

(No Model.)

C. COLAHAN.  
GRAIN BINDER.

No. 369,693.

Patented Sept. 13, 1887.

Fig. 1.

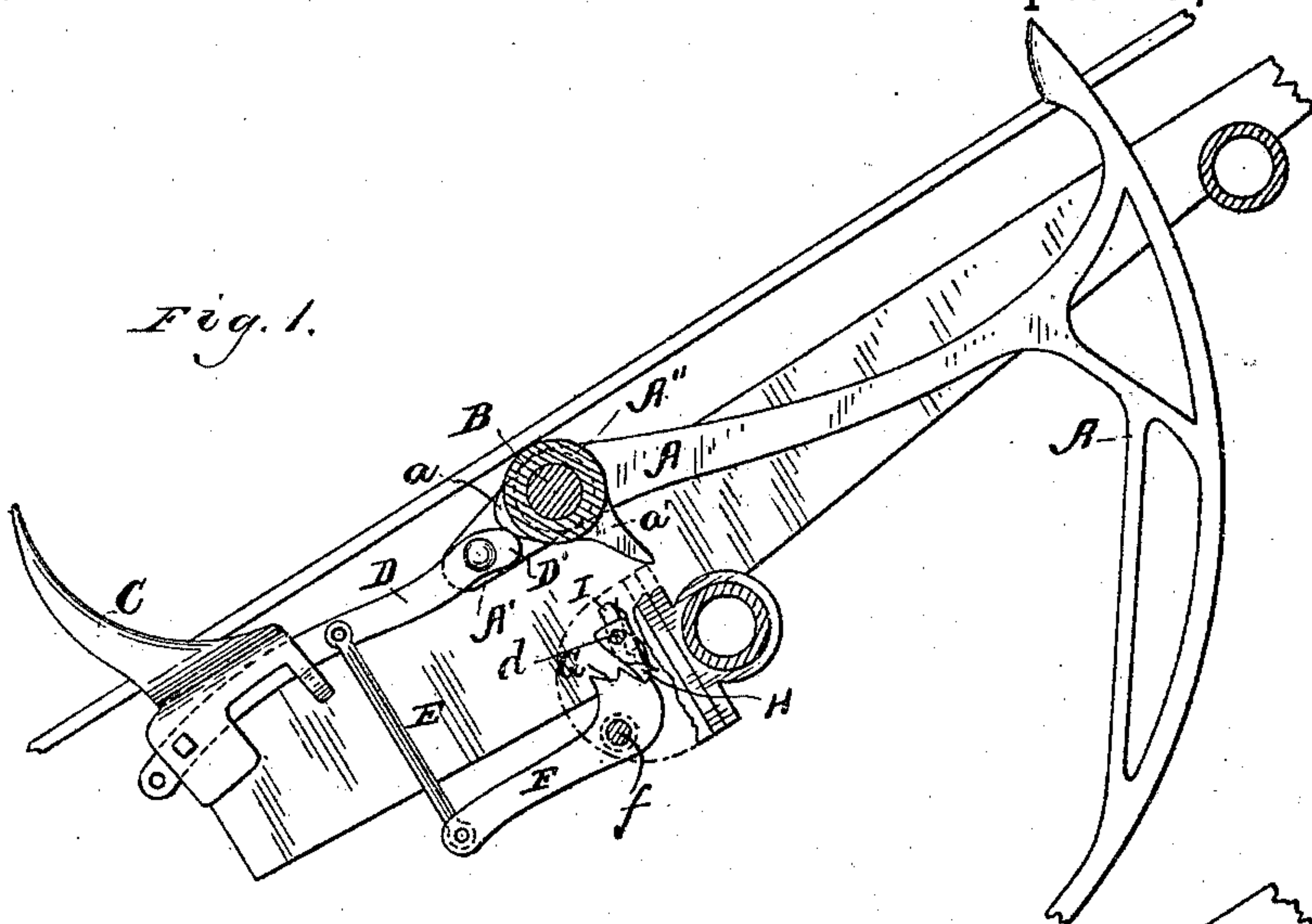


Fig. 2.

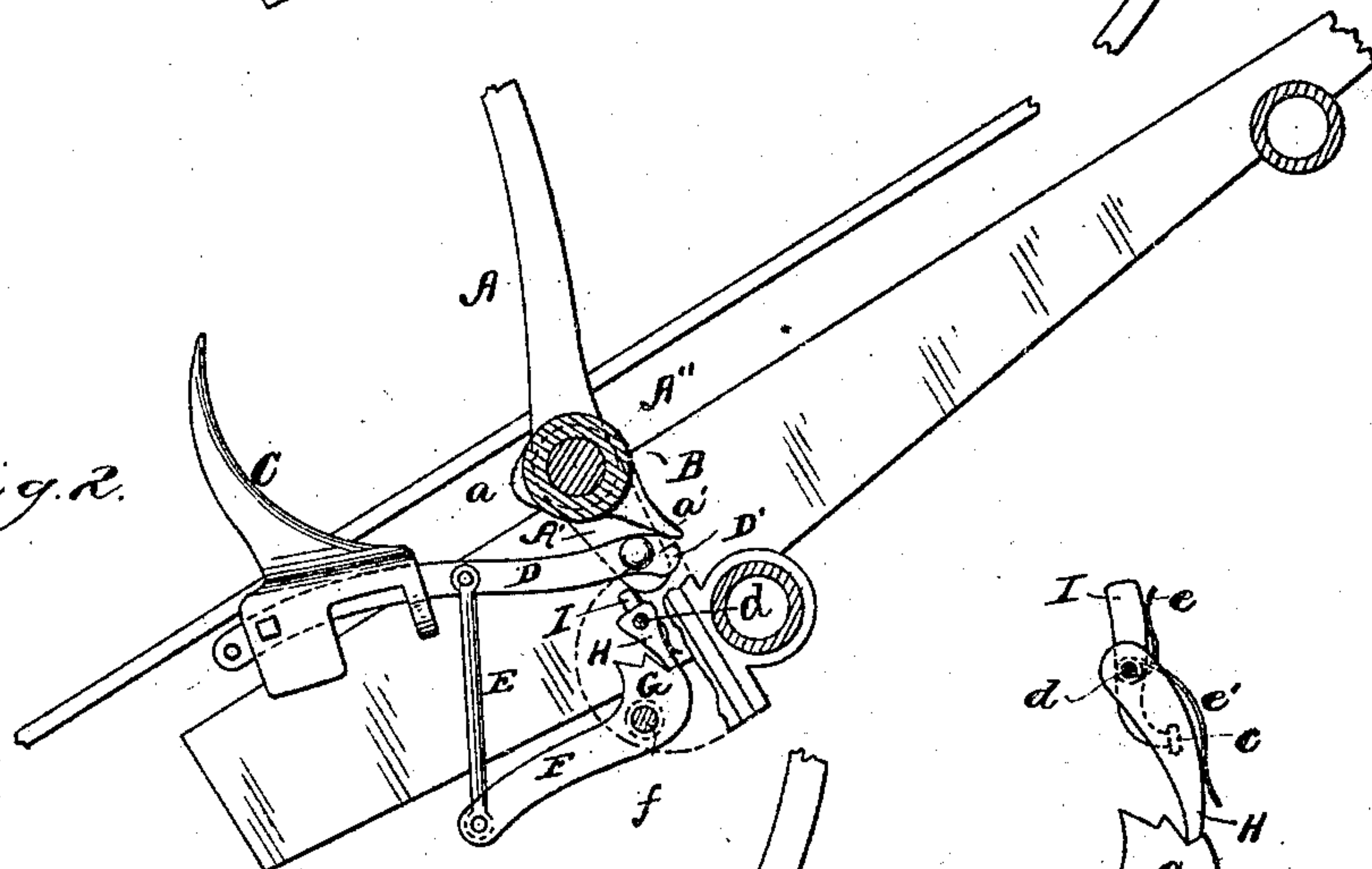
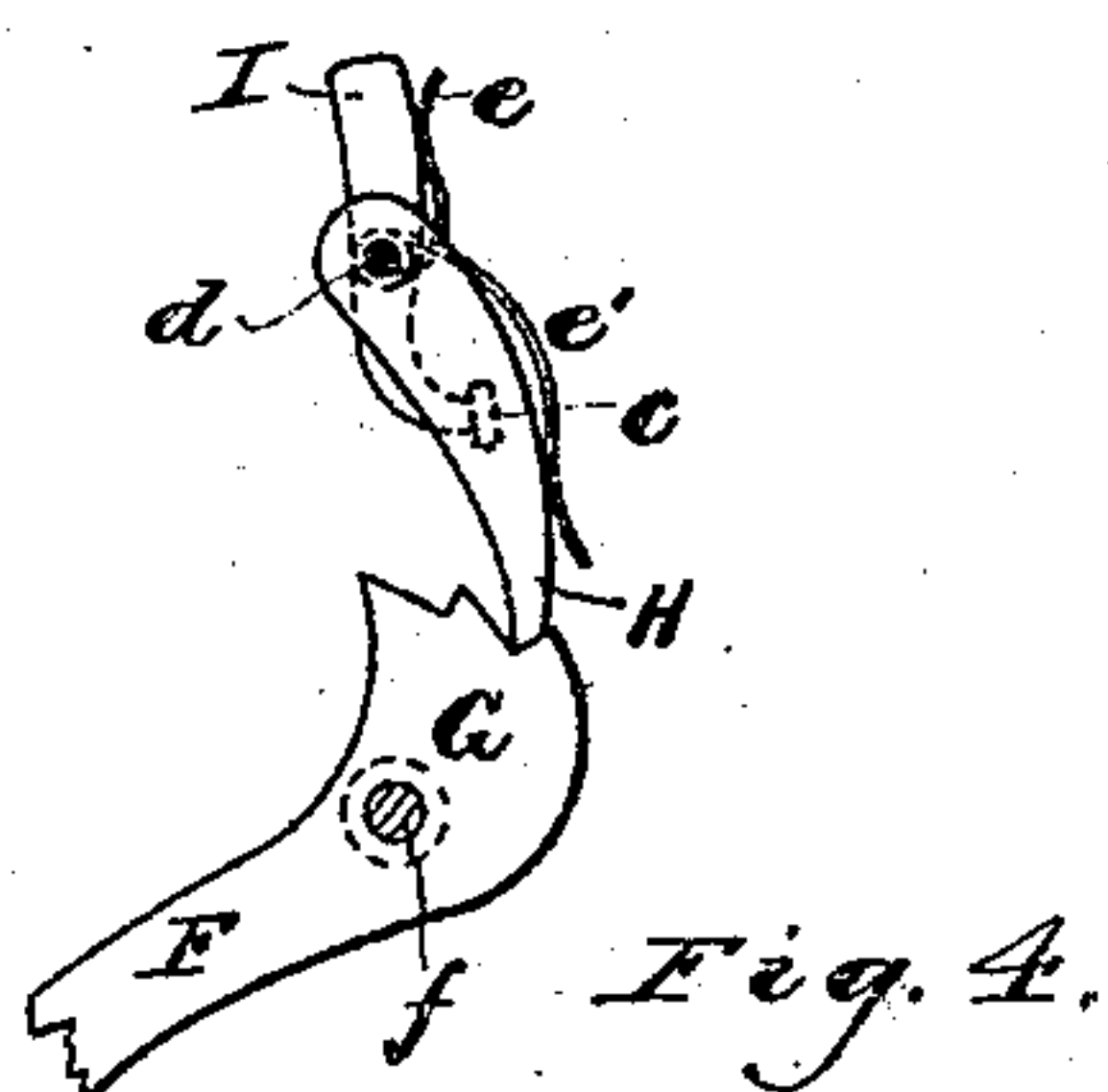
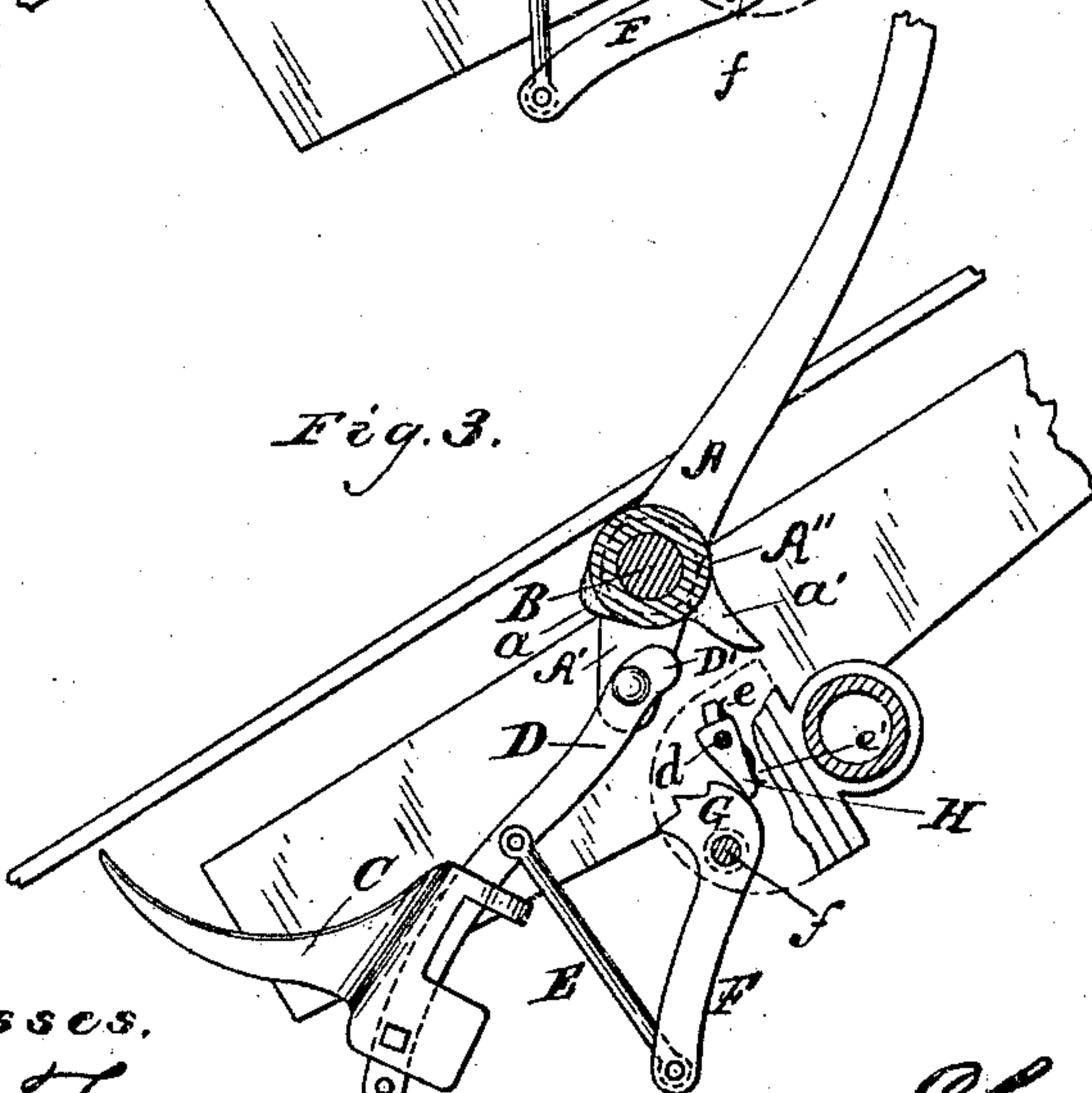


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 369,693, dated September 13, 1887.

Application filed January 26, 1884. Renewed February 23, 1887. Serial No. 228,622. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES COLAHAN, of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful

5 Improvements in Grain-Binders, of which the following is a specification.

My invention relates to that class of automatic grain-binders in which the binding mechanism is started by the pressure of a pre-  
10 determined quantity of grain against a compressing and tripping arm and of that form of construction known as the "Appleby Binder," the object of my invention being to dispense with many of the parts used by said Appleby  
15 in the use of the compressing arm or fingers; and my invention consists in securing and releasing the rock-shaft and its link and arm connections and placing fixed cam projections at or near the heel of the binder arm center of  
20 revolution or axial bearing, and said cams are so located as to be in the path or line of travel of the heel of the supporting-bar on which said compressing-fingers are mounted, so that the heel or inner end of said bar may be forced  
2 to rock said bar and its compressing-fingers on its pivotal support or fulcrum on the heel of the binder-arm as said binder-arm vibrates on its axis and causes the said bar to traverse around its center of motion and carry the heel-  
30 extension of said bar in contact with said cam-surfaces and force said bar to rock and close its compressing-fingers in the process of finally compressing the sheaf while the cord is being tied, and on the opening of said arms for the  
35 release of the bundle the reverse movement causes the heel of said bar to be brought in contact with other cam projections and forces the heel end of said bar down, and thus carries the tripping and compressing fingers to the  
40 proper place to stop the inflowing grain as it accumulates for the next sheaf or bundle. This movement of said bar also carries the rock-shaft and link connection and its supporting-crank to the desired position to sustain the  
45 thrust of the inflowing grain, and by being locked or sustained in a fixed position by means of a simple pawl or stop which will admit of the desired movement of the tripping and compressing arms as said compressing arms are  
50 actuated by the movements of the cord-carrying or binder arm, and said compressing-bar

will rock on its fixed link-support, which is similar to the devices used for this purpose shown in Patent No. 212,420, differing there-  
from in the point or fact of dispensing with 55 application of power to the supporting-crank, as shown in said patent, and my invention consists in the operating of the compressing-fingers by the heel of the binder-arm. While the supporting-bar may be free to rock on its sup-  
60 porting-link connections, it is securely locked in its place while compressing the bundle, and said supporting-bar may be released at the proper moment to admit the discharge of the bound bundle. 65

In said Patent No. 212,420 the supporting-  
bar is forced down by the same-crank used by  
me, being rocked by its pitman-connection,  
this pitman-connection also serving to support  
the connecting-link in a fixed position, the 70  
said bar, and its tripping and compressing fingers, during the accumulation of the grain, when it aids in forcing it forward in the compression of the bundle. I deem this pitman-  
connection unnecessary in the operation of 75  
compressing the grain in connection with the binder-arm attachment and the stationary or fixed cams cast on the main frame to cause the compressing and tripping fingers, as the  
80 same are sustained by the supporting-bar and its link-connections as the binder-arm actuates the same and causes it to move in a desired course, as said fixed cams force the heel of said bar to vibrate or rock said bar on its pivot.

In the drawings, Figure 1 represents a trans- 85  
verse section of a binding attachment embodying my invention as it appears in readiness to receive the grain as it is packed therein in the usual manner. Fig. 2 is a similar sectional  
90 view with the binder-arm and compressing-fingers in position of compressing the bundle while it is being bound. Fig. 3 shows a similar view of the position of the parts as the bundle is being discharged. Fig. 4 is a detail  
95 view of the crank-supporting arm and its ratchet and double pawl that lock and sustain the same, as hereinafter fully explained.

A represents the binder-arm; A', the heel-  
extension of same. A'' is the main-frame cast-  
ing or support and journal of the binder-arm 100  
shaft B. C represents the tripping and compressing fingers. D represents the supporting-



bar of said fingers. E is the link connecting the crank F thereto. *f* is its shaft or pivotal support. G is the ratchet-elbow, which is a part of the crank F. Said ratchet is of sector form, and is locked in its raised position, as shown in Figs. 1 and 2, by the pawl H, which pawl is pivoted at *d*. I is a pawl-tripping finger, which is pivoted on the same pivot, *d*, as the pawl H. Said pawl and supplemental tripping-finger are held in position by springs *e* and *e'*. *e* is a stop on pawl H, and will cause the tripping of the pawl H when the heel of the binder-arm is brought in contact with its pawl-tripping finger I on its reverse movement. *a* and *a'* are cam-surfaces on the main-frame casting A".

In operation it will thus be clearly observed by those experienced in the art that, as illustrated in Fig. 1, the inflowing grain will be received against the tripping and compressing fingers C in the usual manner, and on the moving up of the binder and compressing arms, when the same shall be caused to start by the operation of the tripping device, the supporting-bar D, which is supported by its link E and locked arm F in its present position, resting with its heel D' against cam *a*, will be caused by the downward movement of the heel of the binder-arm to rock in on its vibrating link E, and by being brought in contact with the cam *a'* at its heel will be caused to rock the compressing-fingers up against the bundle as desired. The heel A' of the binder-arm A, as it passes by the pawl-tripping finger I, will cause said finger to rock on its pivot *d* out of the way, and not disturb the pawl H, and on the completion of the bundle and the reverse movement of the arms A C D to permit discharge of the bound sheaf, it is important to drop the outer arm and its fingers quickly, and as the arm A is forced back by its shaft the heel projection A' will come in contact with the finger I and force it against the stop *e* on the pawl H and cause the pawl H to rock on its pivot *d* and force it from contact with the

ratchet-quadrant G on arm F, which will cause said arm F to drop, carrying with it the link E and the supporting-bar D and its fingers C, and thus the bound bundle is permitted to be discharged without meeting any obstruction or delay, and as the binder-arm is being forced down reaches its lowest position. Its heel end will cause the end D' of the supporting-bar D to engage the cam *a*, and cause the arm D and its fingers C to rise to their place and carry the link E and its crank F to a proper position, and the spring-pawl H will lock and retain the same until another bundle is formed.

Having thus fully described my invention and its operation, what I claim, and desire to secure by Letters Patent, is—

1. In an automatic grain-binder, the combination of the binder-arm A, having the heel A', pivoted to the supporting-bar D, having the heel D', and the fixed cams *a a'*, operating as and for the purposes substantially as shown and described.

2. The combination of the arm A, having the heel A', and the supporting-bar D, having the heel D', and being pivoted to the heel A', the tripping and compressing fingers C, and the cams *a a'*, operating substantially as shown and described.

3. The combination of the bar D, its extended end D', pivoted at A' to binder-arm A, the lug *a* on the main frame, with the arms E F and pivot *f*, and means, substantially as described, for locking the bar D and its compressing-fingers as the bundle is forming.

4. The combination of the main frame A", the shaft B, the binder-arm A, secured to the shaft B, the compressor-bar D, pivoted at A' to a heel of the binder-arm, and a lug or cam, *a*, on the main frame A", substantially as set forth.

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Witnesses:

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