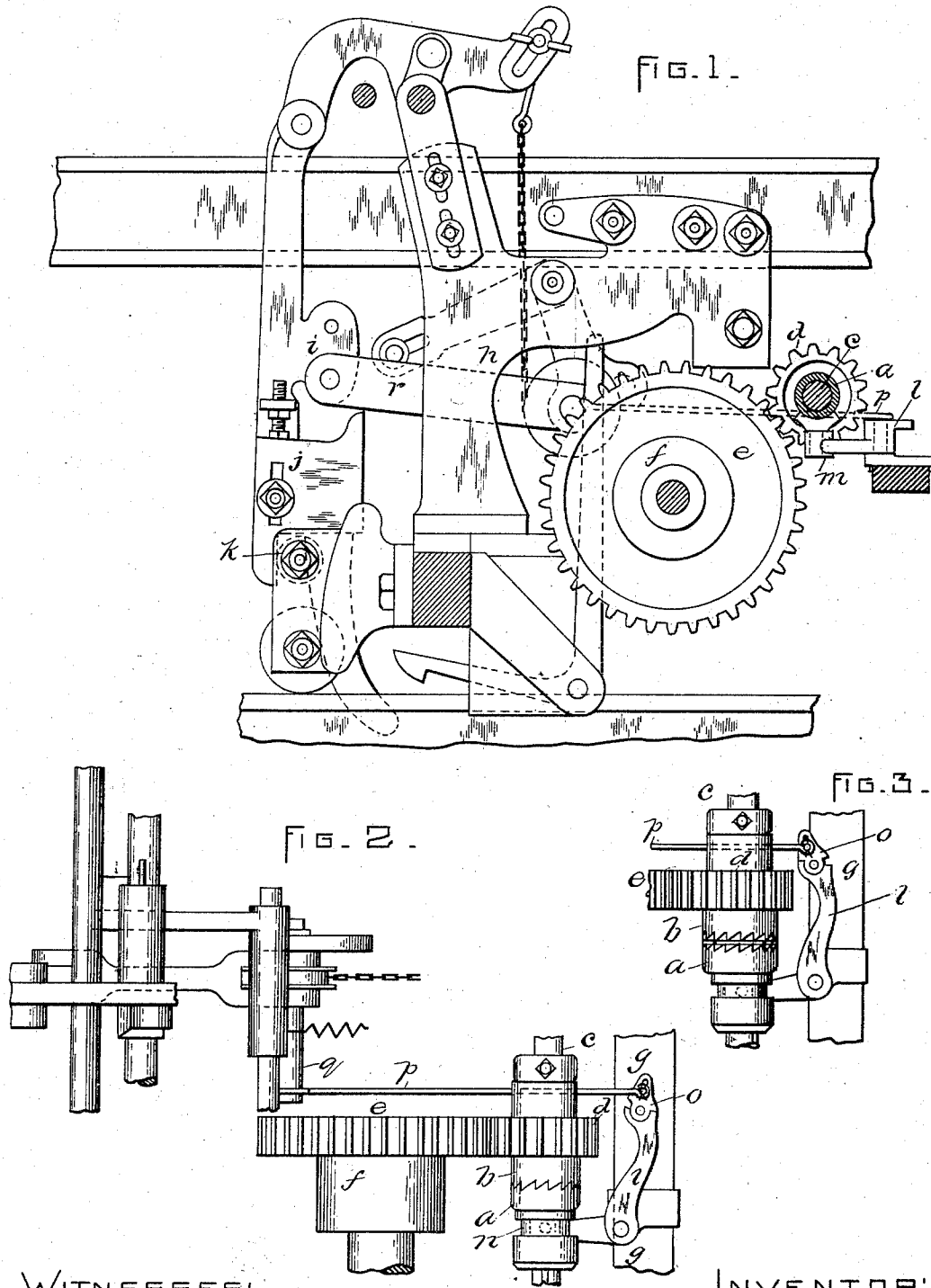


(No Model.)

C. A. DAM.
COTTON SPINNING MULE.

No. 483,301.

Patented Sept. 27, 1892.



WITNESSES:

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CHARLES A. DAM, OF LOWELL, MASSACHUSETTS.

COTTON-SPINNING MULE.

SPECIFICATION forming part of Letters Patent No. 483,301, dated September 27, 1892.

Application filed May 2, 1892. Serial No. 431,508. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. DAM, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Cotton-Spinning Mules, of which the following is a specification.

My invention has relation to winding mechanisms for cotton-spinning mules in which a clutch-box is employed in lieu of a click-wheel for setting the winding motion in operation.

It is the object of my improvement to provide means which can be relied upon with certainty to maintain a stationary position out of action of the sliding clutch part during the outward run of the carriage, the process of backing off, and the movement of the copping-rail, and which the moment the follower is locked will act to force the sliding clutch part into contact with the opposite clutch part, so that the winding mechanism may be set in motion the instant the follower becomes locked and be kept in operation until winding is effected as close as may be to the beam and the follower is unlocked.

It is also the object of my invention to simplify the means for operating the clutch-box and render the same more ready of adjustment and repair than heretofore.

To these ends my invention consists of the clutch-box comprising the fixed and the sliding parts, means connecting the fixed part with band-cylinder, a bell-crank lever one arm of which is engaged with the sliding part to operate the same, the end of the other arm being provided with a swivel or pivoted latch adapted to be moved to a limited extent without effecting a movement of said lever, and connections between the said swivel and follower-leg, all as will be more fully described and claimed hereinafter.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

In the drawings, Figure 1 is a sectional side elevation of so much of a mule-carriage as it is necessary to show in order to illustrate my invention. Fig. 2 is a top plan view of the essential features thereof, shown in connection with co-operating parts, the sliding clutch part being represented as in engagement with

the fixed clutch part. Fig. 3 is a top plan view of the clutch-box, its connected gears, and my improved means for operating the sliding clutch part, the two parts of the clutch mechanism being represented as separated.

In the drawings, *a* designates the sliding part, and *b* the fixed part, of the clutch-box, arranged on the shaft *c*, upon which there is a gear *d*, which meshes with the gear *e*, connected with the winding-drum *f*.

g designates the square, and *h* other parts, of the frame of the mule-carriage.

i designates the follower-leg, provided on its lower end with the offset-block *j*, which is adapted to catch over the bowl or roller *k* when the follower is depressed and the winding motion is in operation and to be moved off from said bowl when the follower is raised and out of operation.

The parts thus far described, as also the means for operating and controlling the operations of the follower-leg and its connections, form no part of my present invention and need not be more particularly described herein.

l is an arm or bell-crank lever pivoted upon the square and having the end of one arm provided with a pivoted traveler *m*, arranged to move in a groove *n* of the hub of the sliding clutch part *a* of the clutch-box. The end of the other arm of the lever *l* is provided with a swivel or pivoted latch *o*, so constructed and arranged as to have a limited movement upon its pivot independent of the arm with which it is connected, as will be clearly understood by an inspection of Figs. 2 and 3.

p is a rod provided at each end with an eye, one end being connected to the swivel or latch *o* and the other end to a pin *q*, to which one end of a bar *r* is pivoted, the other end of said bar being connected in a similar manner with the follower-leg. With this means it will be seen that if the parts are, as they will be, as shown in Fig. 3 during the outward run of the carriage they will so remain until the backing off and movement of the copping-rail occurs, the sliding clutch part of the clutch-box being held positively out of engagement with the fixed part. During the backing-off movement and movement of the copping-rail the swivel or latch *o* will be moved from the position in which it is shown in Fig. 3 to that in which it

is represented in Fig. 2; but the arm or lever *l* will not be moved until the backing off is effected and the follower is locked. The instant the latter occurs, however, the arm *l* will be moved to the position represented in Fig. 2, the clutch will be thrown into engagement, and the winding motion set in operation.

By my invention I enable the mule to wind closer to the beam during the inward run of the carriage, the latch or swivel having to move quite a distance before the lever *l* can be moved to throw the sliding clutch part out, thus preventing snarls or kinks in the yarn at the beam while the carriage runs in at slow speed.

It is to be noted that any arrangement of the swivel or latch *o* on the lever *l* whereby the said swivel may move to a limited extent without moving the lever would fall within the scope of my invention.

Having thus described the nature of my invention and explained a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its employment, I declare that what I claim is—

1. The shaft *c* and the clutch-box thereon,

comprising the fixed and sliding clutch parts, in combination with the lever *l*, one arm of which is engaged with the sliding clutch part, the end of the other arm being provided with a swivel or latch adapted to have a limited movement independent of the lever, the follower-leg, and means connecting the follower-leg with the swivel or latch, as set forth.

2. The combination, with the shaft *c*, of the clutch-box comprising the fixed and sliding parts, means connecting the fixed parts with the band-cylinder, a bell-crank lever, one arm of which is engaged with the sliding part to operate the same, the end of the other arm being provided with a swivel adapted to be moved to a limited extent without affecting the movement of the lever, and connections between the said swivel and follower-leg, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 23d day of April, A. D. 1892.

CHARLES A. DAM.

Witnesses:

ARTHUR W. CROSSLEY,
EDWIN D. MELLEN.