E. F. BEUGLER.

HORIZONTAL BARREL TRUSSING MACHINE.

APPLICATION FILED MAY 25, 1905.

906,857.

Patented Dec. 15, 1908.

7 SHEETS—SHEET 1.

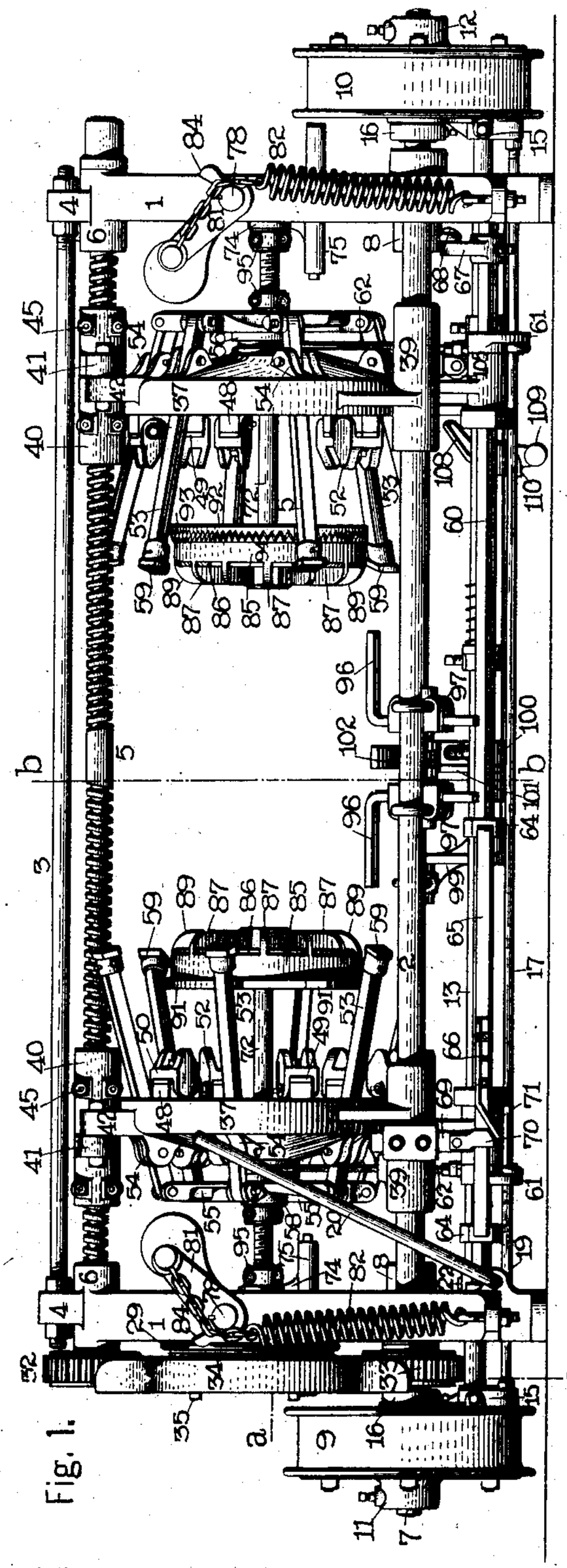

Fig. 1.

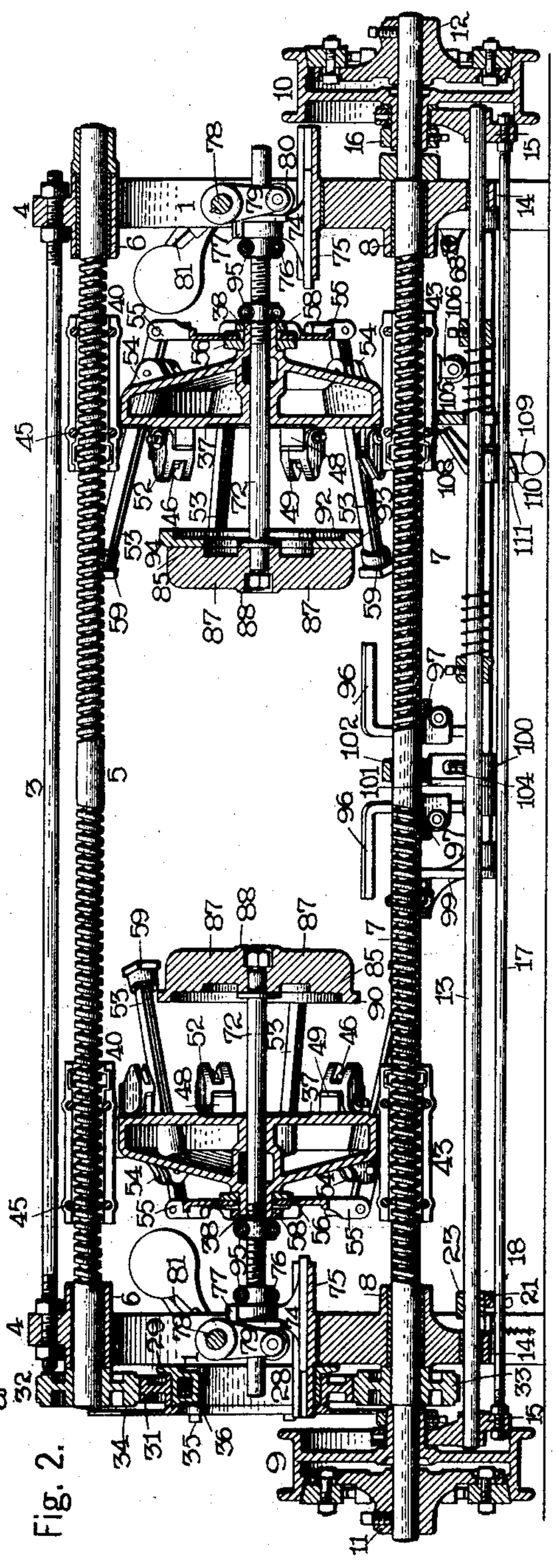

Fig. 2.

Witnesses.

L. M. Sangster,

Geo. A. Neubauer.

Inventor.

Edwin F. Beugler.

By A. J. Sangster Attorney.

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7 SHEETS—SHEET 2.

Fig. 4.

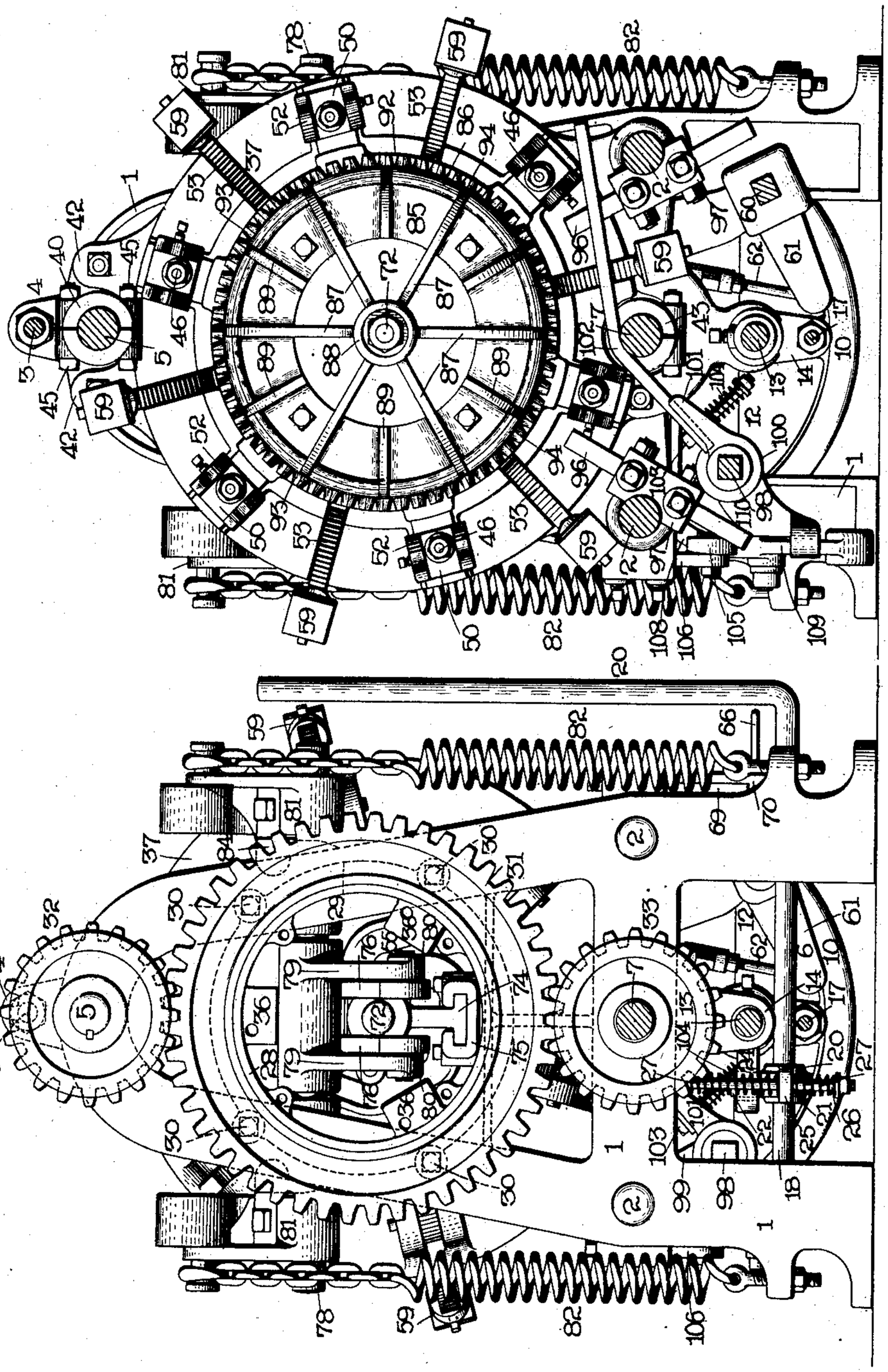

Fig. 3.

Witnesses.

L. M. Sangster.

Geo. A. Neubauer.

Inventor:

Edwin F. Beugler.

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7 SHEETS—SHEET 3.

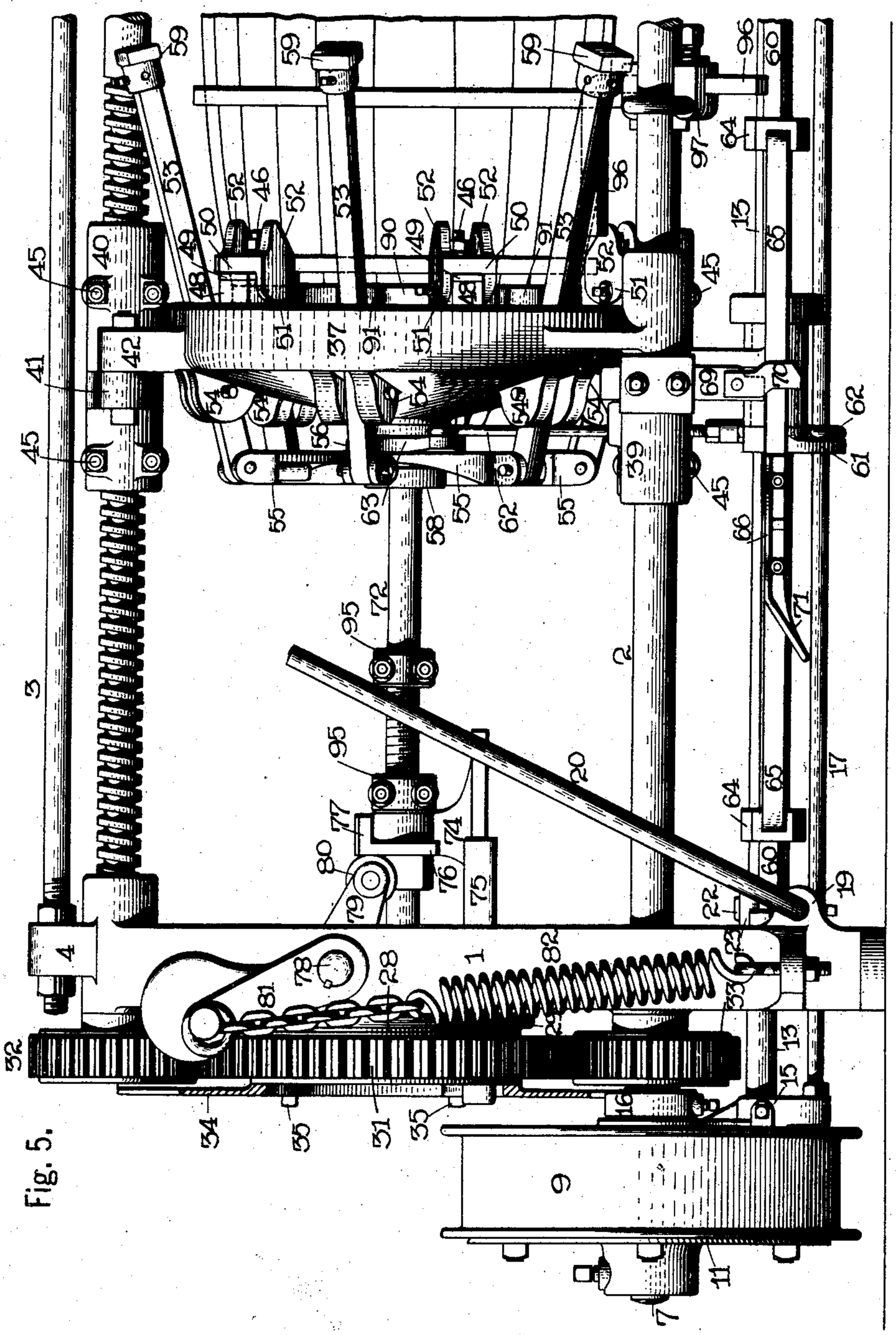

Fig. 5.

Witnesses.

L. M. Daugster.

Geo. A. Neubauer.

Inventor.

Edwin F. Beugler.

By A. J. Daugster Jr. Attorney.

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7 SHEETS—SHEET 4.

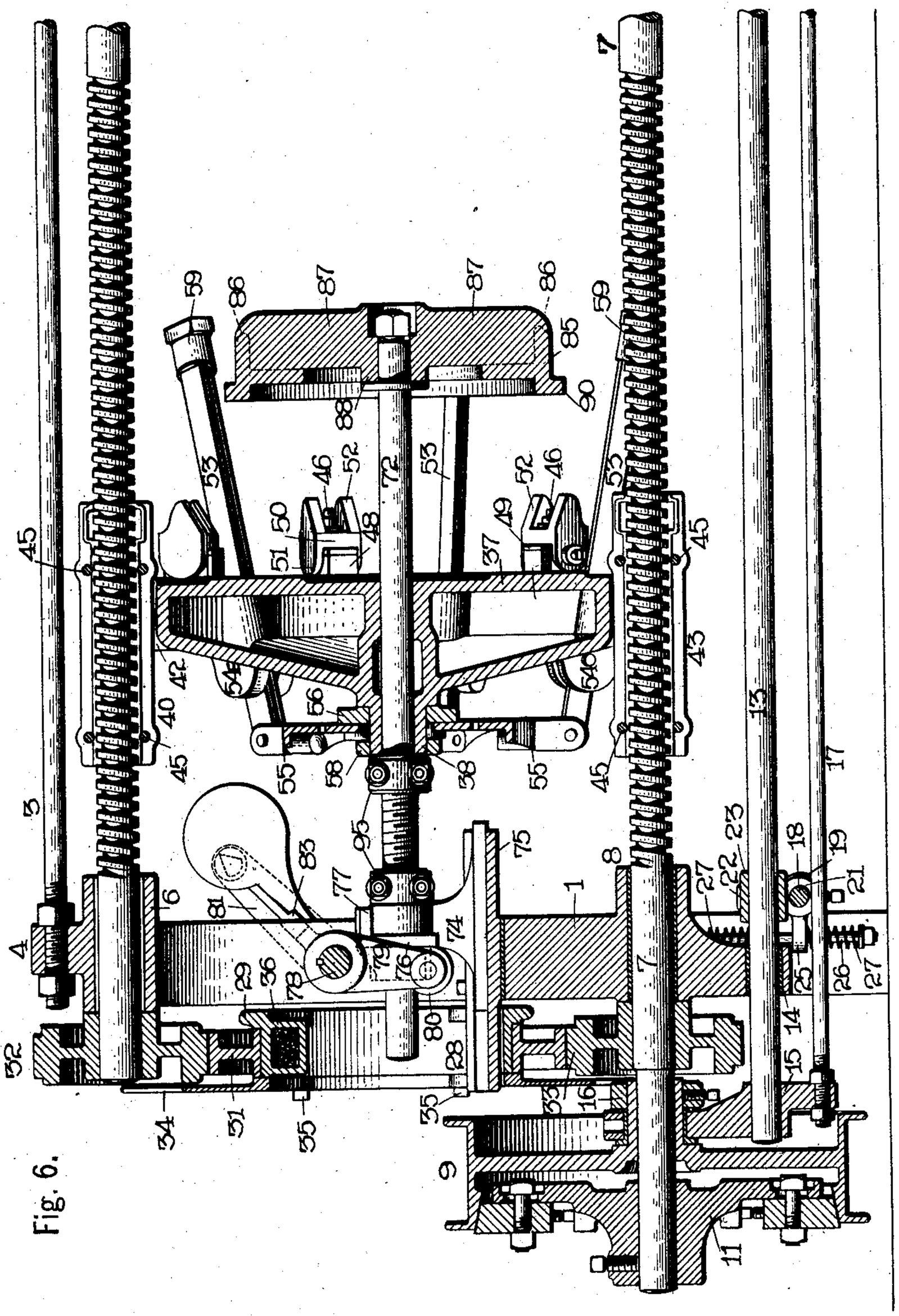

Fig. 6.

Witnesses.

L. M. Daugster.

Geo. A. Neubauer.

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Edwin F. Beugler.

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7 SHEETS—SHEET 5.

Fig. 12.

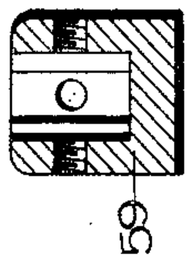


Fig. 11.

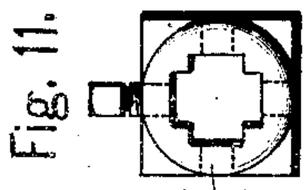


Fig. 9.

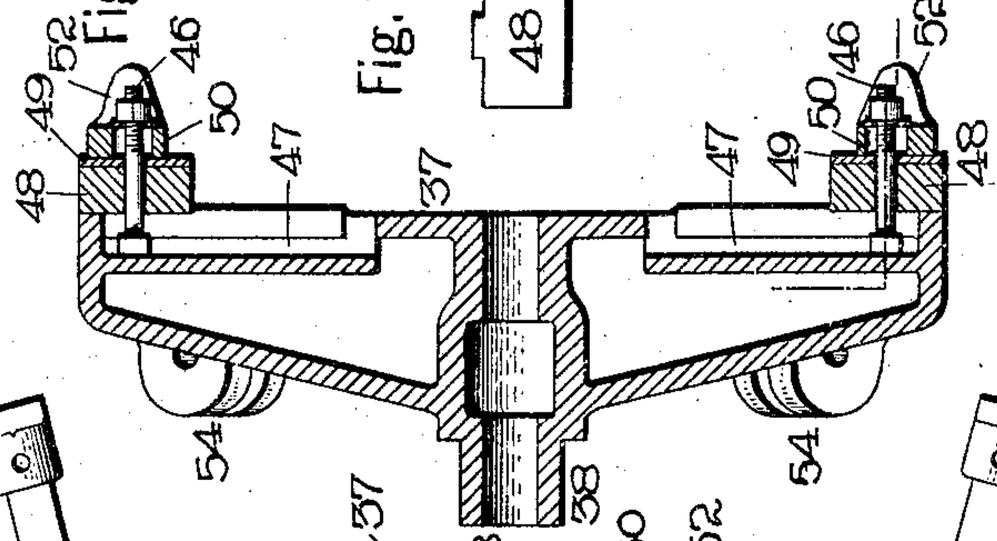


Fig. 14.




Fig. 16.

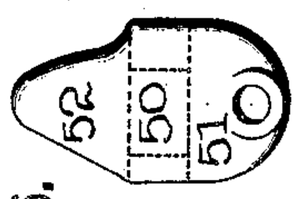


Fig. 10.

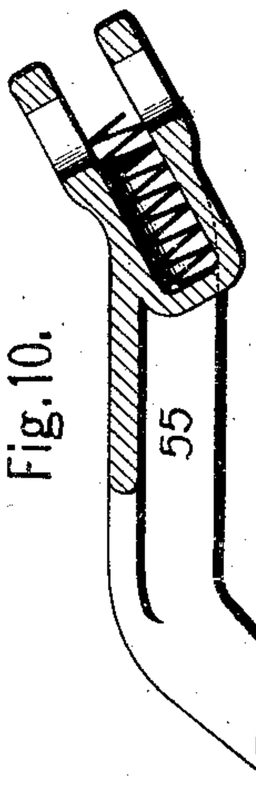


Fig. 13.

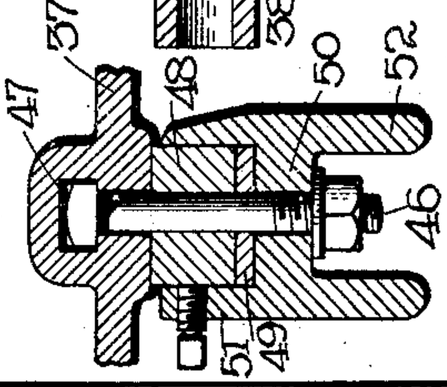


Fig. 15.

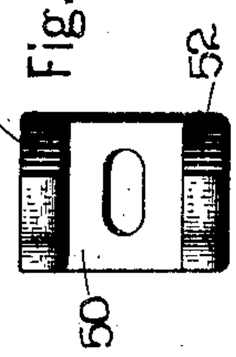


Fig. 8.




Fig. 7.

Witnesses.

L. M. Daugster.

Geo. A. Neubauer

Inventor.

Edwin F. Beugler.

By C. F. Daugster. Attorney.

E. F. BEUGLER.

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7 SHEETS—SHEET 6.

Fig. 20.

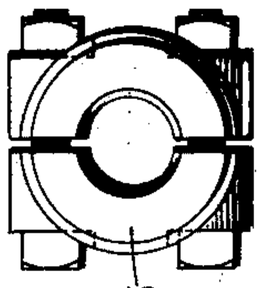


Fig. 21.

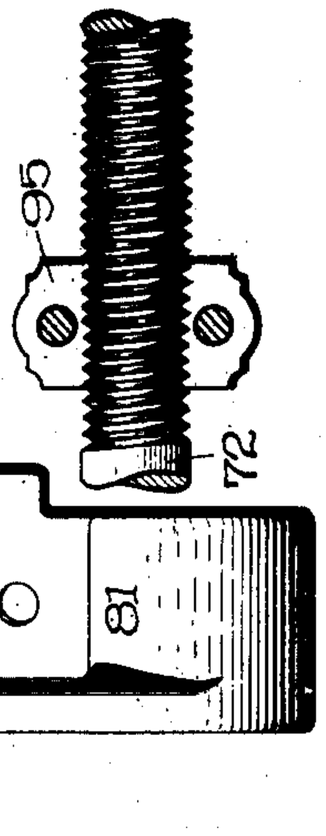


Fig. 19.

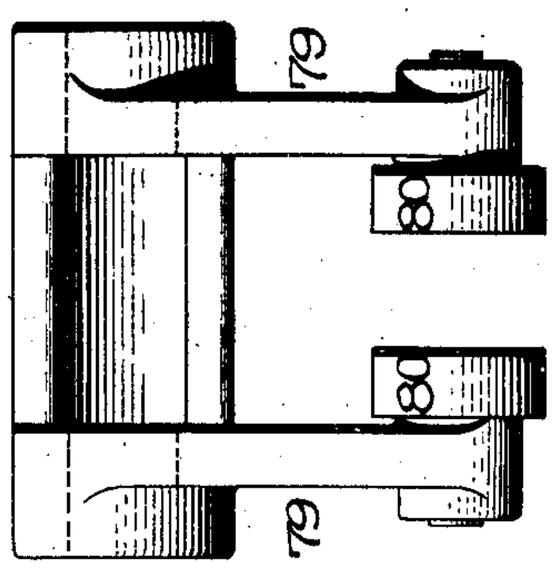


Fig. 22.

Fig. 18.

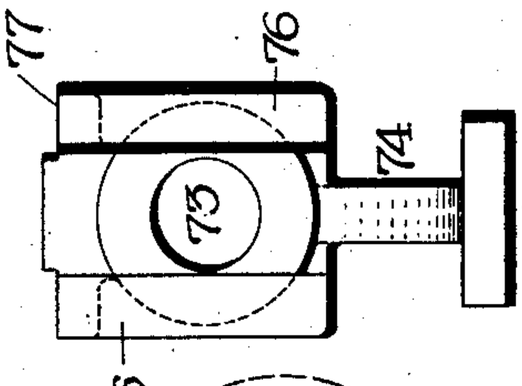


Fig. 23.

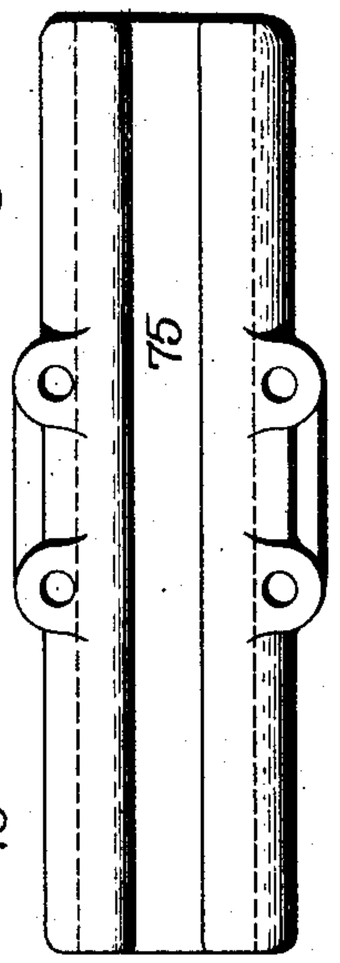


Fig. 17.




Witnesses.

L. M. Daugster.

Geo. A. Neubauer.

Inventor.

Edwin F. Beugler.

By A. J. Daugster. Attorney.

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Patented Dec. 15, 1908.

7 SHEETS—SHEET 7.

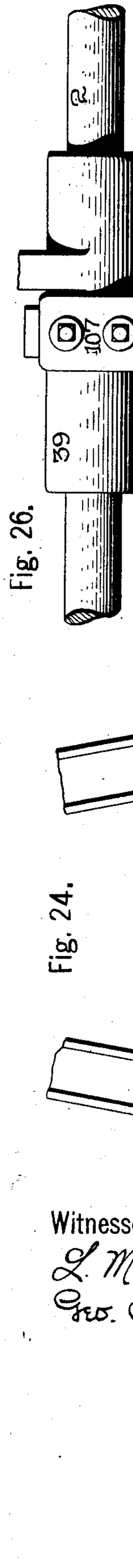


Fig. 26.

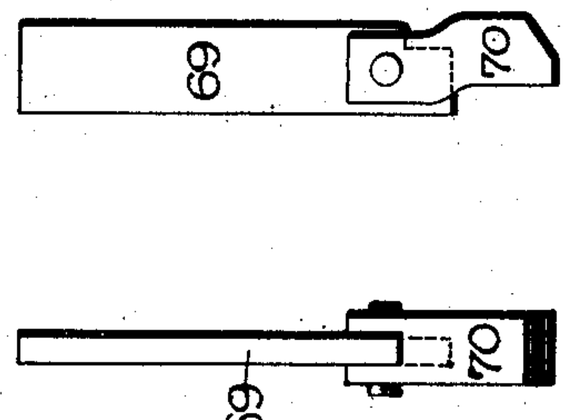


Fig. 28.

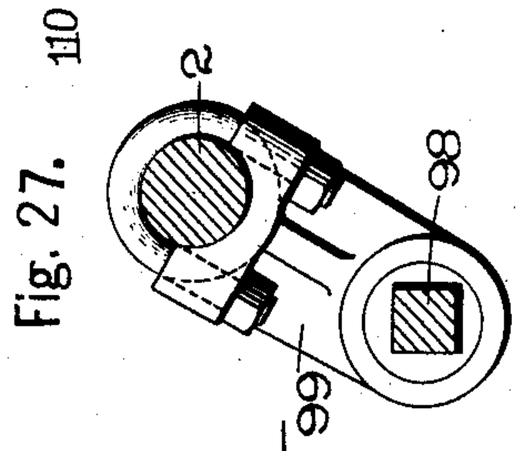


Fig. 27.

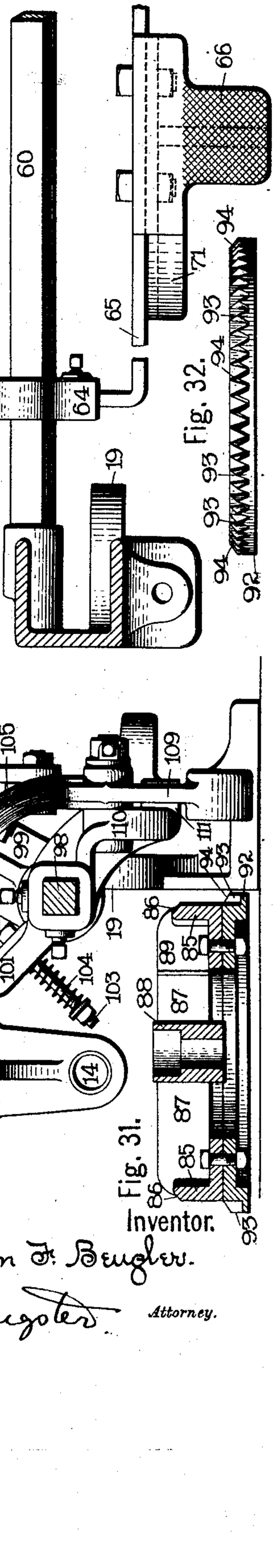


Fig. 30.




Fig. 32.

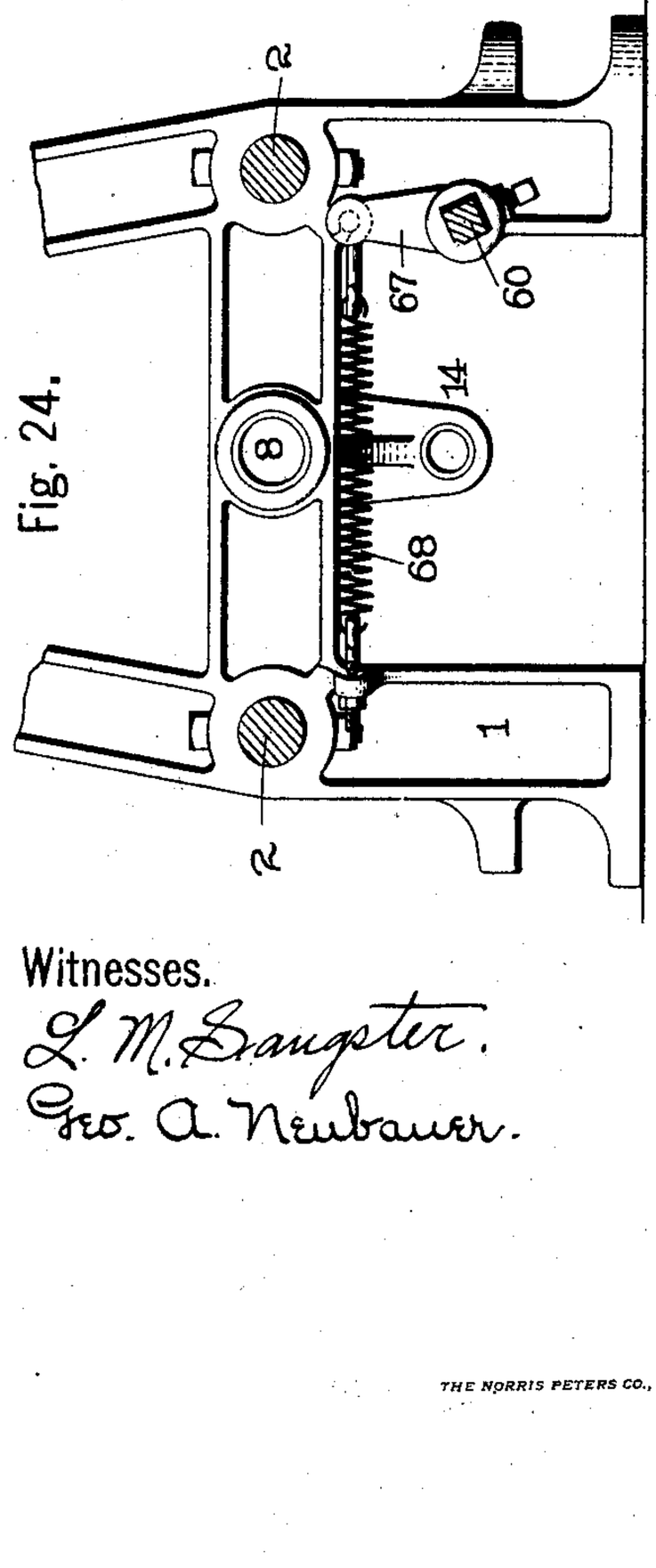


Fig. 24.




Fig. 25.




Fig. 31.

Witnesses.

L. M. Daugster.

Geo. A. Neubauer.

Inventor.

Edwin F. Beugler.

By A. J. Daugster Attorney.

# UNITED STATES PATENT OFFICE.

EDWIN F. BEUGLER, OF BUFFALO, NEW YORK, ASSIGNOR TO EDWARD B. HOLMES, OF BUFFALO, NEW YORK.

## HORIZONTAL BARREL-TRUSSING MACHINE.

No. 906,857. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed May 25, 1905. Serial No. 262,186.

*To all whom it may concern:*

Be it known that I, EDWIN F. BEUGLER, of Buffalo, in the county of Erie and State of New York, a citizen of the United States, have invented certain new and useful Improvements in Horizontal Barrel-Trussing Machines, of which the following is a specification.

This invention relates to a machine for driving heavy truss hoops on unheaded barrel bodies preparatory to cutting the croze in each end thereof and heading up the barrels.

The barrels for which this machine is chiefly designed is that known in the trade as tight barrels or barrels used for holding liquids, such as cider, vinegar, etc., and which have to be made very tight to prevent leaking of the liquid.

In this machine the rough barrel bodies composed of staves and preliminary hoops for holding the staves together are placed for the purpose of having heavy metal hoops, known as truss hoops, driven firmly thereon.

One of the features of the invention consists in two or more screw threaded rods between which the trussing or hoop driving mechanism is located, said screw threaded rods being connected to said trussing mechanism to reciprocate the same and being rotated at uniform speed so that the trussing mechanism is always moved in perfect alinement and the strain of the trussing pressure borne at two or more separated points.

Another feature consists in corrugating or serrating the annular surface of that portion of one of the trussing rings which comes in contact with the stave ends for the purpose of relieving the dead crushing pressure against the stave ends and thus preventing the splitting or checking of the staves or the crushing of the stave ends.

The invention also relates to certain other features and improvements and to certain novel details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which,—

Figure 1 is a side elevation of the machine. Fig. 2 is a central longitudinal section through the machine. Fig. 3 is an enlarged end elevation of the machine, a section being taken on line *a a*, Fig. 1, and the gear case or guard being omitted. Fig. 4 is an enlarged transverse section through the machine on line *b b*, Fig. 1. Fig. 5 is an enlarged fragmentary side elevation of the machine, the hoop driving mechanism being in position to drive the end truss hoop upon the barrel, a fragment of which is shown. Fig. 6 is a central longitudinal section through a fragment of the machine on or about line *c c*, Fig. 3. Fig. 7 is an enlarged detached outside view of the hoop driving mechanism complete. Fig. 8 is a section through the driving head, showing two of the driving arms and drivers for driving the bilge hoops. Fig. 9 is a section through the driving head and two of the drivers for driving the end truss hoops. Fig. 10 is an enlarged detached sectional view of one of the radial arms for connecting the shiftable collar to the driving arms. Fig. 11 is an enlarged detached top plan view of one of the drivers for driving the bilge hoops. Fig. 12 is a detached central vertical section through the driver shown in Fig. 11. Fig. 13 is a transverse section through one of the end truss hoop drivers, also showing a fragment of the driving head. Fig. 14 is an enlarged detached end elevation of one of the rectangular blocks of the end truss hoop drivers. Figs. 15 and 16 are respectively a plan view and a side elevation of one of the end truss hoop drivers detached from the rectangular block. Fig. 17 is an enlarged detached fragmentary view of the outer portion of the mechanism for leveling the barrel, a section being shown through the slideway and a fragment of the machine frame. Fig. 18 is an enlarged detached end elevation of the slide block. Fig. 19 is an enlarged detached view of one of the crank arms of the barrel leveling mechanism. Fig. 20 is a detached side view of one of the split and threaded collars on the shaft of the leveling mechanism. Fig. 21 is a fragmentary view of the screw threaded portion of the shaft of the leveling mechanism showing one-half of one of the split collars in position thereon. Fig. 22 is an enlarged detached elevation of the double crank for rocking the transverse shaft. Fig. 23 is an enlarged detached top plan view of the slide way. Fig. 24 is a fragmentary inside view of one of the end frame members showing the spring and crank for returning the rock shaft which operates the driving arms. Fig. 25 is an enlarged fragmentary transverse section showing the mechanism for removing the barrel from the machine. Fig. 26 is an enlarged fragmentary view of the mechanism for removing the

barrel from the machine. Fig. 27 is a transverse section through one of the side rails and the rock shaft of the barrel removing mechanism showing one of the bearings for said shaft. Figs. 28 and 29 are enlarged detached views of the device for automatically tripping the shaft which operates the driving arms. Fig. 30 is a fragmentary section through one of the end frame members showing a fragment of the foot lever for tripping the rock shaft which operates the driving arms. Fig. 31 is a detached section through the leveling ring and the toothed ring. Fig. 32 is a detached edge view of the toothed ring.

In referring to the drawings for the details of construction, like numerals designate like parts.

The frame of the machine consists of two end members 1, two longitudinally extending bars or rails 2, the ends of which are seated and securely fastened in the end members 1, so as to rigidly connect said end members and a longitudinally extending tie-rod 3, the ends of which are screw threaded and passed through openings in lugs 4, extending vertically from the top of the end frame members, the tie-rod being securely fastened in place by opposed nuts which are secured upon the rod on each side of the lugs 4, see Figs. 1 to 6, inclusive. This construction gives a comparatively light, and an exceedingly rigid and simple frame, the longitudinal rails 2, serving the double purpose of frame members and of slideways upon which the truss hoop driving mechanism is supported and slides.

The driving heads are moved toward or from each other by two longitudinally extending parallel horizontal screw threaded shafts, the upper shaft 5, being mounted in bearings 6, which are formed in the upper ends of the end frame members, and the lower shaft 7, being mounted in bearings 8, in the end frame members and vertically beneath the upper shaft 5. These shafts are each provided with a left hand and a right hand thread, the left hand thread being formed on the left half of each shaft and for the greater portion of said half; and the right hand thread being formed on the right half of each shaft and for the greater portion of said half, see Fig. 2. The shafts 5 and 7, are connected so as to rotate at the same speed, the motion being transmitted from the lower shaft 7, to the upper shaft 5, by a set of gears as shown in Figs. 3, 5 and 6. The lower shaft 7, is slightly longer than the upper shaft 5, and has its ends slightly reduced and projecting beyond the end frame members, see Fig. 2. Two pulleys 9 and 10, are mounted upon the shaft 7, one at each end thereof and rotate oppositely to each other. The pulleys are mounted loosely upon the shaft and rotate independently thereof. Two friction clutches 11 and 12, are secured to the shaft 7, by set screws; the friction clutch 11, being placed upon the shaft in proximity to the pulley 9, and the friction clutch 12, being placed upon the shaft in proximity to the pulley 10, see Fig. 2. The pulleys are brought into engagement with the friction clutches by means of a longitudinally extending sliding bar or shaft 13, which is mounted in bearings 14, formed in the end frame members and vertically beneath the shafts 5 and 7. A collar 15, is rigidly secured by set screws to each end of the bar 13, each collar having an upwardly extending portion which loosely encircles the reduced inwardly extending portion of the adjacent pulley hub, see Fig. 6. A collar 16, is secured by a set screw to the end of the reduced portion of each pulley hub so as to prevent any longitudinal movement of the collar 15, upon said hub. A truss rod 17, extends longitudinally beneath the sliding bar 13, and has its ends passed through depending portions on the collars 15. The ends of the rod are screw threaded and are locked to the collars 15, by opposed nuts as shown in Fig. 6. This truss rod prevents any buckling of the sliding bar 13, while it is being shifted to bring the pulleys into engagement with the friction clutches. The bar 13, is shifted by means of an angular lever, the horizontal portion 18, of which is mounted in bearings 19, extending from one of the end frame members 1, and passes transversely beneath the sliding bar 13. The outer portion 20, of the angular lever bends at right angles to the portion 18, and extends diagonally upward into convenient reach of the operator, see Figs. 3 and 5. A collar 21, having an upwardly extending finger or lug 22, is secured to the portion 18, of the angular lever, and a collar 23, having a laterally extending lug 24, is secured to the sliding bar 13, directly above the horizontal portion of the angular lever. The lateral lug 24, has a vertical opening formed therein in which the finger or lug 22, loosely fits. It will be seen that a rocking movement of the angular lever will transmit a longitudinal movement to the sliding bar 13, and so bring either of the pulleys into engagement with its adjacent friction clutch at the will of the operator. The collar 21, is also provided with a laterally extending lug 25, through which the lower end of a comparatively long bolt 26, is passed, the upper end of which is seated in a portion of the adjacent end frame member. Two spiral springs 27, encircle the bolt 26, one on each side of the lug 25, and serve to maintain the angular lever in a normally central position and the pulleys normally disengaged from the friction clutches, see Fig. 3.

The screw threaded shafts 5 and 7, are connected so as to rotate in unison by a set of gears, as before noted. These gears are shown in Figs. 1, 2, 3, 5 and 6, to which figures

reference will be had in the following description.

A ring 28, having a lateral flange 29, extending outwardly from one side thereof is secured to one of the end frame members by bolts 30, which pass through the flange 29. The ring 28, is secured to the end frame members exactly between the ends of the shafts 5 and 7. In the preferred adaptation of the invention as illustrated in the accompanying drawings, the ring is secured to the left hand end member of the machine frame, see Fig. 6. A gear wheel 31, is mounted upon the ring 28, the ring serving as a hub upon which the gear revolves. The gear wheel 31, meshes with two pinions 32 and 33, one of the pinions being mounted upon each of the shafts 5 and 7. By this construction, both the shafts 5 and 7, are driven in the same direction and at a uniform speed. A gear casing or guard 34, is secured to the ring 28, by bolts 35, which pass through lugs extending from the casing or guard 34, and form the inside of the ring and also serves to hold the gear wheel 31, in place upon the ring 28, see Fig. 6. The ring 28, is provided with a number of pockets 36, which are filled with oil soaked waste so as to lubricate the periphery of the ring upon which the gear revolves.

There are two sets of hoop driving mechanisms, each set of which drives the hoops upon one end of the barrel. The two sets are placed so as to oppose each other and are moved toward or from each other by the rotation of the screw threaded shafts 5 and 7. As each set of driving mechanism is practically a duplicate of the other, a detailed description of but one set will be given, the reference numerals on the drawings, however, being placed upon like parts of each set. A detailed and separate description of the minor points in which the two sets differ will be hereinafter given.

In the following description of the hoop driving mechanism attention is particularly called to Figs. 1 and 2, and to Figs. 7 to 16, inclusive. Each set of driving mechanism comprises a driving head, a plurality of driving arms pivotally secured to the driving head and a plurality of drivers secured to the ends of the driving arms and to the driving head to force the truss hoops upon the barrel. The driving head 37, is preferably circular in shape and hollow in construction and is provided with a centrally projecting hub 38, the outer portion of which is slightly reduced in diameter. The driving head is slidably supported from the rails 2, by two sleeves 39, which are cast integral with the driving head and are connected thereto by ribs or webs as shown in Figs. 1, 4, 5 and 7. Two split nuts which engage with the screw threads on the shafts 5 and 7, are secured to the driving head; the nut 40, which engages with the thread on the upper shaft 5, having laterally extending lugs 41, through which bolts are passed to secure the nut to vertically extending lugs 42, on the driving head, see Fig. 5. The nut 43, which engages with the thread on the lower shaft 7, is secured to the web connecting the driving head and the sleeves 39, by bolts which pass through laterally extending lugs 44, on the nut 43, and through the web, see Fig. 7. The two halves of each of the nuts 40 and 43, are fastened together by bolts 45, as shown in Fig. 7.

The driving head 37, is provided with two sets of drivers, the set which drives the end hoop upon the barrel being adjustably secured directly upon the face of the driving head as shown in Fig. 9, and the set which drives the bilge hoop being secured to the outer ends of radially extending driving arms as shown in Fig. 8. The end hoop drivers which are preferably six in number, are formed as shown in Figs. 5, 6, 9, 13, 14, 15 and 16, and are secured to the face of the driving head and equi-distant from the center thereof and from each other as shown in Fig. 4. Each driver is secured in place by a bolt 46, the head of which seats in a radially extending T slot 47, formed in the face of the driving head. Each driver is composed of a rectangular shaped block 48, a driving plate 49, of hardened metal, and a guide block 50, the whole being fastened together and to the driving head by the bolt 46, which passes through openings in the block 48, and in the plate 49, and through a slot in the guide block 50. A nut is screwed upon the outer end of the bolt to fasten the driver firmly to the driving head, see Fig. 9. The rectangular shaped block 48, has a rib extending from the face adjacent to the driving head which rib fits into the narrow portion of the T slot and prevents any pivotal movement of the driver upon the bolt. The guide block 50, is provided with two lugs 51, which straddle the plate 49, and the block 48, and prevents the block 50, from rotating on the bolt 46. A set screw is screwed through one of the lugs 51, to additionally secure the block in place. Two lugs 52, extend from the block 50, oppositely to the lugs 51, and have beveled edges which guide the hoop so that it is evenly gripped by the driving plates 49. Each driver may be adjusted upon the face of the driving head by loosening the nut upon the outer end of the bolt 46, and moving the driver toward or from the center of the driving head. The drivers for driving the bilge hoops are shown in Figs. 1, 2, 4, 7, 8, 10, 11 and 12.

A plurality of driving arms 53, are pivoted by pins to lugs 54, extending from the driving head and pass through radially extending slots which are formed in the driving head, see Fig. 7. The outer ends of the driving arms are connected by angular arms or con-

necting links 55, to a shiftable collar 56, which is supported by the reduced portion of the hub 38, of the driving head. The links 55, are secured to the driving arms by pins which project through the slots in the outer ends of said links and are pivoted to the shiftable collar by pins 57, which extend from said collar. A collar 58, is fastened by a set screw to the outer ends of the reduced portion of the hub 38, and prevents any longitudinal movement of the shiftable collar 56, on said hub and also serves to secure the inner ends of the connecting links 55, in place upon the pins 57.

The drivers 59, are formed as shown in Figs. 8, 11 and 12, having a socket in which the end of the driving arm is fitted. The other end of the driver has a square flange which grips the truss hoop and drives it into place. The socket is in the form of a Roman cross, so that if one edge of the flange should become damaged, the driver can be removed from the driving arm and given a quarter turn to bring a new edge of the flange into use to drive the hoop. By making the socket cruciform the driver plate may be locked positively, unrotatably and immovably in any one of four positions to which it may be adjusted to the driver arm. The advantage of this construction is that approximately four times the wear is obtained over a driver having but one edge. It is not however necessary to make the socket cruciform although that shape is thought preferable as any form having corners of identical conformation and equal in number to the gripping and driving edges of the flange may be used; the purpose being to enable any one of the edges to be arranged in operative position and to lock the driver in any one of the positions to which it may be turned. The driver is securely fastened to the end of the driving arm by a set screw as shown in Fig. 8. The driving arms 53, are moved toward and from the barrel by means of a rock shaft which may be operated automatically or by the foot of the operator, see Figs. 1, 5 and 7. A square rock shaft 60, has its ends journaled in the end frame members 1, and a crank 61, is mounted upon the shaft so as to slide thereon. This crank is connected by means of a connecting rod 62, to a crank arm 63, extending from the shiftable collar 56, and formed integral therewith. Two blocks 64, are fastened to the rock shaft 60, and a foot lever 65, has its ends bent at right angles and seated in depressions which are formed in the blocks 64, see Figs. 5 and 30. A plate which has a foot treadle 66, formed thereon is bolted to the foot lever so that the treadle is within convenient reach of the operator.

It will be seen by the above description and by referring to the drawings that a downward movement of the foot lever will cause the shaft 60, to rock and give an upward movement to the crank 61. This causes a partial rotation of the shiftable collar 56, by means of the rod 62, and moves the drivers 59, toward the barrel by spreading the outer end of the driving arms 53, by means of the connecting links 55. The drivers are returned to their normal position by means of a crank 67, which is secured to the rock shaft 60, near one end and a spring 68, which has one end secured to the crank 67, and the other end to a lug extending from the adjacent end frame member, see Fig. 24.

The automatic means for operating the drivers is illustrated in Figs. 1, 5, 28, 29 and 30.

One of the sleeves 39, of the driving head which is adjacent to the foot lever 65, has a lug cast integral therewith which has a vertical opening formed therein. A bar 69, has one end rigidly secured in this opening by set screws and has a trigger 70, pivoted at its other end by a pin. This trigger is pivoted so as to have a swinging movement in one direction, but is locked against any movement in the opposite direction. The plate on which the foot treadle 66, is formed has an inclined portion 71, against which the bottom edge of the trigger is adapted to operate. It will be seen that when the driving heads are moved toward the barrel, the trigger strikes the inclined portion of the plate and depresses the foot lever and rocks the shaft 65, in the same manner as the operator's foot.

Mechanism is provided for leveling the barrel before the truss hoops are driven into place and is illustrated in Figs. 1, 2, 3, 5, and 6, and Figs. 17 to 23, inclusive. This mechanism is in two sets, a set being placed at each end of the machine and as each set is a duplicate of the other, but one set will be described. The reference numerals on the drawings will be placed upon like parts of each set.

The hub 38, of the driving head 37, has an opening formed therein in which a longitudinally extending sliding shaft 72, is supported. The outer end of the shaft 72, passes loosely through an opening 73, see Fig. 18, in a slide block 74, which is slidably mounted in a slide way 75. This slideway 75, is secured by bolts to a transversely extending portion of the end frame members 1. The slide block 74, is provided with vertical and horizontal flanges 76 and 77, which have flat faces as shown in Figs. 17 and 18.

A transversely extending rock shaft 78, is journaled in bearings in the end frame members 1, above the slideway 75, and a hub which is provided with two crank arms 79, is securely fastened to the middle of the rock shaft, see Fig. 3. The ends of the crank arms 79, are provided with rollers 80, which operate against the flat faces of the flanges 76 and 77, see Fig. 17. The ends of the rock shaft extend beyond the bearings and a

weighted crank arm 81, is keyed to each end of the shaft. Each crank arm is connected by a chain to the upper end of a powerful spiral spring 82, the lower end of which is secured by an eye bolt to a lug extending from the end frame members 1. Each crank arm 81, has a projection 83, which strikes against a lug 84, see Fig. 1, on the end frame members and limits the outward movement of the crank arm.

A leveling ring 85, is secured to the inner end of each of the shafts 72, each ring having one of its edges beveled as at 86, in Fig. 31, and a series of webs 87, which connect the ring 85, to a central hub 88, see Fig. 4. Each ring also has a series of short webs 89, the webs 87 and 89, extending beyond the beveled edge of the ring and having their outer ends rounded as shown in Figs. 1, 2, 6 and 31. The rounded edges of the webs and the beveled edge of the ring guide the ring into the open end of the barrel. One of the leveling rings 85, has a peripheral flange 90, see Fig. 6, against which the edges of the staves fit so as to make them perfectly level and flush with each other. This flange 90, has a number of radial projections 91, which prevent the end hoop from sliding off the barrel before it is driven into place.

It has been found in practice that the barrel staves are not always of equal length therefore were either crushed or bulged out at the middle, or were not leveled exactly by the flange 90, as it could not touch the edges of both the long and the short staves. To remedy this, the flange 90, is omitted on one of the leveling rings 85, and a ring 92, having a series of **V** shaped peripheral teeth 93, is substituted therefor, being fastened in place by bolts as shown in Figs. 4 and 31. The lateral edge 94, of each tooth 93, is brought to a sharp edge and is beveled so that the peripheral edge of the tooth is shorter than its base, see Figs. 31 and 32.

It will be seen by the above description and the drawings that when the leveling rings 85, are forced into the open ends of a barrel, the edges of the longer staves will strike against the flange 90, on one ring. The beveled edges 94, of the teeth will enter the longer staves until the edges of the shorter staves are reached and all the staves pushed evenly against the flange 90. The purpose of beveling the edges 94, of the teeth is so that the deepest cut in the edges of the staves will be on the inner surface so that when the croze is cut and the uneven edge of the barrel trimmed off, the edges of the staves will not be mutilated. The beveled edge of the teeth serve also to force the staves outward against the hoops.

A portion of the sliding shaft 72, is screw threaded and two split collars 95, having screw threaded openings are mounted upon this portion of the shaft being locked in place by transverse bolts as shown in Figs. 20 and 21. By adjusting these two collars on the shaft, the distance between the two leveling rings 85, can be varied to provide for barrels of different lengths.

When a barrel is placed in position to be trussed and the driving heads moved toward each other, the tension of the springs 82, acting upon the cranks 81, rock shafts 78, cranks 79, and slide blocks 74, forces the leveling rings 85, into the open ends of the barrel until the edges of the staves strike the peripheral flange 90, which levels one end of the barrel and brings the barrel into a perfectly circular form. The truss hoops are now driven tightly into place and as the driving heads recede from the barrel, they carry with them the shafts 72, by reason of the hubs 38, striking against two of the collars 95, see Figs. 5 and 6.

Barrel supports are adjustably secured to the side members or rails 2, to support the barrel in a central position in the machine, see Figs. 1, 2 and 4. The supports consist of angular bars 96, which are adjustably supported in blocks 97, secured to the rails 2, by **U** bolts. The bars 96, are fastened in the blocks 97, by set screws and may be adjusted in length to support barrels of different diameters.

A device for automatically removing the barrel from the machine is provided and is illustrated in Figs. 1, 2, 4, 25, and 26. A square rock shaft 98, has one end supported in a bearing in one of the end frame members 1, and its other end supported in a bearing 99, secured to and depending from one of the side rails 2, see Fig. 27. A collar 100, is secured to the shaft 98, at about the middle of the machine and has an extension 101, formed integral therewith. This extension has a depression formed in its top surface in which one end of a bent bar 102, is seated being held in place by a long bolt 103, which is encircled by a spiral spring 104. The shaft is rocked to eject the barrel by a roller 105, which is mounted on a pin at the lower end of a bar 106. The bar is secured in an opening in a lug 107, extending from one of the sleeves 39. The roller 105, operates against the inclined surface 108, of a weighted swinging arm or trigger 109, which is pivoted to a diagonally extending crank arm 110, secured to the shaft 98, see Fig. 25. A stop 111, on the crank 110, prevents the movement of the trigger in one direction so that the crank is depressed by the roller coming into contact with the inclined surface 108, of the trigger 109, when moving in one direction, see Fig. 26, and thus rocks the shaft to eject the barrel.

The operation of the machine will readily be understood from the foregoing description and the drawings.

We claim as our invention.

1. In a machine of the class described, the combination with a hoop driving mechanism having driving arms, of a rock shaft for radially shifting said driving arms, means for reciprocating the hoop driving arms bodily longitudinally of the barrel and means substantially as described whereby the rock shaft may be operated manually or automatically by the reciprocating of the hoop driving mechanism.

2. In a machine of the class described, the combination with a hoop driving mechanism having driving arms, of a rock shaft for radially shifting said driving arms, means for reciprocating the hoop driving arms bodily longitudinally of the barrel, means substantially as described for automatically rocking said shaft, and a manually operated treadle for also independently rocking said shaft, substantially as set forth.

3. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine; one of said mechanisms including an element having a serrated surface adapted to contact with the stave ends, substantially as set forth.

4. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings one of which has a roughened surface adapted to contact with and cut into the ends of the staves sufficiently to grip the same securely, substantially as set forth.

5. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings at least one of which has a beveled and serrated or toothed edge, substantially as set forth.

6. In a hoop driving machine, barrel holding and leveling mechanism having a toothed ring the teeth of which are adapted to contact with the stave ends, for the purposes specified.

7. In a hoop driving machine, barrel holding and leveling mechanism having a toothed ring the teeth of which are beveled and are adapted to contact with the stave ends, substantially as set forth.

8. In a hoop driving machine, barrel holding and leveling mechanism having a toothed ring the teeth of which are beveled outwardly and are adapted to contact with the stave ends, substantially as set forth.

9. In a machine of the class described, hoop driving mechanism including a driving head and driving arms, a trigger supported from the driving head, means for radially shifting the driving arms and a plate adapted to be struck by the trigger to automatically operate the shifting means, substantially as set forth.

10. In a hoop driving machine, barrel holding and leveling mechanism having an element, the gripping surface of which is roughened sufficiently to cut into the stave ends and hold the barrel securely.

11. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings, one at least of which has a beveled toothed edge and a series of webs extending in part beyond the beveled edge of the ring, substantially as set forth.

12. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings, one at least of which has a beveled toothed edge which is adapted to contact with the ends of the staves and a series of webs extending in part beyond the beveled edge of the ring and having their outer ends rounded, substantially as set forth.

13. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings, one of which is toothed and adapted to contact with the stave ends.

14. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings, one of which has beveled teeth adapted to contact with the stave ends.

15. In a horizontal machine of the class described, the combination with two opposed sets of hoop driving mechanisms, of barrel leveling mechanism in two sets located at opposite ends of the machine and including two opposed leveling rings, one of which is serrated or toothed at that portion which is adapted to contact with the stave ends, substantially as set forth.

16. In a hoop driving machine, barrel holding and leveling mechanism having a toothed element adapted to contact with the stave ends, for the purposes specified.

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