No. 819,523. PATENTED MAY 1, 1906.

J. F. DEAL.

HAND AND FOOT POWER.

APPLICATION FILED JUNE 29, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

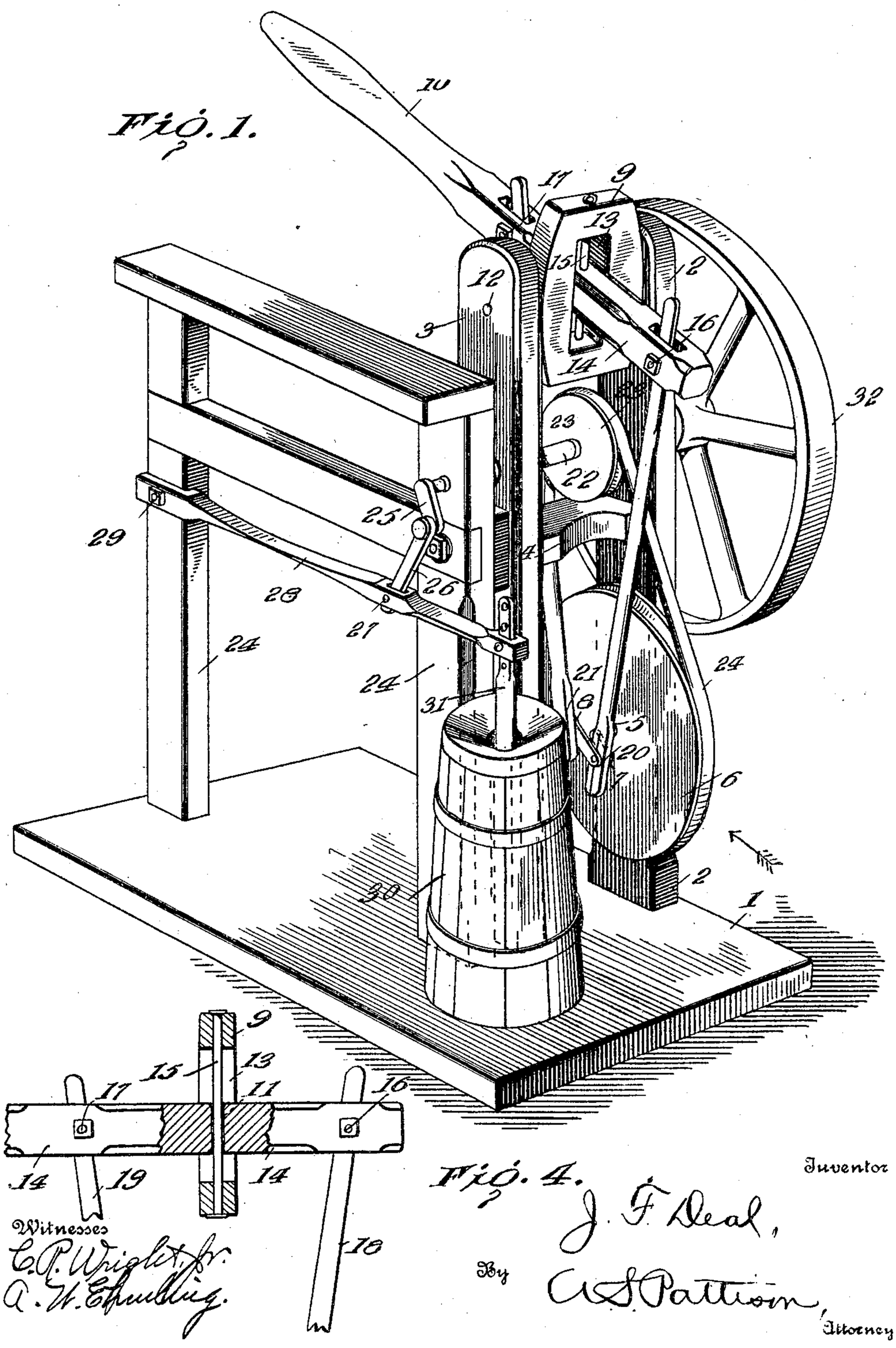

Fig. 4.

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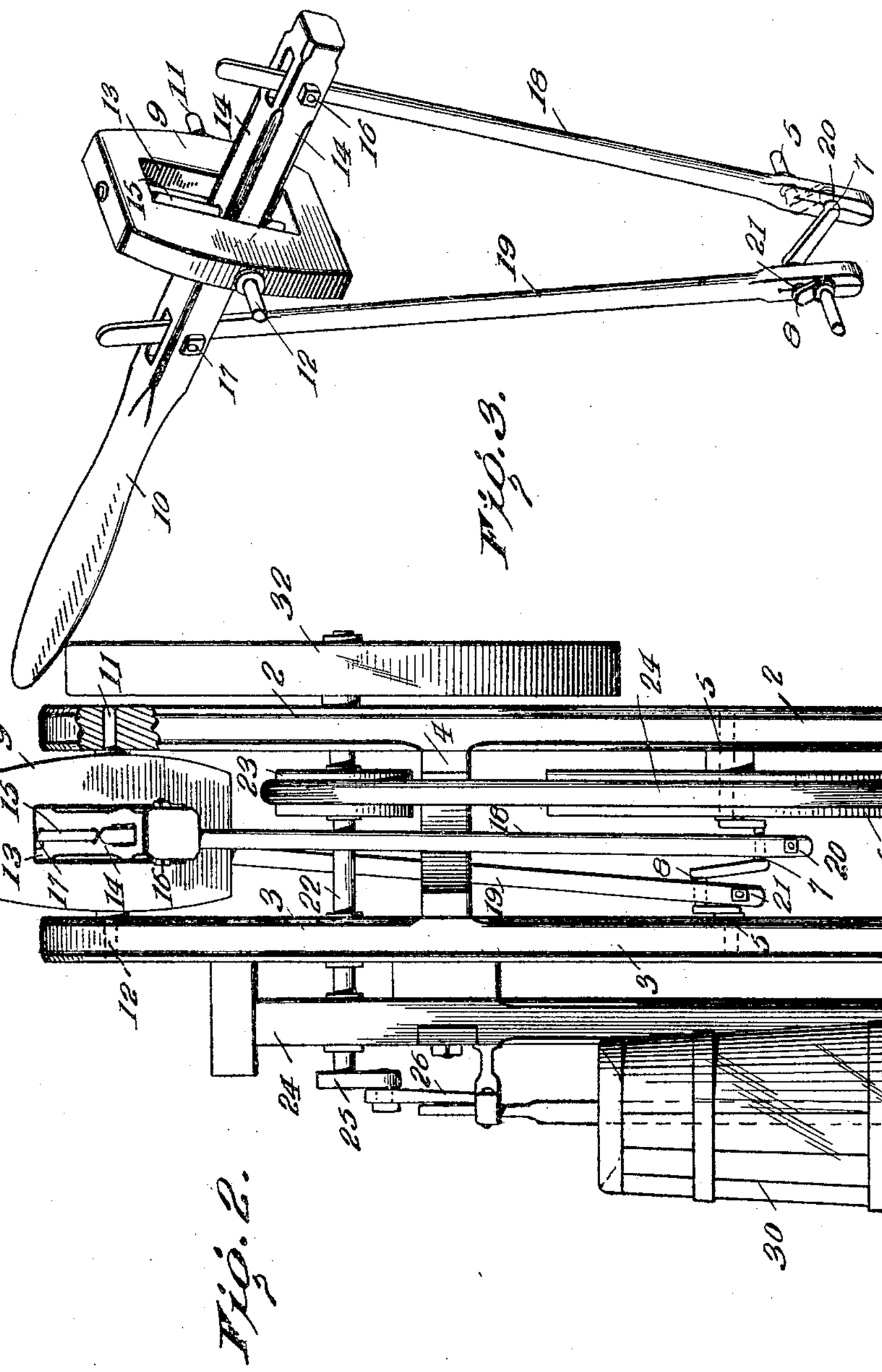
2 SHEETS—SHEET 2.



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HAND AND FOOT POWER.

No. 819,523. Specification of Letters Patent. Patented May 1, 1906.

Application filed June 29, 1905. Serial No. 267,637.

To all whom it may concern:

Be it known that I, JACOB F. DEAL, a citizen of the United States, residing at Tilton, in the county of Whitfield and State of Georgia, have invented certain new and useful Improvements in Hand and Foot Powers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in hand and foot powers, and pertains more particularly to that class used in operating churns and the like.

The object of my invention is to provide a hand or foot power of this character which absolutely prevents a dead-center, and thus allowing the same to be started by the operating-lever at any time without first revolving the fly-wheel, as is the usual practice when the same stops at a certain point.

Another object of my invention is to provide a more simple, cheap, and effective device to accomplish the above results.

In the accompanying drawings, Figure 1 is a perspective view of my improved power, showing the same operating a reciprocating churn. Fig. 2 is an end view of Fig. 1 looking in the direction of the arrow. Fig. 3 is a detached perspective view of the yoke carrying the lever and showing the link connection between the said lever and the cranks. Fig. 4 is an enlarged side elevation, partly in section, of the yoke.

Referring now to the drawings, 1 represents a base, which may be of any form, but which is preferably of a rectangular form, and is provided adjacent one end with the upwardly-extending standards 2 and 3, which are provided intermediate their ends with the transverse brace 4, which holds the standards in their proper relation with each other. Rotatably mounted within said standards adjacent their lower ends is a shaft 5, which is provided with the main drive-pulley 6, by means of which the churn-operating mechanism is driven. The standards 2 and 3, as clearly shown, are spaced a distance apart, so that the shaft may be provided with the double cranks 7 and 8, by means of which the main drive-pulley may be driven. The said cranks 7 and 8, as clearly shown, are arranged on opposite sides of the shaft 5.

Pivotally mounted within the upper end of the standards 2 and 3 is a yoke 9, in which is mounted the operating-lever 10. The said yoke, as shown, is of an elongated form and is pivoted intermediate its ends by means of pivots 11 and 12, carried by the yoke and which are pivotally mounted within the openings in the standards 2 and 3. The said yoke is provided with a transverse vertically-elongated slot 13, through which passes the operating-lever 14, the said slot 13 being of a width slightly wider than the thickness of the lever and said slot being of a length considerably greater than the width of the lever, so that the same will have a vertical movement within the yoke. Passing centrally through the yoke and vertically disposed is a rod 15, which passes centrally through the elongated slot 13 and also loosely through the operating-lever 14, permitting sliding movement of the lever on the rod 15. The said lever 14 at equal distances from the yoke has pivotally connected thereto at 16 and 17 the pitmen 18 and 19, which extend downward and are provided with openings 20 and 21, which are adapted to receive the cranks 7 and 8. The pitmen 18 and 19 are connected to the operating-lever 14 at such a point that it is impossible to so position the cranks that the same cannot be operated by either of the pitmen in one or the other directions, and thus a dead-center is absolutely prevented. The connection of the pitmen to the operating-lever is such that a mere pivotal connection of the lever with the standards would not be operative, as the lever necessarily has to have a vertical movement, and this is accomplished by having the lever vertically movable upon the rod 15 with the yoke.

Mounted with the standards 2 and 3 above the brace 4 and below the yoke is a shaft 22, which extends through the standard 2. Rigidly mounted upon the shaft directly above the pulley 6 is a small pulley 23, and passing around said pulley is a belt 24, by means of which the small pulley may be driven. One end of the shaft is provided with a balance-wheel 32 on the outside of the standards.

The base 1 carries an elongated frame 24, through which the opposite end of the shaft 22 passes, and the said shaft on the outside of the frame is provided with a crank 25, which has pivotally connected thereto the link 26, which extends downwardly and is pivotally connected at 27 to the lever 28. The said lever is pivoted at 29 to the frame 24, and the link 26 is pivoted adjacent the opposite end. The extreme opposite end of the lever 28 extends over the churn-body 30, which is removably held upon the base. The extreme

outer end of the lever has pivotally connected thereto the downwardly-extending dasher-shaft 31, which reciprocates within the churn-body.

It will be seen by the proportional sizes of the two pulley-wheels that the shaft 22 will be driven very rapidly and that the churn-dasher will in turn be rapidly reciprocated.

While I have shown this power especially applied to a churn, it will be understood that the same can be readily applied to other devices requiring a reciprocating or rotary motion, and the same could also be used in connection with a foot-power without departing from my invention.

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

1. A device of the character described, comprising a shaft having double cranks, a pivoted lever, means for allowing said lever to have a vertical movement independent of its pivotal connection, and pitmen connecting said lever and cranks.

2. A device of the character described, comprising a shaft having double cranks, a pivoted lever, means for allowing said lever to have a vertical movement independent of the pivotal connection, pitmen connecting said lever and the cranks, and means carried by the shaft for transmitting motion.

3. A device of the character described, comprising a shaft having double cranks, a pivoted yoke, means for vertically movably securing said lever in the yoke, and pitmen connecting said lever and cranks.

4. A device of the character described, comprising a shaft having double cranks, a pivoted yoke, a lever within the yoke, means for vertically movably securing the lever in the yoke, and a pitman pivotally connected to said lever on each side of the yoke, and connected to said cranks.

5. A device of the character described, comprising a shaft having double cranks, a pivoted yoke, a lever passing through said yoke, a vertically-disposed rod carried by the yoke and passing loosely through the lever, and a pitman connected to said lever on each side of the yoke and having their lower ends connected to the double cranks.

6. A device of the character described, comprising a base, upwardly-extending standards carried thereby, a yoke pivotally mounted between the upper ends of the said standards and having an elongated vertical slot therein, a lever passing through the said slot, a rod carried by the yoke and passing through the lever, a shaft carried by the standards below the yoke and having double cranks, and a pitman connected to said lever on each side of the yoke and having their lower ends connected to said double cranks.

7. A device of the character described, comprising a base, upwardly-extending standards carried thereby, a yoke pivotally mounted between the upper ends of said standards and having a vertical elongated slot therein, a lever passing through said slot and of a width considerably less than the length of said slot, a rod carried by the yoke and passing loosely through the lever, and pitmen connected to the lever on each side of the yoke and having their lower ends connected to the double cranks.

8. A device of the character described, comprising a base, standards carried thereby, a shaft rotatably mounted between the lower ends of said standards and having double cranks, a lever pivotally connected between the upper ends of said standards, means for allowing said lever to have a vertical movement independent of the pivotal connection, pitmen connecting said lever and the double cranks, a drive-pulley carried by the shaft, a second shaft rotatably mounted within the standard above the first shaft, a pulley-wheel carried by the second shaft between the standards, a belt passing around said pulleys, a balance-wheel carried by the second shaft and the outside of the standards, the opposite end of said shaft having a crank, a lever having one end pivoted to a standard, a link connection between the opposite end of said lever and the crank, and means carried by said lever for imparting a reciprocating movement to the machine to be operated.

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

JACOB F. DEAL.

Witnesses:
W. E. EVERETT,
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