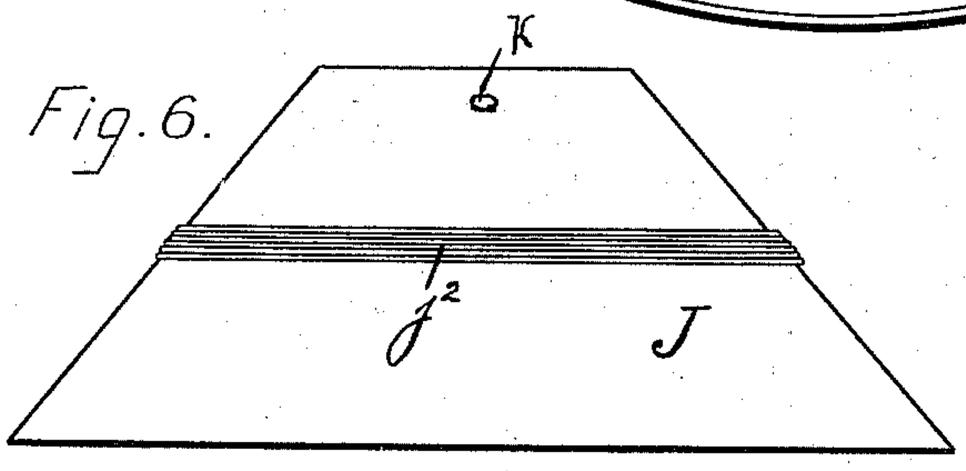
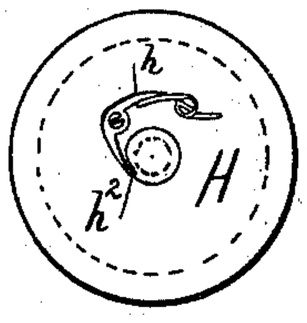


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANÇOIS XAVIER NADON, OF RIVER DESERT, CANADA.

CENTRIFUGAL SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 566,466, dated August 25, 1896.

Application filed February 18, 1896. Serial No. 579,805. (No model.) Patented in Canada September 18, 1895, No. 50,023.

To all whom it may concern:

Be it known that I, FRANÇOIS XAVIER NADON, a citizen of the Dominion of Canada, residing at River Desert, in the county of Ottawa and Province of Quebec, Canada, have invented certain new and useful Improvements in Centrifugal Separators, (for which I have obtained Canadian Patent No. 50,023, dated September 18, 1895;) and I do 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 appertains to make and use the same.

This invention relates to devices for separating the cream from the milk by centrifugal force; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view elevation. Fig. 2 is a top view. Fig. 3 is an end view. Fig. 4 is a side view taken in section on line 4 4, Fig. 3. Fig. 5 is a top view of the separator with the two covers removed. Fig. 6 is a side view of the separating vessel, and Fig. 7 is a bottom view of the spring pawl and ratchet used to hold the pulley fixed on the spindle when the machine is working.

Two axles B and C are journaled in a frame A, which is supported on legs *a*. The axle B carries a large spur-wheel *h*, gearing into a pinion *c* on the axle C. Cranked handles D are provided at the outer ends of the axle B, and a large pulley E, having a V-shaped groove, is secured on the axle C. A curved arm or bracket F is secured to one end of the frame A, reaching over to the center of an extension A^2 of the said frame A. In this arm is journaled a vertical spindle G. The lower ball-bearing *g* for the spindle consists of a series of balls placed in a groove formed around a circular aperture and a shoulder on the spindle resting on the said balls. The upper bearing g^2 is of ordinary construction. Between these two bearings on the spindle G is journaled a pulley H, having a V-shaped groove. This pulley is connected to the spindle by means of a spring-pawl *h*, secured on the said pulley and engaging ratchet-teeth h^2, formed on the spindle. A cord or rawhide I connects the pulleys H and E. Thus it will be seen that by turning the cranks D a very rapid motion will be given to the spindle G. A vessel J is suspended from the spindle and rotates with it. This vessel is shaped like a truncated cone, having a bottom *j*, and is open at the top. Through the sides of this vessel are two apertures. One, K, is near the top for the milk, and the other, L, is lower down for the cream. The opening of the upper one for the exit of milk is regulated by any approved means, such as a slidable plate *k*, which may be caused to cover more or less of the aperture K. From the inside of this aperture K a tube or closed channel K^2 runs down the side to the bottom of the vessel, where an aperture k^2 is formed for the entrance of the milk.

Inside the vessel and surrounding the aperture L is a pocket L^2, formed of the sides *l* and the bottom l^2, which slopes down to a level with the aperture L. The top walls run up and finish at the same level with the aperture K. In order to strengthen the sides of the vessel J against pressure from the inside, several coils of wire j^2 are wrapped around and secured to it. To the bottom *j* of the vessel J is centrally secured a vertical cylinder M, having an aperture *m* at the bottom. An extension M^2, fitting slidingly inside the cylinder M, forms a telescopic joint. A radial vertical wall N is secured inside the vessel J to the side and near to the tube K^2, and secured by the end of a flange *n* to the bottom. This wall is so placed that the aperture *m* of the cylinder M is on one side of it and the aperture k^2 on the other side. A bar O passes through the sides of the vessel J and the extension M^2 of the cylinder M. Near the top this bar is provided with a central perforation *o*, which is exactly in the center of the opening at the top of the vessel J, and is adapted to be engaged by a hook *p* at the lower end of a rod P. The upper end p^2 of this rod is hooked and adapted to be secured to the lower end of the spindle G.

To receive the milk and cream as it flows in separate streams from the apertures K and L, I make use of the following device: R is a disk of metal, having a vertical wall *r* around its periphery and another wall, r^2, a little distance from it on the inside and concentric with it, forming an annular channel R^2 between the two walls. An aperture having a

depending spout R^3 is formed in the channel R^2, and a similar aperture and spout R^4 is formed inside the inner wall r^2. A cover S, almost hemispherical in shape, fits into the wall r like the lid of a can, and having a flange s, resting on the top of the said wall. In the top of this cover is a central aperture S^2, and near it is secured a funnel S^3, having a spout s^2, extending to near the center of the said opening, its end being downturned. Another cover, T, similar but smaller than the cover S, fits the inner wall r^2 and is provided with a flange t, which rests on the top of the said wall. The opening T^2 in this cover is larger than the opening in the outer cover. This disk is placed on the extension A^2 of the frame A, and the vessel J hangs inside the inner cover, the top of the inner cover reaching above the aperture L, and below the aperture K, under the spouts R^3, is placed a milk-can V and under the spout R^4 a vessel V^2 to receive the cream.

The operation of the device is as follows: When the cranks are turned, the spindle is caused to rotate by means of the ratchet-gear and thus turn the vessel J very rapidly. The new milk is poured into the funnel and enters the cylinder M, passing out through the aperture m. After making a revolution the wall N causes a stoppage and the level of the milk is raised, the cream being at the top. The milk, rising in the tube, flows out through the aperture K and is caught by the cover S, which is stationary, runs down into the channel R^2, and out of the spout R^3 into the milk-can V. The cream rises in the vessel J until it falls into the pocket L^2 and out through the aperture L into the inner cover T, there down through the spout R^4 into the cream vessel V^2.

I claim as my invention—

1. In a separator, a vertical spindle suitably journaled, a pulley journaled on the said spindle, a spring-pawl on the said pulley engaging ratchet-teeth, a hooked rod secured to the said spindle, a vessel in which the milk is to be separated suspended from a hook at the lower end of the said rod, and means for driving the said pulley, substantially as set forth.

2. In a milk-separator the combination with the spindle G, journaled in the bearings, g and g^2, a pulley H journaled on the said spindle, the pawl h and ratchet-teeth h^2, connecting the said pulley, and spindle, a rod P secured by a pin p^3 to the said spindle and a vessel J secured to the lower end of the said rod, of the pulley E, cord I, connecting the pulleys E and H, the pinion c, the axle C carrying the said pulley E and pinion c, the spur-wheel h gearing into the said pinion c, the axle B carrying the said spur-wheel h, and the crank-handles D substantially as set forth.

3. In a milk-separator, the combination with the vessel J having apertures K and L, in its side walls, the tube K^2 on the inside reaching from the bottom and connected with the aperture K, and aperture k^2 at the bottom of the said tube, means for regulating the said aperture K, the pocket L^2 of the cylinder M having an aperture m formed at its lower edge, the sliding portion M^2, the radial wall N secured to the bottom j by a flange n and the bar O passing through the upper portion of the vessel J and the sliding portion M^2 of the cylinder M, the said bar O having a central perforation o by which the said vessel is suspended and revolved, substantially as set forth.

4. In a milk-separator, the combination with the vessel J adapted to be revolved and throw out the milk through a perforation K near the top of the said vessel, and the cream through a perforation L, lower than the said perforation K, of the stationary disk R having a vertical wall r around its periphery, a wall r^2 inside the said wall r and concentric thereto, a cover S fitting into the wall r and open at the top and covering the vessel J, a funnel S^3 secured near the top of the said cover S, a spout extending from the said funnel and discharging into the vessel J, and inner cover T fitting the wall r^2 and having a flange t resting on the top of the said wall, the said cover T being open at the top and reaching above the perforation L but not as high as the perforation K, and spouts R^3 and R^4 secured in the said disk, substantially as set forth.

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

FRANÇOIS XAVIER NADON.

Witnesses:

LOUIS LÉVESQUE,

ALFRED L. NOËL.