

(No Model.)

2 Sheets—Sheet 1.

M. A. HAMILTON.  
WOVEN WIRE AND SLAT PACKING CASE.

No. 437,594.

Patented Sept. 30, 1890.

Fig. 1

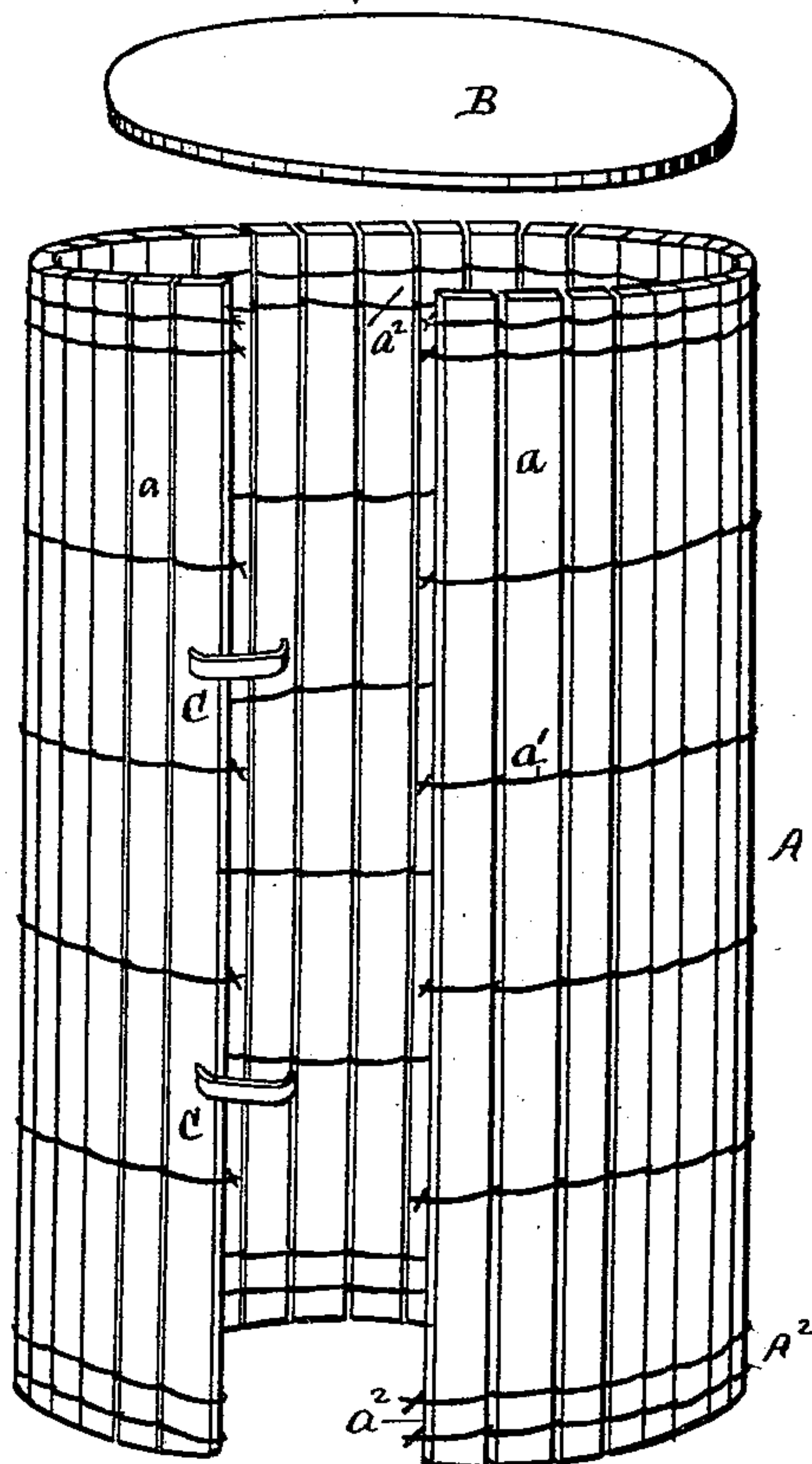


Fig. 2

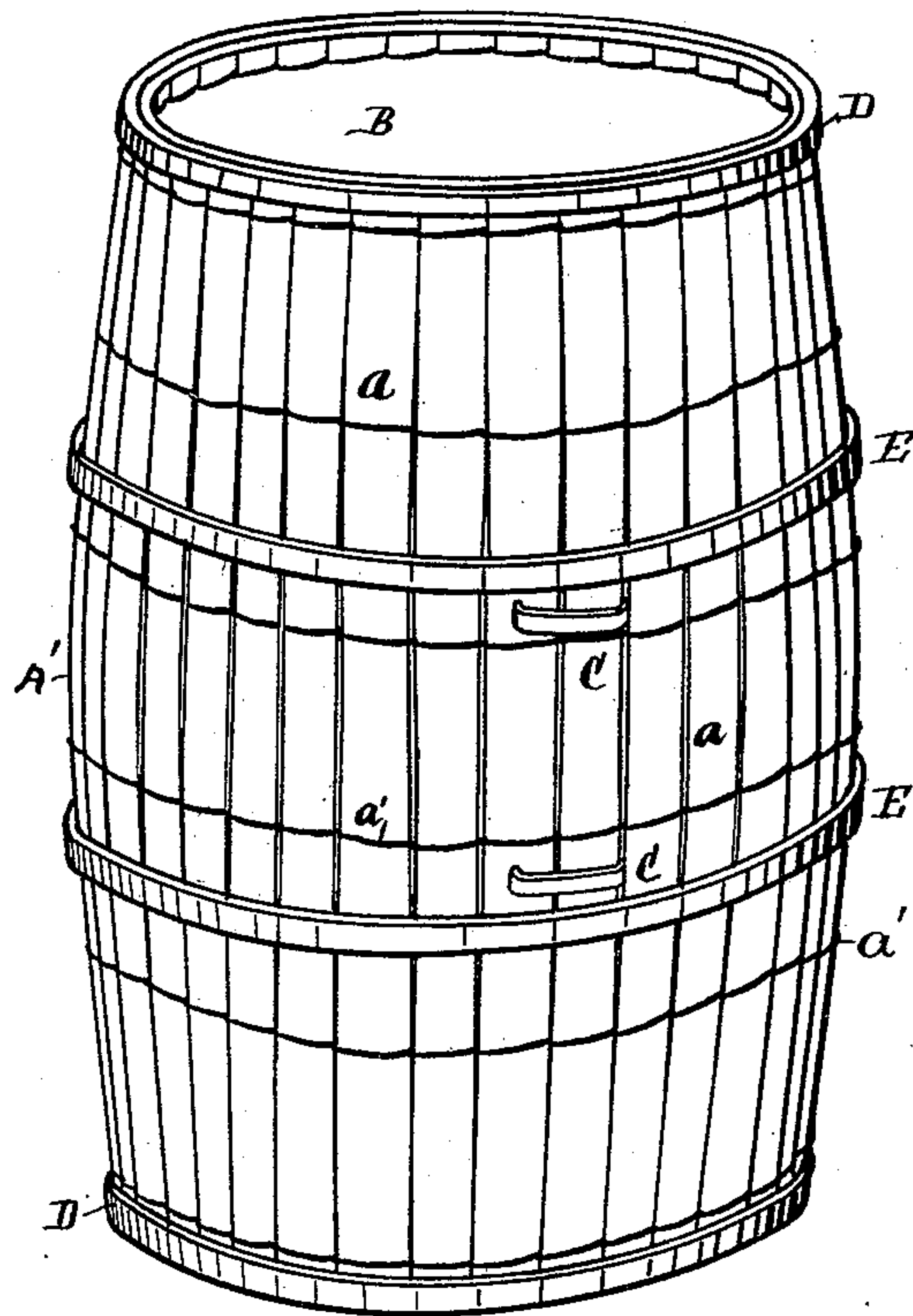


Fig. 5

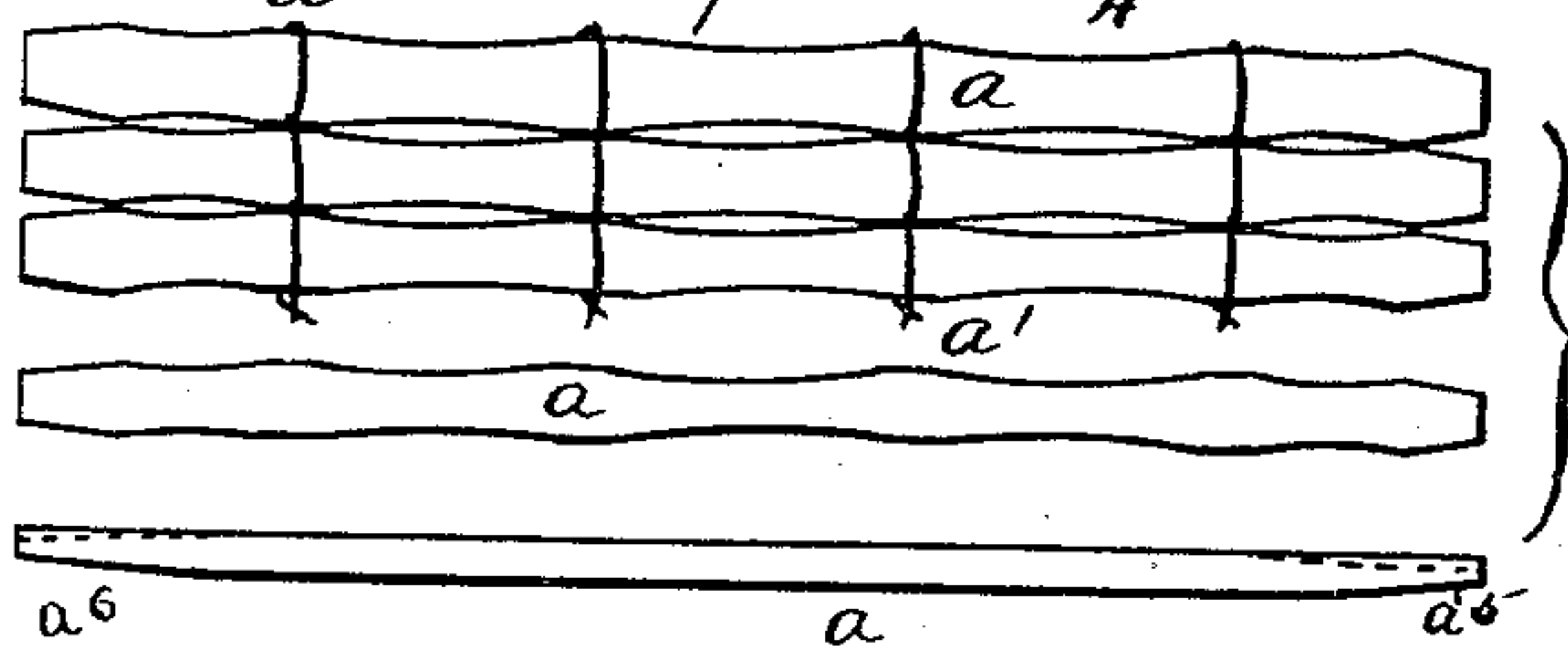


Fig. 4

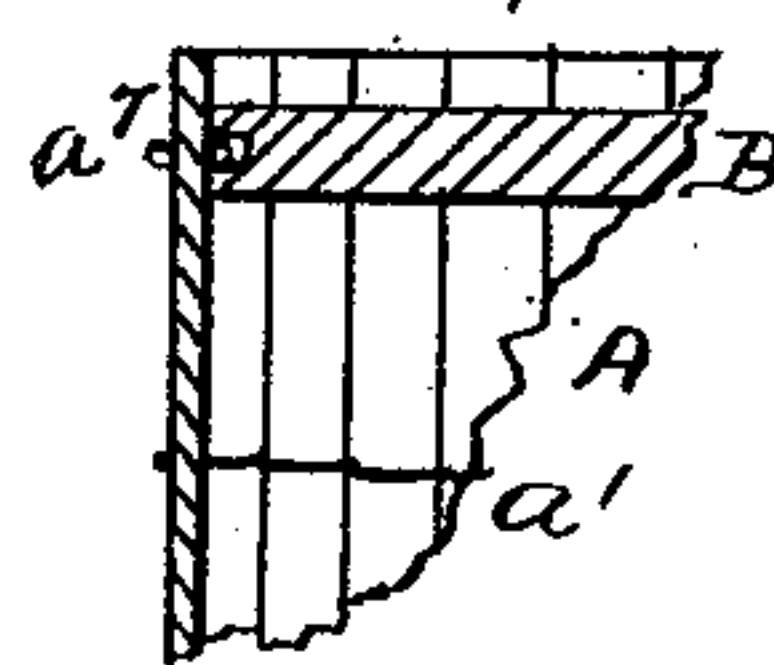
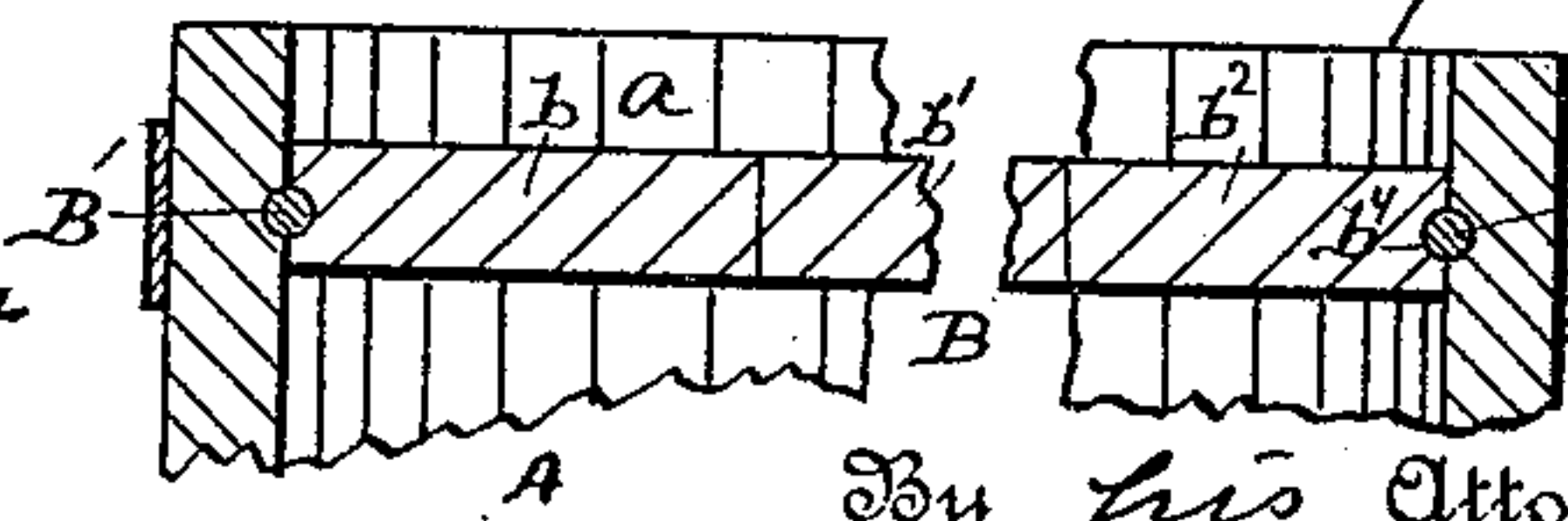


Fig. 6



Witnesses  
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Inventor  
Milton A. Hamilton

By his Attorney.

Wm. S. Wright.

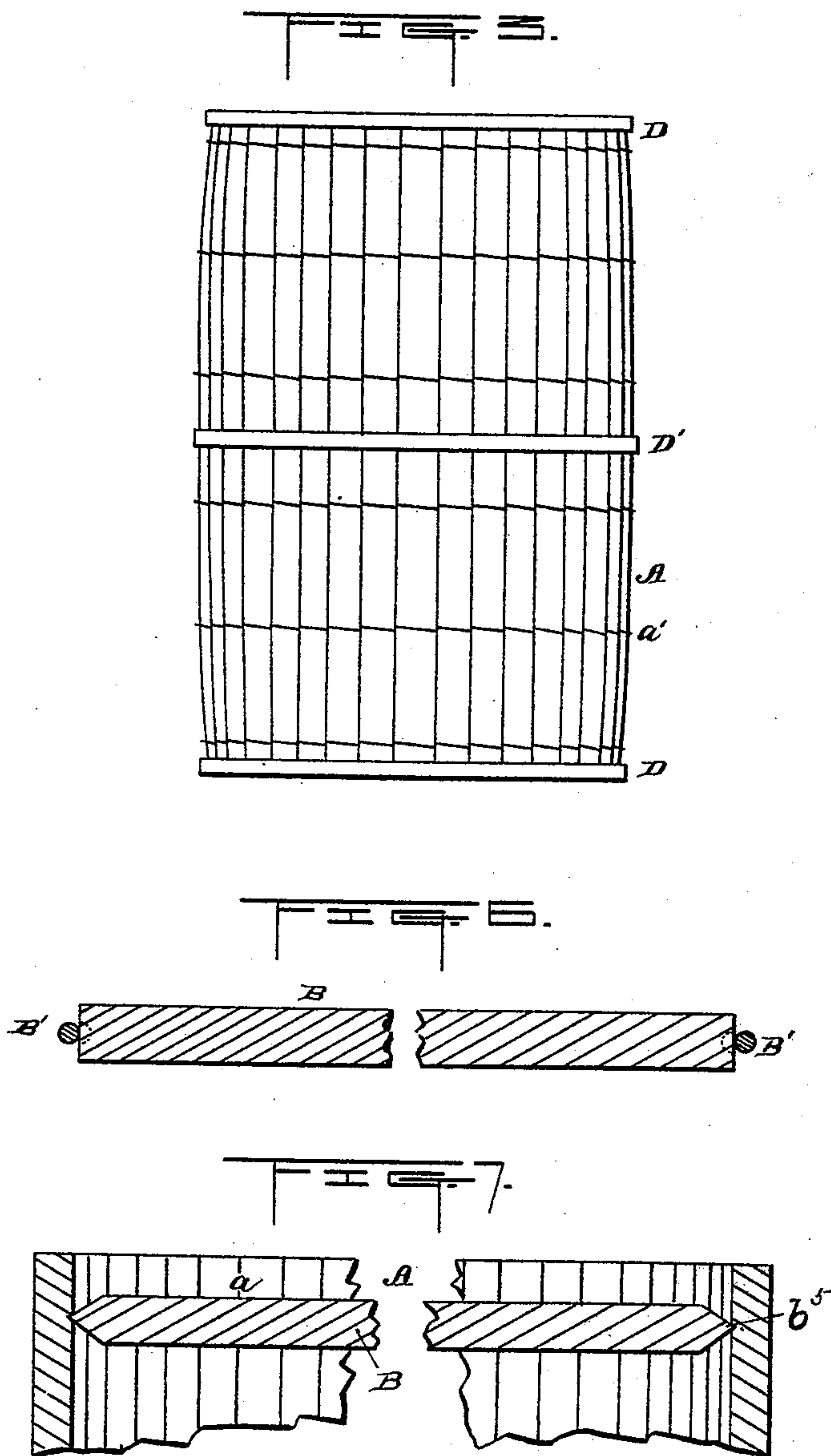
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Witnesses

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# UNITED STATES PATENT OFFICE.

MILTON A. HAMILTON, OF DETROIT, MICHIGAN.

## WOVEN-WIRE-AND-SLAT PACKING-CASE.

SPECIFICATION forming part of Letters Patent No. 437,594, dated September 30, 1890.

Application filed May 25, 1889. Serial No. 312,051. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON A. HAMILTON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Woven-Wire-and-Slat Packing-Cases; and do I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in the construction of woven-wire-and-slat packing-cases, and is designed more particularly as an improvement on devices of this class for which patents were granted to me by the United States March 13, 1888, No. 379,219, and November 29, 1887, No. 373,828.

The object of my invention is to provide a package of woven slats with a head of one piece or in sections, which is durable in use, comparatively inexpensive of production, and well adapted for the purpose for which it is designed.

Accordingly, Figure 1 is a view in perspective of the fabric and head before being compressed one upon the other. Fig. 2 is a view in perspective, showing a complete barrel or keg. Fig. 3 is a modification in elevation with the bilge reduced and hooped. Fig. 4 shows a part of a recessed head engaged with the fabric. Fig. 5 shows the slats constructed with scallops on the marginal edges and cut away at the ends. Fig. 6 shows the head surrounded by a band without grooving the head. Fig. 7 is a detail view in section, showing a common bevel-edged head indented into a body by compression. Fig. 8 is a view in section, illustrating a particular construction of the head and the manner of its engagement in place.

I carry out my invention as follows:

A represents a fabric forming the body of the barrel or keg, said fabric constructed of slats *a*, connected by a warp of wires *a'* interwoven therewith, and as more fully set forth in the patents referred to.

B is the head.

In the first above-mentioned patent expan-

sion-heads were contemplated, and the bilge was to be formed by expanding the center of the body of the barrel or keg. My present purpose, however, is in certain cases to do away with the expansion both of the body fabric and also of the head and to secure both results by one and the same operation, the principle of that operation being of the opposite nature, compression being herein employed instead of expansion.

My invention to this end contemplates the use of a head made of one or more pieces, as may be preferred.

In the process of construction the edges of the fabric made ready for use are brought together and engaged firmly by any suitable fastener—as, for instance, clasps C C or staples or analogous devices, either permanent or movable.

I do not herein limit myself to any particular fastening means for holding the adjacent edges of the fabric together.

It will be understood that the head is of smaller diameter than the normal inner diameter of the body adjacent thereto. It will be obvious, also, that the slats of wood, though normally woven close together, may be materially compressed, since, the slats being numerous, the compression of each, even in a slight degree, will give in the aggregate all the compression that will be required to secure the desired result. By such compression of the ends of the body the diameter thereof at these points may be contracted and to such an extent as to bind the fabric in firm engagement upon the periphery of the head. To secure this compression any suitable means may be employed—as, for instance, an ordinary cooper's windlass with a rope adjusted about the end of the body fabric. Power applied to the windlass will then draw in and snugly compress the fabric about the head and form a strong engagement of the two in their mutual relations to each other. When this compression of the fabric upon the head has been secured, a hoop D is engaged over the compressed body fabric to hold the fabric in place and prevent its relaxing, the use of the hoop in this case being not to tighten the slats, as is its use where staves are employed, but simply to hold and maintain the compression already secured. First



one head of the barrel or keg is thus engaged in place with the fabric compressed about it and held by the hoop. Then the package may be filled and the other end headed up in the same way. It will be seen that by thus diminishing the diameters of the ends of the body by compression a bilge A' will necessarily be formed without any expansion, as compression is absent at this point. The bilge may thus be formed also from a fabric where the slats are of normally-uniform width, it being wholly unnecessary to widen the slats at the center. The fabric itself, therefore, is simplified in construction and its production cheapened. I do not, however, limit myself to the use of normally straight slats. If necessary, intermediate hoops E may be employed to give added strength where the barrel or keg is to be used for shipping heavy goods.

I have shown in the accompanying drawings the fabric constructed with a croze  $a^2$  of projecting loops of wire A<sup>2</sup>, interwoven with the slats, as set forth in the first patent above referred to. I do not, however, limit myself to a croze so made, or even to the use of a croze at all, as for some purposes at least the compression will so indent the head into the face of the fabric as to answer every purpose, or the fabric may be nailed upon the head. If desired, the head may be recessed to receive the projecting loop, as shown in Fig. 4; but this is also immaterial.

As the head is not forced into place in the manner heretofore common, it will be obvious that it is not necessary to provide the body fabric with a chine, the full strength of the material being preserved. By removing the hoop from the end of the barrel or keg the fabric will be loosened, so that the head can be readily disengaged. Where a ventilating-package is desired, the fabric may be loosely woven, and as the fabric is simply compressed at the ends of the body the intermediate portion will remain open.

The principle of compressing the ends of the body upon a head of narrower diameter than the normal diameter of the body adjacent thereto is believed to be new whatever may be the construction of the body itself, and I desire, therefore, to cover this feature broadly herein.

It is to be noted that the hoops D are not driven upon the barrel or keg to tighten the body upon the head, as is ordinarily the case, as this tightening is already accomplished before the hoop is located thereupon, the compression being maintained by the windlass or other compressing device until the hoop is secured in place. A barrel or keg so constructed forms an efficient knockdown package. The body being in one integral piece, may be readily assembled about the heads and engaged thereupon in the manner set forth. By releasing the hoops the heads are readily released, and the fabric, being flexible, may be flattened out or rolled up into small

compass for storing or shipping. Should it be desired to make the package still tighter, compression may also be employed in the same manner intermediate of the ends of the body to draw in and cause the slats to hug each other more tightly at the middle of the barrel, the bilge, being reduced or dispensed with, as may be preferred, a hoop D' being applied to prevent expansion. In this manner a very tight package may be constructed from the woven fabric. So, also, the intermediate hoops E, already referred to, may be driven toward the bilge to make the package tighter, if desired. A tight package from woven fabric will, however, be thus provided by weaving the slats firmly and closely together, as the operation of compressing the fabric upon the head does not lessen the tight union of the edges of the slats so woven, as is liable to be the case where an expansion-head is used.

I would have it understood that I do not limit myself to any particular construction of the fabric alone, as it might be woven in various ways and still come within the scope of my invention.

The compression of the fabric in the manner already described and held in place by a hoop may also be applied to the engagement of the bottom in place in a basket, the bottom being in such a case properly implied under the term "head," while a basket so constructed is properly included under the general term "package," as herein employed in this specification. Where the slats are scalloped, as in Fig. 5, the scallops may be cut upon one or upon both sides, the scallops being either opposite or alternate on adjacent slats. So, also, for some purposes it may be desirable to cut away the slat upon one or both sides, as shown at  $a^5 a^6$ . Such a construction will facilitate compression under some circumstances. Such a construction of the ends of the slats will also provide for increased bilge and strengthen the barrel.

While I do not limit myself to any particular construction of the head, I prefer for some uses to construct it of separate pieces, as shown in Fig. 8 at  $b b' b^2$ , said pieces being bound firmly together by a band B', as of wire.

A head may obviously be made cheaper from separate pieces than in a single integral piece. Still, for convenience in handling and in order to hold the head together while being engaged in place, it is desirable to unite the pieces firmly to make a united head.

In the application of a head in a fabric constructed as herein described such a head is especially desirable in order that it may be conveniently handled in compressing the fabric thereupon. Moreover, in forcing a head into place, as in compressing fruit into a barrel in the customary way, such a head is very desirable and efficient. The wire B', however, it will be readily seen, not only serves to bind the various pieces of the head



firmly together, but also serves effectually to unite the head firmly with the fabric without the requirement of any croze. When the fabric is compressed upon the head, the slats being made of compressible material, the wire is readily embedded in the slats, as shown, making a very firm union the one with the other. I contemplate the application of the wire on the periphery of the head either by suitably grooving said periphery, as shown at  $b^4$ , or without, as may be preferred. The compression of the fabric upon the head will serve to indent the wire into the head as well as the slats of the fabric where a previous grooving of the head is dispensed with. The utility of the wire about the head to dispense with the necessity of a croze is equally advantageous in a head made in a single piece.

It will be obvious, moreover, that with a head made from hard wood beveled to an edge in the ordinary way, as shown in Fig. 7 at  $b^5$ , the force of compressing the body upon the head will cause the edge of the head to indent the body, dispensing with the necessity of providing the body with a croze.

In Fig. 4 I have shown a head grooved to receive a croze-wire interwoven with the fabric; but it will be obvious that such a wire, if sufficient force be employed in the compression of the fabric, will be embedded in the periphery of the head without previously grooving said periphery. The wire  $a^7$  of Fig. 4 may simply to this end be interwoven in any desired manner with the fabric at the end thereof.

In compressing the fabric of which the body is constructed, as I contemplate the use of the slats made of soft wood, not only are the slats forced close together, but the grain of the wood of each slat is also compacted, thereby securing additional firmness and strength as well as form or shape. This enables me to use lighter

material and to still secure the desired strength.

What I claim is—

1. A package having a body formed of slats interwoven with a warp of wire, the edges of the slats being in close contact throughout their length, said body being compressed at its ends to a diameter less than the normal diameter of the assembled body, forming a bilge, and hoops to hold the body in its compressed state, substantially as set forth.

2. A package having a body formed of a fabric of slats interwoven with a warp of wire, the edges of the slats being in close contact, the body being compressed at its ends to a diameter less than the normal diameter of the assembled body, heads located within the compressed ends, and hoops to retain the compressed ends in position, substantially as set forth.

3. A package having a body formed of a fabric of slats interwoven with a warp of wire, said body compressed at the end into a circumference less than the combined normal widths of the slats at the point of compression, and a hoop to hold the slats compressed, substantially as set forth.

4. A package having, in combination, a head less in diameter than the normal diameter of the body compressed upon it, the body formed of a fabric of slats interwoven with a warp of wire and provided with a wire engaged therewith adjacent to the periphery of the head, said fabric and last-named wire compressed upon the periphery of the head and secured thereupon, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

MILTON A. HAMILTON.

Witnesses:

N. S. WRIGHT,  
CHAS. F. SALOW.