

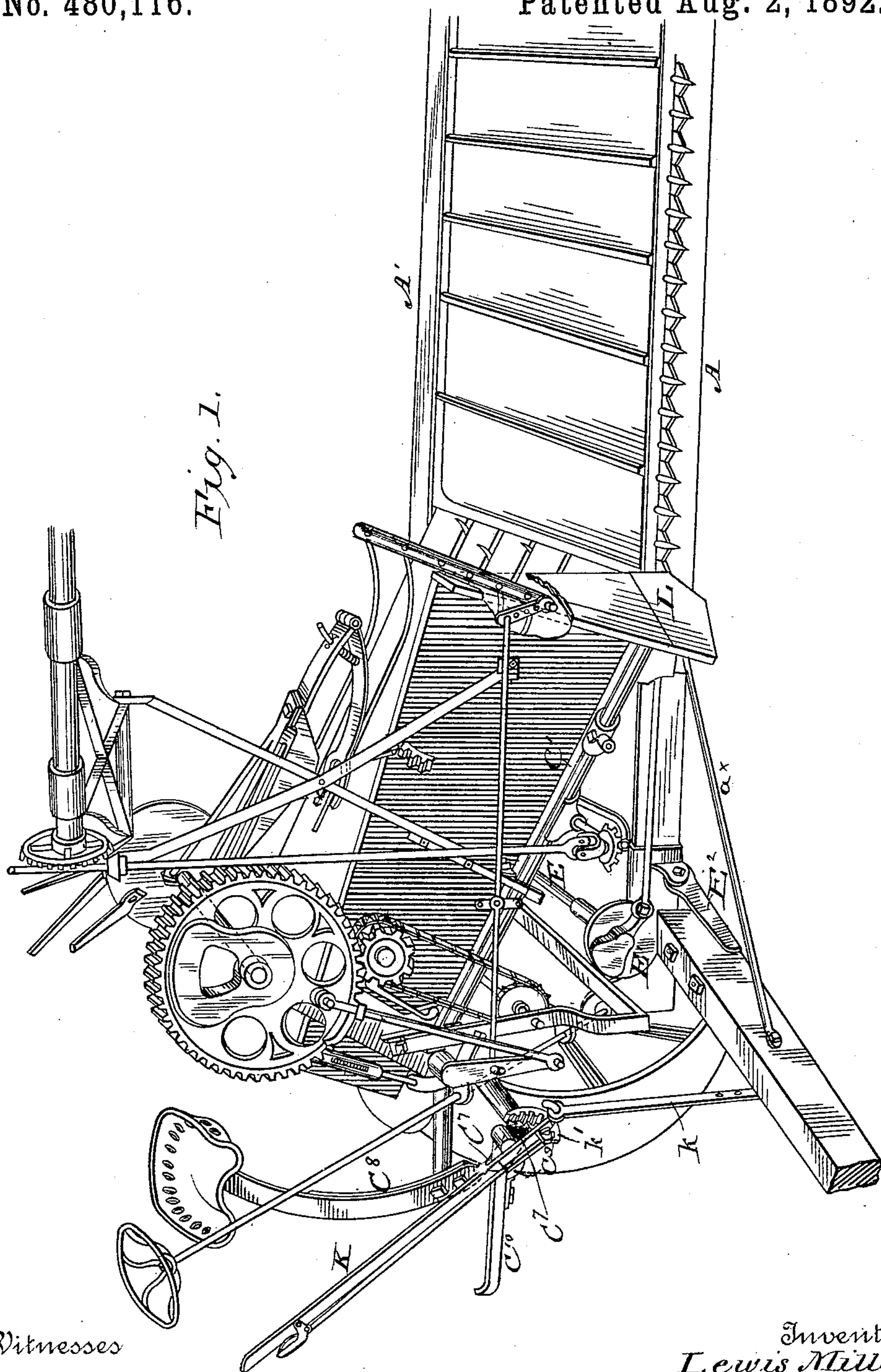
(No Model.)

3 Sheets—Sheet 1.

L. MILLER.
GRAIN BINDING HARVESTER.

No. 480,116.

Patented Aug. 2, 1892.



Witnesses

H. C. Newman.
E. S. Newman.

Inventor
Lewis Miller

By his Attorneys

Attorneys
Baldwin, Davidson & Wright

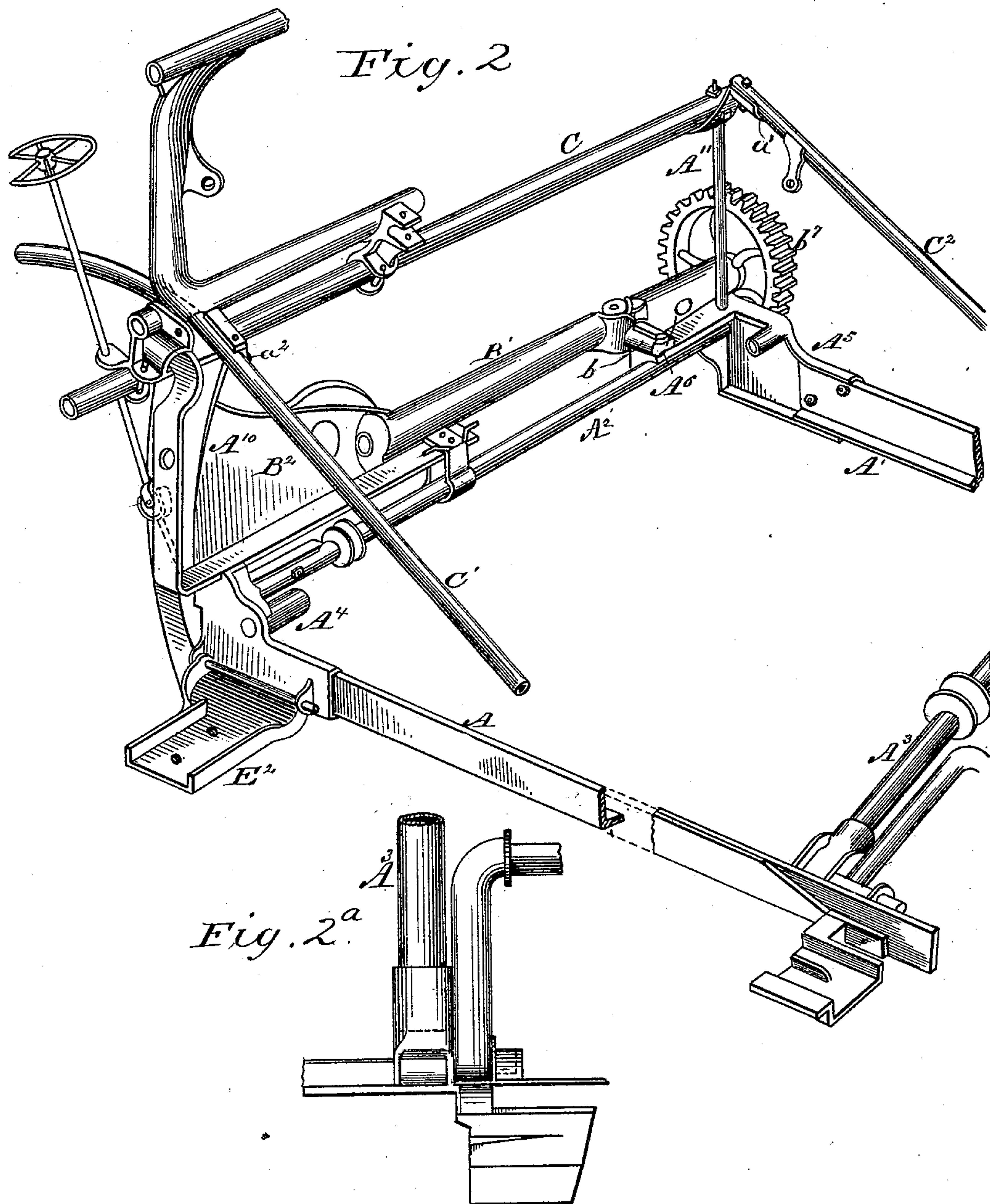
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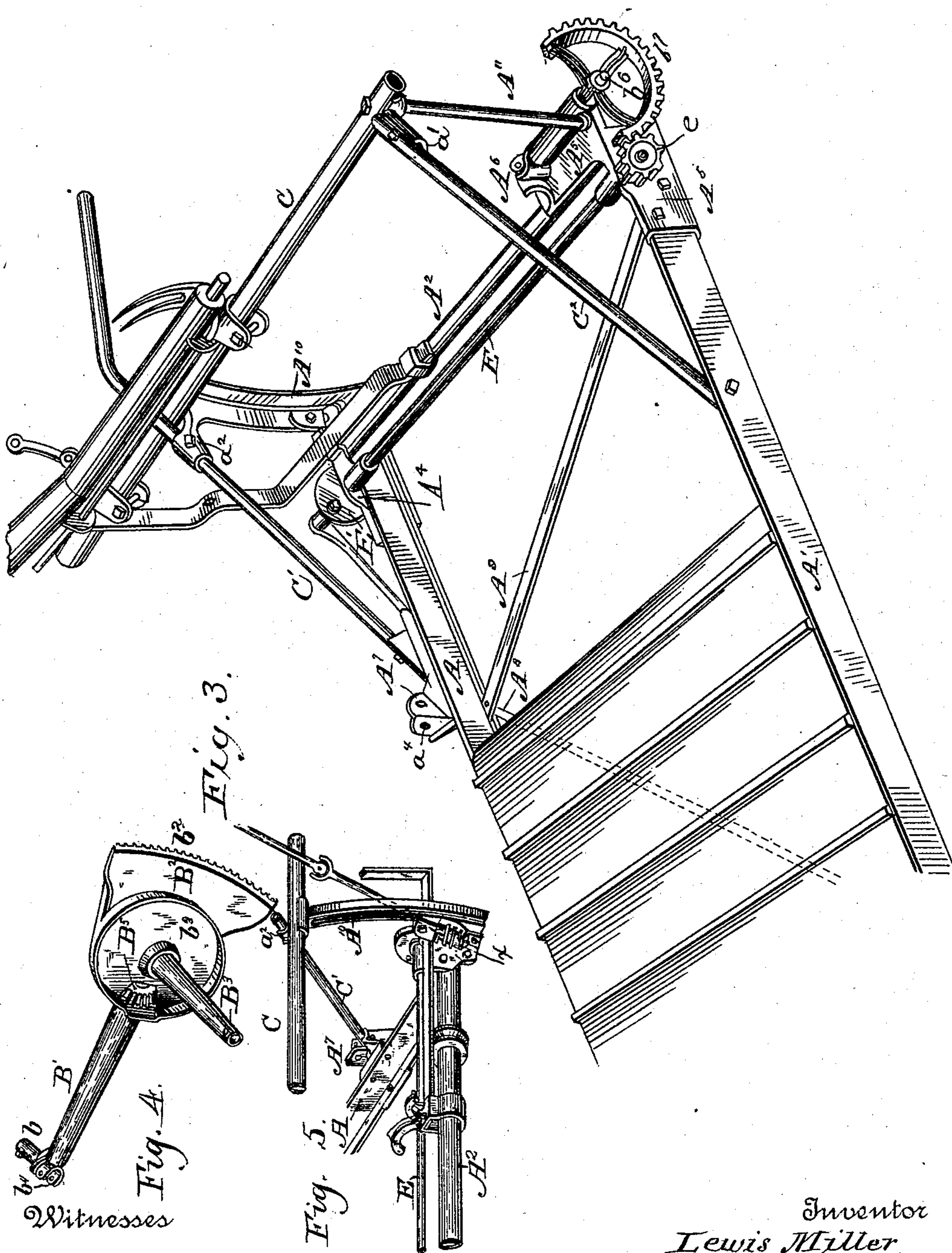
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UNITED STATES PATENT OFFICE.

LEWIS MILLER, OF AKRON, OHIO.

GRAIN-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 480,116, dated August 2, 1892.

Original application filed April 30, 1886. Serial No. 200,754. Divided and this application filed April 2, 1889. Serial No. 305,756.
(No model.) Patented in England December 22, 1888, No. 18,739.

To all whom it may concern:

Be it known that I, LEWIS MILLER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Grain-Binding Harvesters, (for which I have received Letters Patent in Great Britain, No. 18,739, dated December 22, 1888,) of which the following is a specification.

My invention, while applicable to harvesters generally, relates more especially to what is known as the "low-down" grain-binder. Its object is to secure a strong, simple, compact, and effective light-weight machine, which ends I attain by the novel organization of the instrumentalities hereinafter described.

The subject-matter claimed is hereinafter specifically designated in the claims at the close of this specification.

The accompanying drawings represent so much of a low-down grain-binding harvester embodying all my present improvements as is necessary to illustrate the subject-matter herein claimed.

Figure 1 represents the machine as seen from the front and grain side, showing its general organization; Fig. 2, a view from the front and grain side, showing the framework, binder-gear stand, and adjusting and axle-supporting devices and gearing; Fig. 2^a, a detail plan view of the grain end of the frame, the divider-support, and grain-wheel arm. Fig. 3 is a view from the rear and grain side of most of the parts shown in Fig. 2. Fig. 4 is a detail view of a part of the gearing. Fig. 5 is a detail view of a corner of the frame and certain mechanism carried thereby.

The subject-matter herein claimed relating mainly to the construction of the main or platform frame, it is deemed unnecessary here to describe in detail the construction of the other parts of the machine, more especially as they are fully described and shown in other divisions of this application, respectively serially numbered and filed as follows, namely: 200,754, filed April 30, 1886; 304,945, filed March 27, 1889; and 305,753, 305,754, and 305,755, respectively filed April 2, 1889.

The front and rear transverse frame bars or sills A A' are shown as made of angle-iron or bars having horizontal flanges at their lower sides or edges preferably turned in-

wardly toward each other. Longitudinal frame-tubes A² A³ are firmly secured to these sills at their points of intersection by means of socketed angular braces or corner-pieces A⁴ A⁵, bolted to the sills, in which sockets the tubes are inserted. These corner-pieces, it will be observed, are composed of vertical walls and horizontal ledges, as well as sockets, in contradistinction to the angular ferrules or tubes sometimes used in harvester-frames. The front and rear corner-pieces A⁴ A⁵ at the stubble or drive-wheel end of the frame are respectively provided with bearings or sleeves for a crank-shaft E, which lies close to and parallel with, but slightly above and inside of the longitudinal frame-bar A².

An angular box-bracket A⁷, secured on the forward side of the front transverse sill A at or near the stubble end of the cutting apparatus and platform apron or carrier, constitutes a support for an inner shoe and grain guide or deflector L, a guard and guide for the heel end of the knife and the end of the pitman connected therewith, a point of attachment for the lower end of the front inclined transverse tubular bar C' of the triangular binder-frame which supports the elevating-table and binder, and as a point of attachment a⁴ for the oblique pivoted draft-rod a^x, connecting the tongue and frame and supporting them against working strains due to the side draft, &c. The forward ends of two diagonal braces A⁹ A⁹ are secured to this bracket or to the sill near thereto. These braces diverge backwardly until they intersect the rear transverse sill, the inner brace A⁹ being secured to the inner rear corner-piece A⁵ on the drive-wheel side of the frame, while the other A⁸ is connected with the corresponding grain-side corner-piece, thus serving materially to stiffen not only the front sill A, but the entire platform-frame against working strains, which, it will be seen, concentrate upon the junction-point of these braces with the front sill. An inwardly-inclined transverse socket or sleeve a² on the upper end of the standard A¹⁰, mounted on the inner front corner-piece A⁴, receives the upper portion of the front inclined transverse tubular binder-frame bar C', above mentioned. An upright post A¹¹, mounted on the inner rear corner-piece A⁵, supports the rear end of a longitudinal tubu-

lar binder-frame bar C, the forward end of which is supported by the standard A¹⁰, above mentioned. The lower end of an inclined transverse tubular binder-frame bar C² is secured to the rear transverse sill A' coincidently or in line longitudinally with the bracket A⁷ of the front sill or the point of attachment of the front bar C', while its upper end is secured in a socketed plate a', secured to the upright A¹¹ and longitudinal bar C, thus constituting a strong triangular frame for the support of the binding and other mechanisms, which I call, for convenience, the "binder-frame," of which it will be seen the platform-frame forms the base and an integral or firmly-connected part.

My improved organization, it will thus be seen, combines the main frame, the platform-frame, and the binder-frame, all in one compact and light but rigid and strong frame, the advantages of which organization are obvious.

An outward projection or overhanging bracket on the rear corner-piece A⁵ carries a sleeve or tubular bearing rigid therewith for a short secondary or counter-shaft b⁶, parallel with but slightly above and outside of the longitudinal frame-tube A². A spur-wheel b⁷ on the outer rear end of this shaft drives a corresponding spur-pinion e on the crank-shaft E. A tubular arm or sleeve B' is connected by a transverse pin b on its rear end with a transverse bearing-socket A⁶ on the overhanging bracket of the corner-piece A⁵. A spur or projection O at the inner end of the pivot b prevents lateral movement of this pivot-pin in this bearing-socket, while permitting it to turn freely therein.

A vertical plate B², constituting a forward extension or prolongation of the sleeve B', is slightly curved on its forward edge and is movable vertically in an arc around the pivot b and in a vertical guideway in the standard A¹⁰ above mentioned, erected on the outward extension or overhanging bracket of the front corner-piece A⁴. The inner front edge of the plate B² is slightly beveled and carries segment-teeth b², meshing with a worm-gear x, turning in bearings on the corner-piece A⁴ inside the vertical guideway A¹⁰, by which means the vertical relation of the axle-support and main frame may be varied.

An axle B³, formed upon or secured to the plate B², projects outwardly therefrom concentrically with an annular flange b³, which encircles a bevel-wheel (not shown) on the driving-wheel. This bevel-wheel drives a corresponding pinion B⁵ on the jointed movable portion of the bevel-wheel and secondary or countershaft, which turns in bearings in the sleeve B'. The pinion projects through or works in an opening in the plate. The rear end of the movable part of the counter-shaft is coupled to the fixed part by a tumbling or universal joint coincident with the pivot b. By this means the axle-support and driving-gear mounted therein are free to move verti-

cally relatively to the frame around the pivot b without interference with the proper working of the mechanism secured on the frame, which maintains its uniform relation thereto. The front wall or face of the inner forward corner-piece A⁴ is also provided with vertical ears or lugs to which the rear end of a tongue plate or socket E² is hinged by a transverse horizontal pivot-pin.

The crank-shaft E, driven, as before remarked, by a spur-pinion on its rear end, extends through its bearing-sleeves on the corner-pieces and carries a crank-wheel E' on its forward end arranged directly in front of the corner-piece A⁴ and over the expanded rear part of the tongue-plate E², hinged to the corner-piece, thus serving to preserve the crank-wheel and its pitman connection from injury or obstruction. (See Fig. 1.)

The upper longitudinal binder-frame bar C and front inclined transverse binder-frame bar C' extend both longitudinally and laterally beyond the standard A¹⁰, to which they are respectively connected. These bars are also rigidly united by an angular or inclined brace C⁷, Fig. 1, the rear outer end of which supports a seat-standard C⁸, which may be secured to it by the same bolts which connect the brace C⁷ and bar C' or in other suitable ways. The driver's foot board or support C¹⁰ is secured to the brace C⁷ in any suitable manner. The front inner end of the brace C⁷, at the point where it is secured to the forward end of the longitudinal bar C, is expanded or widened or has a plate C⁹ secured to it, and extends inward beyond the bar C, as shown. A lever K is mounted on a pivot projecting longitudinally forward from this plate, the inner end of which is curved and carries on its front face a toothed rack or segment k', also curved in an arc of a circle, of which the pivot of lever K is the center. The lever K is connected by a link k with the hinged pole or tongue, and its upper end, which extends within reach of the driver in his seat, is provided with a thumb-lever for operating a latch adapted to engage the rack k' for holding the lever K at any desired adjustment. By vibrating the lever the driver can rock the machine on its carrying-wheels for raising and depressing the cutting apparatus in a manner that will be readily understood.

Having thus fully described the construction, organization, and operation of my improved low-down grain-binding harvester, what I claim therein as new and of my own invention, and desire to secure by Letters Patent, is—

1. The combination, substantially as hereinbefore set forth, of the front and rear transverse angle-iron frame bars or sills, the longitudinal frame-tubes, the interposed socketed angular braces or corner-pieces connecting these longitudinal tubes and transverse frame-bars, a brace extending diagonally backward from the front transverse frame bar or sill to the rear inner drive-wheel or stubble-side

corner-piece, and a second diagonal brace extending diagonally backward from the front sill to the rear divider or grain-side corner-piece to give additional stiffness to the frame.

5 2. The combination, substantially as here-
inbefore set forth, of the front transverse
frame bar or sill, the inner longitudinal frame-
tube, their connecting corner-piece, the tongue
hinged directly thereto, the angular box-
10 bracket on the front sill, and the draft-rod
connecting the box-bracket and tongue.

15 3. The combination, substantially as here-
inbefore set forth, of the transverse sills, the
diagonal braces converging from the ends of
the rear sills and intersecting at the front sill,
the tongue, and the draft-rod connecting the
front sill and tongue at the intersection of the
braces.

4. The combination, substantially as here-
inbefore set forth, of the front and rear sills, 20
the longitudinal frame-bars, the shoe, a tongue-
brace attached to or near said shoe, diagonal
braces extending, respectively, from the front
sill near the shoe to the outer and inner ends
of the rear sill, and an inclined transverse 25
bracing frame-bar forming one bar of the sup-
port for the binder-gear standard, both the
diagonal braces and transverse frame-bar rig-
idly bracing the machine at the point of its
heaviest strain from the draft. 30

In testimony whereof I have hereunto sub-
scribed my name.

LEWIS MILLER.

Witnesses:

O. L. SADLER,
W. K. MEANS.