No. 825,711. PATENTED JULY 10, 1906.

G. A. ENSIGN.

RIMMING MACHINE.

APPLICATION FILED OCT. 31, 1905.

3 SHEETS—SHEET 1.

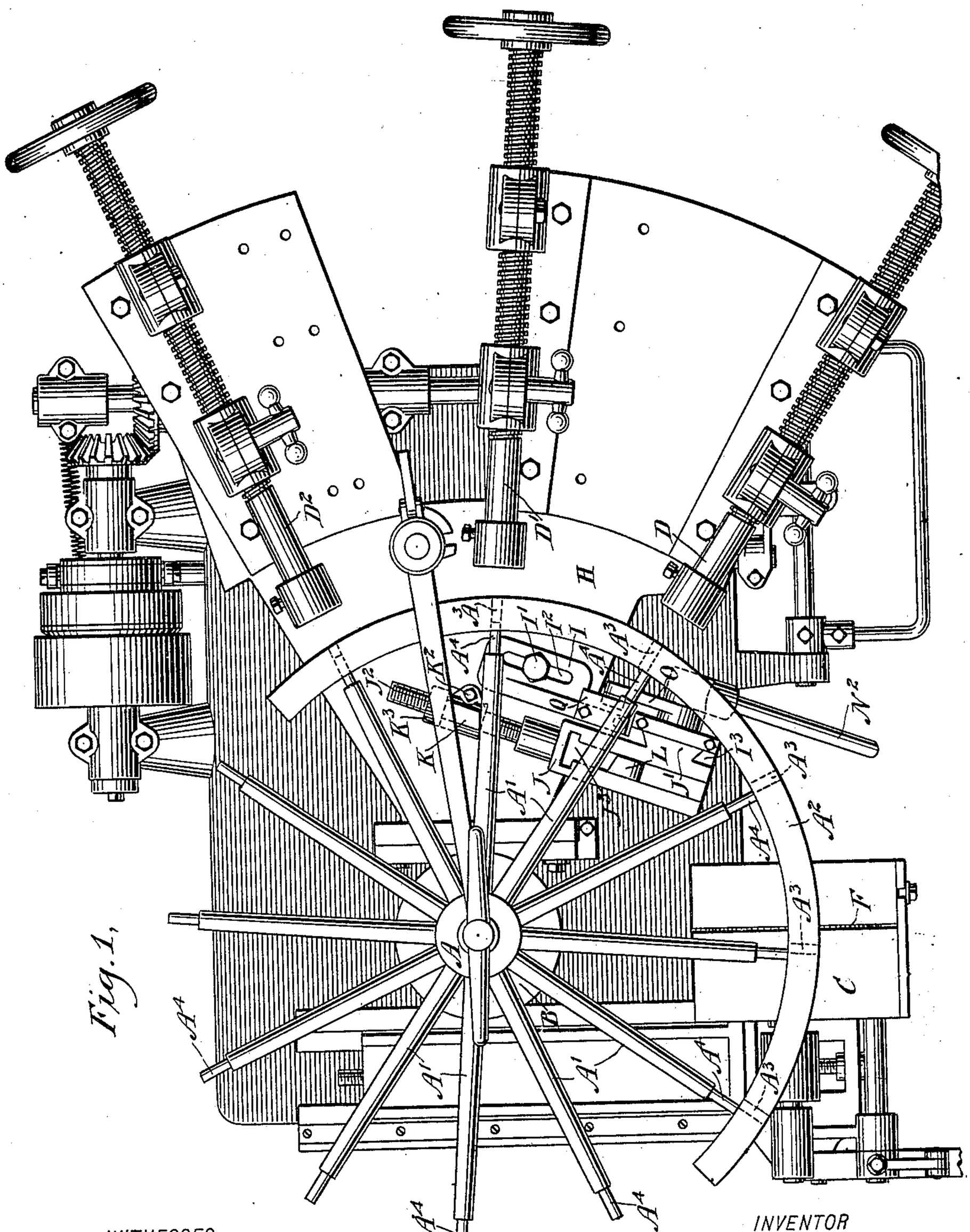


Fig. 1.

WITNESSES:

Edward Thorpe

Rev. J. Hoosteng

INVENTOR

George A. Ensign

BY Munn & Co

ATTORNEYS

No. 825,711. PATENTED JULY 10, 1906.

G. A. ENSIGN.

RIMMING MACHINE.

APPLICATION FILED OCT. 31, 1905.

3 SHEETS—SHEET 2.

Fig. 2,

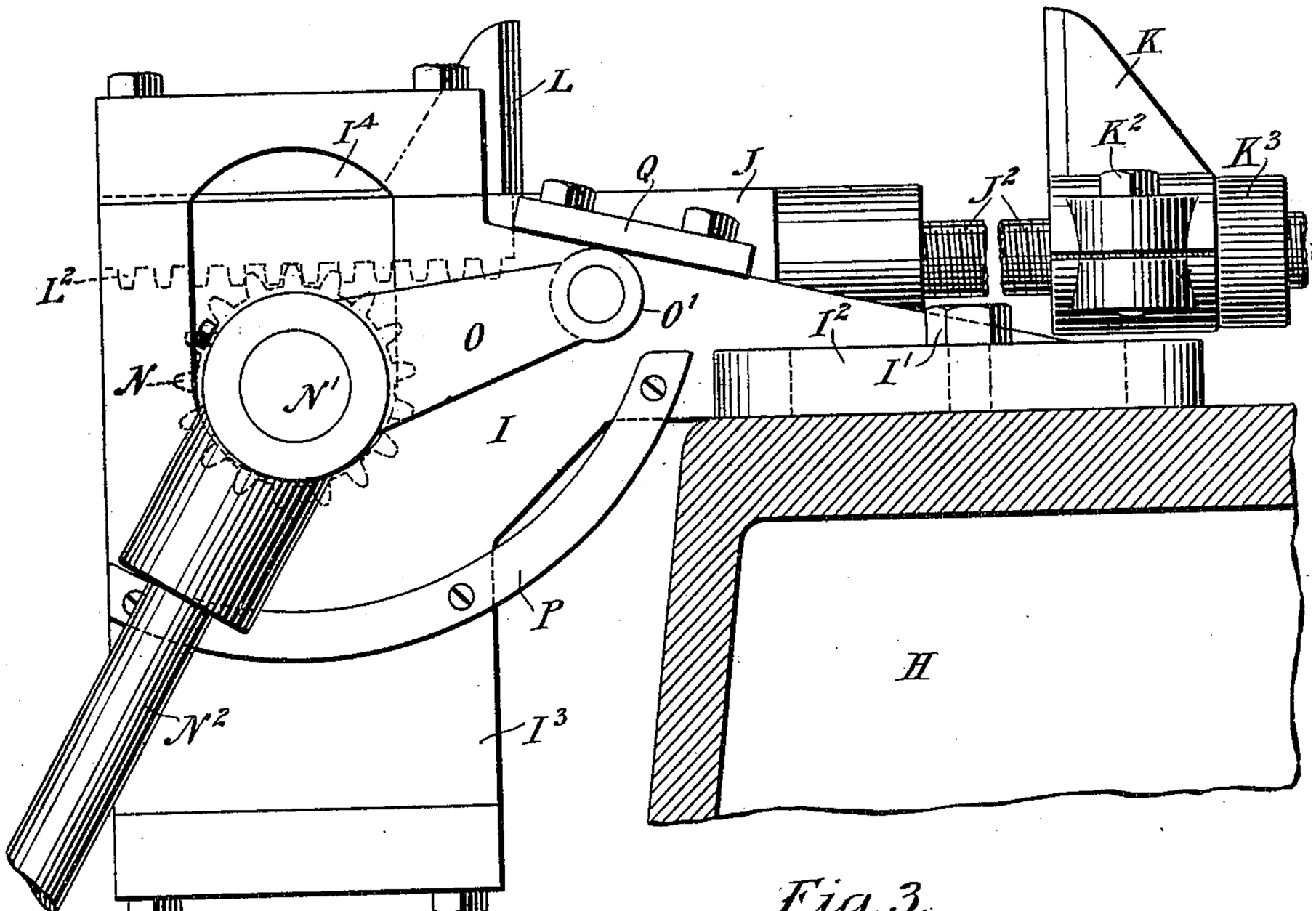
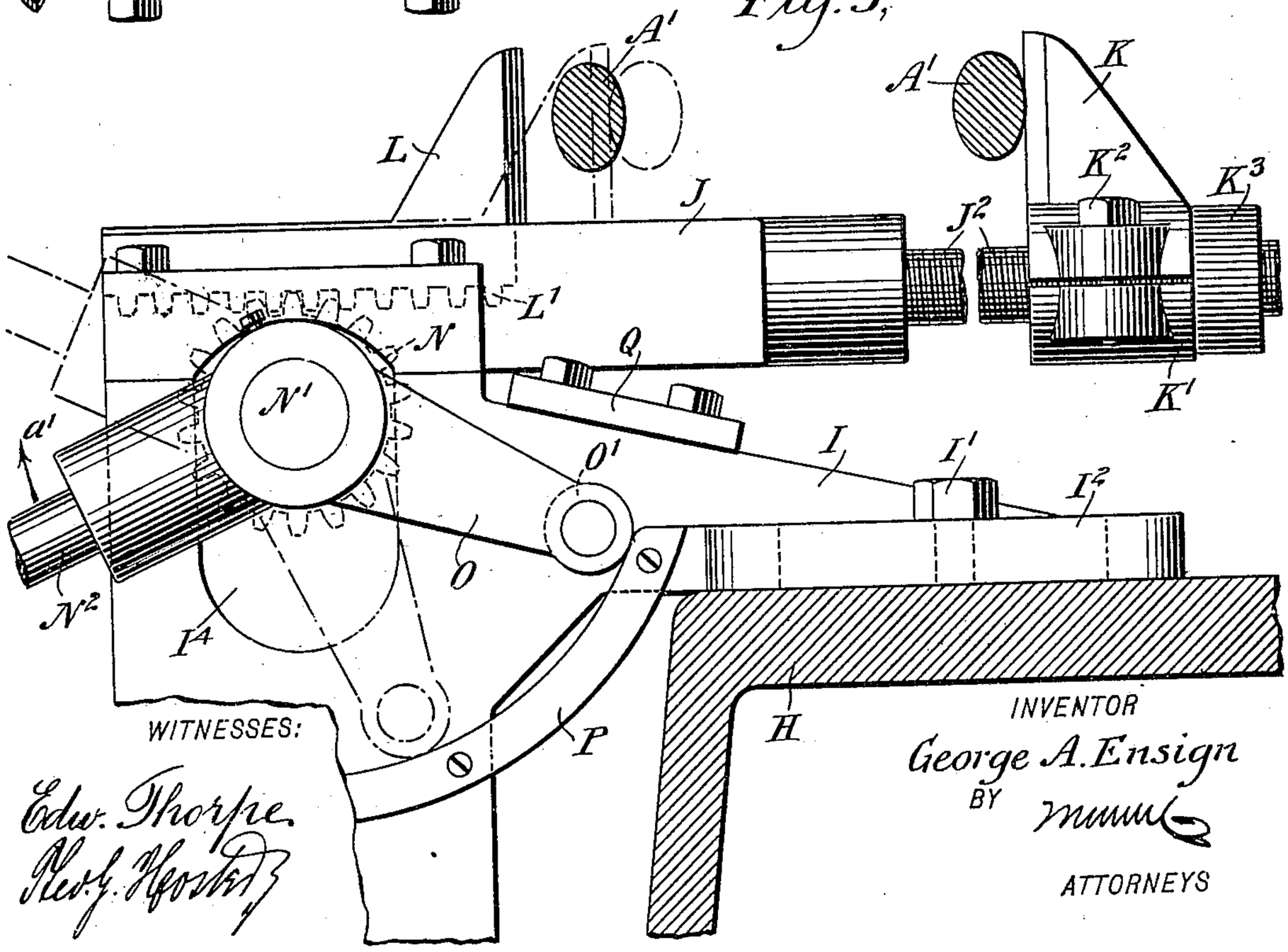


Fig. 3,



No. 825,711. PATENTED JULY 10, 1906.

G. A. ENSIGN.

RIMMING MACHINE.

APPLICATION FILED OCT. 31, 1905.

3 SHEETS—SHEET 3.

Fig. 4.

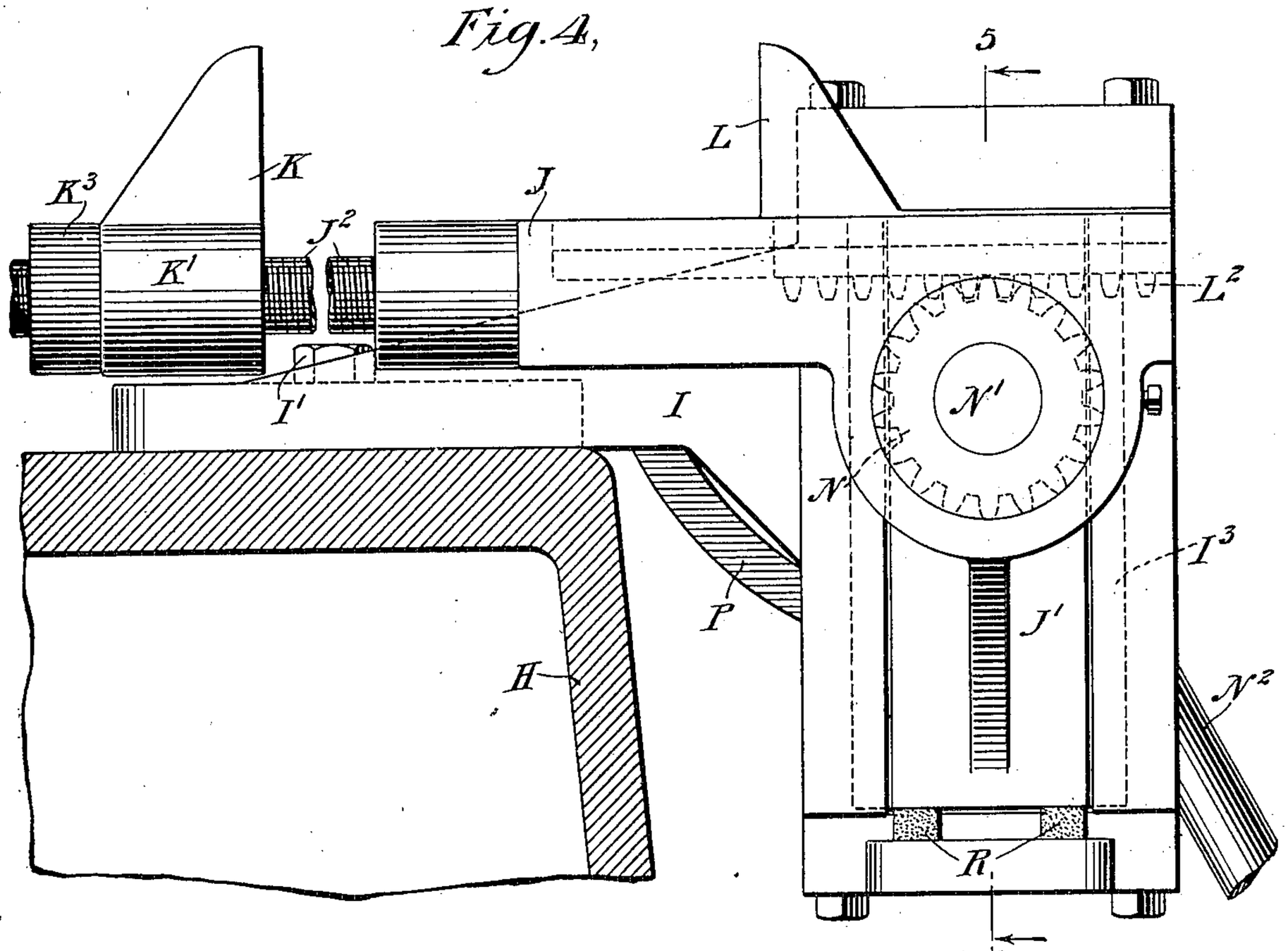
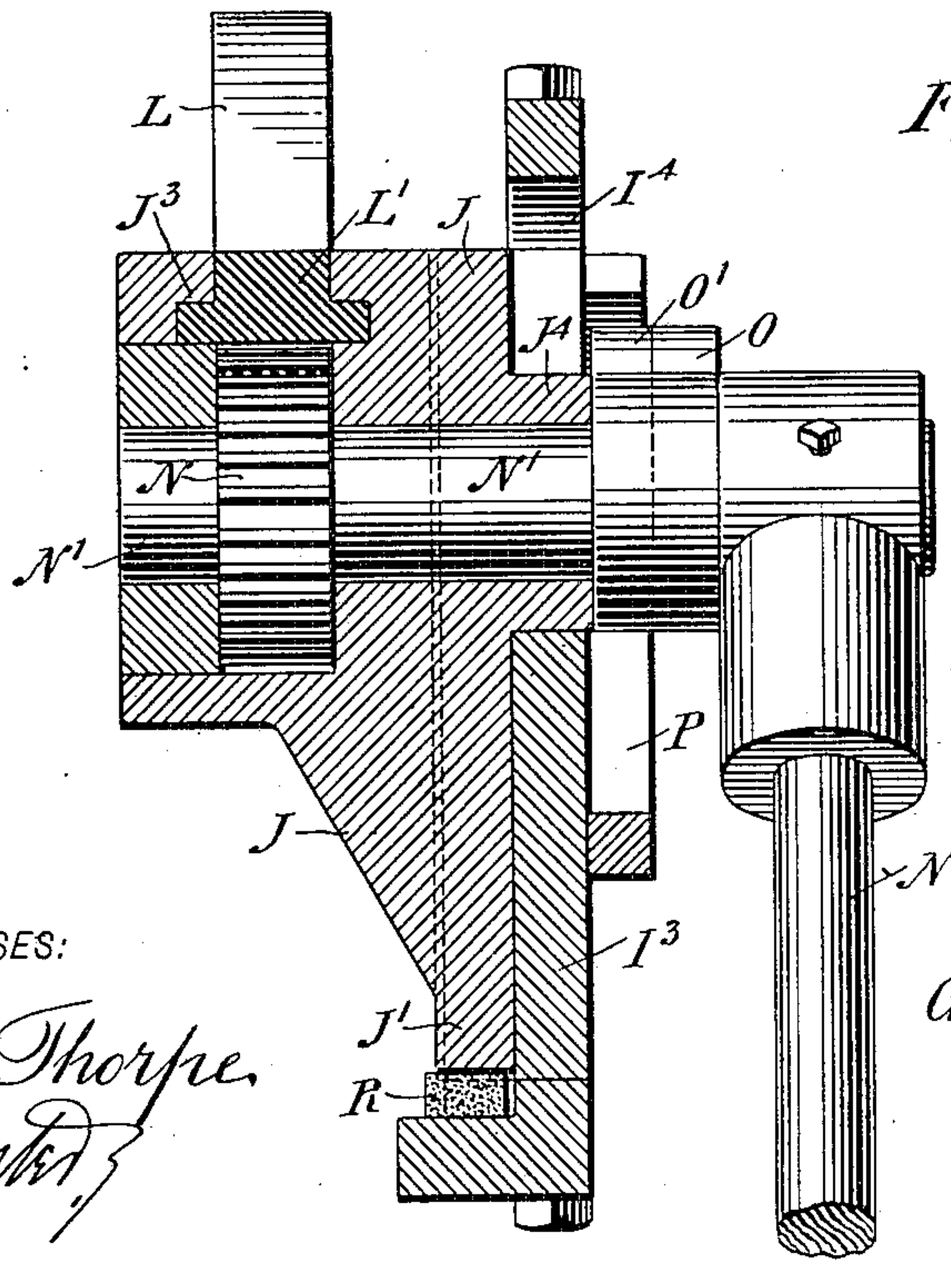


Fig. 5.



WITNESSES:

Edward Thorpe.

Reo J. Hoosier

INVENTOR

George A. Ensign

BY

Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE A. ENSIGN, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE MACHINE WORKS, OF DEFIANCE, OHIO.

RIMMING-MACHINE.

No. 825,711. Specification of Letters Patent. Patented July 10, 1906.

Application filed October 31, 1905. Serial No. 285,231.

To all whom it may concern:

Be it known that I, GEORGE A. ENSIGN, a citizen of the United States, and a resident of Defiance, in the county of Defiance and State of Ohio, have invented new and useful Improvements in Rimming-Machines, of which the following is a full, clear, and exact description.

The invention relates to woodworking machinery, and more particularly to rimming-machines—such, for instance, as shown and described in the Letters Patent of the United States, No. 733,826, granted to me July 14, 1903.

The object of the invention is to provide certain new and useful improvements in rimming-machines, whereby the tenons of the spokes are brought into proper alinement with the apertures in the rim-sections immediately previous to the reciprocating starting-plunger driving the rim-section onto the first portion of the tenon.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a rimming-machine provided with my alining device. Fig. 2 is an enlarged side elevation of the alining device in an inactive position. Fig. 3 is a like view of the same in an active position relative to the adjacent spokes shown in cross-section. Fig. 4 is a rear side elevation of the same, and Fig. 5 is a cross-section of the same on the line 5 5 of Fig. 4.

In the improved rimming-machine a hub A, with its spokes A′ radiating therefrom, is mounted on a revoluble support B, and rim-sections A^2 are placed by the operator on a table C and guided to bring the apertures A^3 in the rim-sections in alinement with the tenons A^4 of the spokes. When this is done, driving devices, such as plungers D, D′, and D^2, mounted on reciprocating carriages E and E′, are caused to act on the peripheral face of the rim-sections A^2 in alinement with the corresponding spokes to drive or push the rim-section inward to engage the openings A^3 thereof with the tenons A^4 of the spokes, each plunger pushing the rim-section a distance along the tenon, and this distance corresponds to a portion of the length of the tenon—that is, when four plungers are employed then each pushes the rim inward a distance of one-quarter of the length of the tenons, and the first plunger drives the rim onto the outer quarter portion of the tenon. The next plunger drives the rim one-half of the tenon, the third one onto three-quarters of the tenon, and the fourth plunger pushes the rim home on the outer end of the spoke. When three plungers are employed, as shown in Fig. 1, each plunger pushes the rim inward one-third of the length of the tenon. For wheels having sixteen spokes I prefer to employ four plungers; but for heavy wheels with twelve or fourteen spokes the last plunger is omitted and the other plungers are so adjusted sidewise as to cause the plungers to stand simultaneously radially to a corresponding number of successive spokes, as shown in Fig. 1. In ordinary carriage and buggy wheels usually but two rim-sections are employed; but for wagon-wheels and other heavy wheels more than two rim-sections are used; but in either case the sections are driven or pushed in by the driving devices to gradually engage the rim-sections with the tenons of the spokes. In case the ends of the sections overlap—that is, one section is longer than necessary—then the operator makes use of a circular saw F, operating through a slot C′ in the table C, to cut off the overlapping portion for the ends of the rim-sections to abut properly.

The carriages E and E′, carrying the plungers D, D′, and D^2, are reciprocated by suitable means, such as more fully shown and described in the Letters Patent above referred to, so that further description of the same is not deemed necessary.

It sometimes happens that the tenon A^4 of a spoke A′ is not in alinement with the aperture A^3 in the rim-section A^2 at the time the rim-section to be acted on by the first plunger D (see Fig. 1) is opposite the first plunger D, and in order to bring this spoke-tenon A^4 into accurate alinement with the corresponding aperture A^3 for the first or initial plunger

D to drive the rim-section in position on the tenon without injury to the latter the following alining device is provided, it being understood that this alining device is more especially employed when using the rimming-machine for heavy wheels having comparatively few spokes—say twelve or fourteen. On the main frame or bed H of the rimming-machine is adjustably secured a bracket I by means of a bolt I′, passing through an elongated slot I², formed in the bracket I. On the rear face of the bracket I is formed or arranged a vertically-disposed guideway I³, in which is mounted to slide a slide J′, depending from a support J, on which are mounted dogs K and L, of which the dog K is adapted to engage the spoke A′ opposite the plunger D′, while the dog L is adapted to engage the spoke A′, standing opposite the first or initial plunger D. (See Fig. 1.) The dog K is provided with a split nut K′, screwing on a screw-rod J², forming part of the support J, to allow of adjusting the dog K on the screw-rod to bring the dog in proper relation with its spoke A′. After the desired adjustment is made a clamping-screw K² on the split end of the nut K′ is screwed up, so as to securely clamp the nut K′ in place, a jam-nut K³ being also employed to hold the dog K against accidental movement on the screw-rod J². A dog L is mounted to slide on the top of the support J, and for this purpose the dog L is provided with an integral slide L′, mounted to slide in guideways J³, formed on the top of the support J. (See Fig. 5.) On the under side of the slide L′ is formed or secured a rack L², in mesh with a gear-wheel N, secured on a shaft N′, extending transversely and mounted to turn in suitable bearings carried or arranged on the support J. On the forward end of the shaft N′ is secured a handle N² under the control of the operator to permit the latter to turn the shaft N′, with a view to cause the gear-wheel N to act on the rack L² to move the slide L′, and consequently the dog L, toward or from the other dog K to engage or disengage the spoke A′, standing at the time opposite the first or initial plunger D.

Normally the support J is in a lowermost position, so that the tops of the dogs K and L are below the spokes A′ to allow of conveniently turning the hub A and with it the spokes A′ as the rimming proceeds, and in order to lift the support J and with it the dogs K and L in order to bring the same in proper relation to the adjacent spokes A′ the following device is provided: On the shaft N′ is secured an arm O, carrying at its free end a friction-roller O′, adapted to engage a cam P, secured to or forming part of the bracket I. The friction-roller O′ normally rests on a stop Q, bolted to the bracket I, as shown in Fig. 2, and when the operator imparts a swinging motion to the handle N² in the direction of the arrow *a′* then the arm O is caused to swing downward, and in doing so its friction-roller O′ engages the cam P, thus causing a lifting of the shaft N′, and consequently of the support J, as the said shaft N′ is mounted in the support, and the latter is provided with a slide J′, mounted to slide vertically in the guideways I³ of the bracket I.

As shown in Figs. 2, 3, and 5, the support J is provided with a hub portion J⁴ around the shaft N′, and this hub portion extends through an elongated slot I⁴, formed in the bracket I, so that when the top of the hub portion J⁴ reaches the upper wall of the slot I⁴ then further lifting of the support J is prevented; but on further swinging of the handle N² in the direction of the arrow *a′* the gear-wheel N is caused to move the rack L² forward to bring the dog L in firm engagement with the corresponding spoke A′, then opposite the plunger D. Now it is evident that if the tenon A⁴ of this spoke A′, engaged by the dog L, is not in alinement with the corresponding aperture A³ of the rim-section A² then a further turning of the handle N² causes the dog L to bend the spoke forwardly until its tenon A⁴ is in alinement with the aperture A³. It is further evident that as the dog K is in engagement with the spoke A′, arranged opposite the second plunger D′, the hub A and its spokes A′ are prevented from turning during the time the spoke A′, engaged by the dog L, is bent over, as above described. It is understood that the spoke A′ opposite the second plunger D′ has a portion of its tenon A⁴ already engaged by the rim-section A², so that the latter is also held against movement during the time the spoke A′, engaged by the dog L, is bent over, as above explained. When the tenon A⁴ of the spoke A′, located opposite the initial plunger D, is in alinement with the aperture A³ of the rim-section A², then a reciprocating motion is given to the plungers, so that the plunger D drives the rim-section onto the tenon A⁴ of the spoke A′, held in a bent position by the action of the dog L, as above explained. After the rim-section A² is driven partly onto the tenon A⁴ of the first spoke held in place by the dog L then the operator swings the handle N² downward to lower the support J and with it the dogs K and L, thereby disengaging the same from the adjacent spokes A′ to allow of turning the hub A, spokes A′, and the rim-section A². In case the next spoke A′ now brought opposite the first or initial plunger D has its tenon A⁴ out of alinement with the corresponding aperture A³ then the above-described operation is repeated—that is, the support J is raised by the operator manipulating the handle N² and then the dog L is advanced to engage the first spoke A′ and bend the same over, as above explained.

It is understood that the cam P is in the

form of a segment the center of which coincides with that of the shaft N′ at the time the support J is in an uppermost position, so that the friction-roller O′ rolls off on the cam P during the time the gear-wheel N imparts a sliding motion to the rack L^2 and the dog L. When the handle N^2 is first turned and the friction-roller O′ moves from the stop Q in engagement with the upper end of the cam P, then this upper end of the cam acts as a fulcrum for causing an upward movement of the shaft N′ and the dog L until the uppermost position is reached, and then further turning of the shaft N^2 causes the friction-roller O′ to run on the inner surface of the cam P—that is, during the time the dog L is advanced or receded, as above described.

In order to ease the return movement of the support J, cushions R are mounted on the bracket I (see Fig. 4) to cushion the lower end of the slide J at the time the latter moves with the support J into a lowermost position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a machine for driving rims on spokes, comprising means for driving the rim-sections and a support for the wheel-hub permitting respective spokes and rim-sections to be brought in line with the driving devices, means for compressing a pair of spokes to bring their ends opposite their respective rim-sockets, said means mounted to lie normally below the plane of said spokes, so as not to interfere with the bringing of successive spokes into said line, and means for moving said compressing means into the plane of the wheel and in line with the driving devices.

2. In a rimming-machine, the combination with the wheel-support, and means for forcing a rim upon the wheel while on the support, of means for bending the spokes into alinement with the openings of the rim, said means normally lying without the plane of the wheel, and a single means for operating said bending means and for moving it into the plane of the wheel.

3. In a rimming-machine, the combination with the wheel-support, and means for forcing a rim on the wheel while on the support, of means for bending the spokes into alinement with the openings of the rim, said means normally lying out of the plane of the wheel, means for operating said bending means, and means whereby a preliminary movement of said operating means may move said bending means into the plane of the wheel.

4. In a rimming-machine, the combination with the wheel-support, and means for forcing a rim upon the wheel while on the support, of means for bending the spokes into alinement with the openings of the rim, comprising a pair of dogs for engaging adjacent spokes, means for moving one of the dogs toward the other whereby to bend the spoke engaged by the movable dog, and means for bodily moving the dogs toward and from the wheel upon the support.

5. In a rimming-machine, the combination with the wheel-support, and means for forcing a rim on the wheel while on the support, of means for bending the spokes into alinement with the openings of the rim, comprising a support, a pair of dogs on the support for engaging adjacent spokes, and means for bodily moving the support toward and from the wheel.

6. In a rimming-machine, the combination with the wheel-support, and means for forcing a rim on the wheel while on the support, of means for bending the spokes into alinement with the openings of the rim, comprising a support, a pair of dogs on the support, means for bodily moving the support toward and from the wheel and for moving one of the dogs toward and from the other.

7. In a rimming-machine, the combination with the wheel-supporting means and means for forcing the rim on the wheel while on the supporting means, of a bracket on the supporting means, a slide movable upon the bracket and provided with a support, a fixed dog on the support, a second slide movable upon the support toward and from the fixed dog, said slide having rack-teeth on the bottom thereof and having upon its upper face a dog coöperating with the fixed dog to bend the spokes into alinement with the openings of the rim, a shaft journaled in the first-named slide beneath the support and having a gear-wheel meshing with the rack, a cam secured to the bracket, and an arm on the shaft having a roller for engaging the cam whereby the rotation of the shaft will elevate the slide and move the dogs toward each other.

8. An alining device, comprising a support carrying dogs, of which one is movable on the support and provided with a rack, a shaft mounted to turn in the said support and carrying a gear-wheel in mesh with the said rack, a bracket having a slot for the passage of the said shaft, a cam fixed on the said bracket, and an arm on the said shaft for engaging the said cam.

9. An alining device, comprising a support carrying dogs, of which one is movable on the support and provided with a rack, a shaft mounted to turn in the said support and carrying a gear-wheel in mesh with the said rack, a bracket having a slot for the passage of the said shaft, a cam fixed on the said bracket, an arm on the said shaft for engaging the said cam, and a stop on the bracket for the said arm to normally seat on.

10. An alining device, comprising a support carrying dogs, of which one is movable on the support and provided with a rack, and

the other dog is adjustably secured on the said support, a shaft mounted to turn in the said support and carrying a gear-wheel in mesh with the said rack, a bracket having a slot for the passage of the said shaft, a cam fixed on the said bracket, and an arm on the said shaft for engaging the said cam.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE A. ENSIGN.

Witnesses:

K. SHARPE,

JOS. BAUER.