

(No Model.)

H. C. KRUSE.

SIPHONIC DISPENSER FOR VITRIOL, &c.

No. 412,191.

Patented Oct. 1, 1889.

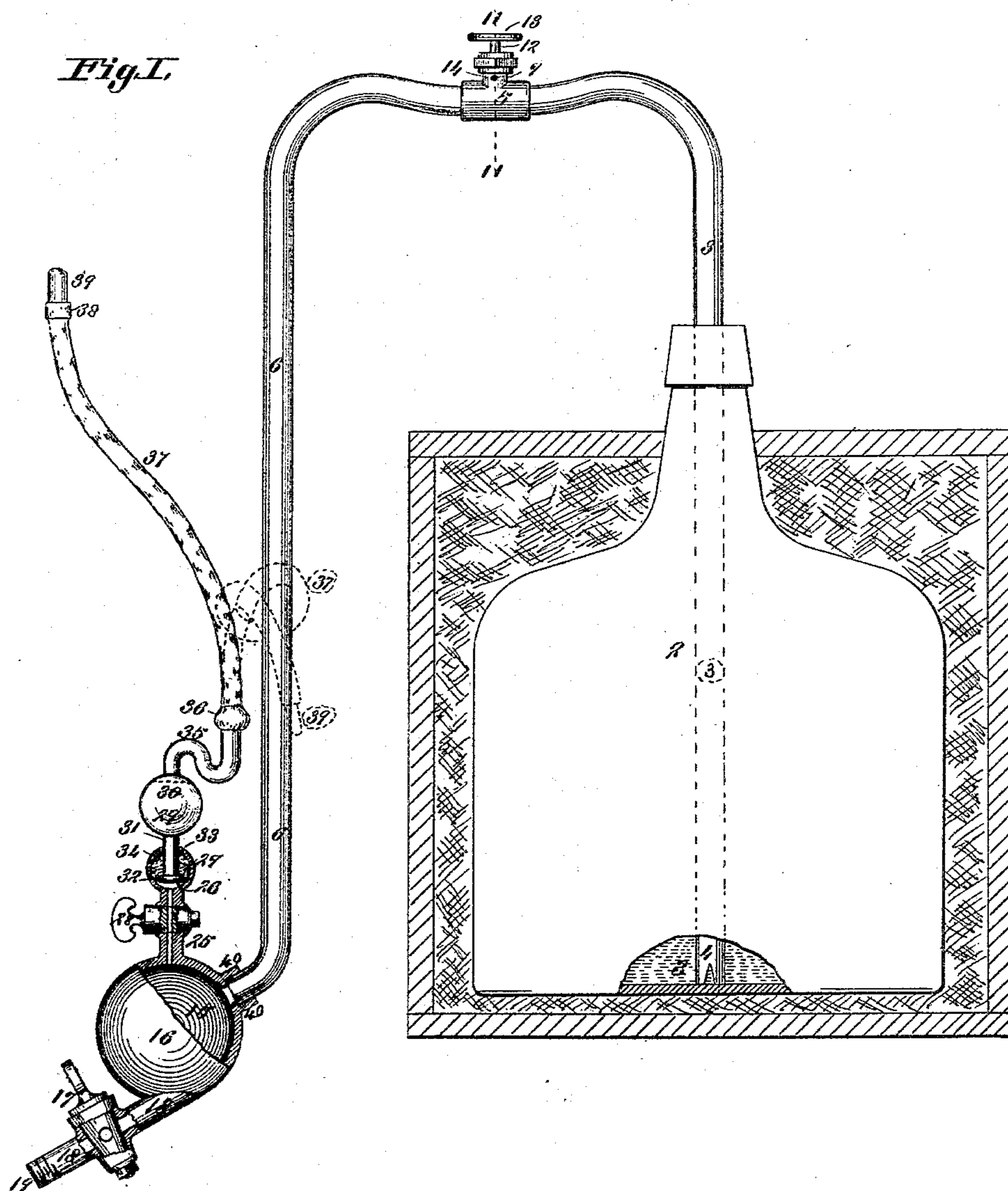
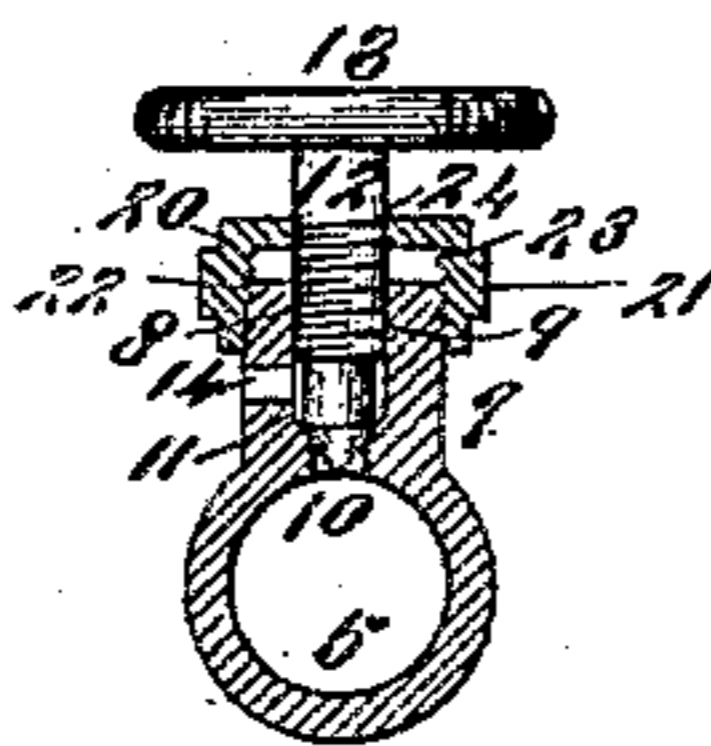


Fig. II.



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SIPHONIC DISPENSER FOR VITRIOL, &c.

SPECIFICATION forming part of Letters Patent No. 412,191, dated October 1, 1889.

Application filed November 22, 1888. Serial No. 291,572. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. KRUSE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Siphonic Dispensers for Vitriol, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to a siphonic apparatus for the transfer of vitriol and other liquids from one vessel to another; and the invention consists in features of novelty hereinafter fully described, and pointed out in the
15 claims.

Figure I is a vertical section of the carboy-case, and also shows the bottle inclosed in said case, (with part broken away to show the inlet to the siphon,) the sectional siphon, the
20 globe-chamber, its attendant valves, the transparent indicator, and draw-tube; and Fig. II is a vertical section taken on line II II, Fig. I, and shows the action of the cut-off valve, which relatively opens and closes the air-port
25 at the junction of the sectional pipe.

Referring to the drawings, in which similar figures of reference indicate like parts in all the views, 1 represents a carboy-case that incloses a bottle 2, that contains the vitriol or
30 other liquid to be dispensed.

3 represents the initial or receiving section of the siphon-pipe which enters the mouth of the bottle, and which is provided with a notched base 4, that allows free passage for
35 the entrance of the liquid into said pipe. The upper end of said section is bent around from the vertical to nearly a horizontal position, and at its terminal enters the coupling-pipe joint 5, in the reverse end of which pipe-joint
40 is inclosed the junction terminal of the secondary or delivery section 6 of the siphon-pipe, the joints being made tight by soldering or other suitable means.

The coupling-pipe joint has a tube-stud 7, that rises vertically from the middle of the same. The inner surface of the tube 8 of said vertical stud has a screw-thread 9 at top and carries its size down to within a short distance of the coupling-pipe joint, from which a reduced bore connects the tube above with the
50 coupling-pipe below, making an air-port en-

trance 10 to the siphon. In the interchange between the diverse diameters of the bores is provided a bevel-seat 11 for the bevel-point of the screw-stem 12 of the pneumatic screw-
55 valve 13, whose screw engages with that of the tube. An air-port 14 communicates with the tube 8, and when the screw-valve 13 is elevated sufficiently off its bevel-seat the air rushes in through said port and down through
60 the port 10, and thus cuts off the siphonic connection at that point, and attraction of gravity then causes the liquid at the initial section of the pipe to run down into the bottle in the carboy and that in the secondary or de-
65 livery section down into the globe-chamber 15 within the globular incasement 16, into which said section of the siphon-pipe delivers, and within the flange-collar 40 of which the said section-pipe has an air-tight joint. From
70 said globe-chamber (supposing that the cut-off cone-valve 17 is open, having received one-quarter turn from that shown in Fig. I) the liquid then passes through the mouth or nozzle of the discharge-pipe 18 (in which pipe
75 said valve is seated) into the vessel that is in the course of filling. The said discharge-pipe extends from the globe-chamber 15 to the outlet that empties into the reception-vessel.

The screw-threaded end 19 of the discharge-
80 pipe may, if desired, have a nozzle of any usual construction secured by a corresponding screw thereon; also, if the vessels to be filled are at a distant point or on a lower floor, another section of pipe may be attached
85 by being coupled to the section 18 by one of the usual pipe-coupling joints.

The valve 17, as shown in Fig. I, is in the cut-off position, to which position it is turned when it is desired to stay the flow of the liq-
90 uid when the reception-vessel is filled, part of the discharge-pipe being broken away in said figure to show the cut-off action of the valve when its tube-opening is crosswise of that of the discharge-pipe instead of coinci-
95 dent therewith, as it is at the time of flow.

20 represents a packing-cap that may surmount the tube-stud 7, the inner surface of the vertical flange 21 of which cap is screw-threaded and engages on the corresponding
100 screw-thread 22 around the outer surface of the tube-stem, leaving a packing-chamber 23

around the stem of the screw-valve 13, which stem works through a perforation 24 in the top of the packing-cap. While I prefer to use this packing-cap, yet, especially where
 5 the siphon is used for the transfer of innocuous liquids, the packing-cap may be dispensed with, for the pneumatic screw-valve is operative without it to relatively open and cut off the air-ports, and thereby relatively sever
 10 or guard (as the case may be) the siphonic flow of the liquid within the pipe.

25 represents a vertical pedestal-tube that surmounts the summit of the incasement of the globe-chamber 15, with which chamber said
 15 tube communicates, and 26 is a globe-chamber whose incasement 27 surmounts said pedestal-tube and is integral therewith. The tube within the pedestal communicates with both the globe-chambers 15 and 26, and a cut-
 20 off cone-valve 28, that is seated in said pedestal across the line of tube, relatively cuts off the flow of the liquid or allows free passage thereto, according as its transverse port is thrown out of or into coincidence with the
 25 line of the tube.

The sectional siphon-pipes, the coupling-pipe joint, the globular incasements, and the screw and cone-valves are all preferably made of suitable composition metal, which is able
 30 to withstand the attacks of vitriol and other strong acids that are dispensed by the siphon. A suitable composition for the purpose is composed of block-tin and lead, with a sufficient amount relatively of antimony,
 35 bismuth, and copper to harden the same or give it stability, care being exercised that there be not too large an addition of these britannia elements of the alloy to render the composition susceptible to the disintegrating
 40 influences of the acids. At the same time it should be understood that the valves, being subject to frictional wear, require a larger proportion of the hardening elements of the alloy than do the pipes and globular incase-
 45 ments.

I do not claim any novelty in the above formula for the composition used. Neither do I confine myself to said formulated composition, for any suitable composition may be used
 50 that will at the same time resist the disintegrating influences of strong acids and yet possess sufficient hardness and stability to prevent distortion of the parts; but I do call attention to necessary qualifications in the alloy
 55 used for reasons given, for the guidance of those who make use of my invention under the patent, if one issues therefor.

29 represents a glass hollow globe, which incloses the indicating-chamber 30, for recording
 60 the effusion of the liquid through the siphon-pipe. A pendent glass pipe 31, integral with said globe and having a terminal rim 32, is inserted through the aperture 33 in the summit of the incasement of the globe-chamber 26, and is surrounded in said chamber by
 65 packing 34, that prevents the leakage of the liquid, the terminal rim on said pipe also

holding it from withdrawal from its seat. A surmounting glass pipe 35, also provided with a terminal rim 36, rises from the summit of
 70 the glass globe, with which it is integral, and forms in conjunction therewith and with the pendent pipe a clear passage for the liquid through from the tube of the pedestal 25 (that surmounts the globe-chamber 15) to the rub-
 75 ber tube 37, whose lower terminal has an elastic clutch around the upper terminal rim of the glass indicating-pipe.

The upper terminal of the rubber tube embraces around the projecting rim 38 of the
 80 tubular mouth-piece 39.

The operation of the apparatus is as follows: The two sections 3 and 6 of the siphon-pipe are coupled together at their upper ends
 85 by the pipe-joint 5, so as to effect an air-tight connection, the bevel-pointed seat of the pneumatic valve being screwed down onto its seat, so as to close the air-ports 10 and 14, and thus secure an air-tight passage through the siphon. The lower terminal of the delivery-section of
 90 the pipe being inclosed with an air-tight joint 40 in the incasement of the globe-chamber 15, the valve 17 is turned to its cut-off position, as shown in Fig. I, and the valve 28 to its open-port position, as in said figure. The op-
 95 erator then inserts the initial end of the siphon in the carboy or other vessel from which the liquid is to be dispensed, and through the mouth-piece 39 withdraws the air from the siphon, creating a vacuum therein, which
 100 siphon-pipe and globe-chamber is immediately filled with the contents of the vessel, which is registered by the rising of the liquid in the indicating-chamber 30 within the glass globe, as shown by broken line in said globe in Fig. I. The operator then immediately closes the
 105 cut-off valve 28 and the siphonic connection is complete, but cannot ascend higher in the glass indicating-pipe and globe, because its ascent has been arrested by the closing of said
 110 valve. The mouth 19 of the discharge-pipe 18 is then inserted within the mouth of the bottle or other vessel to be filled and the cut-off valve 17 turned to bring its open port in line with the discharge. When the amount
 115 required for the filling of said vessel is drawn, the cut-off is immediately reversed and the flow thus stayed while the filled vessel is removed and another inserted in its place, which operation is repeated until the
 120 carboy or other vessel from which the liquid is being dispensed is emptied. The siphon may be kept full, if desired, and passed from one carboy (or other vessel) to another until any number of them that it is required
 125 to empty shall have been operated on, if the contents of the vessels are the same, so as to only require the one drawing to effect continuous siphonic action.

It will of course be understood that the same
 130 siphons are not to be used for dispensing diverse antagonistic ingredients, and also that siphons that have been used for vitriol or other noxious liquids are not afterward to be

used for distributing those that are of an innocuous nature.

When it is desired to cut off the siphonic connection at the pneumatic valve 13, the valve is unscrewed, thereby lifting its bevel-point from its seat and opening the air-ports 10 and 14, when the contents of section 3 will run back by its own gravity into the carboy and that of section 6 into the reception-vessel that is being filled.

Although I prefer to construct my siphon with section-pipes and couple them at their summit, as shown and described, and provide said coupling-pipe and its tubular T-stud with the pneumatic cut-off valve, as stated, yet when a cheap siphon with the other elements of my invention is desired one continuous pipe may be used, dispensing with the sectional joint-pipe 5 and its valve. When the siphonic current is effected through the siphon and the cut-off valve 28 is closed, the rubber tube 37 may be loosely looped or knotted, as shown in broken lines in Fig. I, to prevent its hanging down in the way of the operator.

I claim as my invention—

1. In a siphonic dispenser, the combination of the siphon conductor-pipe, the globular incasement 16, that incloses the chamber into which said pipe discharges, the surmounting tube 25, having a packing-chamber 27, filled with packing, a gage having a stem embedded in said packing and communicating with tube 25, a suction-pipe connected to said gage, the discharge-pipe 18, and the cut-off valve 17, substantially as and for the purpose set forth.

2. In a siphonic dispenser, the combination of the siphon conductor-pipe, the globular incasement that incloses the chamber into which said pipe discharges, the discharge-pipe 18, the cut-off valve 17 in said pipe, the pedestal-tube 25, with its globular incasement that incloses the chamber 26, the glass indicating-pipe with its recording-bulb, the rubber tube 37, and mouth-piece 39, for withdrawal of air from the siphon to cause a vacuum in the siphon and effect the siphonic current therein, substantially as and for the purpose set forth.

3. In a siphonic dispenser, the combination of the sectional pipes, the coupling-pipe joint that connects them, the tubular T-stud that surmounts said joint, provided with air-ports, the pneumatic valve that opens and closes said ports, the globular incasement that incloses the globe-chamber 15, the discharge-pipe 18, the cut-off valve 17 in said pipe, the pedestal-tube 25, with its globular incasement that incloses the chamber 26, the glass indicating-pipe with its recording-bulb, its pendant pipe being seated in the chamber 26, the packing around said pipe in said chamber, the rubber tube 37, and mouth-piece 39, for the withdrawal of air from the siphon to cause a vacuum and effect a siphonic current of the liquid being dispensed therein, substantially as and for the purpose set forth.

HENRY C. KRUSE.

In presence of—

BENJN. A. KNIGHT,
SAML. KNIGHT.