

(No Model.)

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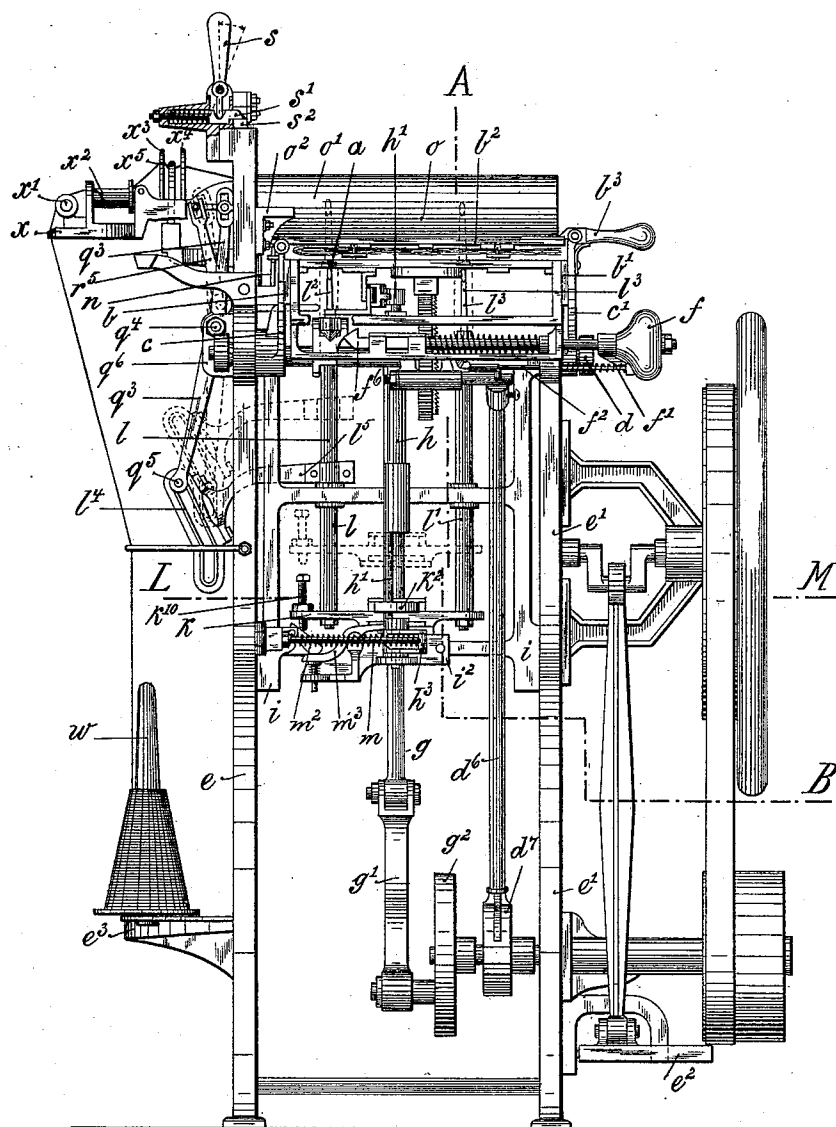
K. GIESE.

SEWING MACHINE FOR MAKING STRAW BOTTLE COVERS.

No. 507,898.

Patented Oct. 31, 1893.

FIG: 1.



Witnesses,
W. H. Humphrey.

David H. Mead.

Inventor,
Karl Giese.

by A. S. Openforth.

his Attorney.

(No Model.)

8 Sheets—Sheet 2.

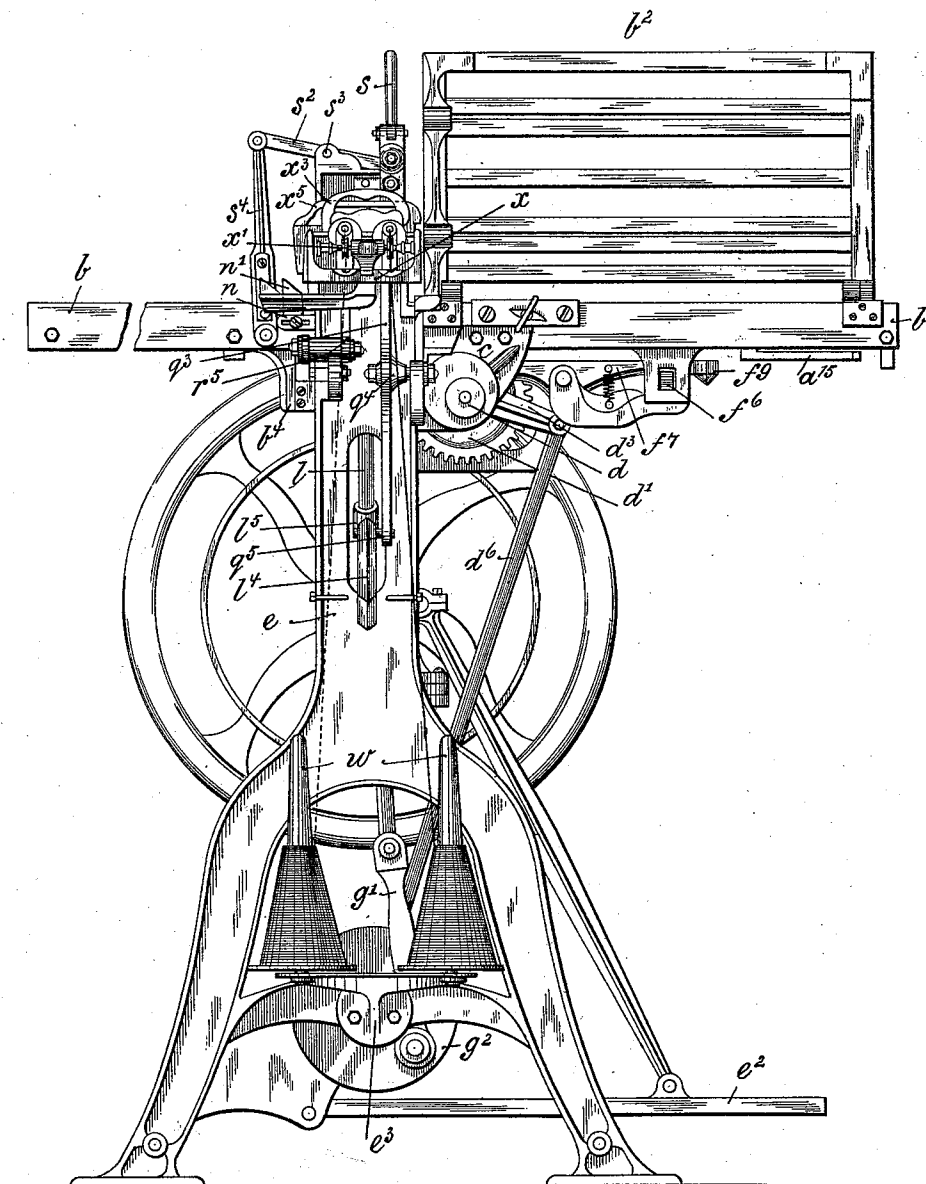
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FIG. 2.



Witnesses,
W. H. Humphrey.
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Inventor,
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(No Model.)

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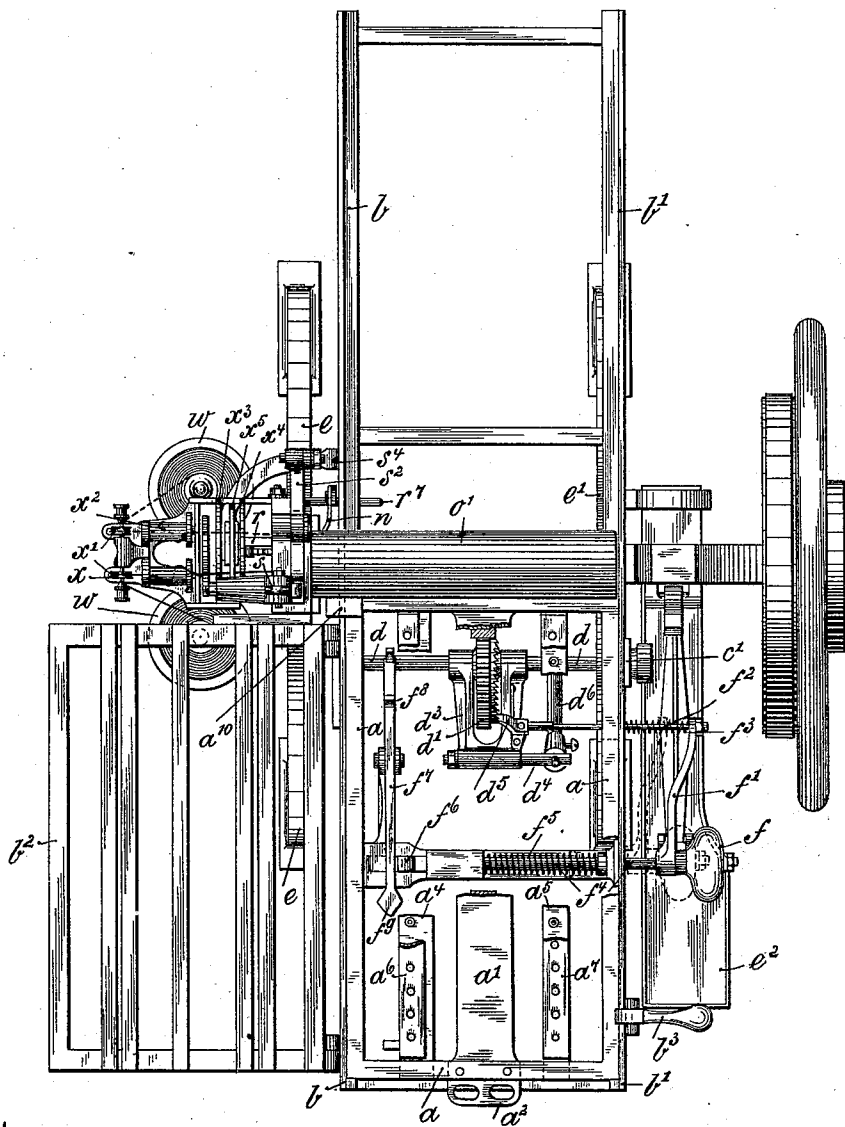
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FIG. 3.



Witnesses,
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(No Model.)

8 Sheets—Sheet 4.

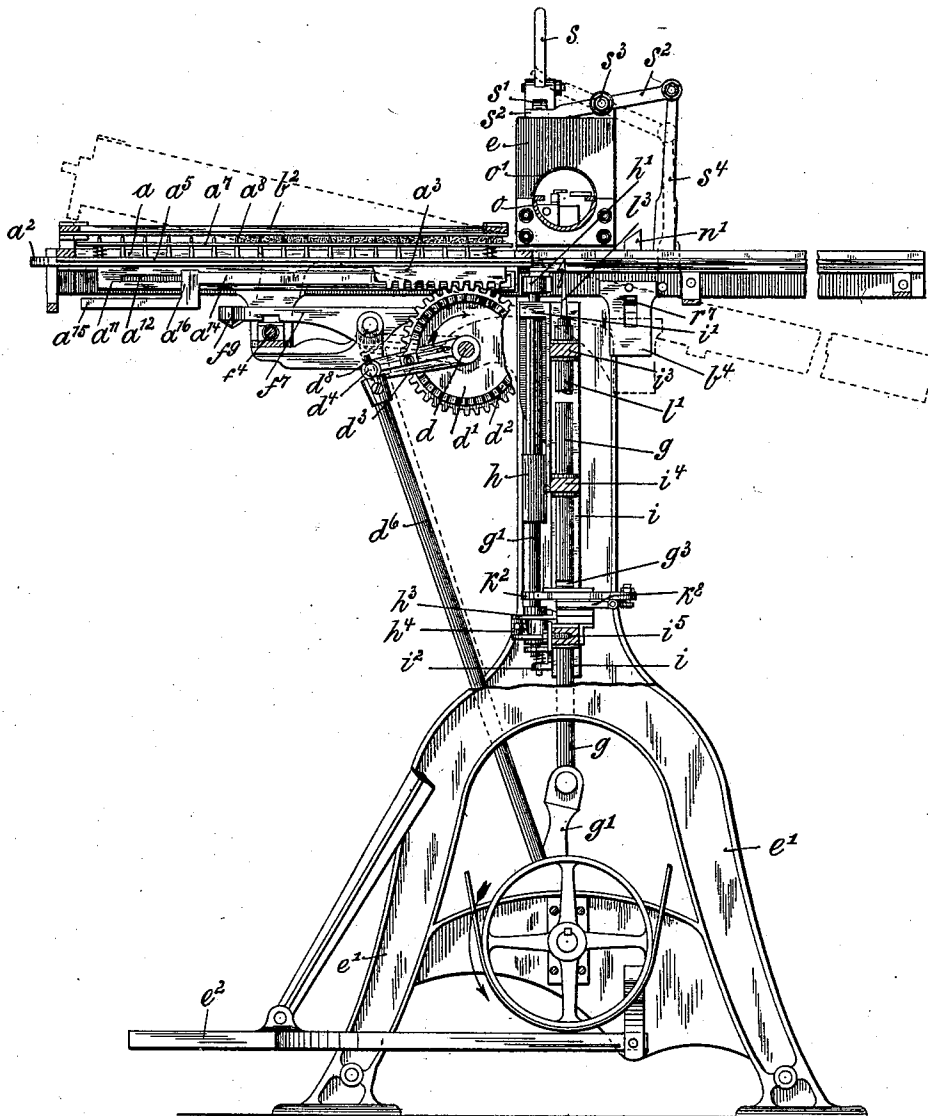
K. GIESE.

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FIG. 4.



Witnesses,
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SEWING MACHINE FOR MAKING STRAW BOTTLE COVERS.

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FIG. 5.

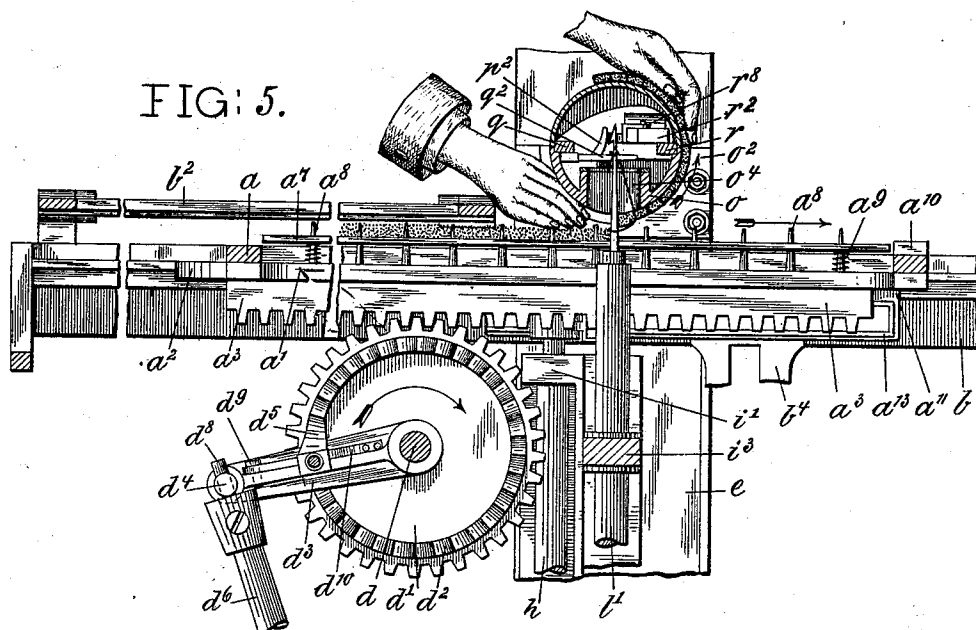
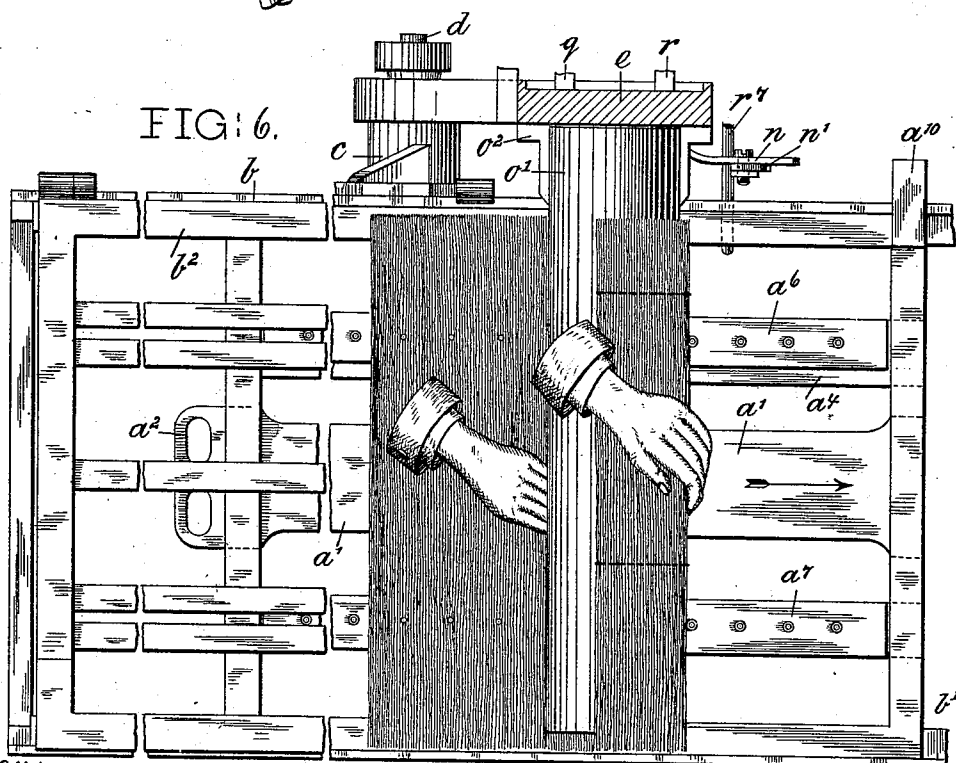


FIG. 6.



Witnesses,
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(No Model.)

8 Sheets—Sheet 6.

K. GIESE.

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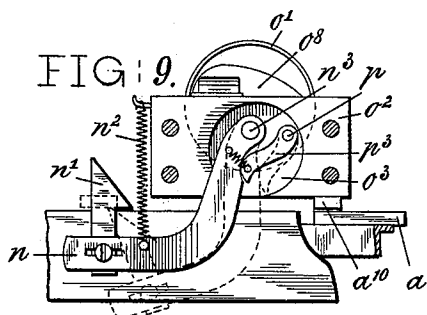
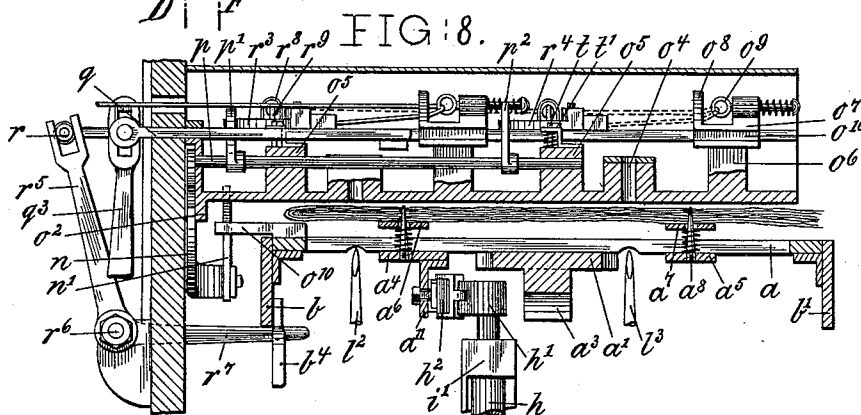
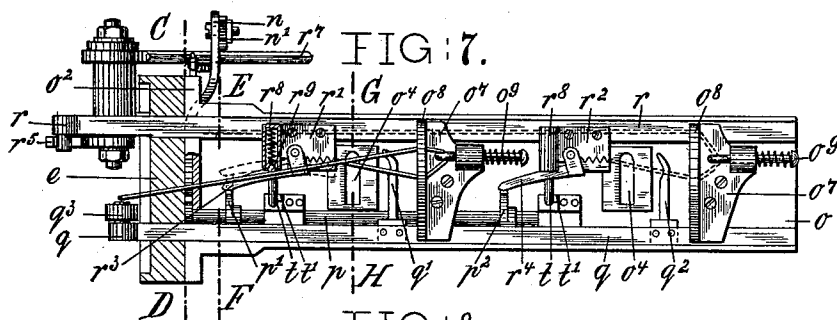


FIG. 10.

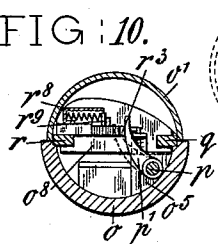


FIG. 11.

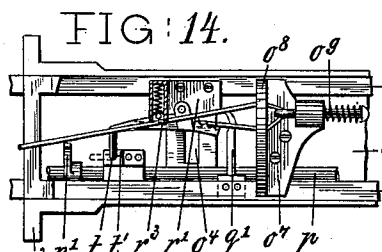
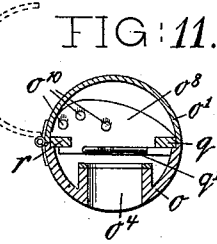


FIG. 12.

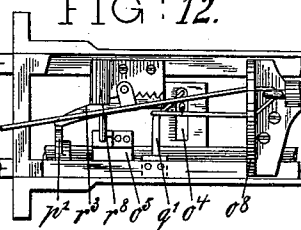
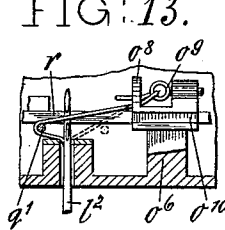


FIG. 13.



Witnesses,
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FIG: 15.

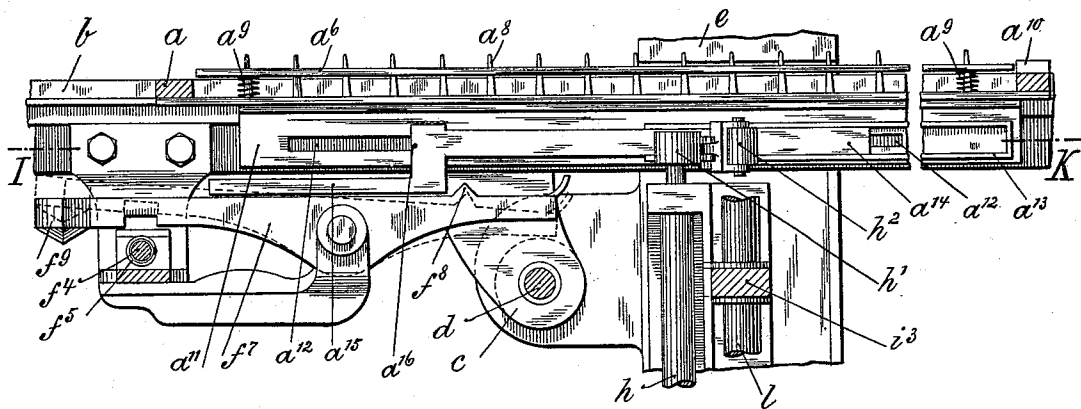


FIG: 16.

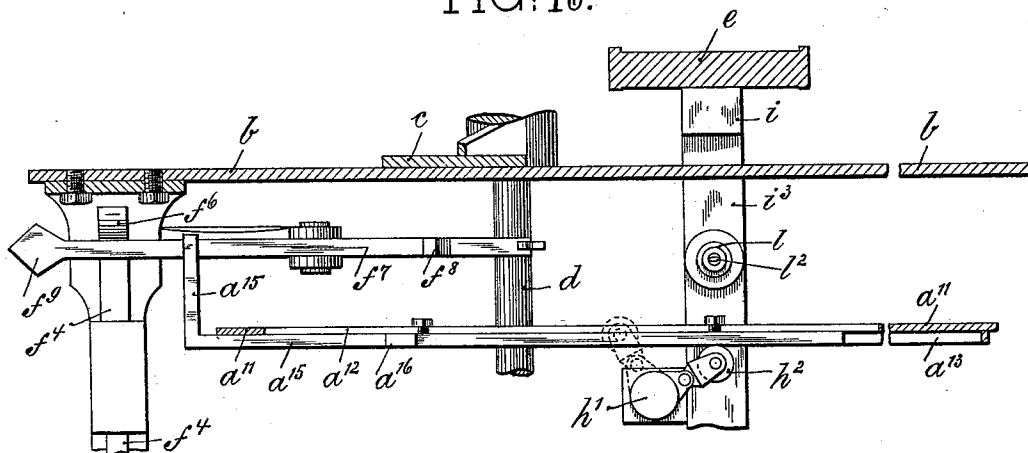
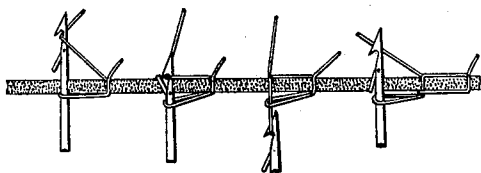
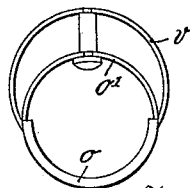


FIG: 18.



Witnesses,
H. H. Humphrey,
David Stumud.

FIG: 17.



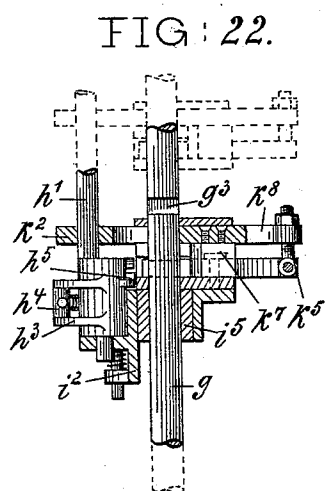
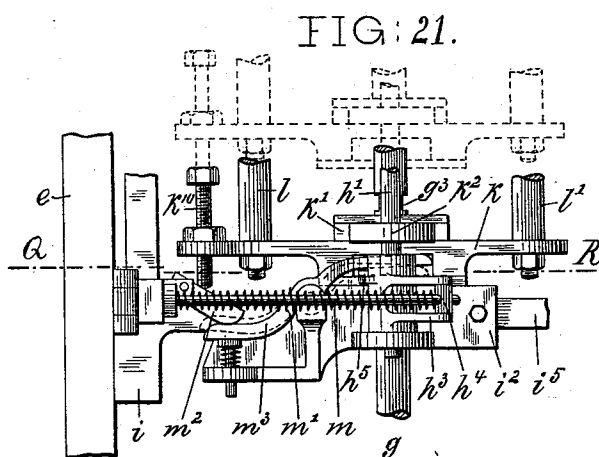
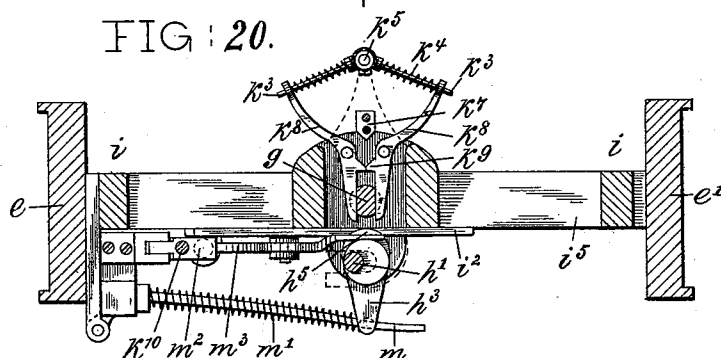
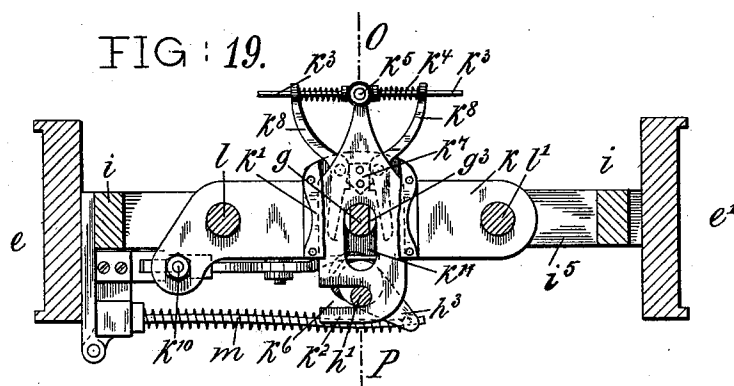
Inventor,
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by A. E. Stenforth,
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Witnesses,
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Inventor,
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UNITED STATES PATENT OFFICE.

KARL GIESE, OF OFFENBACH-ON-THE-MAIN, GERMANY.

SEWING-MACHINE FOR MAKING STRAW BOTTLE-COVERS.

SPECIFICATION forming part of Letters Patent No. 507,898, dated October 31, 1893.

Application filed March 17, 1891. Serial No. 385,400. (No model.) Patented in England April 27, 1883, No. 2,130, and April 8, 1886, No. 4,925; in Germany November 10, 1883, No. 24,617, and December 23, 1885, No. 35,872; in France May 3, 1886, No. 173,691, and in Austria-Hungary September 17, 1886, No. 11,584 and No. 38,924.

To all whom it may concern:

Be it known that I, KARL GIESE, a subject of the Emperor of Germany, residing at Offenbach-on-the-Main, in the German Empire, have invented certain new and useful Improvements in Sewing-Machines for Making Straw Bottle-Covers, (the same having been patented to me in Great Britain under Patents No. 2,130, dated April 27, 1883, and No. 4,925, dated April 8, 1886; in Germany under Patents No. 24,617, dated November 10, 1883, and No. 35,872, dated December 23, 1885; in Austria-Hungary under Patents No. 11,584 and No. 38,924, dated September 17, 1886, and in France under Patent No. 173,691, dated May 3, 1886;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for manufacturing straw wrappers for bottles.

The object of the present invention is to provide a machine for automatically producing straw wrappers for bottles of every description. The straw of which the wrapper are made, is first laid on the tray of the machine, which is then transported under a cylinder containing a part of the sewing devices, said cylinder having a variable diameter which may be adjusted to the size of the wrapper being made. The straw forming the wrapper is held on the cylinder while being sewed, and gradually drawn around the same by hand until finished, when by a movement of the machine frame, the removal of the finished wrapper from the cylinder is accomplished. The formation of the stitches is effected by needles mounted on rods vertically movable in the machine frame, while the tray carrying the straw is continuously moved forward step by step by means of an eccentric and ratchet gear.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout the several views.

Figure 1— is a side elevation of the machine. Fig. 2— is a front elevation with the cover of the straw tray opened. Fig. 3— is a plan with

the straw tray partially removed. Fig. 4— is a section on line A—B, Fig. 1. Fig. 5— is a vertical section on an enlarged scale showing the mechanism for moving the straw tray, as also the manner in which the wrapper is manipulated and the formation of the stitches. Fig. 6— is a plan of Fig. 5. Fig. 7— is a plan of the cylinder containing portions of the stitch forming mechanism drawn to a larger scale. Fig. 8— is a vertical section of the cylinder as also the straw tray. Fig. 9— is a section on line C—D, in Fig. 7. Fig. 10— is a section on line E—F, Fig. 7. Fig. 11— is a section on line G—H, Fig. 7. Fig. 12— is a partial plan showing the thread in position to be gripped by the needle. Fig. 13— is a partial vertical section, showing the thread in the same position as in Fig. 12, and the needle about to grip the same. Fig. 14— is a detail view showing the mechanism for cutting off the thread after the wrapper has been finished. Fig. 15— is a partial elevation, showing the device for setting the needles out of operation. Fig. 16— is a sectional plan on line I—K, Fig. 15. Fig. 17— shows means for increasing the size of the cylinder when making wrapper for larger size bottles. Fig. 18— shows the formation of the stitches. Fig. 19— is a section on line L—M, Fig. 1, on an enlarged scale, showing a plan of the coupling device when uncoupled. Fig. 20— shows the coupling mechanism locked in section on line Q—R, Fig. 21. Fig. 21— is an elevation of Fig. 19; and Fig. 22— is a section on line O—P, Fig. 19.

Referring to Figs. 1, 2, 3 and 4, the tray *a*, on which the straw is laid, is supported on two guides *b, b'*, pivoted to the machine frame *e, e'*, by means of the lugs *c, c'*, on shaft *d*, arranged in the frame *e*. The cover *b²* is hinged to the guide *b*, as clearly shown in Fig. 2. Running longitudinally on the bottom of tray *a*, a batten *a'* is secured, having a handle *a²* and carrying the rack *a³*. Two longitudinal strips *a⁴* and *a⁵*, are attached to the bottom of the tray and provided with spikes *a⁶*, (Figs. 5 and 15.) The end spikes *a⁶* have spiral springs *a⁷*, which support two battens *a⁶*, *a⁷* the latter being provided with holes corresponding to the rows of spikes, and on these

battens the straw to be sewed is evenly spread out. The weight of the straw is sufficient to compress the springs a^3 , so that the points of the spikes pass in to the straw layer holding the same in position (Figs. 4, 5 and 6). After the straw has been spread out on the battens a^6 , a^7 , the cover b^7 , is closed and fastened down by the catch b^3 , (Fig. 1,) the tray a is transported along the guides b , b' , in the following manner:—The cog d' loosely mounted on the shaft d engages in the rack a^3 and is provided with lateral circle of teeth d^2 in which a ratchet d^5 mounted on lever d^3 engages. The cog d' is intermittently rotated from the main driving shaft e^4 of the machine, by means of the eccentric d^7 , rod d^6 and pin d^4 and lever d^3 pivotally supported at its end by shaft d . The ratchet d^5 (Figs. 3 and 5) is pivoted to the lever d^3 at d' and actuated away from the teeth d^2 by spring d^{10} . In order to set the ratchet d^5 in operation the handle f (Fig. 3) must be brought into the position shown in dotted lines, whereby the ratchet is forced on to the teeth against the pressure of its spring d^{10} by means of intermediate lever and rod f' f^2 . The ratchet is retained in this position, by means of the nose f^6 on rod f gripping under the lever f^7 . This whole device is attached to the guides b b' (Figs. 3, 15 and 16). As soon as the tray begins to move forward, the needles must be brought into operation, which is accomplished by the herein-after described mechanism.

When the machine is set in motion by means of the treadle e^2 , the vertical rod g moves up and down several strokes without taking the needles with it. As soon, however, as the roll h^2 mounted in a lever arm at the upper end of the rod h comes against the glide bar a'' which is attached underneath the tray, and moves with it, the lever arm and roll will be turned from the position shown in dotted lines to that drawn in full, in Fig. 16. Thus the rod h is turned about a quarter of a revolution, as the lever arm is rigidly attached thereto, whereby the rod g is coupled causing the vertical motion of the needle rods in the following manner: The rod h is attached to the vertically movable frame i at i^1 and i^2 and at its lower part is turned eccentrically at h' . This eccentric h' lies in a slot k^6 in the slide plate k^2 (Fig. 19) which slides in a casing k' on plate k . This slide plate k^2 has a central slot k^3 for the reception of the rod g , while to the plate k are attached the needle rods l , l' . As soon as the rod h has been turned by means of the roll h^2 being operated as hereinbefore described, by the glide bar a'' of the advancing tray, the slide plate k^2 is pushed back as shown in Fig. 20 in dotted lines. Underneath the slide-plate k^2 and attached to the same, is a wedge k^7 , which, when the slide moves backward, is removed from between the shanks of the gripper k^8 , k^8 , causing the same to close into the slits g^3 , g^3 , of the rod g under the influence of springs k^4 , k^4 , arranged on rods k^3 ,

k^3 , pivoted to the slide at k^5 . The plate k as also the needle-rods l , l' are now coupled to the rod g and move vertically up and down with the same. As soon as the needle-rods which are guided in the cross pieces i^3 , i^4 , of the frame i , have passed up and down three times and the tray a has advanced a corresponding distance, the projection a^{10} , of the tray a , (Figs. 6 and 9) strikes the nose n' of the lever n pressing the same downward into the position shown in dotted lines in Fig. 9. This lever n is pivoted at n^3 , and moves in cavity o^3 , in the end plate o^2 , of the cylinder o (Figs. 7, 8 and 9). The lever n actuates a second lever p^3 which is rigidly attached to the rod p . To the rod p are attached, inside the cylinder, the arms p^1 , p^2 , which, by the partial revolution of the rod p are pressed against the shanks r^3 , r^4 , of the nippers r' , r^2 , hereinafter described, opening the same in the position shown in dotted lines in Figs. 7 and 10, letting go the ends of two threads previously clamped therein by hand, which must be done at the beginning of each wrapper. The ends, however, are only let loose after the needles have made the first three stitches; otherwise the thread would get loosened and the straw would be badly attached.

The arrangement of that part of the sewing mechanism which is in the cylinder is as follows:—Arranged on each side of the cylinder o are two longitudinally sliding rods r and q which project at one end through the cylinder and recesses in the side e of the frame. The ends are pivotally connected to the levers r^5 and q^3 . The rods r and q are guided inside the cylinder, in recesses o^6 in the cross-pieces o^7 . Underneath the rod q are attached two transversely projecting thread carriers q' , q^2 , while to rod r , the cheeks r' , r^2 of the thread nippers are screwed. The movable cheeks and shanks r^3 , r^4 , of the nippers are held close on to the cheeks r' , r^2 , by springs arranged in the casings r^8 which press against pins r^9 , r^9 , of the movable shanks. o^5 , o^5 , are the bearings of the rods p o^6 , the support blocks to which the transverse pieces o^7 , are screwed. o^4 , o^4 , are the orifices for the needles which are bored through bosses cast on to the cylinder. The upper part o' of the cylinder is hinged to the lower part and opens as shown in dotted lines in Fig. 11. The whole cylinder is open at the right end, while the end plate o^2 of the left end is attached by means of screws to the side e of the machine frame. The rod q is moved longitudinally backward and forward in the cylinder from the rocking-lever q^3 pivotally attached at q^4 to the projection of the frame, (Fig. 1.) The ends of the threads having been let loose by the grippers as hereinbefore described, and drawn out of the cylinder by the advancing tray, the said thread passes from the wrapper through the needle orifices o^4 , through the guide holes o^{10} in the right hand side of the bridge o^8 then through the eyes of the spring bolts o^9 and back through the left hand holes o^{10} of the

bridge o^8 , through various tightening devices hereinafter described, to the bobbins mounted on the bracket e^3 in the lower part of the machine frame e (Figs. 1 and 2). The front one of the two bridges o^8 , is provided with three holes, one of which serves to conduct the second thread which passes to the second bridge (Figs. 7 and 8). When the rod q is in a position of rest the thread carriers q' , q^2 lie behind the needle orifices o^4 (Figs. 7, 14, and 13 in dotted lines). When the rod q is drawn out, by means of the lever q^3 the carriers q' , q^2 catch up the thread and draw it over the needle orifice o^4 in the manner shown in Figs. 12 and 13, so that the needles on entering the slits or orifices o^4 , will catch the threads and draw them downward into the straw. The needles draw the threads through the straw as shown in Fig. 18, thus forming chain stitches, as soon as the needles have descended, the rod q and carriers q' , q^2 , are slid back by lever q^3 . This latter lever is actuated by the arm having a curved slit l^4 which rises and falls with the frame i , being attached to the needle rod b .

After the wrapper has been sewed in the manner shown in Figs. 5 and 6, and the ends of the thread secured against raveling out, by allowing the machine to make several stitches more than actually necessary, the guide bars b , b' with the straw tray a are now tipped into the position shown in dotted lines in Fig. 4, to enable the more convenient removal of the wrapper from the cylinder. The tipping of the tray is accomplished by turning the handle s mounted on the side b of the frame (Fig. 1), and thus withdrawing the spring bolts s' from the lever s^3 which is pivoted at s^3 . The other end of the lever s^2 is pivoted to the upright s^4 , which is rigidly attached to the guide rail or rod b . By liberating the lever s^2 from underneath the spring catch s' , the guide-rails b , b' and straw tray may be inclined downward until the said lever s^2 strikes or rests on the upper corner of the side e of the frame. A slotted flat piece b^4 is movably attached to the guide bar b in the slot of which passes the arm r^7 of the angle lever r^5 pivoted to the frame e at r^6 (Figs. 2, 4 and 8). The lever r^5 operates the rod r to which the grippers r' , r^2 are attached in the cylinder o . On tipping the guide bars b , b' and tray a , the motion is transferred to the lever r^5 which drives the rod r into the cylinder, causing the grippers r' , r^2 to open, owing to their shanks r^3 , r^4 coming against the spring stops t , t , arranged on the blocks o^5 , in the cylinder.

In the moment while the grippers are open, they grip the thread as shown in Fig. 14, and hold it fast, as they close again as soon as the shank has passed the spring stop t , under influence of their springs r^3 . In closing, they cut off the threads and the straw wrapper may be easily removed from the cylinder.

On returning the guide rods b , b' and tray

a to their horizontal position where they are secured by catch s' , the lever r^5 draws the rod r back out of the cylinder, on which movement the shanks r^3 , r^4 pass the stop t , pushing or turning them against the pressure of their springs, flat onto the cylinder wall as they have no support or stop t' on this side.

The sufficient quantity of straw only, for the particular size of wrapper being made, should be laid on the battens a^6 , a^7 , of the straw tray (Figs. 3, 4, 5, 6, and 8) so that the vertical motion of the needles b^2 , b^3 , and the forward movement of the tray a by means of its cog d' , need only be continued long enough to sew the straw, and when this is completed, the needles b^2 , b^3 , and wheel d' are disengaged so that the needles no longer rise and descend and the tray stops automatically in spite of the fact that the treadle e^2 crank e^6 , and driving shaft e^4 continue to run.

The mechanism for effecting the automatic disengagement of the devices mentioned, operates as follows: On the longitudinal-strip a^4 of the frame a is arranged an angle iron a^{11} , having a slit a^{12} , and a guiding surface a^{13} , in which it carries a sliding plate a^{14} , having an arm a^{15} bent round at right angles to it. The roll h^2 , of the vertical rod h runs on this rail a^{14} , on the guide surface a^{13} , (Figs. 15 and 16) until, owing to the advance of the tray a , the roll reaches the corner a^{16} , of the sliding plate a^{14} , where it runs off. The running off of the roll h^2 causes the rod h to turn in its bearings in the following manner: An arm h^3 is arranged on the lower end of the rod h , as shown in Figs. 1, 4, 21, and 22, in which arm is mounted a pivot h^4 . One end of the rod m , which is encircled by a spring m' , passes through the pivot h^4 . As soon now, as the roll h^2 , runs off its supporting slide a^{14} , the spring m' presses against arm h^3 and turns the rod h to a certain extent, whereby the eccentric part h' of the rod h pulls the slide plate k^2 , forward, pressing the wedge k^7 against the projections k^9 , of the grippers k^8 , and opening the same, thus withdrawing their cheeks from the notches g^3 and freeing the rod g as shown in Fig. 19, in dotted lines. In order to prevent the gripper k^8 from opening while the plate k and the whole locking device are in a raised or partially raised position, whereby the same would fall down and damage the mechanism, the following device is provided: The automatic disengaging mechanism cannot operate until the set screw k^{10} , of the plate k strikes the thumb m^2 , which it presses downward. This in its turn depresses the lever m^3 , causing its end to disengage from behind the stop h^5 on the back of the lever h^3 , so that the rod h cannot turn and effect the uncoupling until the lock is at its lowest position. When the needle rods are coupled, the set screw k^{10} , will, it is true, depress the lever m^3 , at every stroke, but this does not affect the working as its end simply falls back behind the catch of the arm h^3 again, on the ascent.

of the needle rods i , the rod h not being able to turn until the roll h^2 has run off its guide surface a^4 .

The rail a^{14} , of the angle iron a^{11} , besides
 5 actuating the disengaging device, also serves to set the pawl d^5 out of gearing with the ratchet-crown d^2 , of the driving wheel d' in the following manner: The arm a^{15} projecting at right angles to the rail a^{14} , projects over
 10 the lever f^7 . As the tray a and with it the rail a^{14} , advances, the transverse arm a^{15} , strikes the projections f^8 , of the lever f^7 , thus on advancing further depressing lever f^7 and elevating the end of the same, which had
 15 hitherto retained the rod f^4 with its projection f^6 . The lever f^4 is thus freed (Fig. 15) and springs into the position shown in Figs. 1 and 3 under the influence of its spring f^5 . Thus, the rod f^2 by means of the intermediate
 20 connections f' , f^4 is retracted from the pawl d^5 allowing the flat spring d^{10} to operate freely, when it detracts the pawl d^5 from the ratchet toothing. The tray a is now stationary, even when the lever a^3 which is pivoted
 25 to the shaft on both sides of the wheel d' for the sake of greater stability, continues to oscillate, thus obviating the necessity of a loose pulley in the driving gear. The tray a may be pulled back into the position shown in
 30 Fig. 3, by means of the handle a^2 .

In order to make wrappers of a larger diameter, an extra piece v is attached to the cylinder, as shown in Fig. 17. The prolonged operation of the sewing mechanism as also a
 35 later disengaging of the various devices is accomplished in the following manner. The rail a^{14} is slid farther along in its slit a^{13} and guiding surface a^{13} , thus necessitating the roll h^2 to describe a longer way, before it
 40 reaches the end a^{16} , and the arm a^{15} will depress the lever f^7 later. The quantity of straw laid on the tray a also varies with the size of the wrapper to be made. The two threads coming from the bobbins w, w , are held tight,
 45 by being taken first through the guide holes of the holder x , then to the clamp disks x' , round the rollers x^2 , through the guide x^3 , under the guard x^5 , and finally back through the guide x^4 , through openings in the frame
 50 at the end of the cylinder o , and then further in the manner as hereinbefore described.

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

55 1. In a machine for making straw wrappers,

a cylinder or former adjustable to the size of the desired wrapper the sewing device, a carrier or tray for conveying the straw under the cylinder, mechanism for giving the tray a step by step movement and mechanism for
 60 removing the finished wrapper from the former, substantially as described.

2. In a combination with a tray or carrier and mechanism for moving it forward step by step, the forming cylinder, the frame and
 65 needles mounted on vertically movable rods and means for giving the needle rods a rotary movement, substantially as set forth.

3. In combination with a tray or carrier, and the machine frame, rods vertically-mov-
 70 able in the said frame, needles mounted on said rods, the rod h means to rotate the same, a vertically movable frame carrying said rod, substantially as described.

4. In combination with a tray or carrier,
 75 and the machine frame, rods vertically-movable in the said frame, needle mounted on said rods, the rod h means to rotate the same, and a vertically movable frame carrying said rod, and having eccentric portion h' ,
 80 and a slide plate having a slot in which said eccentric portion works, substantially as described.

5. In combination with a tray or carrier, and the machine frame, rods vertically-mov-
 85 able in the said frame, needles mounted on said rods, the rod h means to rotate the same, and a vertically movable frame carrying said rod, and having eccentric portion h' , and a slide plate having a slot in which said eccentric
 90 portion works, and the rod g working in a slot in said plate, substantially as described.

6. In combination with a tray or carrier, and the machine frame, rods, vertically-mov-
 95 able in the said frame, needles mounted on said rods, the rod h means to rotate the same, and a vertically movable frame carrying said rod, and having eccentric portion h' and a slide plate having a slot in which said eccentric
 100 portion works and the rod g working in a slot in said plate, and the well h^2 and plate k , substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

KARL GIESE.

Witnesses:

ALVESTO P. HOGUE,
 JEAN GRUND.