

(No Model.)

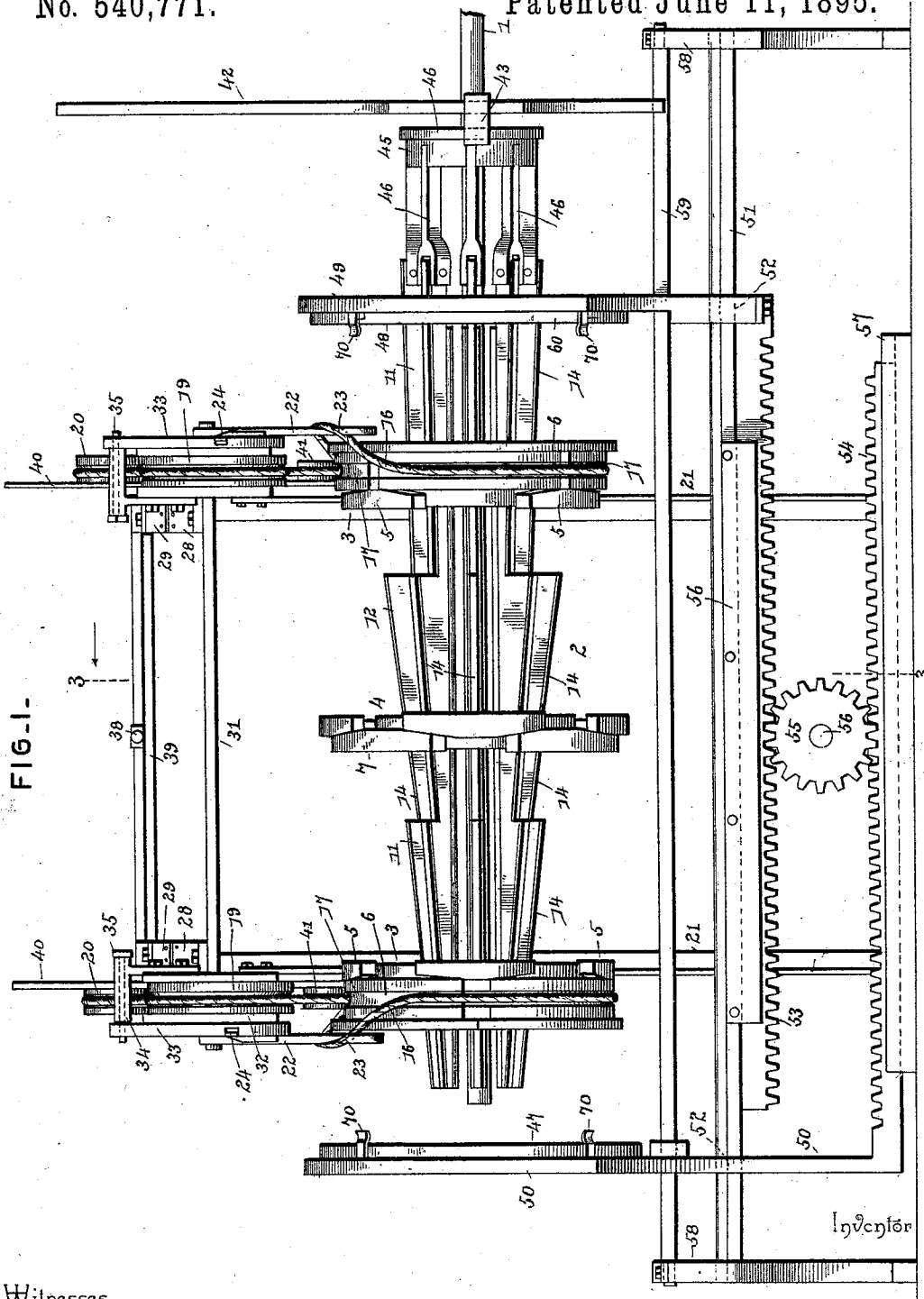
4 Sheets—Sheet 1.

E. E. WILLIAMS.

MACHINE FOR SETTING UP AND TRUSSING BARRELS.

No. 540,771.

Patented June 11, 1895.



Witnesses

Jas. K. McEachran
J. J. Riley

By his Attorneys, Ebenezer E. Williams

C. A. Snow & Co.

(No Model.)

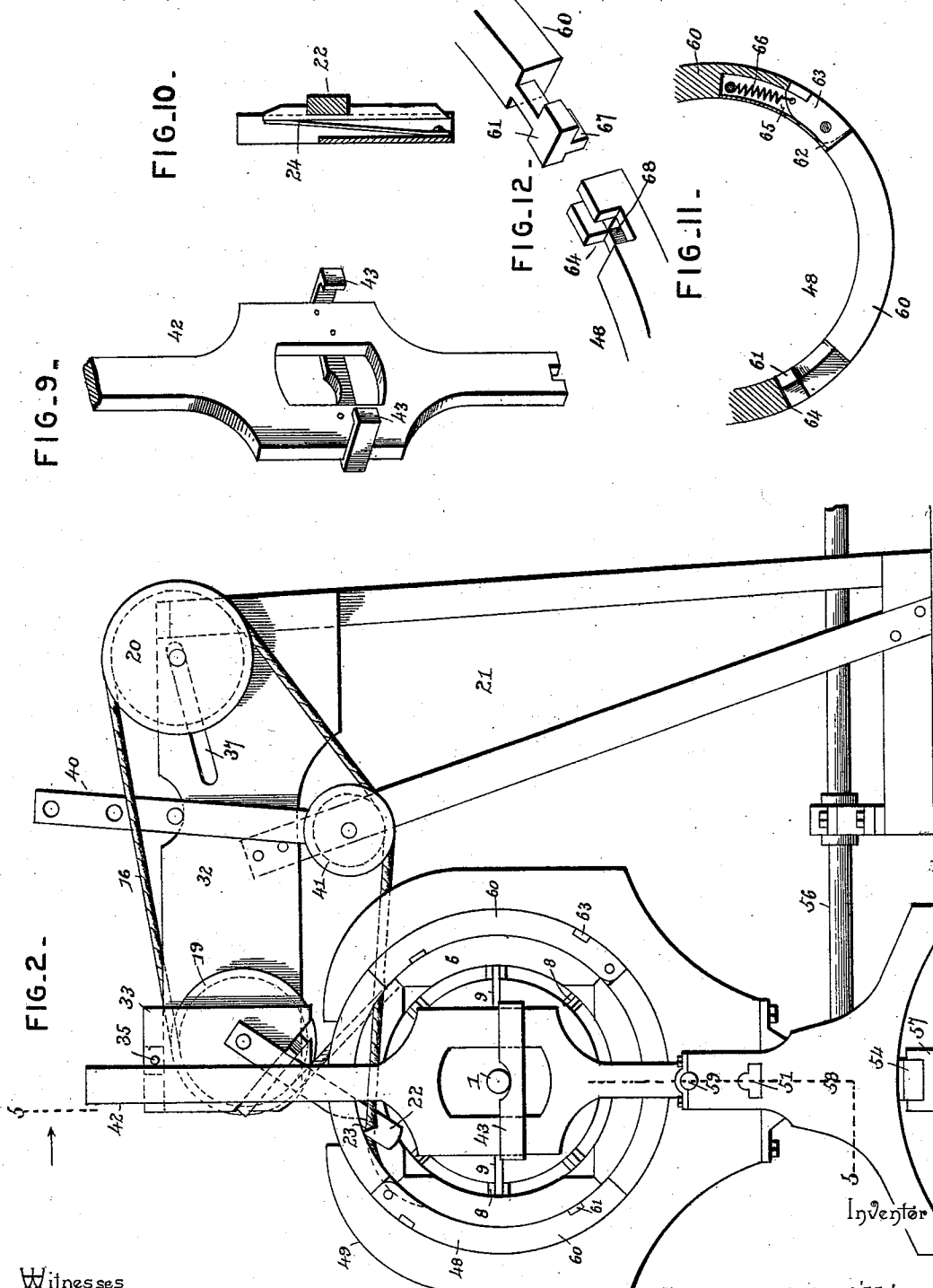
4 Sheets—Sheet 2.

E. E. WILLIAMS.

MACHINE FOR SETTING UP AND TRUSSING BARRELS.

No. 540,771.

Patented June 11, 1895.



Witnesses

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E. E. WILLIAMS.

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FIG. 4.

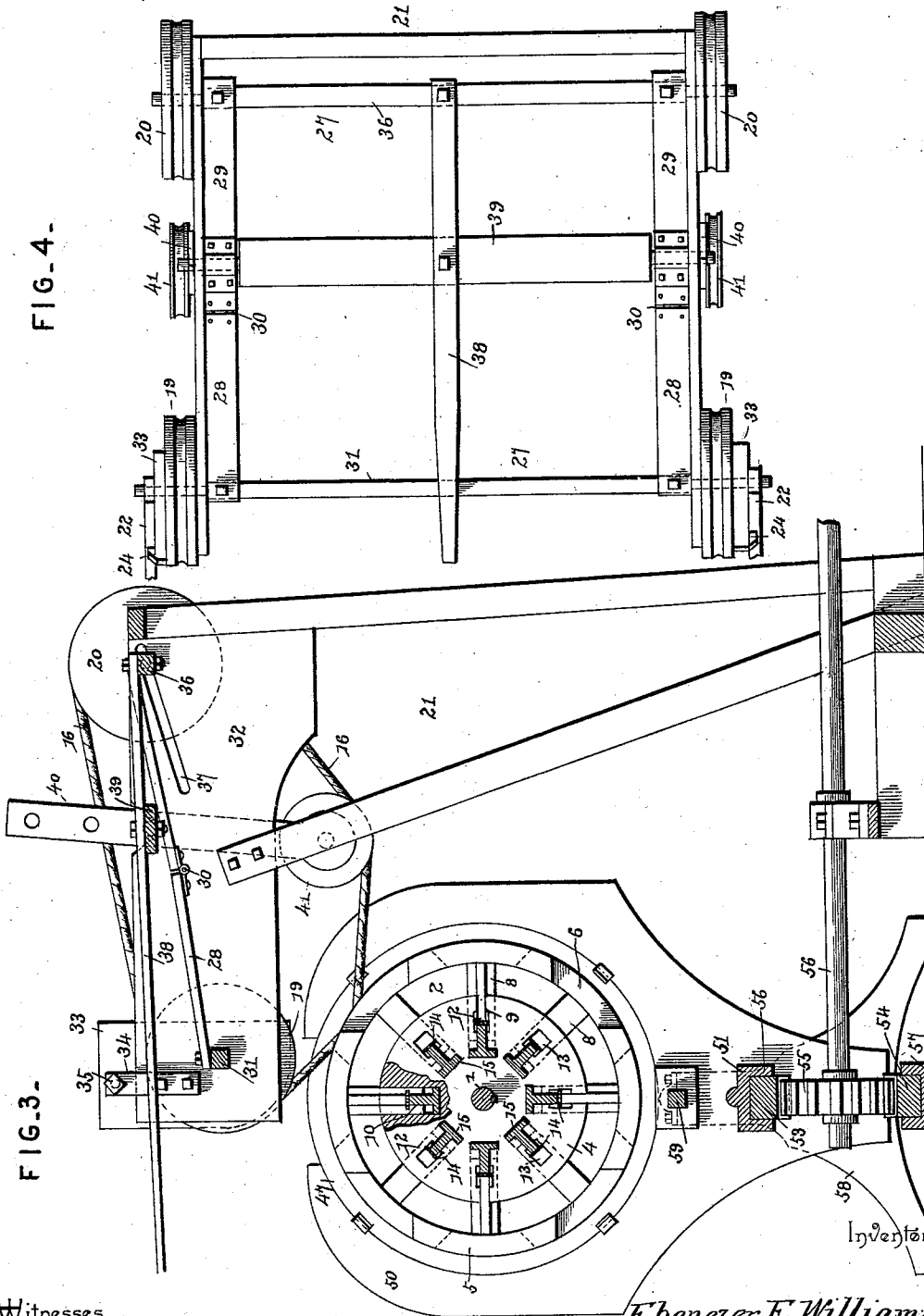


FIG. 3.

Witnesses

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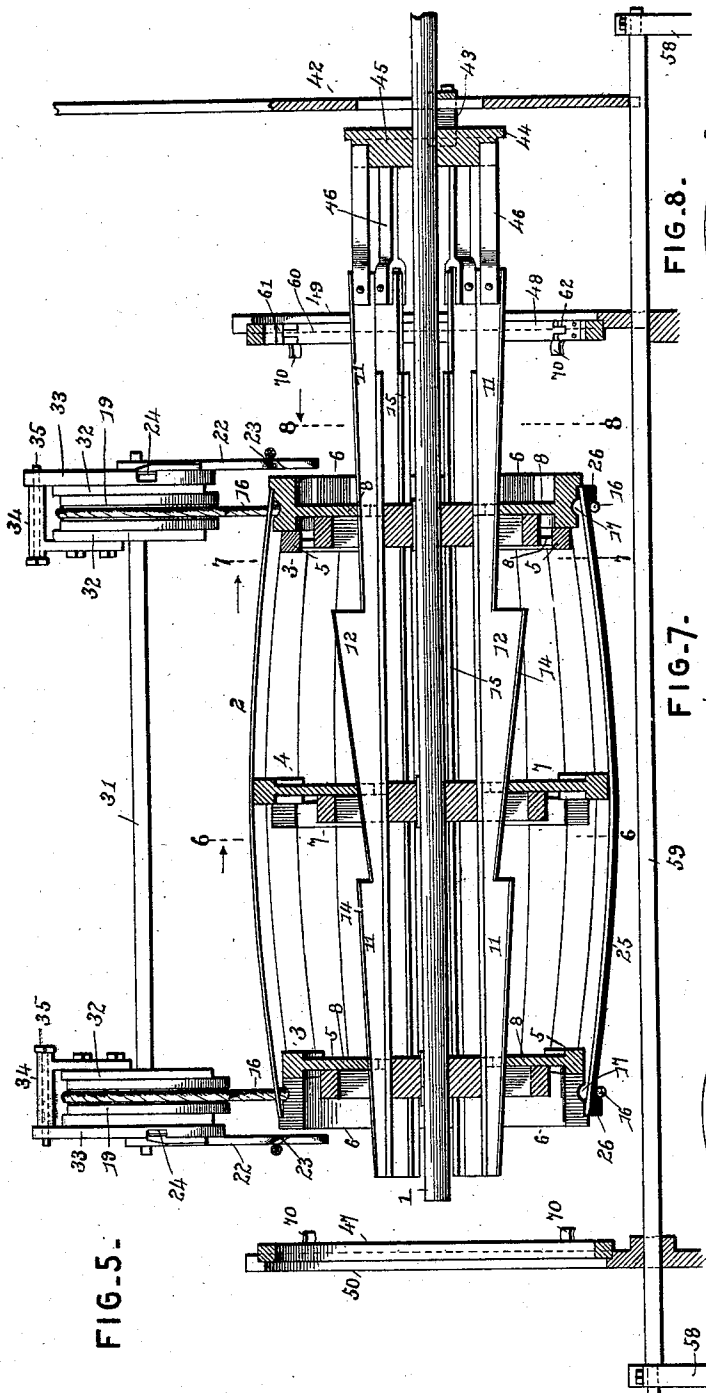
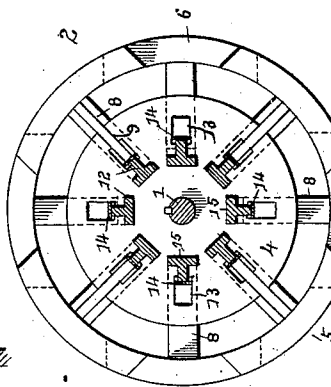
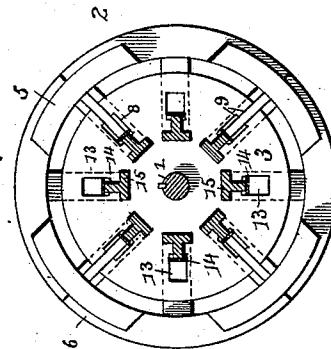
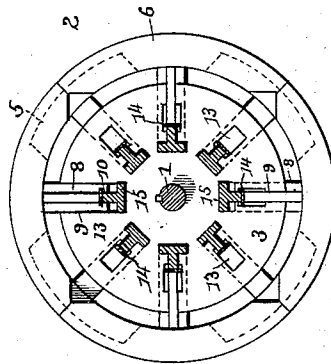


FIG. 5.

FIG. 6.

FIG. 7.

FIG. 8.



Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

EBENEZER E. WILLIAMS, OF PINE BLUFF, ARKANSAS.

MACHINE FOR SETTING UP AND TRUSSING BARRELS.

SPECIFICATION forming part of Letters Patent No. 540,771, dated June 11, 1895.

Application filed November 30, 1894. Serial No. 530,455. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER E. WILLIAMS, a citizen of the United States, residing at Pine Bluff, in the county of Jefferson and State of Arkansas, have invented a new and useful Machine for Setting Up and Trussing Barrels, of which the following is a specification.

The invention relates to improvements in machines for setting up and trussing barrels.

The object of the present invention is to improve the construction of barrel making machines, and to provide one, which will enable barrels, casks, and the like, to be rapidly set up, given the proper bilge, and trussed without steaming them.

A further object of the invention is to effect a saving of material, and labor, and to enable poor timber, or twisted staves, which usually have to be discarded, to be readily employed, without injury to a barrel.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a front elevation of a machine for setting up and trussing barrels constructed in accordance with this invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view on line 3 3 of Fig. 1. Fig. 4 is a plan view of the tension device. Fig. 5 is a vertical sectional view on line 5 5 of Fig. 2. Fig. 6 is a detail sectional view on line 6 6 of Fig. 5. Fig. 7 is a similar view on line 7 7 of Fig. 5. Fig. 8 is a similar view on line 8 8 of Fig. 5. Fig. 9 is a detail perspective view of the drum-operating lever. Fig. 10 is a detail sectional view illustrating the construction of the spring-catches for holding the pivoted guides in position. Figs. 11 and 12 are detail views illustrating the construction of the sectional truss-hoop.

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

1 designates a horizontally disposed shaft, journaled in suitable bearings and receiving motion from any suitable source, it being preferably provided with a pulley and belt connection (not shown), and it may be provided with a suitable shifter for controlling the

shaft, such mechanism being of any ordinary construction, and not requiring and detail description or illustration.

The horizontal shaft 1 carries an expandible drum 2, on which the staves are fed to form a barrel or cask, and it is composed of end disks 3 and the central disk 4, provided with radially adjustable segments 5, 6, and 7, forming expandible peripheries for the central and end disks, and adapted to impart the proper bilge, and the desired diametrical dimension to a barrel. Each adjustable, or expandible, segment is provided with a stem 8, arranged in radial sockets or ways 9 of the disks, and having their inner ends bifurcated and interlocked with sliding wedges 11 and 12, which are arranged in slots 13 of the disks. The slots 13 of the disks intersect the radial ways or sockets 9, and the sliding wedges are mounted on stems, or are integral, and are provided at their outer edges with flanges 14, and at their inner edges with flanges 15. The outer flanges engage corresponding notches of the bifurcated ends 10 of the stems of the segments, and the inner flanges engage corresponding recesses or notches of the disks, whereby the wedges are secured against radial or outward movement, and the segments are connected with the wedges, and are thereby retained on the disks. The inner or central segments 7 impart the proper bulge to the staves, which are retained on the drum by endless bands 16; and the central wedges 12 are of greater size than the end ones, in order to expand the central series of segments to the necessary extent.

Each end disk 3 has an inner series of segments 5, and an outer series of segments 6. The latter are of greater width than the former, and are provided with peripheral grooves 17, to receive the endless band 16, which preferably consists of wire rope; and the segments 6 are also provided at their outer sides with peripheral flanges 18, forming stops for the ends of the staves, to secure them against endwise movement on the expandible drum.

An endless band 16 is arranged at each end of the expandible drum, and it is also arranged on pulleys 19 and 20 arranged in pairs, and located at each side of a tension device supporting frame 21. Each endless band extends upward from the back of the drum, and

passes over the pulley 19, and extends therefrom to the pulley 20, and from the bottom of the latter it extends forward to the top of the drum, and then around the same. The endless bands are adapted to have their tension regulated, by means hereinafter described, and the portions passing over the top of the drum are diverged outward by pivotally mounted guides 22, to separate the adjacent portions of the belts or bands at the points of crossing, for the purpose of allowing the staves to be fed to the drum. The pivotally mounted guides 22, are provided at their lower ends with angularly disposed slots 23, forming a guide for each belt or band, and depressible spring catches 24 are employed for holding the guides 22 in an outwardly inclined position for diverging the endless bands. When the drum is filled with staves, the spring-catches are depressed, and the guides 22 are swung rearward by the bands, which movement disengages them from the endless bands automatically, and allows the bands to clamp and thoroughly bind the staves. When the first stave is fed to the drum, it is accompanied (Fig. 5) by a bar 25, provided at its ends with stops 26, which prevent the endless bands from slipping off the staves.

The tension device for adjusting the endless bands, to allow them to give as the staves are fed to the drum, and to cause the endless bands to clamp the staves on the drum to the desired degree of tightness, consists of an extensible frame located at the top of the supporting frame 21, and composed of front and rear sections 28 and 29, and carries the rear pulleys 20, and is adapted to move the same to and from the front pulleys 19, thereby varying the tension of the endless belts or bands. Each section of the extensible frame 27 is composed of a transverse rod and similar side pieces, having their inner adjacent ends connected by hinges 30. The front transverse rod 31 has rounded terminals, which are journaled on the sides 32 of the supporting frame, and which extend beyond the same forming bearings for the front pulleys 19. The terminals of the transverse rod 31, extend through removable cheek pieces 33, and form pivots for the guides 22. The tops of the cheek pieces 33 are connected detachably to lugs 34 by fastening devices 35, passing through the lugs and the cheek pieces.

The transverse rod or bar 36 of the rear frame section 29, has its terminals forming bearings or journals for the rear pulleys 20, and arranged in slots 37 of the sides 32 of the supporting frame, whereby the extensible frame is adapted to advance the rear rollers and recede the same. The tension device is operated by a forwardly extending bar or lever 38, secured at its rear end to the transverse bar 36, and fastened between its ends to an intermediate cross-bar 39, mounted on the rear section 29, and having rounded terminals extended laterally beyond the frame, and carrying vertically adjustable bars 40.

The bars 40 are provided at intervals with perforations, adapted for the reception of the terminals of the intermediate transverse bar 39; and the adjustable bars have journaled on their lower ends pulleys 41, which depress the lower portions of the endless bands, to increase the tension of the same. By raising the outer end of the handle bar 38, the back of the extensible frame is moved forward, carrying with it the rear pulleys 20, and the lower pulleys 41 are simultaneously raised, whereby the endless bands or belts are slackened, and by depressing the outer end of the handle bar 38, the reverse operation takes place, the rear pulleys 20 being forced rearward, and the lower pulleys 41 being moved downward. By this means the tension of the endless bands or belts is readily regulated to permit them to yield as the staves are fed to the drum, and after the latter has been filled, the staves may be securely clamped on the drum with the desired pressure by forcing the handle bar 38 downward.

The supporting frame, which may be of any desired construction has a suitable base, and is provided with the sides 32, which are suitably braced, and which extend forward from rear standards or uprights.

The drum is expanded and contracted by means of a lever 42, fulcrumed at its lower end, and disposed substantially vertically, being provided with a central opening to receive the horizontal shaft 1. The lever is shaped at its upper end to form a handle, and it is centrally enlarged. The central portion of the lever is provided with projecting L-shaped arms 43, which engage an annular flange 44 of a circular head 45, which rotates with the shaft. The head is connected by an annular series of link bars 46, with the adjacent terminals of the annular series of wedges, whereby when the lever is moved to the right or left, the sliding wedges will be actuated to expand and contract the drum. The outer ends of the link bars 46 are secured in recesses of the head 45, and their inner ends are bifurcated, and receive the adjacent ends of the wedges, to which they are pivotally connected.

After the staves have been set up for forming a barrel, they are retained in position by truss-hoops 47 and 48, which are placed on the ends of the staves by hoop carriers 49 and 50, and after being placed thereon the barrel is removed from the drum at the left hand end of the machine, the drum being contracted to facilitate such removal.

Each hoop carrier is provided with opposite curved arms, and has a circular opening, and they are slidably mounted on a horizontally disposed guide bar 51, which is substantially inverted U-shaped in cross-section, the hoop carriers being provided below the arms with corresponding openings 52. These hoop carriers are operated by upper and lower rack-bars 53 and 54, and an interposed pinion 55, fixed to a shaft 56 receiving motion by suitable gearing. (Not shown.) The upper rack-

bar 53, is arranged in a way 56, and is connected with the hoop carrier 49; and the lower rack-bar 54 is arranged in a corresponding way 57, and is connected with a depending portion of the other carrier 50. When the pinion is rotated, the rack-bars will cause the carriers to move inward for placing the truss-hoops on the ends of the staves, and outward after performing such operation. The guide bar 51 is supported by opposite feet 58, to which is also secured a guide rod 59, located above the guide-bar, and serving to support and guide the hoop-carriers in their inward and outward movement, said rod passing through suitable slots or openings of the carriers.

The truss-hoop 47, which is located at the left hand side of the machine, at the terminus of the shaft 1, is continuous, and the other truss-hoop 48 is composed of separable sections 60, to enable it to be placed around the shaft, without inserting it at the left hand end of the same, and passing it over the drum. One of the sections 60 of the truss hoop 48 is provided with a substantially T-shaped tongue 61, and the adjacent end of the contiguous section has a corresponding recess 64 for the reception of the tongue 61, whereby the sections are detachably interlocked at that joint. The upper ends of the sections have T-shaped tongues 63 and recesses 65, in which the tongues 63 are pivoted and interlocked, and springs 66 are connected with the pivoted tongues 63 for holding the parts interlocked. The tongue 61 is provided with a lug 67, which fits in an opening 68 of the adjacent section. By this construction the sections of the truss-hoop are firmly maintained in operative position, and the truss-hoop is adapted to be broken or separated when desired. The hoop carriers are provided at intervals with resilient catches 70 for supporting the truss-hoops in position in the recessed portions of the arms.

It will be seen that the machine for setting up and trussing barrels, casks, and the like, is simple and comparatively inexpensive in construction, that it enables staves to be readily fed, and that twisted staves are utilized, as in placing them on the drum as before described, the twist is distributed throughout the entire length of the stave. It will also be apparent that it facilitates rapid setting up and trussing, and that the whole operation may be readily performed by one man. As the staves are simultaneously bent from each end, the strain is equally distributed, and there is no liability of splitting or breaking them.

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

What I claim is—

1. In a machine of the class described, the combination of an expansible drum, adapted for the reception of the staves, and consisting

of the end disks, and a central disk of greater diameter than the end disks, and adapted to form the bilge in a barrel, and means for gripping the staves on the end disks, substantially as described.

2. In a machine of the class described, the combination of an expansible drum adapted for the reception of staves, and consisting of end disks having expansible peripheries, and a central disk of greater size than the end disks, having an expansible periphery, and adapted to form the bilge in a barrel, and means for gripping the staves on the end disks, substantially as described.

3. In a machine of the class described, the combination of an expansible drum, adapted for the reception of the staves, and consisting of the end disks having expansible peripheries and the central disk having an expansible periphery adapted to form the bilge in a barrel, the endless bands having loops receiving the end disks and gripping the staves, and a tension device for regulating the pressure of the endless bands on the staves, substantially as described.

4. In a machine of the class described, the combination of an expansible drum, the endless bands having loops receiving the drum, a supporting frame, the front and rear pulleys located at opposite sides of the supporting frame, the extensible frame pivoted at its front to the supporting frame and composed of two hingedly connected sections, the rear end of the extensible frame being slidingly mounted on the supporting frame and carrying the rear pulleys, the opposite adjustable bars depending from opposite sides of the extensible frame, the lower pulleys journaled on the adjustable bars and engaging the endless bands, and the handle bar for operating the extensible frame, whereby the tension of the endless bands is regulated, substantially as described.

5. In a machine of the class described, the combination of an extensible or expansible drum, adapted to receive staves for forming a barrel, endless bands having loops receiving the drum, a supporting frame, a tension device mounted on the supporting frame and provided with pulleys receiving the endless bands, and the guides receiving the endless bands and diverging the same at the points of crossing, substantially as described.

6. In a machine of the class described, the combination of an expansible drum, endless bands having loops receiving the drum, a frame, a tension device mounted thereon and provided with pulleys receiving the endless bands, and the pivotally mounted spring pressed guides having openings receiving the endless bands, said guides being arranged to separate the endless bands at the points of crossing and adapted to swing rearward for releasing the bands, substantially as described.

7. In a machine of the class described, the combination of an expansible drum, a sup-

- porting frame provided at opposite sides with slots, an extensible frame composed of two hinged sections provided at its front and rear with transverse rods having rounded terminals, the front rod being journaled on the supporting frame and the rear rod being arranged in said slots, the front and rear pulleys journaled on the ends of the transverse rods, the endless bands arranged on the drum and the pulleys, and the spring-pressed guides receiving the endless bands and arranged on the terminals of the front transverse rod and pivoted by the same, substantially as described.
8. In a machine of the class described, the combination of an end disk, grooved segments provided with peripheral flanges forming stops for the staves, an endless band having a loop receiving the grooved segments, and means for operating the segments, whereby they are moved inward and outward, substantially as described.
9. In a machine of the class described, the combination of a shaft, the central and end disks, the segments mounted on the central and end disks and provided with stems, the segments of the end disks having grooves, and provided with flanges, endless bands having loops receiving the end disks, and the annular series of sliding wedges engaging the stems for expanding the segments, substantially as described.
10. In a machine of the class described, the combination of a shaft, the central and end disks mounted thereon, segments carried by the disks and forming expansible peripheries, endless bands having loops receiving the end disks, the annular series of sliding wedges for expanding the segments, a head slidably mounted on the shaft, an annular series of

links pivotally connected to the head and the wedges, and a lever having an opening receiving the shaft, said lever being provided with opposite arms loosely engaging the head, substantially as described.

11. In a machine of the class described, the combination of an expansible drum, endless belts or bands having loops receiving the drum and adapted to receive the staves and to grip them on the drum, and a bar designed to be placed on one of the staves and provided with stops to prevent the bands or belts from slipping off the ends of the staves, substantially as described.

12. In a machine of the class described, the combination of an expansible drum, endless bands having loops receiving the same, the opposite truss hoop carriers located at the ends of the drum, a pair of truss hoops mounted on the carriers, one of the truss hoops being composed of separable sections, and means for reciprocating the carriers to and from each other, substantially as described.

13. In a machine of the class described, a truss-hoop comprising the sections provided with T-shaped tongues 61 and 63, and having corresponding recesses 64 and 65, the tongues 63 being pivoted in their corresponding recesses, and the tongue 61 being provided with a lug fitting in a corresponding opening of the adjacent section, and springs connecting the pivoted tongues with the adjacent sections, substantially as described.

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

EBENEZER E. WILLIAMS

Witnesses:

LEOPOLD ALTHEIMER,
EDGAR BLACKWELL.