



HEAVY CUTTING SHEAR.

plied with a clutch on the main crank shaft, on which shaft, when the clutch is in operation, the driving gear runs loose. The improvement consists in keying this gear rigidly to the crank shaft and placing a friction clutch upon the pinion or fast-speed shaft. The shifting bar operating this clutch is connected with a lever and counterweight, shown at the left-hand side of cut. On the main crank shaft is a cam operating a slide working in vertical guides upon the housing. The mechanism is so arranged that when the cranks are in their upper position, so that the shear knives are open to receive the work, a latch in the slide acts to raise the counterweight and hold the friction clutch out of gear, thus allowing the cutter bar to stand at rest. Depressing the treadle throws the latch out of gear, allowing the weight to drop, which action throws the clutch into operation and starts the machine. When the crank shaft has made one revolution the cam above referred to depresses the slide, thus lifting the counterweight and stopping the machine.

As these motions are very easy, there is said to be no shock or jar in starting, and as the train of gearing is at rest when the cutter bar is not moving, the shaft is held securely with the cranks at their top center, with no tendency to drop back or ahead, even though no counterweight is used to balance the cutter bar.

The cutting blades are 8 feet 4 inches long, and there is sufficient gap in the housings to allow a plate 36 inches wide being split through the center. Im-

mediately in front of the cutter bar is a clamping bar, which, when the machine is started, automatically descends and securely holds the work in place while the shearing is taking place.

The machine is geared about 20 to 1, and is driven by a plain side-valve engine, 12x15 inches, which is attached directly to the housing. The crank shaft is of hammered steel, with cranks forged solid and slotted out. In order to compensate for wear of the blades, the lower one is supported on a long wedge, by setting up on which the cutting edge of the blade is kept level with the table. The upper blade is adjusted downward by lowering the cutter bar bodily. The machine weighs complete about 45,000 pounds.

BLACK WALNUT.

Black walnut is rapidly becoming exhausted, and there seems to be nothing in this country to take its place. No other tree is so valuable. It grows rapidly, will thrive in any soil and is very hardy, requiring very little care because no animal and but one insect feed upon it. It has a value but little known, which is, that the European or French walnut, as it is called, grows firmly upon it, and is easily grafted. It can in that way be made to yield a fortune, if cultivated on a large scale. In twenty years it will more than pay all expenses and interest; and in fifty years the trees would be worth at least \$40,000 an acre.