

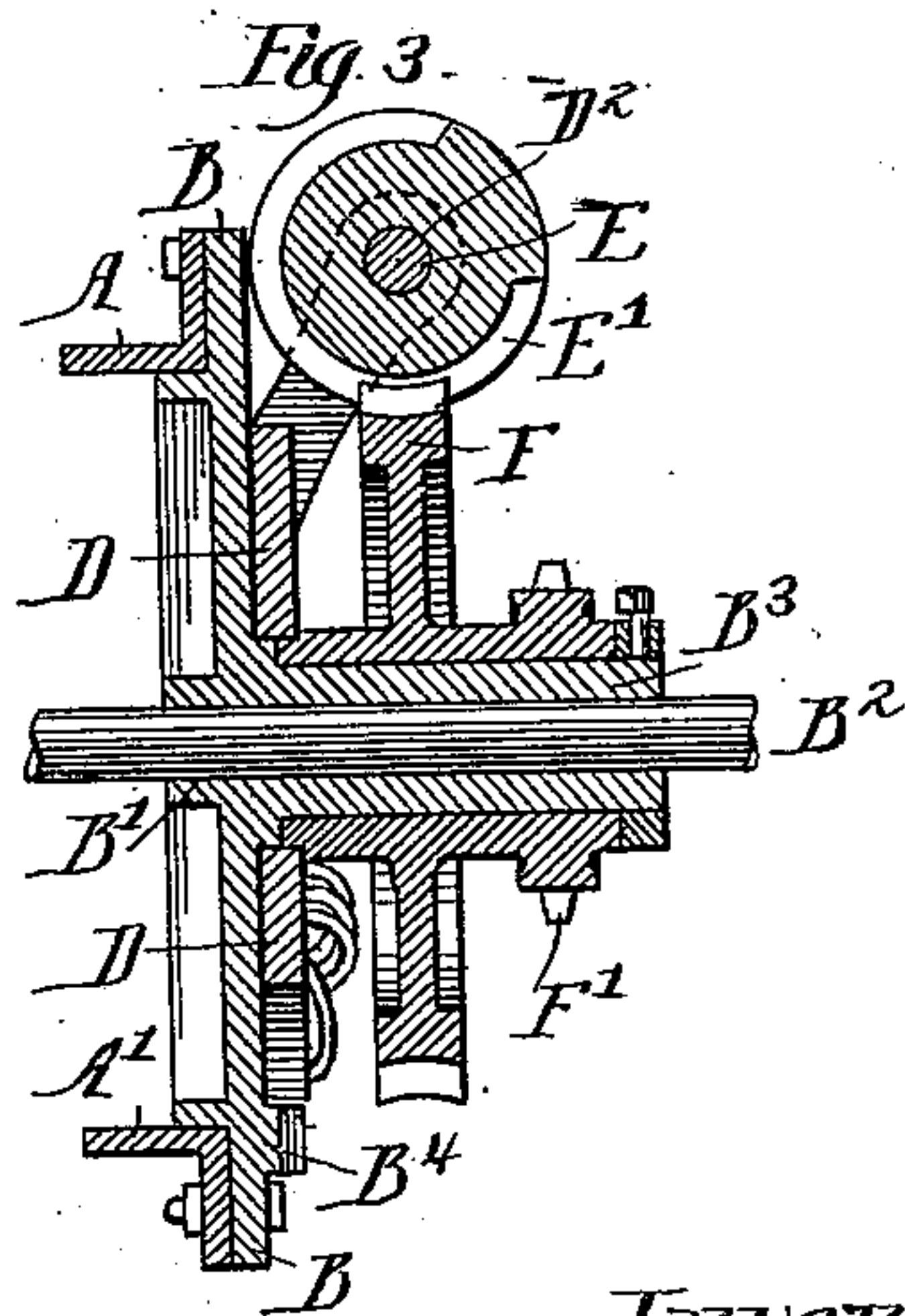
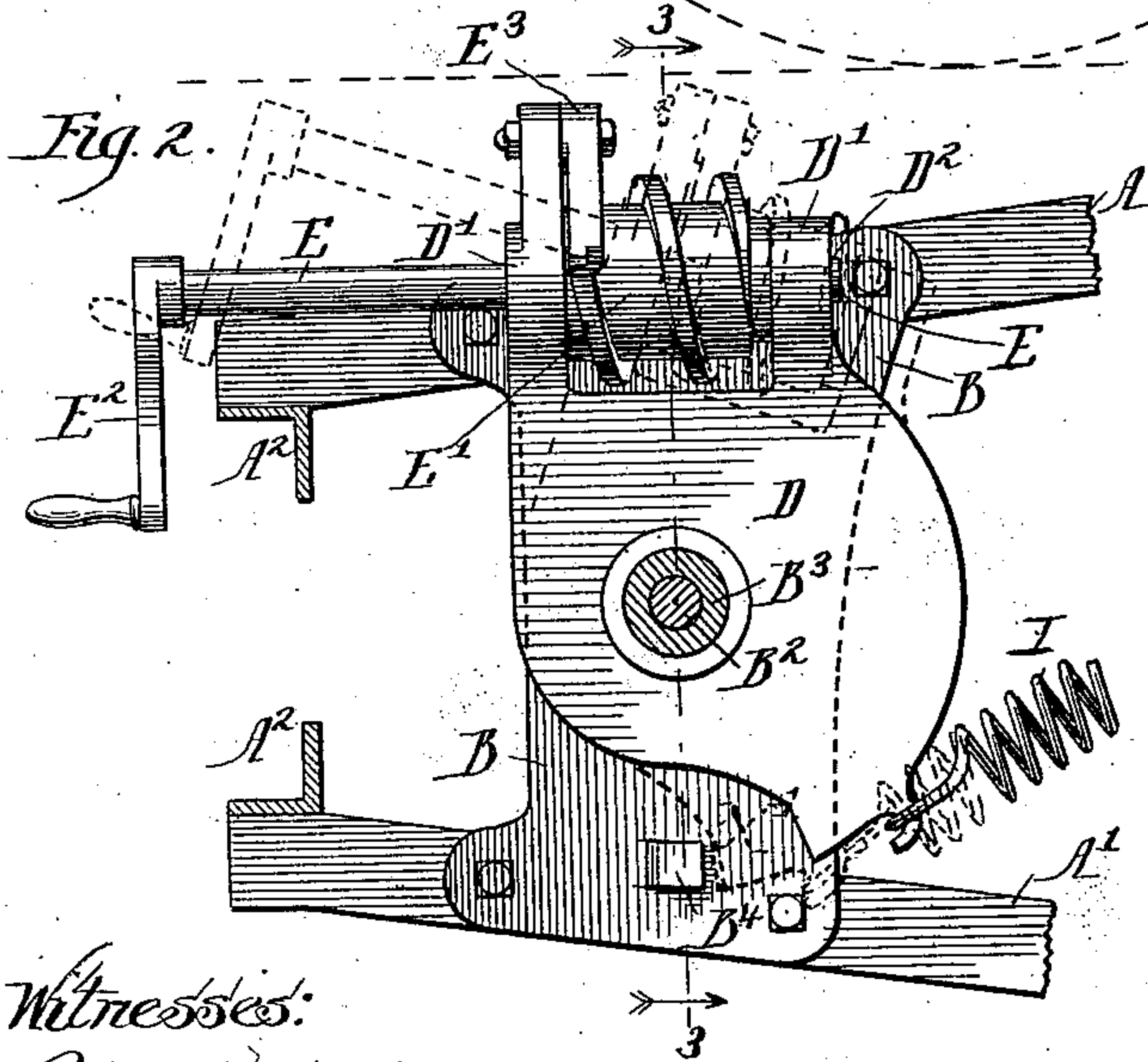
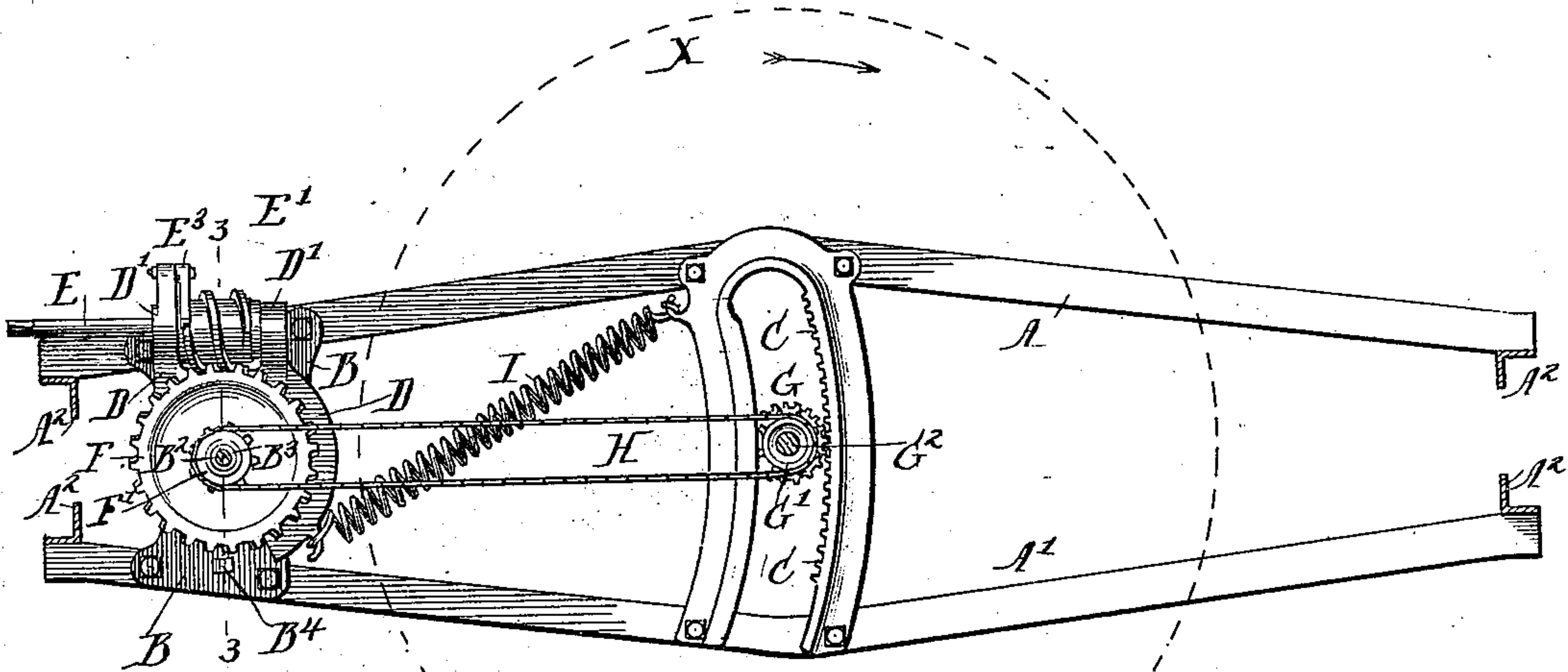
(No Model.)

J. MACPHAIL.
GRAIN BINDER.

No. 561,010.

Patented May 26, 1896.

Fig. 1.



Witnesses:

Fred Berlach
E. F. Dowling

Inventor:

James Macphail,
By L. L. Morrison,
Attorney.

UNITED STATES PATENT OFFICE.

JAMES MACPHAIL, OF ROCKFORD, ILLINOIS.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 561,010, dated May 26, 1896.

Application filed July 25, 1890. Serial No. 359,941. (No model.)

To all whom it may concern:

Be it known that I, JAMES MACPHAIL, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Grain-Binders, of which the following is a specification.

My invention relates to mechanism for raising and lowering the main frame of grain-binders, has for its objects to prevent jarring of and shocks to the machine, and consists of an oscillating worm-gear-bearing bracket, a sustaining-spring, and parts for operatively connecting the same with the machine-frame.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a view showing the inner truss of the driving-wheel frame of a grain-binder of the usual form and construction having my improvements operatively connected therewith. Fig. 2 is a detailed view of parts shown in Fig. 1, indicating by dotted lines the movements of which the same are capable. Fig. 3 is a section at the dotted line 3 3 of parts shown in Fig. 1.

Like letters of reference indicate corresponding parts throughout the several views.

The dotted circle X indicates the position of the driving-wheel (not shown) of the machine.

A A' are two pieces of angle-iron forming the inner truss of the driving-wheel frame (the outer truss, identical in form and construction therewith, being removed to show the construction and mode of operating my improvements) of the machine.

A² are cross-pieces of angle-iron in transverse section, securing the inner truss A A' and outer truss (not shown) together.

B is a bearing-plate rigidly connected with the parts A A'.

B' is a bearing in the plate B, supporting the inner end of the shaft B², the outer end whereof is supported by a bearing in a like plate fast to an outer truss, to which reference has already been made.

C is a segment-rack secured to the parts A A'.

D is an oscillating worm-gear-bearing bracket mounted on the bearing-plate B, as

shown, or in any other suitable manner, and provided with transverse lugs D', having bearings D² therein.

E is a shaft, having a worm-gear E' mounted thereon and being itself mounted in the bearings D² in the lugs D'.

E² is a crank for operating the worm-gear E'.

E³ is a pawl pivoted to one of the lugs D' to prevent the worm-gear from revolving in one direction.

F is a gear-wheel meshing with the worm-gear E' and mounted preferably on the sleeve-bearing B³, integral or rigidly connected with the plate B.

F' is a sprocket-wheel preferably integral with the gear-wheel F and mounted on the sleeve-bearing B³.

G is a gear-wheel meshing with the segment-rack C. G' is a sprocket-wheel concentric and rigidly connected therewith.

G² is the axle of the driving-wheel of the machine, and has bearings in the wheels G G' and in like wheels meshing with a segment-rack connected with an outside truss of the driving-wheel frame, to which reference has already been made.

H is a sprocket-chain connecting the sprocket-wheels F' G'.

I is a sustaining-spring, one end thereof connecting with and operating on the oscillating bracket D and the other end connecting with and operating on the truss of the driving-wheel frame or some attachment of the same. The spring I sustains the entire weight of the truss shown in Fig. 1 and its fellow truss (not shown) and all the parts supported by them.

Whenever the driving-wheel of a grain-binder provided with my improvement receives a shock or jar from coming in contact with any obstacle or passing over rough and uneven ground, the same will be transmitted to the spring I, which obviously will not communicate the same to any considerable extent to the truss and frame of the machine, but will counteract and dissipate the shock and prevent its communication to the machine, which obviously would wear out faster and operate less easily if subjected to frequent shocks, as those machines are which do not

have a spring interposed between the running-gear and cutting and binding mechanism thereof.

In case a shock should be transmitted to the spring I sufficiently violent to break it the stop B⁴ would prevent the oscillating bracket D from turning farther than indicated by the dotted lines X' in Fig. 2, thereby preventing any injury to the machine in such a contingency.

I claim—

1. In a grain-binder, in combination, a suitable bearing-frame, an oscillating bracket mounted thereon, a sustaining-spring connecting the oscillating bracket with the bearing-frame, a worm-gear having bearings on the oscillating bracket, a gear-wheel mounted concentrically with the oscillating bracket and meshing with the worm-gear, the main axle, the segment-rack, the gear-wheel connecting and cooperating therewith, the sprocket-wheels—one concentric and rigidly connected with the gear-wheel meshed with the segment-rack, and one concentric and

rigidly connected with the gear-wheel meshed with the worm-gear—and the sprocket-chain connecting the same, substantially as and for the purpose specified.

2. In a grain-binder, in combination, the truss, the oscillating bracket D, mounted on a bearing connected therewith, the worm-gear E' having bearings thereon, the gear-wheel F mounted on the oscillating bracket D and meshing with the worm-gear E', the spring I connecting the truss with the oscillating bracket D, the crank E² for winding the worm-gear E', the segment-rack C secured to the truss, the gear-wheel G meshing therewith, the sprocket-wheel G' concentric and rigidly connected with the gear G, the sprocket-wheel F', concentric and rigidly connected with the gear-wheel F and the chain H connecting said sprocket-wheels, substantially as and for the purpose specified.

JAMES MACPHERAIL.

Witnesses:

L. L. MORRISON,
E. F. DOWLING.