As autonomous software and robot hardware enable improved teleoperation, focus has increasingly moved toward increasing battery life. One critical driver of battery life is the weight of the robot – and especially the weight of the end effector – which can disproportionately impact the power draw of a robotic arm. In this paper, we present the design of a novel parallel jaw gripper that incorporates compact, lightweight, active 2—speed gearboxes, thereby enabling the overall gripper to be inherently lightweight. The gripper weighs 20% of comparable commercial grippers with similar force and speed performance. A fabricated prototype gripper achieves similar performance and is demonstrated grasping a variety of objects. Finally, the gripper is integrated with YOLO v5 and autonomously grasps the same set of objects, demonstrating the gripper's potential for teleoperation while potentially improving battery life significantly.