

(No Model.)

E. W. BURGESS.
GRAIN BINDER.

No. 602,028.

Patented Apr. 5, 1898.

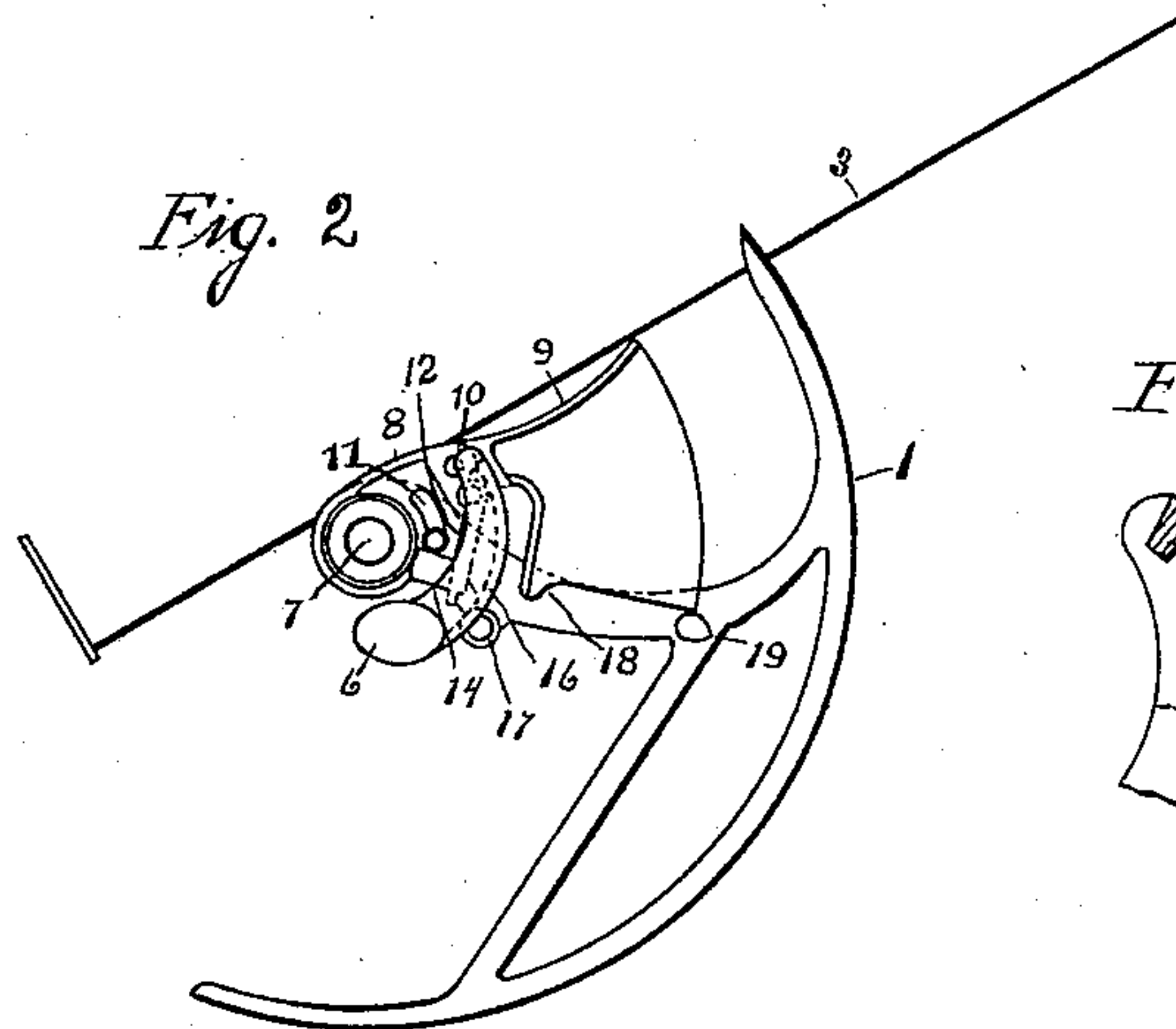
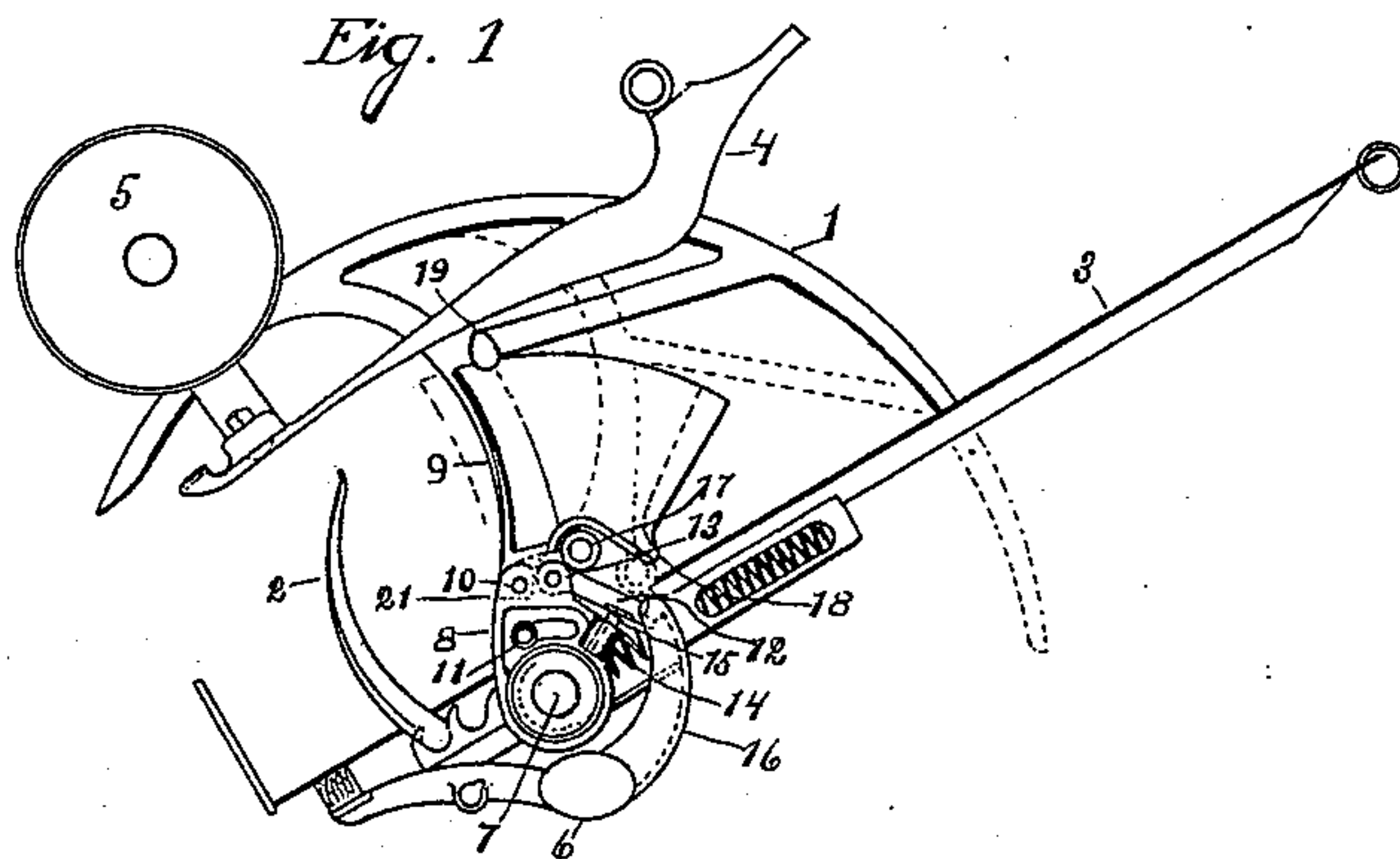
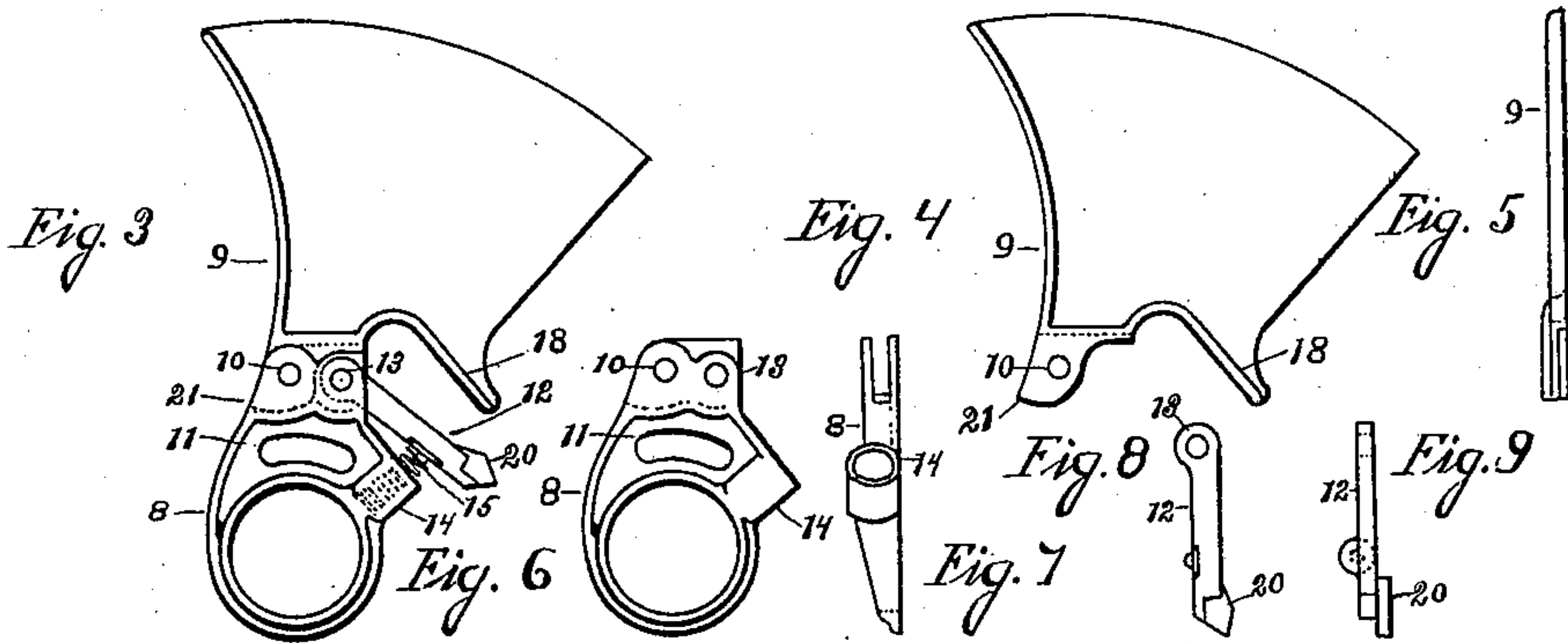
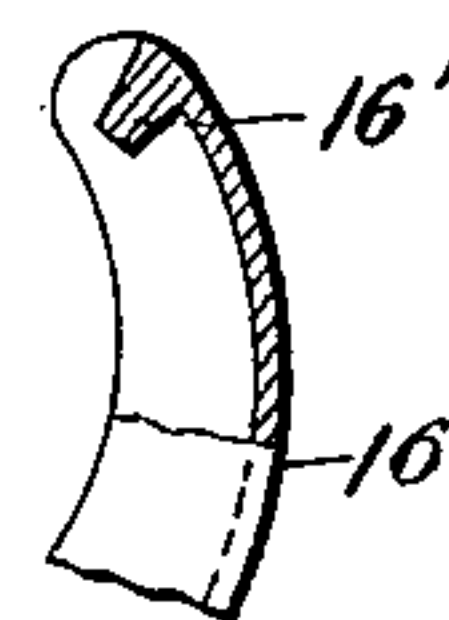


Fig. 10.



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GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 602,028, dated April 5, 1898.

Application filed July 19, 1897. Serial No. 645,083. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. BURGESS, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Grain-Binders, of which the following is a specification, which will enable those skilled in the art to which my invention pertains to make and use it.

My invention relates to improvements in grain-binders in which the gavel is compressed by the joint action of a needle or binder arm and a compressor upon opposite sides of the gavel; and the objects of my invention are, first, to prevent the expansion of the gavel and consequent increase of tension upon the binding material as the needle enters upon its retrograde movement after placing the binding material around the gavel; second, to give additional compression to the gavel as the binding material is being secured around the gavel. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a drawing of my invention and as much of a binding attachment as is deemed necessary to clearly illustrate it. Fig. 2 shows the various parts of my invention as the gavel is being formed, and Figs. 3, 4, 5, 6, 7, 8, and 9 represent detail parts of my invention.

Similar numerals refer to similar parts throughout the various views.

1 is the needle or binder arm; 2, the compressor-arm, and in this case acts as a trip-arm also, and this and other parts of the binding mechanism are shown and described in United States Patent No. 503,662, granted August 22, 1893, to J. A. Graham and E. J. Birkett.

3 is the binder-deck; 4, the breast-plate; 5, the knoter cam-wheel; 6, a portion of the binder-frame, and 7 the binder-arm rock-shaft.

The supplemental compressor is composed of parts 8 and 9, being pivotally connected at 10. Part 8 is adapted to encircle the hub of the binder-arm and is provided with a slot 11, which is made concentric with the axis of the needle. A small stud or boss formed upon the needle passes through this slot, and part 8 is held in place against the needle

by a bolt or rivet passing through the boss and needle and having a head or washer sufficiently large to prevent the disengagement of the needle and part 8, the said part 8 by means of the concentric slot 11 having a limited pivotal movement around the hub of the needle. A swinging supporting-leg 12 is pivoted to the part 8 at 13. A barrel portion 14 is formed upon the part 8, adapted to receive one end of a helical spring 15, the opposite end of which abuts against the leg 12. The frame-piece 6 is provided with a supporting step portion 16, adapted to form a step for engagement with the supporting-leg 12. The needle is provided with a roller or stud 17, which is adapted to engage with the parts 8 and 9 when the needle is caused to advance, as shown in Fig. 1. Part 9 is provided with a projecting heel portion 18, adapted to form a track which rests upon the roller 17, the said heel portion being eccentric to the needle-axis when parts 8 and 9 are in the position shown by full lines in Fig. 1.

19 is a lip portion formed upon the needle and adapted to form a guide for the upper edge of part 9.

The operation of my invention is as follows: While the grain is being accumulated against the trip-arm 2 the needle and supplemental compressor lie below the deck, away from the path of the incoming grain, as shown in Fig. 2. When enough grain has been packed against the trip-arm to cause it to trip the binding mechanism into action and the needle is caused to advance, the stud or roller 17 engages with the parts 8 and 9 and causes them to advance with the needle. When the needle has reached the limit of its forward movement, the helical spring 15 causes the supporting-leg 12 to engage with the step portion 16 by resting upon the portion 16' and thus prevent any backward movement of part 8. After the twine has been placed in the holder and the needle has started on its return movement the leg 12 sustains part 8, and the roller 17, rolling beneath the heel portion 18, not only sustains it against the expansive force of the gavel upon its being relieved from the pressure of the needle, but, as in this construction the heel portion 18 is eccentric with the axis of the needle, the part 9 is forced

forward by the action of the roller or stud 17 upon the cam-track 18, thus giving additional compression to the gavel at the time the knotter is performing its function and when the strain upon the binding material is the greatest, as shown by dotted lines in Fig. 1.

As the needle proceeds in its return movement and after the knotter has performed its function and the compressor is allowed to fall the roller 17 engages with a toe-piece 20, formed upon the lower end of the leg 12, and disengages it from the step 16. The small stud upon the needle-arm has at this stage traversed the length of the concentric slot 11 in part 8, and said part is then caused to move backward with the needle, the lower portion 21 of part 9, below the pivot 10, engages with the part 8, and the various parts are returned to the position shown in Fig. 2.

In adapting my invention to the various binding attachments now in use many changes may be made from the specific construction described without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. In a grain-binder, the combination of feeding and packing mechanism, a trip and compressor arm, a cord holder and knotter, a needle or cord-placing arm and a two-part supplemental compressor having its lower member pivoted upon the axis of the needle and adapted to be moved forward with it against the gavel, a swinging leg pivoted to said lower member and adapted to engage with a fixed part of the binder-frame to retain said lower member against the gavel during a portion of the retrograde movement of the needle, a means for disengaging the leg from the said fixed part, an upper part pivoted to the lower part and adapted to be carried forward with it, said upper part being provided with a heel extension adapted to engage with a portion of the needle for the purpose of retaining it against the gavel during a portion of the retrograde movement of the needle, substantially as and for the purpose described.

2. In a grain-binder, the combination of a needle and a compressor acting upon opposite sides of the gavel, with an auxiliary or supplemental compressor attached to, and having a limited pivotal movement upon the axis of said needle and adapted to be moved forward with the needle against the gavel, and a leg pivoted to said auxiliary compressor adapted to engage with a fixed part of the binder to retain said compressor against the gavel, and a means for disengaging said leg from said fixed part, substantially as and for the purpose described.

3. In a grain-binder, the combination of the

needle with a supplemental compressor pivoted at or near its axis, and adapted to move forward with it, and a means for positively retaining said compressor against the gavel during a portion of the retrograde movement of said needle.

4. In a grain-binder, the combination of the needle with a supplemental compressor pivoted at or near its axis, and adapted to move forward with it, and a means for positively advancing said compressor against the gavel during a portion of the retrograde movement of said needle.

5. In a grain-binder, a needle and an auxiliary compressor comprising two primary members, one of which members has a limited pivotal movement upon the axis of the needle, a stud upon the needle adapted to engage with the two members and carry them forward with the needle, a means for retaining in its forward position the member which is pivoted to the axis of the needle, during a portion of the backward movement of the needle, and a heel extension upon the other member adapted to engage with the stud upon the needle and maintain said member in its forward position during a portion of the retrograde movement of the needle, substantially as and for the purpose described.

6. In a grain-binder, an auxiliary compressor comprising the following members in combination, the part 8 having the concentric slot 11, the parts 9 and 12 pivotally connected with part 8, the helical spring 15 interposed between the parts 8 and 12, the heel extension 18 upon part 9, the toe-piece 20 upon part 12, the step 16 upon the frame-piece 6, the needle 1 and the stud and rivet passing through the concentric slot 11, the roller 17, and the lip 19, substantially as and for the purpose described.

7. In a grain-binder, a needle and an auxiliary compressor comprising two primary members, one of which members has a limited pivotal movement upon the axis of the needle, a stud upon the needle adapted to engage with the two members and carry them forward with the needle, a means for retaining in its forward position the member which is pivoted to the axis of the needle during a portion of the backward movement of the needle, and a heel extension upon the other member adapted to engage with the stud upon the needle and to advance said member against the gavel during a portion of the retrograde movement of the needle, substantially as and for the purpose described.

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