

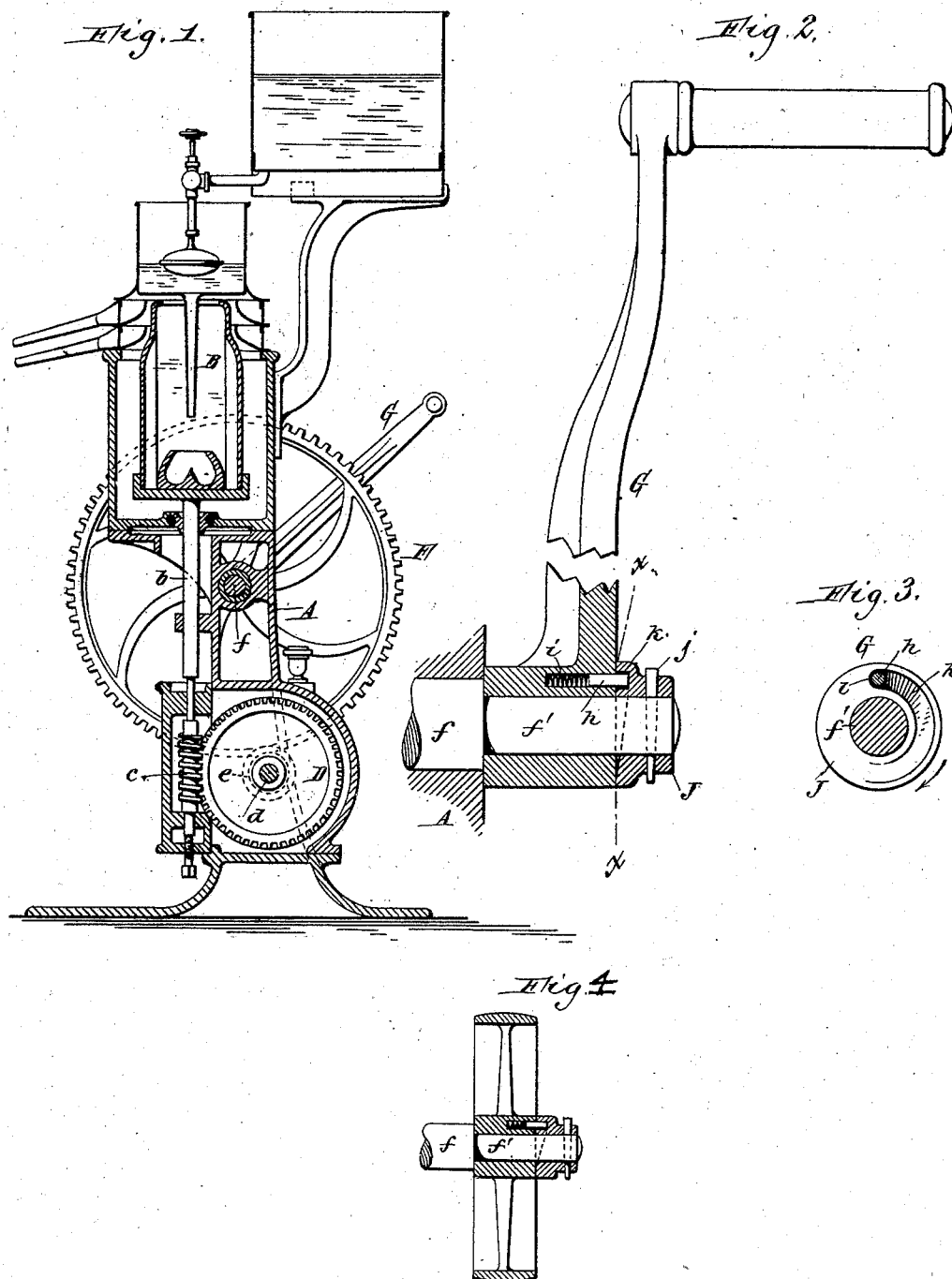
(No Model.)

J. BERNSTRÖM.

CRANK CONNECTION FOR CENTRIFUGAL SEPARATORS.

No. 489,140.

Patented Jan. 3, 1893.



witnesses:
Theo. L. Poppe,
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UNITED STATES PATENT OFFICE.

JOHN BERNSTRÖM, OF STOCKHOLM, SWEDEN, ASSIGNOR TO THE AKTIE-
BOLAGET SEPARATOR, OF SAME PLACE.

CRANK CONNECTION FOR CENTRIFUGAL SEPARATORS.

SPECIFICATION forming part of Letters Patent No. 489,140, dated January 3, 1893.

Application filed September 29, 1890. Serial No. 366,495. (No model.)

To all whom it may concern:

Be it known that I, JOHN BERNSTRÖM, a subject of the King of Sweden and Norway, and a resident of Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Crank Connections for Driving Mechanisms of Centrifugal Separators, of which the following is a specification.

This invention relates to that class of centrifugal creamers or separators which are operated by hand or by animal power and has for its object to provide means for maintaining a uniform speed and to prevent rotation of the bowl in the wrong direction and to prevent breakage by the sudden stoppage of the driving crank or pulley.

In the accompanying drawings, Figure 1 is a sectional elevation of a centrifugal creamer operated by hand and provided with my improvements. Fig. 2 is a sectional elevation of the hand crank on an enlarged scale. Fig. 3 is a cross section in line *x-x*, Fig. 2. Fig. 4 is a sectional elevation of a pulley provided with my improved ratchet mechanism and applied to the separator when it is operated by animal power.

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

A represents the frame of the machine, B the separating bowl, *b* the spindle thereof provided with a worm *c*, *d* the countershaft provided with a worm wheel D which meshes with the worm *d*, *e* a pinion and *f* the driving shaft provided with a gear wheel F which meshes with the pinion *e*. All of these parts may be of any suitable or well known construction.

G represents the hand crank which is loosely mounted upon the reduced end *f'* of the driving shaft and connected with the shaft by a ratchet mechanism so constructed that the shaft can be turned only in the direction in which it will rotate the bowl properly.

As represented in Figs. 2 and 3, the ratchet mechanism consists of the following parts. *h* represents a bolt arranged in a cavity formed in the crank parallel with the axis of the driving shaft and *i* is a spring arranged in the cavity behind the bolt and pressing the latter outwardly so that it projects from the face of the crank. *J* represents a washer secured

to the end of the shaft by a cross pin *j* and arranged against the face of the crank. *k* represents an inclined semi-circular groove formed in the face of the washer adjacent to the crank and provided at one end with an abrupt shoulder *l* while it runs out to nothing at the other end. The end of the spring bolt engages in this groove against the abrupt shoulder when the hand crank is turned in the proper direction and causes the shaft to be rotated. When the hand crank is turned in the wrong direction, the spring bolt is pressed back by the inclined groove and no rotation of the shaft takes place. When the separator is being operated at the normal speed, at which the crank makes forty revolutions and the bowl six thousand revolutions per minute, and the operator slackens the speed of the hand crank, the bowl continues to rotate at the normal speed by its momentum and relieves the hand crank from the pressure. This lack of pressure and the click of the spring bolt riding over the inclined groove in the washer, indicates to the operator that the speed of the hand crank is below the normal and enables him to maintain a uniform speed which is of the greatest importance in obtaining satisfactory results from a hand separator.

In Fig. 4 the improvement is shown applied to a driving pulley by which the driving shaft is rotated and which is set in motion by animal or other power. When the speed of the shaft from which the pulley is rotated or the speed of the hand crank is suddenly reduced or stopped, the speed of the bowl is not suddenly checked, but the bowl continues to rotate and its speed is retarded only by the slight resistance which the shaft encounters in rotating in the slowly rotating or stationary crank or pulley.

The spring bolt is preferably made of such size that it will break in case of accident before any other part of the separator breaks, so that it acts as a safety coupling for which purpose it is very suitable as it is easily replaced.

I claim as my invention:—

The combination with the driving shaft, of a driving device loosely mounted on the shaft, a spring bolt arranged in the driving device

parallel with the shaft and projecting beyond
the flat outer face of the driving device, and
a washer secured to the outer end of the shaft
and constructed with a flat inner face fitted
5 against the flat outer face of the driving de-
vice and having in its flat inner face a con-
centric groove in which the spring bolt en-
gages and which recedes from the flat face to
an abrupt shoulder, substantially as set forth

In testimony that I claim the foregoing as
my invention I have signed my hand, in pres-
ence of two witnesses, this 5th day of Sep-
tember, 1890.

JOHN BERNSTRÖM.

Witnesses:

E. HAASE,

K. F. LUNDIN.