states that the knives are quite sufficient for dealing with small trees. They have cut trees 4 in. in diameter. He also states that the slight angle at which the cutting knives are placed makes the plough somewhat slower in its progress through a slide, but the knives do not break when they strike obstructions such as rocks and trees.

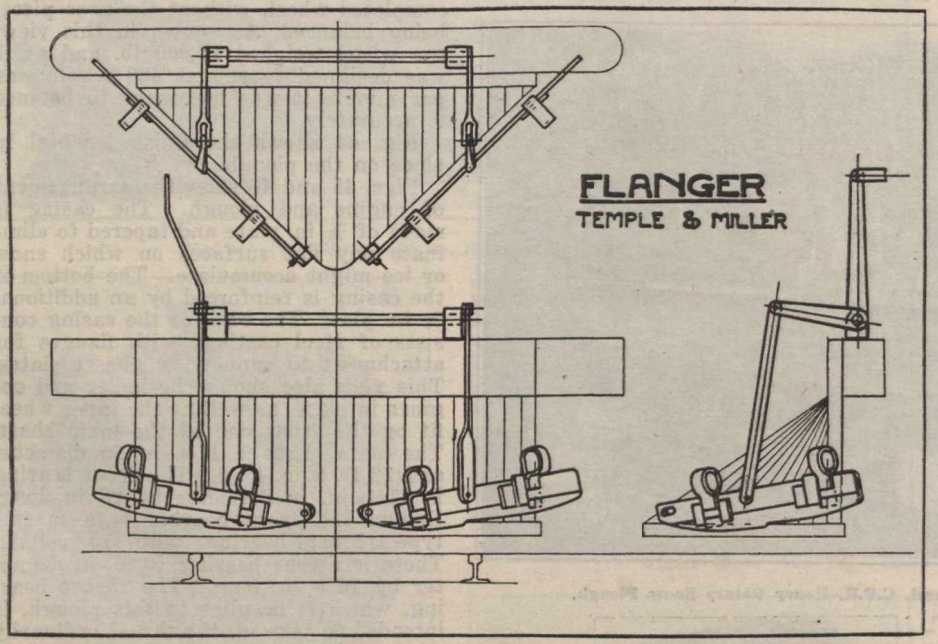

Figure 48.

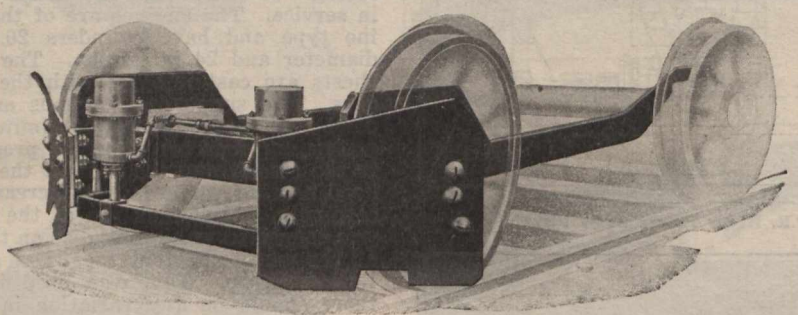

Fig. 49. The Ray Flanger.

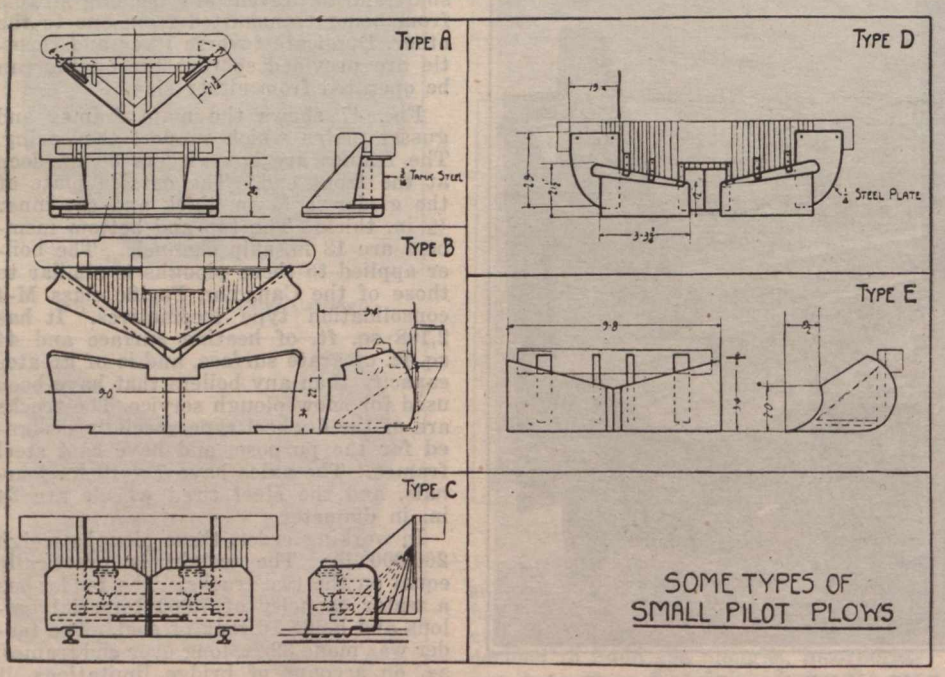

Figure 52.

Flangers.—In order to properly clean up the track and to clear out the space between the rails for a depth of from 2 to 4 in., flangers are generally used. Flangers are applied either to the front of the locomotive, temporarily to box cars or flat cars, or permanently to snow ploughs or flanger cars. Fig. 48 shows one of the early type of flangers used on locomotives. It was known as the Temple and Miller type. It consisted of a knife-like blade, one end of which was pivoted to the nose of the locomotive pilot. It was lowered and raised by means of lever connections from the locomotive cab, and when down in working position was practically parallel to the side of the pilot. The blade was made in two pieces. The lower one, which could readily be removed or replaced, formed the cutting plate or shoe, and was attached to the upper one by means of springs.

An improved type was known as the Priest flanger. Its general arrangement is similar to that of the Ray type described later, except that it was raised and lowered through a system of levers similar to those of the Temple and Miller flangers, the motive power being supplied by an air cylinder bolted through the running board of the locomotive. The

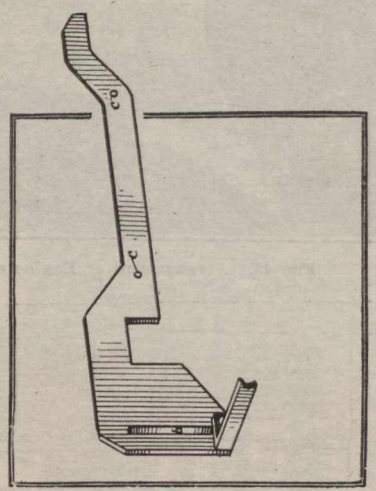

Fig. 50. The Ray Flanger.

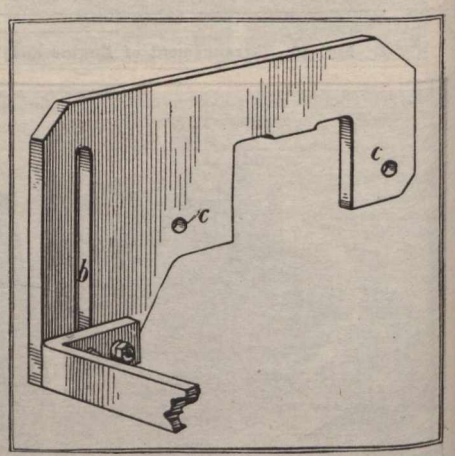

Fig. 51. The Ray Flanger.

manufacturers of the Priest flanger developed the Ray flanger. This widely used flanger is shown in figs. 49,50 & 51. These illustrations show how the air cylinders for raising and lowering the flangers are bolted to the cross tie which connects the front end of special equalizers. The flanger is held in raised position by means of a strong spring in each cylinder. The air is used only to keep the flanger down in operating position. These flangers make a cut 2 in. deep on the inside of the rail and 1 in. deep on the outside. The total width of the cut is about 20 inches. Air for the cylinders is supplied from the locomotive main reservoir, the operating valve being located in the cab within easy reach of the engineer. Ray flangers are made in different styles. By extending the inner edges of flanger blades a very useful combination snow plough and flanger is made. Such a type