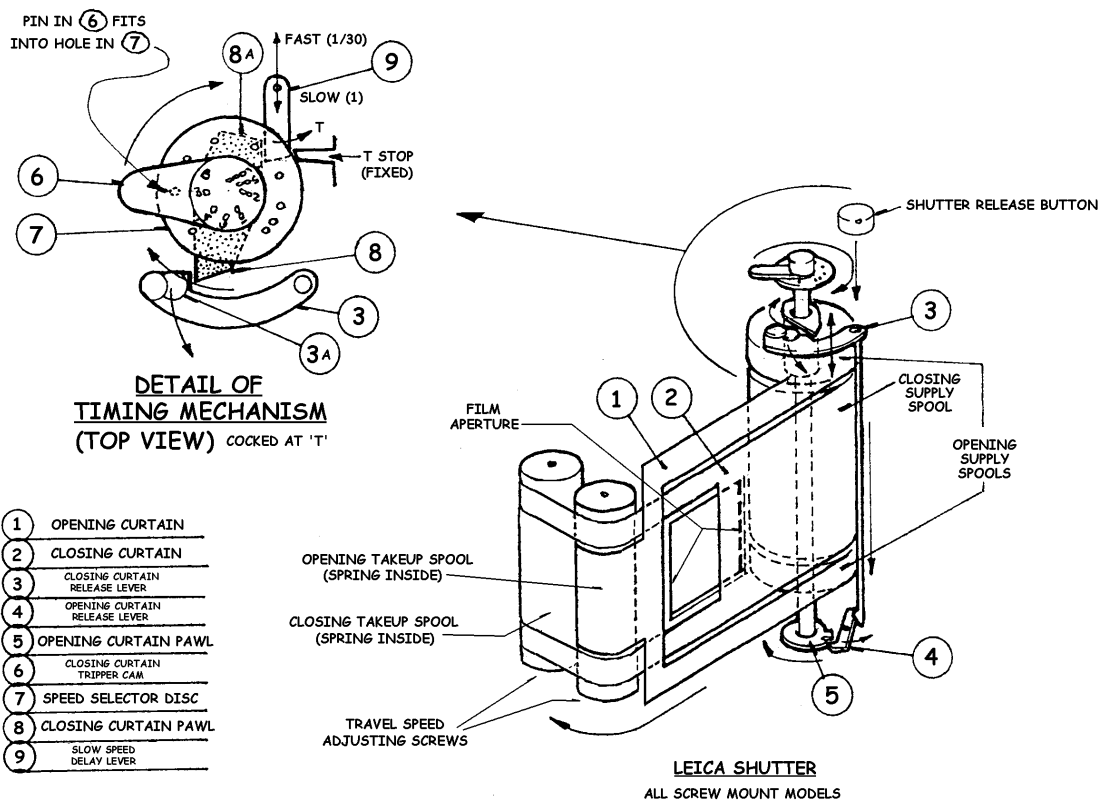


# How it Works: the Leica Shutter

The legendary Leica shutter is famous both for its accuracy and reliability, and for the inability of other manufacturers to successfully copy it (even when World War II voided its patent protection). All this would give the impression that this must be a highly complex design with dozens of intricate moving parts. On the contrary, it's so simple and straightforward that it's hard to understand what gave the copiers so much trouble. We only need to look at nine parts to fully describe the operation of the shutter.



The basic shutter consists of an opening curtain (1) and a closing curtain (2). Each curtain travels from a supply spool to a takeup spool; the supply spools are coaxial, the closing curtain in the center and the ribbons of the opening curtain at the upper and lower ends. Although they are coaxial, the opening and closing spools rotate independently, the only connection being through the timing mechanism.

When the shutter release is pressed, it causes release lever (4) to pull away from pawl (5), releasing the opening curtain; at the same time, lever (3) moves downward so that it blocks pawl (8), preventing the closing curtain from traveling.

As the opening curtain supply spool rotates, speed selector disc (7) rotates with it. Attached to this disc is a cam (6) whose position is set by the shutter speed dial. As the disc turns, cam (6) hits screw head (3A), pushing lever (3) back and releasing pawl (8) which is connected to the closing curtain supply spool. At normal speeds (1/30 to 1/1000), curtain (2) immediately snaps shut - - the speed depending solely on the starting position of cam (6).

Disc (7) turns less than 360° in operation; therefore, there is a point where cam (6) can be set so that it stops before reaching (3A), and curtain (2) does not release. This is the 'B' setting. As the shutter release button rises, lever (3) rises with it, releasing the closing curtain.

The front-mounted slow speed mechanism is a totally separate device consisting of a swinging lever (9), a clockwork mechanism to control the lever's speed, and a setting dial which moves the lever forward or back, into or out of the way of pawl (8A). Set to a slow speed, operation is as described above, except that as curtain (1) reaches its full open position, lever (9) rises into the path of pawl (8A). Now pawl (8) is released by (3) as before but cannot move until (8A) has pushed (9) out of the way. This may take from 1/30 to 1 second, depending on how far (9) has to be pushed. When dialed past 1 second to the 'T' position, lever (9) wedges in between (8A) and a solid stop, locking the shutter in the open position. It will not close until the dial is turned back from the 'T' position.

As mentioned earlier, lever (9) rises into position as curtain (1) reaches the full open position. At all 'normal dial' settings faster than 1/30, curtain (2) has already been released before this happens, therefore it is too late for the slow speed mechanism to have any effect. Thus the normal speed dial must be set to its slowest setting if a slow speed is to be used.

Simple though it is, this device is the standard by which focal plane shutters are judged, and is the basis of most modern 35mm shutter designs (most of

which are considerably more complex). It was commercially introduced on the Leica I (A) in 1925, and with the slow speed mechanism added on some models after 1933, continued in production until 1960. It was rendered obsolete, along with the cameras that used it, by the more durable and more convenient M series which was introduced in 1954.