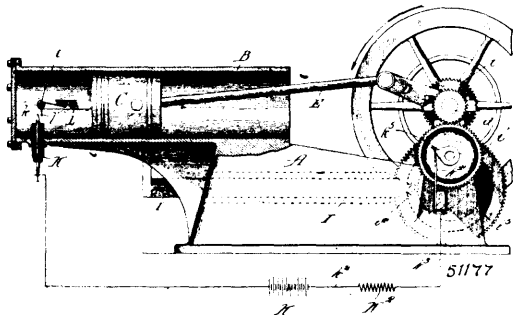


forate band and bottom, of the stove pipe opening at one end, the draught pipe extending downwardly from the top at the opposite end and the internal lining extending down from the top to the level of the bottom of the draught pipe and the opening for the wood and suitable cap therefore, as and for the purpose specified. 3rd. In a stove, the combination with the imperforate band and bottom, of the stove pipe opening at one end, the draught pipe extending downwardly from the top at the opposite end into the stove and provided with an upper bend and downwardly extending outside portion and the opening for the wood provided with a suitable cap, as and for the purpose specified.

**No. 51,177. Explosion Engine and Method of Mixing and Volatilizing Gases in the same.**  
(Machine explosive et methode de mélange et volatisation du gaz.)



Thomas Kane, Chicago, Illinois, assignee of Edward Joel Pennington, Racine, Wisconsin, both in the U.S.A., 1st February, 1896; 6 years. (Filed 2nd November, 1895.)

*Claim.*—1st. The herein described method of perfecting the volatilization of liquid hydro-carbons, which consists in first compressing a charge of liquid hydro-carbon and air, and then applying an electric spark to the mixture of air and hydro-carbons before final compression thereof, substantially as described. 2nd. In explosion engines, the herein described method of volatilizing and exploding a mixture of gas and air, which consist in first admitting a charge of hydro-carbon and air, then applying an electric spark to the charge previous to final compression thereof, and then igniting the explosive charge by a second electric spark after final compression to explode the same, substantially as described. 3rd. In explosion engines, the method herein described of first admitting an explosive mixture of hydro-carbon oils and air into a cylinder or other receptacle, then primarily heating the explosive charge by an electric spark just previous to the final compression thereof, and the secondarily igniting the explosive mixture by an electric spark after the final compression of such mixture to explode the same substantially as and for the purposes set forth. 4th. In an explosion engine, the combination of a frame portion provided with a cylinder, a reciprocating piston moving in such cylinder, a rigid electrode on one of such portions, the cylinder or reciprocating piston, an elastic electrode formed of a helically coiled spring on the other portion with its free end arranged to contact the rigid electrode and be snapped thereby during the reciprocation of the piston, substantially as described. 5th. In an explosion engine, the combination of a frame portion provided with a cylinder, a reciprocating piston movably mounted therein, an electrode on such cylinder portion and an electrode on the reciprocating piston, both of such electrodes so constructed and arranged that when in an electric circuit they form a primary spark previous to the ending of the backward movement of the piston, and a secondary spark after the piston has begun its forward motion, substantially as described. 6th. In an explosion engine, the combination of a cylinder portion, a reciprocating piston mounted therein, a rigid electrode on such cylinder portion and an elastic electrode on the piston portion, both of such electrodes being so arranged when in electric circuit that a primary electric spark is formed previous to the ending of the backward stroke of the piston, and a secondary spark is formed after the piston has begun its forward motion, substantially as described. 7th. In an explosion engine, the combination of a cylinder portion, a reciprocating piston mounted therein, a rigid electrode mounted in such cylinder, and an elastic helically coiled electrode mounted on such piston portion, both of such electrodes being so arranged that when an electric circuit is formed a primary spark is formed just previous to the end of the backward motion of the piston, and a secondary electric spark is formed immediately after the piston has begun its forward motion, substantially as described. 8th. In an explosion engine, the combination of a cylinder, a reciprocating piston mounted therein, a rigid yoke electrode mounted in the cylinder portion, a supporting bridge mounted on the piston portion, and an elastic helically coiled spring electrode on such supporting bridge portion arranged in connection with the rigid electrode to form an electric spark just previous to the ending of the backward motion of the piston, and a secondary electric spark immediately after the piston has begun its forward motion, substantially as described. 9th. In an explosion engine, the combination of a cylinder

made of thin material adapted to rapidly radiate heat, a rigid electrode projecting within the cylinder at or near its head portion, a reciprocating piston mounted on such cylinder, and a spring electrode projecting from the piston portion to contact the rigid electrode just before the piston reaches the final limit of its backward motion and form a primary electric spark, and to form a secondary electric spark immediately after the piston has begun its forward motion, substantially as described. 10th. In an explosion engine, the combination of a frame portion provided with a cylinder, a piston movably mounted therein, and two electrodes arranged to contact with each other during the movements of the piston and form a primary spark previous to final compression of gasses and air, and a secondary exploding spark after such final compression, substantially as described.

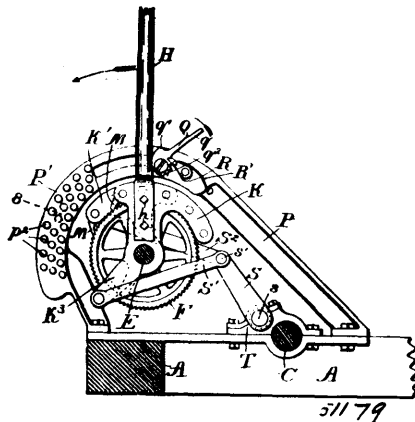
**No. 51,178. Pipe. (Pipe.)**



Charles W. Foster, Brooklyn, New York, U.S.A., 1st February, 1896; 6 years. (Filed 8th November, 1895.)

*Claim.*—1st. In a pipe, the combination with the bowl and stem, of a removable cup in the bottom of the bowl provided with a downward directed extension, a tube which extends through the stem and communicates with said extension, and a mouth piece connected with said tube and stem, substantially as shown and described. 2nd. In a pipe, the combination with the bowl and stem, of a removable cup in the bottom of the bowl provided with a downwardly directed extension, a tube which extends through the stem and communicates with said extension, and a mouth-piece connected with said tube and stem, said tube being surrounded by an angular chamber, substantially as shown and described. 3rd. In a pipe, the combination with the bowl and stem, of a removable cup in the bottom of the bowl provided with a downwardly directed extension, a tube which extends through the stem and communicates with said extension, and a mouth piece connected with said tube and stem, said tube being surrounded by an angular chamber, and said tube being divided longitudinally, or composed of two separable parts, substantially as shown and described.

**No. 51,179. Saw-Mill Set Works. (Charriot de scierie.)**



Henry McDermott, Merinette, Wisconsin, U.S.A., 1st February 1896; 6 years. (Filed 8th November, 1895.)

*Claim.*—1st. In a saw-mill set works organization, the combination with a main set shaft, and gearing connecting said shaft with the knees, of receding springs placed under tension on said shaft and normally tending to withdraw said knees away from the saw line, a gear-wheel fast on said shaft, a counter shaft parallel to said set shaft, a pinion loose on said counter shaft and meshing in the gear-wheel on said set shaft, a spring-actuated clutch coupling normally connecting said pinion to said counter shaft, a hand lever for releasing said clutch coupling, when desired, and ratchet and pawl arrangement mounted on said counter shaft, with a hand lever for turning said ratchets, and so causing said counter shaft and clutch coupling to turn said pinion whereby motion is transmitted to said gear-wheel and to said set shaft, substantially as described. 2nd. In a saw-mill set works organization, the combination with a main set shaft and gearing connecting said shaft with the knees, of receding springs placed under tension on said shaft, and normally tending to withdraw said knees away from the saw line, a counter shaft, a pinion loose thereon, with gearing connecting said pinion with said shaft, a spring-actuated clutch coupling normally connecting said pinion to said counter shaft, a hand lever for releasing said