

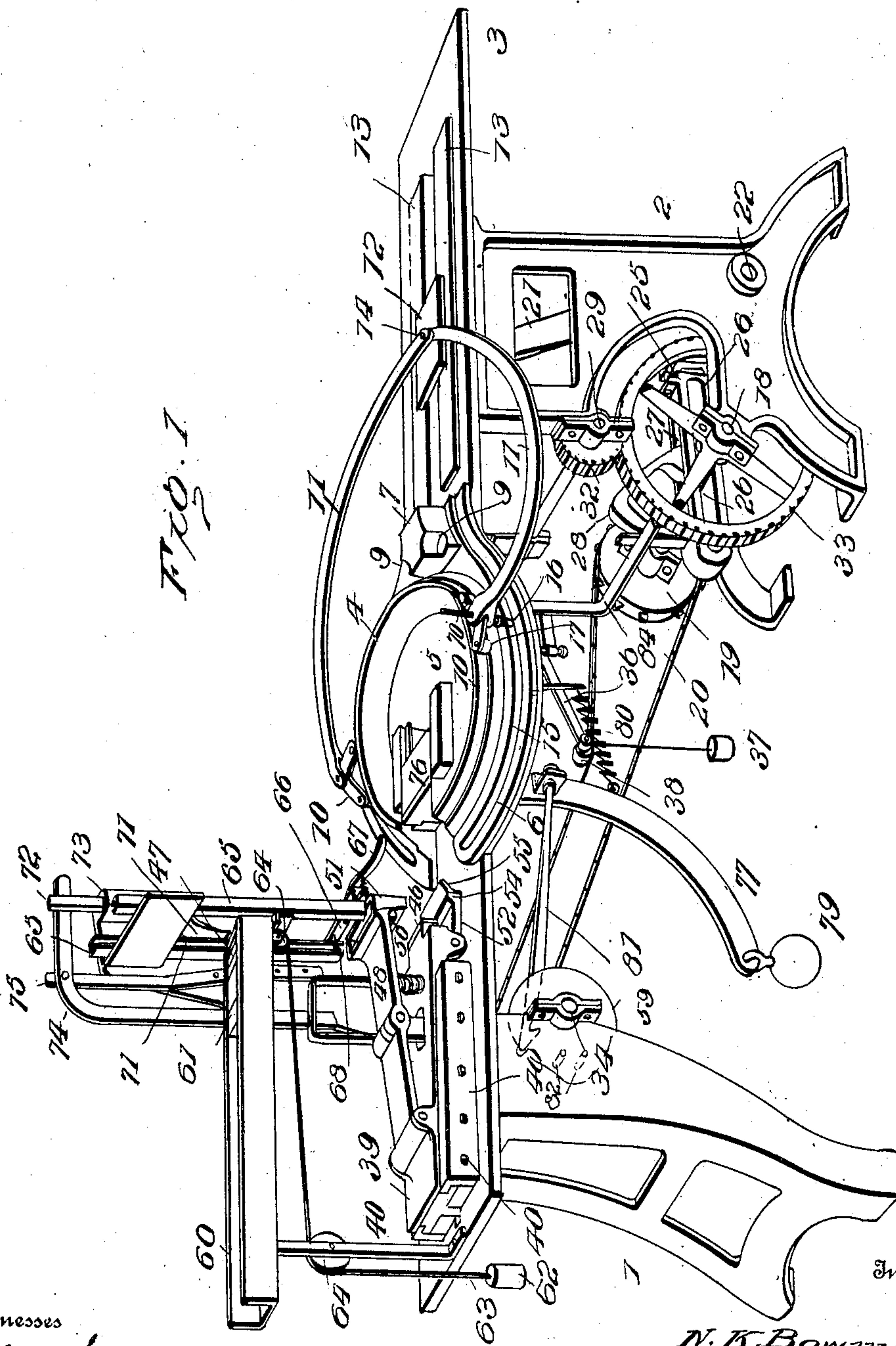
No. 827,607.

PATENTED JULY 31, 1906.

N. K. BOWMAN.
HOOP FORMING AND SPLICING MACHINE.

APPLICATION FILED OCT. 27, 1904.

5 SHEETS—SHEET 1.



Inventor

N. K. Bowman

Witnesses

James W. Woodson

By

Pha. Macy, Attorneys

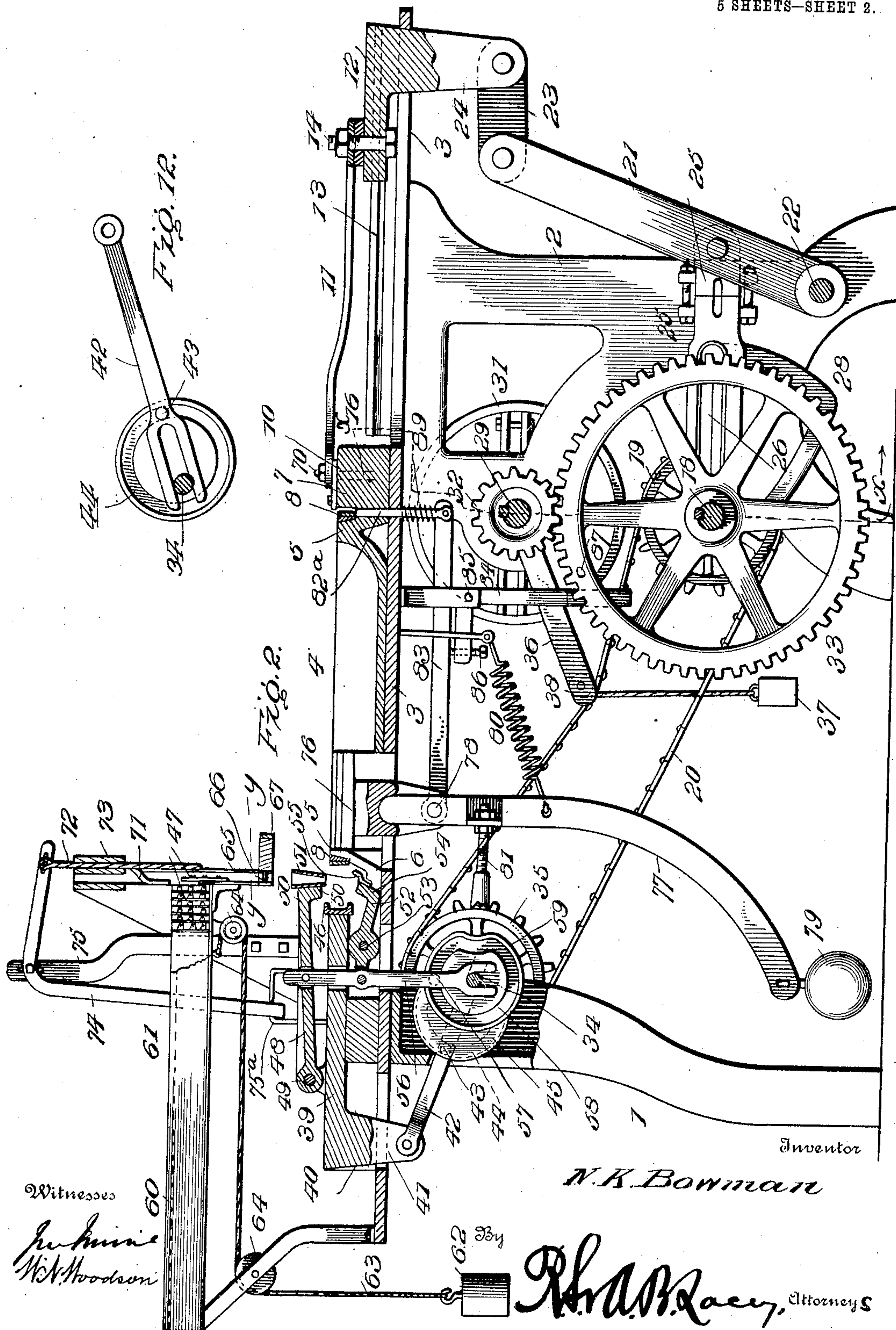
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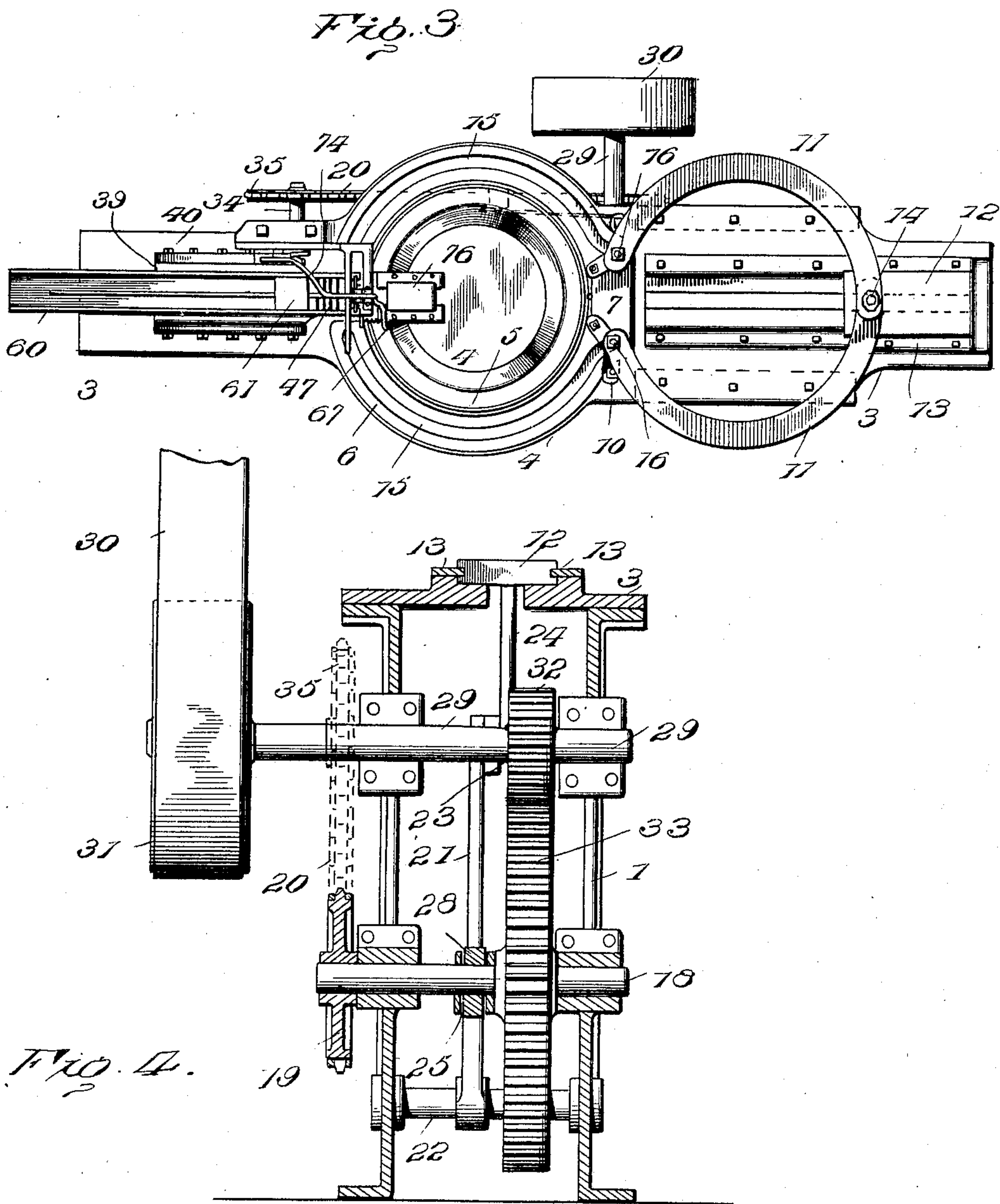
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5 SHEETS—SHEET 3



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5 SHEETS—SHEET 4.

Fig. 5.

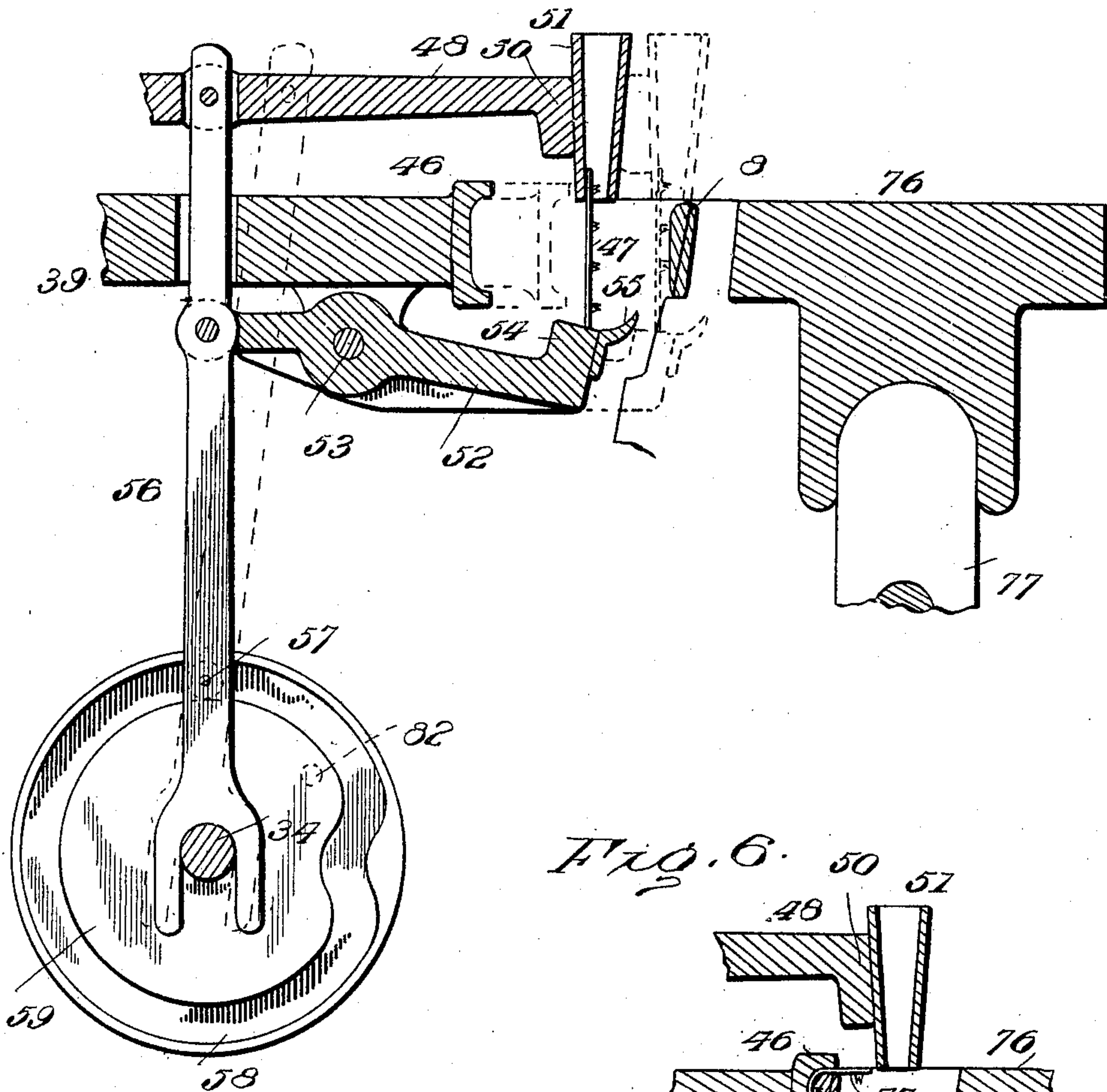
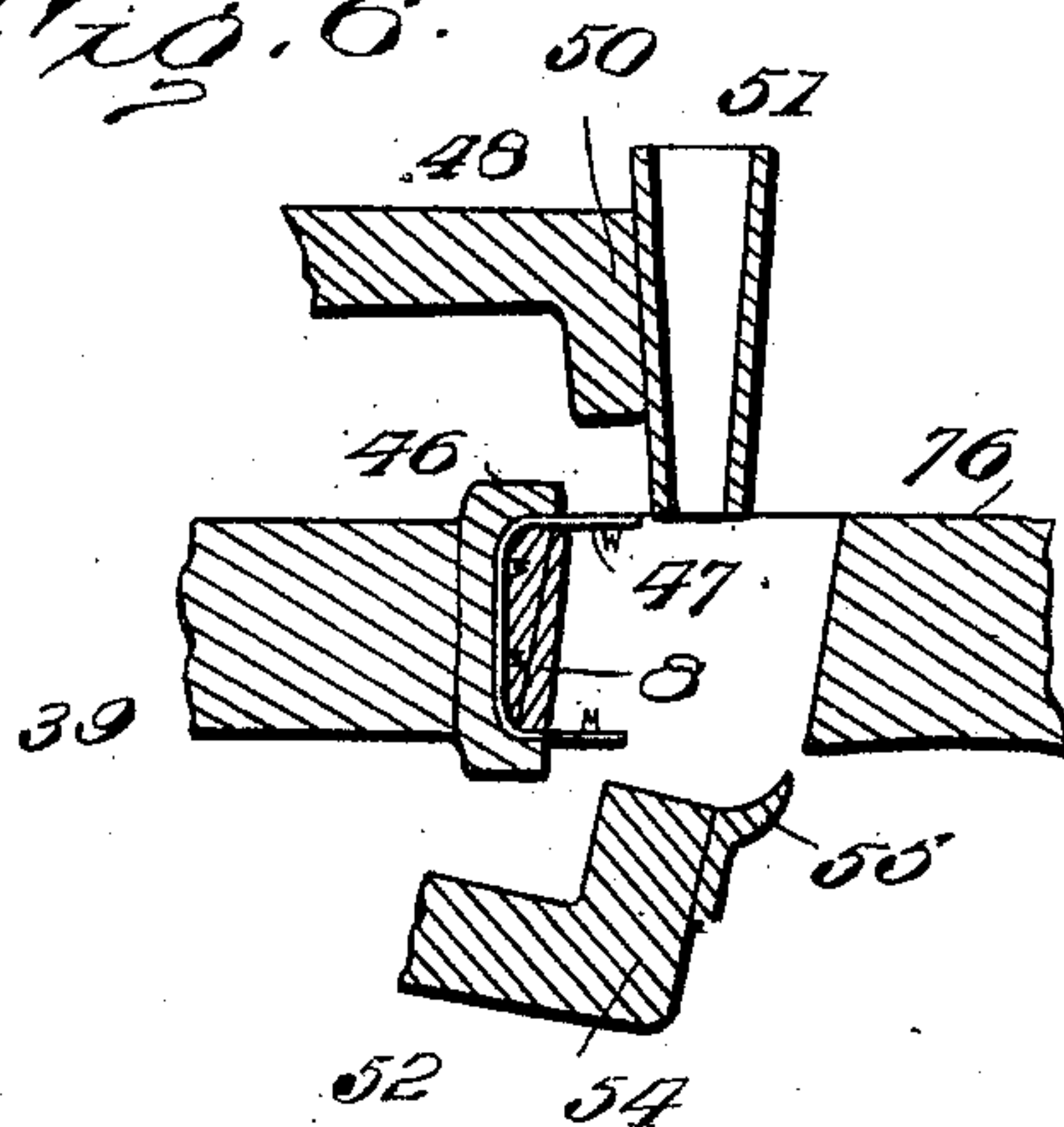


Fig. 6.



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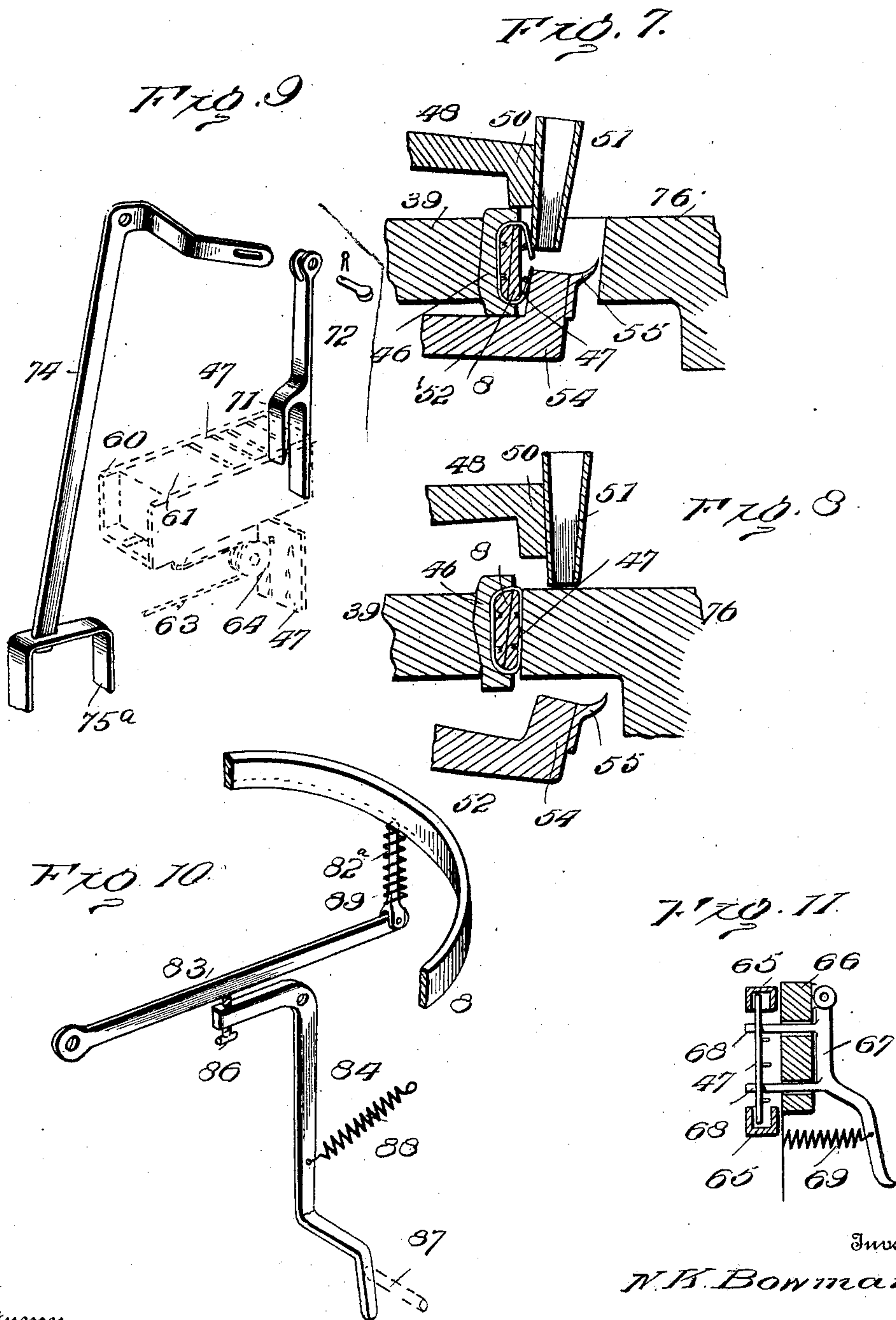
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5 SHEETS—SHEET 5.



Witnesses

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UNITED STATES PATENT OFFICE.

NEWTON K. BOWMAN, OF NORTH LAWRENCE, OHIO.

HOOP FORMING AND SPLICING MACHINE.

No. 827,607.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed October 27, 1904. Serial No. 230,245.

To all whom it may concern:

Be it known that I, NEWTON K. BOWMAN, a citizen of the United States, residing at North Lawrence, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Hoop Forming and Splicing Machines, of which the following is a specification.

This invention relates to machinery specially designed for bending strips or hoop-blanks of wood into circular form and securing the meeting or overlapping ends by a metal splice, the operating parts being so timed and arranged as to insure their rapid movement either in successive order or in unison, as the work may require.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a machine for forming and splicing hoops constructed in accordance with and embodying the vital features of this invention. Fig. 2 is a vertical central longitudinal section of the machine on a larger scale. Fig. 3 is a top plan view of the machine about on the scale indicated in Fig. 1. Fig. 4 is a vertical transverse section of the machine on the line *x x* of Fig. 2 looking in the direction of the arrow and showing the wheels and their shafts in full lines. Fig. 5 is a sectional detail view of the instrumentalities for applying, bending, and securing the splice-piece. Fig. 6 is a sectional detail of the component parts for bending and securing the splice-pieces, showing their relative position after the end portions of a splice-piece have been bent around the edges of the hoop-joint and just prior to the action of the cooperating jaws for rebending the terminal portions of the splice-piece, so as to envelop the joint. Fig. 7 is a view of the parts shown in Fig. 6, illustrating the position of the jaws after the terminal portions of the splice-pieces have been rebent. Fig. 8 is a view of the parts shown in Figs. 6 and 7, illustrating their relative position after the hammer has

operated to clench the splice-piece and complete the joint. Fig. 9 is a detail perspective view of the hopper for containing the splice-pieces, the separator and the means for transmitting motion to the separator and advancing the splice-pieces as consumed in the operation of the machine. Fig. 10 is a detail perspective view of the hoop-ejecting means, showing a portion of a hoop. Fig. 11 is a plan section on the line *y y* of Fig. 2 of the guides and detent for the splice-piece, showing the parts on a larger scale. Fig. 12 is a detail view of the inner end of the bar 42, eccentric 45, and shaft 34.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The framework of the machine for supporting the working parts may be of any design and substantial structure and, as illustrated, comprises supports 1 and 2 and a bed or table 3. A hoop-former 4 is arranged upon the bed or table 3 about midway of its ends and is approximately of annular outline and comprises a vertical rim or flange 5 and a horizontal or basal flange 6. The hoop-former is cut away at a point in its circumferential length corresponding to the position of the splicing mechanism. The hoop-former may be of a size corresponding to the diameter of the hoop to be constructed, and by substituting a hoop-former of one size for another the machine may be adapted for different sizes of hoops within certain prescribed limits. A stop 7 is located upon the bed exterior to the hoop-former and at a point diametrically opposite to the cut-away portion and forms a support for the hoop-blanks when placed in position preliminary to the shaping operation. Recesses 9 are formed in the corner portions of the stop 7 adjacent to the hoop-former and are adapted to receive the inner end portions of the pivoted shaping-shoes 10 at the movable ends of the bending or shaping arms 11 when the parts occupy a normal position, as indicated most clearly in Fig. 3. The stop 7 consists of a block and may constitute a part of the hoop-former or may be separate and attached thereto.

A slide 12 is mounted upon an end portion of the bed or table 3 for rectilinear movement and is adapted to be reciprocated in the operation of the machine to alternately advance and retract the bending or shaping arms 11. The slide 12 is directed in its re-

reciprocating movements by means of guides 13. The bending or shaping arms 11 are preferably overlapped at their outer ends and are pivotally connected to the slide 12 by means of a bolt 14 or like fastening. The arms 11 are longitudinally curved to enable them to encircle the hoop-former when advanced and holding a hoop-blank therearound. To give proper direction to the inner or loose ends of the bending or shaping arms 11, channels 15 are provided in the base portion of the hoop-former and constitute guides which cooperate with projections 16, pendent from the terminal portions of said arms and entering the channels 15. By reason of this construction the extremities of the bending-arms carrying the shaping-shoes are caused to travel around opposite sides of the hoop-former and maintain a close relation to the vertical portion 5, thereby bending the hoop-blank 8 around said part 5 and holding it close thereto. The shaping-shoes are pivotally connected to the extremities of the bending-arms 11 midway of their ends, preferably by means of bolts or fastenings 16, the pendent lower ends of which constitute the projections herein referred to as cooperating with the guides or channels 15. Each of the shaping-shoes consists of a bar deflected midway of its ends and rollers 17 at the outer ends of the bar and mounted upon pins or studs projected therefrom. The rollers 17 come in direct contact with the hoop-blanks and reduce the friction to the smallest amount possible. When the slide 12 is moved outward to the limit of its throw, the bending-arms 11 and the pivoted shaping-shoes assume the position shown in Fig. 3, at which time a hoop-blank 8 is placed in position between the stop 7 and hoop-former. As the slide moves inward to advance the bending-arms the innermost rollers 17 come in contact with the hoop-blank and cause the pivoted shaping-shoes to turn upon their pivot-fastening 16 until both rollers come in contact with the hoop-blank and press the same against and around the hoop-former as the slide 12 continues its inward movement and advances the bending-arms.

The following means have been devised for operating the slide 12 from the shaft 18. A bar 21 is pivotally supported at its lower end upon a tie-rod 22, and its upper end is connected by a link 23 to a pendant 24 of the slide 12. A bar 25 is pivotally connected at one end to the bar 21 and is provided with a longitudinal slot 26 to receive the shaft 18 and with an intersecting slot 27, in which operates a cam 28, secured to the shaft 18, so as to rotate therewith. As the shaft 18 rotates the cam 28 sweeps through the slot 27 and imparts a reciprocating movement to the bar 25, which in turn oscillates the bar 21 and imparts a reciprocating movement to the slide 12. The cam 28 is of such formation as to

admit of the slide 12 having a period of rest at the extremity of its throw in each direction to provide for removal of the finished hoop and the placing of a hoop-blank in position and to admit of operation of the splicing mechanism.

The main shaft 29 is journaled in suitable bearings of the machine-frame and is adapted to be driven from a suitable source of power by means of a drive-belt 30 and band-pulley 31 and is provided with a pinion 32, which is in mesh with a gear-wheel 33, secured to the shaft 18, so as to impart power thereto. A third shaft 34 is journaled to the machine-frame parallel with the shafts 18 and 29 and is connected to said shaft 18 by means of a sprocket-belt 20, which passes around a sprocket-wheel 19, secured to the shaft 18, and a sprocket-wheel 35, secured to the shaft 34. The sprocket-belt 20 is maintained under tension by means of a tightener consisting of a pivoted arm 36, having a weight 37 attached to its outer end and provided with a pulley 38, arranged in contact with the upper run or portion of the belt.

A slide 39 is mounted upon the opposite end portion of the bed 3 and is directed in its reciprocating movements by guides 40. A pendent portion 41 of the slide has a bar 42 pivotally connected thereto, the inner lower end of said bar being forked and fitted to the shaft 34, by means of which it is supported in its pivotal and sliding movements. A lug 43, extended laterally from the bar 42, enters a cam-groove 44 in one side of an eccentric 45, secured to the shaft 34, so as to impart a reciprocating movement to the slide 39. A pressure-head 46 is provided at the inner end of the slide 39 and is recessed in its outer face to form a seat to receive the adjacent portion of the hoop-joint and to bend the end portions of the splice-piece 47 therearound, as shown most clearly in Fig. 6. A lever 48 is pivotally connected at its outer end to the slide 39 at 49, and its inner end has a jaw 50 and a tubular guide 51. A lever 52 is pivoted between its ends to the inner lower portion of the slide 39 at 53 and is provided at its inner end with a jaw 54 and a guard 55. A vertically-disposed operating rod or bar 56 extends through openings of the bed 3 and slide 39 and is pivotally connected to the lever 48 at a point between the ends of the latter and to the rear end of the lever 52, so as to simultaneously operate both levers and either advance or separate their jaws. The lower end of the rod or bar 56 is forked and receives the shaft 34. A projection 57 at one side of the bar 56 enters a groove 58 in a side of a wheel 59, secured to the shaft 34, said groove 58 having a cam portion, so as to impart a vertical movement to the bar 56 to effect pressing of the jaws 50 and 54 together and to cause their separation at proper intervals in the operation of the machine. The

slide 39 and cooperating parts are arranged opposite to the space formed by cutting away a portion of the hoop-former.

The splice-pieces 47 are arranged in a hopper 60, which is of trough shape and located above the slide 39. A follower 61 is arranged in the hopper 60 and is moved forward so as to positively feed the splice-pieces and insure having one in position to be applied to the hoop-joint when splicing the same. A weight 62 is attached to the lower end of a cord 63, which passes around guide-pulleys 64 and is connected at its upper end to the follower 61. The splice-pieces 47 are sheet-metal plates having spurs or teeth pressed therefrom. Vertical guides 65 are arranged at the inner or delivery end of the hopper 60 and consist of U-shaped bars having a portion of the flange adjacent to the hopper cut away to admit of the splice-pieces entering the grooves or guideways. A bar 66 connects the lower ends of the guides 65 and supports the detent by means of which the splice-pieces are arrested in their descent and held in position for instant dropping the moment the bending or shaping mechanism has completed its operation. The detent consists of a lever 67, pivoted at one end and provided with pins 68 to project through openings of the bar 66 and across the path of the splice-pieces 47, said lever being held in a normal position by means of a spring 69 and having a portion extended into the path of a trip 70, carried by one of the bending or shaping arms 11 and which may constitute an extension of the bolt, pin, or fastening 16. A separator 71 serves to free the foremost splice-piece and to hold in check the remaining splice-pieces. The separator 71 consists of a plate having its lower end sharpened to a chisel edge, the beveled side facing away from the hopper, so as to loosen the foremost splice-piece and admit of its starting downward in the guides 65 until arrested by the detent. Inasmuch as the teeth or spurs of the splice-pieces are in coincident relation and are pointed, the extremities of the teeth of one splice-piece enter the openings of the splice-piece next in advance. Hence the necessity for providing and constructing the separator 71 in such a manner as to free the outermost splice-piece from the one next in order. The separator 71 is carried by a vertically-reciprocating bar 72, mounted in a guide 73 at the upper end of the guides 65 and connecting the same. The separator 71 springs from the rear side of the bar 72, and its lower end is sharpened to a chisel edge to readily pass between the outermost splice-piece and the one next thereto to effect separation of the splice-pieces in the operation of the machine. It is not necessary to have the separator 71 spring from a side of the bar 72; but such construction is preferred, since

it admits of the separator extending over the delivery portion of the hopper and enables the lower end of the bar 72 to obtain a bearing at a point below the upper end of said separator. An elbow-lever 74 is fulcrumed to a standard 75 and its approximately horizontal arm is connected to the upper end of the bar 72 to impart movement thereto, whereas the lower end of its approximately vertical arm is connected to the slide 39 by means of a frame 75^a of substantially U form. When the slide 39 moves rearward, the lower end of the lever 74 is correspondingly moved and the free end of its horizontal arm is depressed and causes the bar 72 and separator 71 to descend, and the chisel edge of the separator 71 passing between the outermost splice-piece and the one next thereto presses the foremost splice-piece outward into the guides 65, down which it descends until arrested by the detent. Upon the forward movement of the slide 39 the separator ascends and during this movement the hoop-shaping mechanism is actuated to bend the blank around the former and as said shaping mechanism reaches the completion of its movement the detent is tripped to effect a release of the splice-piece previously delivered from the hopper, when it drops into position to be applied to the overlapped ends or joint of the hoop. Upon the rearward movement of the slide 39 the completed hoop is released from the former in the manner presently to be explained.

A hammer 76 is slidably mounted within the hoop-former in longitudinal alinement with the splicing and hoop-shaping mechanisms. A lever 77, pivoted at 78, has its upper end articulating with the hammer 76 or connected thereto in any manner to insure consonance of movement of said hammer and lever. The lever 77 may be acted upon either by means of a weight 79 or a spring 80, or by both of these elements. During the final operation of the splicing mechanism the lever 77 is actuated to store up power for driving the hammer 76 in the final step of completing the splice-joint. A rod or bar 81 is connected to the lever 77 and its outer end extends into the path of a trip 82, projected from a side of the wheel 59, whereby the lower end of the lever 77 is moved outward and upward, thereby lifting the weight 79 or expanding the spring 80, or both, and at the same time moving the hammer 76 inward or away from the joint, this operation taking place during the final movement of the jaws 50 and 54, the part 81 being released the instant the jaws 50 and 54 have separated, whereby the hammer is quickly and effectively shot forward to deliver a blow upon the joint to clench the splice-piece and drive the spurs or teeth home into the material of the hoop.

The ejector for stripping or removing the hoop from the former when completed consists of a pin 82^a, arranged to operate in vertical openings formed in the bed 3 and hoop-former, as indicated most clearly in Fig. 2. The lever 83 pivotally supports the ejector or stripper 82^a and is adapted to be actuated at proper intervals to cause the stripper to move upward and disengage the hoop from the former. An elbow-lever 84, pivoted at 85, has its horizontal arm provided with a set-screw 86, constituting an adjustable stop for lever 83, the vertical arm thereof being adapted to be struck by means of a trip 87, projected from a side of the gear-wheel 33. A spring 88 returns the lever 84 to a normal position after being actuated, and a similar spring 89 performs a like office for the pin or ejector 82^a.

The strips or hoop-blanks 8 are of uniform size for a common hoop and are fed to the machine in any determinate way. Figs. 2 and 3 of the drawings show the parts in normal position, Fig. 3 indicating a blank in place. As the slide 12 moves forward the bending or shaping arms 11 are advanced and carry the shaping-shoes 10 around the hoop-former, bending the blank 8 therearound. When the slide 12 reaches its forward movement, the cam 28 is acting upon the front end of the slot 27 of the bar 25 and holds the slide and shaping mechanism stationary, during which time the splicing mechanism is operating to secure the joint formed by the meeting or overlapped ends of the hoop-blank. At the instant the bending-arms close about the hoop-former the detent is actuated and the splice-piece 47 supported thereby drops into the guide 51, thence upon the lower jaw 54, being prevented from displacement by means of the guard 55. At this instant the slide 39 is moved forward and the pressure-head 46 causes the spurs or teeth of the splice-piece to enter the joint, and the end portions of the splice-piece are bent around the edges of the joint, as indicated most clearly in Fig. 6. The next step in the operation is the closing of the jaws 50 and 54, whereby the bent ends of the splice-piece are closed or folded against the inner side of the joint, as indicated in Fig. 7, and an instant later the jaws fly apart and the hammer is shot forward and completes the joint, as clearly shown in Fig. 8. The shaping-arms are now returned to a normal position and the ejector is actuated to effect removal of the hoop from the former and another hoop-blank is placed in position. At this instant the slide 39 is returned to a normal position and effects operation of the lever 74, which communicates motion to the separator 71 and releases the next splice-piece, which descends in the guides 65 until arrested by the detent and held in position until the

shaping of the next hoop is completed, when the operation just described takes place.

Having thus described the invention, what is claimed as new is—

1. In a hoop forming and splicing machine, the combination of a stationary hoop-former having a cut-away portion, mechanism for bending opposite end portions of the hoop-blank equally about said former to cause the ends to overlap opposite to the cut-away portion thereof, means for applying a splice-piece to the overlapped ends of the hoop, mechanism for bending the splice-piece around the overlapped ends of the hoop, and a hammer for delivering a blow upon the splice-piece to clench the bent ends thereof, the several mechanisms operating successively through the cut-away portion of the former, substantially as set forth.

2. In a hoop forming and splicing machine, the combination of a stationary hoop-former having a cut-away portion, mechanism for bending opposite end portions of the hoop-blank equally about said former to cause the ends to overlap opposite to the cut-away portion thereof, means for applying a splice-piece to the overlapped ends of the hoop, mechanism arranged upon one side of the cut-away portion of the former for bending the splice-piece around the overlapped ends of the hoop-blank, and a hammer located upon the opposite side of the said cut-away portion and adapted to cooperate with the splice-piece and bending mechanism to clench the splice and secure the overlapped ends of the hoop, substantially as described.

3. In a hoop forming and splicing machine, the combination of a hoop-former having a portion cut away, mechanism for bending a hoop-blank about the former to bring the joint opposite to the cut-away portion of the latter, mechanism for applying and bending a splice-piece about the joint and located opposite to the cut-away portion of the hoop-former, and a hammer for clenching the splice-piece arranged to operate in the space formed by the cut-away portion of the hoop-former, substantially as set forth.

4. In a hoop-forming machine, the combination of a hoop-former, oppositely-disposed cooperating bending or shaping arms, actuating means therefor, shaping-shoes pivoted to the free ends of said arms, each of said shoes consisting of a bar pivoted intermediate of its ends to an arm, and rollers at the ends of said bar, substantially as and for the purpose set forth.

5. In a hoop-forming machine, the combination of a hoop-former having a guide, cooperating bending or shaping arms, actuating means therefor, shaping-shoes, and means pivotally connecting said shaping-shoes to the free ends of said arms and having projecting portions for cooperating with

the guide of the hoop-former to give proper direction to the bending-arms and shaping-shoes, substantially as set forth.

6. In a hoop-forming machine the combination of a hoop-former, a stop arranged exterior thereto and spaced therefrom to receive the hoop-blank, pivoted bending or shaping arms arranged to operate upon opposite sides of said stop and hoop-former, and shaping-shoes pivoted to the free ends of the shaping-arms and normally held out of the path of the hoop-blank by direct contact with said stop, substantially as set forth.

7. In a hoop-forming machine, the combination of a hoop-former, a stop arranged exterior thereto and having depressions in opposite corners to form seats, cooperating bending or shaping arms, and shaping-shoes pivoted intermediate of their ends to said bending-arms and adapted to have one end enter the depressions of the stop when the parts are in normal position, substantially as set forth.

8. In a hoop forming and splicing machine, the combination of hoop forming and shaping mechanism, cooperating splicing mechanism, splice-piece-feeding mechanism, and a separator for liberating the splice-piece in position for delivery to the splicing mechanism, said separator consisting of a blade having an end portion beveled to provide a chisel edge, the beveled side facing away from the pile of splice-pieces to insure entire liberation of the splice-piece next in order to be delivered to the splicing mechanism, substantially as set forth.

9. In a hoop forming and splicing machine, the combination of hoop forming and shaping mechanisms, cooperating splicing mechanism, a splice-piece feeder, and a detent intermediate of the splice-piece feeder and splicing mechanism to arrest the advance of the splice-piece to insure proper delivery thereof to the splicing mechanism, substantially as set forth.

10. In a hoop forming and splicing machine, the combination of hoop forming and shaping mechanisms, cooperating splicing mechanism, a splice-piece feeder, a detent intermediate of the splice-piece feeder and splicing mechanism to arrest the advance of the splice-piece to insure proper delivery thereof to the splicing mechanism, and a trip for said detent adapted to be actuated by means of the hoop-shaping mechanism, substantially as set forth.

11. In a hoop forming and splicing machine, the combination of hoop forming and shaping mechanisms, a splicing mechanism, a splice-piece feeder, a guide for directing the splice-pieces to the splicing mechanism, a detent in the path of said guide for arresting the forward movement of the splice-piece, said detent comprising a spring-actuated lever and a projection therefrom, and a trip

actuated by means of the hoop-shaping mechanism for operating the detent to release the splice-piece, substantially as set forth.

12. In a hoop forming and splicing machine, the combination of hoop forming and shaping mechanisms, a splicing mechanism, a hopper for receiving a pile of splice-pieces, a guide for directing the splice-pieces to the splicing mechanism, a separator, connecting means between the said separator and splicing mechanism to effect delivery of a splice-piece at each operation, and a detent arranged in the path of the guide to arrest the feed of the splice-piece and having a portion extended in the path of the hoop-shaping mechanism to be actuated thereby, substantially as described.

13. In a hoop forming and splicing machine, the combination of hoop forming and shaping mechanisms, a splicing mechanism including a guide, a splice-piece feeder, a detent arranged in the path of the splice-piece to arrest its movement and having a portion extended, and a trip carried by the hoop-forming mechanism to engage with the extended part of the detent, substantially as described.

14. In a machine of the character specified, the combination of a slide, jaws mounted upon opposite sides of the slide and movable therewith, and actuating means for said jaws movable with the slide and across the same and adapted to impart simultaneous movement to the jaws about at a right angle to the plane of movement of the said slide.

15. In a machine of the character specified, the combination of a slide, jaws mounted upon the slide and movable therewith, a guide upon one jaw, a guard upon the other jaw, and means for moving the jaws across the path of the slide.

16. In a machine of the character specified, the combination of a slide having an end recessed to provide a pressure-head, jaws arranged upon opposite sides of the slide and pivoted thereto and having their ends extended beyond the recessed end of the slide, and means for moving the jaws across the path of the slide.

17. In combination with a hoop-forming mechanism, of a slide movable toward and from the joint of the hoop-blank, levers pivoted to the slide and movable therewith and having cooperating jaws, one of the levers being pivoted at its end and the other between its ends, and an operating-bar connected with one of the said levers between its ends and with the other lever at the end remote from its jaw and adapted to receive a rectilinear movement.

18. In combination with a hoop-forming mechanism, of a slide movable toward and from the joint of the hoop-blank, levers pivoted to the opposite sides of the slide and

movable therewith and having cooperating jaws, one of the levers being pivoted at its end and the other between its ends, and an operating-bar extended across the path of the slide and movable therewith and connected with one of said levers between its ends and with the other lever at the end adapted to receive a substantially rectilinear movement.

10 19. In combination with a hoop-forming mechanism, of a slide, levers arranged upon opposite sides of the slide and pivoted thereto, the one between its ends, the other at an end, and an operating-bar extended across the
15 path of the slide and having pivotal connection with one of said levers intermediate of its ends and with an end of the other lever, both of said levers having cooperating jaws at their free ends.

20 20. In combination a hoop-forming mechanism, a splice-piece feeder, a slide provided with a pressure-head for applying a splice-piece to the joint of a hoop and bending end portions of the splice-piece around edge portions of said joint, cooperating jaws carried
25 by said slide for rebending the bent end portions of the splice-piece around the joint, and actuating means for simultaneously moving said jaws in opposite directions, substantially
30 as specified.

21. In combination a hoop-forming mechanism, a splice-piece feeder, a slide provided with a pressure-head, cooperating jaws for bending the end portions of a splice-piece
35 around the joint of a hoop, and a hammer arranged to operate between said jaws and in conjunction with said pressure-head to clench the splice-piece and thereby complete the joint, substantially as set forth.

40 22. In a hoop forming and splicing machine, the combination of a hoop-former, cooperating hoop shaping and splicing mechanisms, an ejector for stripping the completed hoop from the former, said ejector
45 consisting of a pin, a pivoted lever carrying said pin, an operating-lever, and an adjustable stop between the pivoted and operating levers.

23. In a hoop forming and splicing machine, the combination of a hoop-former, cooperating hoop shaping and splicing mechanisms, an ejector for stripping the completed hoop from the former, said ejector consisting of a pin, a pivoted lever carrying
50 said pin, an operating-lever of elbow form, an adjustable stop carried by one arm of the operating-lever and adapted to engage with said pivoted and operating levers, and operating means for applying movement to the other
55 arm of said operating-lever, substantially as set forth.

24. In a hoop forming and splicing machine, the combination of a hoop-former, cooperating shaping mechanism, a splice feeder and separator, a detent for arresting the forward movement of the splice-piece and properly positioning the same and adapted to be
65 actuated by the hoop-shaping mechanism, a pressure-head for applying the splice-piece to the joint and bending the end portions thereof around the edges of said joint, cooperating
70 jaws for bending the end portions of the splice-piece about the joint, a hammer cooperating with the pressure-head for clenching the splice-piece, and an ejector for removing the
75 completed hoop from the former, the parts being combined and arranged to operate substantially in the manner specified.

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

NEWTON K. BOWMAN. [L. S.]

Witnesses:

UNA C. BOWMAN,
JOHN POLLOCK.