C. H. BROOKBANK.

Grain-Separator.

No. 221,026. Patented Oct. 28, 1879.

Fig. 1

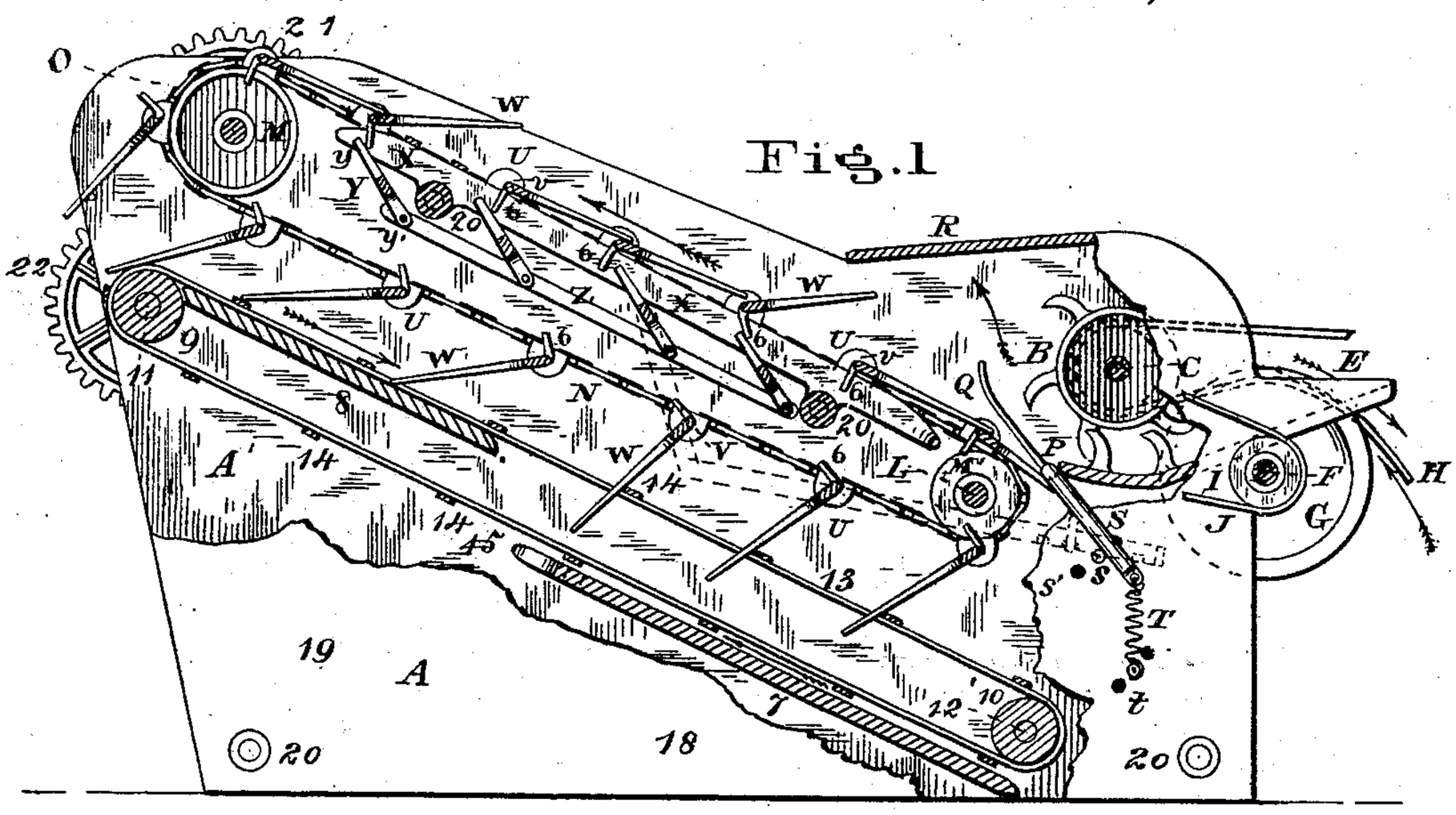

Fig. 2

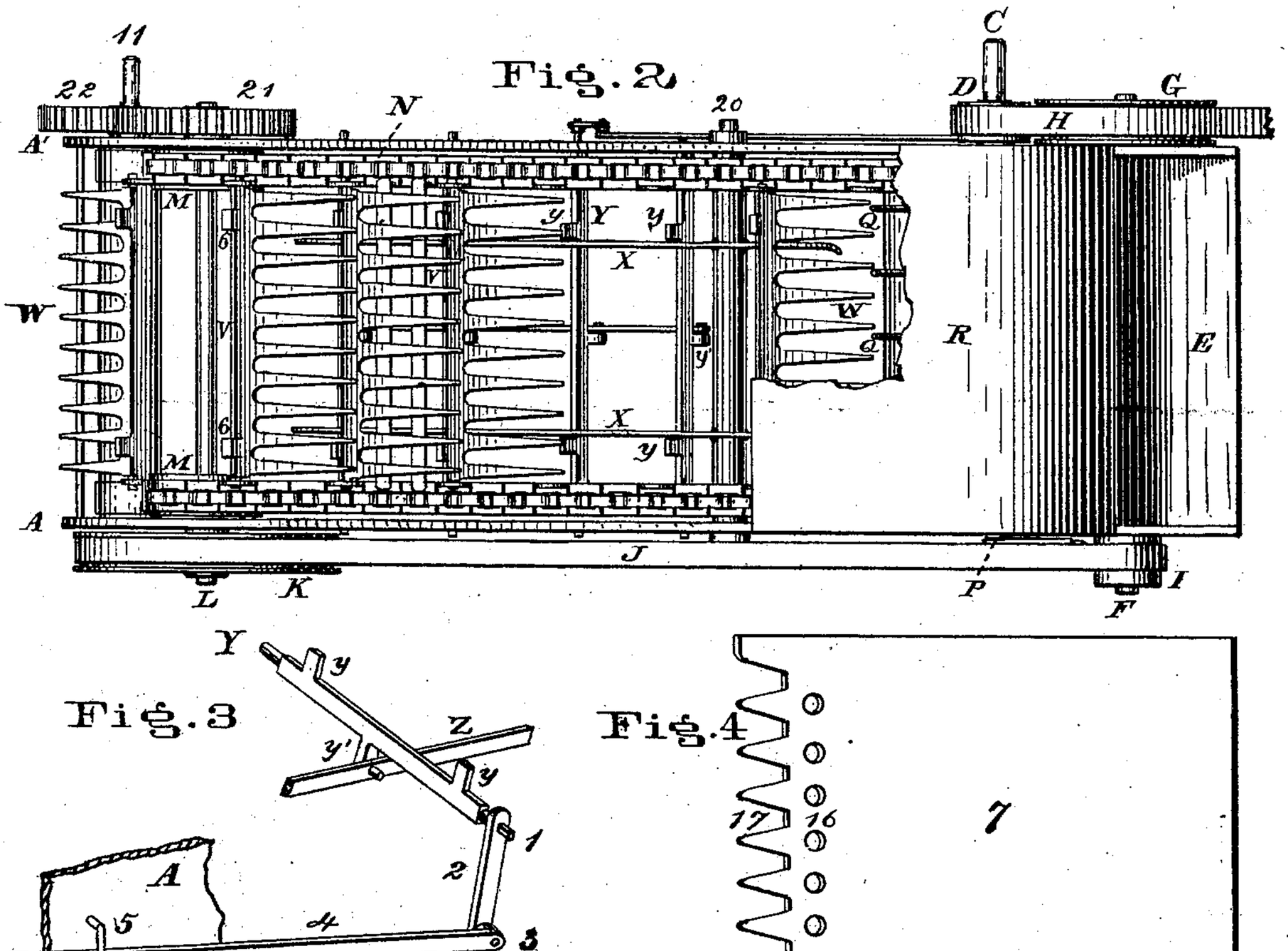

Fig. 3

Fig. 4

Attest

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Atty's

UNITED STATES PATENT OFFICE.

CHARLES H. BROOKBANK, OF CONNERSVILLE, INDIANA.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **221,026**, dated October 28, 1879; application filed March 10, 1879.

To all whom it may concern:

Be it known that I, CHARLES H. BROOKBANK, of Connersville, Fayette county, Indiana, have invented a new and useful Improvement in Grain-Separators, of which the following is a specification.

My invention comprises means for deflecting the thrashed material upward from the beating-cylinder, so as to permit the grain to separate promptly from the straw, and to thereby utilize that part of the carrier near the cylinder which is otherwise liable to become clogged with straw and chaff.

My invention further comprises a peculiarly-constructed adjustable rake-agitator.

In the accompanying drawings, Figure 1 is a partly sectioned front elevation of a grain-separator embodying my improvements. Fig. 2 is a plan of the same, a portion of the roofing being removed. Fig. 3 shows a portion of the adjustable agitating mechanism. Fig. 4 is a top view of my ascending chute.

A A′ may represent the sides of a suitable inclosing frame of a grain-separator. B may represent any customary or suitable thrashing-cylinder. The cylinder-shaft C extends through one side of the machine, for the reception of a driving-pulley, D.

Journaled in and extending through both sides of the machine, parallel to but nearer the front than the cylinder-shaft, and below the feed-hopper E, is a counter-shaft, F, in adjustable bearings, one end of which shaft carries, in alignment with the pulley D, a flanged pulley, G, of much larger diameter. The pulleys D and G are driven in opposite directions, at the same peripheral velocity, by the main driving-belt H, which, being led over the top of pulley G, is brought around pulley D, and returned over itself. This arrangement causes the belt to infold very closely a large part of the circumference of pulley D, thus securing against slip and lost motion on this important and necessarily swiftly-revolving member. It also causes the belt to hug the upper part of the flanged pulley's periphery with sufficient tractive force to rotate it in the reverse direction to pulley D.

The other end of the counter-shaft carries a small pulley, I, which (being belted, J, to a large pulley, K, on shaft L of the driving-sprockets M of endless chains N of the straw-carrier O) operates to impart to said carrier the slow rearward and upward delivery required for the performance of its duties.

A shaft, L′, journaled below and in rear of the cylinder, carries sprockets or pulleys M′, around which the receiving or lower bight of the carrier is stretched.

Immediately in rear of a customary or any suitable concave is journaled a shaft, P, from which project fingers Q, which, curving obliquely rearward and upward in rear of the cylinder, serve to direct the thrashed material toward the roof R, and thus to enable the grain to fall upon the front portion of the carrier before the straw can reach it, and by this means initiate the separating action at the earliest practicable moment. One end of shaft P, projecting outside the frame, has an arm, S, to which is secured a spring, T, whose lower end, being secured to one or other of a series of holes, *t*, in the frame, gives a greater or less tension to the spring. A stop, *s*, capable of being inserted in one or other of a series of holes, *s′*, enables the attendant to set the deflector at any desired angle relatively to the thrashing-cylinder.

The endless chains N are composed of two series of connected open links adapted to engage positively with their propelling pulleys, and to freely pass whatever grain alights upon them. These chains have a series of lugs, U, perforated to receive the pivots *v* of heads or bars V, from whose front sides project fingers W, whose length is such as to enable the fingers of each rake or series to rest upon the head of that next in front of it, and whose distance apart is just sufficient to support the straw while permitting the grain to drop through the interstices of the carrier. Tracks X secured in the proper oblique position within the case A serve to support the upper and effective portion of the carrier.

A series of rock-shafts, Y, journaled in each side of and extending athwart the case are armed at each extremity with tappets *y*, and with cranks *y′*, which latter occupy orifices in a bar, Z, which serves to couple said rock-shafts to one another, and to compel simultaneous motion. One of said rock-shafts, terminating with a square arbor, 1, outside of the

case, carries an arm, 2, pivoted at 3 to a notched bar, 4, that occupies a staple, 5, that projects from the case side. By shifting the notched bar 4, the tappets are made to assume a position which approaches or recedes from an erect one. Projections or heels 6, from each end of the rake-heads, striking the more or less erected tappets *y* as the carrier travels rearward, cause the rakes to be momentarily jerked up, in the manner indicated in Fig. 1, with the effect of scattering and loosening the straw and chaff, and of permitting the descent of the imprisoned grain.

Chutes 7 8 extend athwart the casing and beneath the carrier, to catch grain falling therefrom. Pulleys 9 10, on shafts 11 12, carry bands 13, the cross-bars 14 on which scrape the droppings up the surface of chute 7 and down the surface of chute 8. 16 17 represent, respectively, orifices and indentations in chute 7, to allow grain to drop through clear of chaff. 18 and 19 indicate the locations of the customary fan and riddle, respectively. 20 represents some cross-girders connecting and bracing the sides of the casing. 21 22 represent spur-gearing, which conveys motion from shaft L to shaft 11. The blower and riddle are actuated from the cylinder-shaft or other moving member.

I claim as new and of my invention—

1. The series of carrier-rakes W, pivoted to the endless and open-linked chains N, and having projections 6, which strike a series of duplex agitators *y* at each end of a series of rock-shafts, Y, journaled in both sides of and extending athwart the case, said rock-shafts and agitators being capable of simultaneous adjustment by means of rods Z 4, arms *y'* 2, and rack 5, substantially as set forth.

2. The up-directed and yielding deflector Q, pivoted in rear of the concave, and provided with spring T and adjusting mechanism *s t*, substantially as and for the purpose indicated.

In testimony of which invention I hereunto set my hand.

CHARLES H. BROOKBANK.

Attest:

GEO. H. KNIGHT,

L. H. BOND.