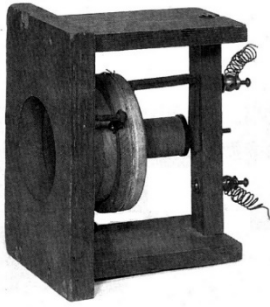
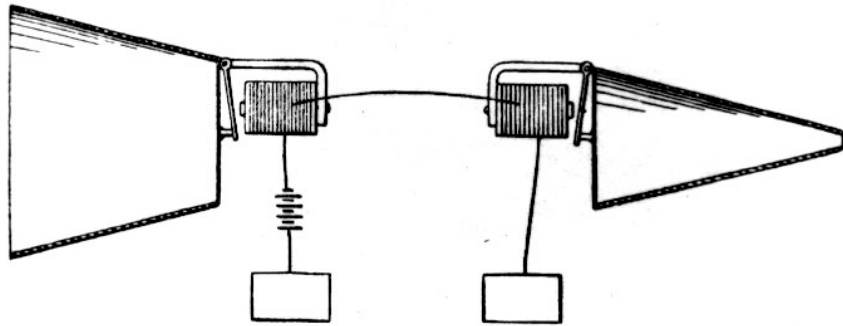


## 2 Wired communication



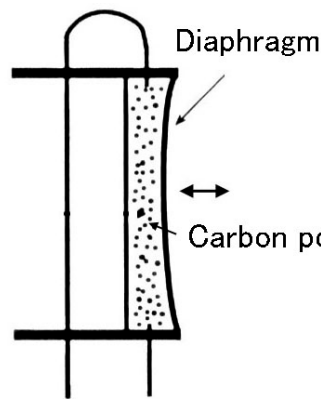
Microphone of telephone invented by A.Bell.  
"Mr. Watson. Come here. I want you"  
was the first voice.



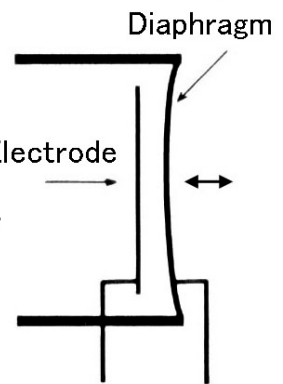
Telephone by A.Bell (1876) Electromagnetic microphone and receiver  
(I.Sagara : History of electronics in 20<sup>th</sup> century, Nikkei electronics (1996))



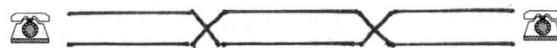
Electromagnetic receiver and carbon microphone



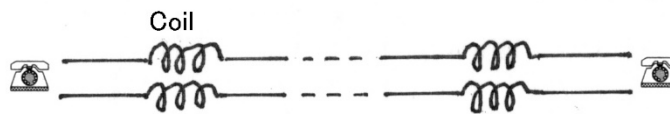
Carbon microphone  
Edison (1877)



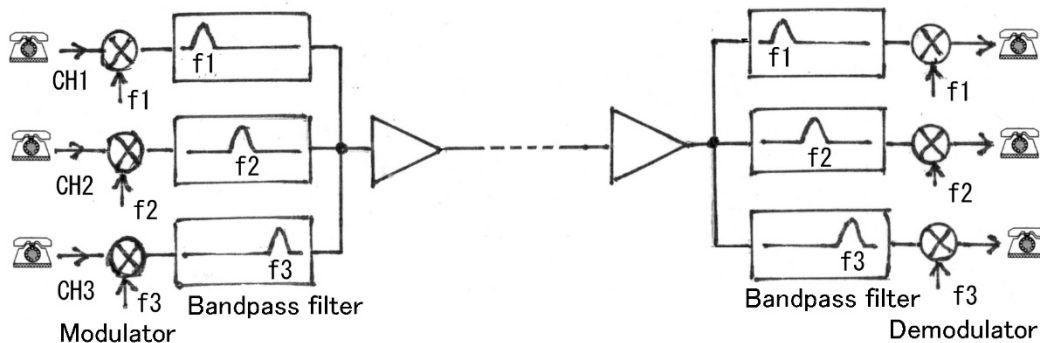
Condenser microphone



(a) Balanced twisted cable



(b) Loaded cable (M.I.Pupin (1899))



(c) Multiplexed communication using unloaded cable (S.Matsumae (1932))