(No Model.)

D. & F. H. ORME.

COUNTER FOR MULES.

No. 300,633. Patented June 17, 1884.

FIG. 1.

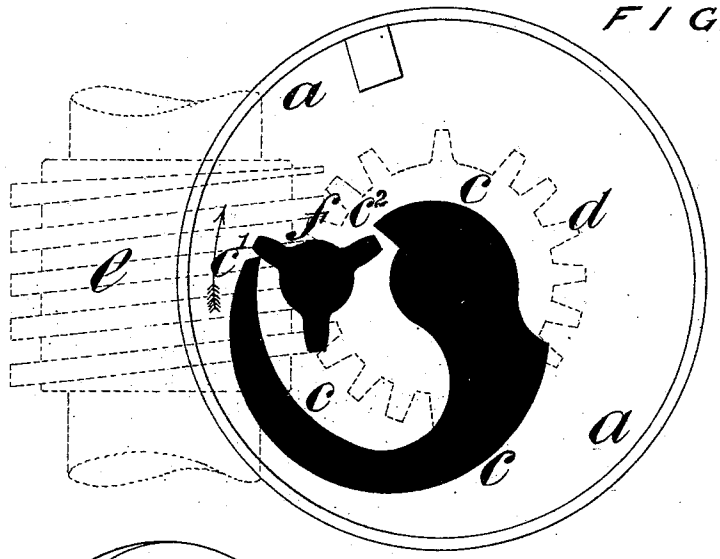


FIG. 2.

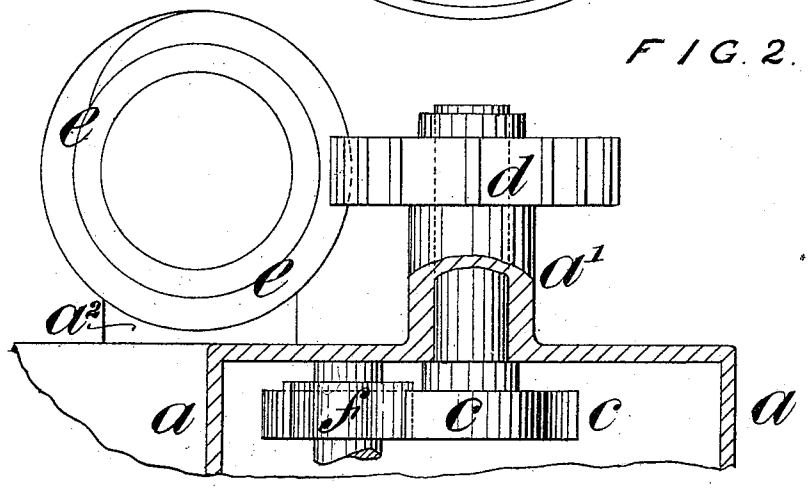
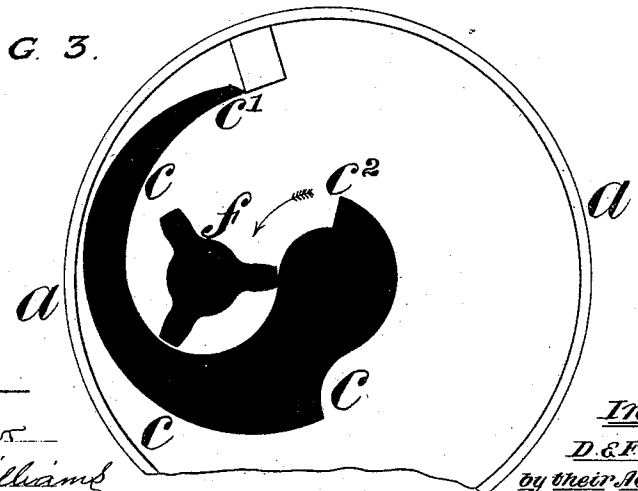


FIG. 3.



Witnesses
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David S. Williams

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by their Attys.
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UNITED STATES PATENT OFFICE.

DANIEL ORME AND FRANCIS HEANS ORME, OF OLDHAM, COUNTY OF LANCASTER, ENGLAND.

COUNTER FOR MULES.

SPECIFICATION forming part of Letters Patent No. 300,633, dated June 17, 1884.

Application filed October 15, 1883. (No model.) Patented in England December 13, 1881, No. 5,437.

To all whom it may concern:

Be it known that we, DANIEL ORME and FRANCIS HEANS ORME, both residing at Oldham, county of Lancaster, and subjects of the Queen of Great Britain and Ireland, have invented an Improvement in Counters for Mules, (for which we obtained a patent in Great Britain, No. 5,437, dated December 13, 1881,) of which the following is a specification.

Our invention consists of improvements in the construction of counters, as hereinafter described and claimed; the invention being more especially adapted for registering the number of "draws," or the work performed by the mules used in the spinning of fibrous materials.

In the accompanying drawings, Figure 1 is a sectional view of the lever and pinion. Fig. 2, partly in section, is a side view of the same parts, and shows how they are actuated. Fig. 3 shows the parts in another position.

In the said figures, *a* is a part of the case of a mule-counter, the part containing the usual integrating wheels and the dials on which the numbers of draws of the mule are indicated not being represented, as such parts of the apparatus are of ordinary construction. In a boss, *a'*, upon the said casing is mounted a shaft, upon which is fixed or formed a vibrating lever, *c*, and upon the outer end of the same shaft is secured a worm-wheel or segmental wheel, *d*. The casing *a* is formed with two lugs, a^2, which are bored to suit the rocking shaft upon which the counter is to be mounted. A worm, *e*, works between these two lugs and is secured to the said rocking shaft. When the mule is at work the said rocking-shaft—say, for example, the scroll-shaft—revolves a few times in one direction and then makes a corresponding movement in the reverse direction during each draw of the mule, as is well understood. The worm *e*, acting on the worm-wheel *d*, causes the lever *c* to vibrate and to act upon a three-leaved wheel or pinion, *f*. In Fig. 1 the lever is supposed to be moving in the indicated direction, the end of the pallet *c'* of the lever acting upon one of the three leaves of the pinion and revolving the pinion until the said end of the lever clears and passes beyond the end of the pinion-leaf, as seen in Fig. 3. The said lever is formed with an inner face or second pallet, c^2, which, when the lever is moving in the direction indicated in Fig. 3, comes in contact with one of the leaves of the pinion and turns the pinion still farther. It will be seen that each of the pallets *c'* and c^2 turns the pinion *f* into such a position as that the other pallet can act upon it, and that the vibration of the lever to and fro results in an intermittent revolution of the pinion *f* in one direction. The parts are so suitably proportioned as that each double movement of the lever *c* to and fro made during a single draw of the mule causes the pinion *f* to make one-third of a revolution. The pinion is connected with the train of gearing which actuates the indexes, whereby the number of draws made in any given time are marked on a dial, as is usual. The employment of the parts *c* and *f* admit of great variations in the movements of the mule-rocking shafts in each direction, because, although a vibration of the lever *c* to the extent of about one-sixth of a revolution is sufficient to give the required motion to the pinion *f*, a vibration to the extent of more than half a revolution will not increase the movement of the pinion. A pinion having more than three leaves—say, for example, five leaves—may be used in lieu of the pinion *f*, the lever *c* being made to suit the pinion. The arrangements for communicating motion from the mule-rocking shaft to the lever *c* may be varied.

We claim as our invention—

The combination of the shaft carrying a worm, *e*, with a lever, *c*, having a worm-wheel gearing into said worm and a pinion, *f*, adapted to be acted on by said lever, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

DANIEL ORME.
FRANCIS HEANS ORME.

Witnesses:
EDWARD K. DUTTON,
DAVID FULTON.