

cheap transportation for low grade freights will so augment the volume of high grade and fast freights that the railroads will carry more freights and make more money than they do now.

GENERAL FEATURES.

To reduce transportation to the lowest possible cost we propose to make a navigation as free from detention as any lake or river. To that end the channels will be so wide and deep that the largest lake vessels can steam through them at full speed, there being sufficient current to neutralize as far as may be, the formation of waves; there will be the least number of locks, but seven between Lake Erie and the terminals, and but four between Montreal and New York, and the locks will move two vessels at a time, one ascending while the other is descending, the speed being as great as is consistant with safety; the double balanced locks being built of steel and operated by compressed air at $11\frac{1}{2}$ lbs. pressure per square inch. The principle of the locks is the familiar one of weighing in a scale, the locks representing the scale pans and the compressed air the scale beam; and the motion being caused by a small *difference* in the total weights of water in the locks, just as the motion of a scale is caused by a smaller difference between the weight and the object weighed.

The lowest lift will be 45 ft. at Montreal; the highest 95-98 ft. at Troy. The average lift will be 72 ft. All the locks, except that at Montreal, will have duplicated working parts, and the same pressures of water and air, and the lock gates will be duplicates. At Montreal the lock and canal will admit vessels of 27 ft. draft, and Montreal Harbor will be practically extended to Lake St. Louis; to the great cheapening and bettering of facilities for handling freights.

Ample harbors and terminal facilities will be provided wherever desirable. It is probable that cable towing plants will be installed in the canals.