

(No Model.)

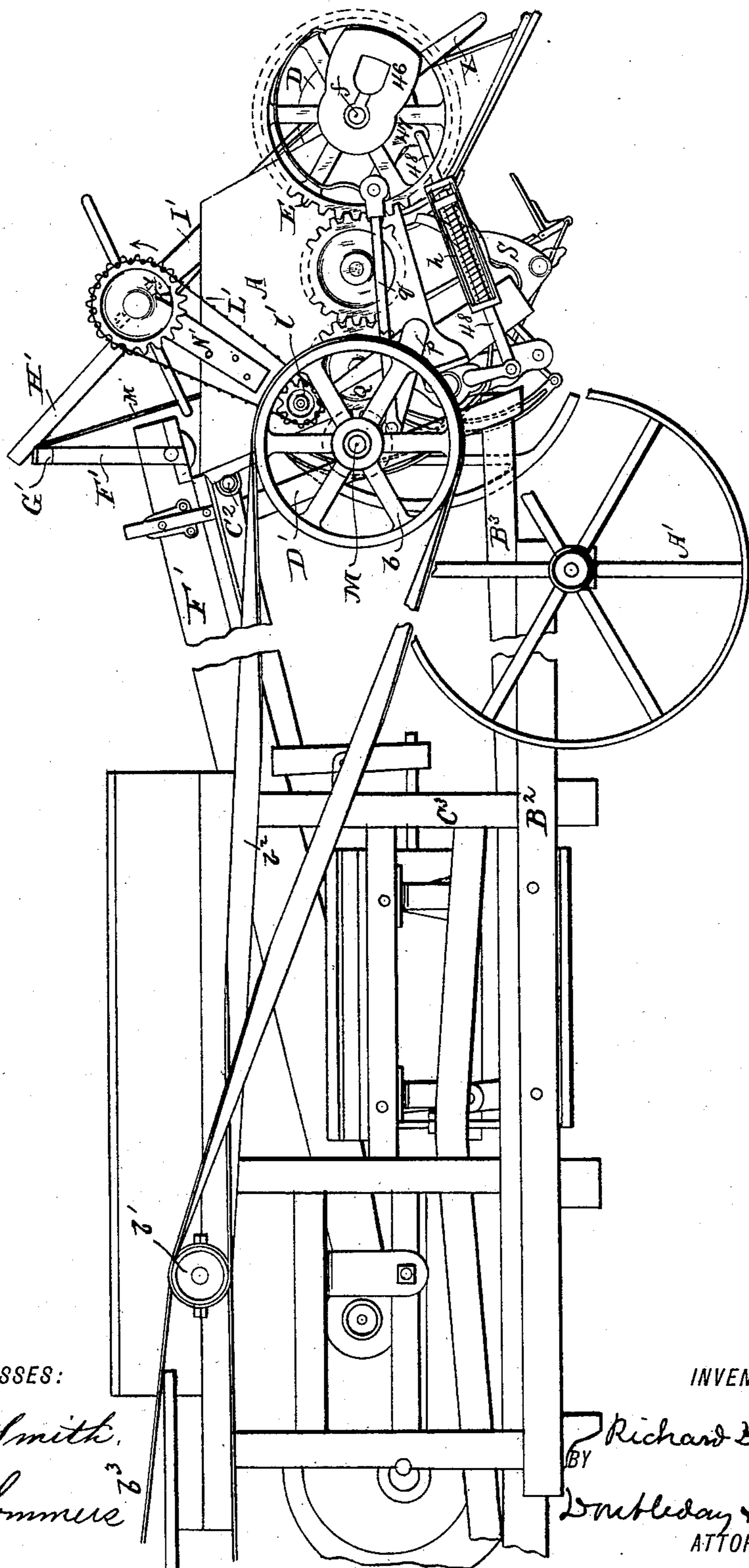
3 Sheets—Sheet 1.

R. D. NORTON.

COMBINED THRASHING MACHINE AND BINDER.

No. 393,782.

Patented Dec. 4, 1888.



WITNESSES:

E. D. Smith.
B. H. Sommers

INVENTOR,

Richard D. Norton.
BY Doubleday & Bliss.
ATTORNEYS.

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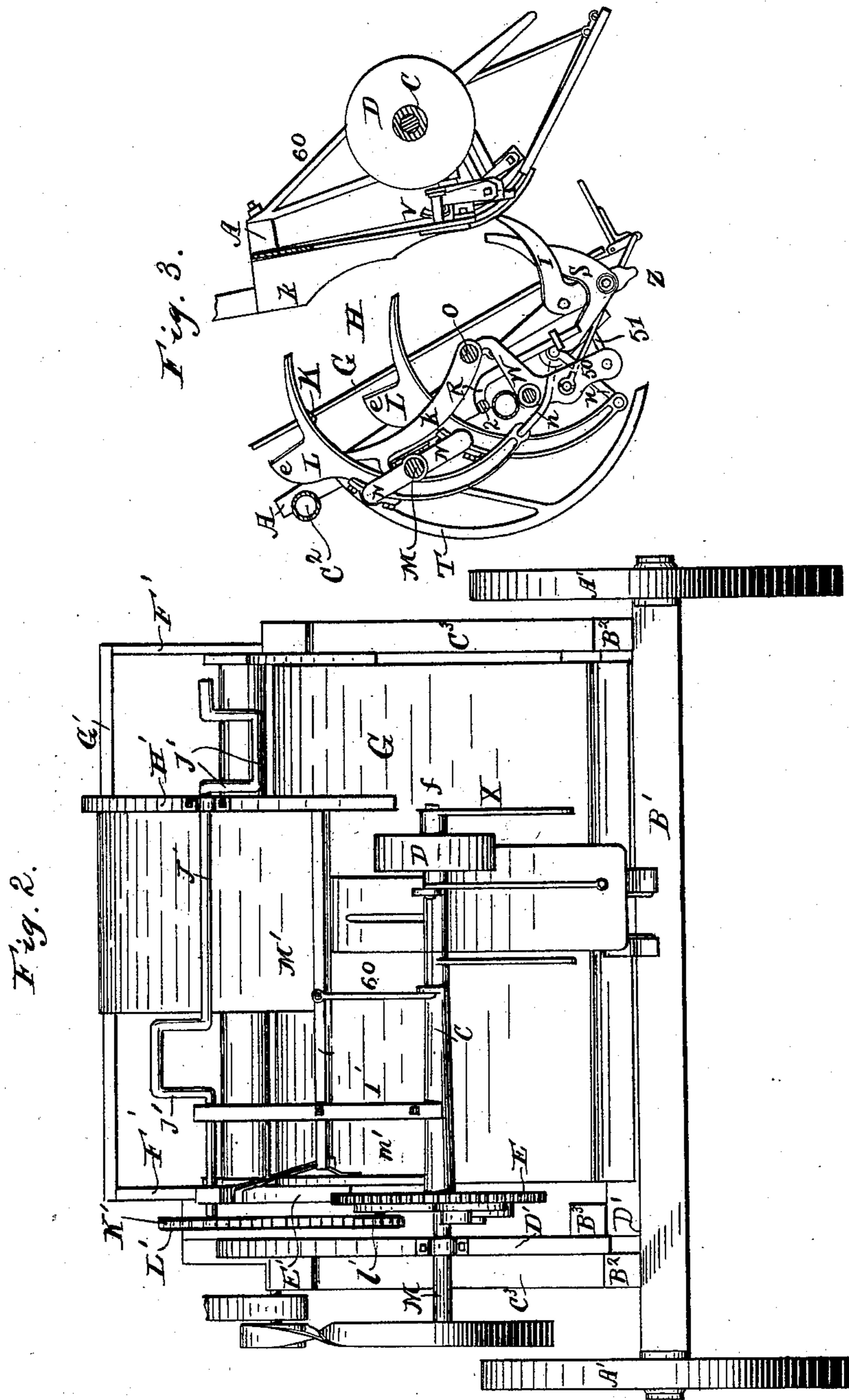
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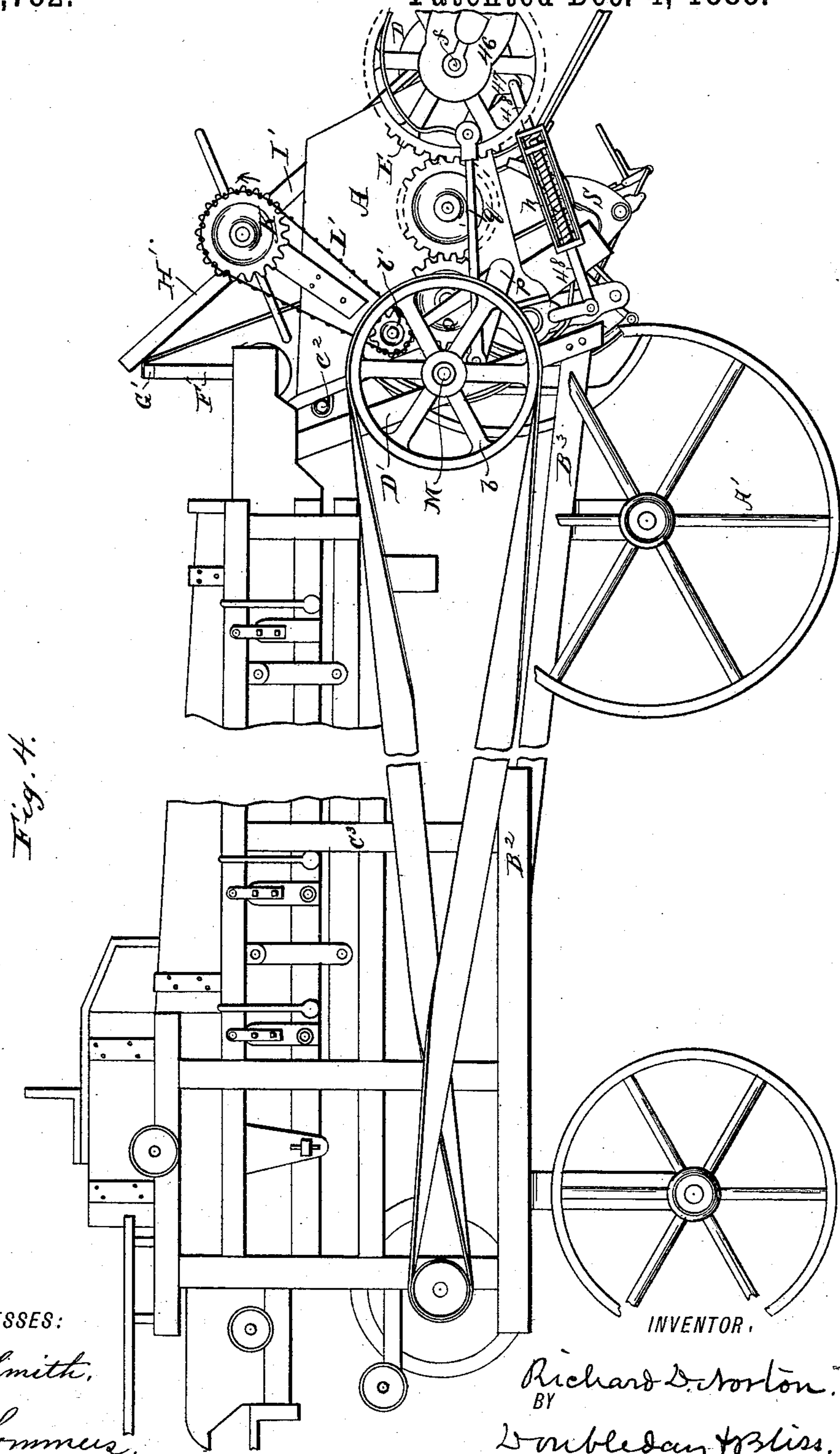


Fig. 4.

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UNITED STATES PATENT OFFICE.

RICHARD D. NORTON, OF HIGHTSTOWN, NEW JERSEY.

COMBINED THRASHING-MACHINE AND BINDER.

SPECIFICATION forming part of Letters Patent No. 393,782, dated December 4, 1888.

Application filed January 20, 1886. Serial No. 189,194. (No model.)

To all whom it may concern:

Be it known that I, RICHARD D. NORTON, a citizen of the United States, residing at Hightstown, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in a Combined Thrashing-Machine and Binder, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a rear view. Fig. 3 is a detached view enlarged, showing more fully the construction of the binder. Fig. 4 is a side elevation illustrating a modification in the means of driving the binder.

This invention relates to the combination of a thrashing-machine and a grain-binder, whereby straw may be delivered directly from the separating mechanism of the thrasher to the gavel-forming devices of the binder, the whole being by preference mounted upon a common frame-work and driven from a common motor, as will be hereinafter more fully explained.

In carrying out my invention I usually prefer to employ one of the thrashers of that class known as "long-straw machines," which is of such width that the straw can be fed in crosswise, the machine effecting the separation of the grain from the straw by means of rubbers; but I do not wish to be limited to the employment of a thrasher of this type, although I prefer one of these machines, because the separation of the straw and the formation of it into gavels is more readily effected than can be done in that sort of thrasher in which the straw is fed into the cylinder endwise.

For the purpose of illustrating one method of working my invention I have shown in the drawings, Figs. 1 and 2, a thrashing-machine such as is more fully shown and described in detail in patent No. 277,595, granted J. H. Melick May 15, 1883, to which patent reference is herein made for a more detailed description of the construction of the thrasher.

The binder which I prefer to use is that which is well known to the trade as the "Appleby," and which is described and shown fully in detail in Letters Patent Nos. 212,420 and 262,883, granted J. F. Appleby, and dated,

respectively, February 18, 1879, and August 4, 1882.

To enable a skilled mechanic to readily construct and operate my invention, I refer to the above-mentioned Melick and Appleby patents, and need not, therefore, enter into a specific explanation, either by drawing or description, of the thrasher or the binder, except so far as may be necessary to point out the method which I have adopted for combining these machines in a single operative structure.

Referring particularly to Figs. 1, 2, and 3, A' A' are the supporting-wheels; B' B² C³, the frame-work of an ordinary thrashing-machine. To this I add supplemental sills B³ B³, bolted to the frame and projecting rearward. I also propose to add a girt, B⁴, and posts D', projecting upward from the rear end of sills B³ B³, and thus form a supplemental frame to which the binder may be attached in substantially the same manner as the Appleby binders are connected with the harvesting-machines.

In the drawings I have lettered many parts of the binder to correspond with the lettering in the above-named patents, M being the main power-shaft or driving-shaft carrying the pulley-wheel *b*, which is connected with a pulley, *b'*, on one end of the cylinder-shaft of the thrasher by means of a belt, *b²*, the belt being crossed to drive the shaft M in the proper direction.

b³ is the belt connecting the thrasher-cylinder with any suitable motor, and it will be readily seen that the tension of these two belts *b³* *b²* pulls upon the cylinder-shaft in opposite directions, and therefore tends to relieve the bearings of the cylinder-shaft from much of the strain and consequent friction which, in an ordinary thrasher, results from the tension or pulling of the single drive-belt.

D is the rack-wheel.

G is the chute-board over which the straw slides from the rear end of the straw-carrier F'.

L L are carrying-arms operated by two cranks, N N, and projecting through the chute-board to carry the straw against the fingers I I S in the receptacle H between the chute-board G and the ribs *k k*. (See Fig. 3.)

T is the needle which carries the binding-cord.

The rack-wheel D is mounted on the inner end of shaft *f*, which carries a spur-gear, E, (see Fig. 1,) and is driven by a train of spur-gears from shaft M.

5 The reference-letters thus far referred to will be sufficient to identify the binder as being of that character known as the "Appleby."

10 To facilitate the operation of my combination of binder and thrasher, I have added a number of other devices or parts, among which are the following:

To the upper ends of posts or arms *F' F'*, which rise from the rear end of the straw-carrier, I attach a cross-bar, *G'*.

15 *H' I'* are two inclined bars supported in any well-known manner upon the frame-work of the binder, including the bar *G'*.

J' is a shaft mounted upon bars *H' I'*, and preferably an arm, *N'*, (see Fig. 1,) carrying on its outer end a sprocket-wheel, *K'*, connected by a chain or belt, *L'*, with a sprocket-wheel, *l'*, which is mounted in a stud-shaft projecting from one of the side parts of the binder-frame and carries a spur-gear meshing with one of the spur-gears of the train which connects shaft M with gear E. This shaft *J'* has two cranks, *j' j'*, for a purpose which will be explained.

30 *M'* is a guard, preferably connected at its upper end to cross-bar *G'* and arranged in an inclined position which is substantially parallel with the chute *G*. This guard assists in directing the straw properly in its passage from the straw-carrier of the thrasher to the bundling devices of the binder. Although shown in the drawings as a single piece or sheet, this guard may be formed of slats, wires, canvas, ropes, or any other material, flexible or rigid, and this material may be fastened at its upper end to bar *G'*, with its lower end loose, so as to swing free when desired and rest its weight upon the downward-moving grain; or it may be fastened at its lower end to a suitable cross-bar and have its upper end free to swing.

40 As will be readily understood from the above description and an examination of the drawings, the straw will pass freely from the rear end or discharging end of the straw-carrier down over the chute-board to the bundling and binding mechanism, where it will be bound in bundles of suitable size.

I have found in practice that the shaft *J'*, with its crank-arms *j' j'*, acts in a very efficient manner in assisting the straw in its movement down to the binder.

It is customary in many thrashers to support the outer end of the cylinder-shaft by a

60 bracket-bearing to resist the pull of the driving-belt which connects the horse-power or other motor with a small pulley on the end of the cylinder-shaft outside of the casing of the machine, and in working my invention I have found it desirable to remove said outside bracket-bearing and affix to the cylinder-shaft the small pulley *b'* at the point occupied by the bearing.

70 It will be understood that in operating my invention the straw is fed in a practically continuous stream to the gavel-forming devices of the binder, where it is formed into gavels of suitable size, then bound, and thence discharged from the machine.

75 In Fig. 4 I have shown a modification, in which I propose to belt the driving-pulley *b* of the binder to a pulley, *b'*, on the crank-shaft, which communicates motion to the shaking-shoe of the winnowing devices of the thrasher; but I prefer the arrangement shown in Fig. 1, because, among other reasons, it is very convenient in a large number of thrashers to remove the outside yoke or bracket-bearing and place the pulley *b'* on the cylinder-shaft; secondly, because it is more desirable to take the power from the motor, and, thirdly, because by taking power from that shaft I avoid imposing any twisting or sidewise strain upon any other shaft of the thrasher or its bearings.

What I claim is—

90 1. The combination, with the straw-carrier, the bundling devices arranged at the rear of the carrier, the chute-board *G*, and the arms *L L*, operated by cranks *N N*, projecting through said chute-board, of the inclined guard *M'* at the rear of and parallel with the chute-board, the receptacle *H*, and the shaft *J'*, having crank-arms *j' j'*, substantially as shown and described, and for the purpose specified.

2. The combination, with the straw-carrier and the arms *F' F'*, rising from the rear end thereof, of the cross-bar *G'*, connecting the upper ends of said arms, the inclined bars *H' I' N'*, the main shaft M, the shaft *J'*, mounted upon said bars *H' I' N'*, sprocket-wheel *K'* on the outer end of said shaft *J'*, the crank-arms *j' j'* on the shaft *J'*, the sprocket-wheel *l'*, mounted on a stub-shaft on the binder-frame, a spur-gear on said stub-shaft and connected with the shaft M, and the chain *L'*, connecting the wheels *K'* and *l'*, substantially as and for the purpose specified.

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

RICHARD D. NORTON.

Witnesses:

JOHN WILSON,
JOHN C. RIGGS.