

THE CAR'S WATER TANK HOLDS ABOUT 30 GALLONS OF WATER. AS THE RECYCLING OF BOILER WATER IS NOT TOTALLY EFFICIENT ESPECIALLY ON HOT DAYS SOME WATER IS STILL LOST BY EXCAPING STEAM. WHEN THE STANLEY STEAMER WAS DESIGNED HORSE TROUGHS WERE COMMONPLACE AND IT WAS COMMON PRACTICE TO DROP A HOSE INTO A TROUGH AND START THE STEAM SYPHON TO FILL THE WATER TANK.

MOVING THE LEVER ON THE STEERING COLUMN CONTROLS THE OPENING OF A SPECIAL VALVE WITHIN THE THROTTLE. THE DESIGN OF THE THROTTLE IS "BALANCED" IN THAT THE PRESSURE OF THE STEAM DOES NOT CAUSE THE THROTTLE TO CHANGE POSITION ONCE SET BY THE DRIVER.

STEAM FROM THE THROTTLE IS CALLED SATURATED STEAM MEANING THAT IT IS THE SAME TEMPERATURE AS THE WATER. SATURATED STEAM WILL CONDENSE BACK INTO WATER RATHER EASILY SO AFTER LEAVING THE THROTTLE THE STEAM IS PASSED THROUGH A PIPE ROUTED WITHIN THE MAIN BURNER FIRE TO ADD "SUPERHEAT". THE PIPE IN THE BURNER IS CALLED THE SUPERHEATER. PASSING THE STEAM THROUGH THE SUPERHEATER RAISES THE TEMPERATURE OF THE STEAM AND GREATLY REDUCES ITS ABILITY TO CONDENSE BACK INTO WATER.

STANLEY BOILERS TYPICALLY GENERATE BETWEEN 500 AND 600 POUNDS OF STEAM PRESSURE. A SAFETY RELIEF VALVE INSURES BOILER PRESSURES NEVER RISE TOO HIGH ABOVE THIS LEVEL. DUE TO THE UNIQUE AND NEARLY FAILSAFE STANLEY BOILER DESIGN, NO DOCUMENTED STANLEY BOILER EXPLOSIONS ARE KNOWN.

UNDER THE HOOD LEFT SIDE

BOILER STEAM PRESSURE IS APPLIED TO THE TOPSIDE OF A DIAPHRAGM AND ACTS AGAINST A HEAVY SPRING ON THE BOTTOM SIDE OF THE DIAPHRAGM. WHEN THE STEAM PRESSURE OVERCOMES THE SPRING PRESSURE THE DIAPHRAGM MOVES. THE DIAPHRAGM'S MOTION PUSHES A VALVE ROD THAT STOPS THE FLOW OF KEROSENE TO THE MAIN BURNER.

THE BOILER WATER LEVEL INDICATOR IS PIPED TO THE TOP AND BOTTOM OF THE BOILER SO THAT THE WATER LEVEL IN THE INDICATOR EQUALS THAT OF THE BOILER. A FLOAT MOVING INSIDE THE UNIT ROTATES A SHAFT THAT MAGNETICALLY COUPLES TO THE NEEDLE OF THE INDICATOR. THE DIAL FOR THE WATER LEVEL INDICATOR IS MOUNTED ON THE FIREWALL TO THE RIGHT OF THE BRAKE PEDAL.

THE STEERING BOX CHANGES STEERING WHEEL MOTION INTO WHEEL MOVEMENT. A SPUR GEAR DESIGN CHANGES THE ROTATIONAL MOVEMENT OF THE STEERING WHEEL INTO LINEAR MOTION FOR A SERIES OF RODS THAT MOVE THE FRONT WHEELS TO STEER THE CAR.

WHEN STEAM IS GENERATED WITHIN THE BOILER IMPURITIES AND SEDIMENT SUCH AS RUST REMAIN BEHIND IN THE WATER. OVER TIME THIS CONCENTRATION OF IMPURITIES CAN INCREASE AND CAUSE BOILER DAMAGE. AT THE END OF EACH OPERATING DAY MULTIPLE BLOWDOWN VALVES ARE OPENED AROUND THE LOWER PERIMETER OF THE BOILER TO REMOVE IMPURITIES AND SEDIMENT WHICH SETTLE AT THE BOTTOM OF THE BOILER. TYPICALLY ALL BOILER WATER IS DISCHARGED LEAVING ONLY STEAM BEHIND. WHEN THE BOILER COOLS THE STEAM CONDENSES AND CREATES A VACUUM WHICH IN TURN DRAWS WATER FROM THE WATER TANK. ONCE THE BOILER HAS FULLY COOLED THE BOILER WILL HAVE SYPHONED FULL OF WATER AND IS READY FOR THE NEXT USE.