

(No Model.)

2 Sheets—Sheet 1.

A. SYME.
HOOP BENDING MACHINE.

No. 505,614.

Patented Sept. 26, 1893.

Fig. 1.

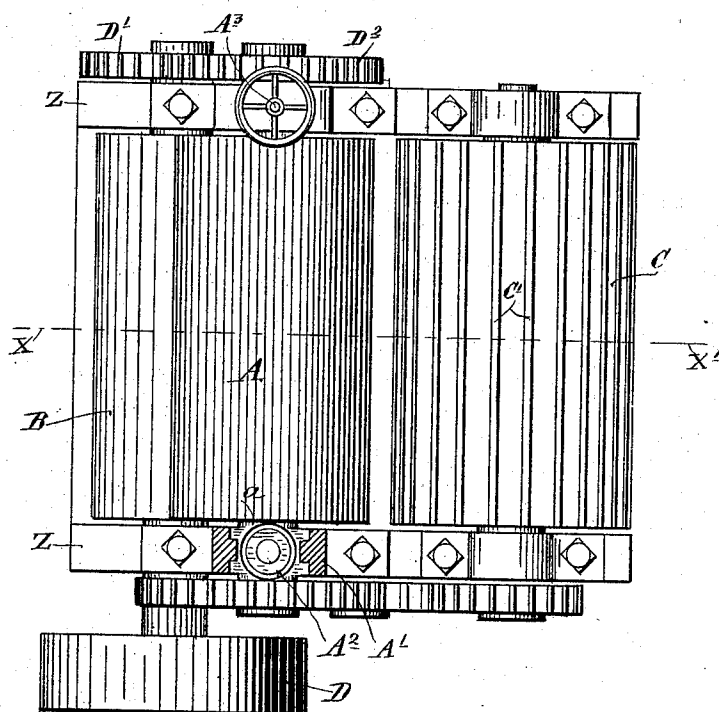
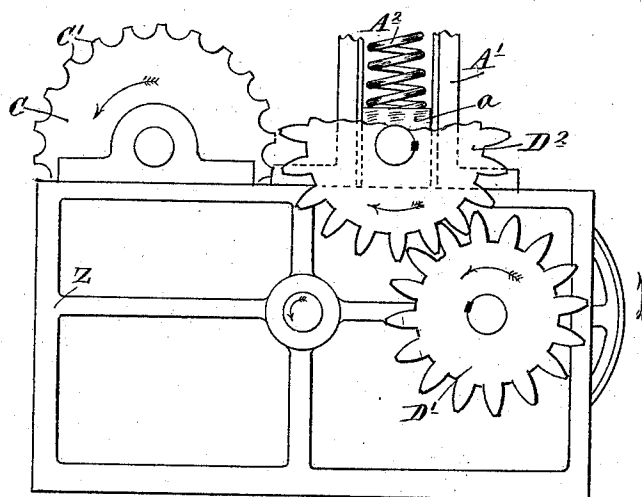


Fig. 2.



Witnesses
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By his Attorney.
Jas. F. Williamson

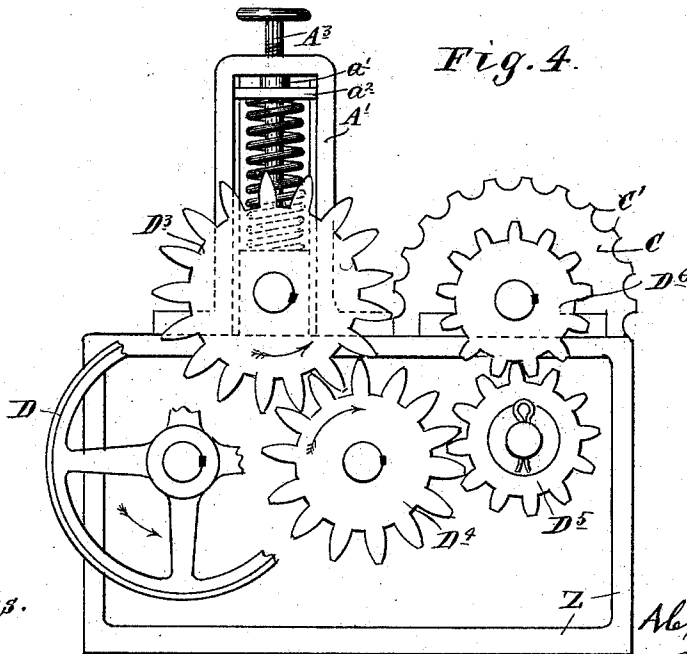
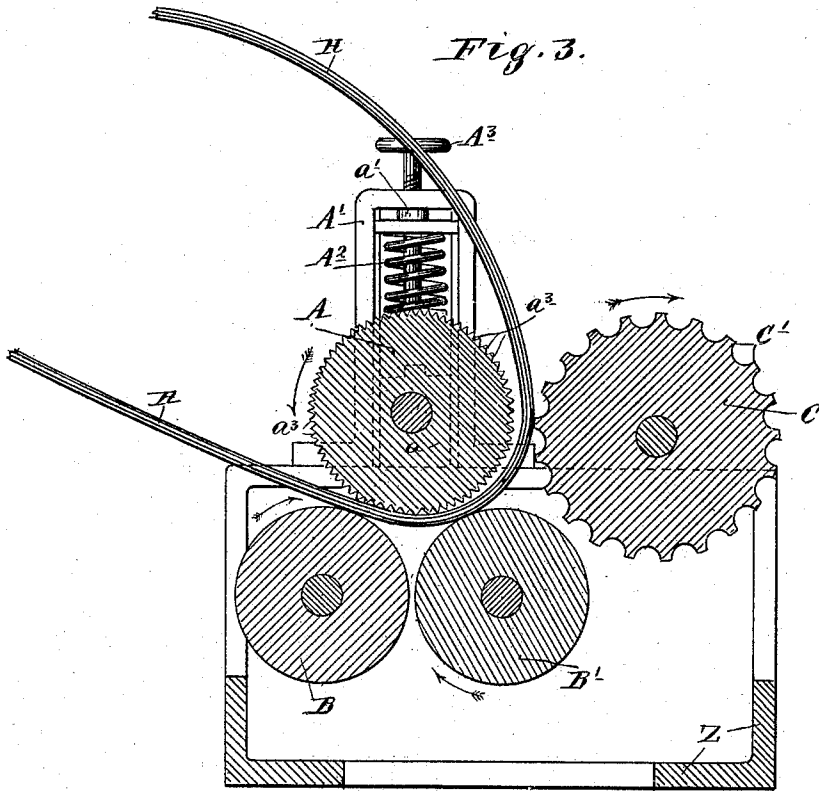
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2 Sheets—Sheet 2.

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HOOP BENDING MACHINE.

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UNITED STATES PATENT OFFICE.

ALEXANDER SYME, OF GLENWOOD, WISCONSIN.

HOOP-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,614, dated September 26, 1893.

Application filed March 6, 1893. Serial No. 464,824. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER SYME, a citizen of the United States, residing at Glenwood, in the county of St. Croix and State of Wisconsin, have invented certain new and useful Improvements in Hoop-Bending Machines; and I do hereby 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.

My invention has for its object to provide an efficient hoop-bending machine.

To this end the invention consists of certain novel devices and combination of devices which will be hereinafter fully described and be defined in the claims.

The accompanying drawings illustrate the preferred form of my machine, wherein, like letters referring to like parts throughout the several views, Figure 1 is a plan view of the machine, with some parts shown in section. Fig. 2 is a left side elevation of the same, with some parts broken away. Fig. 3 is a longitudinal vertical section on the line X X' of Fig. 1; and Fig. 4 is a right side elevation of the machine, with some parts broken away.

Z represents a strong frame or support of any suitable construction.

A B B' are three co-operating, parallel rollers, of which B B are the bed members, and A is the angle or pressure member working in the dip or angle between the said bed members. The bed members are journaled in suitable fixed bearings in the said frame; and the angle member A is journaled in sliding bearings α vertically movable in yoke-like guides A' secured to the sides of the frame. The angle or pressure roller A is under yielding pressure from springs A² applied to the sliding bearings α , the tension of which is adjustable by ordinary hand screws A³ working through the top or cross bars of the yoke-like guides A', and having screw threaded engagement therewith. As shown, the hand screws have fixed collars α' , which work against followers α^2 loosely seated in the bearing guides and resting against the top of the springs A²; the stems of the hand screws are of sufficient length to project into the springs and assist in holding and centering the same.

The bed rollers are smooth; and the press-

ure roller A is provided with longitudinal corrugations, as shown at α^3 , which are of angular form in cross section and sufficiently sharp to take a good bite on the hoop without being sharp enough to cut the wood.

C is a return feed drum or roller located to the rear of the rollers A B B' and parallel therewith. This return feed drum C is journaled in fixed bearings on the frame, and is provided with deep longitudinal corrugations C' which are comparatively blunt and rather widely spaced apart.

Motion is given to the several rollers as follows: The front member of the bed rollers is provided with a driving pulley D, at its right hand end, for the application of the power, and has on its left end a gear D' engaging with the gear D² on the left end of the pressure roller A. The pressure roller A has on its right end a gear D³ in engagement with the gear D⁴ on the front end of the bed roller B'. The gear D⁴ also engages an idle gear D⁵ on the right side of the frame; which in turn engages with the gear D⁶ on the right end of the feed roller or drum C. The train of gears thus specified and arranged will turn the respective rollers in the directions indicated by the arrows. The gears are preferably of involute form and are so shown in the drawings.

Referring to Fig. 3, H represents a hoop under the action of the machine.

It will be observed, by referring to the drawings, that the length of the teeth of the gear-wheels D' D² D³ and D⁴, are elongated, so as to permit a considerable movement of the roller A and said wheels D² and D³, to and from the said wheels D' and D⁴, without disengaging the said teeth. It will be further observed, that, in virtue of the size of the return feed drum C, and of the driving gearing to the same, the periphery of the said drum will travel faster than the peripheries of the feed rollers, and hence, the said return drum with its corrugations will engage the hoop and turn the same forward, under a continued bending and drawing action.

The operation is as follows: The hoops are fed by hand or in any suitable way to the co-operating rollers A B B' from the front. On the passage of the hoops between the said rollers, the pressure member A will act on

the same at the span or dip between the bed rollers B B', thereby bending the hoops as required. When the forward end of the hoop meets the return drum or roller C, it will be thrown forward thereby, over the pressure roller A, to the front of the machine, enabling the operator to supply the hoops and remove the same from the machine from a common position at the front. The hoops are fed to the rollers A B B' with their backs toward the bed members, and their faces toward the pressure member A. The pressure member therefore acts on the face of the hoop and bends the same in the proper direction for application to the barrel. In virtue of the corrugations a^3 on the pressure member A, the said pressure roller acts on the hoop with a crimping action which is very effective for bending the hoop in the best manner. This machine is very efficient and produces much better results on the hoop than can be obtained by hand action. In virtue of the relation of the pressure roller to the bed rollers, the curvature is continuous, and the pressure is supplied, in virtue of the corrugations a^3 at uniform distances on the face of the hoop with substantially uniform pressure, varying as required, according to the thickness of the hoop. The hoops are seldom ever broken and large economy is effected, not only in the time saved in bending the hoops as compared with hand work, but in avoiding the waste which occurs in bending hoops by the hand action. The hoops are also in much better form for application to the barrels.

It is, of course, obvious that the yielding pressure on the vertically movable pressure roller A might be secured by means of weights instead of springs. It would also be possible to dispense with the return drum C. The said return or feed drum is, however, a convenience for the purpose already named of throwing the hoop back to the front of the machine; and it also assists in holding or setting the hoop to the form into which the same is bent by the co-operation of the rollers A B B'.

Instead of the train of gearing as shown and described for revolving the rollers, it is of course obvious, that any other suitable form of driving connections might be substituted instead.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A hoop bending machine comprising three co-operating parallel rollers in triangular arrangement between which the hoop is passed, the pressure member of which is mounted in sliding bearings and works under yielding pressure on the hoop at the span or dip between the other two or bed rollers, substantially as described.

2. The combination with the three co-operating parallel rollers in triangular arrangement between which the hoops are passed, of the positively driven return feed drum or roller at the rear of the said three rollers, and provided with longitudinal corrugations, substantially as described.

3. A hoop bending machine, comprising three cooperating parallel feed rollers, in triangular arrangement, between which the hoop is pressed, the pressure member of which is mounted in sliding bearings, and driving gearing between the shafts of said rollers, having the elongated teeth adapted to permit the movement of said pressure roller, substantially as described.

4. The combination with the three cooperating parallel rollers, in triangular arrangement, between which the hoops are to be pressed, of the return roller, provided with longitudinal corrugations, and positive acting driving gearing for said return roller adapted to move the periphery of the same at a greater speed travel than the peripheries of the feed rollers, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER SYME.

Witnesses:

JAS. F. WILLIAMSON,
A. H. OPSAHL.