



everything old is  
**new again**

designing for the future

Aug. 4, 1970

J. E. LAMBRIGHT ET AL

3,522,664

INTERFACE DEVICE AND DISPLAY SYSTEM

Filed Nov. 20, 1967

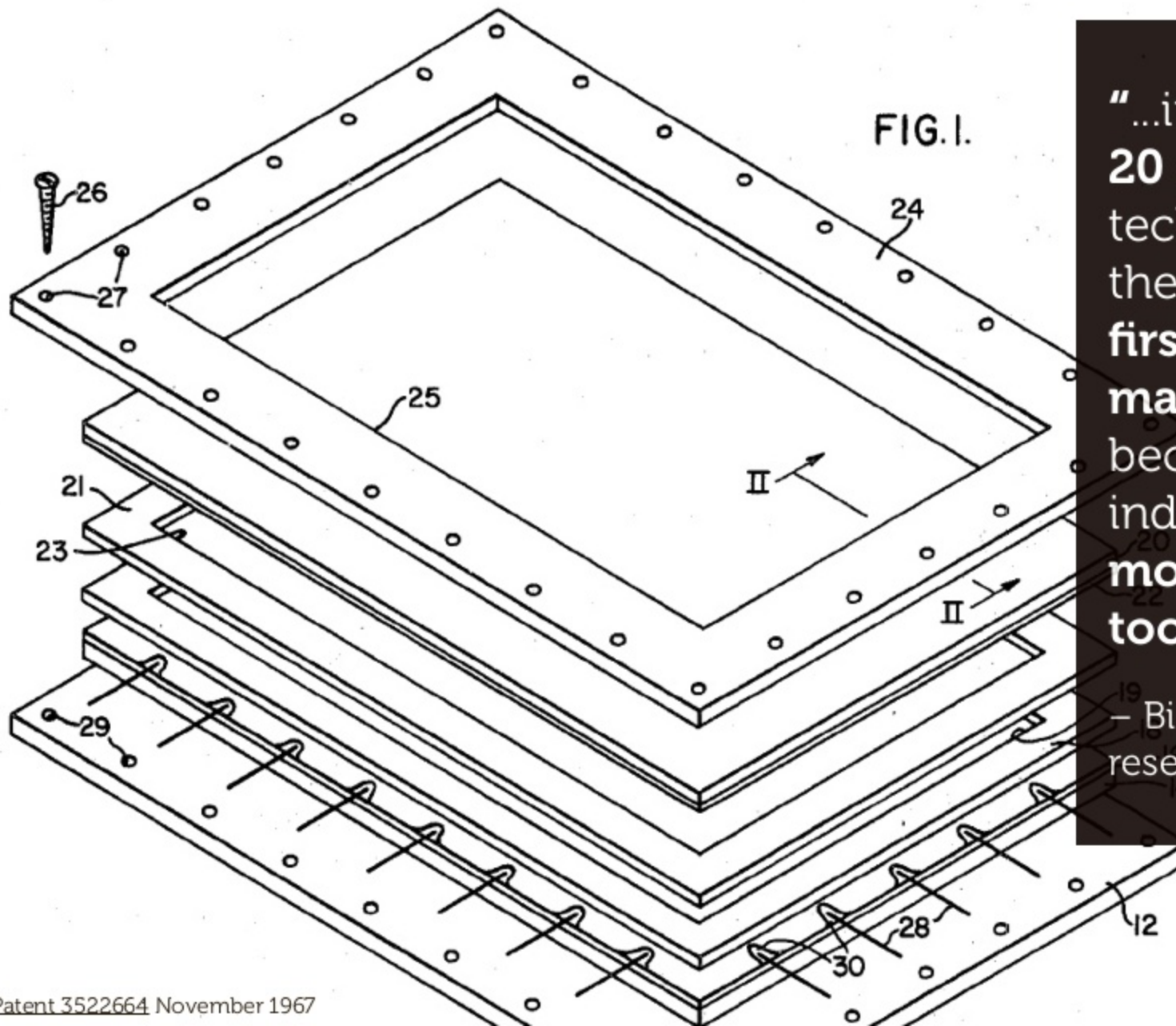


FIG. 1.

"...it takes **on average 20 years** for a technology to make the transition from **first articulation to maturity** (defined as becoming a \$1billion industry)...**the mouse**, for example, **took 30 years.**"

— Bill Buxton, Principle researcher Microsoft





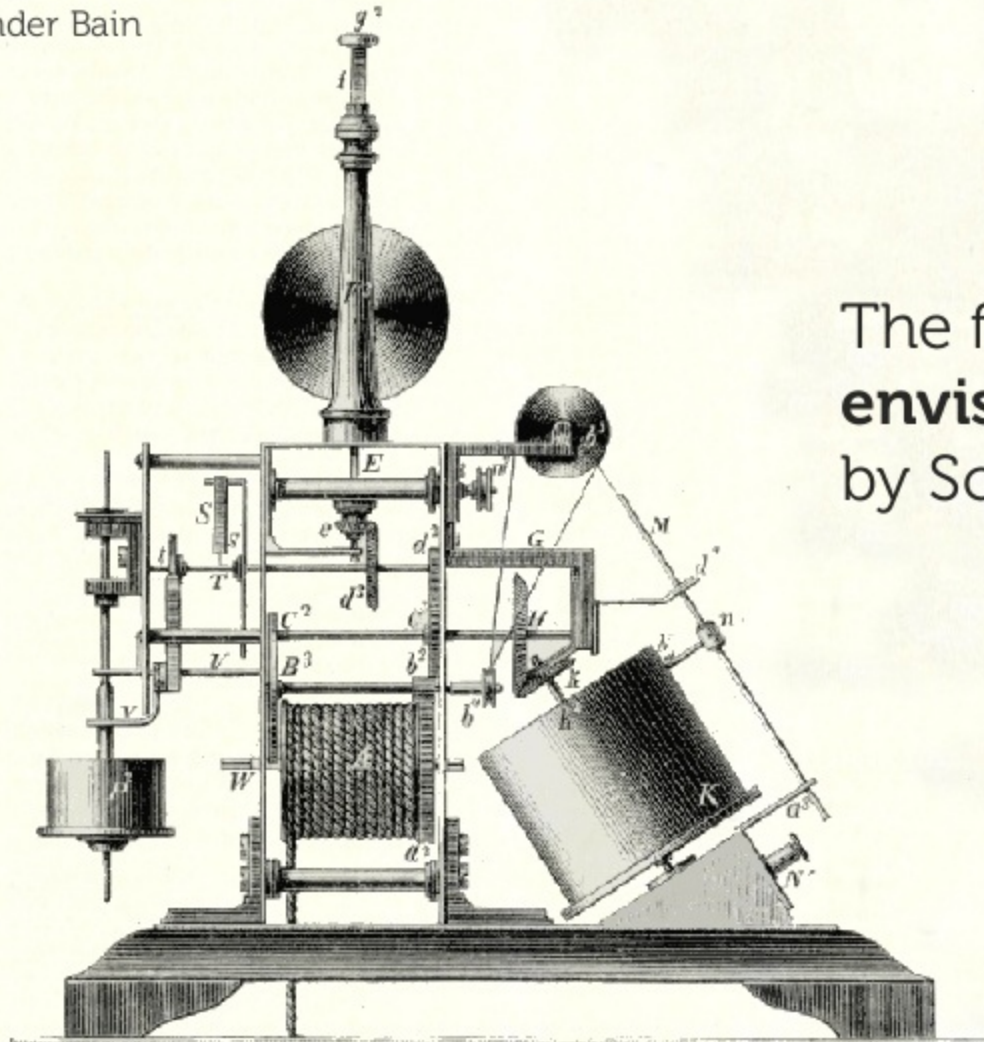
take **for example**  
the humble fax machine...

(a technology that may finally have outlived its usefulness)



1843

Alexander Bain



(image shown is of an 1850 iteration)

The fax machine was **first envisioned** and patented **in 1843** by Scotsman Alexander Bain...

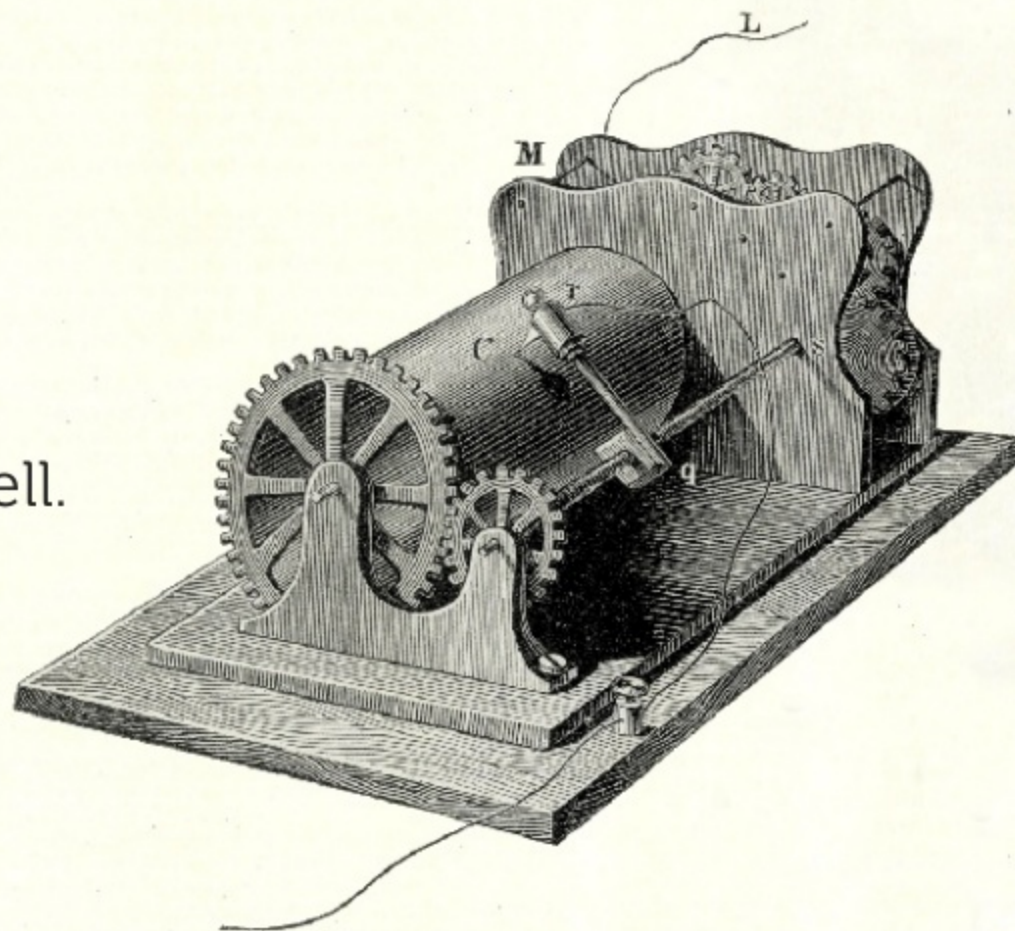
1843

1848

Alexander Bain

Frederick Bakewell

...then **improved on**  
(and patented once again)  
in 1848 by Frederick Bakewell.



Bakewell, E. P. 12352, 2. 12. 1848



1843

1848

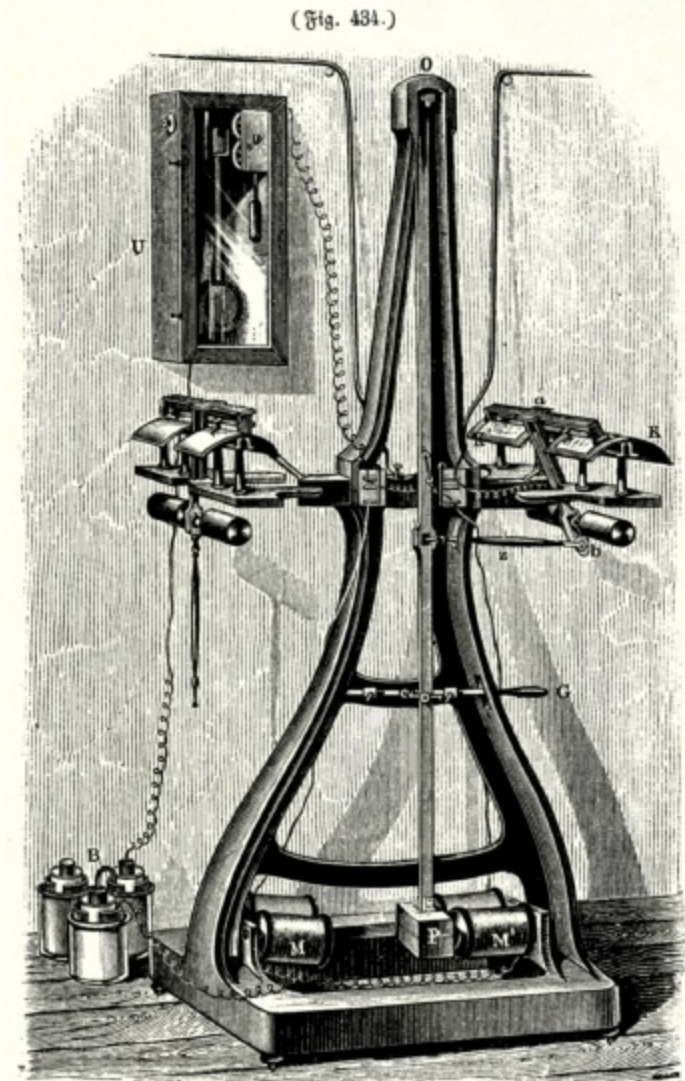
1861

Alexander Bain

Frederick Bakewell

Giovanni Castelli

Then **improved on** once again  
**13 years later**, this time by  
Giovanni Castelli, an Italian priest...



Castelli's pantelegraph

1843

1848

1861

1865

Alexander Bain

Frederick Bakewell

Giovanni Castelli

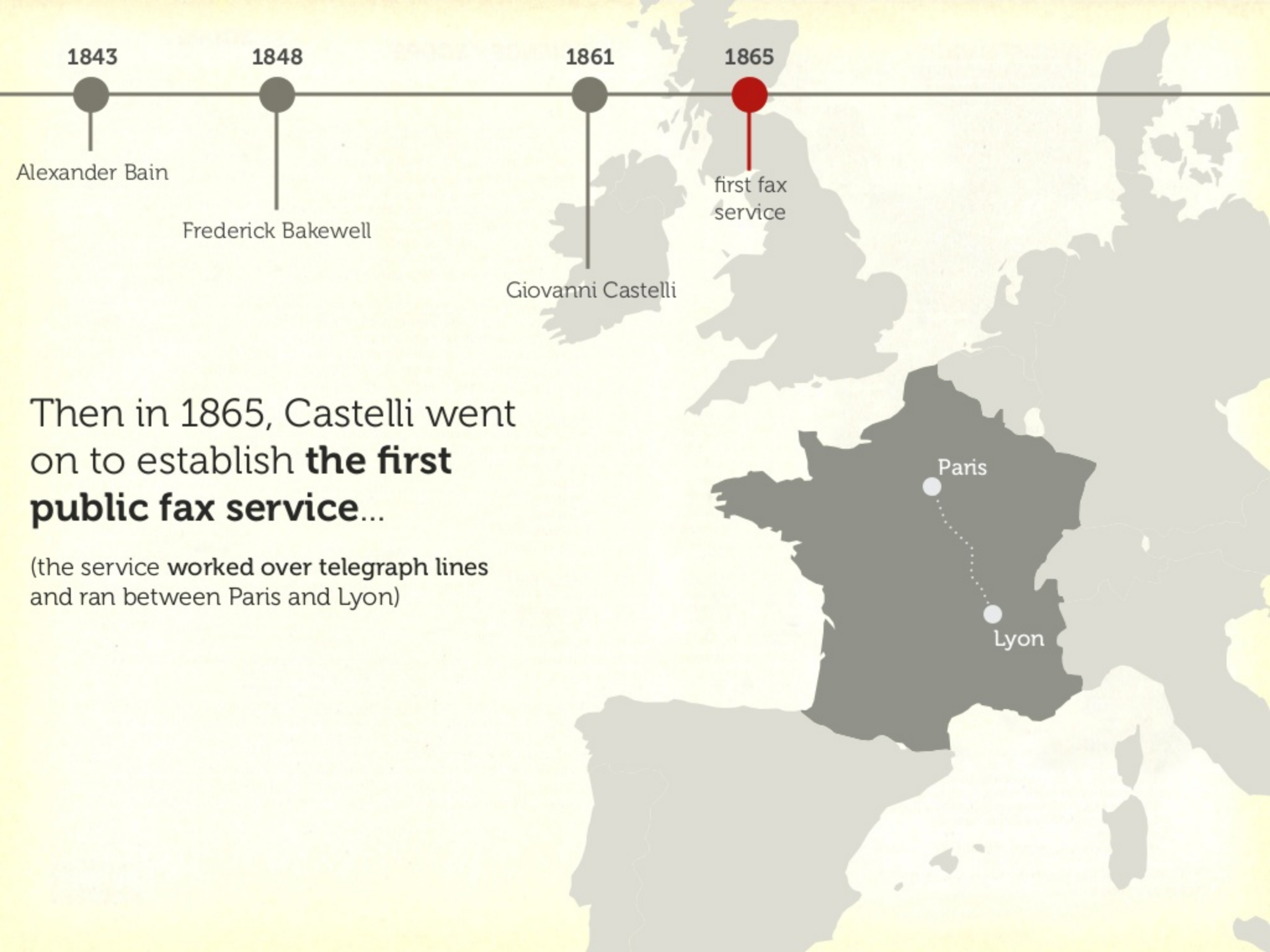
first fax  
service

Then in 1865, Castelli went  
on to establish **the first  
public fax service...**

(the service worked over telegraph lines  
and ran between Paris and Lyon)

Paris

Lyon





1843

1848

1861

1865

1876

Alexander Bain

Frederick Bakewell

Giovanni Casti

...this was still **11 years before** the invention of the telephone...

(this isn't unusual—we don't always know the true value of a technology until a related one comes along)



*Photo of Bell using the telephone in New York.*



1843

1848

1861

1865

1876

Alexander Bain

Frederick Bakewell

Giovanni Castelli

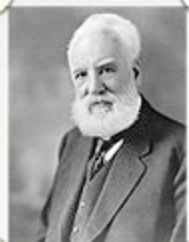
first fax  
servicetelephone  
patent:  
Alexander  
Graham BellInnocenzo  
ManzettiThomas  
Edison

J. P. Reis

Elisha Gray

Antonio  
Meucci

Six people were known to have been working on  
**"voice transmission over a wire"** around the  
 time that Bell was ultimately successful in  
 obtaining the first patent.



Alexander  
Graham Bell



Thomas  
Edison



Innocenzo  
Manzetti



Johann  
Phillip Reis



Elisha  
Gray



Antonio  
Meucci



1843

1848

1861

1865

1876

1877

Alexander Bain

Frederick Bakewell

Giovanni Castelli

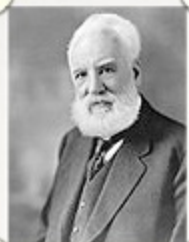
first fax  
servicetelephone  
patent:  
Alexander  
Graham BellInnocenzo  
ManzettiThomas  
Edison

J. P. Reis


Elisha Gray

Antonio  
Meuccitelephone  
exchange:  
Tivadar Puskás

Shortly thereafter, a Hungarian engineer by the name of Tivadar Puskás **invented the telephone switchboard**—which allowed for the formation of telephone exchanges (and **eventually networks**).

Alexander  
Graham BellThomas  
EdisonInnocenzo  
ManzettiJohann  
Phillip ReisElisha  
GrayAntonio  
MeucciTivadar  
Puskás



A close-up photograph of a vintage toy car. The car's body is a white plastic rotary telephone base. It has four blue plastic wheels. A red plastic handset is attached to the back. The car is decorated with colorful stickers, including stars and a price tag that says "PRICE". It is sitting on a dark, textured surface.

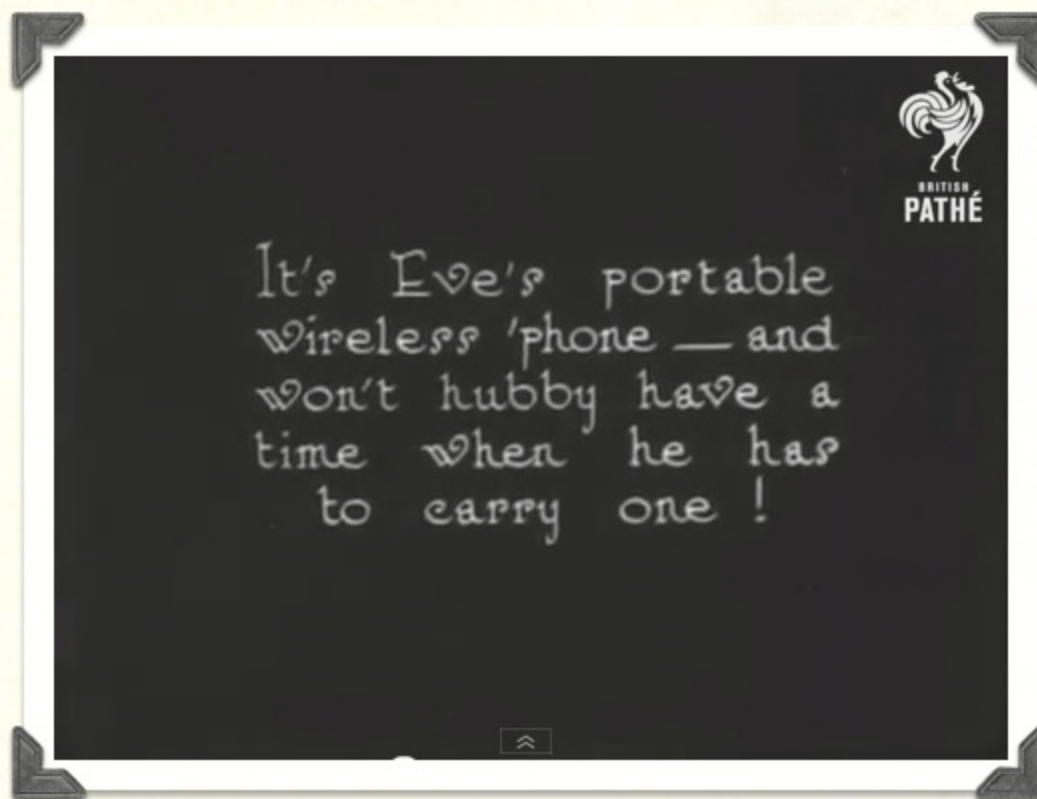
almost immediately—we began  
**dreaming up** ways to **move**  
**phones around**

an example from  
the early **1920s**

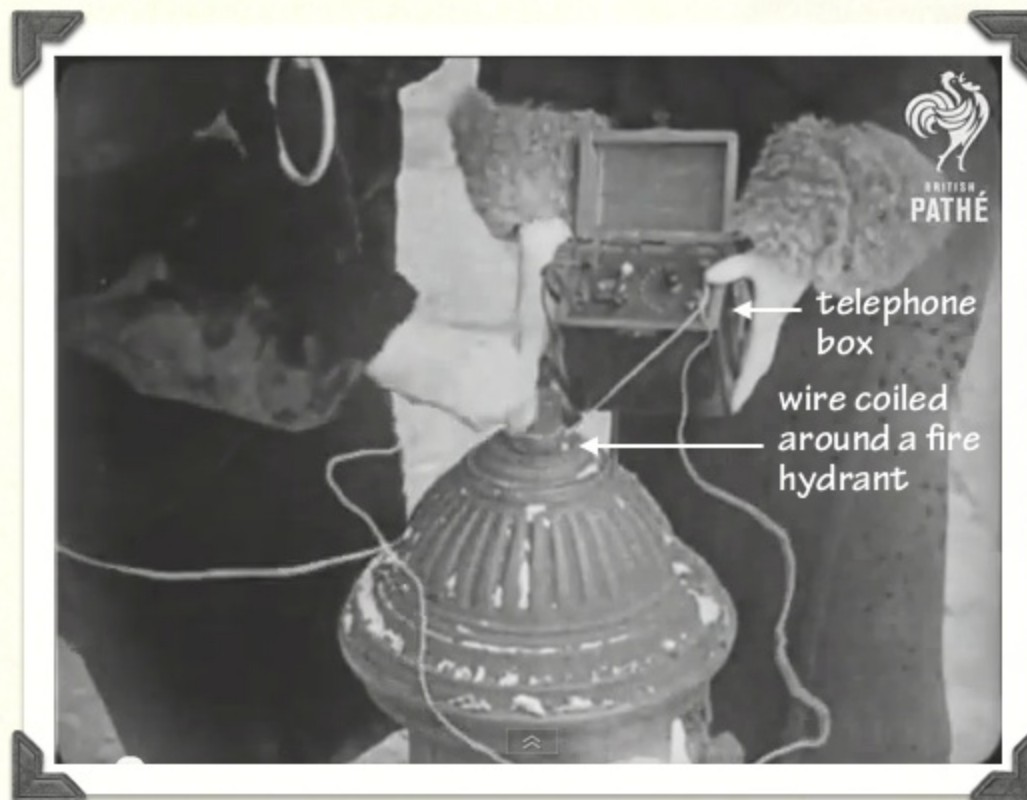


A **wireless phone prototype** for the well-to-do lady on the town...





...of course **it's a bit bulky**, so the lady may need a gentleman to carry it...



"The two ladies are using a small simple HF radio, probably a 'Cat's Whisker' type. For it to work **it needs to be earthed**, which is why it's **connected to the fire hydrant...**"





"The **antenna** (or aerial) is **the wire in the umbrella...**"

- Explanation courtesy of Simon Atkins, an Ex-Royal Signals officer



the simplest solution was  
of course to **distribute the phones**  
throughout our environment

(a solution that remained **useful for more than 100 years!**)

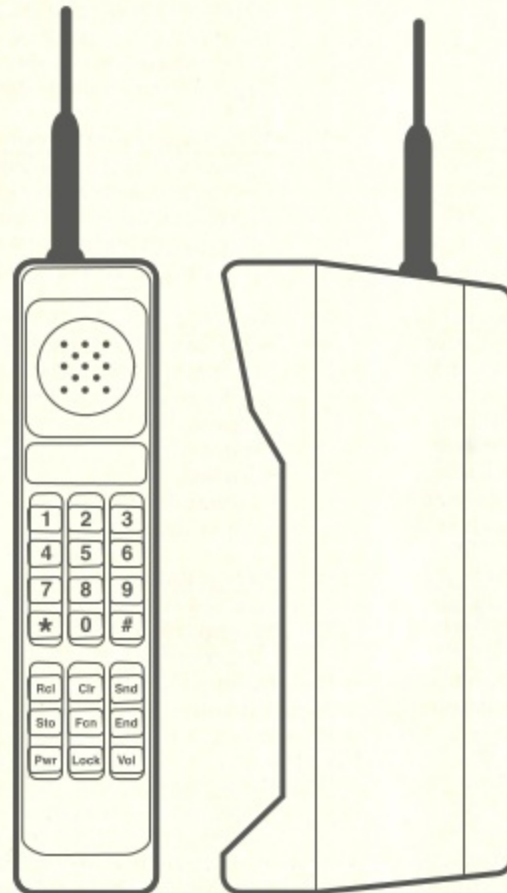




in a pinch, you could  
also **build a portable booth**

a mobile phone center for reporters in 1960s Chicago

**Finally, after twenty years of experimentation**  
(and the invention of microprocessors) we ended up with this....



**1983: the \$3,995 DynaTAC**

the first mobile telephone that  
could connect to the telephone  
network without the assistance of  
a mobile operator



...which was released **about the same time** as this.



**1984: the Apple Macintosh**  
the first commercially successful personal  
computer to feature a mouse and a  
graphical user interface

...**the following ten years** were pretty much devoted to finding ways to **combine** these two concepts....

