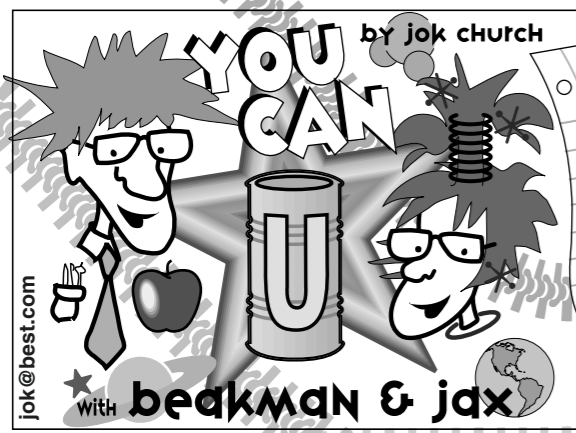


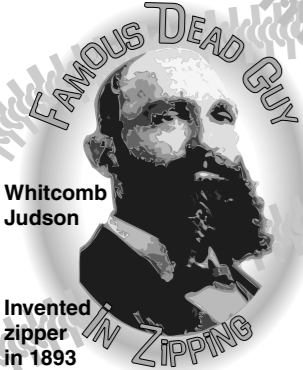
EMBARGOED
Until Release Date



by jok church

Dear Jax,
How does a zipper work?
Amanda Roberts
Hubert, North Carolina

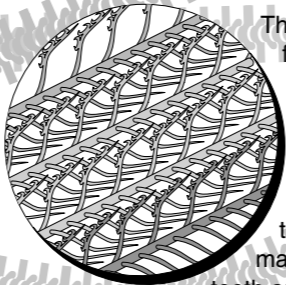
Beakman or Jax
P.O. Box 30177
Kansas City, MO 64112
Question, name & address



What we call a zipper was first invented as the *clasp-locker* by Mr. Judson, who tried to sell it at the 1893 Chicago World's Fair. More than 20 million people came to the fair. But Mr. Judson sold only 20 of his invention – all of them to the U.S. Post Office to close mail bags. Thirty years later they were improved and used to close up rubber rain shoes made by B.F. Goodrich. Mr. Goodrich named his new shoes *Zippers* after the sound the fastener made. The name zipper stuck.

PS: from Beakman: Zippers are used on most pairs of pants. But that didn't happen until 1937, when the first pair of men's trousers included the first zippered fly. Like a lot of fashion firsts, it was an idea from French fashion designers.

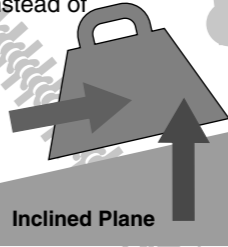
Dear Amanda,
Zippers work the same way that a plow works, by using *pulling-down* energy to do *pushing-sideways* work. Horses or a tractor can pull a plow. The plow's wedge shape pushes the dirt sideways and opens up the soil for planting. A zipper slider goes up or down, and its wedge shape plows apart hundreds of little zipper teeth – teeth locked together so tightly only a plow could do it.



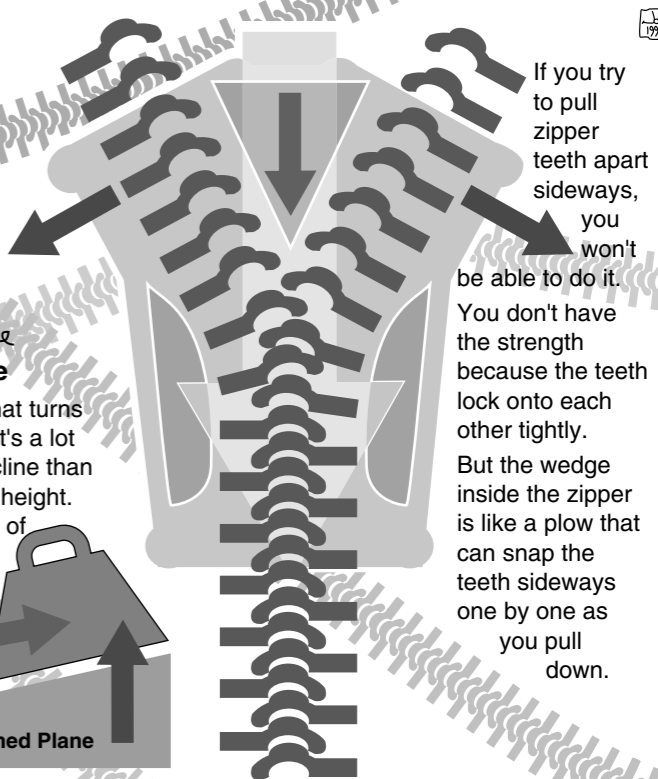
The next time you find a feather, use your fingers to zip and unzip the barbs. A feather works a lot like Mr. Judson's invention. But the teeth on a feather don't lock tightly enough to use on mail bags or shoes. Zipper teeth are much harder and snap together tightly – so tightly that a machine had to be added. The machine was a wedge, a kind of inclined plane.

An inclined plane is a machine that turns pushing energy into lifting work. It's a lot easier to push a weight up an incline than to just lift the weight to the same height. When we push the plane instead of the weight, we call it a wedge. The *pushing-longways* energy is turned into *pushing-apart* work. That's how both a plow and a zipper use energy to pull soil or zipper teeth apart.

Jax Place
Jax Place



Inclined Plane



If you try to pull zipper teeth apart sideways, you won't be able to do it. You don't have the strength because the teeth lock onto each other tightly. But the wedge inside the zipper is like a plow that can snap the teeth sideways one by one as you pull down.

1999

