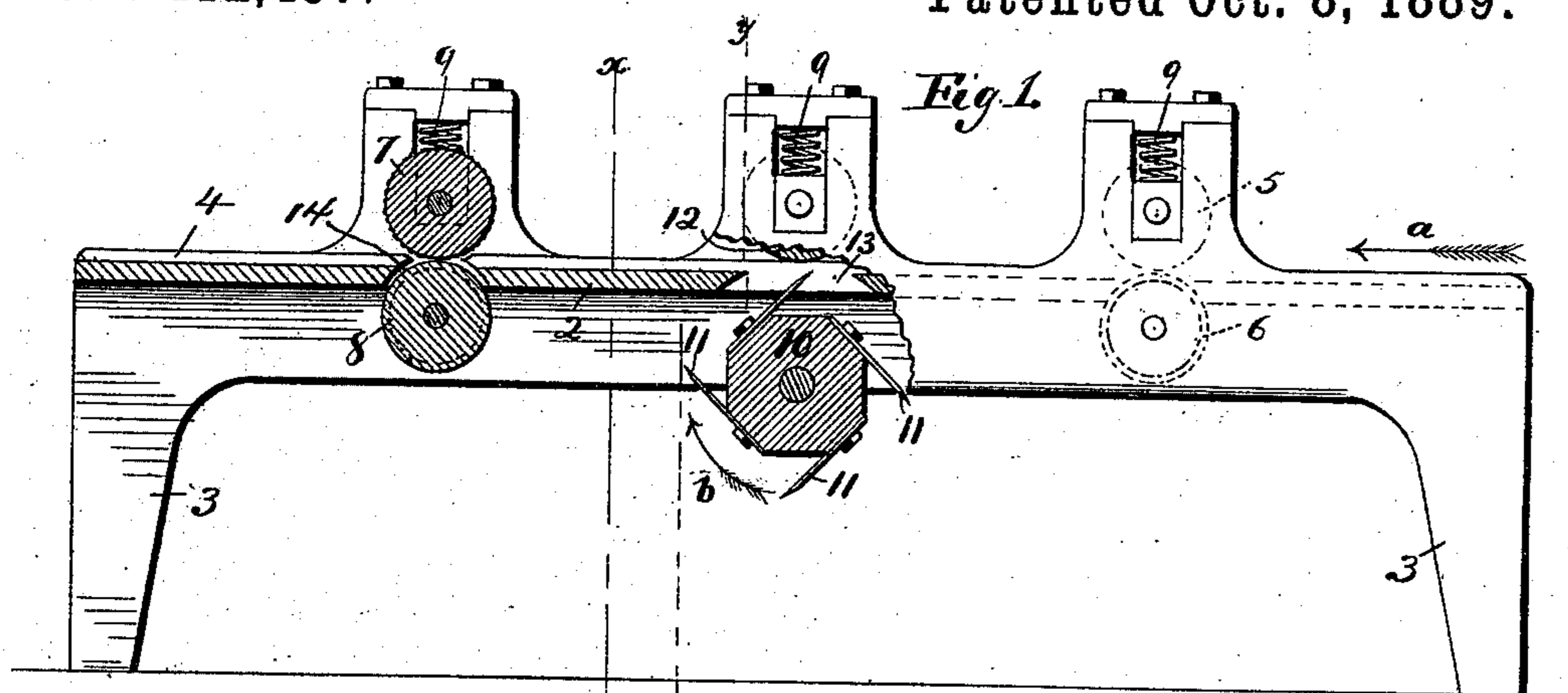


(No Model.)

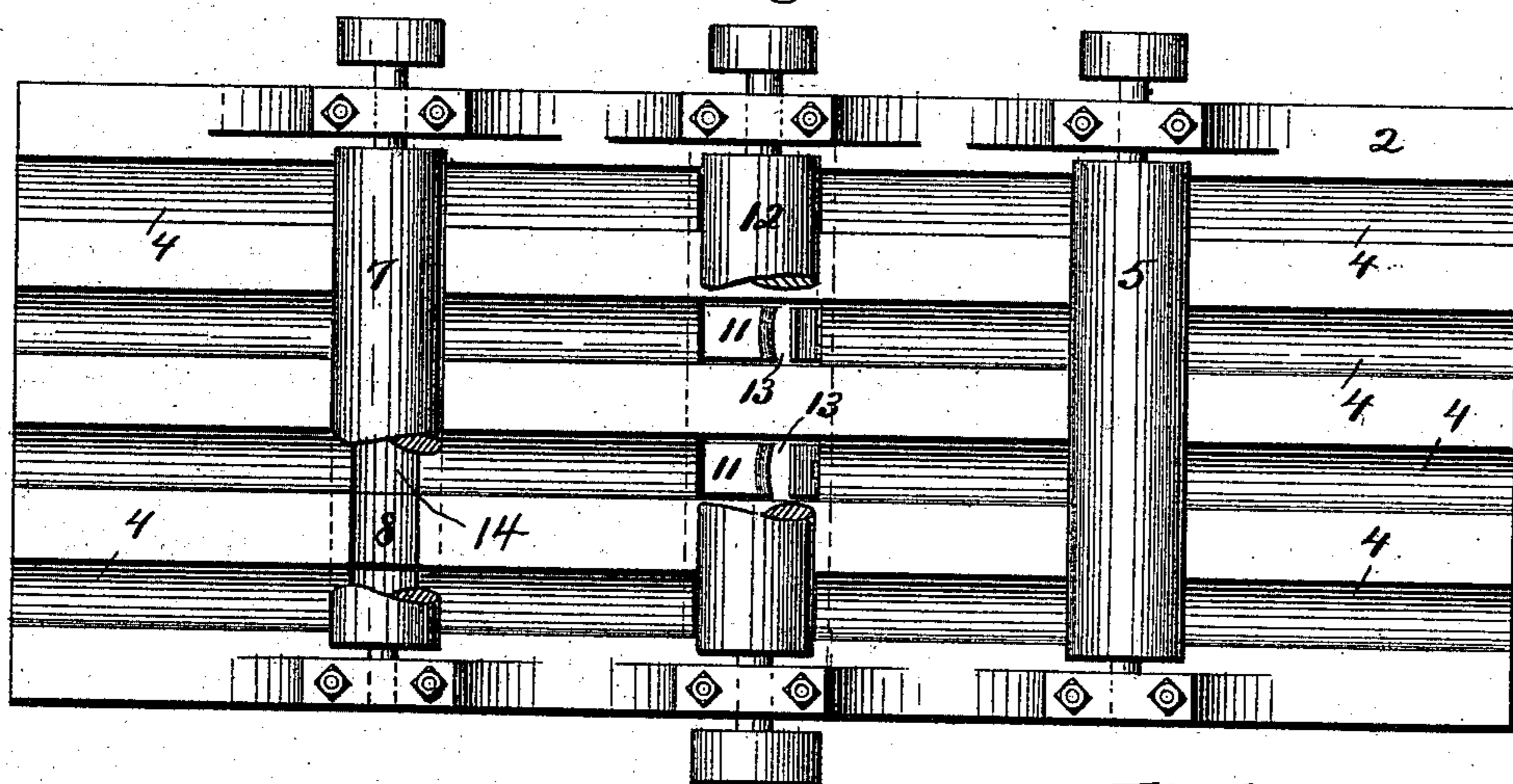
P. B. WARNER.  
HOOP KNOTTING MACHINE.

No. 412,437.

Patented Oct. 8, 1889.

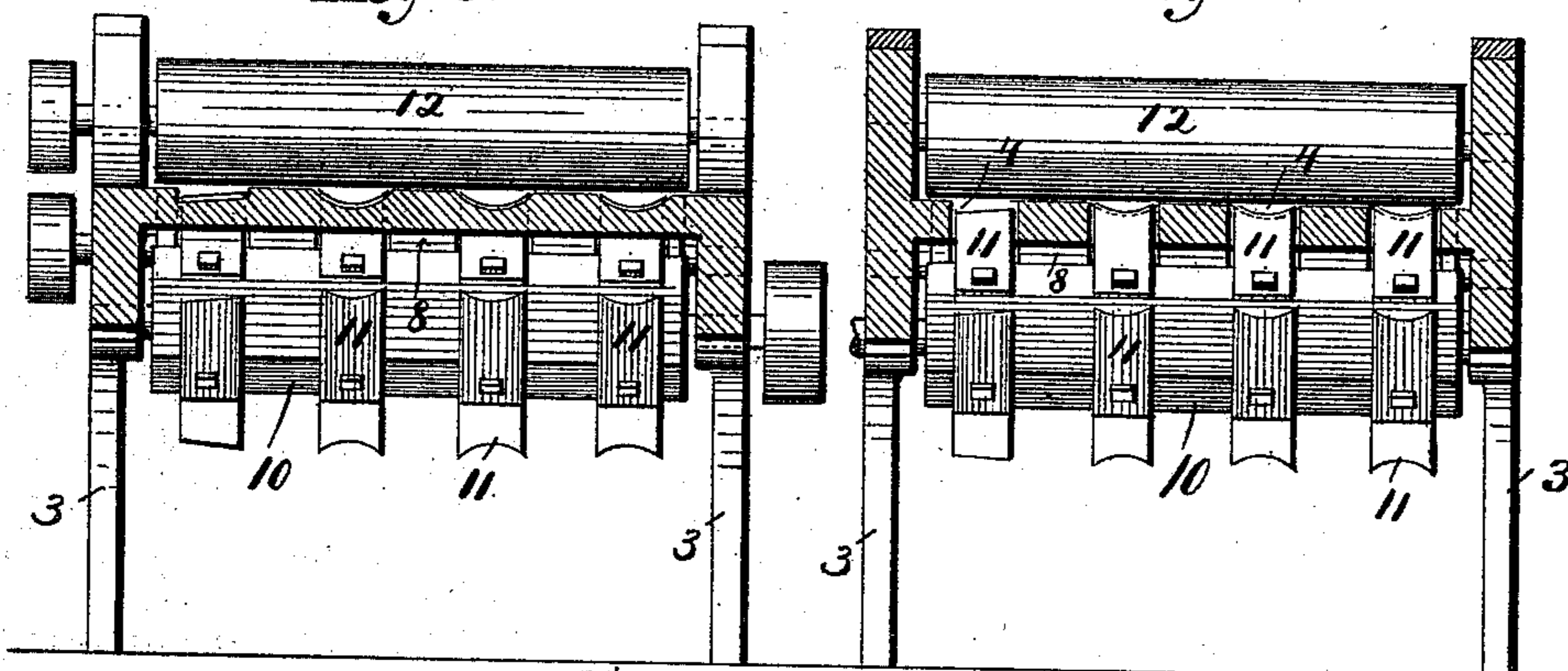


*x y Fig. 2.*



*Fig. 3.*

*Fig. 4*



*Fig. 5.*

Witnesses.

J. Jensen.  
Bessie Booth



**Inventor.**

*Peter B. Warner*

By Paul Thurman Att'ys

# UNITED STATES PATENT OFFICE.

PETER B. WARNER, OF GREEN BAY, WISCONSIN.

## HOOP-KNOTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 412,437, dated October 8, 1889.

Application filed April 11, 1889. Serial No. 306,829. (No model.)

*To all whom it may concern:*

Be it known that I, PETER B. WARNER, of Green Bay, Brown county, Wisconsin, have invented a certain new and useful Hoop-Knotting Machine, of which the following is a specification.

The object of my invention is to provide means for removing the knots from hoops split from poles before the same are dressed or shaved; and it consists, generally, in the construction and combination hereinafter described, and specifically pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a side elevation and partial section of my improved hoop-knotting machine, showing the arrangement of the knife-cylinder and feed-rollers. Fig. 2 is a plan view and partial section of the same. Fig. 3 is a vertical cross-section of the same on the line *xx* of Fig. 1. Fig. 4 is a similar cross-section on the line of *yy* of Fig. 1, and Fig. 5 is a detail of lower feed-roller.

In the drawings, 2 is a suitable bed-plate supported on suitable standards 3, and provided with longitudinal half-oval grooves 4, that are adapted to receive and guide the hoops through the machine. Supported in suitable bearings on said bed-plates are the upper and lower feed-rollers 5 and 6, arranged at the front end of the machine, and the similar rollers 7 and 8, arranged at the rear end of the machine. The bed-plate is provided with a transverse slot 14 under each of the rollers 5 and 7, so as to allow the rollers to grasp the hoop and to pass it through the machine. The rollers 5 and 7 are preferably provided with the springs 9, by means of which the roller exerts a yielding downward pressure. Centrally supported in proper bearings underneath said bed-plate, and transverse of the same, is the knife cylinder or arbor 10, provided with a series of concave bitted knives 11. The bed-plate immediately above said knife-cylinder is provided with slots 13 longitudinal of said grooves, each slot being preferably of the width of the groove into which it opens. The series of knives 11 are carried by the cylinder 10 in its rotation through these slots 13, and strike against the knots or other projections

upon the hoops passing in the grooves above. The knives are preferably so arranged that their cutting-edges or bits revolve nearly as high as the bottom of the grooves, so that while striking only knots or projections the body of the hoop will not be cut by them. Arranged in suitable bearings transverse of the bed-plate, and immediately above the knife-cylinder, is the pressure-roller 12, also provided with suitable springs 9, which is adapted to press upon the hoops passing underneath, so as to hold them down upon the revolving knives. This machine may be constructed as an independent machine, as shown in the drawings, or as an attachment to a hoop-dressing machine. I also prefer to provide one or more flat grooves and straight bitted knives to revolve in the slots of said grooves in which sawed hoops may be partially dressed.

The feed and pressure rollers and knife-cylinder may be propelled by belting or other suitable means and at any desired speed. The upper feed-rollers 5 and 7 are preferably roughened or corrugated to enable them to grasp firmly the hoops that pass underneath. The knives 11 may be secured in any suitable manner to the cylinder, but are preferably independent of each other, so that they can be readily detached in case of breakage or for the purpose of sharpening them.

Instead of the series of longitudinal slots over the knife-cylinder, a broad slot transverse of the bed-plate may be arranged over the knife-cylinder, through which the knives may be rotated, and with this construction, if preferred, a series of knife-blades may be used extending the entire length of the cylinder, having their edges bitted to correspond with the grooves above. I prefer also to provide the feed-rollers 6 and 8 with annular grooves in form and position to align with the grooves of the bed-plate.

The mode of operation is as follows: The feed-rollers and pressure-roller being rotated at a substantially uniform speed, so as to carry a hoop through the machine in the direction indicated by the arrow *a*, and the knife-cylinder being rotated, preferably, at a much higher speed in the direction indicated by the arrow *b*, the hoops to be trimmed of

knots are inserted into the front of the machine with their oval or bark side downward in the grooves, and passed between the rollers 5 and 6, which propel them through the machine, the knives trimming the knots as they pass over the cylinder 10, whence they may be conveyed to a suitable hoop-dressing machine, if so desired.

I claim as my invention—

10 1. In a hoop-knotting machine, the combination of a longitudinally-grooved bed-plate having a transverse series of longitudinal slots opening into the grooves in said bed-plate, a rotatable shaft or arbor arranged  
15 transversely of said bed-plate and underneath said slots, a series of knives adjustably secured to said shaft and adapted to be carried in the rotation of said shaft through said slots in the bed-plate and having bits of  
20 the form of cross-section of said grooves, and a pressure-roll arranged transversely of said bed-plate and above said knife-shaft, and adapted to hold the hoops passing through the machine in said grooves, and to bring any  
25 knots or other projections on said hoops in contact with said knives, substantially as described.

2. In a hoop-knotting machine, the combination of a bed-plate provided with half-oval  
30 longitudinal grooves on its upper surface, a series of longitudinal slots opening into said grooves, and a transverse slot in the body of the bed-plate at one side of said series of slots, a knife-cylinder journaled transversely  
35 of said bed-plate and underneath said series of slots, and adapted to rotate its knives through said slots, said knives being adjustably secured on said cylinder and having bits corresponding in form to the cross-sections of

their respective grooves, a spring-controlled  
40 presser-roll arranged above said knife-cylinder and adapted to hold the hoops passing through the machine upon the bottom of the grooves and knots upon their under surfaces in contact with said knives, a spring-con-  
45 trolled feed-roll arranged above said transverse slot, and an under feed-roll rotated in said slot and provided with annular grooves corresponding in form to the grooves in the bed-plate and in alignment with said grooves,  
50 substantially as and for the purpose set forth.

3. In a hoop-knotting machine, the combination, with the bed-plate 2, having the half-oval longitudinal grooves 4, the series of longitudinal slots 13, opening into said grooves, and  
55 the transverse slots 14, of a series of knives having bits corresponding to the cross-sections of said grooves adapted to be rotated in said slots 13 in vertical planes parallel with  
60 said grooves, the presser-roll 12, arranged transversely of said bed-plate and above said series of slots 13, and provided with a spring 9, the feed-rolls 5 and 7, journaled above the slots 14 transversely of the bed-plate, and the feed-rolls 6 and 8, journaled underneath  
said bed-plate and rotating in the slots 14, and having annular grooves corresponding in form and aligning with the grooves of said  
70 bed-plate, substantially as and for the purpose set forth.

In testimony whereof I hereby set my hand this 3d day of April, 1889.

PETER B. WARNER.

In presence of—

T. D. MERWIN,  
A. MAY GASKILL.