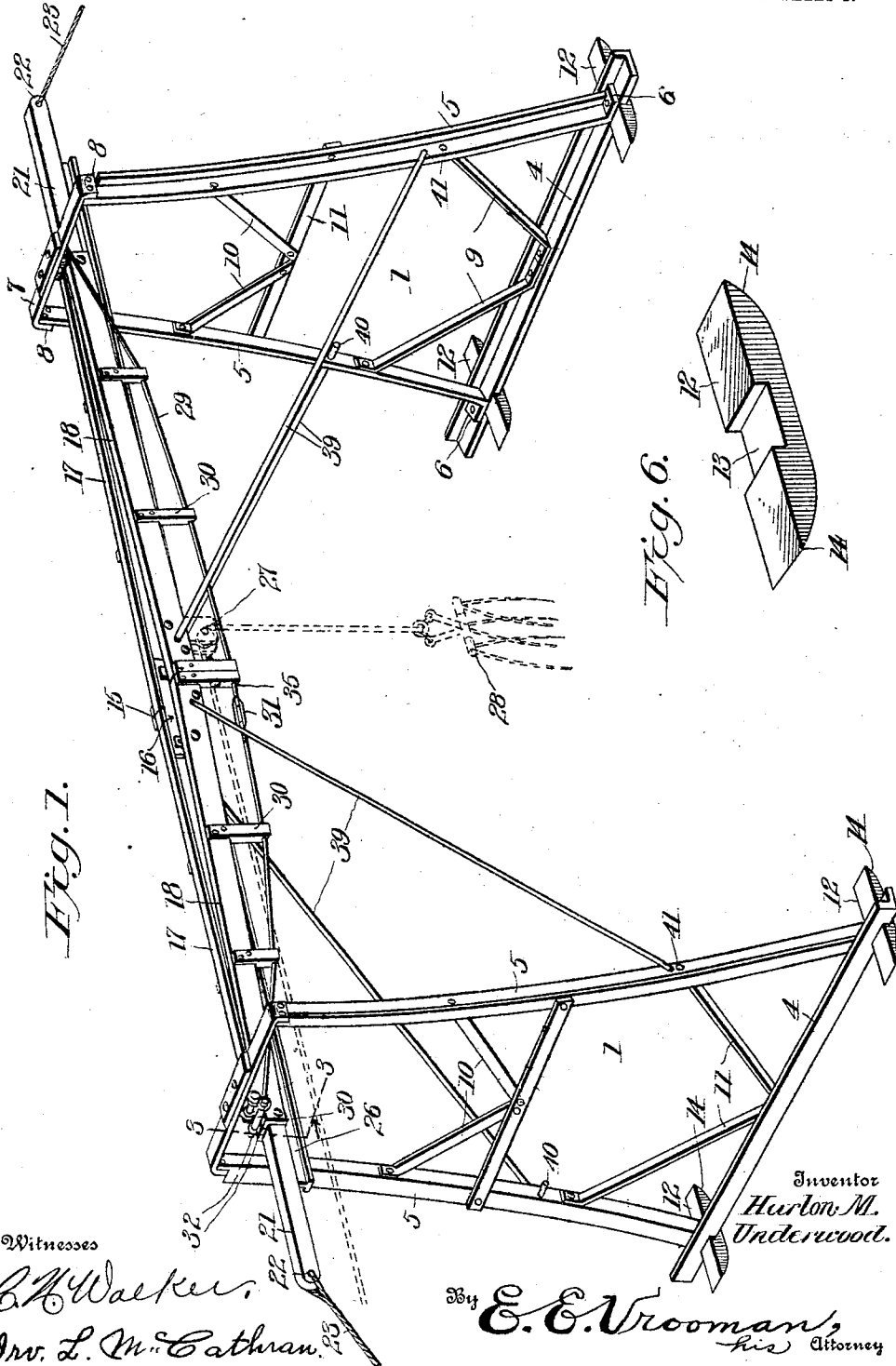


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HAY STACKER.
APPLICATION FILED FEB. 24, 1908.

908,522.

Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.



Witnesses
C. H. Walker,
J. L. M. Cathran.

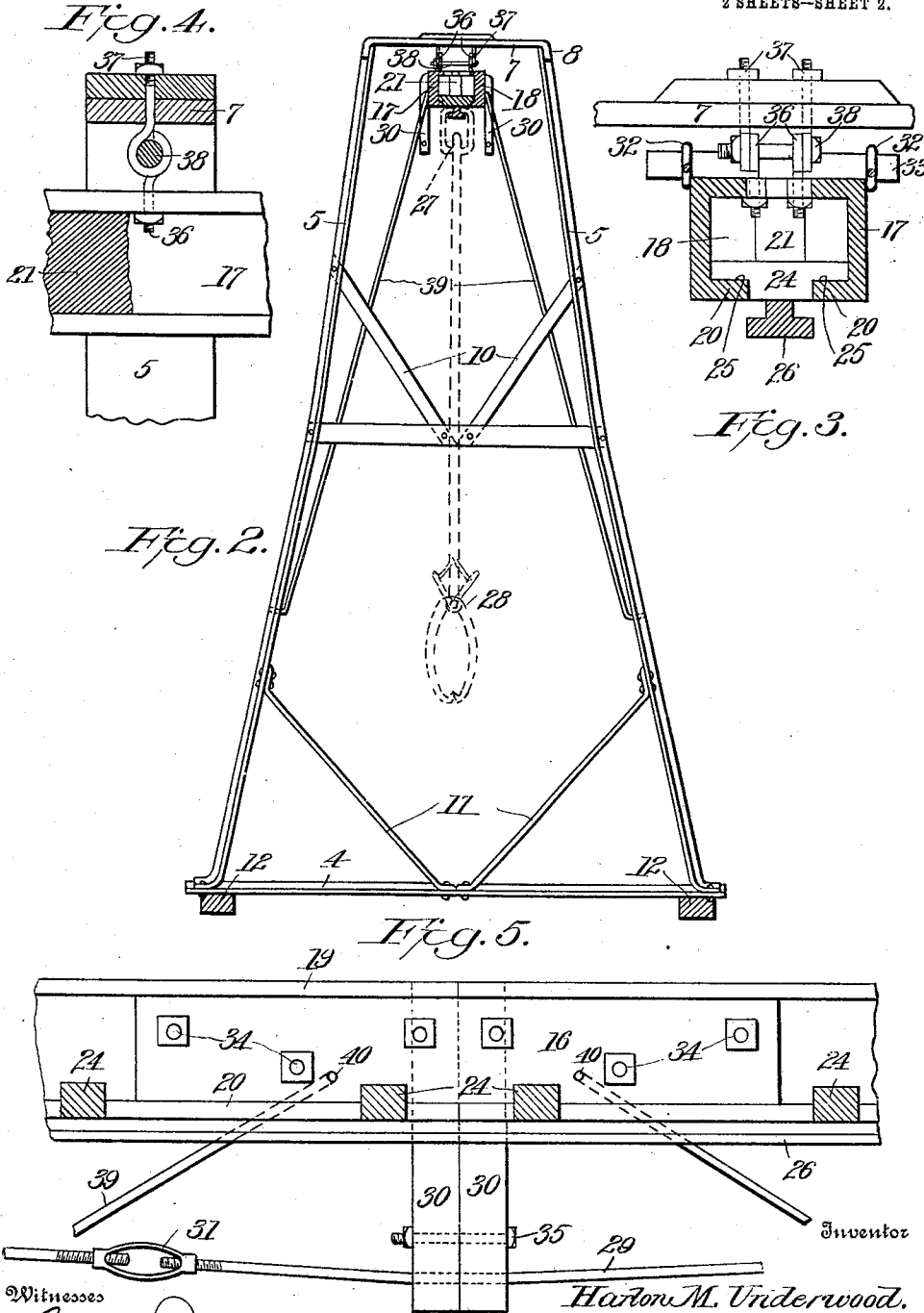
By E. E. Vrooman,
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Witnesses
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UNITED STATES PATENT OFFICE.

HARLON MONROE UNDERWOOD, OF UNIONVILLE, IOWA.

HAY-STACKER.

No. 908,522.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed February 24, 1908. Serial No. 417,454.

To all whom it may concern:

Be it known that I, HARLON M. UNDERWOOD, a citizen of the United States, residing at Unionville, in the county of Appanoose and State of Iowa, have invented certain new and useful Improvements in Hay-Stackers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improved frame for hay stackers, and has for its object the construction of a simple frame, which can be quickly assembled or disassembled, and which is capable of being transported with ease, not only in shipment, but also in its assembled position in the field.

Another object of the invention is the construction of a light and durable frame-structure, for carrying the hay-lifting and conveying means, which comprises a minimum number of parts, is simple to construct, and is durable, as well as inexpensive to manufacture.

With these and other objects in view, the invention consists of certain novel constructions, combinations, and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a perspective view of an apparatus constructed in accordance with the present invention. Fig. 2 is an end-view of the structure shown in Fig. 1, parts being shown in section. Fig. 3 is a fragmentary, transverse, sectional view taken on line 3, 3, Fig. 1. Fig. 4 is a fragmentary, longitudinally, sectional view of the apparatus. Fig. 5 is an enlarged, fragmentary view, showing particularly the splice joint. Fig. 6 is a perspective view of one of the shoes.

In constructing my apparatus or frame-structure, for carrying the tackle and hay-fork, etc., I preferably form the same from metal, which increases the durability of the structure, and owing to the fact that the metal employed is, preferably, comparatively light benched steel or angle-iron, the structure is not hard to assemble or disassemble or transport, although a very durable apparatus is produced thereby.

Referring to the drawings by numerals, 1 designates the two end-sections, and 3 the horizontal top-section of the frame or apparatus. From the following description, it is to be noted that the end-sections 1 are pivotally connected or hinged to the top-section,

and, therefore, the sections can be assembled while they are lying flat upon the ground, and then by bringing the bottom portions of the end-sections towards each other, the top-section will be raised and the end-sections will be positioned in a vertical plane, shown in Fig. 1. The end-sections are similarly-constructed, and by reason of this fact, they are interchangeable, and, furthermore, it will, therefore, only be necessary to specifically describe one of the end-sections.

Each end-section comprises, preferably, a horizontal angle-iron beam 4, and, preferably, inclined, vertical standards 5. The standards 5 are also, preferably, constructed of angle-iron or steel, and the lower end of each standard is provided with a flat angle-extension or foot 6, which rests upon the horizontal portion of the base member 4. The angle-extensions or feet 6 of the standards 5 are fixedly secured to the horizontal portions of the angle-members 4. The tops of the vertical standards 5 in each end-section 1, are connected by a horizontal, upper, cross-piece 7, which has its ends turned and overlapping portions of the sides of the standards, Figs. 1 and 2, and these overlapping ends 8 are secured to the standards by any suitable fastening means. Primary braces 9 are secured between the standards 5, and have their upper ends fixedly secured to the inner faces of the standards and their lower ends secured to the horizontal portion of the base or angle-member 4. It is to be noted that these braces 9 are inclined, and that each brace has portions at its ends bent at an angle for facilitating the securing of the brace to the standard 5 and the base member 4. The lower angled ends of the inclined primary braces 9, preferably abut, Fig. 1, for increasing the rigidity of the end-section. Auxiliary, inclined braces 10 are fixedly secured, at their lower ends, to the intermediate brace 11, and said braces 10 have their upper ends bent at an angle, and secured to the inner faces of the angle-standards 5. It will be noted that this structure produces a very rigid end-section, which is comparatively simple to construct.

When the frame or apparatus is in the field, I may place shoes 12 on the bottom of the horizontal base-member 4. I employ, preferably, two of these shoes 12 on each end-section. Each shoe comprises a body portion having a transverse notch or cut-out

portion 13 formed in its upper face, which notch or cut-out portion is of substantially the same width as the base-member 4, so that the shoe will not be easily removed after the end-section has been seated or placed therein. The lower face of the shoe is curved or rounded at each end, as at 14, constituting a runner, so that by attaching a draft animal, or other suitable hauling means, to one or both of the end-sections, the frame or apparatus may slide over the ground either to one side or forward or backward, relative to the position desired, or the relationship of the frame with the stack or rick.

The top or horizontal section 3 is, preferably, formed of two sections, which are spliced together, at the center 15, by means of detachable plates 16 that are bolted to the sections, as hereinafter described. Each section of the top-section comprises a pair of horizontal, flanged beams 17 and 18. Each beam is provided with an upper and lower, inwardly-extending flange 19 and 20, respectively. An auxiliary beam 21 is positioned, at its inner end, between the outer ends of the two beams in each section, and is held in said position by any suitable fastening means. An aperture 22, constituting fastening means, is formed in the auxiliary beam 21, for receiving a guy, cable, or similar means 23 for fastening the frame or apparatus in a stationary position. The beams 17 and 18 of the top-section are closed together, at their outer ends, which ends are in engagement with the auxiliary beam, and diverge towards their inner ends or the center 15; said beams are held in a spaced or diverging position by means of track-supporting spacing blocks 24. Each block 24 is provided, in its under or lower portion with a pair of cut-out portions 25, Fig. 3, which fit over portions of the lower, inwardly-extending flanges 20.

A track 26 is secured to the under face of the blocks and this track is of any ordinary structure for permitting the carriage, shown by dotted lines 27, to pass longitudinally of the top-section 3. The carriage supports the hay-fork shown by dotted lines 28.

A pair of guy rods or trusses 29 engage or extend through the lower ends of vertical supports 30. The vertical supports are formed of cleats or pieces of material, and are fixedly secured, at their upper ends, preferably, to the outer faces of the beams 17 and 18. The vertical supports are of greater length at the center of the top-section and decrease in length towards the ends. Each guy-rod or truss 29 is formed in sections, and the inner contiguous ends of the sections are connected by a turnbuckle 31, whereby the rods can be kept taut. Each rod is provided, at its ends, with loops or annular portions 32, which annular portions surround horizontal members or bars 33 that have

their ends projecting beyond the sides of the beams 17 and 18, Figs. 1 and 3. The guy-rods 29 provide a rigid brace, strengthening the entire structure of the top-section.

Each plate 16 overlaps the abutting or contiguous inner end of the two beams, and these plates are, preferably, placed between the upper and lower flanges and secured against the inner face of the beams, as clearly shown in Fig. 5. Suitable fastening means, as for instance, bolts 34, are passed through registering apertures formed in the beams and spliced plates, and detachably secure the beams together, but by reason of this spliced structure, it will be noted that when it is desired to disassemble the frame or apparatus, these can be quickly accomplished by merely unscrewing the nuts on the bolts 34, and removing the splice-plates 16; the sectional structure of the beams 17 and 18 permit the apparatus to be shipped in a comparatively small space, or when it is stored, it will not occupy as much room, as would be the case, if the beams 17 and 18 were formed in a solid piece and not split or separated contiguous to their center.

The two central vertical supports 30 of each side of the top-section, are, preferably, fastened together, by a suitable fastening means, as for instance, bolt 35.

The means for pivotally connecting or hinging the end-sections to the top-section comprises, preferably, primary eye-bolts 36, which have their shanks passing through the top flanges 19 of the flanged beams, and these bolts are secured in position by threading nuts upon their projecting ends. Auxiliary eye-bolts 37 are passed through the top cross-piece 7, and nuts are also threaded upon the extended ends of these auxiliary bolts for securing them in position. The eyes of bolts 36 and 37 are capable of registering, and through these eyes, are passed horizontal bolts 38, which forms a pintle or pivot-pin, upon which the end-sections pivot. This is a very simple and inexpensive structure, but is efficient.

When the apparatus or frame is in a field, and it is desired to move the same, or, in fact, when the frame is assembled, and it is desired to change the position thereof, I, preferably, employ detachable bracing-rods 39, each of which is provided at its ends with angularly-disposed hooks or horizontal extensions 40. The lower extensions or hooks 40 extend through apertures 41, formed in the vertical standards 5 of the end-sections. It is to be noted that a plurality of these apertures may be formed for securing different inclined positions of the end-sections relative to the top-section, as it will be obvious that the placing of the lower hooked ends or extensions 40 higher up on the standards, will tilt or incline the standards inward, whereas the placing of the hooks or exten-

sions 40 in the lower apertures will place the end-sections in approximately a vertical plane. The upper hooks or extensions 40 extend, preferably, through registering apertures formed in the horizontal beams and the spliced plates, Figs. 1 and 5. These rods can be quickly placed in position and easily detached, but when they are assembled upon the frame, they will perform the function of a rigid lock for holding the end-sections against pivotal or hinged movement upon the top-section, and, furthermore, if a stack or rick is not being formed between the end-sections, these bracing rods 39 will also prevent the top and end-sections from collapsing or falling over. However, when desired, these rods 39 can be removed and laid away, or placed to one side, and the frame used without the same.

In forming a stack or rick, the carriage 27 is drawn to one end of the track 26, and, consequently, the hay fork 28 passes through one of the end sections between the top cross-piece 27 and the intermediate brace 11 and the two standards, subsequently, the fork can be loaded and drawn upward, so as to permit the loaded fork to pass through the end-section, and then the carriage can be moved longitudinally of the top-section for placing the load in its desired position, which will obviate the necessity of a workman carrying the load from one place upon the stack or rick to another place, as is usually done when a hay stacker is not employed. In other words, the mechanical means which I have illustrated and described will facilitate the placing of each fork full of hay or straw, or like material in the desired position upon the stack or rick, which will minimize the expense of stacking the hay and also decrease the amount of labor expended.

What I claim is:

1. In an apparatus of the class described, the combination with end-sections and a top section, means connecting said end-sections and top-section, and detachable shoes engaging the bottom of said end-section, each shoe comprising a body portion provided with an open-ended transverse notch or cut-out portion, said body provided with rounded ends on its under face constituting runners, each shoe being adapted to longitudinal adjustment upon an end-section.

2. In an apparatus of the class described, the combination of end-sections, a top-section carried by said end-sections, each end-section comprising a horizontal, angle base-member, standards secured at their lower end to the horizontal portion of said base-member, and a horizontal cross-piece connecting the upper ends of said standards and having angle portions overlapping the sides of said standards.

3. In an apparatus of the class described, the combination with end-sections, of a

sectional top-section carried by said end-sections, each section of said top-section comprising horizontal beams, the beams in one section abutting at their inner ends against the beams in the other section, overlapping means extending across the engaging-ends of said beams and constituting splicing means for securing the engaging-ends of the beams together, a track, and means supporting said track upon said beams.

4. In an apparatus of the class described, the combination with end-sections, of a top-section carried by said end-sections, said top-section comprising beams secured together at their outer ends and spaced apart intermediate their ends, a block secured between said beams, and a track suspended from said block.

5. In an apparatus of the class described, the combination with end-sections, of a top-section carried by said end-section, said top-section comprising beams spaced apart intermediate their ends, a plurality of horizontal blocks positioned between said spaced beams, and a track secured to the under face of said blocks.

6. In an apparatus of the class described, the combination with end-sections, of a top-section carried by said end-section, said top-section comprising beams, auxiliary beams positioned between said first-mentioned beams and extending beyond the ends thereof, and a track positioned beneath all of the beams and suspended therefrom.

7. In an apparatus of the class described, the combination with a support, of a pair of beams secured to said support, each beam provided at its lower edge with an inwardly-extending flange, a block positioned between said beams and having a portion positioned between the flanges of said beams, and a track supported by said block.

8. In an apparatus of the class described, the combination with a support, of a top-section carried by said support, said top-section comprising sections, each section comprising beams, the beams in one section engaging the inner ends of the beams in the other section, and means detachably securing said sections together at their engaging ends, and means for supporting a movable carriage and hay fork upon said beams.

9. An apparatus of the class described, comprising a top-section, end-sections movably secured to said top-section, detachable rods provided with extensions at their ends, the extensions of said rods extending through portions of said top-section and said end-sections for holding the end-sections and top-section against movement and rigidly securing the same together.

10. An apparatus of the class described, comprising end-sections, a top-section, depending eye-bolts carried by each of said end-

sections, upwardly-extending eye-bolts carried by said top-section near each end and positioned parallel with the depending eye-bolts of the end-sections, and detachable members positioned in the registering eye-bolts of the end-sections and top-section near each end.

11. In an apparatus of the class described, the combination with a support, of a top-section carried by said support, said top-section comprising sections, each section comprising beams, the beams in one section engaging the inner ends of the beams in the other section, and means positioned against the sides of all of the beams and extending across their junction point and detachably securing the beams of the sections together.

12. In an apparatus of the class described, the combination with a support, of a top-section carried by said support, said top-section provided upon its outer face with vertical supports, each support comprising a body having a reduced upper section, the extension lying against the sides of the top-section and having a portion of the body positioned beneath said section, guy-rods at the sides of the top-section and engaging and extending through portions of the supports at their lower ends, and means connecting the ends of said guy-rods to the top-section near its outer ends.

13. In an apparatus of the class described, the combination with a support, of a top-section carried by said support, said top-section comprising beams, the beams in one section abutting against the inner ends of the beams in the other section, vertical supports secured to each beam at its inner end, all of the supports at the inner ends of the beams in engagement, each support having a portion positioned under the lower face of a beam and another portion positioned against the side of the beam, and bracing-means secured near its ends to the sections and engaging the lower ends of the supports.

14. In an apparatus of the class described, comprising a top-section, end-sections movably secured to said top-section, each end-section provided with a plurality of horizontal apertures, detachable rods adapted to be moved off of said sections, said rods provided with horizontal extensions at their ends, and the extensions at one end of each rod extending into the top-section and an extension at the opposite end extending into one of the apertures of an end-section and being adapted to be adjusted upon said end-section by positioning the extension in either of the apertures.

15. In an apparatus of the class described, the combination of vertical end-sections and a horizontal top-section, means pivotally connecting said top-section and said end-sections, each end-section comprising an angle base-member, longitudinally-movable

shoes positioned upon said base-member, angle standards provided with horizontal extensions at their other ends, the extensions resting upon the horizontal portion of the base-member, and one edge of each standard engaging the vertical portion of said base-member, a cross-piece extending across the top of said standards and having integral angle-portions parallel with the sides of the standards, and means connecting the end-section and the top-section intermediate their ends and being adapted to prevent pivotal movement of said sections with respect to each other.

16. An apparatus of the class described, comprising a pair of end-sections and a top section, means connecting said top-section to said end-sections, each end-section provided with a pair of standards, each standard provided with a horizontal aperture, said top section provided with horizontal apertures, a pair of rods detachably secured at their upper ends in apertures of the top-section and having portions detachably positioned in the horizontal apertures of the standards of the end-sections, whereby the end-sections are prevented from having pivotal movement upon the top-section and also preventing the end-sections from being slightly rotated or twisted at their connection with the top-section.

17. In an apparatus of the class described, the combination of end-sections and a top-section supported by said end-section, each end-section comprising an angle base member, angle standards secured to the horizontal portion of said base member, braces provided at each end with an angle portion, and the angle portions at the lower ends of said braces secured to the horizontal portion of said base member and the angle portions at the upper ends of said braces secured to the inner faces of the standards.

18. In an apparatus of the class described, the combination with end-sections and a top section, of a pair of apertured-members secured to each end-section, a plurality of pairs of apertured-members secured to said top-section, the pairs of apertured-members of the top-section positioned parallel with the pairs of apertured members of the end-sections and all of the apertures of the pairs registering, and detachable members extending through the apertures of the registering pairs and connecting the top sections to the end-sections, and also permitting a pivotal movement of the end-sections upon the top-sections.

19. In an apparatus of the class described, the combination of end-sections, each end-section comprising spaced standards and a cross-piece connecting the standards at their upper ends, apertured depending members secured to each cross-piece between its ends and between the standards of the section, a

top-section provided with apertured members, the apertured members of the top-section having their apertures registering with the apertures of the members carried by the cross-pieces, and transversely-extending fastening means positioned within the registering apertures of the members and securing the end-sections and top-section together.

20. In an apparatus of the class described, the combination of end-sections and a top-section, each end-section comprising spaced standards and a horizontal cross-piece connecting the upper ends of said standards, the top-section positioned between the standards of each end-section, means de-

tachably securing the top-section to the cross-pieces, detachable bracing-means extending inwardly from each standard intermediate its ends and connected to the top-section near its center, whereby the end-sections are prevented from twisting or having a slight rotary movement at the connection between the cross-pieces and the top section.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

HARLON MONROE UNDERWOOD.

Witnesses:

F. A. WILSON,
Z. S. PATTISON.