E. F. BEUGLER.

HEADING-UP MACHINE.

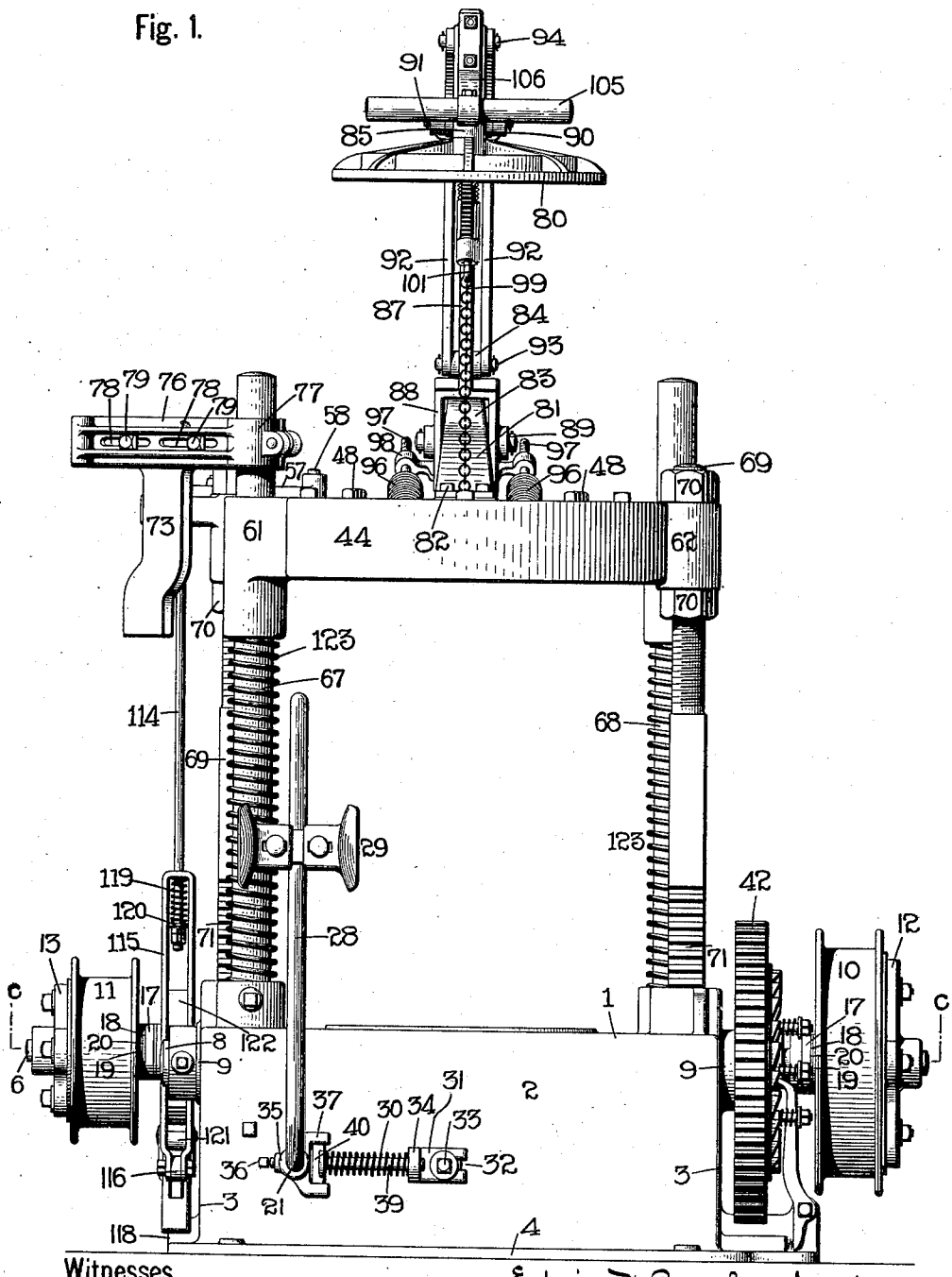
APPLICATION FILED DEC. 21, 1911.

1,027,803.

Patented May 28, 1912.

7 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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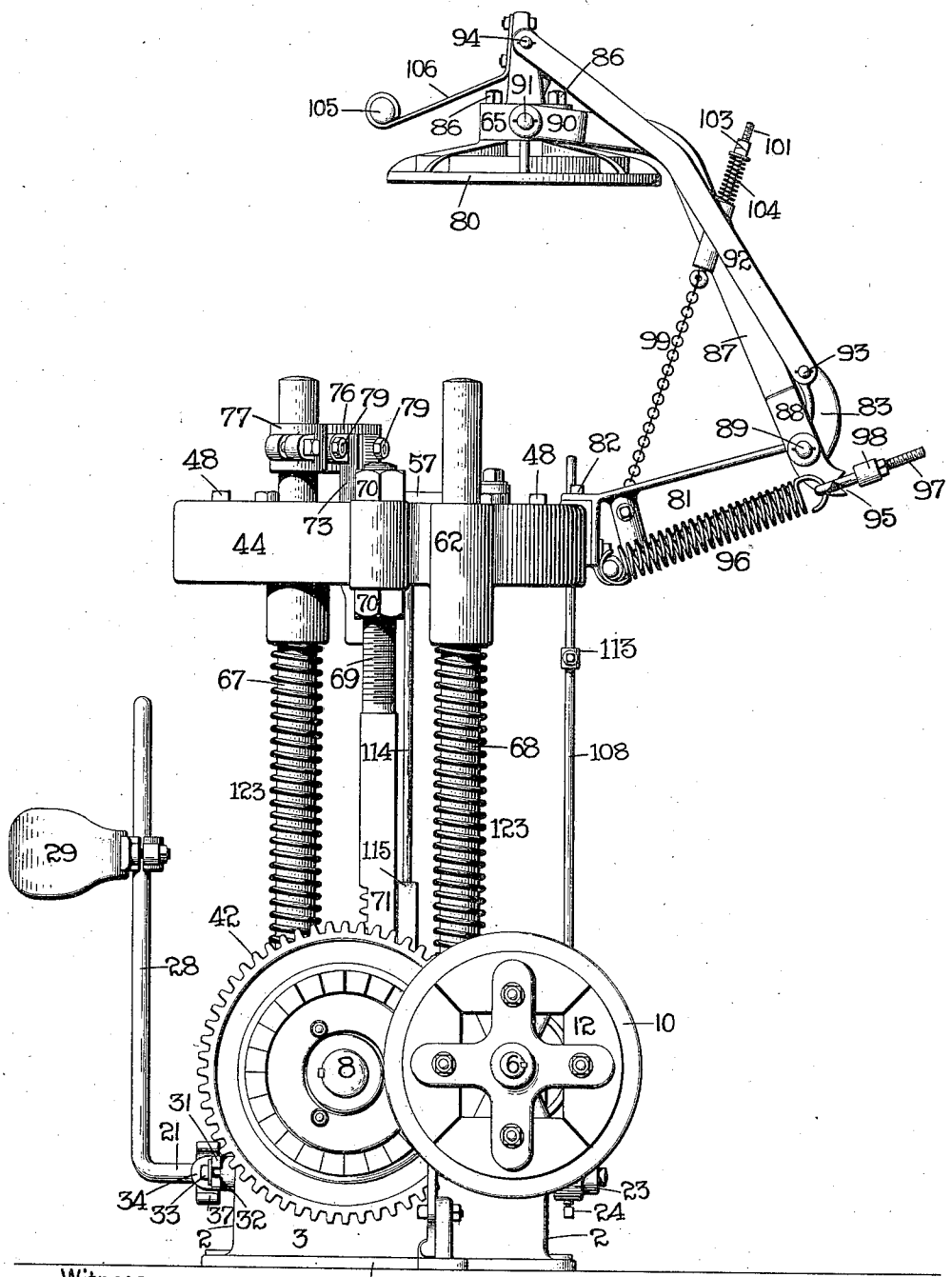
Fig. 2.



Witnesses.

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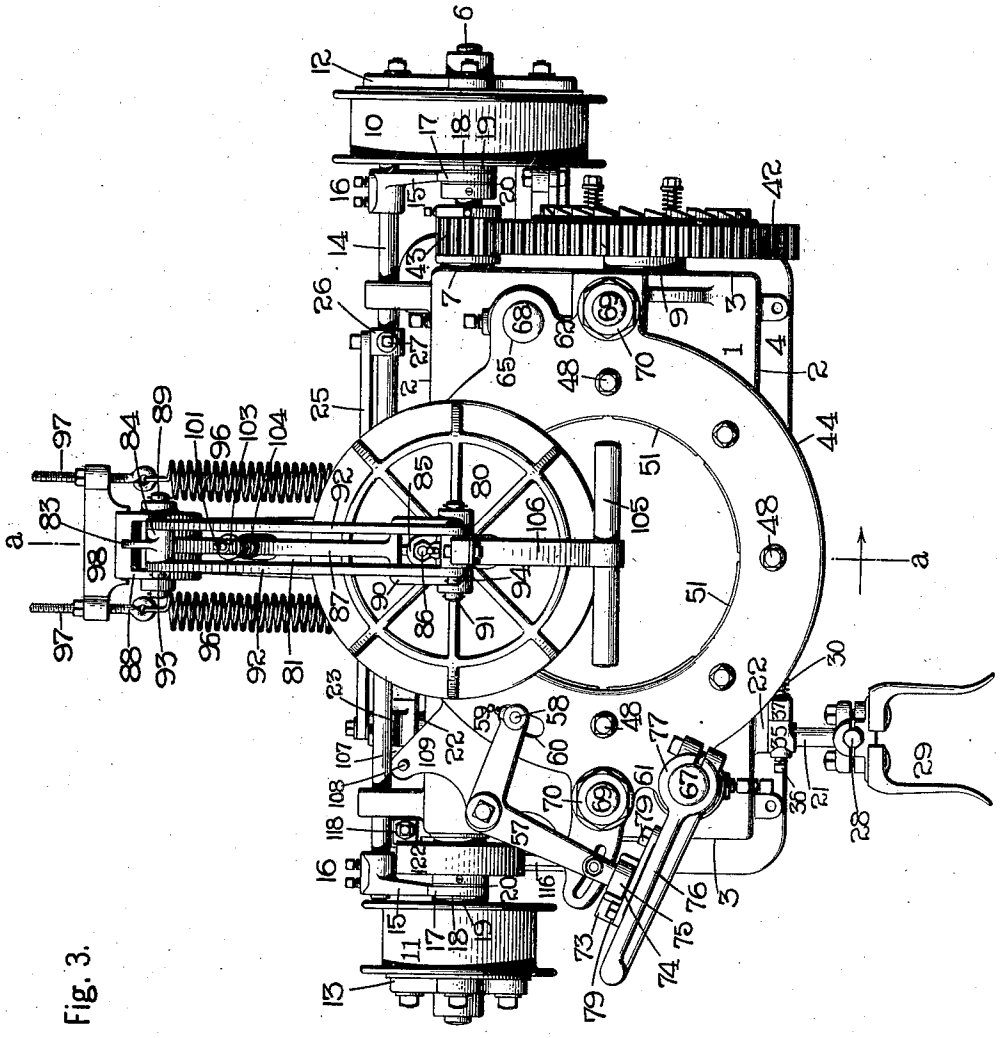

Fig. 3.

Witnesses.

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7 SHEETS—SHEET 4.

Fig. 4.

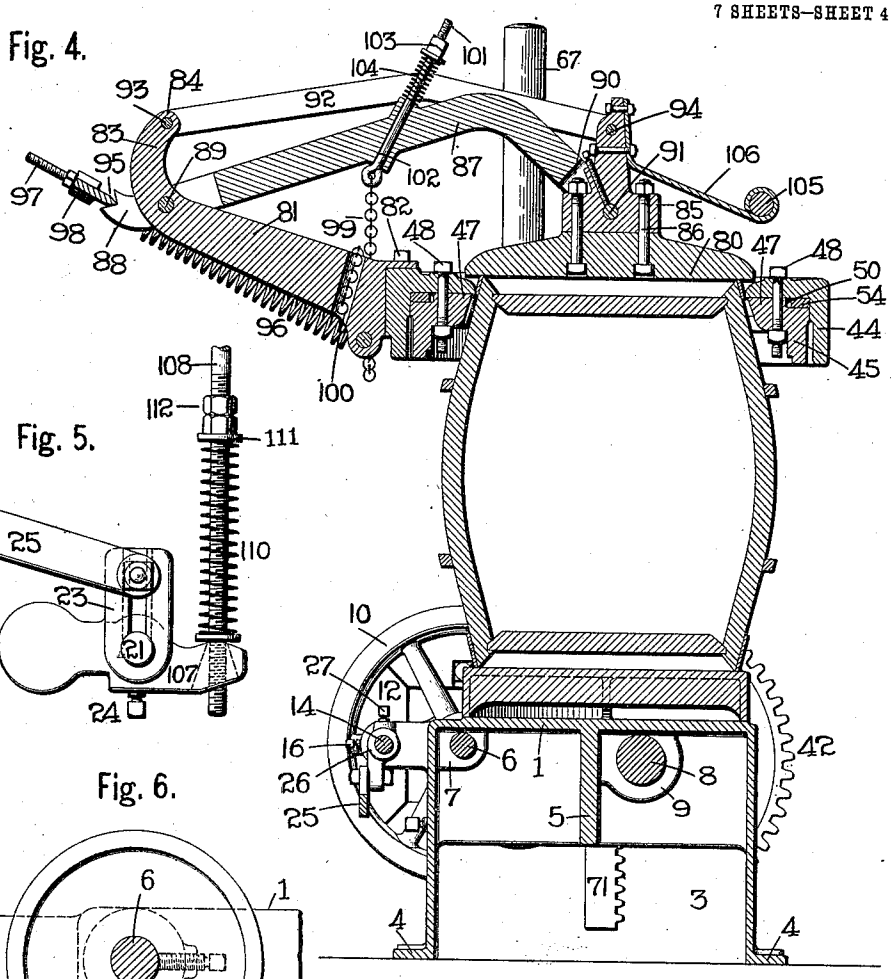
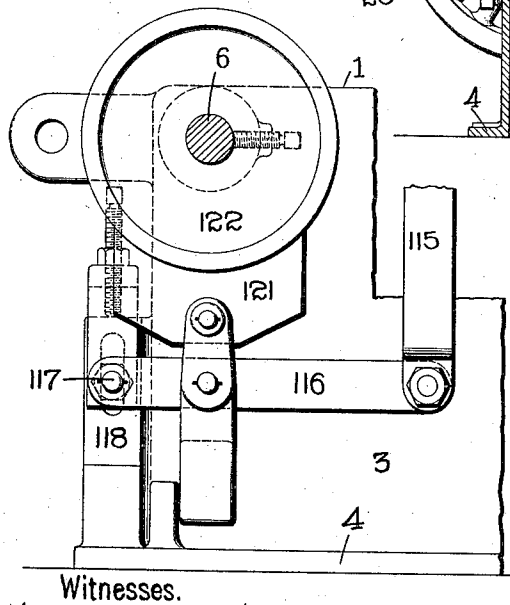


Fig. 5.

Fig. 6.



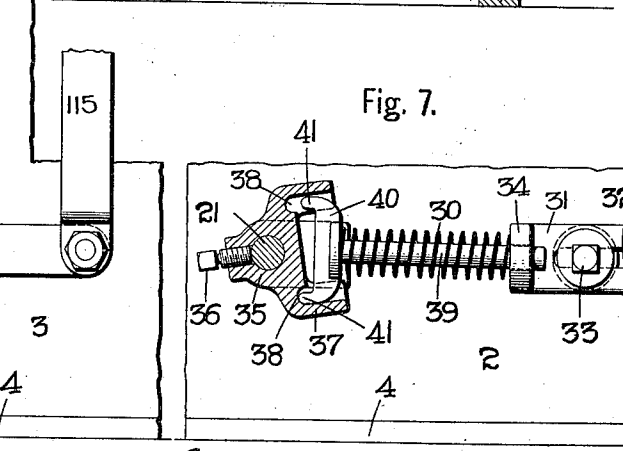


Fig. 7.

Witnesses.

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7 SHEETS—SHEET 5.

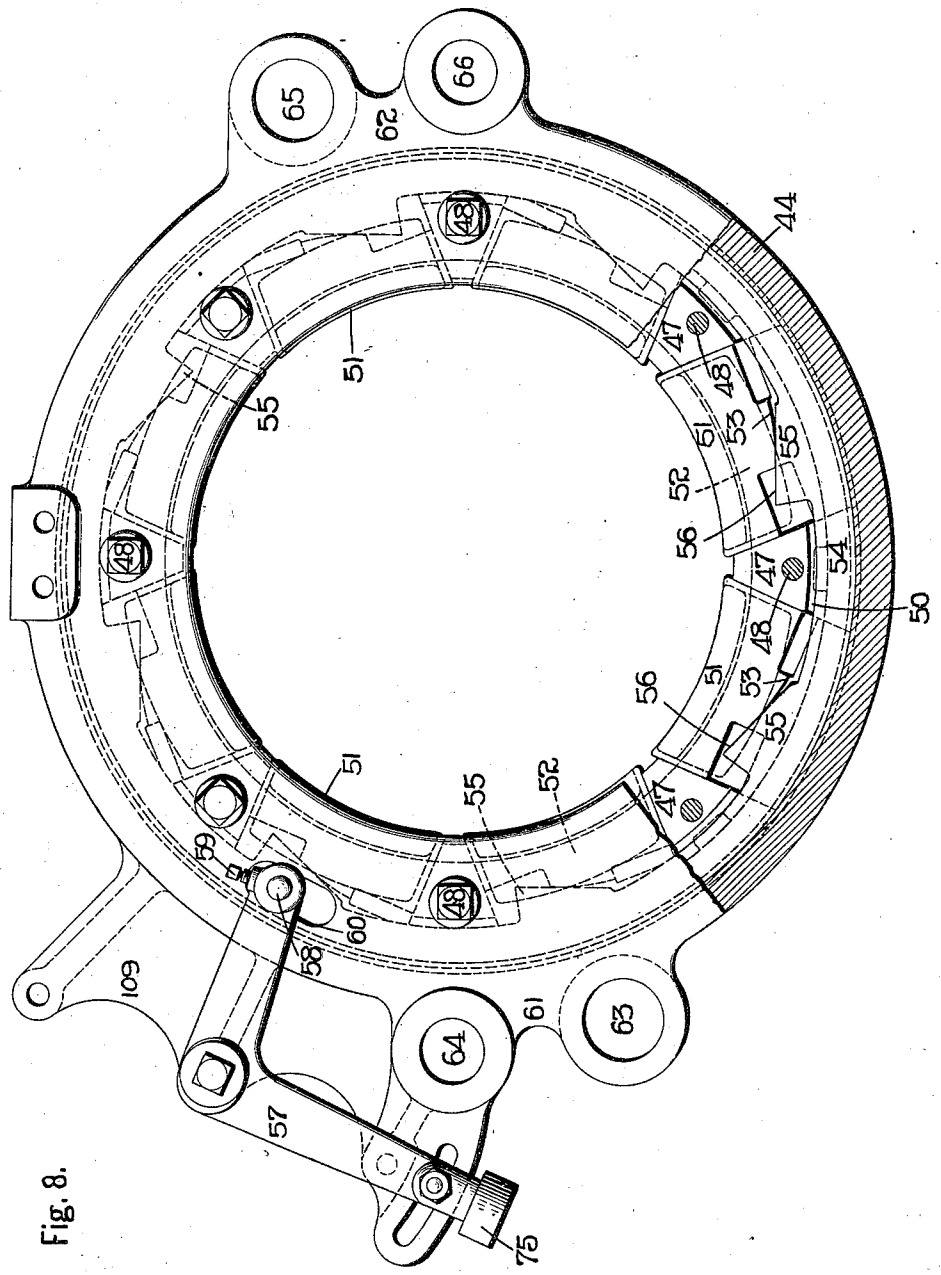

Fig. 8.

Witnesses. Mary M. Kean Edwin F. Beugler Inventor.

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7 SHEETS—SHEET 6.

Fig. 10.

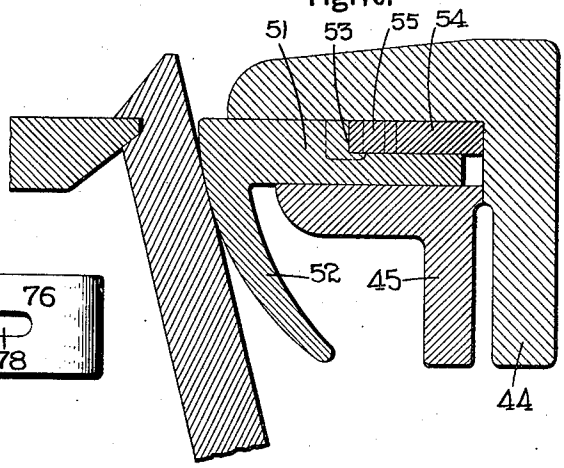


Fig. 9.

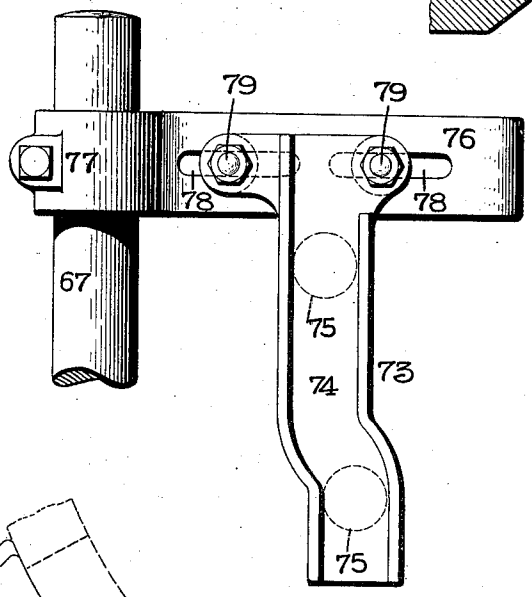
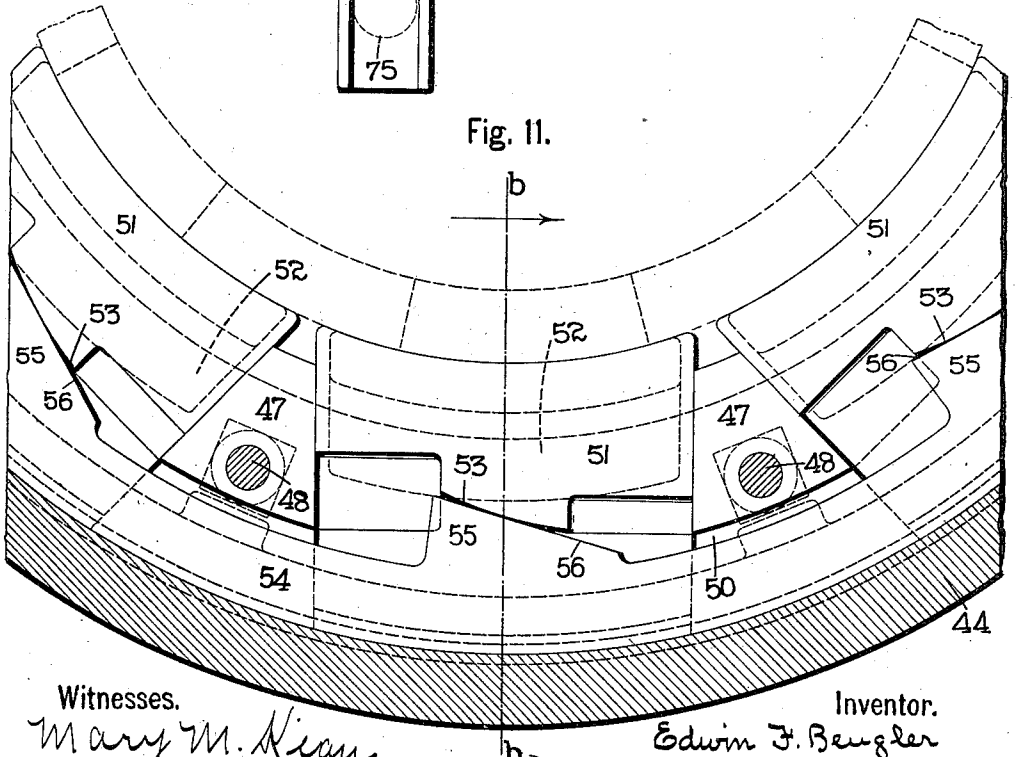


Fig. 11.



Witnesses.

Mary M. Kiam

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7 SHEETS—SHEET 7.

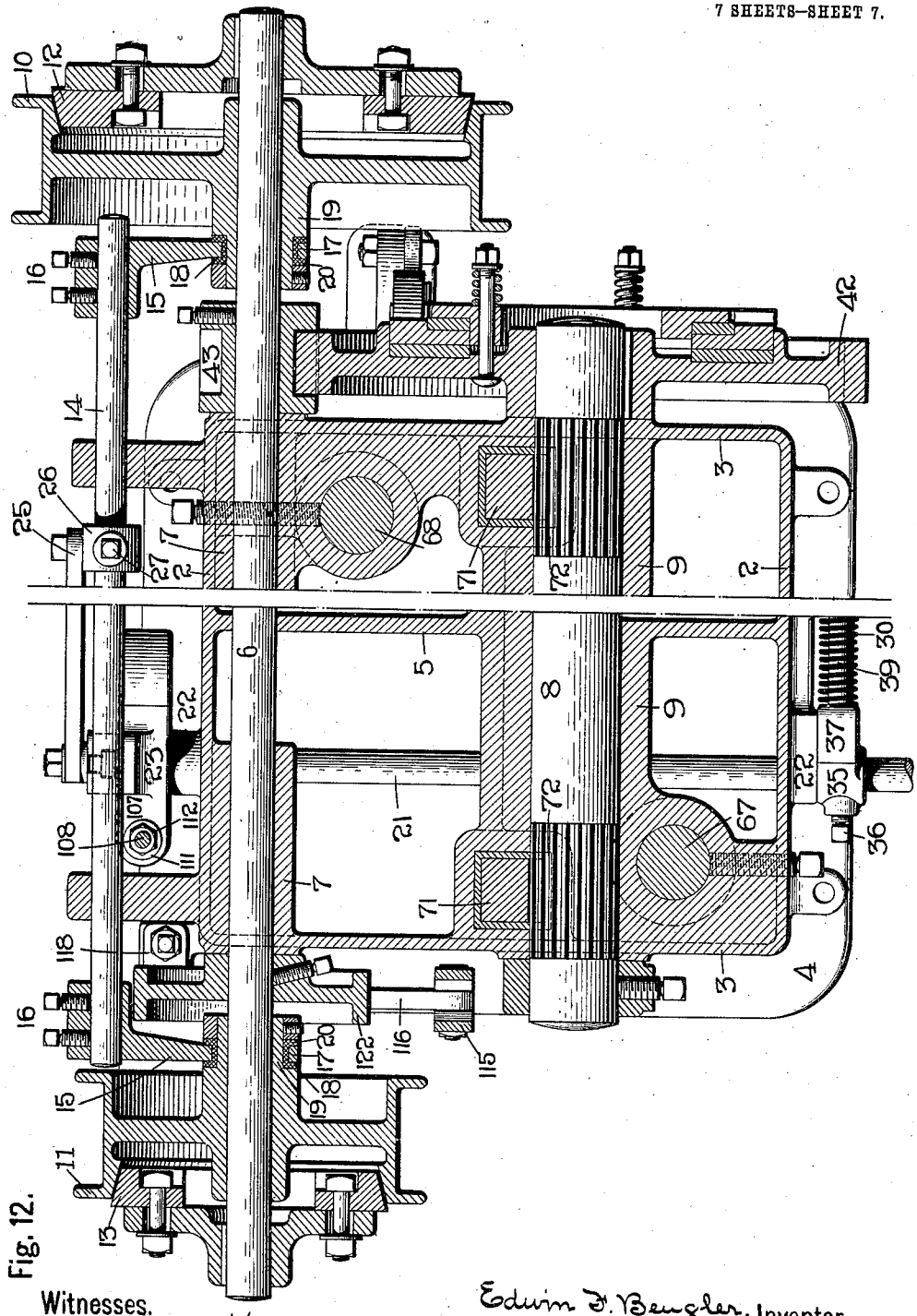

Fig. 12.

Witnesses.

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UNITED STATES PATENT OFFICE.

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HEADING-UP MACHINE.

1,027,803. Specification of Letters Patent. Patented May 28, 1912.

Application filed December 21, 1911. Serial No. 667,152.

To all whom it may concern:

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

This invention relates to improvements in machines for heading kegs, barrels and the like and the main object of the invention is to produce a comparatively simple, durable and reliable machine of this character which is semi-automatic in operation.

The invention also relates to certain details of construction which will be hereinafter described and perhaps claimed reference being had to the accompanying drawings in which a preferred adaptation of the improved machine is shown.

Figure 1 represents a front elevation of the improved machine. Fig. 2 represents a side elevation of the improved machine. Fig. 3 represents a top plan view of the improved machine. Fig. 4 represents a vertical section taken through the improved machine on line *a a* Fig. 3, also showing a vertical section of a keg in place in said machine and illustrating the slammer plate mechanism in its depressed hoop driving position. Fig. 5 represents a detached fragmentary view of a portion of the automatic mechanism for stopping the machine. Fig. 6 represents a detached detail view of the friction brake for limiting the upward movement of the stave compressing ring. Fig. 7 is an enlarged fragmentary view of the spring equalizing mechanism. Fig. 8 represents an enlarged detached plan view partially in section of the stave compressing ring. Fig. 9 represents an enlarged fragmentary view showing the slotted cam controlling the partial rotation of the stave compressing ring for operating the stave compressing blocks. Fig. 10 is a vertical transverse cross section through the stave compressing ring on line *b b* Fig. 11 also showing a fragmentary section of a keg placed in position in said ring. Fig. 11 is an enlarged fragmentary horizontal section through the stave compressing ring, showing the compressing blocks moved inwardly to compress the upper portions of the staves of a keg, a fragment of a keg in position also being shown in dotted lines. Fig. 12 is an enlarged horizontal section on line *c c* Fig. 1 showing the base construction of the machine.

In the preferred adaptation of the improved machine illustrated in the accompanying drawings like numerals designate like parts in referring to the details of the same.

The base of the machine is in the form of a hollow casting having a flat top 1 with depending vertical sides 2 and ends 3 which extend downward from the outer margin of the flat top. The base is also provided with lateral bottom flanges 4 through which bolts or other fastenings may be fitted to screw the base to a floor and a central vertically depending strengthening flange or rib 5 which extends within the interior of the base. A main shaft 6 is journaled in suitable bearings 7 arranged in the base and a countershaft 8 is also journaled in suitable bearings 9 likewise arranged in the base as shown in Fig. 12. Two pulleys 10 and 11 are mounted on the main shaft 6 each being located at one end of the main shaft and being connected by a belt (not shown) to any suitable source of power. The pulleys 10 and 11 are operatively connected to the shaft to rotate the same in either direction by means of two tapering friction clutches 12 and 13 as shown in Fig. 12. The pulleys 10 and 11 are longitudinally shiftable on the shaft so as to be engaged with and disengaged from the clutches 12 and 13 and are connected together for simultaneous shifting so that one may be disengaged and the other engaged or both may be disengaged.

Referring to Fig. 12 it will be seen that a shift bar 14 is located at the rear of the machine and is provided with two laterally extending arms 15 which are adjustably fastened thereon by set screws 16. These two arms are provided with collars 17 at their outer ends which fit loosely in exterior grooves 18 formed in short tubular extensions 19 of the pulleys. The grooves 18 are preferably lined with a lining 20 of antifriction material for the purpose of allowing the pulley extensions to rotate freely within the collars.

A rock shaft 21 extends from the front to the rear of the machine being mounted in bearings 22 and said rock shaft has a crank arm 23 fastened to its rear end by a set screw 24. The outer end of the crank arm 23 is connected by a connecting rod, 25, to

a collar 26, mounted on a shift bar, 14. The collar, 26, is longitudinally adjustable on the shift bar, 14, and is fastened in its adjusted position on said shift bar by a screw or bolt, 27. The front end of the rock shaft 21 is bent upward to constitute an operating arm 28 and a forked member 29 is clamped to said operating arm and is adapted to be engaged by the limb of the operator to rock the shaft 21. Referring to Fig. 3 it will be noted that the bifurcated or forked portions of the member 29 are separated sufficiently to permit the insertion between the same of the operator's limb so that the shaft may be rocked in either direction to move either pulley into engagement with its clutch or to disengage both pulleys and permit the machine to remain stationary.

Means are provided which normally maintain the rock shaft in a central position and automatically return said rock shaft to its central position after movement in either direction upon its release by the operator. This means I have termed the spring equalizing means and it preferably consists of a spring 30, a block 31 secured to the machine base; said block having a longitudinal slot 32, through which a screw or bolt 33 is adjustably fitted as shown in Fig. 7 and an outwardly extending lug 34 having an opening therethrough as shown in dotted lines in Fig. 7, a block 35 adjustably fastened to the rock shaft 21 by a screw 36, and provided with a forked extension 37 and two shallow recesses 38 and a pin having a stem 39 which is loosely encircled by the spring 30 and slidably fits through the opening in the lug 34 and a head 40 which fits between the forks of the extension 37 and has two short projections 41 which are adapted to extend and fit loosely in the recesses 38.

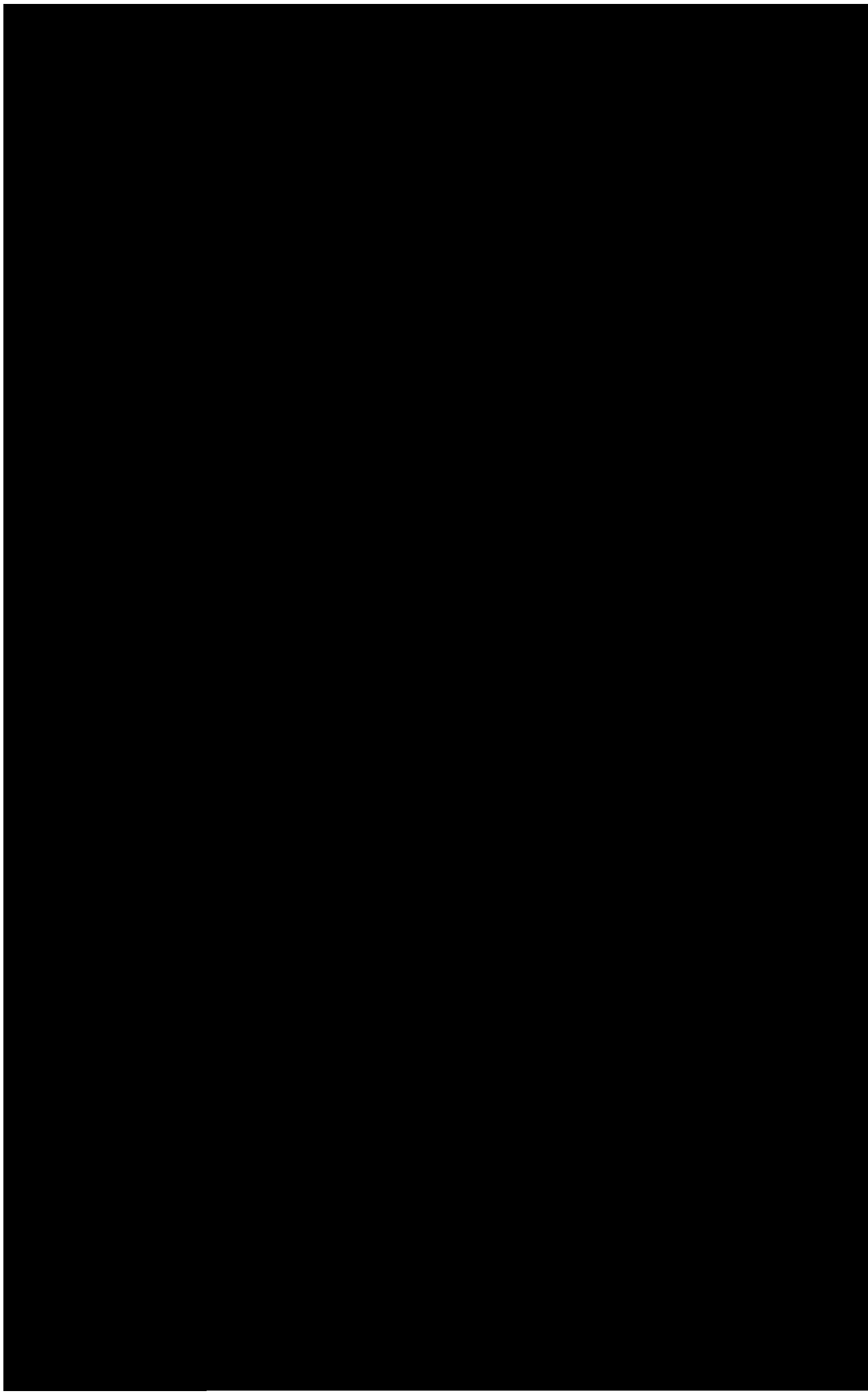
The countershaft 8 is provided with a spur gear wheel 42 which meshes with a pinion 43 on the main shaft 6.

A stave compressing element which I will hereafter term a stave compressing ring is mounted above the machine base and is adjustable vertically relatively to said base. This stave compressing element or ring is formed substantially as shown in Figs. 1, 2, 3, 4, 8, 10 and 11 and consists of an outer annular member 44 of angular form in cross section, as shown in Fig. 10 and an inner annular member 45 also of angular form in cross section. Each of the two annular members 44 and 47 are preferably cast or otherwise formed in one piece and have their outer marginal portions in contact and their inwardly extending horizontal portions separated sufficiently to leave an interior annular space, the inner portion of which is divided into a series of interior pockets, 46, by a set of triangular shaped blocks arranged at equal intervals between the two members. The triangular blocks, 47, are located in separated arrangement in the inner portion of said space and are preferably formed integral with the inner member 45. The two members of the stave compressing ring are fastened together by bolts, 48. It will be noted that the triangular blocks, 47, are separated sufficiently from the inner circular wall of the outer member, 44, to allow the annular outer portion, 50, of the space between the two members to extend completely around the triangular blocks 47 and provide an outer unobstructed annular opening as shown in Fig. 8. A series of stave compressing blocks 51 are arranged in the inner portion of the space between the outer and inner members of the stave compressing ring; each being slidably fitted in one of the pockets 46 into which the inner portion of the said space is divided. Each of these stave compressing blocks is provided with an outwardly and downwardly curved portion 52 which depends from its inner margin as shown in Fig. 10 and has its outer edge 53 at least in part cut to extend diagonally as shown in Fig. 11. The inner surface of each stave compressing block is slightly concaved as shown in Fig. 8 to conform substantially to the rounded contour of the keg, barrel or other article adapted to be headed by the machine. The stave compressing blocks are simultaneously moved radially inward by means of a ring 54 which is mounted in the annular outer portion 50 of the space between the inner and outer members of the stave compressing ring. Said ring 54 surrounds the triangular blocks 47 and the stave compressing blocks 51 as shown in Figs. 8 and 11. A series of inwardly extending projections 55 equal in number to the stave compressing blocks are arranged at equal intervals on the ring 54 and are provided with diagonal inner edges 56 which extend complementary to the diagonal outer edges 53 of the stave compressing blocks and are adapted to slide on said diagonal outer edges 53. The ring 54 is given a sufficient partial rotation to move the stave compressing block the desired distance inwardly by a bell crank 57 which is secured to the ring 54 by means of a pin 58. The pin is secured in the inner end of the bell crank by a set screw 59. The outer member of the stave compressing ring is provided with a vertical slot 60 through which the pin 58 of the bell crank passes; said slot being of sufficient length as shown in Fig. 8 to allow for the necessary horizontal movement of the pin 58 when the ring 54 is turned or partially rotated from one position to another. The outer member 44 is provided with opposed lateral enlargements, 61 and 62, as shown in Fig. 8, and four circular openings, 63, 64, 65 and 66, are formed in these opposed lateral enlargements. Two vertical standards 67 and 68

project up from the base and have their outer portions slidably fitted through the openings 63 and 65 located on opposite sides of the outer member. Two rack bars have their upper ends 69 fitted through and fastened against movement in the openings 64 and 66 by lock nuts 70, and said bars are each provided with a lower toothed portion 71 which meshes with a pinion 72 mounted on the counter shaft as shown in Fig. 12. The stave compressing ring is given a positive vertical movement in either direction by means of the rack bars and pinions and the bell crank is automatically rocked to move the stave compressing blocks inwardly as the stave compressing ring is moved downward by a stationary cam bar 73 mounted on one side of the stave compressing ring and provided with a cam groove 74 in which a roller 75 rotatably mounted on the outer end of the bell crank travels as the stave compressing ring is vertically moved. The cam bar 73 is supported in depending position from a supporting member 76 which has a clamp 77 at its inner end fastened around the upper projecting end of the vertical standard 67 and horizontal slots 78 in its outer portion through which bolts 79 pass to adjustably secure the cam bar 73 to the supporting member as shown in Fig. 9.

Manually operated mechanism for driving the end hoops on the keg or barrel is provided being located at the top portion of the machine and being supported wholly from the stave compressing ring. This improved hoop driving mechanism consists of a slammer plate 80 and a plurality of pivotal arms to the outer or forward ends of which the plate is pivoted. The inner or rear ends of the pivotal arms are pivoted to an angular or stationary arm 81 which has its forward end bolted to the outer member of the stave compressing ring by bolts 82 and extends rearwardly therefrom with its rear extremity curving upward and forward as shown at 83, and terminating in a boss 84, see Fig. 4. The slammer plate 81 has a central block or head 85, which is attached to its top surface by bolts 86 as shown in Figs. 1, 2 and 4. The pivotal connecting arms are preferably three in number, consisting of an angular central arm 87 having a bifurcated rear end 88 which straddles the angular stationary arm 81 just at the lower beginning of its curved extremity 83, and is pivoted thereto by a pivot pin 89, and a bifurcated front end 90, which straddles and is pivoted to the lower portion of the top block or head by a pivot pintle 91, as shown in Figs. 1, 2, 3 and 4; and two side arms 92 which extend parallel to each other and are located on opposite sides of the central arm. These side arms are straighter than the central arm and have their rear ends pivoted by a pivot pin 93 to the boss 84 at the upper end of the curved extremity 83 on the stationary arm 81, vertically above the rear pivot pin of the central arm and their front ends pivoted by a pivot pin 94 to the top of the block or head 85 vertically above the front pivoting pin of the central arm. The object in pivoting the side arms in a different horizontal plane from the central arm is to provide means for maintaining the slammer plate in horizontal position in all points of its movement. The slammer plate is normally maintained in an elevated position by means of springs which are suitably arranged and attached thereto. The rear end of the central arm is extended beyond its rear pivot and is provided with a V shaped notch 95, as shown in Figs. 2 and 4, and two spiral springs 96 have their front ends fastened to the stationary arm 81, and extend rearwardly approximately parallel with and slightly below the said stationary arm 81, as shown in Fig. 4, and have their rear ends fitted through the eyes of screw eyes 97 screwed in a block 98 which is hooked in the V shaped end notch 95 as shown in Figs. 3 and 4. The slammer plate is limited in its upward movement by means of a chain 99 which has its lower end fitted in an opening 100 in the stationary arm 81, and its upper end attached to an eye bolt 101 which is adjustably fitted through an opening 102 in the central arm 87. The eye bolt 101 is provided with a screw threaded upper portion on which nuts 103 are screwed and a coil spring 104 is interposed between the nuts and the central bar to reduce the shock to the central bar as the slammer plate flies up. A handle 105 is fastened to the front end of a bar 106 which in turn is bolted at its rear end to the block or head 85 of the slammer plate.

Safety devices are provided as a precautionary measure to limit the travel of the stave compressing element. One of these devices is designed to limit the downward movement of the stave compressor and is illustrated in Figs. 2, 3, 5 and 12. The crank 23, carried at the rear extremity of the rock shaft 21, is provided with a laterally extending arm 107 projecting at about right angles therefrom. A vertically extending rod 108 has its lower end passing through an opening in the lateral arm 107, and its upper end passing loosely through an opening in a lateral fin or extension 109 on the stave compressing element. The lower end of the rod 108 immediately above the arm 107 is encircled by a coiled spring 110 which is supported between the arm, 107, and a washer, 111, backed by lock nuts 112, see Fig. 5. A collar 113 is fastened by a set screw to the rod 108 at a suitable point below the fin 109. This device is provided to obviate any possibility of the stave com-



and movable relatively to the said base, mechanism for moving said stave compressing ring relatively to the said base, a stationary arm of angular form extending rearwardly from the stave compressing ring and end hoop driving mechanism pivotally supported from the rear end of the stationary arm.

7. In a machine of the class described, a base, a stave compressing ring above the base and movable relatively to the said base, mechanism for moving said stave compressing ring relatively to the said base, a stationary arm of angular form extending rearwardly from the stave compressing ring and end hoop driving mechanism pivotally supported from the rear end of the stationary arm, said hoop driving mechanism having a slammer plate constructed and arranged to operate vertically above the stave compressing ring, and a handle extending forward from said slammer plate.

8. In a machine of the class described, a base, a stave compressing ring mounted above the base and movable toward or from said base consisting of upper and lower annular members in part separated sufficiently to leave an annular interior space, a series of stave compressing blocks arranged in said space, said blocks each having a concaved inner end and a diagonally extending outer edge, an actuating ring within the annular space and surrounding the blocks and having complementary diagonal edges adapted to slide on the diagonal outer edges of the blocks and means for partially rotating said actuating ring including a stationary element having a cam slot and a bell crank connected to the actuating ring and having a roller adapted to travel in the cam slot of the stationary element.

9. In a machine of the class described, a base, and a stave compressing ring mounted above the base and movable toward or from said base, said stave compressing ring being of solid and noncontracting construction and having an interior annular space, a plurality of stave compressing blocks movably mounted in said space and means automatically actuated as the stave compressing ring moves toward the base for moving said blocks inwardly.

10. In a machine of the class described, a base, a stave compressing ring mounted above the base and movable relatively to said base, said stave compressing ring having an interior annular space a series of stave compressing blocks arranged in said space, mechanism for moving said compressing ring relatively to the said base and automatic means for moving the stave compressing blocks inwardly as the stave compressing ring descends.

11. In a machine of the class described, a base, a stave compressing ring mounted above the base and movable relatively to said base, said stave compressing ring having an interior annular space a series of stave compressing blocks arranged in said space, mechanism for moving said compressing ring relatively to the said base and automatic cam actuated means for moving the stave compressing blocks inwardly as the stave compressing ring descends.

12. In a machine of the class described, a base, a stave compressing ring mounted above the base and movable relatively to said base, said stave compressing ring having an interior annular space, a series of stave compressing blocks arranged in said space, mechanism for moving said compressing ring relatively to the said base, means for moving the stave compressing blocks inwardly as the stave compressing rings descend and a stationary cam for automatically actuating said moving means.

13. In a machine of the class described, a machine frame and an end hoop driving mechanism separated from said machine frame and comprising a slammer plate, an angular central arm pivoted at its rear end to the machine frame and at its forward end to the slammer plate and two side arms straighter than the central arm having their rear ends pivoted to the machine frame above the rear pivoting point to the central arm and their forward ends pivoted to the slammer plate at a point above the pivoting point of the forward end of the central arm, said pivotal arms having their pivoting points in different horizontal planes whereby the slammer plate is maintained in horizontal position at all points of its movement.

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Witnesses:
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