Drill cuttings are generally used in open pits and quarries as the most common stemming material, since these are most readily available at blast sites. The plaster stemming method has been found to be better than the drill cuttings stemming method, due to increased confinement inside the hole and better utilization of blast explosive energy in the rock. The main advantage of the new stemming method is the reduction in the cost of blasting. At a limestone quarry, blasting costs per unit volume of rock were reduced by 7%. This is obtained by increasing burden and spacing distances. In addition, better fragmentation was obtained by using the plaster stemming method. Blast trials showed that plaster stemming produced finer material than the conventional methods. In the same blast tests, +20 cm size fragments reduced to 42.6% of the total, compared to 48.7% in the conventional method of drill cuttings stemming. Keywords: Plaster stemming, stemming, blasting, fragmentation, limestone