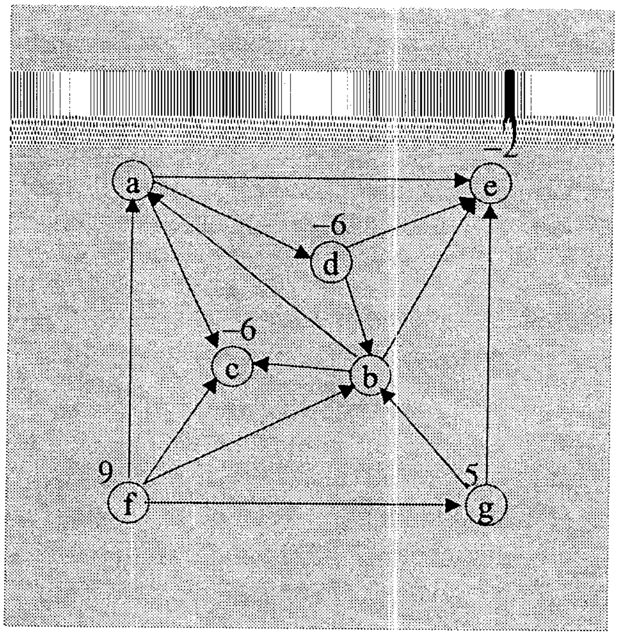

FIGURE 13.1. A network having 7 nodes and 14 arcs. The numbers written next to the nodes denote the supply at the node (negative values indicate demands; missing values indicate no supply or demand).

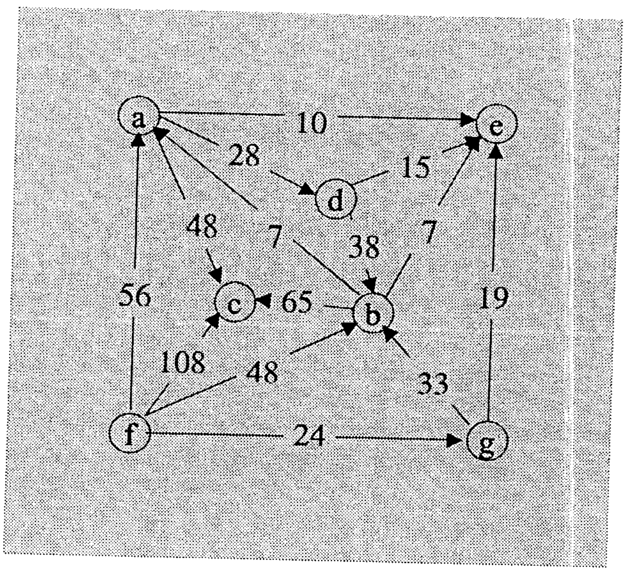

FIGURE 13.2. The costs on the arcs for the network in Figure 13.1.

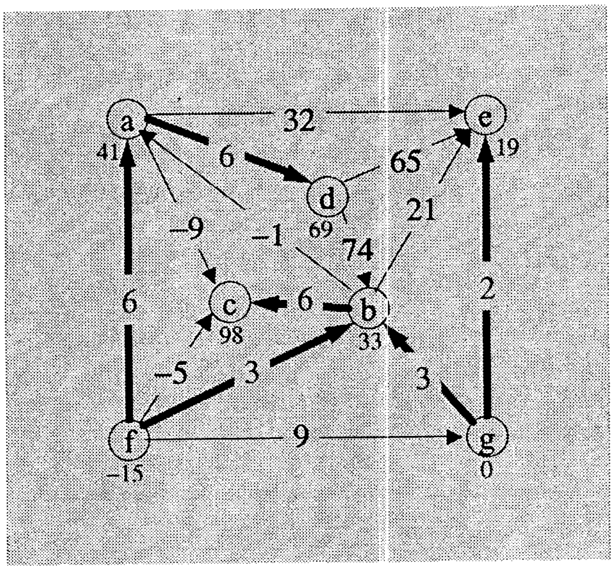

FIGURE 13.6. The fat arcs show a spanning tree for the network in Figure 13.1. The numbers shown on the arcs of the spanning tree are the primal flows, the numbers shown next to the nodes are the dual variables, and the numbers shown on the arcs not belonging to the spanning tree are the dual slacks.

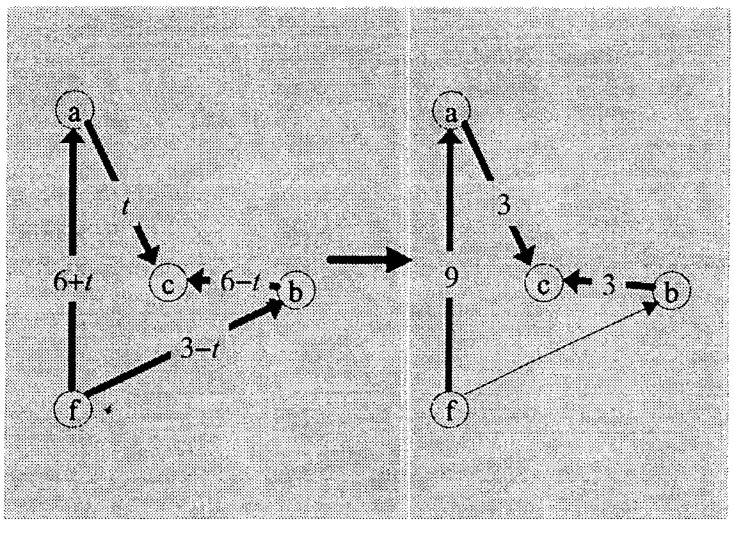

FIGURE 13.7. The cycle produced by including the entering arc with the spanning tree. As the flow t on the entering arc increases, eventually the flow on arc (f,b) becomes zero (when $t = 3$). Hence, arc (f,b) is the leaving arc.

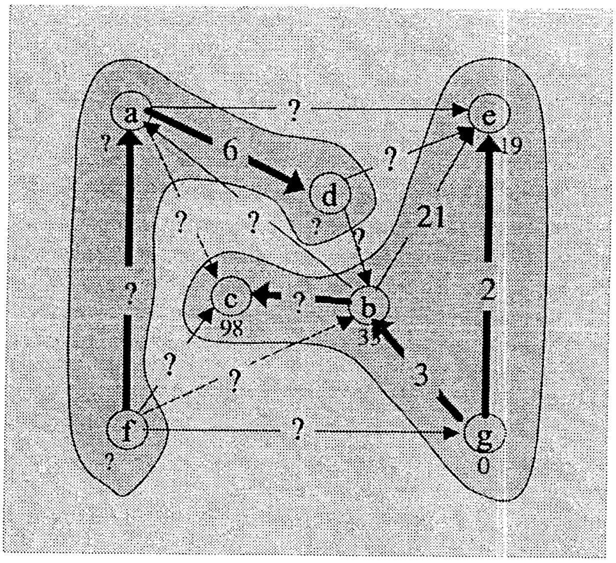

FIGURE 13.8. The two disjoint trees. Primal and dual values that remained unchanged are shown, whereas those that need to be updated are shown as question marks.

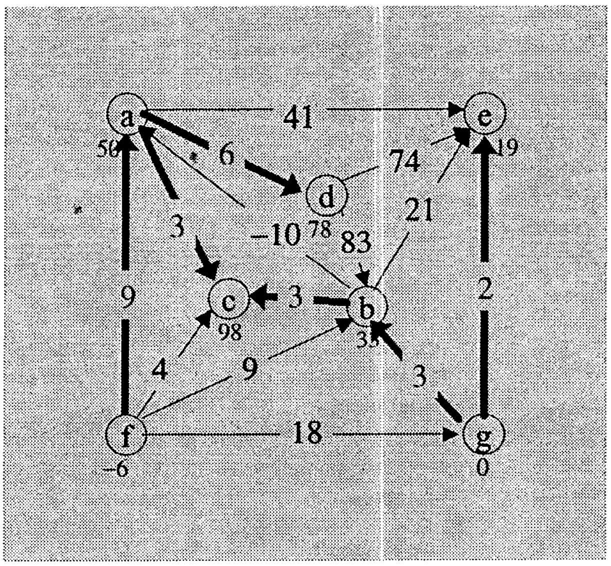

FIGURE 13.9. The tree solution at the end of the first iteration.

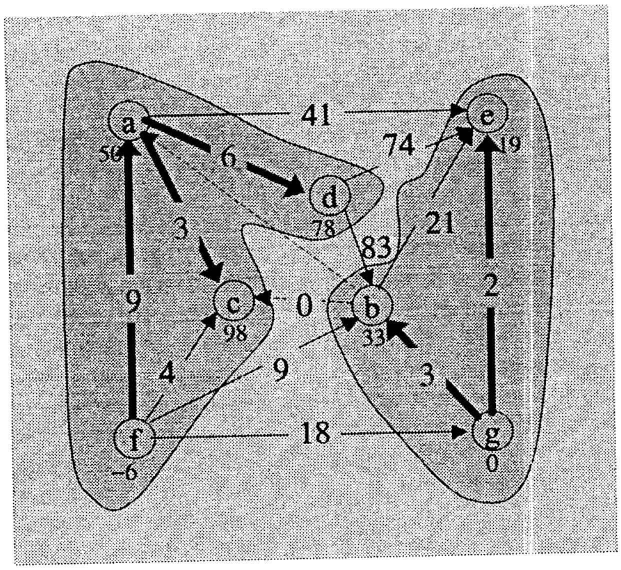

FIGURE 13.10. The two disjoint subtrees arising in the second iteration.

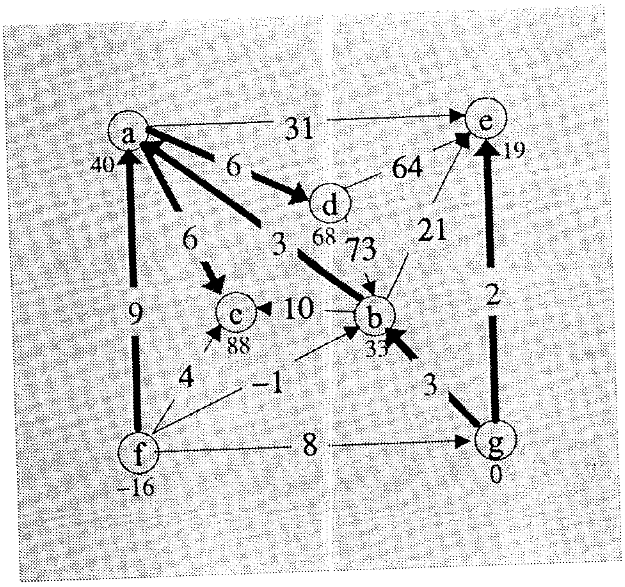

FIGURE 13.11. The tree solution at the end of the second iteration. To get from the spanning tree in Figure 13.9 to here, we let arc (b,a) enter and arc (b,c) leave.

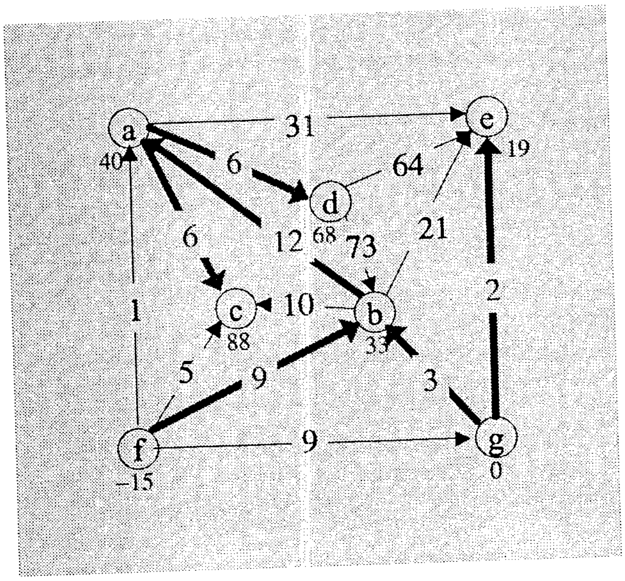

FIGURE 13.12. The tree solution at the end of the third iteration. To get from the spanning tree in Figure 13.11 to here, we let arc (f,b) enter and arc (f,a) leave. This tree solution is the *optimal* solution to the problem.

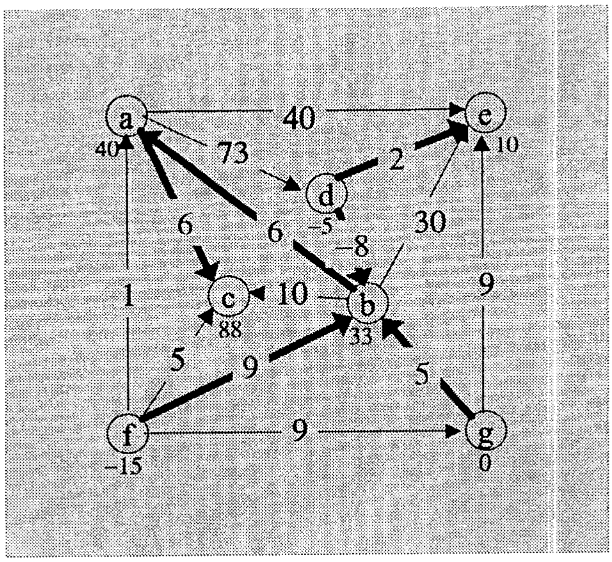

FIGURE 13.13. A tree solution that is dual feasible but not primal feasible.

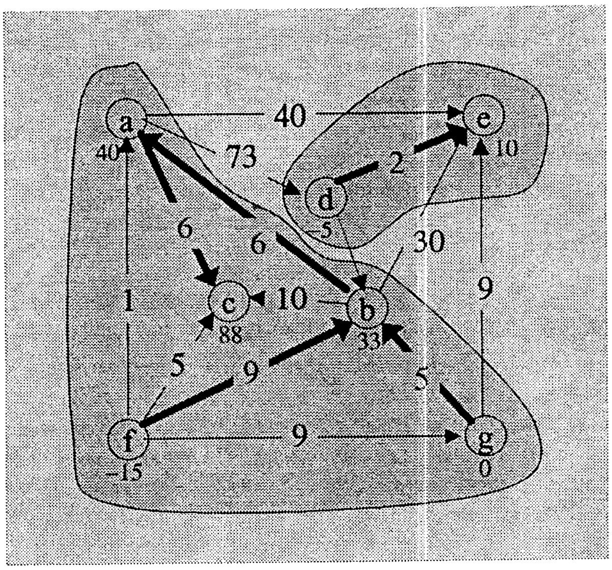

FIGURE 13.14. The two subtrees for the first pivot of the dual simplex method.

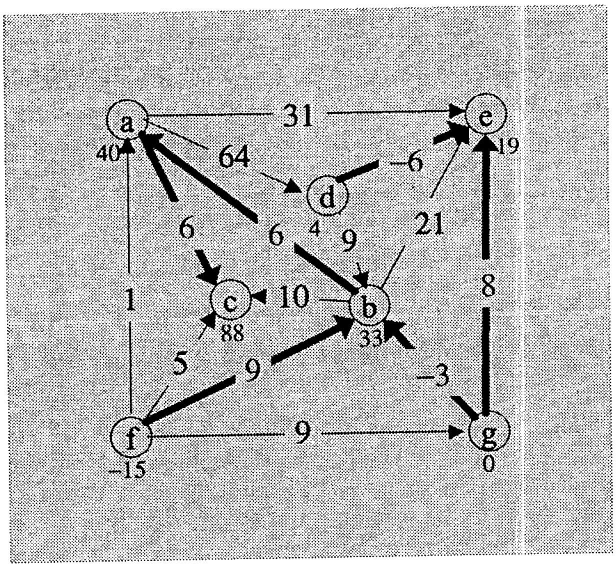

FIGURE 13.15. The tree solution after the first pivot.