

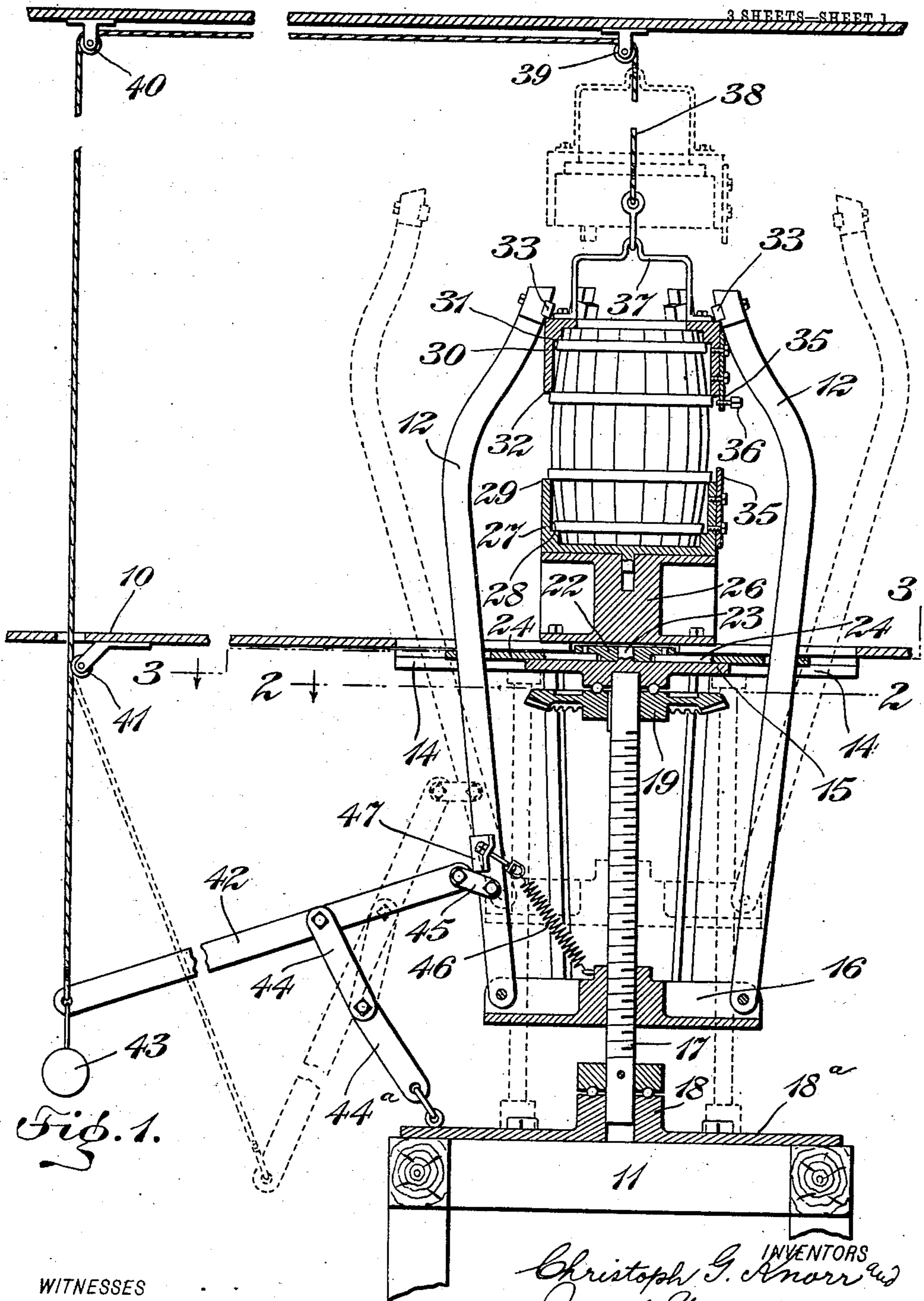
No. 863,925.

PATENTED AUG. 20, 1907.

C. G. KNÖRR & J. STANKOVICH.

APPARATUS FOR TRUSSING BARRELS AND SIMILAR PACKAGES.

APPLICATION FILED FEB. 12, 1907.



WITNESSES

*M. C. Abbott*  
*C. J. Evans*

INVENTORS  
*Christoph G. Knorr and*  
*Jakob Stankovich*  
BY *Paac Blwens*  
ATTORNEY

No. 863,925.

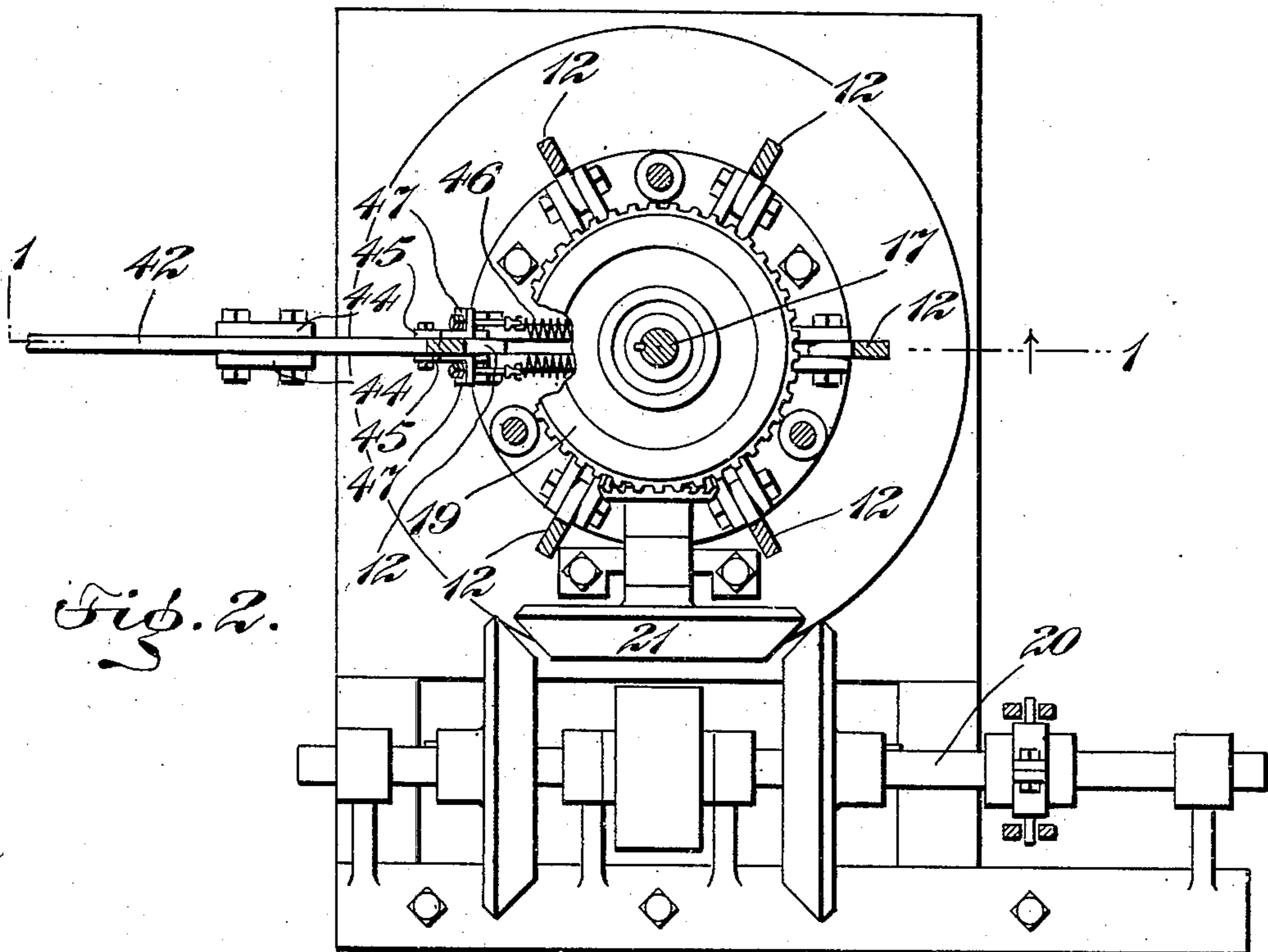
PATENTED AUG. 20, 1907.

C. G. KNORR & J. STANKOVICH.

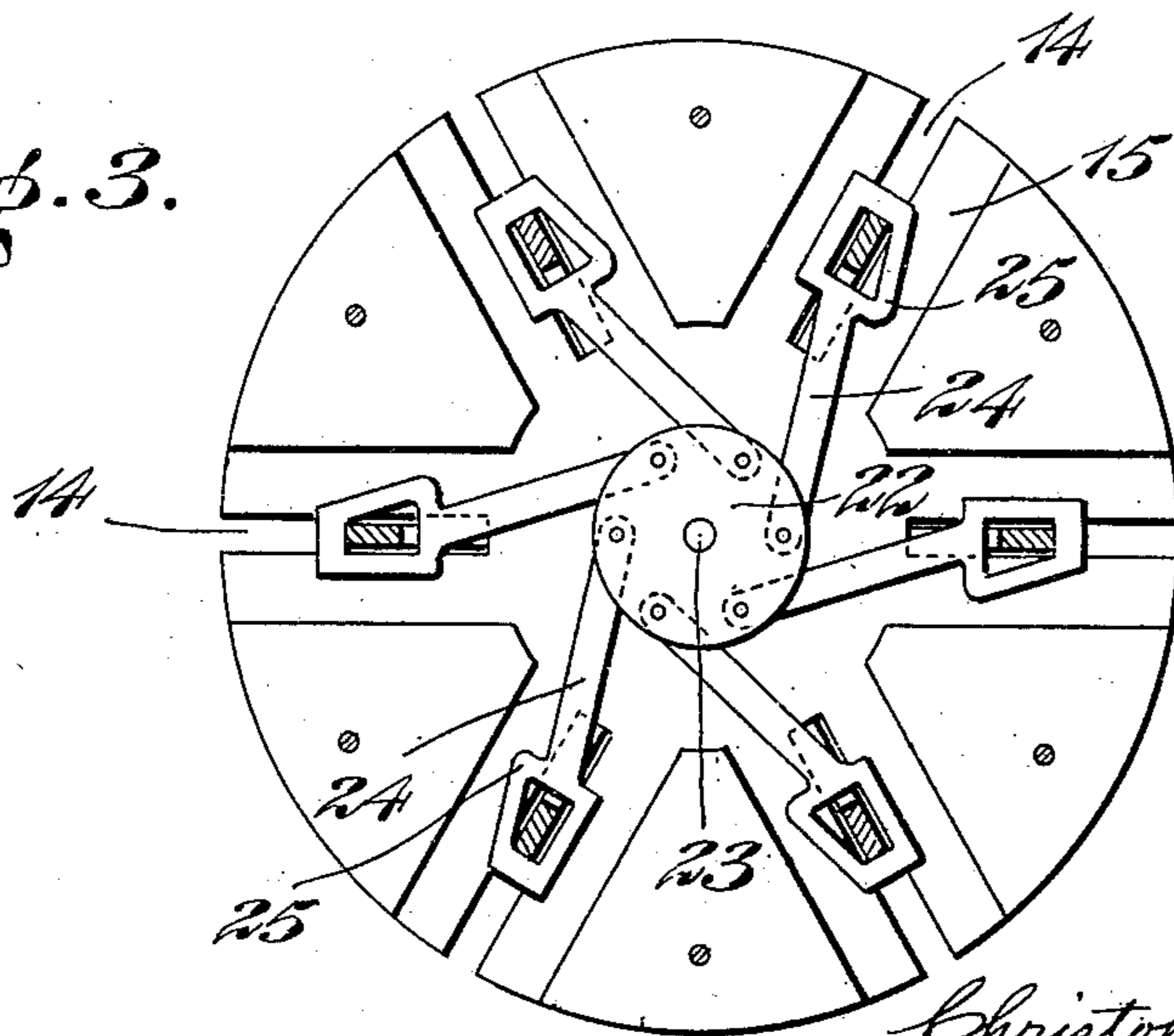
APPARATUS FOR TRUSSING BARRELS AND SIMILAR PACKAGES.

APPLICATION FILED FEB. 12, 1907.

3 SHEETS—SHEET 2.



*Fig. 3.*



WITNESSES

*H. C. Abbott*

*C. J. Kraus*

INVENTORS  
*Christoph G. Knorr &  
Jakob Stankovich*

BY *Heac B. Owens*

ATTORNEY

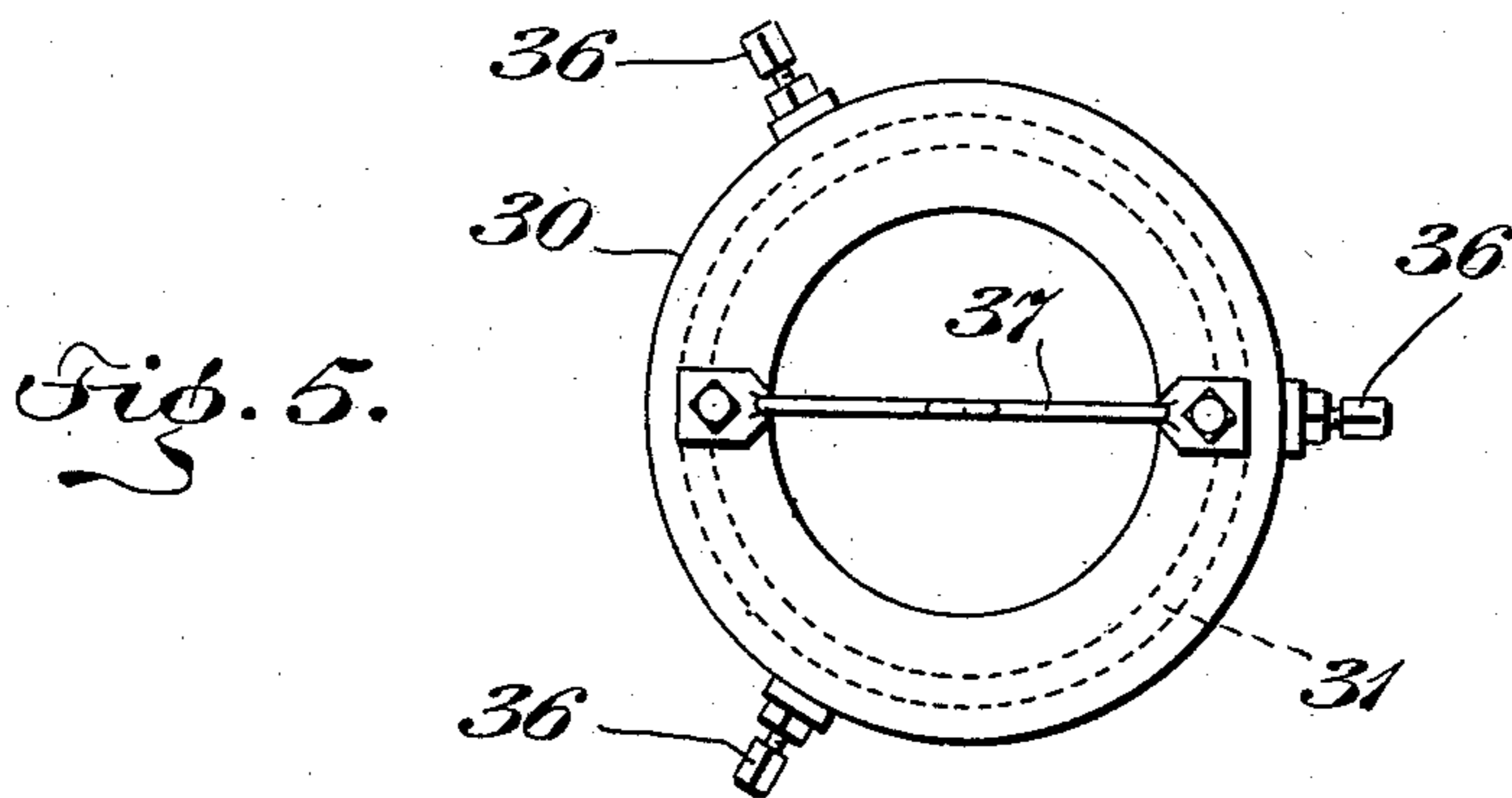
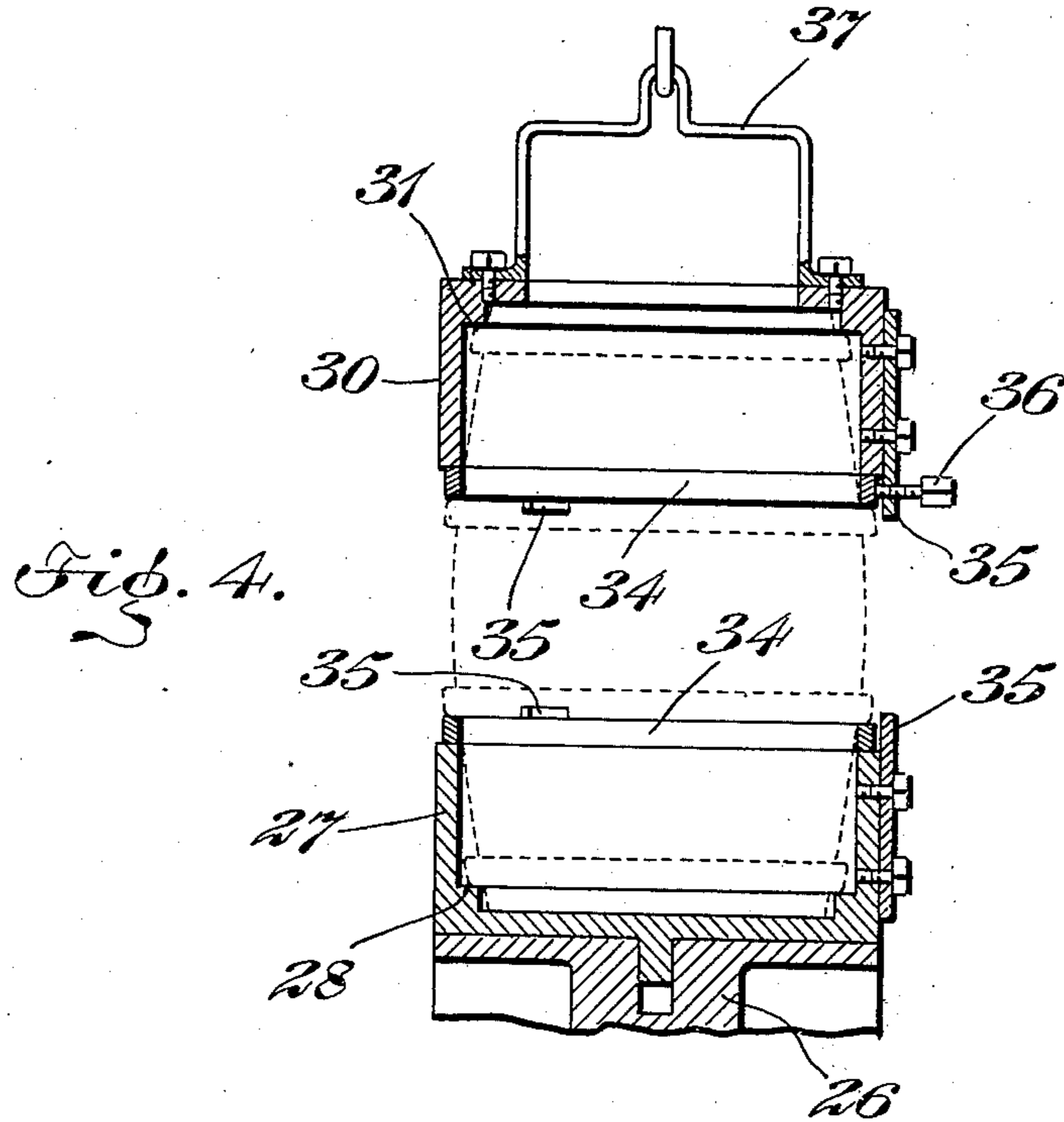
No. 863,925.

PATENTED AUG. 20, 1907.

C. G. KNORR & J. STANKOVICH.  
APPARATUS FOR TRUSSING BARRELS AND SIMILAR PACKAGES.

APPLICATION FILED FEB. 12, 1907.

3 SHEETS—SHEET 3.



WITNESSES  
M. C. Abbott  
C. J. Evans

INVENTORS  
Christoph G. Knorr and  
Jakob Stankovich  
BY Isaac Blumens  
ATTORNEY

# UNITED STATES PATENT OFFICE.

CHRISTOPH G. KNORR AND JAKOB STANKOVICH, OF NEW YORK, N. Y.

## APPARATUS FOR TRUSSING BARRELS AND SIMILAR PACKAGES.

No. 863,925.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed February 12, 1907. Serial No. 357,052.

*To all whom it may concern:*

Be it known that we, CHRISTOPH G. KNORR and JAKOB STANKOVICH, of the borough of Queens, city and State of New York, have invented certain new and useful Improvements in Apparatus for Trussing Barrels and Similar Packages, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

10 In the manufacture of barrels, kegs and like packages particularly those used for beer, it is the custom to assemble the staves and hold them temporarily by a number of iron bands known as truss hoops. The operation of putting these hoops in place is commonly 15 termed "trussing" and it is to machines for doing this work that my invention especially relates. Such machines are usually provided with arms connected under the floor to a mechanism for raising and lowering them, by means of which arms the truss hoops are 20 successively drawn on the barrel.

One object of my invention is to provide a practical machine of this type by which all four of the hoops may be placed on the barrel or other package by a single operation, as contradistinguished from four separate operations heretofore generally necessary. 25

A further object of my invention is to cause the arms to be automatically moved inward and outward thus avoiding the necessity of manually drawing the arms outward as the barrel is placed in the machine, and manually forcing them inward as they engage the hoops. 30

My invention consists of various other features of construction and combinations of parts which will be fully set forth hereinafter and particularly pointed out 35 in the claims.

Reference is had to the accompanying drawings which illustrate, as an example, one manner in which my invention may be practically embodied, in which drawings,

40 Figure 1 is a vertical sectional elevation showing my improvements adapted to the usual machine and broken away at various points to enable all parts of the machine to be illustrated; Fig. 2 is a sectional plan on the line 2—2 of Fig. 1; Fig. 3 is a sectional 45 plan on the line 3—3 of Fig. 1; Fig. 4 is a sectional view showing a manner of changing the adjustment of the machine, and Fig. 5 is a plan view of the cap.

10 indicates the floor and 11 the frame work which is constructed below the floor to support the apparatus, 50 it being understood from the prior art that these machines are usually built with the driving and operating parts below the floor line.

12 indicates the driving arms which have heretofore been employed to engage the hoops for the purpose of 55 drawing them on the barrels, but which, according to my invention operate in a different manner as will

hereinafter be fully set forth. The driving arms are movable in and out in radial slots 14 formed in a frame plate 15 which is fastened directly under the floor 10 while the lower ends of the arms 12 are pivoted to a 60 carrier 16. This carrier operates on a threaded shaft 17, the upper end of which is mounted in the frame plate 15 and the lower end of which is carried in a step bearing 18. Attached to the shaft 17 is a bevel gear 19 which is driven by suitable gear and clutch 21 65 from a prime mover shaft 20.

22 indicates a rocker plate which is arranged to turn centrally of the shaft 17 on a stud 23 formed on the frame plate 15. Said disk 22 has pivoted thereto links 24 disposed tangentially of the disk and formed with 70 yokes 25 which embrace the arms 12, these parts 24 and 25 causing the arms to move inward and outward in unison and to retain the same relative position.

The parts thus far described constitute in substance the machine heretofore employed, the rotation of the 75 shaft 17 in one direction or the other causing the arms to be raised or lowered and allowing them to be engaged with one hoop after the other successively to draw the hoops on the barrel.

26 indicates a stand on which the barrel is ordinarily 80 placed. In carrying out my invention, however, I mount on the stand 26 a cap 27 which is inverted as shown and adapted to receive the lower end of the barrel. The cap 27 is provided interiorly with a shoulder 28 adapted to be engaged by the lower head truss hoop 85 of the barrel. The upper edge 29 of the cap is adapted to be engaged by the lower bilge truss hoop of the barrel. The upper cap is of essentially the same construction as the lower cap 27, it being provided with an interior 90 shoulder 31 to engage the upper head truss hoop and its lower edge 32 being arranged to engage the upper bilge truss hoop. It will be seen, therefore, that by placing the barrel in the lower cap, lowering the upper cap on the top of the barrel and applying downward pressure 95 on the upper cap the four hoops of the barrel will be simultaneously subjected to an equal pressure forcing them firmly in position.

According to my invention, I so arrange the parts of the machine that the blocks 33 of the driving arms 12 will engage the top of the cap 30 instead of engaging 100 the hoops, and forcing this cap down, will bring about the novel operation described. If desired, the caps may be adjusted at will to suit the different sizes and forms of barrels or other packages and as shown in Fig. 4, one means of accomplishing this purpose is the provision of rings 34 which engage the caps and are held in 105 place by means of guide lugs 35 secured to the caps. In the case of the upper cap the guide lugs 35 are provided with screws 36 of which one is shown in Figs. 1 and 4. These screws 36 serve to retain the ring 34 of 110 the top cap in place. It is obvious that the desired adjustment may be obtained in other ways for example

by fitting similar rings inside of the caps to engage the ends of the staves or, if desired, different sizes of caps may be constructed and where the machine is intended to work with packages of varying sizes this duplication will be necessary.

The top cap 30 has a bail 37 attached thereto and to this bail a rope 38 is connected. The rope passes up to the ceiling and off to one side of the machine over guide rollers 39 and 40. From thence the rope passes downward through an opening in the floor 10 past a guide roller 41 and is joined to the free end of a lever 42. The end of this lever is weighted as indicated at 43 to counterbalance the cap 30. The lever 42 is of considerably greater length than the length shown in the drawing, Fig. 1 illustrating the lever broken away to indicate the continued length of this part. Said lever 42 is fulcrumed to one end of two links 44 and 44<sup>a</sup>. These links are pivoted to each other and the link 44<sup>a</sup> is shackled to the base plate 18<sup>a</sup> of the machine. 46 indicates springs which are preferably two in number and which are attached to the carrier 16 and to a yoke 47 which engages the arms 12 to which the link 45 is attached. It will be seen, therefore, that as the holder 16 moves upward and downward under the action of the screw 17 thus raising and lowering the arms 12, a similar movement will be imparted to the lever 42, thus raising and lowering the top cap in unison with the action of the other parts of the machine. In this connection it should be noted that the top cap counterbalances the lever 42 and links 44 and 44<sup>a</sup> so that upon the descent of the holder 16 these parts will not fall. In this manner as the arms 12 rise the upper cap is also raised, thus allowing a barrel to be inserted into its position in the lower cap. The operation of the screw is then reversed and the arms 12 move downward. The instant that this operation begins the action of the lever 42 is reversed and the top cap seats itself on the barrel. As soon as this takes place, the continued downward movement of the arms causes them to engage the blocks 33 with the top cap thus driving the hoops on the barrel as explained.

Heretofore, it has been necessary to move the arms 12 in and out by hand. It will be seen, however, that by means of the improvement which I have devised the operation of these arms becomes entirely automatic, it being now necessary for the workman to do nothing except place the barrel in the machine and to actuate the lever which controls the friction gear 21 so as to start the screw 17 in either direction and stop its rotation as desired. This automatic operation of the arms 12 is due to the action of the springs 46 in one direction and the weighted lever 42 in the other direction. As the carrier 16 moves downward the lever 42 assumes a position approaching the horizontal and the weight of the upper cap balancing the lever 42, the pressure of the lever on the arms 12 becomes *nil* or nearly so and the springs 46 are allowed to swing the arms inward, the links and rocker plate shown in Fig. 3 causing all of the arms to move together. As the carrier 16 moves upward, however, the lever 42 assumes the position shown by broken lines and the weight of the lever and its connections causes the arms to be drawn outward into the position shown by broken lines in Fig. 1. It will thus appear that my invention brings about a two fold improvement in the type of

machine shown, first it enables all of the hoops to be put on simultaneously, thus increasing the capacity of the machine four fold, and second it renders completely automatic the operation of the arms 12 greatly reducing the labor required to operate the machine. A further advantage of the invention which is of prime importance is that it causes the work of putting on the hoops to be done entirely automatically and does not rely upon the skill and judgment of the workman operating the machine. With the old machine, much work was spoiled by reason of the workman allowing the arms to move down excessively, thus forcing the hoops too firmly on the barrel. With my invention, however, the machine being once adjusted all of the hoops will be put on uniformly at the end of the operation which renders it impossible for the caps to be moved any further and which thus limits the extent to which the hoops are driven on. In Fig. 1 the outline of the barrel is shown by broken lines and this view clearly illustrates the ends of the staves engaging the inner surfaces of the caps at the completion of the operation.

While the invention is adapted especially for driving truss hoops, it is not limited to this use and may be used for driving other hoops. It will also be seen that it may be used on barrels, kegs, hogsheads and all other of the various cooper's packages.

Having thus described the preferred embodiment of my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is:—

1. An apparatus for hooping barrels comprising caps respectively adapted to embrace the ends of the barrel each cap having surfaces to engage the head and bilge hoops at their respective ends, means for moving one of the caps toward the other to drive the hoops, annuli adapted to engage the caps and means for removably holding the annuli in place to permit adjusting the apparatus to different forms of barrels.
2. In an apparatus for hooping barrels, the combination with the driving arms and the means for operating them of an annular member adapted to engage a hoop, said member being engaged by the hooping arms to drive the hoop and means for suspending said member overhead and moving the same automatically toward and from the barrel in unison with the action of the arms.
3. In an apparatus for hooping barrels the combination with the driving arms and the means for operating them of a cap adapted to engage the hoop, said cap having a surface adapted to engage the ends of the staves to limit the driving action and the cap being engaged by the hooping arms to drive the hoop and means for suspending said cap overhead and moving the same automatically toward and from the barrel in unison with the action of the arms.
4. In an apparatus for hooping barrels, the combination with the driving arms, and the means for operating them of a member adapted to engage the hoop said member being actuated by said arms and means operating in unison with the operating arms for automatically moving said member in and out of engagement with the hoop.
5. In an apparatus for hooping barrels the combination with the driving arms, and the means for operating them of a stationary cap a movable cap adapted to receive the ends of the barrel and engage the hoops thereof, said movable cap being engaged by the hooping arms to drive the hoops and means for suspending the movable cap overhead and moving the same automatically toward and from the barrel in unison with the action of the arms.
6. In an apparatus for hooping barrels the combination with the driving arms, and the means for operating them of a stationary cap, a movable cap adapted to receive the ends of the barrel and engage the hoops thereof, said movable cap being engaged by the driving arms to drive

the hoops, and means operating in unison with the hooping arms for moving the movable cap toward and from the barrel.

7. In an apparatus for hooping barrels the combination with the driving arms and the means for operating them of a member adapted to engage the hoop, said member being driven by the arms, a lever having connection with one of the arms, and means connecting the lever with said member whereby to move said member automatically toward and from the barrel in unison with the operation of the arms.

8. In an apparatus for hooping barrels the combination with the driving arms, the means for operating them and the connection between the arms to cause them to move in unison, of a member adapted to engage the hoop, said member being driven by the arms, a lever having connection with one of the arms, means connecting the lever with the said member to move the same automatically toward and from the barrel and a spring in connection with one of the arms and tending to move the arms inward, said lever exerting on the arms during their upward movement an outward pressure serving to overcome the tension of the spring and throw the arms outward.

9. In an apparatus for hooping barrels the combination with the driving arms connected to move in unison and the means for operating the arms of a member adapted to engage the hoop, said member being driven by said arms, a yielding means serving to move the arms inward and devices having connection with one of the arms for automatically moving said member toward and from the barrel in unison with the operation of the arms, such devices serving upon the upward movement of the arms to exert a pressure thereon sufficient to move them outward against the action of the said yielding means serving to move the arm inward.

10. In an apparatus for hooping barrels, the combination with the driving arms connected to move in unison and the means for operating them of caps of which one is movable, the caps being adapted to receive the respective

ends of the barrel and engage the hoops thereof, and the movable cap being engaged and driven by said arms, a yielding means serving to move the arms inward and devices establishing a connection between the movable cap and one of the arms to move the cap automatically toward and from the barrel in unison with the movement of the arms said devices also serving upon the upward movement of the arms to force the arms outward against the pressure of said yielding means serving to hold the arms inward.

11. In an apparatus for hooping barrels, the combination of the driving arms, a carrier on which the arms are pivoted, means for reciprocating the carrier to move the arms up and down, a connection between the arms causing them to move inward and outward simultaneously, a yielding means acting on the arms to move them inward and devices acting on the arms upon their upward movement said devices serving to move the arms outward against the action of said yielding means.

12. In an apparatus for hooping barrels, the combination with the driving arms and means for operating them of a member adapted to engage the hoop, said member being engaged by the hooping arms to drive the hoop and means acting in unison with the arms to automatically engage and disengage said member with and from the barrel.

13. In an apparatus for hooping barrels, the combination with the driving arms and the means for operating them of a member adapted to engage the hoop, said member being engaged by the hooping arms to drive the hoop and means for suspending the member overhead and operating the same automatically toward and from the barrel in unison with the action of the arms.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHRISTOPH G. KNORR.  
JAKOB STANKOVICH.

Witnesses:  
JOHN RAPPOLD,  
EDWARD E. NALD.