

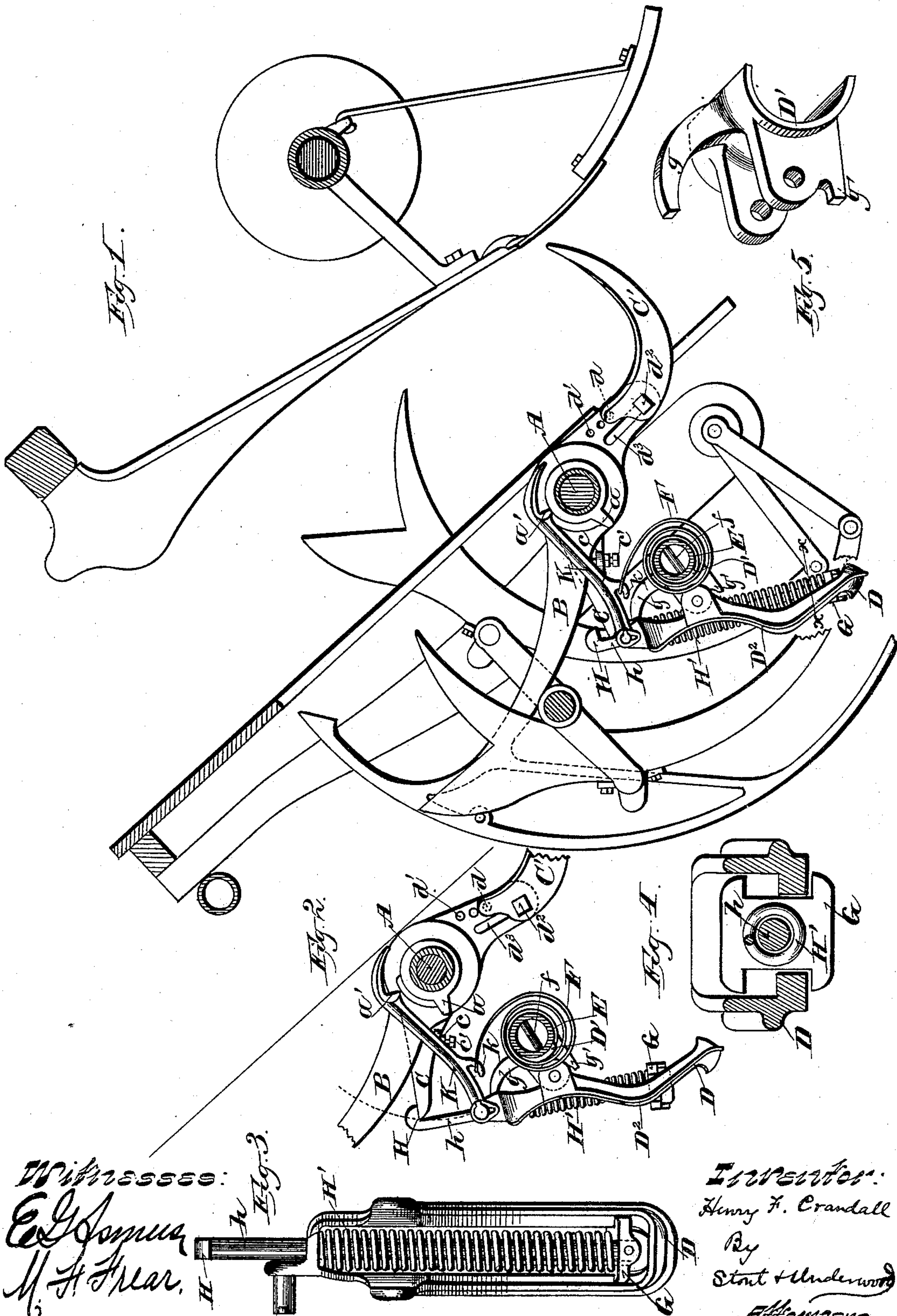
(No Model.)

H. F. CRANDALL.

GRAIN BINDER.

No. 398,382.

Patented Feb. 26, 1889.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY F. CRANDALL, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE MILWAUKEE HARVESTER COMPANY, OF SAME PLACE.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 398,382, dated February 26, 1889.

Application filed January 29, 1887. Serial No. 225,835. (No model.) Patented in England December 6, 1887, No. 16,741.

To all whom it may concern:

Be it known that I, HENRY F. CRANDALL, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Grain-Binders; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to grain-binders, and is designed as an improvement on the device for which Letters Patent No. 339,142 were granted to Joseph P. Bullock on the 6th day of April, 1886. Its nature will be fully set forth hereinafter.

In the drawings, Figure 1 is a vertical cross-section of the binder with the knotter removed, showing the position of the compressing mechanism before a gavel of grain has been accumulated on the compressing-fingers. Fig. 2 is a detail section showing the compressing mechanism in operation. Fig. 3 is a rear elevation of the compressor-spring and frame thereof. Fig. 4 is a section of the same on line $x x$, Fig. 1; and Fig. 5 is a detail.

A is the needle-shaft, and B the needle, which is keyed to the needle-shaft, as usual, and C is a bell-crank, that is slipped loosely upon shaft A and lies close up against the needle. The bell-crank has a lug, c , on its upper arm, through which a set-bolt, c' , is screwed in position to be on a line with the lower edge of the needle, and the lower arm of bell-crank C has fingers C' adjustably secured to it by two bolts, one bolt, d , (indicated by dotted lines,) passing through one of a series of holes, d' , and the other, d^2 , through a slot, d^3 , in the bell-crank. The hub of the needle on its end opposite the bell-crank C is provided with a stop, a , for a purpose hereinafter to be explained.

D is a spring-frame, that is hung to the gas-pipe E beneath the needle by means of a casting, D' , to which it is hinged, and which also secures one end of a spring, F, to the gas-pipe, and is in turn secured thereto by a bolt, f . This casting D' has top and bottom fingers, $g g'$, respectively, to limit the swing of the frame D.

G is a plate that is adapted to slide in the

frame D, and the shank h of a catch, H, is passed down through the top of the frame and through a spiral spring, H' , and then fastened to the plate G, so as to confine the spring between the plate and the upper part of the frame.

K is a finger that is pivoted to the upper portion of the frame D at one end, while its other end lies upon the hub of the needle, and is offset at a' for engagement with the lug or stop a on the heel of the needle.

Near its rear end the finger is cast or otherwise provided on its under side with a hook, k , by which the finger is attached to the outer end of spring F, which latter not only serves to hold the finger down on the hub, but also serves to draw the upper end of frame D toward the needle-shaft. Instead of being straight, as in the patent to Bullock hereinbefore referred to, the frame D is made with a bend, D^2 , which guides the lower end of the shank of catch H, so as to cause said catch to rise in the arc described by the engaging end of the bell-crank as it lifts the catch; otherwise the catch would travel at a tangent to this arc, (which arc is shown in dotted lines, Fig. 2,) and the bell-crank would be liable to disengage prematurely.

The operation of my device is as follows: When a sufficient amount of grain has been packed upon the trip-fingers to cause them to trip the machine into gear, by pressing down the front arm of bell-crank C until the bolt c' by its pressure on the needle slightly lifts it the extreme upper end of the bell-crank engages with the catch H, and the catch takes the weight of the grain as well as the strain caused by the pressure of the needle upon the gavel as the latter is encircled, and remains in engagement with the bell-crank until the needle, as it begins to return, carries the lug or stop a against the offset a' of the finger K, and thus causes the latter to thrust the catch H off of the bell-crank and permit the fingers to fall from under the gavel to be carried back into position to receive the grain by the contact of the back of the needle with the bolt c' after the stop a has passed out of engagement with the offset a' of finger K. To

shorten or lengthen the action of the compressor-fingers it is only necessary to turn the bolt *c'* in or out.

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

1. In a grain-binder, the combination, with the compressing-fingers and the bell-crank to which they are hung, of a spring-catch for engaging the inner end of the bell-crank, and a frame in which the shank of said spring-catch slides, said frame being prevented from vibrating extensively by stops coacting with stops on the main frame, having a bend which, acting on the lower end of the shank of the spring-catch, serves to tilt the catch and permits it to maintain its engagement with the bell-crank as it is drawn up by the action of the pressure of the gavel on the compressing-fingers, as set forth.

2. In a grain-binder, a spring-catch for the compressor-fingers mounted in a swinging

frame, said frame being kept from extensive vibration by suitable stops, but having curved guides for the catch, so that the end of the latter may travel in the arc of a circle in spite of the restrictive action of the stops, substantially as and for the purpose set forth.

3. In a grain-binder, a bracket secured to a supporting-bar of the machine and provided with an upper and lower stop, a frame pivoted to the bracket, a spring-catch mounted in the frame to engage the compressor-fingers, and means, substantially as described, for actuating said frame at predetermined intervals, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

HENRY F. CRANDALL.

Witnesses:

G. H. SCHULTE,

S. S. STOUT.