

(No Model.)

2 Sheets—Sheet 1.

O. COOLEY, E. PRIDMORE & H. M. JOHNSTON.
SELF BINDING HARVESTER.

No. 406,502.

Patented July 9, 1889.

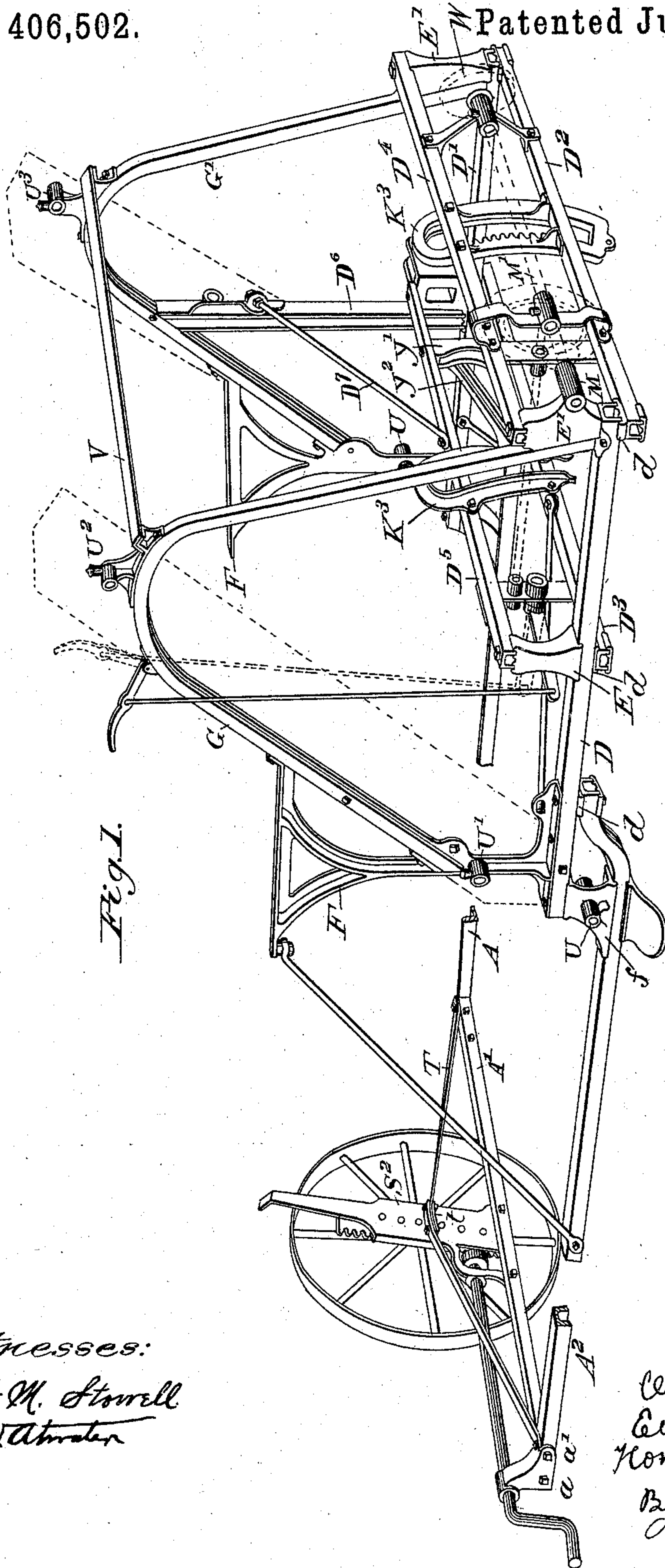


Fig. 1.

Witnesses:

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Homer M. Johnston
By J. W. Ford, Atty.

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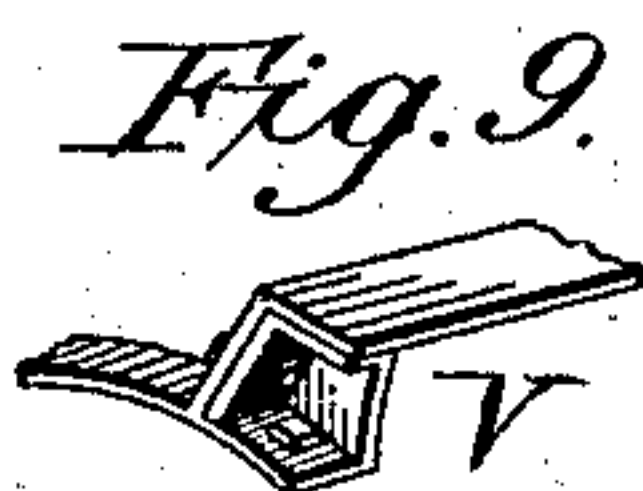
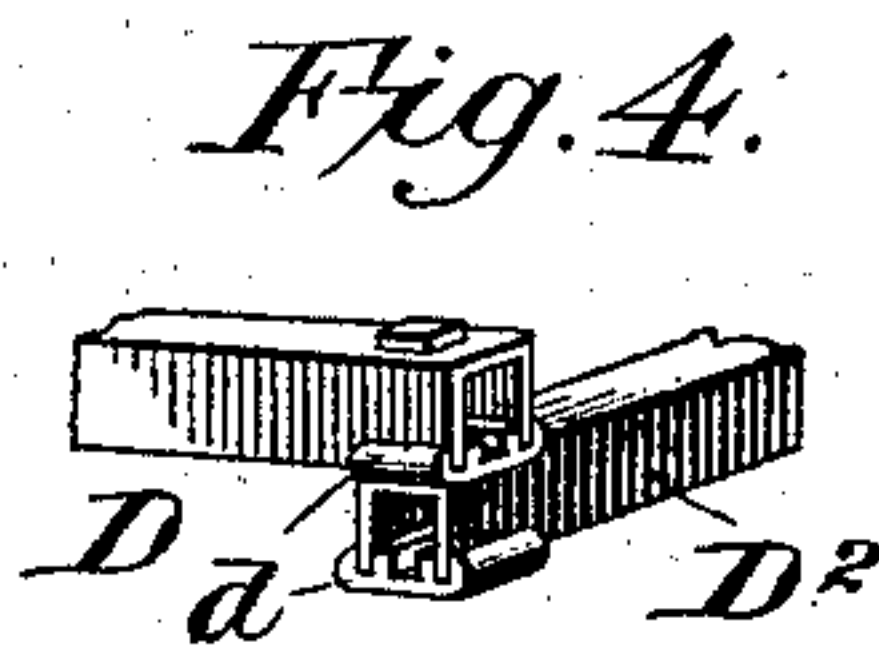
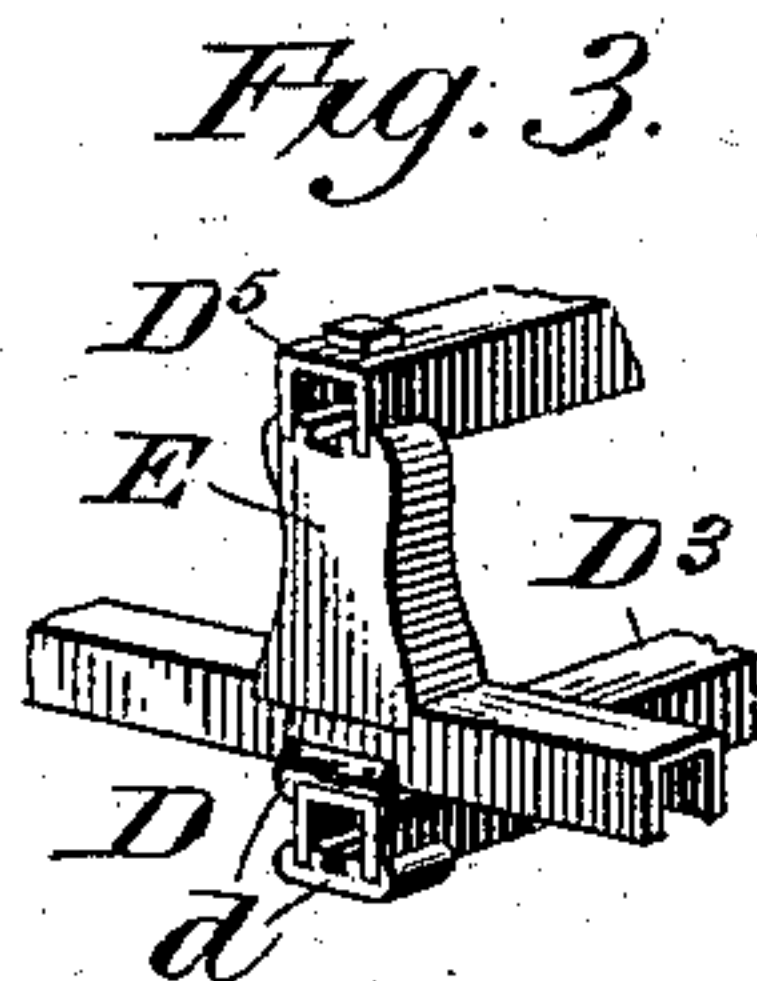
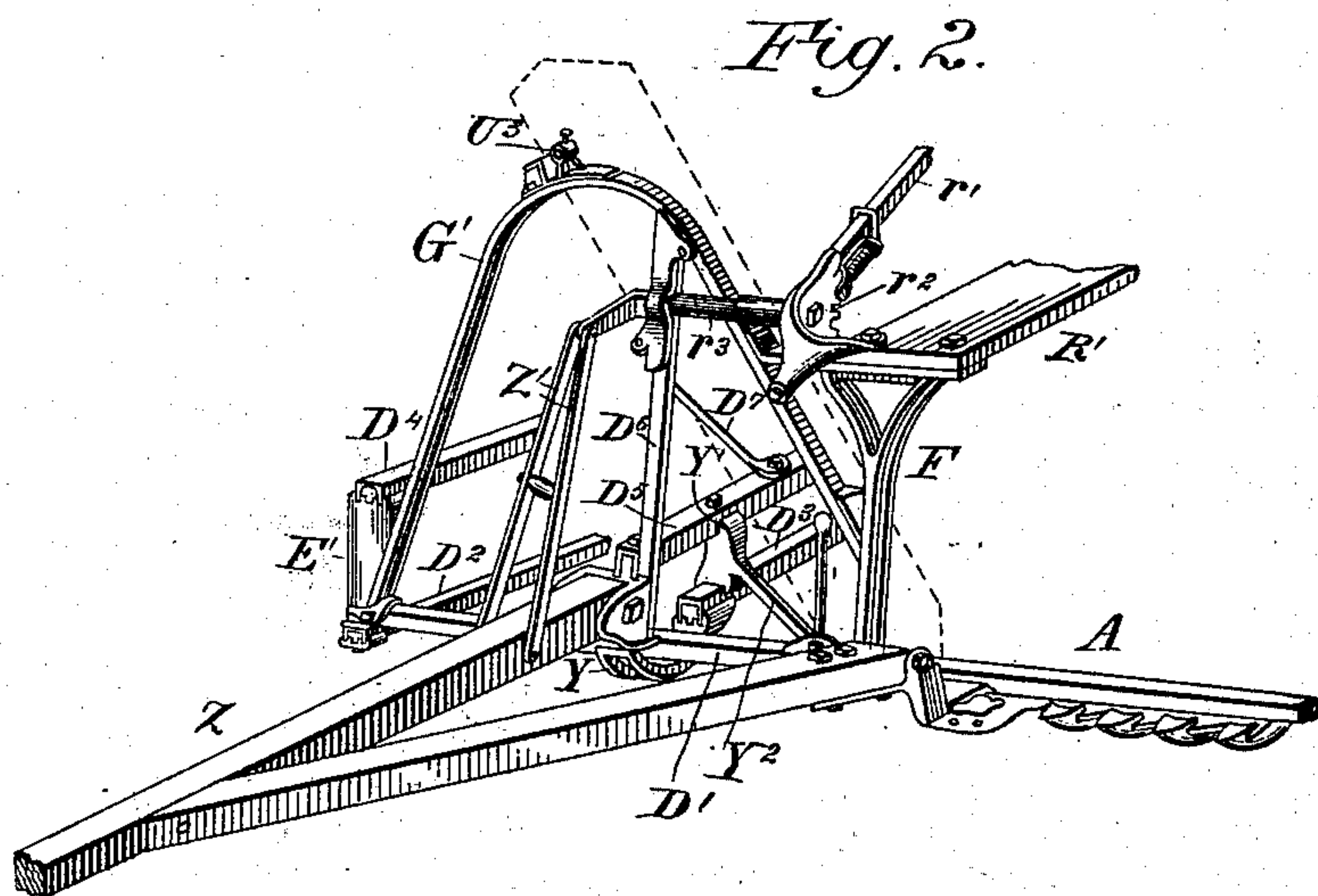


Fig. 5.

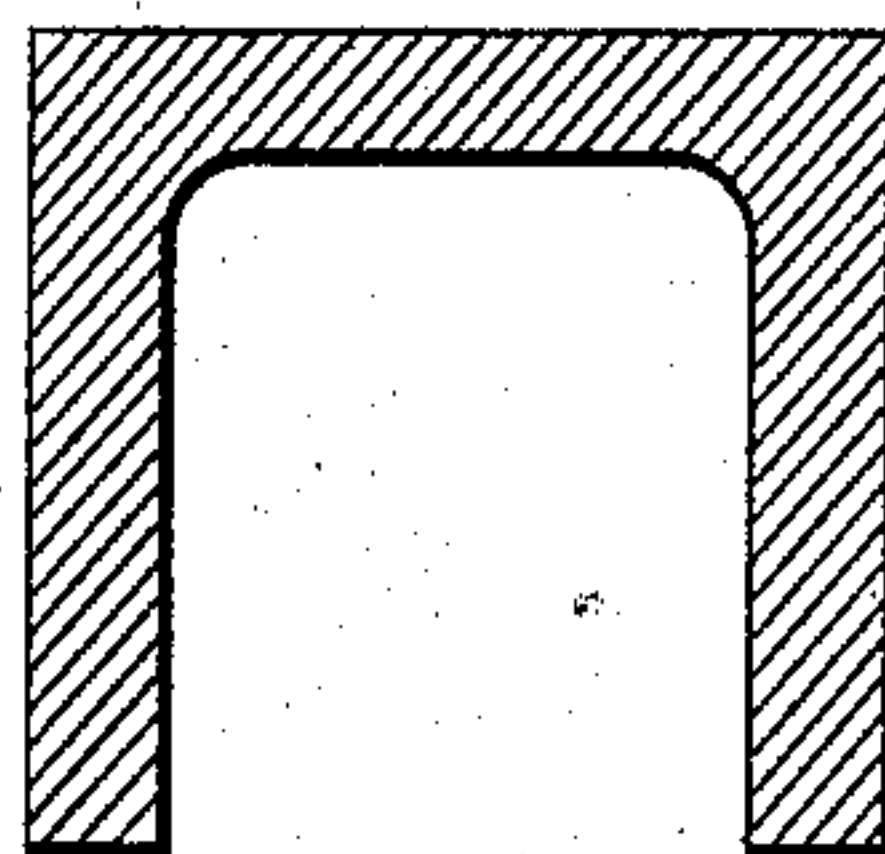


Fig. 6.

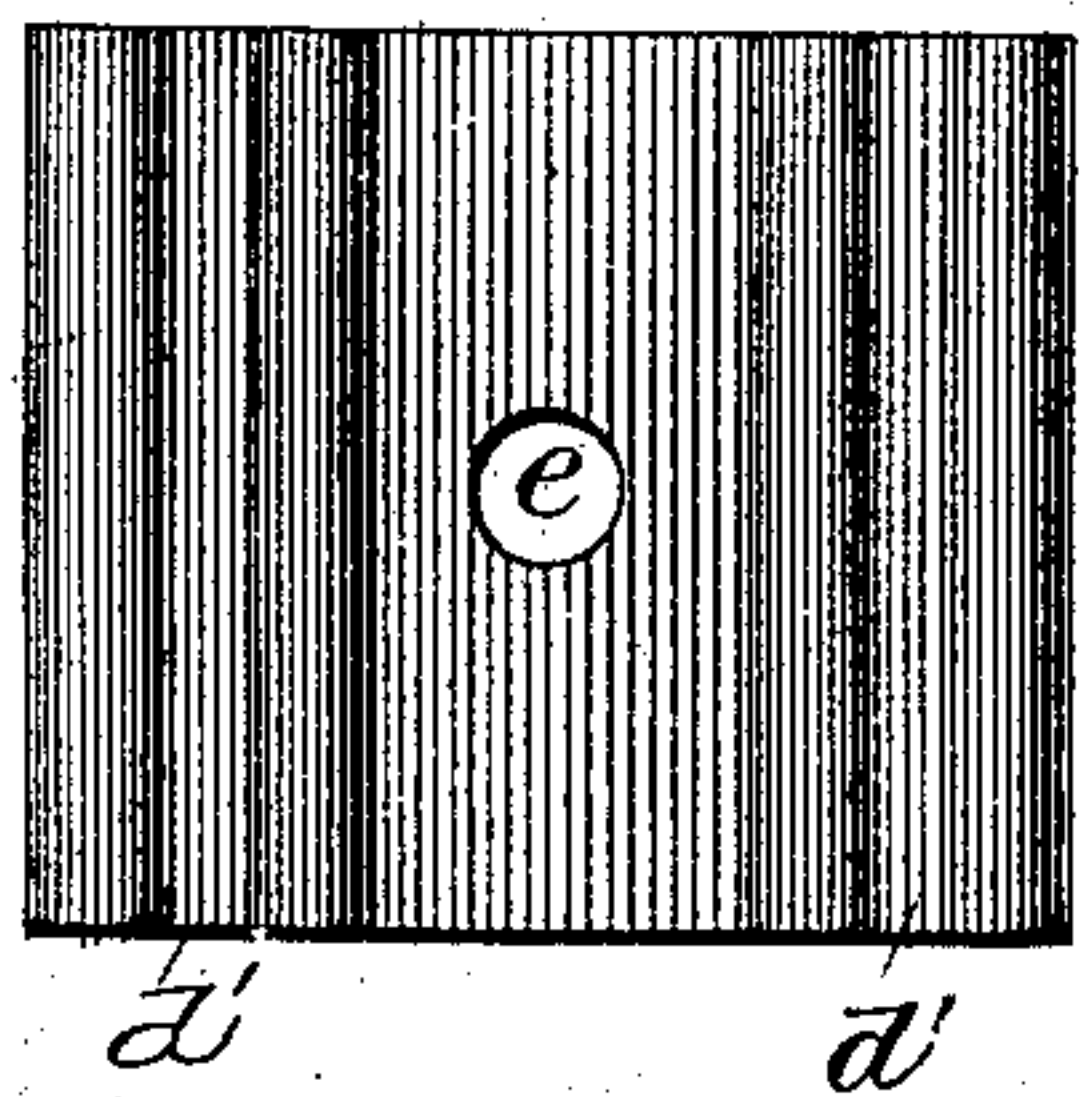


Fig. 7.

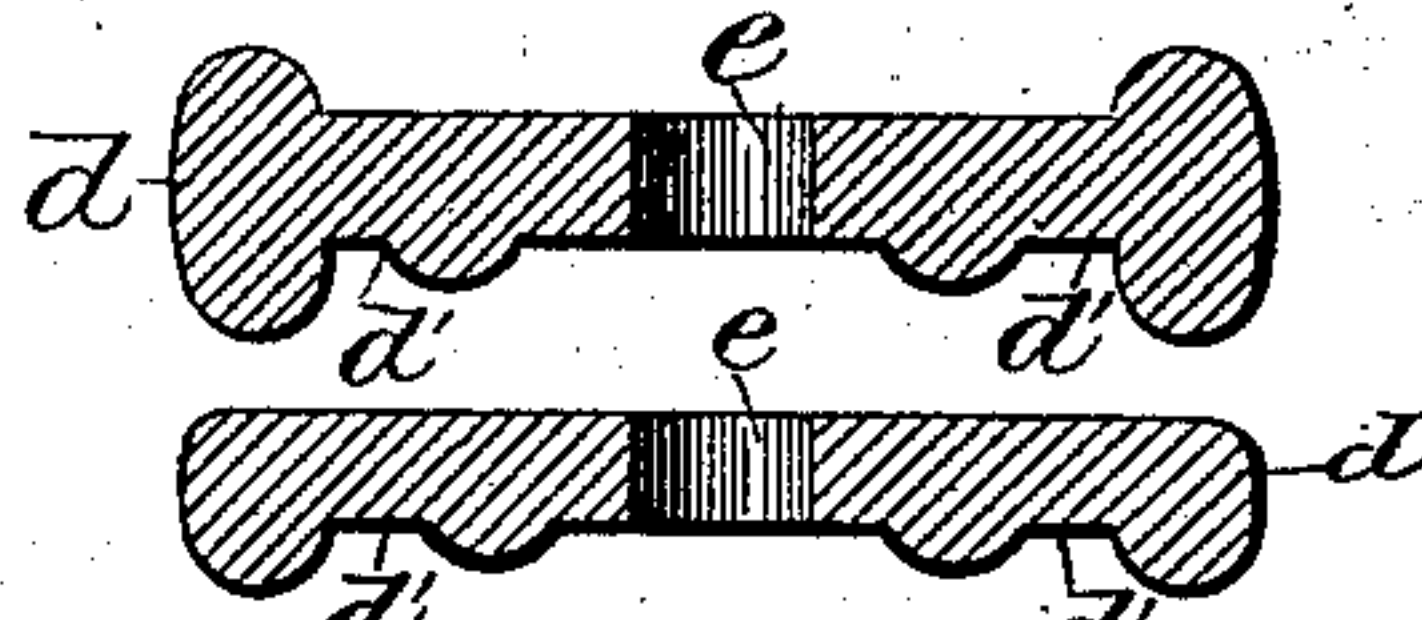


Fig. 8.

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UNITED STATES PATENT OFFICE.

ORVILLE COOLEY, EDWARD PRIDMORE, AND HOMER M. JOHNSTON, OF BATAVIA, NEW YORK, ASSIGNORS TO THE JOHNSTON HARVESTER COMPANY, OF SAME PLACE.

SELF-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 406,502, dated July 9, 1889.

Application filed June 9, 1887. Serial No. 240,829. (No model.) Patented in Canada January 27, 1887, No. 27,294, and in England April 30, 1887, No. 6,364.

To all whom it may concern:

Be it known that we, ORVILLE COOLEY, EDWARD PRIDMORE, and HOMER M. JOHNSTON, citizens of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented a new and useful Improvement in Self-Binding Harvesters, (for which we have obtained a patent in Great Britain, April 30, 1887, No. 6,364; also a patent in the Dominion of Canada, January 27, 1887, No. 27,294,) of which the following is a specification.

Our invention relates to improvements in self-binding harvesters in which a revolving canvas of the usual construction is located rearwardly of a finger-bar and operated in conjunction with the commonly-employed elevating-canvas, by means of which the grain is carried over the driving-wheel and brought within the reach of the binding mechanism, which may be of any well-known type—such, for instance, as the Appleby; and the objects of the improvements are more particularly found in the substitution of metal for wood, the frame being composed of metallic channel-bars, preferably of steel, square in form and bent in the required shape, the parts being secured together by means of bolts and intervening channel-plate clips made in conformity with the shape of the channeled bars, and by means of which the impinging parts are interlocked one with the other. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a rear perspective view of the metallic frame-work of the harvester, with the side boards of the elevator in dotted lines. Fig. 2 is a front perspective of a portion of the frame-work, taken from the finger-bar side of the machine, showing the manner of connecting the several parts. Fig. 3 is a detail view showing the manner of uniting certain bars that form a portion of the frame-work. Fig. 4 is a detail view showing the manner of interlocking such bars as are placed at right angles with each other. Fig. 5 is an enlarged end view of a channeled bar used in

forming the main frame-work. Fig. 6 is a face view of a channeled clip-plate used in forming a rigid connection between the several bars. Figs. 7 and 8 are cross-sectional views of the bar-connecting clip-plate. Fig. 9 shows the manner of securing the angle-iron binder-supporting bar to the uprising channel-steel elevator ends, and also ties the ends together.

Similar letters refer to similar parts throughout the several views.

In the manufacture of metal-frame harvesters a difficulty has been found in securing the proper rigidity necessary without materially adding to the weight of the machine. It is well known that where shafting is used for operating the mechanism the several bearings must at all times be kept in line, or there will be not only undue friction, but the bearings will become rapidly worn, thus impairing the usefulness, which is especially apparent in agricultural machinery that passes over uneven ground. To remedy these defects in metal-bar machines, we have devised this channel-steel frame.

We are aware that solid metal bars have been heretofore used for forming harvester-frames; also, that frames have been made of tubular iron, angle-iron, &c.; but we are not aware that channel iron or steel has been previously used of the form shown in Fig. 5, whereby great rigidity and strength is combined with lightness of material.

In the platform-frame the finger-bar A forms the front portion, A' the end bar, and A² the rear bar. The bars A' and A² are made of channel-steel, while the finger-bar is of the well-known construction, having the guard-fingers secured to an angle-bar back, the vertical part of which is of a width to correspond with the thickness of the end bar, and is secured thereto by a corner-bracket or in any well-known manner. The rear grain-end corners of these bars, forming the platform-frame, are secured together by the bracket a, which supports the rear end of the crank-rod B, to the inner end of which is attached the snail-cam C, which part is made the subject

of another application and not herein claimed. The bracket *a* is provided with the foot-pieces *a'*, which form an angle-bar, one leg of which is bolted to the end bar *A'* and the other to bar *A²*, by means of which the two bars are firmly united.

D is the rear bar of the gear-frame, and *D'* the front bar of the same. The bars *D* *D'* are connected by cross-bars *D²* *D³*, the one *D²* being upon the outside of the ground-wheel and *D³* upon the inside of the same, but leaving sufficient space between the bars to allow the wheel and driving mechanism to turn therein. This gear-frame is upon a higher horizontal plane than the platform-frame, the two frames being secured together as follows: The bar *D* extends inwardly past and above the end of the bar *A²*, the latter being bent upward sufficiently far to reach the under side of the former, less the thickness of the flanged and channeled clip-plate *d*, (see Fig. 7,) which is interposed between the two bars. This clip-plate has flanges or lips upon each side, which lap over the edges of the solid portion of the bar, while the lower edges of the adjoining bar rest within the channels *d'*, thus securely uniting the parts and preventing lateral displacement. Clip-plates to be used upon the channeled edges alone are provided with ribs, whereby grooves are formed upon either edge of the plate, and within which grooves the bar edges rest, the parts being firmly united by the securing-bolts, which pass through suitable holes made in the bars as well as plate, and as clearly shown in Fig. 8.

f is a bracket carrying the bearing-box *U*, which supports one end of the canvas roller, (not shown,) which is also provided with channeled ends conformable with the edge of the bars against which the said ends abut, a bolt passing through each bar as well as bracket, and by this means firmly securing the parts together.

G is the rear bent channel-bar that forms the end support of the elevator-frame, while a duplicate bar *G'* performs the same office at the front end of the said frame. These bars are both channeled, whereby strength is given with lightness of weight. The outer ends of these bars rest upon the top side of the bars *D* *D'*, while the inner ends stop short of the said side bars and abut against a flange upon the seat-plank standards *F*, and are thereunto securely bolted, the foot of said standards being secured to the back and front bars of the gear-frame.

The seat-plank *R'* is bolted upon the top end of the standards *F*. Upon the forward end of the plank is secured the tilting-lever detent *r²*, within the teeth of which the ordinary spring-bolt enters, the same being located upon the lever *r'*, as is commonly done. This tilting-lever is attached to a rock-shaft *r³*, the crank end of the shaft being made to turn in a bearing secured to the vertical channel-bar *D⁶*. This bar *D⁶*, near its lower end, is

bolted to bar *D⁵*, while its upper end is secured firmly to the bent bar *G'*.

D⁷ is a brace-rod extending diagonally from the upper portion of the upright bar *D⁶* to about the longitudinal center of the horizontal bar *D⁵*, thereby so uniting the said bars, and therewith the entire frame-work, that the elevator-frame, while in the act of tilting the machine through the medium of the rock-shaft mechanism, (united to the tongue *Z* by the pivot-connecting bars *Z'*), and the several parts, will at all times be rigidly held in true position.

Above cross-bars *D²* *D³* and running parallel therewith are other channel-bars *D⁴* *D⁵*, the one *D⁴* being upon the outside, the other one *D⁵* (carrying the brace-rod *D⁷*) being inwardly placed, with the ends of the said bars resting upon posts *E* *E'*, which have channels in their ends corresponding to the form of the bars against which they impinge. The post *E*, supporting the rear end of bar *D⁵*, is provided with bolt-holes through each end (the post being a shell) as well as bolt-holes through bars *D* *D³* *D⁵*, the holes being the passageway for a securing-bolt, whereby, in connection with the intervening channel clip-plates, the parts are securely fastened together. (See Fig. 3.) The posts *E'* are formed similar to post *E*, except that they are made to conform upon their inner edges with the bent bars *G* *G'*, or secured thereto in such manner that all the bars coacting with the posts are firmly united, so as to be able to perform their assigned duty.

T is an arched truss-bar, the apex of which is bolted to the flange *t* projecting inwardly from the standard *S²*, while the ends of the truss-bar are secured to the cross-bar *A'* at its end connection with the finger-bar and the rear bar of the platform.

U *U'* *U²* *U³* represent the bearings for the several canvas rollers, which are not herein shown. The bearing *U²* is by suitable flanges bolted upon the uppermost portion of the rear bent elevator channel-bar, while *U³* is similarly secured to the front bent channel-bar. These bearings have secured to them flanged portions, as seen in Fig. 9, to which is bolted the angle-bar *V*, which serves as a tie-bar, and also as a support to the binder-frame. (Not shown.) *W* is the chain sprocket-wheel mounted upon the main driving-shaft *M'*, by which, through the intervention of the usual system of sprocket-wheels and chains, the entire binding mechanism is driven; but as this matter is made the subject of another application nothing is claimed upon this point herein.

In order that the pitman which drives the sickle may have room to operate, the bar *D³* is made shorter than the other cross-bars, and at its forward end is provided with a cast-metal extension-piece *Y'*, Fig. 2, having grooves at the back end for the reception of the flanged edges of the bars *D³*, to prevent lateral displacement, while the parts are se-

curely bolted together. The front end of this bent extension of the cross-bar is also provided with cross-grooves corresponding with the lower edges of the front bar D', which is
 5 also made of channel metal. The part Y', having the inclined arm Y² for supporting the inner end of the finger-bar, is provided with flanges upon each end to correspond with the face of the bars coming in contact therewith,
 10 the parts being securely fastened together with proper securing-bolts.

It will be observed that the square channel-steel herein shown affords a convenient face upon three of its sides for the fastening
 15 thereunto any attachments for the support of the parts, that great strength is obtained with a minimum of weight, and while the rigidity is preserved there is yet sufficient elasticity given to the bar for the preservation of the
 20 bolts intact, so that in use they will not become broken nor the nuts loosened, as is liable to be done when solid bars of metal are used.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a harvester-frame, the combination of the metallic quadrangular three-faced channeled bars, the intervening securing-plate having the central bolt-hole and face-depression
 30 on one side corresponding with the face of one bar and depressions on its opposite face to receive the edge of the flanges forming the side squares of the other bar, with ribs that project over and impinge against the sides of
 35 the same for the prevention of lateral displacement, and the securing-bolts made to pass through the bar and plate for holding the parts in an interlocked position, substantially as described.

2. The combination of the harvester gear-frame, the seat-plank standard, and the bent channel-steel elevator-supporting bar, the outer end of which bar rests upon the outer bar of the gear-frame, while the inner end of
 45 the said bent bar abuts against and is secured

to the seat-plank standard, substantially as described and set forth.

3. In combination with a harvester provided with a grain-elevator, the metallic quadrangular three-faced channeled-bar gear-
 50 frame, rectangular in form, with two straight longitudinal channeled bars, one over the other, upon each side of the frame, the intervening bar-supporting posts placed at the ends of the side bars, the posts having their upper
 55 ends grooved for receiving the lower edges of the flanges forming the sides of the channel-bar, while the reverse end of the post is recessed so as to form lips that shut over upon
 60 either side of the face of the lower bar, against which it impinges, and the front and rear cross-tie bars made from quadrangular three-faced channel steel, the parts being firmly united
 65 by bolts passing through the faces of the bars and lengthwise of the posts, substantially as described and set forth.

4. The combination, in a channel-steel harvester-frame formed in the manner shown, of the bars D³ D⁵, post Y', having the channeled and grooved ends corresponding with
 70 the face of the bars against which the ends of the posts abut, the diagonal arm Y², for supporting the inner end of the finger-bar, the post-securing bolt, the curved extension Y, and bar D', all arranged substantially as
 75 described, and for the purpose set forth.

5. The combination, with the tilting mechanism and the channel-steel frame-work of a harvester, of the brace-rod D⁷, the straight side bar D⁵, the vertical post D⁶, the bar D',
 80 and the bar G', bent in the form shown, all the parts arranged and operating substantially as described and set forth.

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