

C. B. WITHINGTON.
Grain-Binder.

No. 225,195.

Patented Mar. 2, 1880.

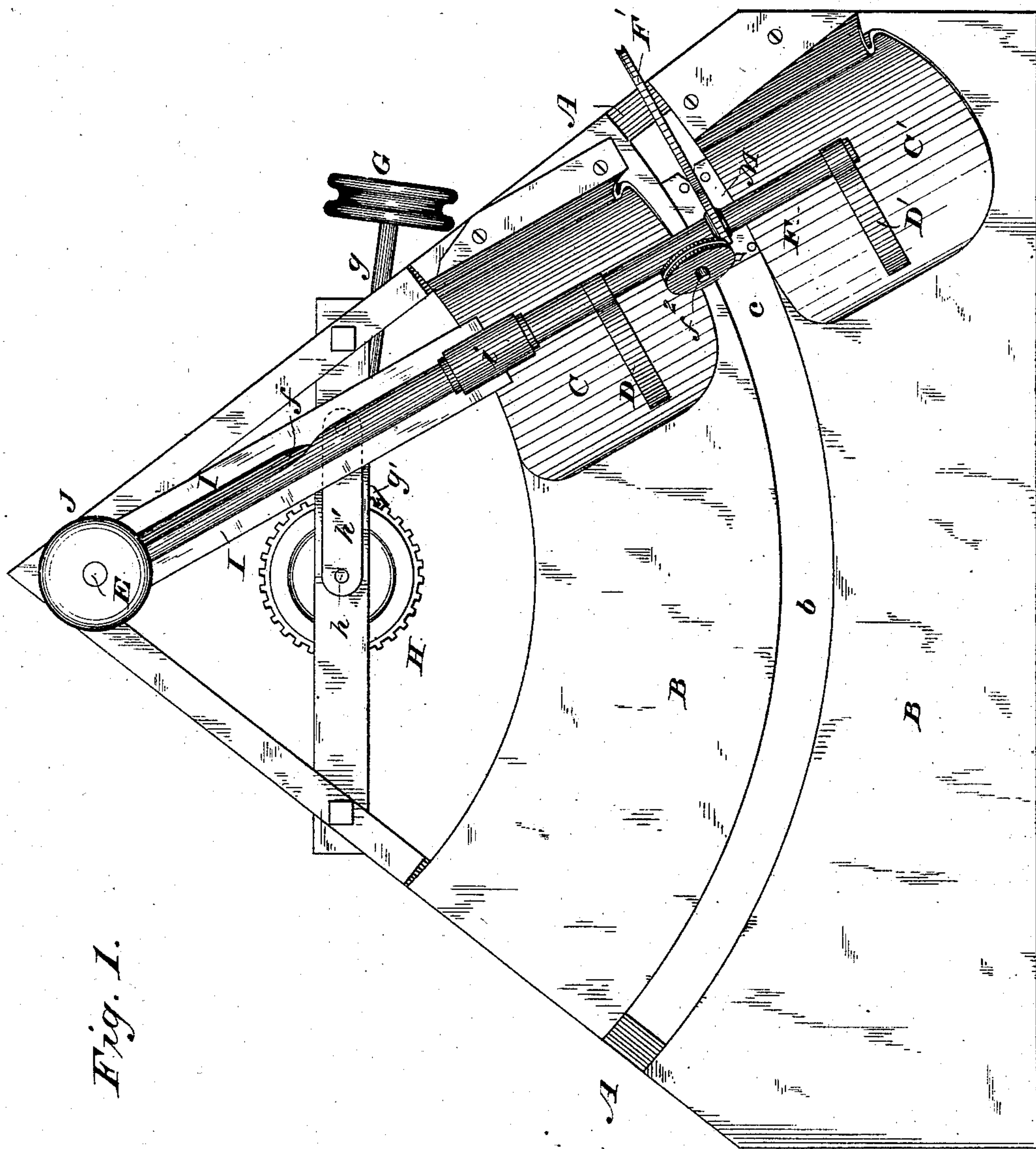


Fig. 1.

WITNESSES

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INVENTOR

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Fig. 2.

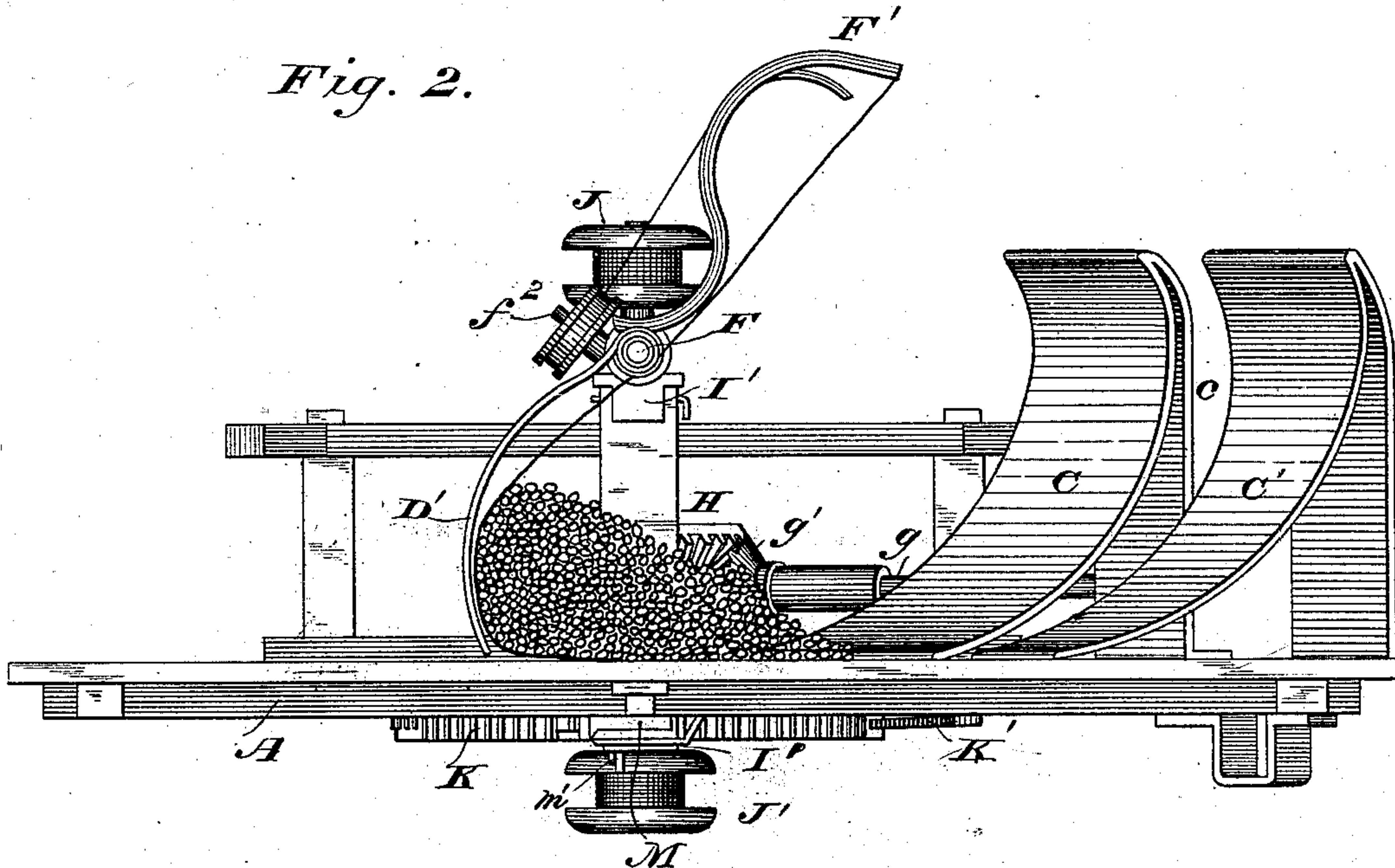
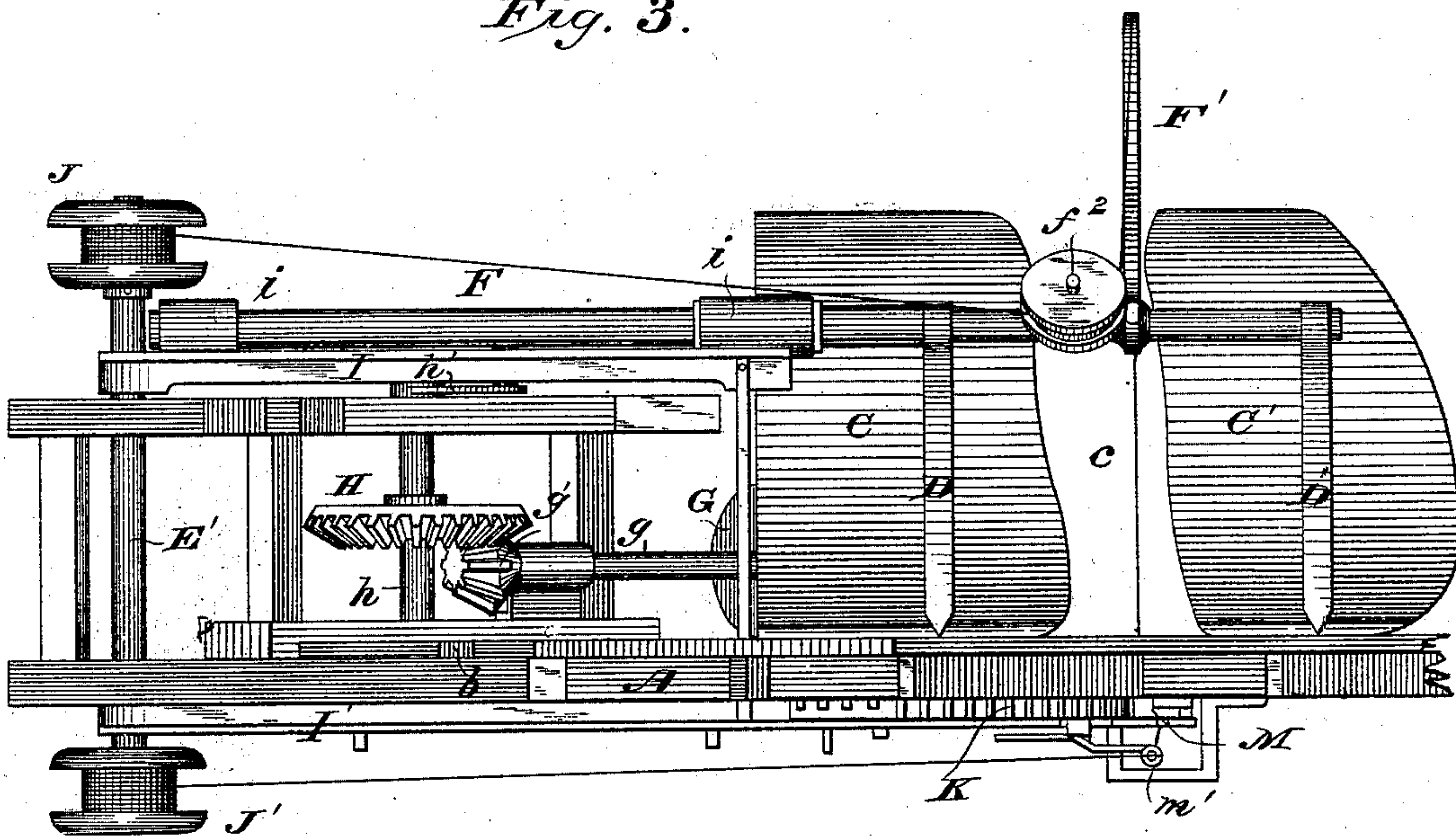


Fig. 3.



WITNESSES

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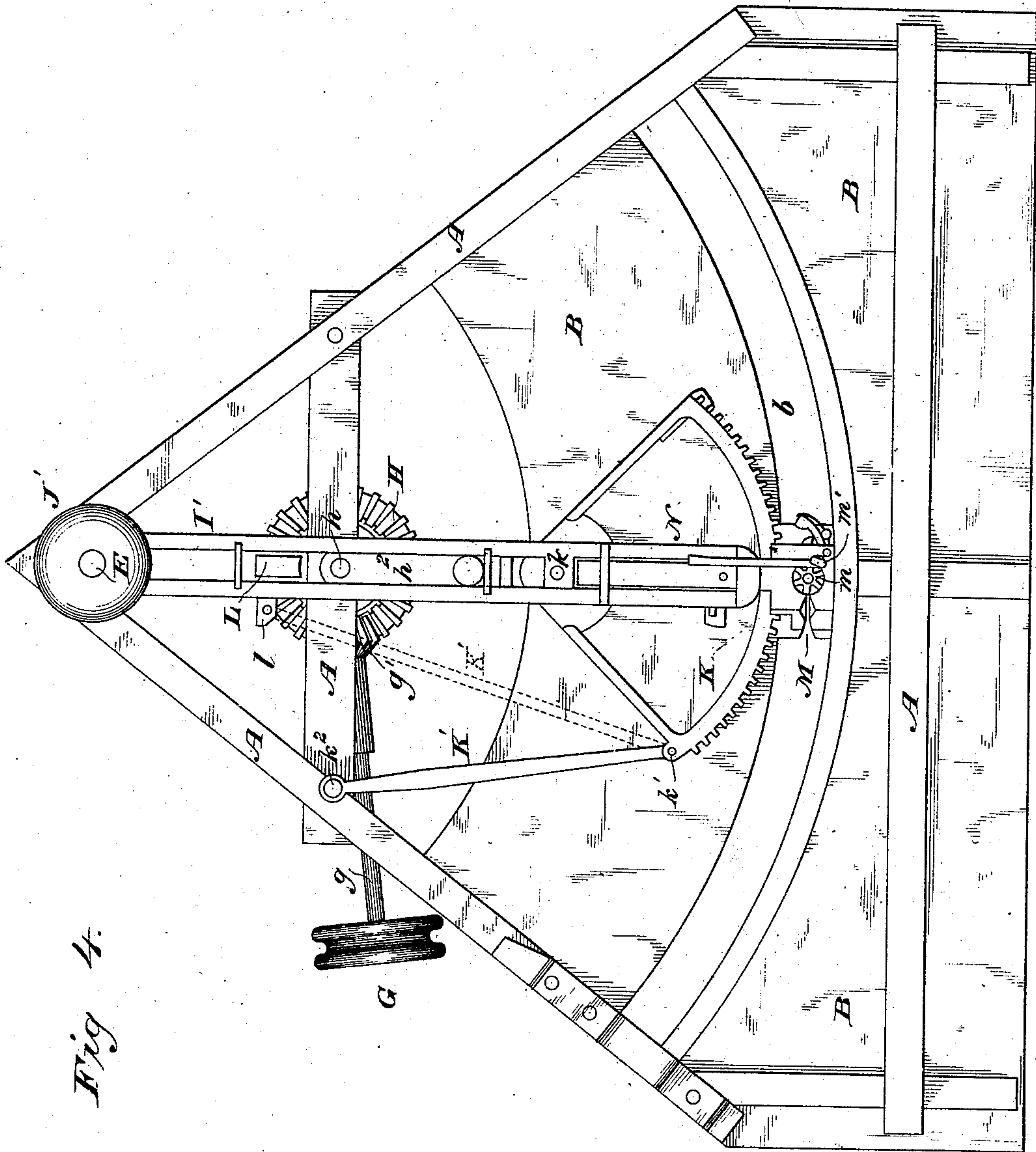
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UNITED STATES PATENT OFFICE.

CHARLES B. WITHINGTON, OF JANESVILLE, WIS., ASSIGNOR TO THE McCORMICK HARVESTING MACHINE COMPANY, OF CHICAGO, ILLS.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 225,195, dated March 2, 1880.

Application filed December 8, 1879.

To all whom it may concern:

Be it known that I, CHARLES B. WITHINGTON, of Janesville, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Grain-Binders, of which improvements the following is a specification.

My invention relates to automatic grain-binders of the class in which a reciprocating binding or wire-carrying arm and twister operate in combination with a stationary grain-receiver.

In an application for Letters Patent filed by me March 5, 1874, (still pending,) and in Letters Patent No. 186,186, granted to me January 9, 1877, on an application filed November 11, 1876, being a division of the application of March 5, 1874, above mentioned, a grain-binding mechanism reciprocating in a straight line, substantially horizontal, is shown in combination with an elevating-apron and stationary grain-receptacle. Letters Patent No. 189,165, granted to me April 3, 1877, on an application filed November 10, 1875, (the subject-matter of which was invented long prior to that date and prior to the date of the subject-matter shown in the present application,) show grain-binding mechanism reciprocating, vibrating, or traversing in a vertical path and operating in combination with an elevating-apron and stationary grain-receptacle.

My present invention constitutes an improvement on the mechanism shown in the above-mentioned application and Letters Patent; and its object is so to organize the binding mechanism as to cause it to reciprocate or vibrate in an arc substantially horizontal while gathering, compressing, binding, and discharging the grain.

In a pending application for Letters Patent filed by me November 10, 1875, (of which this present application constitutes a division,) I have broadly claimed the combination of a stationary grain-receptacle, a binding-frame vibrating in a plane substantially horizontal on a fixed center, a vertically-vibrating binding-arm rocking in said frame, and a twister operated by mechanism also mounted on the vibrating frame. I do not therefore make

such claim in this application, the subject-matter of which is limited to the specific organization of instrumentalities hereinafter set forth, constituting certain novel combinations of old devices.

The accompanying drawings show all the improvements herein claimed as embodied in one machine. Some of them, however, may be used without the others and in machines differing in details of construction from the one herein illustrated.

Figure 1 represents a plan or top view of the binding mechanism proper, being so much of my improved apparatus as is necessary to illustrate the invention herein claimed, the parts being shown in the attitude they assume at the moment the wire-carrying arm encircles the gavel with wire; Fig. 2, an elevation thereof in the plane of the rock-shaft which carries the wire-carrying arm; Fig. 3, a view in elevation, substantially at right angles to that shown in Fig. 2; and Fig. 4, an inverted plan view of the twisting, carrying, and driving mechanism.

In this instance the binding mechanism is shown as more especially organized for adaptation to a two-wheeled hinged-bar machine with a sweep-rake—such, for instance, as the well-known "Valley Chief Reaper," built by Marsh and Kremer, of Lewisburg, Pennsylvania, with what is known as a "Dorsey Rake" mounted thereon. Such rakes, as is well known, operate to deliver the grain to the binding-receptacle intermittently; but the mechanism obviously may readily be so modified in various well-known ways as to adapt it to a continuous flow of grain, such as takes place with the endless-apron rake generally used in connection with automatic binders, as all it would be necessary to do in the present case would be to deliver the grain laterally over the top of the grain-binding receptacle, as shown in my applications and Letters Patent hereinbefore referred to.

In this instance a stout supporting-frame, A, of suitable construction and of substantially triangular shape, supports a grain-platform, B, which also, in the present instance, constitutes a binding-platform. A slot, b, is

formed in this platform, coinciding in curvature with the path traversed by the binding mechanism.

A grain-receptacle is shown as mounted on the frame A at or near one edge of the platform, which grain-receptacle is in this instance divided vertically, or is composed of two independent shields, C C', consisting of bent strips of metal having one end free, so as to be capable of yielding slightly as the gavel is compressed. This vertical division or slot c between the shields coincides with the path of the wire-carrying arm and with the slot b in the binding-platform.

Instead of the slot described in the grain-receptacle and platform, ribs or rods might be employed extending far enough above the platform, or having grooves deep enough, for the entrance or working of the binding mechanism.

The binding mechanism is driven, in usual well-known ways, by means of a belt or chain running over a sprocket-wheel or pulley G, on a driving-shaft, g, mounted in suitable bearings on the frame, and carrying a beveled pinion, g', meshing with a corresponding bevel-gear, H, mounted on and turning with a vertical crank-shaft, h, provided at its upper and lower ends, respectively, with the cranks h' h², which cranks carry suitable friction-rollers working in slots in a swinging binder-frame, I I', turning upon or with a vertical post or shaft, E, which frame carries the binding mechanism.

An arm or rock-shaft, F, turns axially in bearings i on the binder-frame, beyond which it projects horizontally, and is provided with a groove or slot, f, in which the friction-roller or crank-pin works to oscillate the rock-shaft at proper intervals. This rock-shaft carries, on or near its outer end, a wire-carrying arm, F', and a stud or pin, f², for an intermediate take-up tension of well-known construction, (shown in my patents above mentioned.) It also carries two or more elastic gathering or compressing arms D D'.

The apparatus is shown as organized for binding with two wires, (substantially in the manner shown in Letters Patent granted to me February 20, 1872;) but the mechanism may be readily adapted for operation with one wire. The upper wire, in this instance, passes from a reel, J, on the shaft E, through the intermediate rotary take-up tension, to the head of the wire-carrying arm in well-known ways, which need no description.

The lower branch, member, or arm, I', of the vibrating or swinging binder-frame (see Fig. 4) carries a sector-rack, K, oscillating or vibrating on a pivot, k, on said arm, its vibrations being controlled by means of a pitman or link rod, K', connected at one end with the rack by a pivot, k', and at the other to the supporting-frame A by a similar pivot, k², by which organization an intermittent oscillatory movement in directions alternately opposite is imparted to the rack, in addition

to the swinging movement of the binding-frame.

Instead, however, of pivoting the pitman to the supporting-frame, it may, if preferred, be pivoted to a lug, l, on a slide, L, mounted on the vibrating binder-frame, (see dotted lines in Fig. 4,) which slide is operated at suitable intervals by the friction-roller or wrist-pin of the lower crank, h², above mentioned, the slide moving in a longitudinal slot or way in the arm I' or on the arm itself. Where this slide is not employed this lower crank may be omitted, as the upper crank, h', is ordinarily sufficient to vibrate the binding-frame.

A binding-head, M, carrying a twisting-wheel, m, similar in its general construction to that shown in my Patent No. 186,186, of January 9, 1877, above mentioned, is mounted on an arm, N, capable of sliding freely longitudinally in suitable guides, slots, or ways in the lower arm, I', of the vibrating binder-frame, and is provided with a suitable eye or wire-guide, m'.

When two binding-wires are employed the lower wire is carried from a reel, J', on the shaft E, underneath the frame and through the eye above mentioned, through the twister or binding-head, above which it is united to the other wire in well-known ways, illustrated in my patents above mentioned.

The details of construction and operation of the wire twisting and cutting mechanism are fully shown and described in the applications and Letters Patent above mentioned, and need not therefore be repeated here.

In the operation of an apparatus organized as above described, the cut grain is delivered by the rake upon the binding-platform B after an outward sweep of the wire-carrying arm F', which arm carries the bound bundle with it and discharges it from said platform. After this discharge the rock-shaft F is oscillated in its bearings by its driving-crank h', so as to depress the gathering or compressing arms D D', which movement elevates the wire-carrying arm F' into the position shown in Figs. 2 and 3. The binding mechanism then advances over the platform to the grain-receptacle, the compressing-arms sweeping the grain lying upon the platform before them into the receptacle and compressing the bundle, the grain being retained in this compressed condition by the binding-wire encircling it. The wire-carrying-arm F' then descends into the slot or space between the shields C C' of the grain-receptacle, carrying the wire around the bundle and into the twister or binding-head, the gathering or compressing arms rising out of the way as the binding-arm descends. The retrograde vibration then commences, and the wire is twisted, as the bundle is discharged during the backward sweep of the wire-carrying arm, by means of the curved rack K, substantially in the manner described in my Patent No. 186,186, above mentioned.

The operation above described is repeated at the binding and discharge of every bundle.

I claim as of my own invention—

1. The combination, substantially as herein-
5 before set forth, of the supporting-frame, the slotted binding-platform, the slotted grain-receptacle, the binding-frame, the pivot, post, or shaft on or around which it turns, the horizontal rock-shaft carried by said frame, the ver-
10 tically-vibrating wire-carrying arm mounted on the rock-shaft, the binding-head and twister, the slide on the swinging frame, in which slide the binding-head and twister are mounted, the twister-rack carried by the swinging
15 frame, and the driving-gearing.

2. The combination, substantially as herein-
before set forth, of the grain-receptacle, the supporting-frame, the pivot, post, or shaft mounted thereon, the binding-frame vibrating
20 on or around said shaft, the horizontal binding-arm or rock-shaft mounted thereon, the wire-carrying arm, and the gathering or compressing arms on the rock-shaft.

3. The combination, substantially as herein-
25 before set forth, of the grain-receptacle, the supporting-frame, the vibrating binder-frame,

its pivot, post, or shaft, the driving-crank, the horizontal axially-rocking binding-arm driven directly by said crank, and the gathering and wire-carrying arms carried by the binding-arm. 30

4. The combination, substantially as herein-
before set forth, of the grain-receptacle, the supporting-frame, the binder-frame, the pivot, post, or shaft on which it vibrates, the crank-shaft, the slotted arm or lower branch of the
35 binder-frame, the slide movable endwise therein, the binding-head and twister carried by said arm, the sector-rack pivoted on the binder-frame, and the pitman which actuates the rack. 40

5. The combination, substantially as herein-
before set forth, of the supporting-frame, the binder-frame, the pivot, post, or shaft on which it vibrates, the crank-shaft, the horizontal
45 binder-arm rocking in bearings in the binder-frame, the gathering and wire-carrying arms mounted thereon, and the twisting mechanism, also mounted on the binder-frame.

CHAS. B. WITHINGTON.

Witnesses:

B. F. DUNWIDDIE,
L. H. CLARKE.