P. B. SHEE.

SEPARATOR DRIVE.

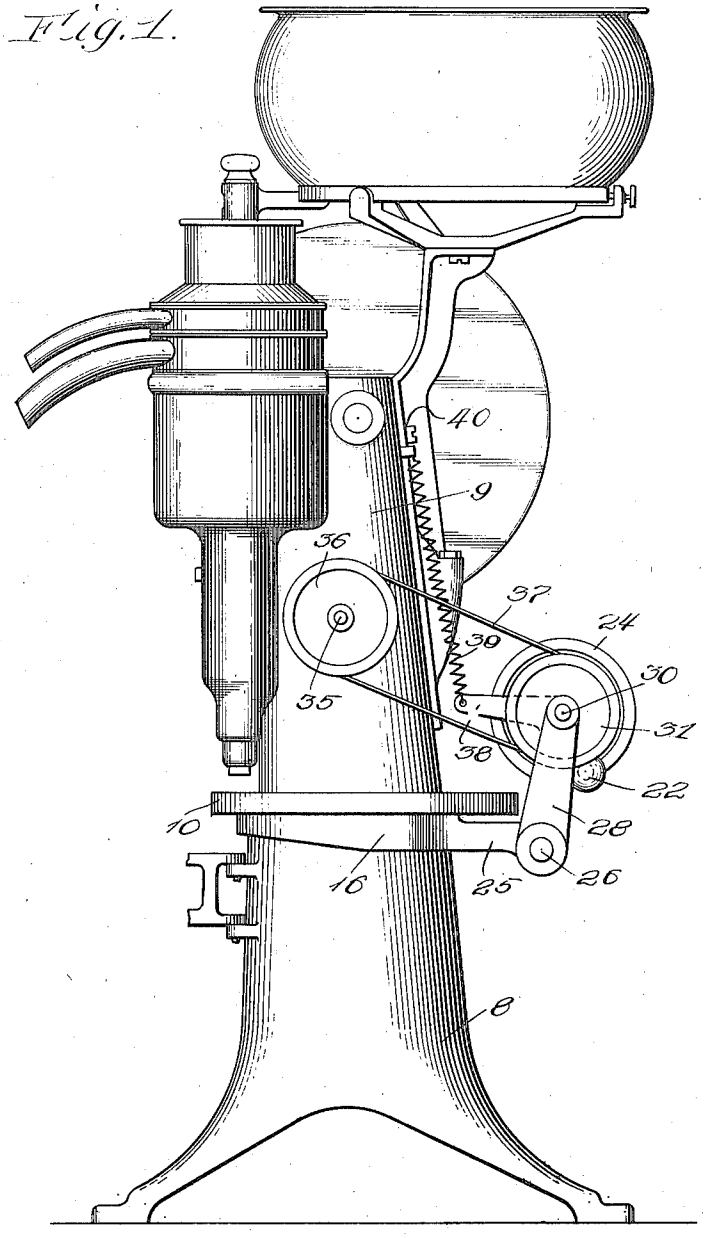
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1,233,516.

Patented July 17, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



Witness:

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2 SHEETS—SHEET 2.

Fig. 2.

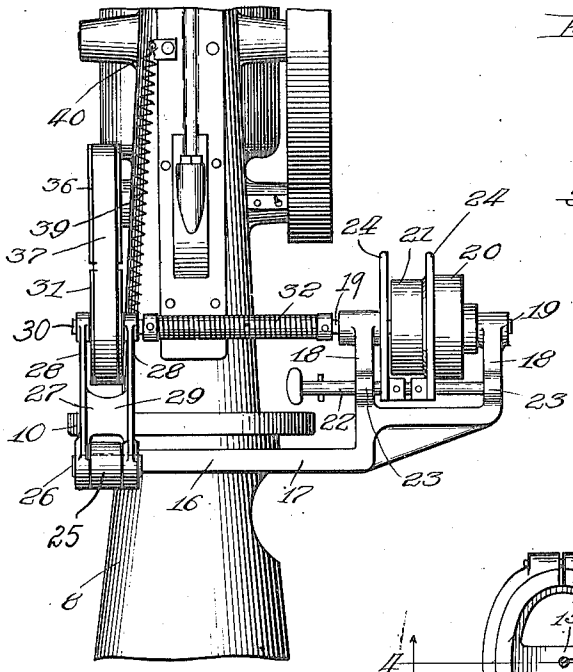


Fig. 4.

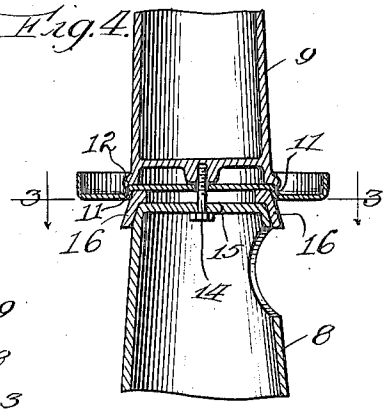


Fig. 3.

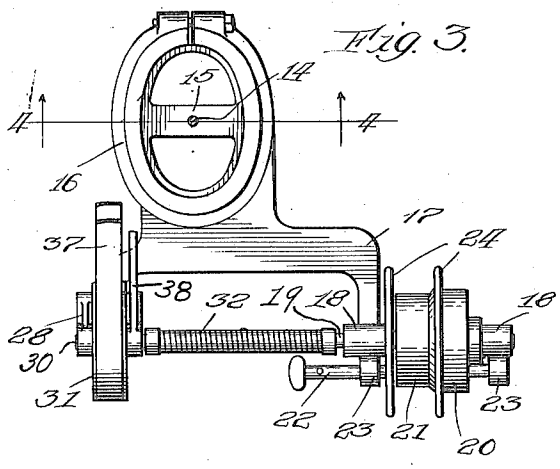
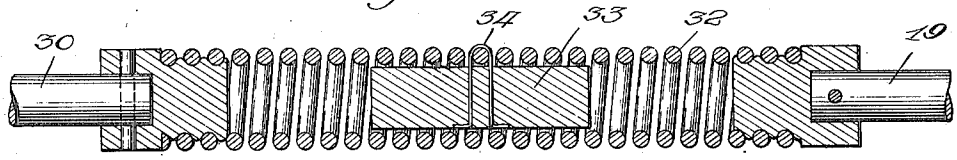


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SEPARATOR-DRIVE.

1,233,516. Specification of Letters Patent. Patented July 17, 1917.

Application filed August 16, 1916. Serial No. 115,141.

To all whom it may concern:

Be it known that I, PARKE B. SHEE, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Separator-Drives, of which the following is a specification.

My invention relates to driving mechanism for centrifugal separators, and the like, and has for its object, the provision of driving mechanism of a flexible nature adapted to yield and prevent irregular impulses of the driving source to be transmitted to the separator. A further object, is the provision of a simple and efficient mechanism of the character mentioned. Other objects will appear hereinafter.

An embodiment of my invention is shown in the accompanying drawings forming a part of this specification, and in which—

Figure 1 is an elevation of a cream separator equipped with driving mechanism embodying my invention.

Fig. 2 is a fragmental view of the rear portion of the separator shown in Fig. 1.

Fig. 3 is a transverse section taken substantially on line 3—3 of Fig. 4.

Fig. 4 is a view taken on line 4—4 of Fig. 3; and,

Fig. 5 is an enlarged longitudinal section of a flexible connection between the two alining shafts of the drive mechanism.

Referring more particularly to the drawings, I have shown a conventional separator having a base 8, supporting a casing 9. Ordinarily interposed between the base 8 and the casing 9, is a drip shelf 10. The drip shelf is held in position by the outer side of its flange 11 fitting in a flange 12 on the lower end of the casing and the inner side of its flange 11 fitting over the top of base 8. A screw 14 passes through a web 15 in the base 8, and is threaded in the bottom of casing 9, holding the parts rigidly together. The frame of my improvement is designed to be placed between the drip shelf 10 and base 8 of such conventional cream separators, and the like. The frame 16 of my device is adapted to fit under the drip shelf and over the top of base 8, as shown in Fig. 4. The screw 14 is adapted to bind the frame 16 of my device between the drip shelf and base 8, substantially as indicated in this figure. The frame 16 is provided with an arm 17, which has two spaced upright members 18 formed integrally with or secured rigidly thereto. The members 18 are provided with alining perforations in which is journaled a horizontal driving shaft 19. The driving shaft 19 is provided with a tight pulley 20 and a loose pulley 21. The tight pulley may be slightly larger than the loose pulley 21 when so desired, to lessen the strain on a driving belt, not shown, when the belt is on the loose pulley. For shifting the driving belt from one pulley to the other, a handled rod 22 is mounted in ears 23 on the upright members 18 and provided with two circular finger members 24 which are adapted to engage opposite edges of the driving belt to effect shifting the latter. The tight and loose pulleys and belt-shifting mechanism shown are of conventional design, and may be substituted for any preferred design, when so desired.

The frame 16 is also provided with an arm 25, which is provided with a perforation in which a pin 26 is secured. The pin 26 is preferably parallel with and lower than the shaft 19. On the pin 26 is pivoted an upright bearing member 27 which comprises two upright arms 28 joined by a web 29, to hold them in rigid relation with each other. The upper ends of the parts 28 are perforated and provide bearings for a shaft 30, which when in normal position is in substantial alinement with the shaft 19. On the shaft 30, between the two parts 28, is fixed a flanged pulley 31, so that the pulley will turn with said shaft 30.

I provide a flexible connection between shafts 19 and 30. This connection is preferably a helical spring 32 having one end secured to the shaft 19, and the other end secured to the shaft 30. The helical spring 32 may be wound in a direction so that the driving strains caused by the driving shaft tend to wind up the spring, or wound so that the spring will tend to unwind as desired. This arrangement provides means whereby a sudden impulse in shaft 19 will cause the spring to yield temporarily and absorb part of the shock of such impulse. As a means for strengthening or stiffening the spring 32, I provide one or more blocks 33 of sub-

stantially the same size as the inner bore of the spring and shorter than the distance between shafts 19 and 30, substantially as indicated in Fig. 5. The block 33 may be of any preferred substance, and I find wood serves admirably. The block 33 may be held against longitudinal movement in the spring in any desired manner, and I have shown a staple 34 passing around one turn of the spring and extending through the block 33.

On one of the shafts 35 of the separator shown, I have indicated a pulley 36 in alinement with the pulley 31 on shaft 30. The pulleys 31 and 36 are connected by an endless belt 37. The resiliency of spring 32 tends to hold the shaft 30 in alinement with shaft 19, and belt 37 is preferably of a length so that it will be taut when said shafts are in alinement. I preferably provide means for assisting the spring 32 in holding the belt taut. This may be accomplished in many ways, and I have shown one way, which comprises forming an arm 38 rigidly on one of the uprights 28 and connecting the free end of arm 38 with a tension spring 39, the latter having a connection with the casing 9, as at 40. The arm 38 is preferably of a length reaching beyond a straight line drawn between the axis of pin 26 and connecting point 40 of spring 39, so that the tension of the spring 39 tends to tighten the belt 37 and move the shaft 30 out of axial alinement with the shaft 19.

With this arrangement, when a force is exerted on shaft 19 having varying rates of speed and sudden impulses, the spring 32 will yield, thereby absorbing parts of the shock of such irregular driving movements, and when sudden strains are placed on belt 37, such strains will cause spring 38 to yield, permitting member 27 to swing on the pin 26 toward the pulley 36. Such movement of pulley 31 toward pulley 36 permits belt 37 to slip, and effectively prevents sudden impulses and quick changes of speed in the driving shaft 19 from being transmitted to shaft 35 of the separator.

While I have illustrated and described the preferred form of my invention, I do not desire to be limited to the precise details set forth, but desire to avail myself of such variations and changes as come within the scope of the appended claims.

I claim:—

1. In combination, a driving shaft; a driven shaft; an intermediate shaft; flexible connections between said shafts; fixed bearings supporting said driving and driven shafts; pivotally mounted bearings supporting the intermediate shaft and adapted to swing toward and away from one of said other shafts; and a spring connected with the pivoted bearings adapted to place both of said flexible connections under strains.

2. In combination, a driving shaft; a driven shaft substantially parallel with the driving shaft; an intermediate shaft normally alining with the driving shaft; pulleys on said intermediate and driven shafts; a flexible connection between the driving and intermediate shafts; and resilient means connected with the intermediate shaft exerting force to maintain said flexible connection taut and tending to move the intermediate shaft out of alinement with the driving shaft.

3. In combination, a cream separator; a shaft mounted for lateral movements; pulleys on the separator and said shaft; an endless belt on said pulleys; a driving shaft; and resilient means connecting said shafts and tending to resiliently hold the first-mentioned shaft in substantial alinement with the driving shaft for holding the belt taut.

4. In combination, a cream separator; a shaft mounted for lateral movements; pulleys on the separator and shaft; a flexible belt on said pulleys; a driving shaft; a helical spring connecting adjacent ends of the shafts tending to hold the movable shaft in substantial alinement with the driving shaft and permitting said movable shaft to yield toward the separator so as to slip the belt under sudden changes of speeds of the driving shaft.

5. In combination, a driving shaft; a driven shaft; an intermediate shaft; pulleys on the driven and intermediate shafts; a belt on said pulleys; a coil spring connecting the driving and intermediate shafts normally holding said shafts in alinement and the belt taut, and adapted to permit movement of the intermediate shaft toward said driven shaft to slip the belt under irregular speeds of the driving shaft.

6. In combination, fixed bearings; driving and driven shafts journaled in said bearings; movably mounted bearings; an intermediate shaft journaled in said movable bearings; pulleys on said intermediate and driven shafts; a belt on said pulleys; a coil spring connecting said driving and intermediate shafts normally holding said intermediate shaft in substantial alinement with the driving shaft; and a spring connected with the movable bearings tending to move the intermediate shaft out of alinement with the driving shaft and hold said belt taut, said spring being adapted to yield and relieve the driven shaft from shocks due to sudden changes of speed of the driving shaft.

7. In combination, a cream separator; a shaft mounted for lateral movements; pulleys on the separator and shaft; a flexible belt on said pulleys; a driving shaft; a helical spring connecting adjacent ends of the shafts normally holding the movable shaft in substantial alinement with the driving

shaft and permitting said movable shaft to yield toward the separator so as to slip the belt under sudden changes of speed of the driving shaft; and means in said helical spring adapted to strengthen the latter.

8. In combination, a cream separator; a shaft mounted for lateral movements; pulleys on the separator and shaft; a flexible belt on said pulleys; a driving shaft; a helical spring connecting adjacent ends of the shafts normally holding the movable shaft in substantial alinement with the driving shaft; a block substantially fitting the bore of and disposed in said helical spring adapted to strengthen the latter and facilitate holding the laterally movable shaft in axial alinement with the driving shaft and the belt taut.

9. In combination, a cream separator; an arm pivoted on the separator; a shaft journaled in the free end of said arm; a pulley on the shaft adjacent said arm; a pulley on the separator; an endless belt on said pulleys; a spring connected with said arm and tending to hold the belt taut; a shaft in substantial alinement with the first-mentioned shaft; and a resilient member operatively connecting said shafts and tending to maintain the latter in alinement.

10. In combination, a cream separator; a horizontally disposed pin mounted on the separator; a member pivotally mounted on the pin and having two parallel upwardly extending arms thereon; a shaft journaled in the upper ends of said arms; a pulley on said shaft between said arms; a pulley on the separator; an endless belt on the pulleys; a laterally extending arm on one of the first-mentioned arms extending toward the separator; a spring connected to said laterally extending arm and the separator tending to swing the first-mentioned arms away from the separator and tending to hold the belt taut; a shaft journaled on the separator in substantial alinement with the first-mentioned shaft when the latter is in its normal position; and a coil spring connecting the shafts together forming a driving connection between said shafts and tending to maintain the latter in alinement.

In testimony whereof I have signed my name to this specification on this 10th day of August, A. D. 1916.

PARKE B. SHEE.