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PATENTED MAR. 19, 1907.

T. W. MORGAN.
DRIVING MECHANISM FOR CENTRIFUGAL SEPARATORS.
APPLICATION FILED JAN. 26, 1906.

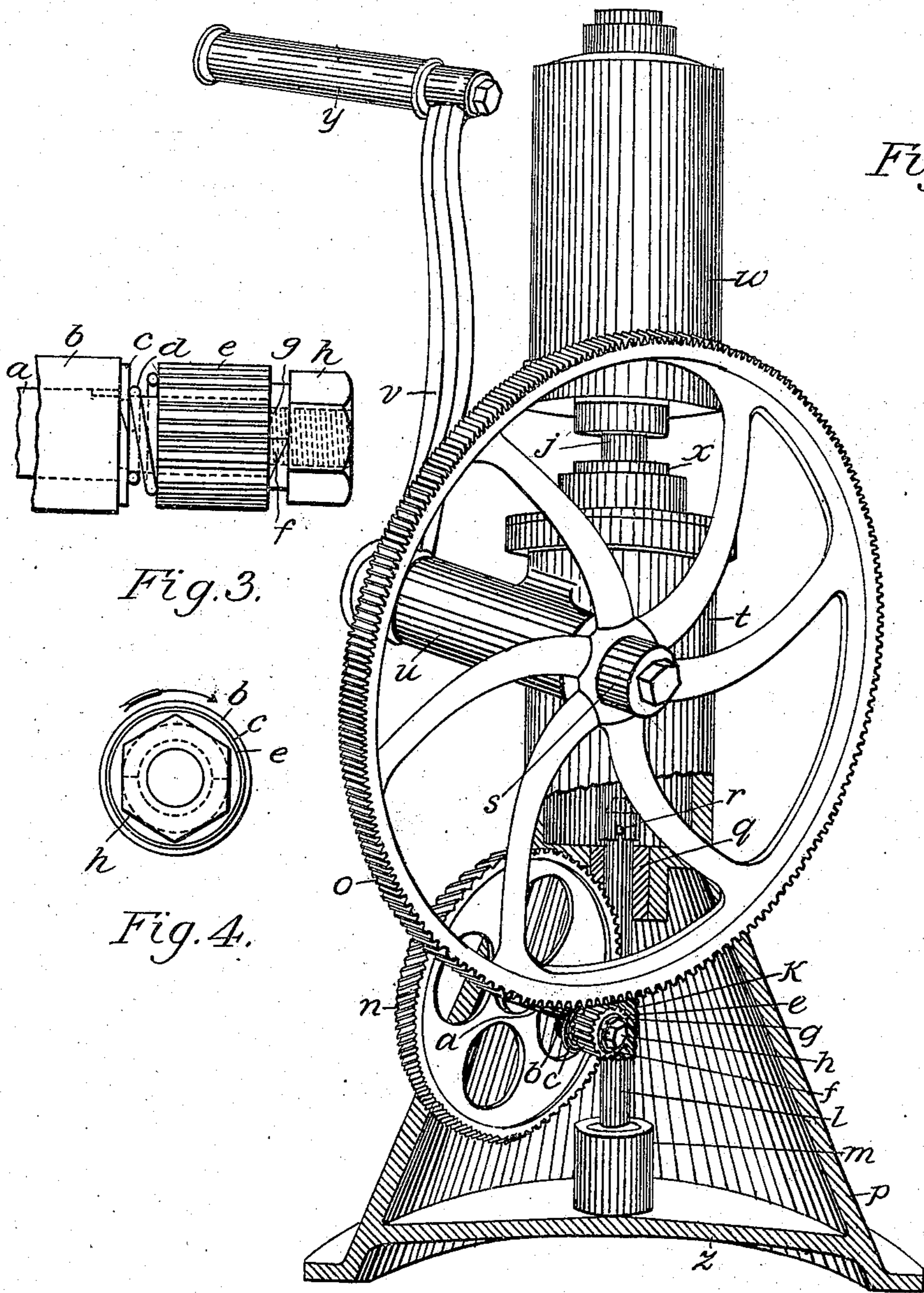


Fig. 1.

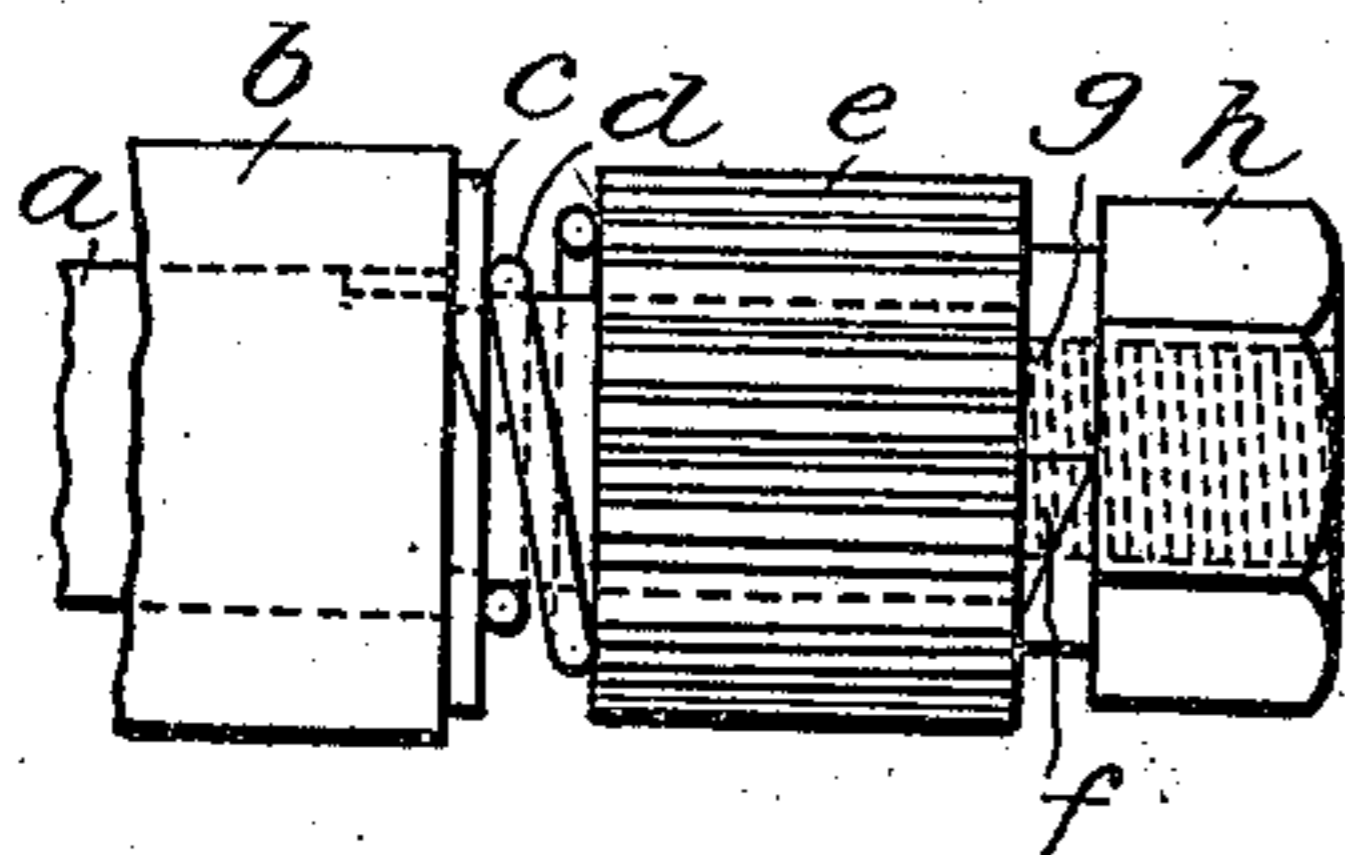


Fig. 3.

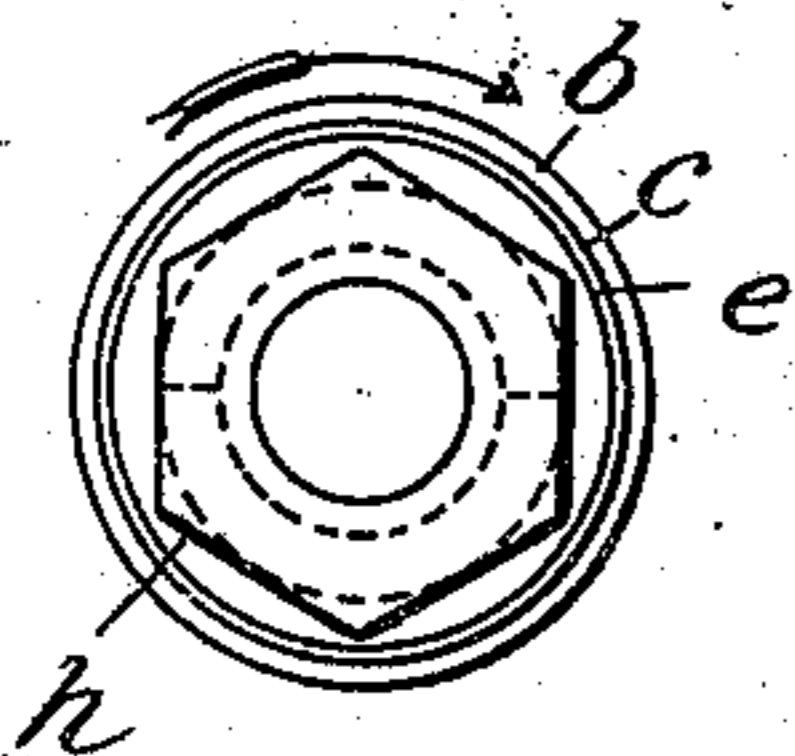


Fig. 4.

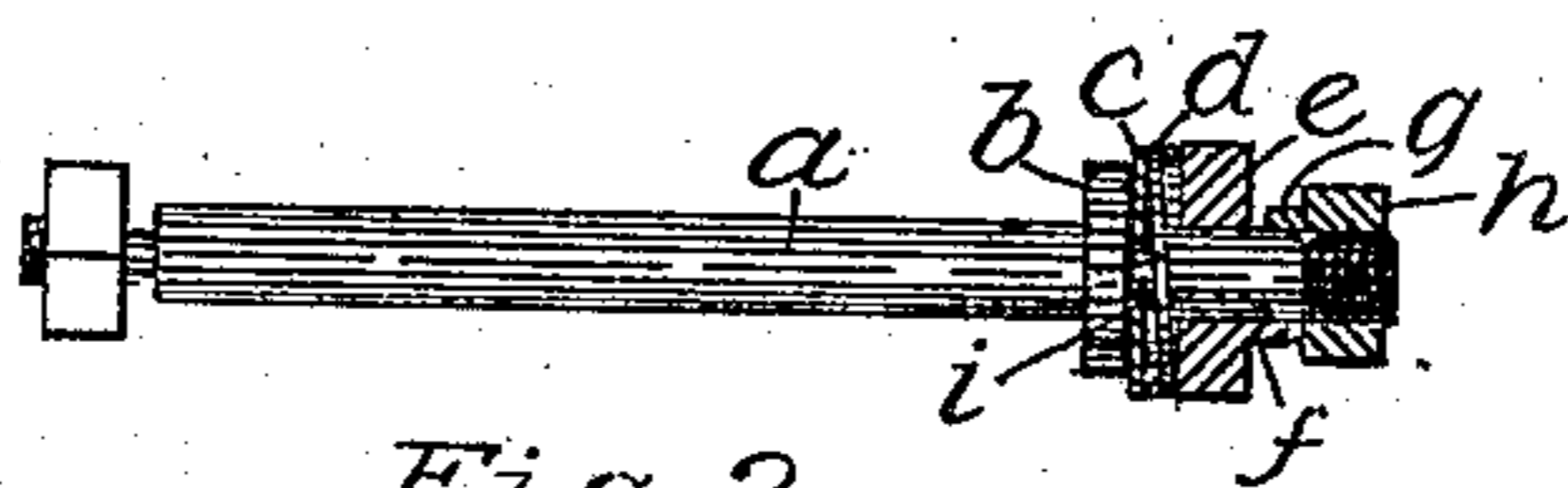


Fig. 2.

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DRIVING MECHANISM FOR CENTRIFUGAL SEPARATORS.

No. 847,802.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed January 26, 1906. Serial No. 297,943.

To all whom it may concern:

Be it known that I, THOMAS W. MORGAN, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Driving Mechanism for Centrifugal Separators, of which the following is a specification.

My invention relates to improvements in driving mechanism for centrifugal separators; and the object of my invention is to provide a ratchet device to be inserted in such a manner within the mechanism of the driving means of a centrifugal separator whereby the driving-gear may be disconnected from the driven gear thereof. This object I have effected by the mechanism which is hereinafter described and claimed and which is illustrated in the drawing hereto annexed, in which—

Figure 1 is a view in perspective of an elevation of the centrifugal separator, the casing thereof being shown in partial section; and Fig. 2 is a detail view showing my improved ratchet device, parts being shown in section. Fig. 3 is an enlarged detail view of the detent-bearing nut and pinion, and Fig. 4 is an end elevation of the same.

Similar letters refer to similar parts throughout the several views.

I have shown in Fig. 1 the driving mechanism of a centrifugal separator of a well-known type arranged to rotate a bowl for separating cream from the other constituents of milk. The upper cylindrical portion *t* of the casing *p* contains a collar-bearing *x* for the reception of the spindle *j* of the separator-bowl *w*. The lower half of the casing *p* is formed in the shape of a truncated cone with its upper truncated edge united to the lower edge of the cylindrical portion *t*, and a bearing *q*, having the same axis as the axis of the bearing *x*, being fixed at this point of junction. A base-plate *z* extends across the lower end of the hollow conical casing *p* and supports a step-bearing *m*, having the same axis as the other bearings. A vertical shaft *l* has its lower end inserted in the step-bearing *m*, while its upper end projects through the intermediate bearing *q* and is provided with a horizontally-extending stud *r*, arranged to engage with the sides of a slot in the lower end of the spindle *j*. The shaft *l* bears a spiral gear *k*, which intermeshes with

the spiral pinion *n*, mounted on a shaft *a*, set transversely in bearings (not here shown) in the casing *p*. The shaft *a* has a fixed collar *b* to prevent movement in one direction of the split spring-washer *c*, the latter being slipped over the diminished portion *i* of said shaft, the latter serving to keep the washer in place. The gear-wheel *e* is rotatably mounted on that portion of the shaft *a* which extends beyond the washer *c*, a coil-spring *d* being inserted around said shaft between the said washer and the said gear-wheel *e*. The rotatable gear *e* bears a detent *f*, which engages a detent *g* on the nut *h* when the former is rotated in one direction. The nut *h* is fitted on the threaded end of the shaft *a*. The gear-wheel *e* intermeshes with the gear-wheel *o*, the latter being mounted on a shaft *s*, set in a transverse bearing *u*, affixed to the upper cylindrical part *t* of the separator-casing. The other end of the shaft *s* is provided with a crank *v*, having a handle *y*.

When the gear-wheel *o* is rotated in one direction, the detent *f* on the gear-wheel *e* is caused by the spring *d* to engage with the detent *g* on the nut *h*, setting the shaft *a*, with its spiral pinion *n*, the spiral gear *k*, shaft *l*, and spindle *j*, in rotation. When it is desired to disconnect the crank *v* and driving gear-wheels *o* and *e* from the driven mechanism, the handle *y* is simply held in one position, when the driven parts will gradually come to a stop, the detents gliding over each other. A great deal of wear on the driving parts is thus prevented and the driving mechanism more quickly brought to a standstill.

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

1. In a driving mechanism, the combination of a partially-threaded shaft a detent-bearing nut removably mounted on the threaded end of said shaft, a pinion mounted loosely on the said shaft and provided with a detent, and a spur-wheel adapted to engage with the said pinion, and means for causing the detent on said pinion to engage with the detent on said nut when said pinion is rotated in one direction.

2. In a driving mechanism, the combination of a shaft threaded at one end, a detent-bearing nut removably mounted on the threaded end of said shaft, a pinion mounted

loosely on the said shaft and provided with a detent, a spur-wheel adapted to engage with the said pinion, a collar on said shaft, and a spring seated around said shaft between said collar and said pinion and adapted to cause the detent on said pinion to engage the detent on said nut when said pinion is rotated in one direction.

3. In a driving mechanism, the combination of a grooved shaft threaded at one end, a detent-bearing nut removably mounted on the threaded end of said shaft, a pinion mounted loosely on the said shaft and provided with a detent, a spur-wheel adapted to engage with the said pinion, a collar on said shaft, a split washer mounted in the groove of said shaft, and a spring seated around said shaft between said collar and said pinion and adapted to cause the detent on said pinion to engage with the detent on said nut when said pinion is rotated in one direction.

4. In a driving mechanism for centrifugal separators, a combination of a shaft threaded at one end, a detent-bearing nut removably mounted on the threaded end of said shaft, a pinion mounted loosely on the said shaft and provided with a detent, a spur-wheel adapted to engage with the said ratchet, means for causing the detent on said pinion to engage with the detent on said nut when said pinion is rotated in one direction, a spiral-gear wheel mounted fast on said shaft, a vertical shaft and a spiral pinion mounted fast on said vertical shaft and adapted to engage with said spiral-gear wheel.

5. In a driving mechanism for centrifugal separators, the combination of a shaft

threaded at one end, a detent-bearing nut removably mounted on the threaded end of said shaft, a pinion mounted loosely on said shaft and provided with a detent, a spur-wheel adapted to engage with the said pinion, a collar on said shaft, a spring seated around said shaft between said collar and said ratchet, and adapted to cause the detent on said pinion to engage with the detent on said nut when said pinion is rotated in one direction, a spiral-gear wheel mounted fast on said shaft, a vertical shaft, and a spiral pinion mounted fast on said vertical shaft and adapted to engage with said spiral-gear wheel.

6. In a driving mechanism for centrifugal separators, a combination of a grooved shaft threaded at one end, a detent-bearing nut removably mounted on the threaded end of said shaft, a pinion mounted loosely on said shaft and provided with a detent, a spur-wheel adapted to engage with the said pinion, a collar on said shaft, a split washer mounted in the groove in said shaft, a spring seated around said shaft between said washer and said pinion and adapted to cause the detent on said pinion to engage with the detent on said nut when said pinion is rotated in one direction, a spiral-gear wheel mounted fast on said shaft, a vertical shaft, and a spiral pinion mounted fast on said vertical shaft and adapted to engage with said spiral-gear wheel.

Signed at Waterloo, Iowa, this 5th day of January, 1906.

THOMAS W. MORGAN.

Witnesses:

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