

No. 618,924.

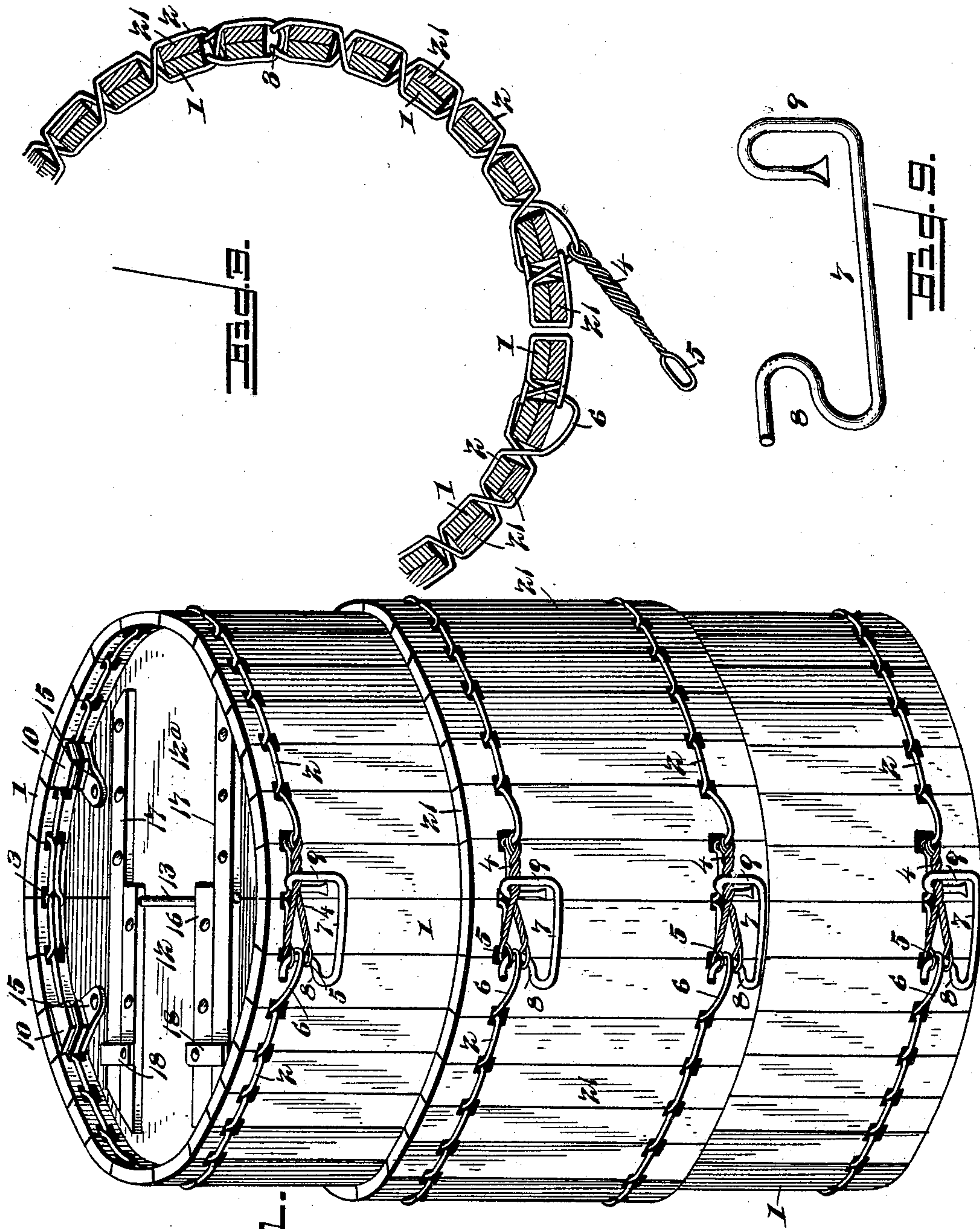
Patented Feb. 7, 1899.

**E. WALTON.  
KNOCKDOWN BARREL.**

(Application filed Mar. 8, 1897.)

(No Model.)

4 Sheets—Sheet 1.



Inventor

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Witnesses

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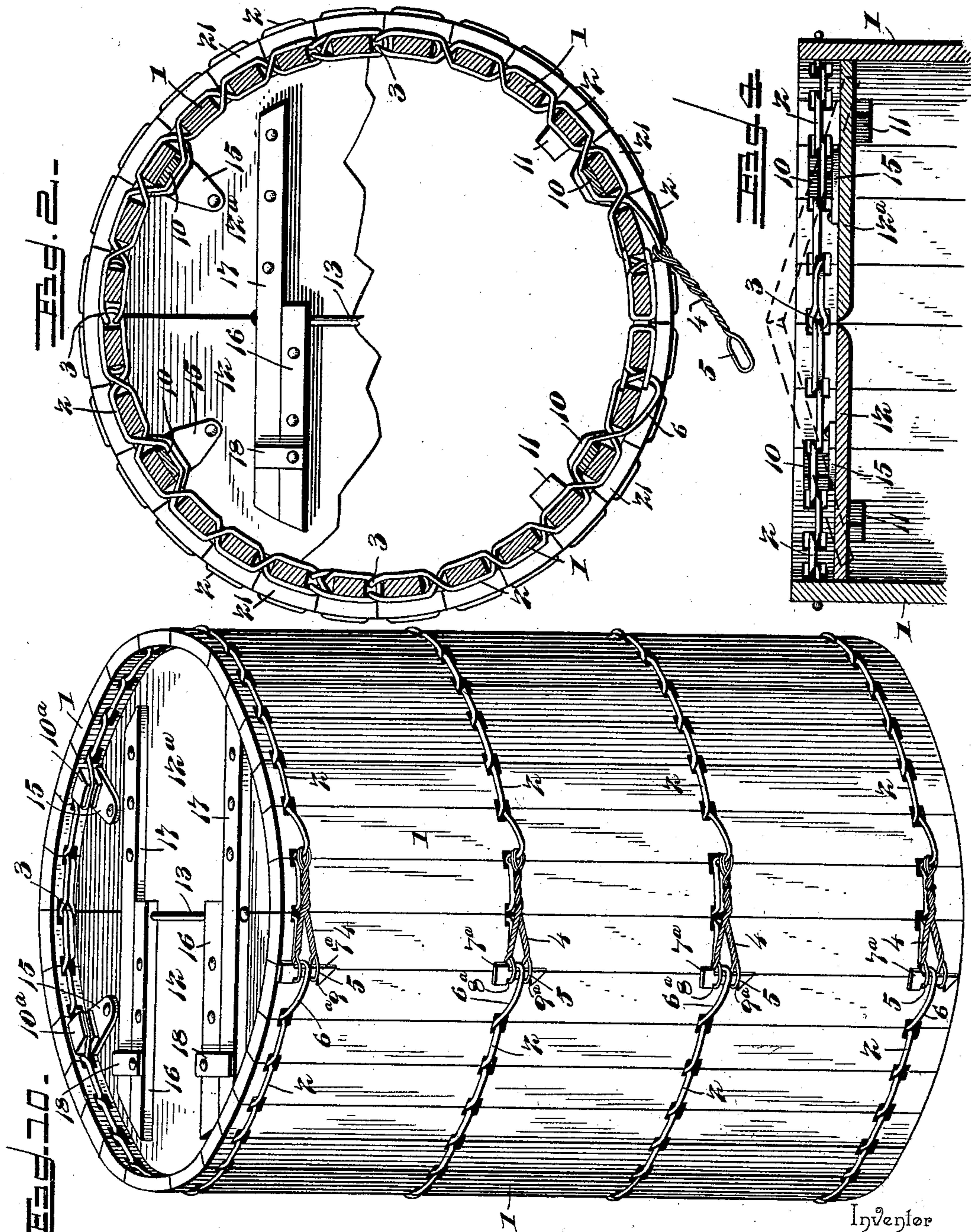
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4 Sheets—Sheet 2.



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4 Sheets—Sheet 3.

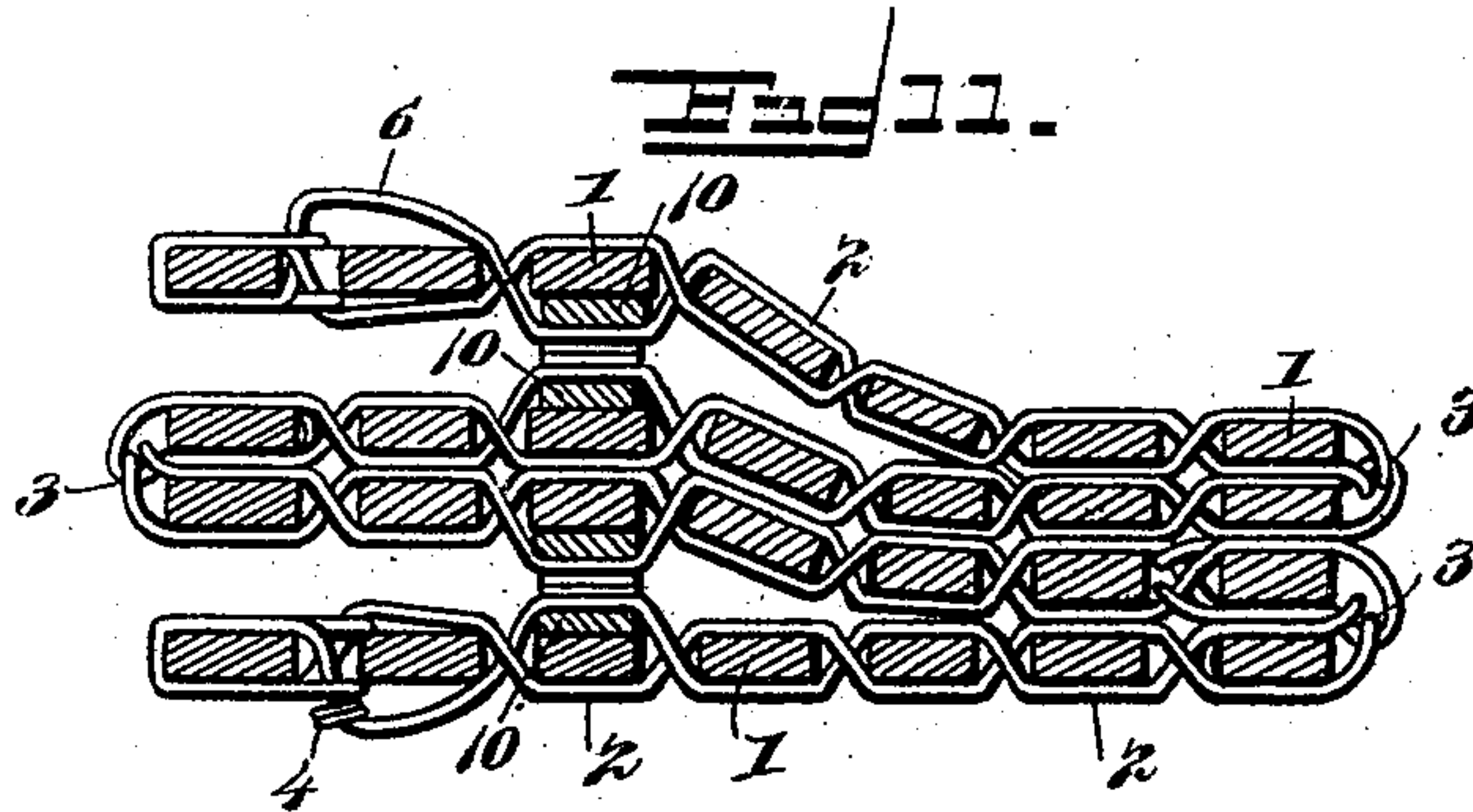


Fig. 5.

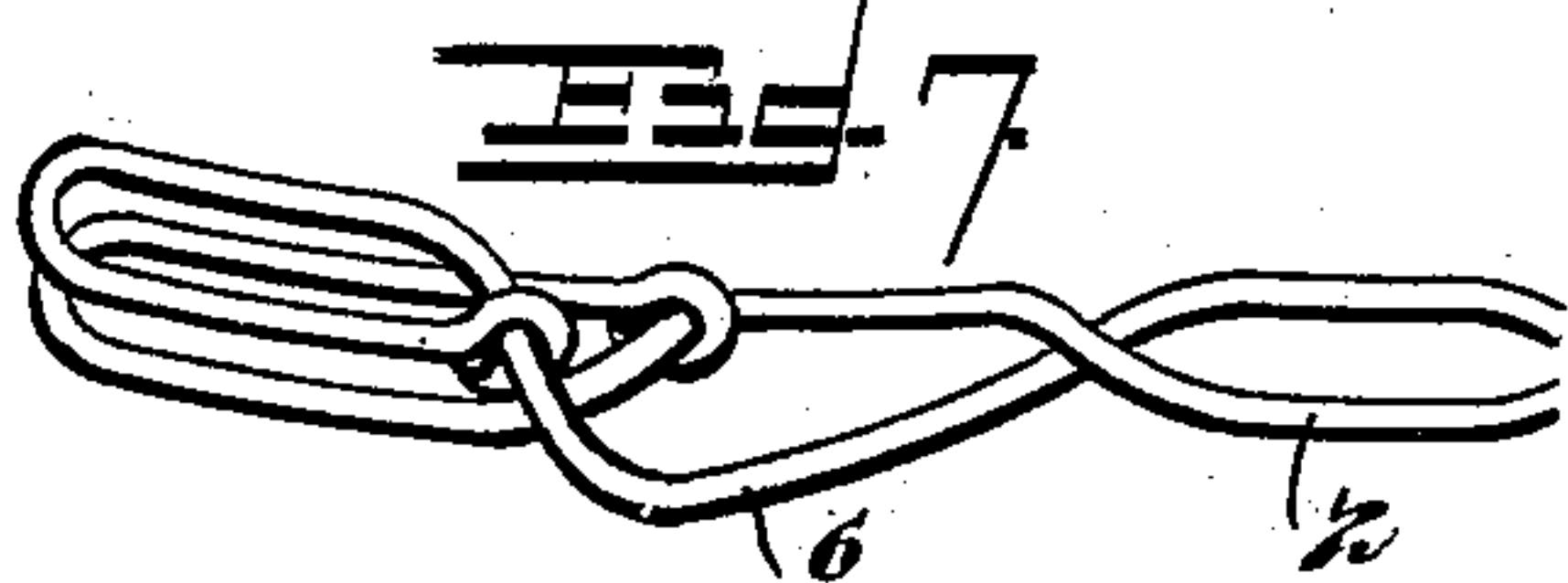
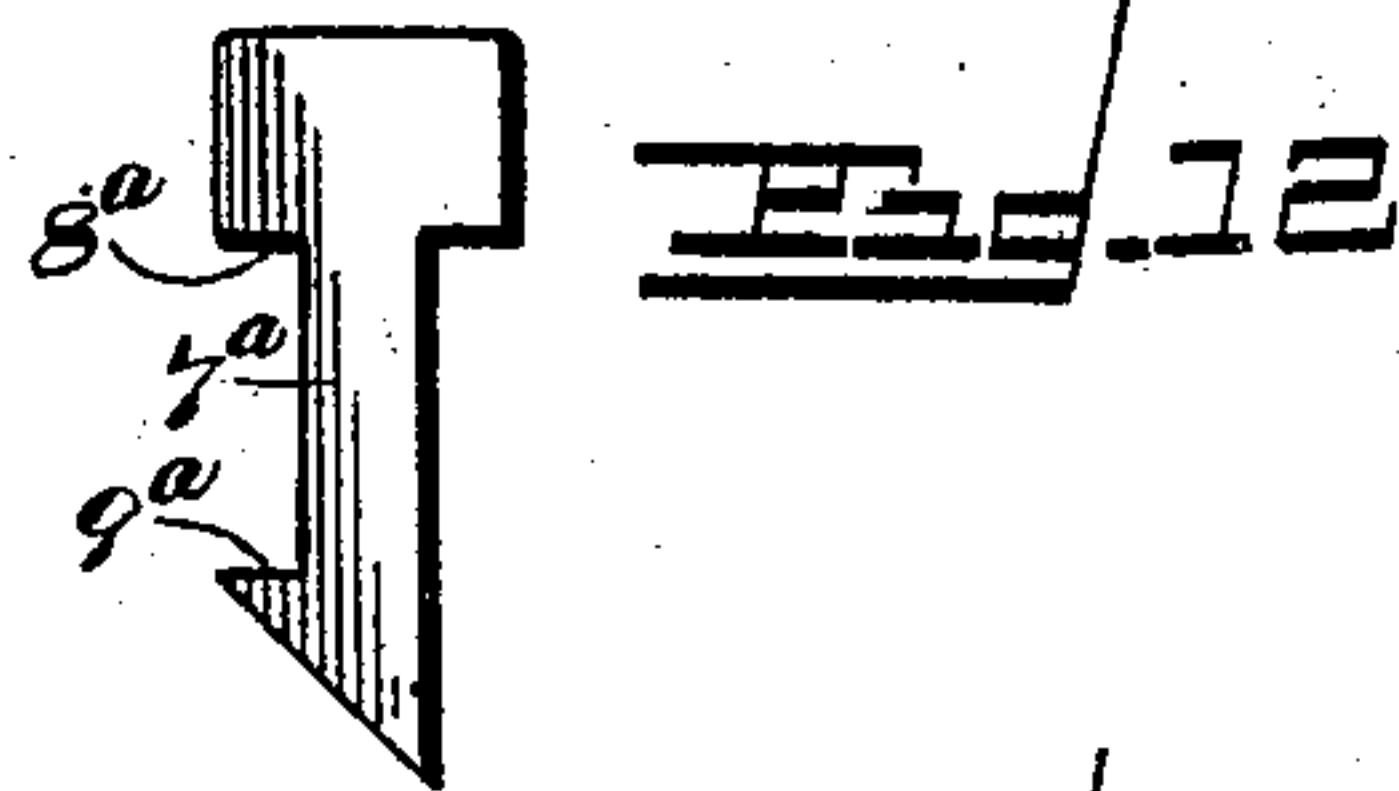
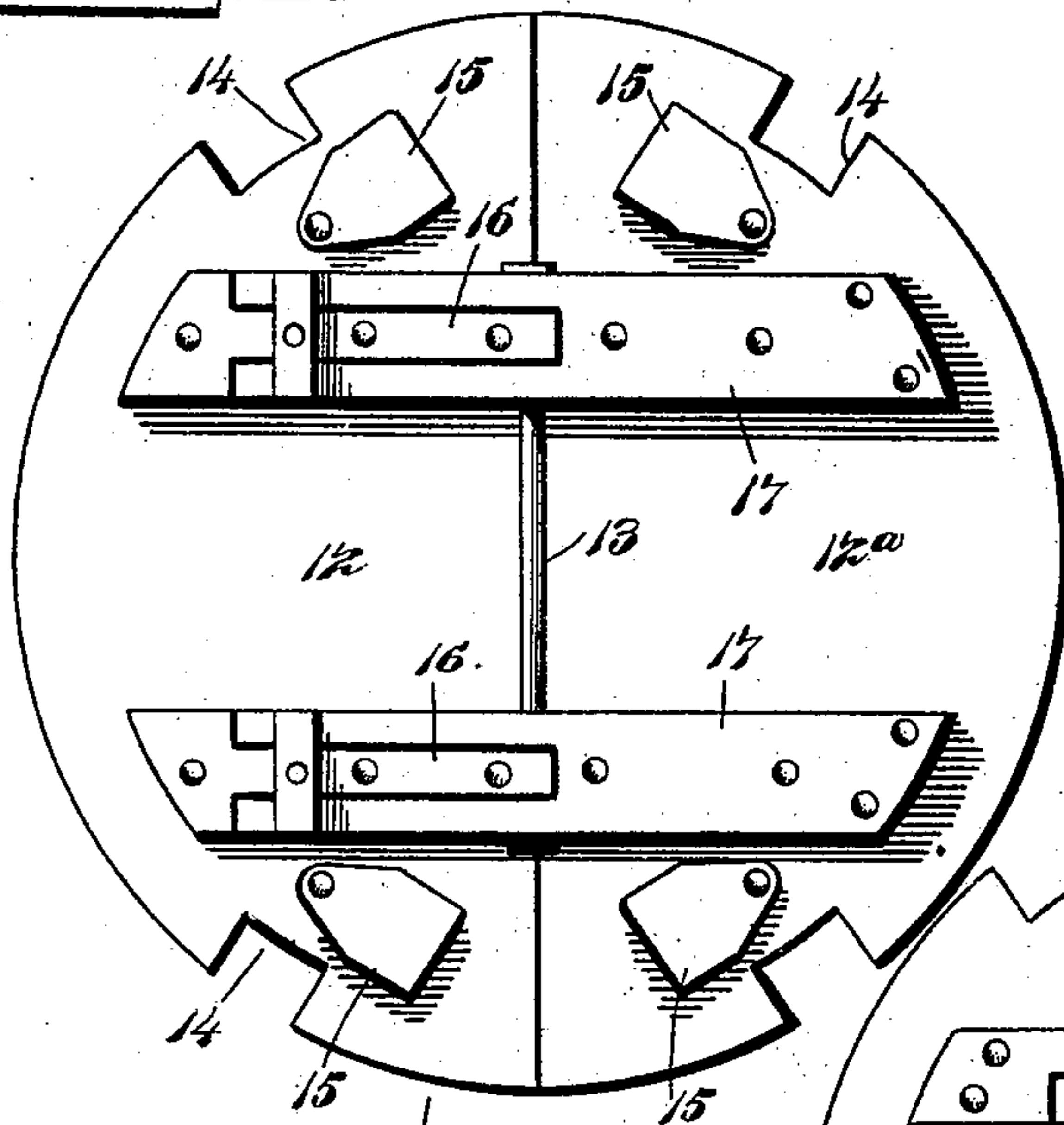
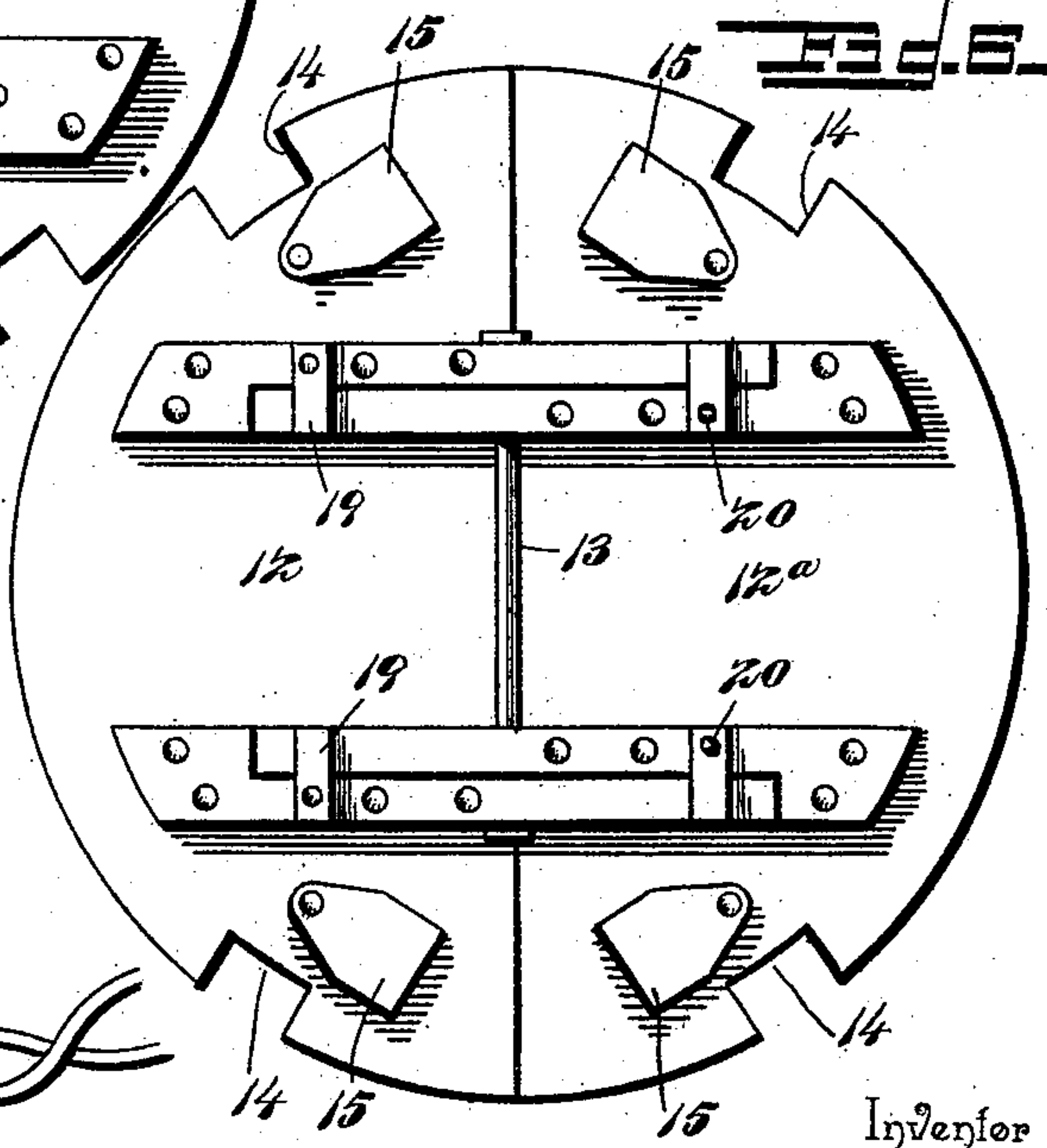
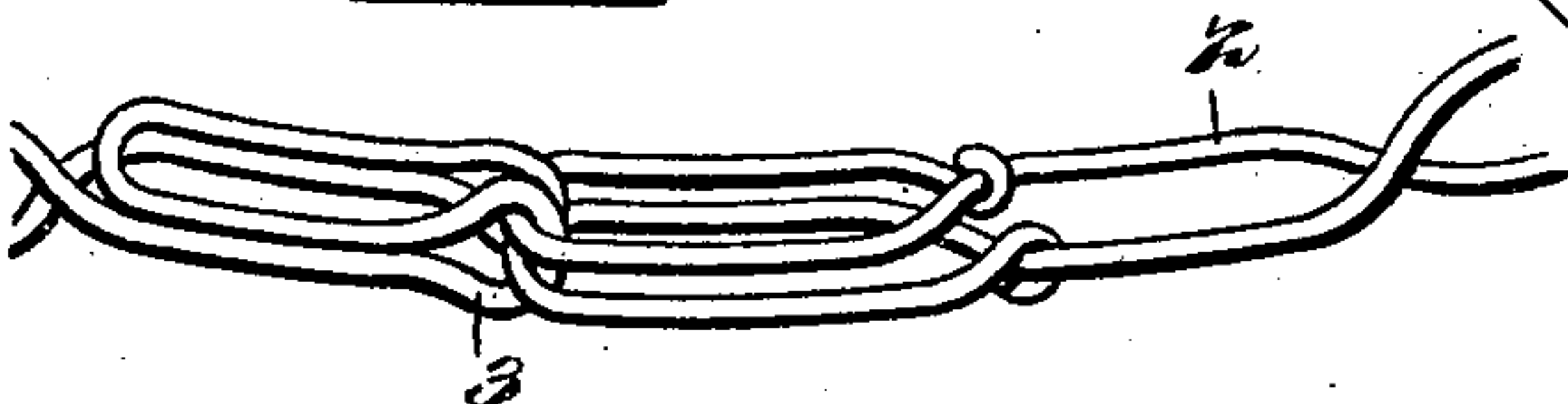


Fig. 8.



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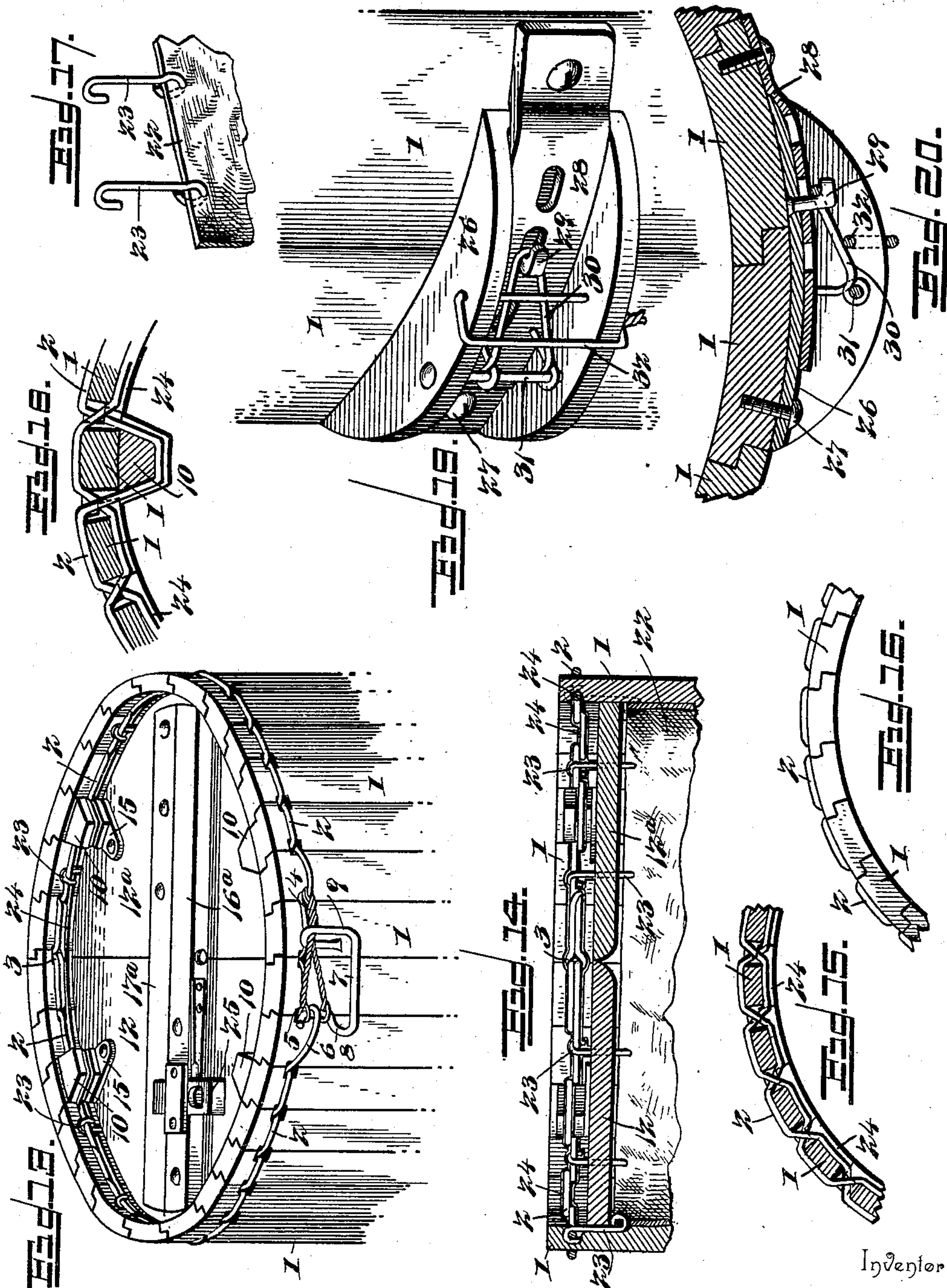
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

EDWARD WALTON, OF PENRITH, VIRGINIA.

## KNOCKDOWN BARREL.

SPECIFICATION forming part of Letters Patent No. 618,924, dated February 7, 1899.

Application filed March 8, 1897. Serial No. 626,494. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD WALTON, a citizen of the United States, residing at Penrith, in the county of Cumberland and State of Virginia, have invented a new and useful Knockdown Barrel, of which the following is a specification.

My invention relates to shipping and storing receptacles, and particularly to those adapted to be knocked down for return shipment and storage in quantities; and the object in view is to provide a receptacle comprising the minimum number of detachable parts and adapted, when extended, to be firmly secured against distortion, as by rough handling in transit.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a receptacle constructed in accordance with my invention. Fig. 2 is a transverse sectional view of the same, taken contiguous to the plane of one of the hoops or stave connections. Fig. 3 is a similar view taken in the plane of one of the connections by which the auxiliary or bracing staves are secured in place. Fig. 4 is a vertical sectional view of the upper head of the receptacle, showing in dotted lines the position of said head in applying it to the receptacle. Figs. 5 and 6 are plan views of slightly-modified constructions of receptacle-covers. Fig. 7 is a detail view of a portion of the connection, showing the staple constituting one member of the locking device. Fig. 8 is a similar view of a portion of the connection, showing one of the hinge-joints. Fig. 9 is a detail view in perspective of the key detached. Fig. 10 is a perspective view of a slightly-modified form of receptacle wherein the auxiliary or bracing staves are omitted and wherein a slightly-modified form of key is employed. Fig. 11 is a transverse sectional view of the wall or side of the receptacle shown in Fig. 10 when folded. Fig. 12 is a detail view of the key shown in Fig. 10. Fig. 13 is a perspective view of a portion of a receptacle, showing an improved arrangement of staves and including a feature designed particularly

for use in shipping small articles which are liable to escape through the joints between the staves. Fig. 14 is a vertical section of the same. Fig. 15 is a detail horizontal section taken in the plane of one of the flexible connections whereby the staves are secured together. Fig. 16 is a detail plan view of a portion of the side wall of the receptacle to show the overlapping joints between the staves. Fig. 17 is a detail view of a portion of the apron which is suspended in contact with the inner surface of the side of the receptacle. Fig. 18 is a detail sectional view of the lid or cover-retaining block illustrated in Figs. 1 and 2. Fig. 19 is a detail view in perspective of a modified construction of locking devices whereby the terminal staves of the barrel members are connected. Fig. 20 is a horizontal section of the same.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The receptacle wall or side comprises a plurality of contiguous staves 1, held in the proper relative positions by flexible hoops or connections 2, any desired number of which may be employed and each consisting of doubled wires of which the sides are arranged to intersect or cross each other alternately in opposite directions between the contiguous edges of the staves. The wall or side of the receptacle is preferably formed in sections, each section comprising a plurality of staves, and these sections being hinged together to facilitate the folding thereof in approximately horizontal planes. In the construction illustrated the members or staves comprising each section are secured together by connecting-wires, which are extended at the joints between the sections to form interlocking loops or hinges 3, as shown clearly in Figs. 2, 3, and 8, whereby when the contiguous edges of the terminal sections of the receptacle wall or side are disconnected said wall may be folded to occupy a small space. (See Fig. 11.)

In order to adapt the staves to fit close together at their contiguous edges and thereby avoid forming intervals through which small articles may escape, I preferably notch said edges of the staves in the planes of the hoops or connections, as also shown in Figs. 2 and 4, the notches in the edges of adjacent staves



being arranged in registration and combining to form a space, in which the opposite sides of the tie or connection intersect. This arrangement allows sufficient flexibility or  
 5 relative movement of the staves to enable them to conform to the general shape of a barrel or adapt themselves to a generally cylindrical arrangement without allowing sufficient looseness to form objectionable intervals between the staves.

It will be seen, furthermore, that a special advantage of the particular form of flexible wire or other connection between the staves or slats forming the body portion of the improved fabric resides in the fact that the  
 15 strands constituting each connection simply cross between the staves or slats, and hence a very small opening, such as a notch or kerf, is necessary to seat the strands at the joints, thus enabling me to weave the fabric without  
 20 forming seats of a size sufficient to allow injury to the contents of the receptacle. This feature is of particular importance in connection with tobacco-shipping hogsheads from  
 25 the fact that in order to preserve the tobacco-leaf in a merchantable condition it is necessary to exclude light, air, and moisture to the greatest possible extent.

A still further particular advantage of the described construction resides in the fact that the intermediate portions of the strands—  
 30 namely, between the portions which are arranged in contact with one surface of a given stave or slat and the opposite surface of the adjoining stave or slat—are disposed diagonally and at such a long inclination as to arrange the same approximately in alinement with the connected portions of the strands. Hence when the connections are subjected to  
 40 the strain which is incident to the packing of tobacco-leaf the strands cannot be further straightened, and therefore the strain cannot separate the staves at their joints. It will be clear that the efficiency of the connections as  
 45 preventing the separation of the staves when subjected to internal pressure will be proportionate to the length of the inclined or diagonal connecting portions or, in other words, to the approach of said connecting portions to  
 50 positions of alinement with the connected or bearing portions of the connections, and hence in constructing the barrel forming the subject-matter of my invention I avoid arranging the intermediate portions of the connections in abruptly-angular positions—as, for  
 55 instance, by carrying said intermediate portions across the meeting edges of adjoining staves in planes approximately perpendicular to the outer and inner surfaces of said staves.  
 60 In practice the intermediate portions of my improved connections are disposed approximately parallel with said outer and inner surfaces of the staves connected thereby.

It is for an analogous reason—namely, to  
 65 withstand the strain incident to the pressure of the contents of a receptacle—that I employ hinges between the sections of the re-

ceptacle-wall, consisting of extensions of the connections. By looping the extremities of the flexible connections, the loops at one edge  
 70 of a section being arranged in a vertical or longitudinal plane parallel with the inner and outer surfaces of the staves, while the loops at the opposite edge of said section are arranged in horizontal or transverse planes  
 75 perpendicular to the surfaces of the staves, I am enabled to engage or interlock the loops and form a hinge which, while allowing the sections to fold in approximately parallel  
 80 planes, will prevent the spreading of the joint between the sections and at the same time communicate the strain upon the flexible connections of one section to those of the connected sections and thereby attain a strength  
 85 in the structure which is necessary in connection with tobacco-shipping receptacles. For instance, it will be seen that I have avoided the use of screws, nails, and other fastening devices as a means of attaching hinges to the connected edges of receptacle-sections and  
 90 have also avoided any means of connection which depends upon attachment to the material of the staves. The wire or equivalent connections are interwoven to hold the staves, and said connections are interlocked at the  
 95 contiguous edges of the sections to form hinge-joints, and hence any expansive strain applied to the inner surfaces of the staves will be resisted solely by the tensile strength of the connections and will not affect the means of  
 100 attachment of the staves to the connections. If the flexible connections are of sufficient tensile strength to withstand the strain applied thereto, the members of the receptacle must retain their longitudinal and normal  
 105 positions, and hence the barrel-heads are not loosened, as they would be if the connections were so disposed as to allow even the slightest yield at the joints between the staves.

In the construction illustrated and above  
 110 described the connecting intermediate or inclined intersecting portions of the strands are disposed approximately in alinement with the portions of the strands respectively in contact with the inner and outer surfaces of the  
 115 staves by forming the registering notches or kerfs in the contiguous edges of the adjoining staves of a length greater than the thickness of a stave or greater than the interval between the parallel inner and outer portions  
 120 of the strands or those portions which are in contact, respectively, with the inner and outer surfaces of the staves. Obviously by having the combined lengths of the registering notches greater than the interval between the  
 125 parallel portions of the strands the inclined portions of the strands are disposed at angles less than forty-five degrees with the straight inner and outer or bearing portions of the strands, and hence any strain upon the fabric in the direction of the length of the strands  
 130 or transversely of the staves, as in packing a receptacle under pressure, will strain each strand approximately in alinement with its



length, and therefore the separation of the contiguous edges of adjoining staves will not occur and the liability of applying to a strand a strain beyond its tensile strength will be reduced to the minimum.

Various forms of connections may be employed between the free edges of the terminal sections of the receptacle wall or side, the form illustrated in the drawings consisting of a swinging latch 4, constructed of wire, bifurcated and provided with terminal eyes 5, adapted to be arranged upon opposite sides of and contiguous to a staple 6 for engagement by a key 7. (Shown clearly in Fig. 1 and in detail in Fig. 9.) This key is provided at one end with an engaging hook 8 to pass through the eyes 5 and staple 6 and at the other end with a retaining-hook 9 to engage the latch, and thereby retain the key in operative position.

The sections of the wall or receptacle side are provided at intervals with outer and inner projections or supporting-blocks 10 and 11, with sufficient space between the planes thereof to receive heads to close the ends of the receptacle. The upper head or that forming the top of the barrel or receptacle is preferably of such construction as to facilitate its introduction and removal, while the parts of the wall are arranged in operative position, and hence in practice I preferably employ a sectional construction of upper head, of which the sections 12 and 12<sup>a</sup> are hinged together at their contiguous diametrical edges by means of a pivot-pin 13, which in the construction illustrated engages suitable registering openings in cleats attached to the exterior surface of the head. The contiguous edges of the sections of the head are preferably beveled to allow the same to occupy an upwardly-bowed position, (illustrated in dotted lines in Fig. 3,) whereby the introduction of the exterior edges of the head between the outer and inner supporting-blocks is facilitated. As a further means of enabling the head to be applied without difficulty I preferably provide the same with peripheral notches 14, adapted to pass over the outer blocks 10, and contiguous to these notches are pivoted closing-plates 15, which may, as illustrated in Fig. 1, be swung over the notches, and hence under the outer blocks 10, when the head is in place, thus forming securing devices.

I have found in practice that a still further securing device is desirable, the same being formed by means of the cleats by employing short cleats 16 upon one section of the head and parallel long cleats 17 upon the other section to fold contiguous to the short cleats, the latter being provided with buttons 18 to swing over the ends of the long cleats. In Figs. 5 and 6 I have shown modified forms of this securing device, wherein in the former figure the long cleat is bifurcated to receive a reduced tongue on the short cleat, and in Fig. 6 the cleats are arranged to interlock, each being extended over the other

section of the head, and duplicate securing-buttons 19 19 and 20 20 being employed.

The outer projections or supporting-blocks 10, which are above described as being arranged at the outer surfaces of the heads, are designed to prevent internal pressure from displacing the heads when the barrel is in use, and the means which I prefer to employ for securing these exterior blocks to the staves consist of the wires forming the flexible hoops or connections 2, said blocks being grooved at their inner surfaces to form seats for the reception of the contiguous portions of said wires, as clearly shown in Figs. 2 and 4. The advantage of thus securing the projections or supporting-blocks resides in the fact that internal pressure has a tendency not only to force the head from place, but to bulge the sides of the barrel, and thus increase the tension upon the connections or hoops, and it is obvious that this increased tension upon the connections or hoops will hold the projections or blocks with proportionate firmness in their places. In other words, as the internal pressure increases the blocks are more firmly secured to the staves, and thus are able to more effectually resist pressure which is applied to the head. A further advantage of this construction and arrangement of parts resides in the fact that no additional fastening devices are required for the blocks, and the latter may be arranged at any desired points through the circumference of the barrel.

In order to give the body of the barrel a bulge at its center, in the first place to strengthen the main staves and in the second place to enable the barrel to be "cut" or turned from its side to its end with greater facility, I preferably employ short or auxiliary staves 21, preferably engaged by the intermediate flexible bands or connections 2 and being held in place solely by said bands or connections, as clearly shown in Fig. 3. In Figs. 10 and 11 the barrel is shown without these auxiliary or short staves, as it will be understood that said parts may be dispensed with when it is desirable to provide a light receptacle for articles not requiring the additional strength imparted by said auxiliary staves, and in said Fig. 10 and in detail in Fig. 12 I have shown a slightly-modified form of key 7<sup>a</sup>, provided with upper and lower shoulders 8<sup>a</sup> and 9<sup>a</sup>, adapted to engage the eyes of the hasp 4, which is of the same construction as that above described. It will be seen that with the exception of the auxiliary staves and the modified form of key the construction illustrated in Figs. 10 and 11 is identical with that shown in Figs. 1 to 3, inclusive, and while it is obvious that the body of a receptacle provided with the auxiliary or bracing staves 21 will not fold as compactly as illustrated in Fig. 11 it is obvious that the same can be folded into such form as to materially facilitate return transportation of "empties."



In Figs. 13 to 17, inclusive, I have shown an improved construction and arrangement of parts in so far as it relates to the joints between the staves and means which may be optionally suspended in contact with the inner surface of the receptacle when the latter is to be used for grain or material formed of small particles which are liable to work through the joints between staves when constructed as shown in Figs. 1 and 10. This improvement contemplates rabbeting the contiguous edges of the staves to cause them to overlap, and while this construction does not prevent the folding of the sections of the receptacle it effectually prevents contained articles from escaping; but in addition to this overlapping construction I have found it desirable under certain circumstances to employ an apron 22 for arrangement in contact with the inner surface of the side of the receptacle, said apron being provided at its upper edge with securing devices, such as hooks 23, for engaging the uppermost flexible connection 2, these hooks being provided with long shanks, whereby they do not interfere with the introduction and removal of the head of the barrel. This is clearly shown in Fig. 14.

It is also desirable, particularly in those barrels which are designed to receive this interior apron, which preferably extends to the plane of the lower head and may cover the latter, (this, however, not being shown in the drawings,) to countersink the inner sides of the flexible connections in grooves 24. (See Figs. 13, 14, and 15.) Also in this connection I have shown an improved form of automatic locking device for securing the cleats 16<sup>a</sup> and 17<sup>a</sup> in their normal relative positions, said device consisting of a spring-actuated bolt 25, having a beveled extremity, whereby the contact of the movable cleat extension represses the bolt and causes the automatic engagement thereof with said extension.

It should be understood that I do not desire to limit myself to these different features of improvement illustrated in Figs. 13 to 17, inclusive, as for the shipment of larger articles the construction illustrated in the preceding figures is adequate; but it is obvious that by employing these improved features a receptacle embodying my invention may be adapted for all of the various conditions of merchandise, whereby the advantages of the improvement are increased.

In Fig. 18 I have shown a detail view of one of the blocks 10, (illustrated in Fig. 1,) wherein the ends as well as the side are provided with grooves to countersink the contiguous portion of the flexible connection; but in Fig. 10 the wire is countersunk only in the inner side of the block, the block itself, which is shown at 10<sup>a</sup>, being slightly shorter compared with the width of the stave than that indicated in Figs. 1 and 2. Furthermore, the ends of the block 10 are beveled, whereby the inner side of the block is re-

duced in width, whereas the block shown in Fig. 10 is square-ended.

In Figs. 19 and 20 I have illustrated a modified construction of locking device for connecting the terminal staves of the barrel members, the same consisting of a hollow open-sided receiving member 26, adapted to be pivotally mounted, as at 27, upon one of the terminal staves, and a strap or adjustable member 28, adapted to fit within the receiving member and provided with a plurality of slots to engage a revoluble shouldered key 29, mounted upon the receiving member. In connection with said key I employ a bail or latch 30, mounted upon a transverse pin 31 and adapted at its looped end to engage the key, the shoulder of the latter to be turned outwardly and thereby engage and prevent the outward-swinging movement of the bail or latch. Also, where the barrel is liable to be subject to rough usage, I prefer to still further secure this bail or latch by employing a light wire tie 32, connecting the parallel side walls of the receiving member above the free end of the latch and adapted to be removed, as by untwisting its extremities or by severing the same, when it is desired to fold the barrel for return shipment.

It will be understood that the side wall of either of the forms of barrels illustrated in the drawings may be folded to form a flat package by reason of the peculiar construction of the hinges employed between the sections of the side wall, the looped portions of the hinges being sufficiently loose to allow the same even when the exterior or bracing staves are employed.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A receptacle having its side wall constructed of a continuous series of foldably-connected flexible sections, each comprising a plurality of staves held in place by interwoven wire connections, the extremities of the wire connections at the contiguous edges of adjoining sections having interlocking loops forming connecting-hinges, substantially as specified.

2. A receptacle having its side wall constructed of a continuous series of hingedly-connected flexible sections, adapted, when folded, to form a plurality of layers lying in approximately parallel planes, each section comprising a plurality of staves held in place by interwoven wire connections, consisting of strands bearing, respectively, against the opposite surfaces of each stave, and crossed in passing from one surface of a slat to the opposite surface of the next slat, and said connections of adjoining sections being looped, with the loops at the edge of one section interlocked with the loops at the contiguous



edge of the adjoining section, substantially as specified.

3. A receptacle having a flexible wall or side constructed of staves secured together by flexible connections, inner and outer supporting-blocks carried by the wall or side contiguous to one end, a head adapted to be fitted within the end of the wall or side between the planes of said blocks and provided with peripheral notches to fit over the outer blocks, and swinging plates carried by the head to close said notches, substantially as specified.

4. The combination with a receptacle provided contiguous to one end with inner and outer projections, of a head of sectional construction having its members hinged together at their contiguous diametrical edges, said members being provided with parallel fixed cleats, and the cleats of one member being extended to overhang the other member and occupy positions contiguous to and parallel with the cleats of the said other member, and means, as buttons, mounted upon the cleats of one member for securing said cleat extensions against upward swinging movement when the head is extended, substantially as specified.

5. The combination with a receptacle constructed of separable staves and interlaced-wire connections forming hoops, and a head fitted within the end of the receptacle, of blocks arranged at intervals in contact with the inner surfaces of the staves and adapted to be arranged exteriorly of the head to prevent the outward displacement thereof, said blocks being engaged and held in place by said wire connections, substantially as specified.

6. A receptacle having its wall or side constructed of separable staves, flexible bands connecting said staves and consisting of interlaced wires which lie in contact with the inner and outer surfaces of the staves, a head fitted in the end of the receptacle, and inner and outer supporting-blocks arranged at opposite sides of the plane of the head and secured to the staves, the outer blocks being provided at their inner sides with grooves or seats through which extend the contiguous portions of the connecting-wires for the staves, whereby internal pressure applied to the receptacle increases the tension of the connections and secures the blocks firmly to the staves, substantially as specified.

7. A receptacle having its wall constructed of separable main staves and interlaced-wire connections forming hoops, and auxiliary or bracing staves of less length than the main staves, arranged in contact with the outer surfaces of the latter and secured in place by said wire connections, substantially as specified.

8. A receptacle having its wall or side constructed of separable main staves and interlaced-wire connections forming terminal

hoops and a plurality of intermediate hoops, and auxiliary or short bracing staves arranged respectively in contact with the outer surfaces of the main staves and terminally engaged by the intermediate hoops, substantially as specified.

9. A receptacle having its wall or side constructed of staves secured together by flexible connections, and means for connecting the free ends of said wall or side, the same comprising a swinging bifurcated latch carried by one edge and provided with spaced terminal eyes, a staple on the other free edge, upon opposite sides of which said eyes are placed, and a key provided at one end with an engaging hook to extend through said eyes and staple, and provided at the other end with a retaining-hook to engage said latch to prevent displacement of the engaging hook, substantially as specified.

10. A receptacle having its wall constructed of separable staves and interlaced-wire connections, said connections being countersunk into the inner surfaces of the staves to lie flush with the same, in combination with a flexible apron open at its upper and lower ends detachably secured at its upper edge to the upper wire connection to hang in contact with the inner surfaces of the staves, substantially as specified.

11. The combination with a receptacle having separable staves and interlaced-wire connections forming hoops, of a flexible apron open at its upper end arranged in contact with the inner surface of the wall and provided at its upper edge with hooks for detachably engaging the portions of said wire connections at the inner sides of the staves, substantially as specified.

12. The combination with a receptacle having its side wall composed of separable staves held in operative position by interwoven-wire connections, and heads forming the end walls of the receptacle, the upper head being arranged below the plane of the upper wire connection, of a flexible apron, open at its upper end, arranged in contact with the inner surface of the wall of the receptacle and provided at its upper edge with hooks detachably engaged with the portions of the upper wire connections at the inner sides of the staves, the shanks of said hooks passing between the periphery of said upper head and the inner surfaces of the staves, and being held by the contact of said head from disengagement from the wire connection, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD WALTON.

Witnesses:

C. W. DICKINSON,  
B. F. DUKE.