Re: Here's one for Bob (hope it makes your head spin)

Source: http://unix.derkeiler.com/Newsgroups/comp.os.vms/2007−09/msg00515.html

- *From*: briggs@xxxxxxxxxxxxxxxx
- *Date*: 10 Sep 2007 06:46:46 −0500

In article <_hFEi.71628$rH6.27721@xxxxxxxxxxxx>, Ron Johnson <ron.l.johnson@xxxxxxx> writes:

> On 09/08/07 11:53, JF Mezei wrote:
>
> > Ron Johnson wrote:
> >
> > > Sorry. Since the bullet travels I still don't understand how N3
> > > makes the *bullet* fly out the barrel.
> >
> > During combustion, the gases/matter between the start of the barrel and
> > the bullet want to greatly expand. But they are not given room to
> > expand, so the pressure rises to accomodate this.
> >
> > As the pressure rises, the gases push in every direction. When they push
> > against the gun barrel, nothing happens because the barrel is not
> > eleastic and doesn't let expansion occur.
>
> You've never watched /Mythbusters/.

In the normal firing of a gun the barrel is approximately rigid. The fact that in extraordinary circumstances, the barrel is spectacularly non−rigid is normally irrelevant.

> When they push against the bullet, the bullet moves towards the end of
> the barrel. The bases are happy because by having pushed the bullet, it
> now gives them a bit more room within the barrel. But they want more so
> they keep pushing on the bullet.
>
> Once the bullet has left the barrel, the gases can then escape from the
> barrel and the pressure equalises between barrel and outside air.

> But as long as there is a pressure difference between the combustion area and the oustide, the gases in the combustion area will want to push anything in the way of reaching the area where there is lower pressure.

> And gas pushing against the bullet is an action−reaction, correct?

The gas against the bullet and the bullet against the gas is one third law force pair, yes.

The gas in one region against the gas in an adjacent region and vice versa is another third law force pair as well.

The gas against the sides of the barrel and the sides of the barrel against the gas is another third law pair.

Personally I find that personifying physical forces and talking about what gasses "want" to do somewhat distasteful.

But given initial conditions of a motionless bullet at rest near one end of a gun barrel with a region of high pressure, high temperature gas behind it and a region of normal atmospheric pressure air ahead, there's an obvious way for the situation to progress −− the bullet accelerates down the barrel and out of the gun.

This is a solution to Newton's equations of motion.

There's also a non−obvious way. The high pressure, high temperature gasses could re−assemble into gunpowder, the primer could re−assemble, the hammer could bounce back and latch into place and the finger could come gently off the trigger.

This is also a solution to Newton's equations of motion.
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