

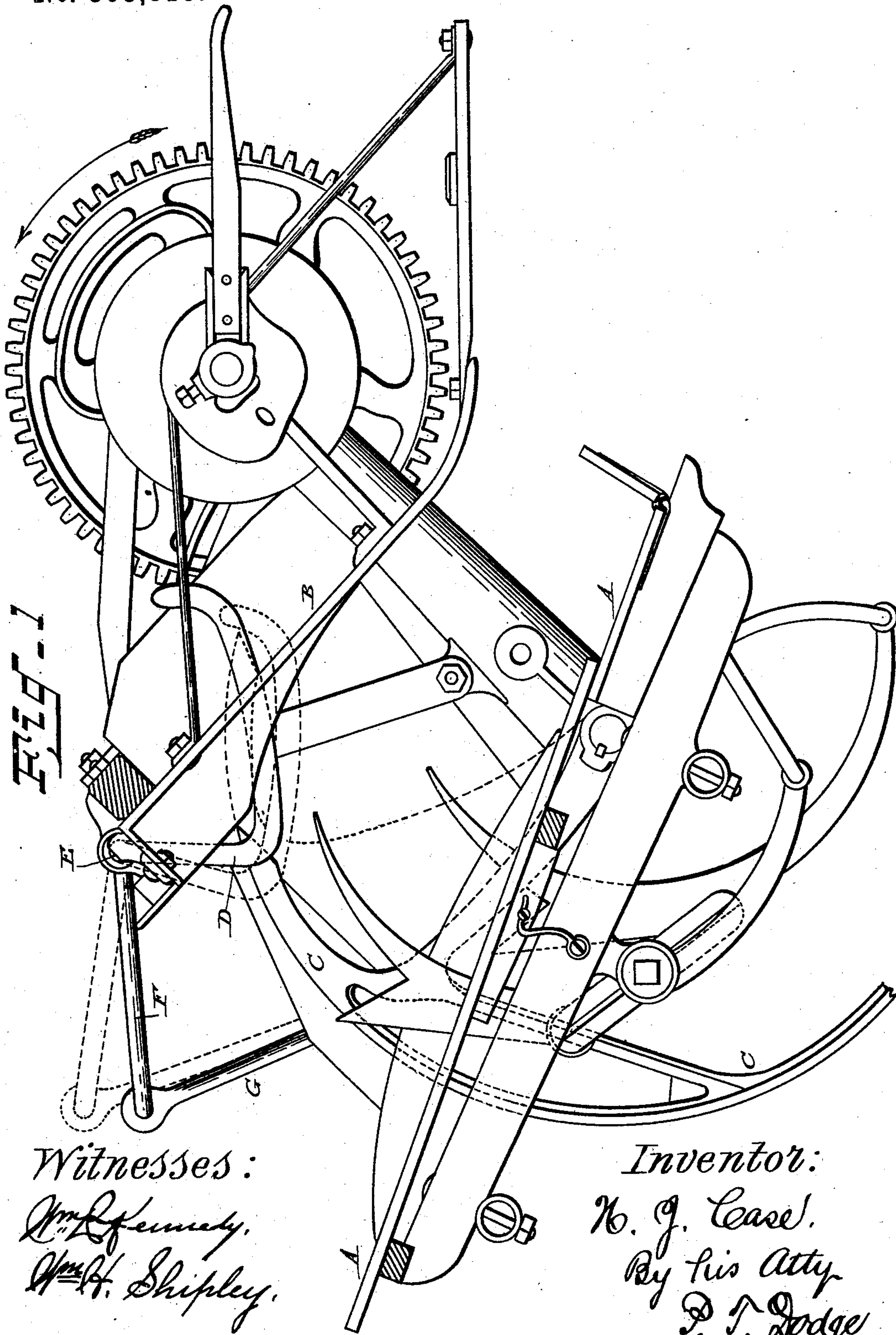
(No Model.)

3 Sheets—Sheet 1.

H. J. CASE.  
GRAIN BINDING MACHINE.

No. 393,815.

Patented Dec. 4, 1888.



Witnesses:  
*Wm. R. Kennedy,*  
*Wm. H. Shipley.*

Inventor:  
*H. J. Case.*  
By his Atty  
*P. T. Dodge.*

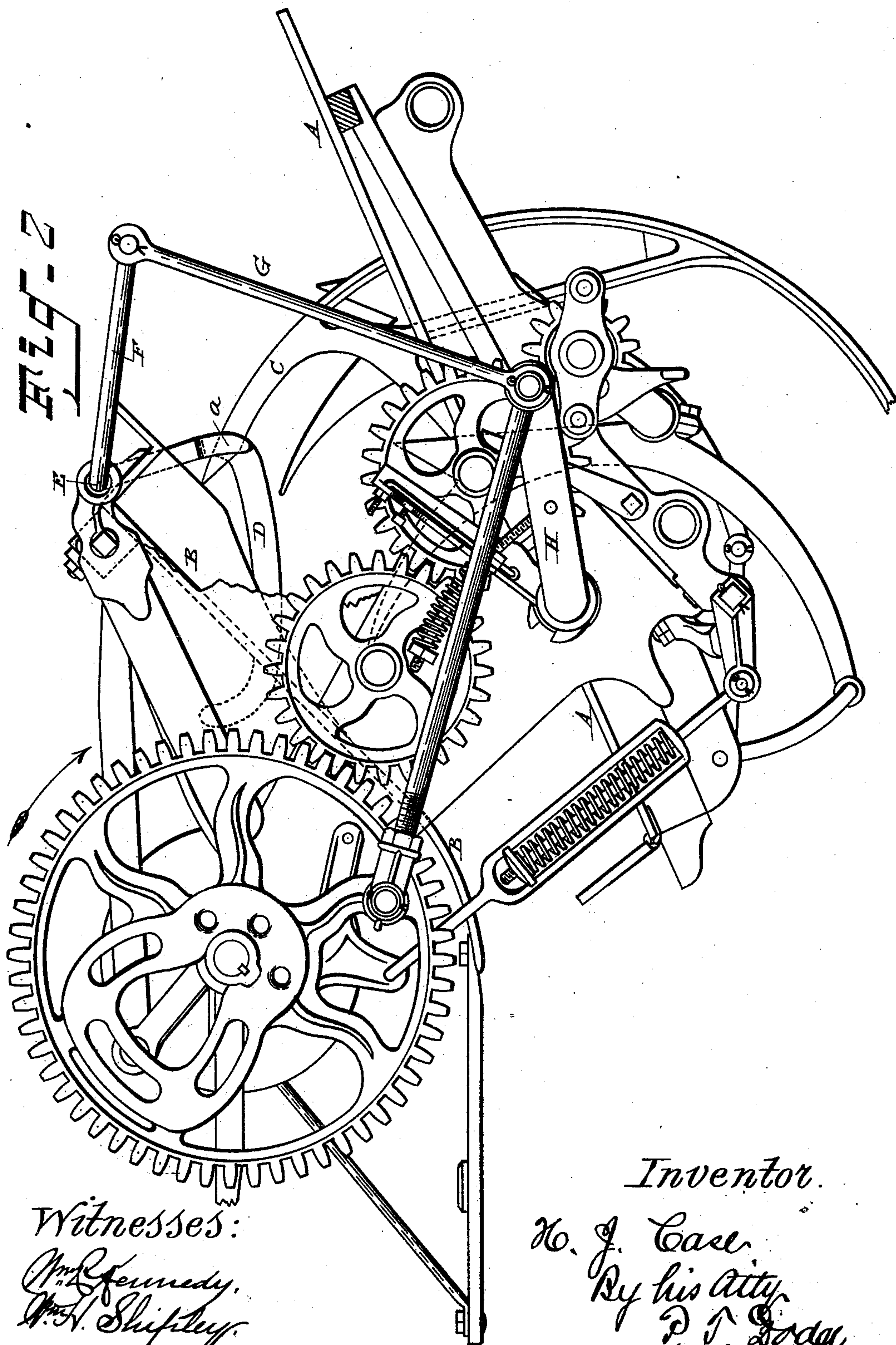
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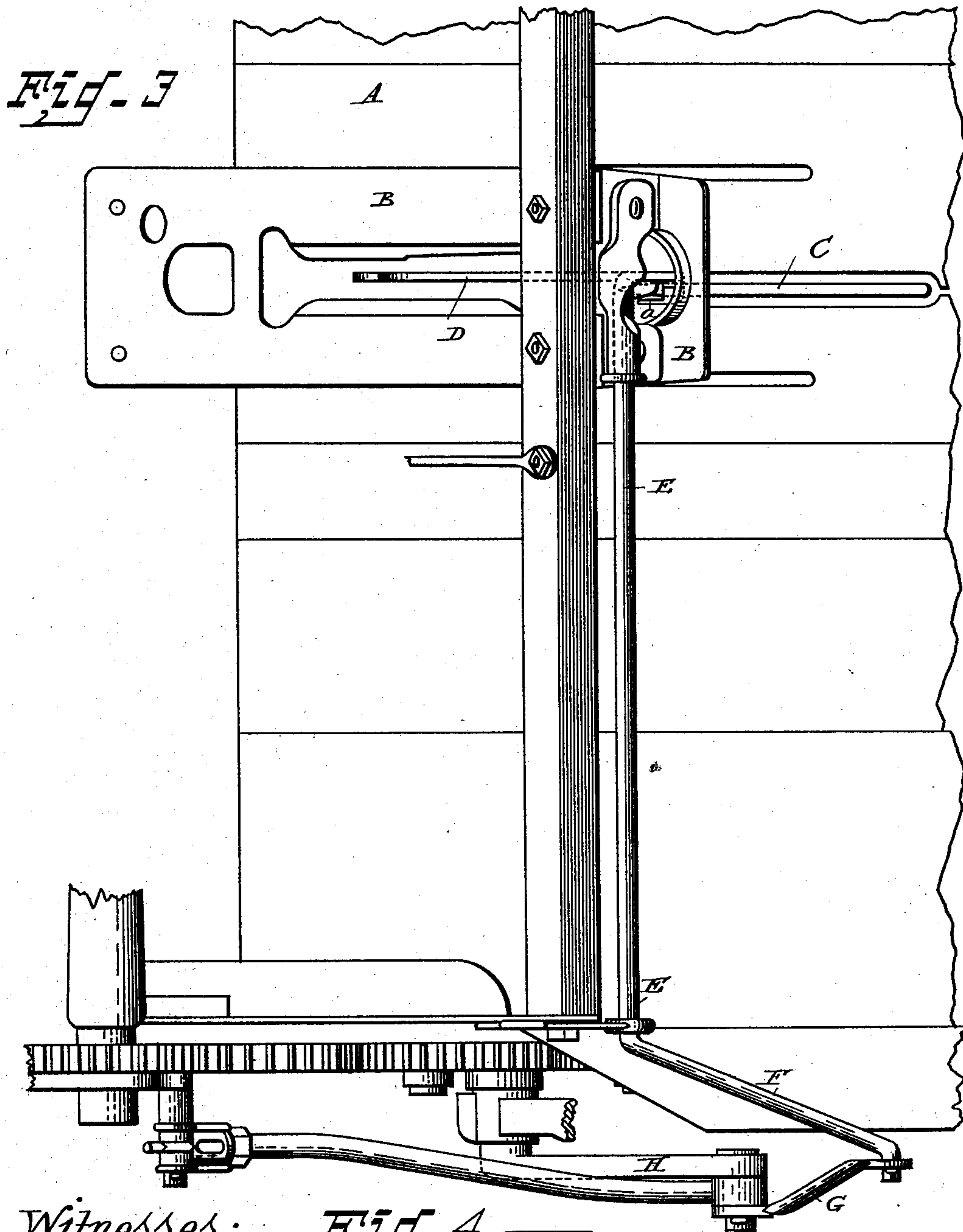
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*Witnesses:*

**Fig. 4**

Wm. D. Kennedy.  
Wm. H. Shipley.

*Inventor:*

No. J. Case.  
By his Atty.  
P. T. Dodge.



# UNITED STATES PATENT OFFICE.

HENRY J. CASE, OF AUBURN, NEW YORK, ASSIGNOR OF ONE-HALF TO THE  
D. M. OSBORNE & COMPANY, OF SAME PLACE.

## GRAIN-BINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 393,815, dated December 4, 1888.

Application filed July 30, 1886. Serial No. 209,576. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY J. CASE, of Auburn, in the county of Cayuga and State of New York, have invented certain Improvements in Grain-Binding Machines, of which the following is a specification.

This invention has reference more particularly to what are commonly known as the "Appleby" type of machine, in which the cord-carrying needle rises through the binder-table and the grain thereon and passes at its point through an overlying breast-plate to present the cord to the tying and clamping devices, the needle being constructed with an outer concentric arm or guard, by which it is adapted to hold back the mass of loose grain while separating the gavel therefrom.

My invention is restricted to that class of machines in which needle-arms of the above type are employed to effect the separation of the gavel from the grain, and has no reference to those machines in which a separation or division is effected by means other than the needle.

The objects of the invention are to reduce the resistance offered by the grain to the movement of the needle, and thus to secure an easier operation of the machine.

The invention consists, essentially, in the combination, with the needle and breast-plate, of a movable arm, which serves the twofold purpose of forcing the gavel within the path of the needle-point and of urging the grain behind the needle-point away from the breast-plate.

In the accompanying drawings, Figure 1 represents an end elevation of an Osborne-Appleby binder having my improvement embodied therein. Fig. 2 is a similar view looking from the opposite end of the machine. Fig. 3 is a top plan view of the upper parts of the binder. Fig. 4 is an edge view of the movable arm.

Referring to the drawings, A represents the inclined binding-table, on which the grain is delivered in the ordinary manner; B, the overlying breast-plate by which the grain is confined on the upper side; C, the vibratory needle pivoted below the table and arranged to swing upward, as shown, through the table, across the intervening space, and through the

usual slot in the breast-plate. These parts may all be of the ordinary construction and arranged to operate in connection with the ordinary compressing, tying, and ejecting devices familiar to every person skilled in the art.

In applying my improvement I provide an angular arm or blade, D, and mount the same on a horizontal rock-shaft or pivot, E, which will be connected with operating devices of any appropriate character, although I prefer to use, as shown, a crank, F, formed on the opposite end of the rock-shaft and connected by a pitman, G, to the wrist of the crank-arm H, forming a part of the ordinary machine. The arm D lies in such position that the point of the needle passes closely by its side. Its angular or middle portion projects through and below the breast-plate at the point where the end of the needle enters. During the time that the needle is depressed, and while the loose grain is entering, the arm D is held in an elevated position, so that the grain may pass freely thereunder. When, however, the point of the needle approaches the breast-plate, the arm swings forward, as indicated in dotted lines, whereupon the upper rear face of the arm acts to force that portion of the grain which lies on the outside of the needle backward upon the needle away from the breast-plate, while at the same time the horizontal portion of the arm, swinging downward on top of the gavel, assists in compressing the same within the path traversed by the needle-point, so that the needle may pass easily around the same.

It will be observed on reference to Fig. 1 that the arm bridges over the angle formed between the point of the needle and the lower face of the breast-plate as the needle enters the latter, thus preventing the grain in the gavel from entering this angle and resisting the advance of the needle—an action which frequently occurs, and which is a source of much trouble in existing machines. The arm also serves to prevent the grain from lodging in the angle between the breast-plate and the outer edge of the needle, so that there is no danger of the grain being carried by the needle through the breast-plate into the tying mechanism. My arm, acting to relieve the



needle from the resistance of the straw both on the outside and on the inside of the point, enables the machine to be operated with much less power than would otherwise be demanded.

5 In this connection it is to be noted that the arm does not lift the grain from the needle, but merely spans the angle alluded to and holds back the grain, which is supported directly upon the needle.

10 It is obvious that the form of the arm may be modified to a limited extent provided it is adapted to act as described, and that the details of the mechanism for imparting motion thereto may be modified at will. I prefer to retain the  
15 construction shown in the drawings and to mount the rock-shaft E in bearings bolted, respectively, to the upper end of the breast-plate and to the rear end of the binder-frame, as shown. The arm D may be provided on  
20 one side with a lip, *a*, as shown in Fig. 4, to pass over the upper edge of the binding-needle; but this is not a necessary feature.

By combining with a needle of the type herein described and the breast-plate the arm  
25 D, I am enabled to effect a positive and easy separation of the gavel from the remaining mass of grain and to effect a wide division

between the gavel and the loose grain, thus avoiding, on the one hand, the difficulties which are commonly encountered in using the  
30 needles for this purpose, and on the other hand doing away with the necessity of separating devices for effecting the division.

Having thus described my invention, what I claim is—

In a grain-binder, the breast-plate and the vibratory needle provided with the concentric guard and arranged to separate the gavel from the mass of loose grain, in combination with  
35 a substantially V-shaped stripper and mechanism for advancing the angle or point of said stripper beyond the breast-plate toward and  
40 alongside of the advancing needle-point, whereby the stripper is caused to crowd both the inside gavel and the outside grain away  
45 from the needle and from the breast-plate to prevent the lodgment of grain between them.

In testimony whereof I hereunto set my hand, this 26th day of July, 1886, in the presence of two attesting witnesses.

HENRY J. CASE.

Witnesses:

T. M. OSBORNE,  
J. FRANK DAVIS.