in Fig. 68, where CC shows the water channel, DD, the
draw closed, and D'D', the draw open.

In case of direct retraction, the draw must either oc-
cupy a higher position than the permanent way, so as
to be drawn back over a portion of it, and the two
planes connected by an inclined apron (a plan not
feasible for rail roads), or a portion, a (Fig. 69), of the
way at the heal of the draw proper, D, withdrawn late-
rally, as to the position of a', to make room for the
longitudinal withdrawal of the draw proper.

\[ \text{Fig. 69.} \]

These movements are effected by having the movable bodies mounted upon wheels or rollers, running
upon hard level ways, so as to reduce the amount of
friction, and consequently that of the required motive
power, to a minimum.

But retractile draws, though they may be still used
in a few cases, and under peculiar circumstances, must
be regarded as nearly obsolete, having been mostly
superseded by the swing draw, which has important
advantages in convenience of construction and opera-
tion. No practical details, therefore, as to the con-
struction of retractile draws, will be given at this
time, as such details if given, would be almost certain
never to be adopted in practice.

CLXVII. The Swing or Pivot draw is either mounted
upon a pivot \(P\) (Fig. 70), in the vertical line through
41