

STRIKING TRAINS

This section describes in some detail the striking mechanism, featuring the unique after strike, found in most Morbier clocks. There are also general treatments of the quarter strike, alarm mechanism, and calendar, and some additional notes on the historical development of the striking train.

There is considerable variety in the striking mechanism of Morbier clocks. Most strike the hour, repeating a minute or two later (the after strike), and strike the half hour with the same mechanism. Others strike and repeat the hour, but the half hour has a passing strike using a pin on the minute wheel and a separate hammer. In the quarter strike there are two-train and three-train movements, some having the after strike and some not. A few three-train, quarter strike clocks repeat the hour with each quarter (*grande sonnerie*). Almost all are based on the same rugged mechanism with a snail and a double-sided rack (which the French call *échelle*, or ladder) that

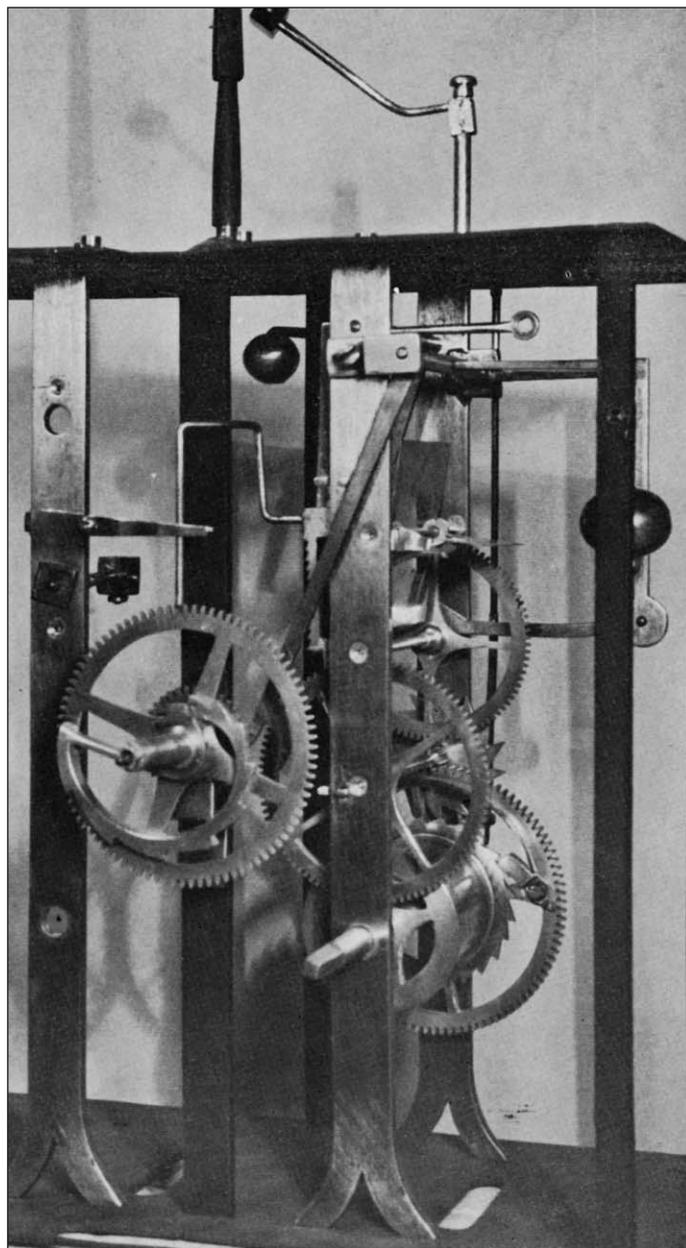
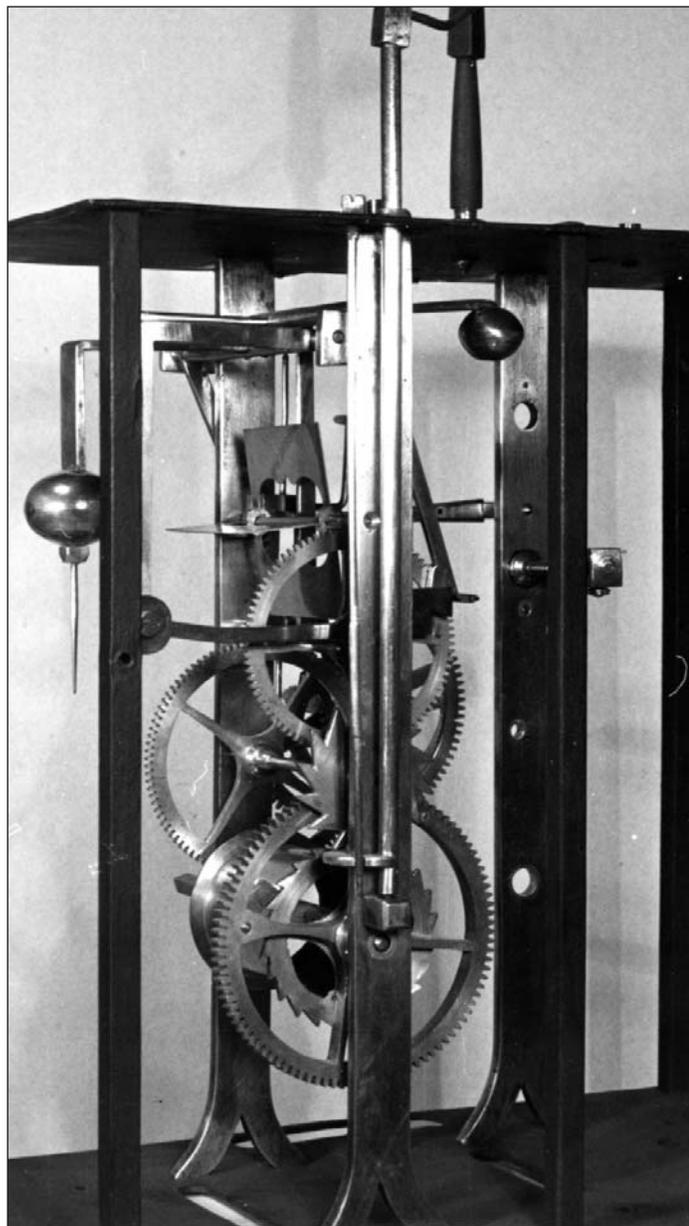


Figure 38, above. Front quarter view of strike mechanism of late Morbier showing general arrangement of parts.

drops vertically instead of pivoting. This mechanism is also notable in that it has no delay or warning; the train is released to strike at the time the rack drops. The following paragraphs describe in some detail this basic mechanism; the variations will be described more briefly.

The Basic Mechanism

Figures 38 and 39 are overall views of the basic mechanism found in most Morbier clocks made between the French Revolution and World War I. As noted in the time train description, one can see the heavy, cut wheels and the substantial handwrought parts of the strike mechanism. The function of the various parts can be better understood with the aid of Fig-

Figure 39, left. Rear quarter view of clock in Figure 38.

ure 40, a schematic diagram of the essential parts of the mechanism. Some liberties have been taken with details for purposes of clarity, but it should be possible to identify the corresponding features in the photographs or in a clock if you have one at hand.

In the diagram, D (Figure 40) is a detent that arrests the striking train when stop pin Q, which is mounted in the rim of the third wheel of the striking train, comes to rest on notch Z. In the diagram this is shown on the front face of the wheel, but in most instances the pin, detent, etc. are on the rear face (Figure 41). The detent is fast on shaft L, which also carries pawl S, which in turn operates on rack F. The latter has teeth on both sides and slides vertically, held in alignment by two rods T and T', which are carried in guides riveted to the main support bar.

M is the minute hand arbor that carries cam I, which actuates the strike mechanism once on the half hour and twice on the hour in the manner peculiar to Morbier clocks (to be described later). Strike release A has a forked end that rides on cam I (Figure 42a). This lever is fastened to arbor K, which carries bent lever B pivoted to trip piece C. The latter engages projection P of detent D either at the end or in a notch on the

lower side (Figures 43 and 44 ahead). Earlier models have two notches on the lower side and a curlicue at the end as shown in the diagram and in Figures 45 and 46 (see page 30), but they function in the same manner.

The operation of the mechanism is as follows: When the first point of the fork on strike release lever A drops off cam I, the lever assumes the position shown in Figure 42b, being retained in an intermediate position by the second point resting on the cam. In so doing, it actuates trip C, the first notch (or the end) of which rests against projection P (Figure 43). In thrusting to the left (diagram) or to the right (Figure 43), it pushes detent D free of pin Q, releasing the train, and because pawl S is also fastened to the same arbor, the rack falls. The number of teeth through which the rack falls is determined by stiff wire W, which, operating in a guide, drops on snail H attached rigidly to the hour hand pipe.

As the train runs, extension G of one leaf of the pinion on the third wheel arbor (Figure 47, see page 30) lifts the rack one tooth for each blow struck and pawl S retains the tooth gained. As long as the pawl engages the teeth of the rack, it holds detent D clear of pin Q and the train continues to run. When the rack is fully raised, the pawl drops into the last notch N. This notch is deeper than the others or else the rack is undercut after the last tooth as in Figure 47. This causes notch Z of detent D to engage pin Q and arrest the train.

At this time, the notch of trip C (or the second notch of earlier models) is resting against projection P (Figure 44) since lever A is in the intermediate position as shown in Figure 42b. When cam I moves about 12° (in approximately two minutes), the second point Y of the fork drops off the cam, lever A moves to the position shown in Figure 42c, and trip C again releases the train, causing the clock to strike the hour as before.

On the half hour, strike release lever A moves a smaller distance as determined by the smaller notch in the cam or shorter break in the hoop wheel. This is enough to release pin Q but not enough to cause the rack to fall. The

Figure 40. Schematic diagram of the strike mechanism as seen from the front.

