(No Model.)

# J. F. APPLEBY & J. F. STEWARD.

## MECHANICAL MOVEMENT.

No. 472,972. Patented Apr. 19, 1892.

Fig. 1.

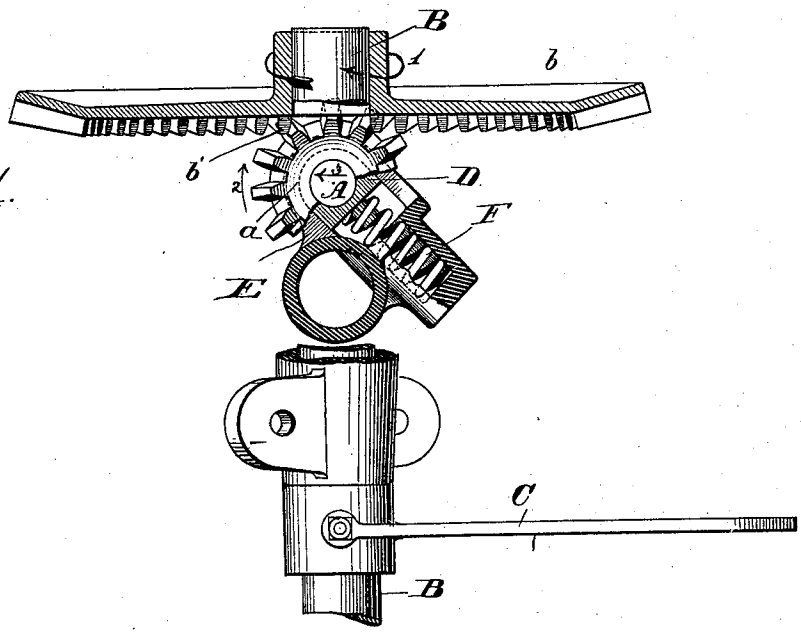



Fig. 2.

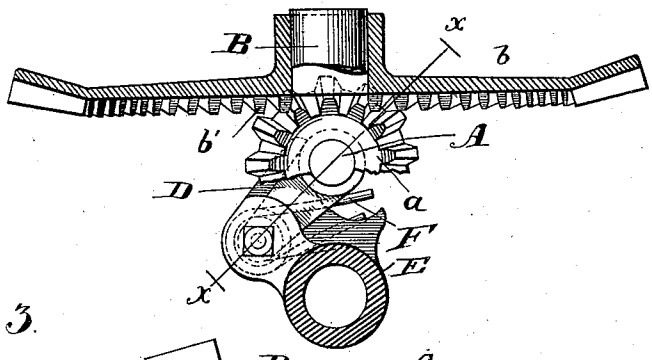
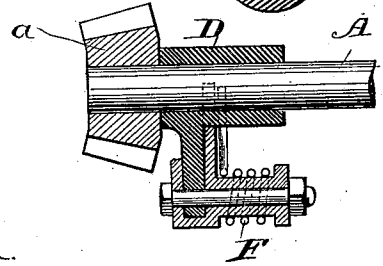



Fig. 3.

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## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 472,972, dated April 19, 1892.

Application filed October 26, 1891. Serial No. 409,922. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN F. APPLEBY, of Santa Cruz, in the county of Santa Cruz and State of California, and JOHN F. STEWARD, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Mechanical Movement, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view illustrating our mechanical movement, partly in section. Fig. 2 is a similar view showing a modification. Fig. 3 is a section on the line X X of Fig. 2.

Our invention is applicable to many classes of machines, but particularly to grain-binders, in which machines the shaft which gives motion to the binding devices proper moves continuously, and the binding devices themselves are required to move but intermittently. While the machine is working the main driving-shaft continues to rotate, as stated; but when the machine is standing it is sometimes desirable to move the binding devices proper through a rotation. In short, the purpose of our invention is to permit the driven parts to be rotated by hand or otherwise when the motive power is at rest, and that without the use of any of the ordinary clutching devices.

A is the driving-shaft, and B the driven. On the shaft A is the pinion *a*, firmly keyed thereto. To the shaft B is keyed the wheel *b*. The wheel *b* is mutilated, as will be seen by reference to Figs. 1 and 2—that is to say, several of the teeth are omitted—and it will, we trust, be clearly seen that the pinion *a* may rotate continuously while *b* remains at rest, because of the failure of the pinion *a* to engage with the teeth of *b* that are out of its reach. In order to show the mutilation of the gear, the latter is drawn in section; but it may be assumed that the gear *b* is continuous, with the exception referred to.

C is an arm secured to the shaft B. By this arm or by any other suitable means the gear *b* may be started in rotation—in this case started in the direction indicated by the curved arrow 1. It will at once be seen that the tooth *b'* will be thus moved to such a position as to engage one of the teeth of the continuously-running pinion *a*. The tooth engaged, the wheel *b* will be rotated until a complete revolution is made or until the pinion meets some other mutilation in the gearing that may be provided for some special purpose. It is possible that the crown of the tooth *b'* may be forced into contact with the crown of the tooth of the pinion nearest which it approaches.

We have provided against breakage in the following manner: The shaft A is pivoted at its end farthest from the pinion *a*, and the upper end of the shaft, as shown in the figures, is journaled in the bearing D.

E is the frame-work upon which all of the parts are mounted, and in an extension of this frame, as shown in Fig. 1, the journal-bearing D is adapted to slide. Incased in the frame is the spring F, which is adapted to hold the pinion into mesh by pressing upon the journal-bearing.

Should the teeth of the driving and driven gears not mesh properly when turned together, the spring will yield under the pressure to allow the pinion to move away from the gear; but the continued rotation of the pinion will instantly cause the teeth of the pinion to slip into proper mesh. The pinion in this case is adapted to rotate in the direction of arrow 2, and when it is in engagement with teeth of the gear *b* the resistance of the latter to movement will produce a pressure upon the journal-bearing in the direction of arrow 3; but as the journal-bearing can only move in the direction shown the result will be that as long as the pinion is properly in engagement with the gear the tendency will be to remain so; but, as before stated, it is sometimes desirable to turn the shaft B when the pinion *a* is at rest. In order to avoid placing a ratchet-and-pawl arrangement to permit the pinion to turn independently of the motive power which controls it, we place the slot in which the journal-bearing slides at such an angle (and place the spring F behind it) that as the wheel *b* is turned through the instrumentality of the arm C the pinion, the upper end of its shaft, and the journal-bearing may yield and its teeth be forced to escape the pinion by forcing the latter away.

In order to prevent a clattering noise, due to the slipping of the teeth of the gear with

those of the pinion, we prefer to make the spring F as light as possible. If its stress is sufficient to merely hold the shaft A in position for meshing, the proper result will be attained and but a slight clattering noise be created.

The slot in which the journal-bearing moves is so short that the latter will be limited to its proper scope of movement.

In Figs. 2 and 3 will be found a slight modification. Instead of a sliding journal-bearing we provide a pivoted one and surround its axis by a light coiled spring. The action is precisely the same as that of the construction shown in Fig. 1.

We have shown two modifications, but prefer the one in which the journal-bearing is pivotally held, and shall draw our specific claim to cover the latter.

We have shown our mechanical movement as adapted to beveled gearing; but it is apparent that it will operate precisely the same where spur-gearing is used. In other words, it is applicable whether the driving and driven shafts be at right angles with each other or parallel.

We have shown the movable journal-bearing as spring-held because we prefer the construction; but it is evident that it may be moved to proper position by gravity. In cases where the driving-shaft is placed horizontal its own weight will be sufficient. In short, gravity or a spring may be depended upon, as the circumstances of the case warrant.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the driven mutilated gear, the driving-pinion, and a yieldingly-held bearing, said bearing for supporting said pinion adapted to permit the pinion to move into meshing position with the gear in such direction that the stress of labor shall tend to hold it in such position, substantially as described.

2. In combination with the mutilated gear *b*, the driving-pinion, a yieldingly-held bearing for supporting said pinion, the latter adapted by its propelling force to tend to remain in proper mesh when running, but adapted when idle to be moved out of mesh with the teeth of the gear *b* when said gear is rotated by means other than the driving-pinion, and said means, substantially as described.

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