

1

00:00:00,000 --> 00:00:07,000

I'm Jamie Heineman, you're watching Kniffbusters.

2

00:00:07,000 --> 00:00:11,000

Coming up, can you get stuck to an airline toilet?

3

00:00:11,000 --> 00:00:13,000

Explode, butchers.

4

00:00:13,000 --> 00:00:15,000

There we go.

5

00:00:15,000 --> 00:00:18,000

Building a biscuit bazooka.

6

00:00:18,000 --> 00:00:20,000

Ho-ho! No!

7

00:00:20,000 --> 00:00:24,000

Wow, that just works everywhere.

8

00:00:24,000 --> 00:00:27,000

The leaping lawyer, fact or fantasy.

9

00:00:27,000 --> 00:00:29,000

Scotty, I need power!

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00:00:29,000 --> 00:00:31,000

You want more? More!

11

00:00:36,000 --> 00:00:40,000

Here on Kniffbusters, we're not just going to retell the legends.

12

00:00:40,000 --> 00:00:43,000

We're going to put them to the test.

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00:00:43,000 --> 00:00:46,000

We're prepared to put our bodies on the line.

14

00:00:46,000 --> 00:00:49,000

Why should you trust these guys?

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00:00:49,000 --> 00:00:54,000

Well, Jamie and Adam have over 30 years in model building,

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00:00:54,000 --> 00:00:57,000

animatronics and toy prototyping.

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00:00:57,000 --> 00:01:01,000

They can build just about anything, and probably have.

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00:01:01,000 --> 00:01:05,000

This is M5, my special effects shop.

19

00:01:05,000 --> 00:01:08,000

Come on in and have a look around.

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00:01:08,000 --> 00:01:14,000

If we can't find what we need here, there's always Adam's junk collection.

21

00:01:14,000 --> 00:01:17,000

My cigarette dispenser.

22

00:01:17,000 --> 00:01:21,000

And they'll need every trick in the book.

23

00:01:21,000 --> 00:01:25,000

So where do we begin? What do we got? Let's go.

24

00:01:28,000 --> 00:01:32,000

This story involves a large woman, a beast woman.

25

00:01:32,000 --> 00:01:35,000

Flying on an SES flight from Europe.

26

00:01:35,000 --> 00:01:38,000

And as she was going along, she had to use the restroom.

27

00:01:38,000 --> 00:01:41,000

She flushed it while she was still sitting on the toilet.

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00:01:41,000 --> 00:01:46,000

And it suctioned her down a little bit, and she was stuck.

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00:01:46,000 --> 00:01:48,000

And they had a lane to plane with her on the toilet.

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00:01:48,000 --> 00:01:52,000

Where the air flight crews had to come in as sister to get off.

31

00:01:53,000 --> 00:01:56,000

What exactly are we going to need to test this?

32

00:01:56,000 --> 00:01:59,000

We have a vacuum pump that is pretty powerful.

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00:01:59,000 --> 00:02:04,000

We have to create a large female posterior.

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00:02:04,000 --> 00:02:06,000

Posterior, is that how we turn?

35

00:02:06,000 --> 00:02:08,000

Posterior, yes.

36

00:02:08,000 --> 00:02:10,000

A big ass.

37

00:02:10,000 --> 00:02:12,000

And we got to hang it over the toilet.

38

00:02:12,000 --> 00:02:14,000

Did you go to art school, Jamie?

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00:02:14,000 --> 00:02:18,000

And I built real stuff. I don't know how to draw it.

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00:02:19,000 --> 00:02:21,000

You know what's what.

41

00:02:21,000 --> 00:02:24,000

I do. It could also be a big leg of lamp cooking over a barbecue.

42

00:02:24,000 --> 00:02:26,000

Gas fee.

43

00:02:26,000 --> 00:02:28,000

Sounds kind of good.

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00:02:28,000 --> 00:02:30,000

We got a rig.

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00:02:30,000 --> 00:02:33,000

A means of measuring how much pull down there is.

46

00:02:33,000 --> 00:02:35,000

To me, that means a big fish scale.

47

00:02:35,000 --> 00:02:37,000

We'll use a forklift.

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00:02:37,000 --> 00:02:39,000

We'll hoist this big ass over the toilet.

49

00:02:39,000 --> 00:02:41,000

And we're hanging off the fish scale.

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00:02:41,000 --> 00:02:44,000

We lower it on there, and then we turn the pump on.

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00:02:44,000 --> 00:02:51,000

And then we raise the forklift and see how much suck the thing has before it lets go.

52

00:02:51,000 --> 00:02:53,000

Via the fish scale.

53

00:02:53,000 --> 00:02:58,000

And we're going to have to invent one because that's a pretty big fish.

54

00:02:58,000 --> 00:03:03,000

This woman was like, I guess it could have been a 300 pounder.

55

00:03:03,000 --> 00:03:11,000

In the aircraft market, we have approximately 13,000 vacuum toilets in operation on a daily basis.

56

00:03:12,000 --> 00:03:15,000

The toilet story broke in early 2001.

57

00:03:15,000 --> 00:03:19,000

We were quite surprised how much press it did get.

58

00:03:28,000 --> 00:03:32,000

We're at Interface Aviation in Hollister, California.

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00:03:34,000 --> 00:03:36,000

Oh my God.

60

00:03:36,000 --> 00:03:43,000

Interface Aviation is an aircraft recycling company that acquires aircraft parts from all over the world.

61

00:03:43,000 --> 00:03:45,000

And they end up here.

62

00:03:45,000 --> 00:03:48,000

I like this. This much for the stairway from us.

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00:03:48,000 --> 00:03:49,000

The stairway is set up for the stairway?

64

00:03:49,000 --> 00:03:51,000

Oh yeah.

65

00:03:51,000 --> 00:03:54,000

They've got three and a half acres of used aircraft interiors.

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00:03:54,000 --> 00:03:58,000

All the panelling, the bathrooms, all the food preparation.

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00:03:58,000 --> 00:04:00,000

God's Lord.

68

00:04:00,000 --> 00:04:02,000

And the toilets.

69

00:04:02,000 --> 00:04:03,000

And the toilets.

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00:04:03,000 --> 00:04:08,000

Every kind of toilet that's ever been made for any kind of aircraft or so it would seem to me.

71

00:04:08,000 --> 00:04:11,000

Do you remember what airline you heard it happened on?

72

00:04:11,000 --> 00:04:13,000

No.

73

00:04:13,000 --> 00:04:15,000

No.

74

00:04:15,000 --> 00:04:20,000

You guys, I know my toilets, but I don't know my legends.

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00:04:20,000 --> 00:04:23,000

Fair enough.

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00:04:23,000 --> 00:04:29,000

Interface carries two completely different human waste disposal units.

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00:04:29,000 --> 00:04:31,000

Here's the old style.

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00:04:31,000 --> 00:04:33,000

It's filled up with blue water.

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00:04:33,000 --> 00:04:37,000

And you can use your own imagination what that water's made of after a while.

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00:04:41,000 --> 00:04:44,000

The average pressure here is exactly zero.

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00:04:44,000 --> 00:04:45,000

Right.

82

00:04:45,000 --> 00:04:48,000

Because you're just recycling Albuquerque tank.

83

00:04:48,000 --> 00:04:49,000

Right.

84

00:04:49,000 --> 00:04:51,000

The pressure should be zero.

85

00:04:51,000 --> 00:04:59,000

But if something, say a hairbrush, gets caught in the outlet valves while the aircraft is at altitude.

86

00:04:59,000 --> 00:05:00,000

Now we're talking.

87

00:05:00,000 --> 00:05:02,000

Okay, you see where I'm going here?

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00:05:02,000 --> 00:05:06,000

She could generate a differential in pressure.

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00:05:06,000 --> 00:05:11,000

Yeah, the greater pressure inside would actually be trying to push her through the hole.

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00:05:11,000 --> 00:05:15,000

That theory of toilet terror has one problem.

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00:05:15,000 --> 00:05:18,000

It could only happen at altitude.

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00:05:18,000 --> 00:05:27,000

According to the legend and the information that we have, they said that the women actually stayed on the toilet until they were on the ground.

93

00:05:27,000 --> 00:05:30,000

Well, that would rule out the pressure differential area, wouldn't it?

94

00:05:30,000 --> 00:05:31,000

Exactly.

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00:05:31,000 --> 00:05:34,000

That leaves this vacuum unit.

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00:05:34,000 --> 00:05:37,000

It has pressure at altitude and on the ground.

97

00:05:37,000 --> 00:05:40,000

The vacuum toilet operates at two different pressures.

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00:05:40,000 --> 00:05:44,000

On the ground it operates at approximately three psi negative pressure.

99

00:05:44,000 --> 00:05:49,000

And at altitude we operate at eight psi negative pressure.

100

00:05:49,000 --> 00:05:56,000

And that pressure is produced by the differential between inside cabin air and the outside of the aircraft.

101

00:05:56,000 --> 00:05:57,000

This is the one.

102

00:05:57,000 --> 00:06:04,000

But at nine grand, it doesn't come cheap.

103

00:06:04,000 --> 00:06:11,000

One of the biggest problems that I see is that we've got to mimic a woman's butt really well.

104

00:06:11,000 --> 00:06:13,000

It has to be nice and fleshy and soft.

105

00:06:13,000 --> 00:06:17,000

So we've got to decide on what kind of, it's going to be a rubber of some sort.

106

00:06:17,000 --> 00:06:21,000

Well, I've thought of using this rubber that's used in a lot of sex toys because it's very fleshy.

107

00:06:21,000 --> 00:06:23,000

It's called Hot Melt Vinyl.

108

00:06:27,000 --> 00:06:34,000

I'd like to see a sample of the Hot Melt Vinyl you have.

109

00:06:34,000 --> 00:06:35,000

Is this a Hot Melt?

110

00:06:35,000 --> 00:06:37,000

Yeah, that's the one that's really sticky.

111

00:06:37,000 --> 00:06:39,000

That's the one that I like.

112

00:06:39,000 --> 00:06:40,000

This is the one that I want.

113

00:06:40,000 --> 00:06:45,000

We are casting up a really large bottom.

114

00:06:45,000 --> 00:06:48,000

And we're going to stick it to an airline toilet seat that we have.

115

00:06:48,000 --> 00:06:50,000

So this is actually perfect.

116

00:06:50,000 --> 00:06:52,000

This is definitely the stuff it, yeah.

117

00:06:52,000 --> 00:06:54,000

It sounds right.

118

00:06:54,000 --> 00:06:56,000

I might want to buy as much as 10 gallons.

119

00:06:56,000 --> 00:06:59,000

So that comes in a flash or a collider?

120

00:06:59,000 --> 00:07:01,000

Flash, of course.

121

00:07:01,000 --> 00:07:03,000

You'd like to try the butt head?

122

00:07:03,000 --> 00:07:05,000

I would like to try the butt head, absolutely.

123

00:07:05,000 --> 00:07:06,000

There you are, sir.

124

00:07:06,000 --> 00:07:08,000

Do I have to pull out the...

125

00:07:12,000 --> 00:07:13,000

All right.

126

00:07:14,000 --> 00:07:17,000

And now the transformation is complete.

127

00:07:17,000 --> 00:07:19,000

I come from a planet butt head.

128

00:07:25,000 --> 00:07:28,000

So how did you have this done?

129

00:07:28,000 --> 00:07:30,000

So that's an actual carry's butt.

130

00:07:30,000 --> 00:07:31,000

No.

131

00:07:32,000 --> 00:07:33,000

Really?

132

00:07:33,000 --> 00:07:37,000

Except that we let her modify herself.

133

00:07:37,000 --> 00:07:39,000

Okay, I'm going to take a shot.

134

00:07:39,000 --> 00:07:41,000

Try to hold it as still as possible from now on.

135

00:07:41,000 --> 00:07:43,000

We scanned her butt.

136

00:07:43,000 --> 00:07:47,000

It's probably the best shot that you'll ever see of your own butt.

137

00:07:48,000 --> 00:07:53,000

Oh, yeah, right in the face.

138

00:07:53,000 --> 00:07:55,000

And then we took it up to the computer

139

00:07:55,000 --> 00:07:59,000

and used the freeform tool to enlarge it

140

00:07:59,000 --> 00:08:02,000

and put a lot of cottage cheese thighs in there,

141

00:08:02,000 --> 00:08:04,000

you know, the whole thing.

142

00:08:04,000 --> 00:08:05,000

It really looks great.

143

00:08:05,000 --> 00:08:07,000

It's a really, really nice set.

144

00:08:07,000 --> 00:08:08,000

It really looks great.

145

00:08:08,000 --> 00:08:09,000

You'll like that.

146

00:08:09,000 --> 00:08:11,000

I'm looking forward to spanking it.

147

00:08:12,000 --> 00:08:17,000

A 300-pound butt requires some significant reinforcing.

148

00:08:17,000 --> 00:08:20,000

There's a science to making butts.

149

00:08:20,000 --> 00:08:25,000

Think of all the Twinkies that go into the actual production

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00:08:25,000 --> 00:08:27,000

of something like this.

151

00:08:27,000 --> 00:08:31,000

We're doing in one night what most people spend a lifetime avoiding.

152

00:08:31,000 --> 00:08:33,000

Contact.

153

00:08:33,000 --> 00:08:35,000

This is what I had in mind.

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00:08:35,000 --> 00:08:37,000

If we have our forklift here

155

00:08:37,000 --> 00:08:39,000

and we hook a line onto it,

156

00:08:39,000 --> 00:08:41,000

we go down to a pivot point

157

00:08:41,000 --> 00:08:46,000

and we have a bar that is on the pivot point.

158

00:08:53,000 --> 00:08:56,000

And the bar is longer on this side than the other.

159

00:08:56,000 --> 00:08:58,000

We put barbell weights over here.

160

00:08:58,000 --> 00:09:01,000

We have another pivot point here

161

00:09:01,000 --> 00:09:04,000

that goes down to the butt.

162

00:09:04,000 --> 00:09:08,000

And there is our strain gauge.

163

00:09:08,000 --> 00:09:11,000

We've made an agreement not to damage this toilet,

164

00:09:11,000 --> 00:09:14,000

so we want to mount it in a way that it doesn't...

165

00:09:14,000 --> 00:09:17,000

Yeah, it's got mount points, good, strong ones.

166

00:09:17,000 --> 00:09:20,000

We might want to also, I don't know, come up on the sides

167

00:09:20,000 --> 00:09:22,000

or somehow do some other stuff to it

168

00:09:22,000 --> 00:09:24,000

to make sure that it doesn't strain here.

169

00:09:24,000 --> 00:09:26,000

I mean, this is definitely welded stainless.

170

00:09:26,000 --> 00:09:28,000

Well, that's why these things cost so much,

171

00:09:28,000 --> 00:09:30,000

is that it's all done to high specifications.

172

00:09:30,000 --> 00:09:32,000

I mean, look at the welds on these things.

173

00:09:32,000 --> 00:09:34,000

It's a perfect little...

174

00:09:34,000 --> 00:09:35,000

Oh, my God, that's beautiful.

175

00:09:35,000 --> 00:09:37,000

When we've finished admiring it,

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00:09:37,000 --> 00:09:41,000

we better get on with finding something to make it suck.

177

00:09:41,000 --> 00:09:44,000

I've got one of those things that I believe

178

00:09:44,000 --> 00:09:47,000

pushes pneumatics around in the stores

179

00:09:47,000 --> 00:09:52,000

when you want to get change in a big department store.

180

00:09:52,000 --> 00:09:54,000

Oh, really? You got one of those in the vacuum?

181

00:09:54,000 --> 00:09:55,000

Yeah.

182

00:09:55,000 --> 00:09:56,000

Oh, that's cool.

183

00:09:56,000 --> 00:09:59,000

Our pump generates just three PSI.

184

00:09:59,000 --> 00:10:05,000

That's three pounds per square inch of exposed butt.

185

00:10:05,000 --> 00:10:07,000

What is this?

186

00:10:07,000 --> 00:10:11,000

This is about 13 inches by 15 inches.

187

00:10:11,000 --> 00:10:16,000

So, 150 times...

188

00:10:16,000 --> 00:10:18,000

What did we say? Three PSI?

189

00:10:18,000 --> 00:10:19,000

We'll say three PSI.

190

00:10:19,000 --> 00:10:20,000

450.

191

00:10:20,000 --> 00:10:22,000

That's 450 pounds.

192

00:10:22,000 --> 00:10:23,000

Pounds of pulp.

193

00:10:23,000 --> 00:10:25,000

So if we had a perfect seal on this

194

00:10:25,000 --> 00:10:26,000

with a rubber gasket and everything,

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00:10:26,000 --> 00:10:28,000

it would take 450 pounds to remove it

196

00:10:28,000 --> 00:10:29,000

just from a three PSI.

197

00:10:29,000 --> 00:10:32,000

And you could see how a woman wouldn't be able to get off?

198

00:10:32,000 --> 00:10:33,000

Absolutely.

199

00:10:33,000 --> 00:10:36,000

She'd have one big hickey.

200

00:10:36,000 --> 00:10:38,000

Big butt hickey.

201

00:10:38,000 --> 00:10:40,000

That's going to be hard to explain.

202

00:10:42,000 --> 00:10:46,000

Things are coming together at last.

203

00:10:46,000 --> 00:10:49,000

That's okay.

204

00:10:49,000 --> 00:10:51,000

I think it actually came out pretty nice.

205

00:10:51,000 --> 00:10:57,000

Yeah, I'm not displeased.

206

00:10:57,000 --> 00:10:59,000

Before the experiment can begin,

207

00:10:59,000 --> 00:11:02,000

we have to balance the butt.

208

00:11:02,000 --> 00:11:05,000

Jamie's using a 4 to 1 ratio.

209

00:11:05,000 --> 00:11:10,000

300 pounds of butt balanced against 75 on the pivot arm.

210

00:11:10,000 --> 00:11:13,000

Okay, guys, we got some serious weight going on here.

211

00:11:13,000 --> 00:11:16,000

So never stand under anything at all.

212

00:11:16,000 --> 00:11:18,000

Keep your eye on what's going on.

213

00:11:18,000 --> 00:11:21,000

We don't know how much weight it's going to take before it rips.

214

00:11:21,000 --> 00:11:23,000

So we're going to turn on the pump.

215

00:11:23,000 --> 00:11:25,000

We're going to lower the butt into place.

216

00:11:25,000 --> 00:11:27,000

We'll see if we get any pressure on this.

217

00:11:27,000 --> 00:11:29,000

We'll let it take weight.

218

00:11:29,000 --> 00:11:34,000

And we'll slowly start to raise and see how much pounds it takes

219

00:11:34,000 --> 00:11:37,000

to remove berth from the toilet.

220

00:11:37,000 --> 00:11:40,000

Sounds like a plan.

221

00:11:40,000 --> 00:11:41,000

Contact.

222

00:11:48,000 --> 00:11:50,000

If the butt creates a seal,

223

00:11:50,000 --> 00:11:53,000

we should see a jump in vacuum pressure.

224

00:11:55,000 --> 00:12:05,000

Okay, soon I'll bring it up.

225

00:12:05,000 --> 00:12:08,000

We're still measuring around 3 psi.

226

00:12:08,000 --> 00:12:13,000

The toilet seat is preventing us from making a seal.

227

00:12:18,000 --> 00:12:20,000

I think it's much more plausible

228

00:12:20,000 --> 00:12:24,000

that she sat down without putting that seat down.

229

00:12:24,000 --> 00:12:27,000

Okay, that's easy to test.

230

00:12:36,000 --> 00:12:38,000

That's better.

231

00:12:38,000 --> 00:12:42,000

That's a seal, but it's not taking that much pressure.

232

00:12:42,000 --> 00:12:47,000

We'll pull the plug and see if we can rethink this.

233

00:12:48,000 --> 00:12:55,000

Well, we're getting a significant amount of suction out of the toilet.

234

00:12:55,000 --> 00:13:00,000

And the needle was bouncing more without the toilet seat on.

235

00:13:00,000 --> 00:13:03,000

And checking all the way around, we had a reasonable seal.

236

00:13:03,000 --> 00:13:06,000

But that air gap between the shroud and the bowl

237

00:13:06,000 --> 00:13:09,000

just prevented any real suction from occurring.

238

00:13:09,000 --> 00:13:13,000

This myth starting to look decidedly shaky.

239

00:13:13,000 --> 00:13:16,000

These two lugs under the shroud

240

00:13:16,000 --> 00:13:19,000

have been preventing an airlock from forming.

241

00:13:19,000 --> 00:13:24,000

I believe myself that the toilets are designed to not seal.

242

00:13:24,000 --> 00:13:25,000

Right.

243

00:13:25,000 --> 00:13:28,000

Adam can sniff a conspiracy.

244

00:13:28,000 --> 00:13:32,000

Do you think they put that in after the myth, like as a response?

245

00:13:32,000 --> 00:13:33,000

No.

246

00:13:33,000 --> 00:13:36,000

Personally, I think we might want to try it without the shroud.

247

00:13:36,000 --> 00:13:40,000

Best to see if there's actually enough suction, if there was a seal.

248

00:13:40,000 --> 00:13:42,000

Okay, contact.

249

00:13:44,000 --> 00:13:46,000

Adam, what comes?

250

00:13:46,000 --> 00:13:48,000

Alright, we're coming down.

251

00:13:48,000 --> 00:13:52,000

However unlikely, we want to cover the possibility

252

00:13:52,000 --> 00:13:54,000

that the victim's butt was so large,

253

00:13:54,000 --> 00:13:58,000

it reached down and made contact with the bowl.

254

00:14:04,000 --> 00:14:06,000

That's as good a seal as we get.

255

00:14:06,000 --> 00:14:07,000

Okay, carry it.

256

00:14:07,000 --> 00:14:08,000

Lower the weight.

257

00:14:08,000 --> 00:14:10,000

Time to measure the suction.

258

00:14:10,000 --> 00:14:11,000

Alright, here we go.

259

00:14:11,000 --> 00:14:12,000

Go!

260

00:14:12,000 --> 00:14:14,000

Keep going, all the way up.

261

00:14:19,000 --> 00:14:23,000

There was a, this whole butt cheek right here.

262

00:14:23,000 --> 00:14:28,000

This whole butt cheek was distended about another three inches down.

263

00:14:28,000 --> 00:14:29,000

The whole butt was deformed.

264

00:14:29,000 --> 00:14:31,000

She's got a hell of a hickey.

265

00:14:31,000 --> 00:14:35,000

We got a really good seal on the butt crack in that last one.

266

00:14:35,000 --> 00:14:39,000

There was a little bit of, that it didn't want to give at first when you lifted,

267

00:14:39,000 --> 00:14:42,000

but it didn't take very much.

268

00:14:42,000 --> 00:14:47,000

Yeah, I saw what the, I was watching what the measurement on this was.

269

00:14:47,000 --> 00:14:51,000

The toilet was generating 450 pounds of suction,

270

00:14:51,000 --> 00:14:56,000

but the scale shows it would take a fraction of that to break the seal.

271

00:14:56,000 --> 00:14:59,000

I'd say a woman this large, I mean, she'd be able to, you know,

272

00:14:59,000 --> 00:15:03,000

pull a cheek or move herself around a little bit and release the gap.

273

00:15:03,000 --> 00:15:06,000

I mean, we're talking, if someone really couldn't do that,

274

00:15:06,000 --> 00:15:08,000

we're talking someone maybe even twice this large.

275

00:15:08,000 --> 00:15:10,000

And then I'm not even sure they could fit in an airplane toilet.

276

00:15:10,000 --> 00:15:12,000

Yeah, I would agree.

277

00:15:13,000 --> 00:15:19,000

What's more, a properly functioning toilet creates suction for just two seconds.

278

00:15:19,000 --> 00:15:24,000

If something were to go inside the bowl and get stuck inside of there,

279

00:15:24,000 --> 00:15:29,000

the pressure is probably about twice as much as a normal shop fact that you would have at your home.

280

00:15:29,000 --> 00:15:34,000

As you can see, there's no damage to a person's hand if they do put a good amount of pressure.

281

00:15:37,000 --> 00:15:40,000

And really all you do is get wet.

282

00:15:41,000 --> 00:15:47,000

Myth busted, and we're prepared to stake Adam's butt on it.

283

00:15:47,000 --> 00:15:50,000

Are you ready to try it, you know, the real deal?

284

00:15:50,000 --> 00:15:51,000

Sure.

285

00:15:51,000 --> 00:15:52,000

All right.

286

00:15:52,000 --> 00:16:01,000

Now, what if you're hurt?

287

00:16:01,000 --> 00:16:04,000

Like, what if you, you know, this starts to feel uncomfortable?

288

00:16:04,000 --> 00:16:06,000

I'll take it gradually.

289

00:16:06,000 --> 00:16:11,000

If I feel things moving around that shouldn't be moving, I'll disconnect.

290

00:16:11,000 --> 00:16:13,000

Because I can't hear you at terribly well.

291

00:16:13,000 --> 00:16:16,000

You'll hear hot, hot, big squealing.

292

00:16:16,000 --> 00:16:21,000

All right, contact.

293

00:16:21,000 --> 00:16:23,000

All right.

294

00:16:23,000 --> 00:16:25,000

Exposed.

295

00:16:25,000 --> 00:16:26,000

Bunchy.

296

00:16:26,000 --> 00:16:27,000

There we go.

297

00:16:27,000 --> 00:16:28,000

Oh!

298

00:16:28,000 --> 00:16:29,000

Oh!

299

00:16:29,000 --> 00:16:30,000

Oh!

300

00:16:30,000 --> 00:16:31,000

Oh!

301

00:16:31,000 --> 00:16:32,000

Oh!

302

00:16:32,000 --> 00:16:33,000

Oh!

303

00:16:33,000 --> 00:16:34,000

Oh!

304

00:16:34,000 --> 00:16:35,000

Oh!

305

00:16:35,000 --> 00:16:36,000

Oh!

306

00:16:36,000 --> 00:16:37,000

Oh!

307

00:16:37,000 --> 00:16:38,000

Oh!

308

00:16:38,000 --> 00:16:39,000

Oh!

309

00:16:39,000 --> 00:16:40,000

Oh!

310

00:16:40,000 --> 00:16:41,000

Oh!

311

00:16:41,000 --> 00:16:42,000

Oh!

312

00:16:42,000 --> 00:16:43,000

Oh!

313

00:16:43,000 --> 00:16:44,000

Oh!

314

00:16:44,000 --> 00:16:45,000

Oh!

315

00:16:45,000 --> 00:16:47,000

Oh, my God!

316

00:16:47,000 --> 00:16:50,000

All right, that's significant.

317

00:16:50,000 --> 00:16:52,000

All right.

318

00:16:52,000 --> 00:16:53,000

Oh!

319

00:16:53,000 --> 00:16:55,000

Oh, my God!

320

00:16:55,000 --> 00:17:00,000

Oh, my God!

321

00:17:00,000 --> 00:17:04,000

Oh, wow, that was really significant!

322

00:17:04,000 --> 00:17:06,000

That was, that was...

323

00:17:06,000 --> 00:17:10,000

All right.

324

00:17:10,000 --> 00:17:12,000

Ah!

325

00:17:12,000 --> 00:17:20,000

That was an impressively significant amount of f***ing of suction.

326

00:17:20,000 --> 00:17:23,000

The whole thing was vibrating with the pressure.

327

00:17:23,000 --> 00:17:26,000

We got up to five PSI.

328

00:17:26,000 --> 00:17:28,000

Yeah, it was, that was significant.

329

00:17:28,000 --> 00:17:31,000

I mean, I had my...

330

00:17:31,000 --> 00:17:34,000

I tried to talk scientifically.

331

00:17:34,000 --> 00:17:37,000

I was able to use my arms, but like, if I didn't have arms,

332

00:17:37,000 --> 00:17:40,000

I would not probably have been able to free myself.

333

00:17:40,000 --> 00:17:42,000

I'm not sure what we've proved here,

334

00:17:42,000 --> 00:17:45,000

but at least it's good television.

335

00:17:45,000 --> 00:17:47,000

Another one bites the dust. Good work.

336

00:17:56,000 --> 00:17:59,000

This next legend involves, it's called the biscuit bullet,

337

00:17:59,000 --> 00:18:01,000

and it's actually pretty funny.

338

00:18:01,000 --> 00:18:04,000

The way I heard it, the sister of a friend of a friend

339

00:18:04,000 --> 00:18:05,000

went to the supermarket.

340

00:18:05,000 --> 00:18:07,000

It was on a very hot day,

341

00:18:07,000 --> 00:18:10,000

and she hears this loud explosion behind her.

342

00:18:10,000 --> 00:18:13,000

And when she heard the pop and felt this sticky mass

343

00:18:13,000 --> 00:18:16,000

in the back of her head, she thought she'd been shot.

344

00:18:16,000 --> 00:18:18,000

And so she better just kind of hold still

345

00:18:18,000 --> 00:18:21,000

and try and hold her brains from falling out of her head

346

00:18:21,000 --> 00:18:23,000

until the paramedics get there.

347

00:18:23,000 --> 00:18:27,000

And when the paramedics pry the woman's fingers off the back of her head,

348

00:18:27,000 --> 00:18:31,000

they find that she's hanging onto this massive raw biscuit dough.

349

00:18:31,000 --> 00:18:34,000

So what do you think we're going to need for this experiment?

350

00:18:34,000 --> 00:18:37,000

Well, we're going to need some biscuit dough

351

00:18:37,000 --> 00:18:40,000

of a bunch of different, a bunch of these canisters

352

00:18:40,000 --> 00:18:43,000

of different sizes or different types and brands.

353

00:18:43,000 --> 00:18:45,000

So we've got to get a car.

354

00:18:45,000 --> 00:18:47,000

We can use my car to do this.

355

00:18:47,000 --> 00:18:51,000

I would think that we'd want to duplicate the car's interior temperature

356

00:18:51,000 --> 00:18:54,000

by, say, pointing heaters into the windows.

357

00:18:54,000 --> 00:18:57,000

Can we build a fire under your car, do you mind?

358

00:18:57,000 --> 00:19:00,000

Yeah, absolutely. That's no problem at all.

359

00:19:00,000 --> 00:19:03,000

We would want to get the temperature stable

360

00:19:03,000 --> 00:19:06,000

in the car and then move the biscuits right in

361

00:19:06,000 --> 00:19:09,000

and start the timer and see how long it takes them to go off.

362

00:19:11,000 --> 00:19:15,000

Step one in our recipe, getting the dough.

363

00:19:16,000 --> 00:19:19,000

I'm guessing that the different mixes,

364

00:19:19,000 --> 00:19:22,000

like you got your flaky biscuits and you got your, you know,

365

00:19:22,000 --> 00:19:26,000

super-duper buttermilk, whatever, you know,

366

00:19:26,000 --> 00:19:29,000

there's going to be some differences in those things.

367

00:19:29,000 --> 00:19:32,000

That maybe that there's, you know, a certain amount of baking soda

368

00:19:32,000 --> 00:19:37,000

in one as opposed to another that would make it more prone to, you know,

369

00:19:37,000 --> 00:19:39,000

building that high pressure.

370

00:19:39,000 --> 00:19:42,000

The tins are meant to be refrigerated,

371

00:19:42,000 --> 00:19:45,000

so we'll keep them in a cooler until the experiment begins.

372

00:19:46,000 --> 00:19:49,000

I had an idea that, you know, it's not only the car's temperature,

373

00:19:49,000 --> 00:19:52,000

but potentially the freshness of the biscuits

374

00:19:52,000 --> 00:19:55,000

that might have contributed to their exploding.

375

00:19:55,000 --> 00:20:00,000

To that end, we've had this one out for 10 days.

376

00:20:00,000 --> 00:20:03,000

And we'll put that in our, you know, as one of our control groups

377

00:20:03,000 --> 00:20:05,000

to see if it explodes faster.

378

00:20:06,000 --> 00:20:09,000

Step two, mounting the tins in the car.

379

00:20:11,000 --> 00:20:15,000

I was thinking just in terms of being able to get a reasonable spread,

380

00:20:15,000 --> 00:20:17,000

maybe a rack of six.

381

00:20:20,000 --> 00:20:23,000

Maybe for fun we should like make a thing like, you know,

382

00:20:23,000 --> 00:20:27,000

a holster, like shotgun shells, like you're, you know, you're either...

383

00:20:27,000 --> 00:20:29,000

Nobody moves, nobody gets hurt.

384

00:20:32,000 --> 00:20:35,000

Right, wearing it under your mask, going through our play security.

385

00:20:40,000 --> 00:20:44,000

Step three, determining the right baking temperature.

386

00:20:44,000 --> 00:20:47,000

So it's a rare sunny day in San Francisco.

387

00:20:47,000 --> 00:20:51,000

The skies look really clear and it's nine on the nose.

388

00:20:51,000 --> 00:20:53,000

We're going to place a thermometer in my car.

389

00:20:53,000 --> 00:20:55,000

We're going to check back in a couple of hours

390

00:20:55,000 --> 00:20:57,000

and see where we can get the temperature to.

391

00:21:00,000 --> 00:21:03,000

It's no coincidence that the Biscuit Bullet story

392

00:21:03,000 --> 00:21:07,000

first started making the rounds in the summer of 95,

393

00:21:07,000 --> 00:21:09,000

one of the hottest summers on record.

394

00:21:12,000 --> 00:21:14,000

So it's about three o'clock.

395

00:21:14,000 --> 00:21:17,000

The car's been sitting out here all day with the thermometer in it.

396

00:21:17,000 --> 00:21:20,000

Temperature's hovering right around 140 degrees.

397

00:21:22,000 --> 00:21:25,000

To ensure a consistent baking temperature,

398

00:21:25,000 --> 00:21:28,000

we're going to bring the car inside and heat it artificially.

399

00:21:36,000 --> 00:21:37,000

So Adam, let's load this thing.

400

00:21:37,000 --> 00:21:38,000

Okay.

401

00:21:40,000 --> 00:21:44,000

I'm hoping we see a pretty significant change in the heat kind of fast.

402

00:21:44,000 --> 00:21:49,000

Well, it ought to, these are radiant heaters, so, you know,

403

00:21:49,000 --> 00:21:53,000

this is like the pure form of what the sun gives

404

00:21:53,000 --> 00:21:56,000

as far as just what actually heats it up.

405

00:21:56,000 --> 00:21:58,000

We're up to 105.8.

406

00:21:58,000 --> 00:22:00,000

It's looking good.

407

00:22:00,000 --> 00:22:03,000

Maybe another 15 or 20 minutes.

408

00:22:03,000 --> 00:22:05,000

It's going to be hot in there.

409

00:22:05,000 --> 00:22:07,000

I don't know if you want to sit in the car,

410

00:22:07,000 --> 00:22:09,000

you know, wait for the Biscuit Towel,

411

00:22:09,000 --> 00:22:12,000

you know, or if I sit in the car, you know, maybe we take turns.

412

00:22:12,000 --> 00:22:13,000

All right.

413

00:22:13,000 --> 00:22:15,000

I think from about a foot away, you know,

414

00:22:15,000 --> 00:22:17,000

it's totally safe for us to, you know,

415

00:22:17,000 --> 00:22:19,000

be able to be the subjects in the car.

416

00:22:19,000 --> 00:22:22,000

I wouldn't load my shorts full of these things in a hot car.

417

00:22:23,000 --> 00:22:25,000

That's a scary thought.

418

00:22:27,000 --> 00:22:31,000

It's starting to smell really strong of like almost burning plastic in there.

419

00:22:31,000 --> 00:22:33,000

So I don't think either of us should sit in there.

420

00:22:33,000 --> 00:22:35,000

I think they made up a rack.

421

00:22:35,000 --> 00:22:36,000

All right.

422

00:22:36,000 --> 00:22:39,000

I mean, you don't want to get hot as with yourself.

423

00:22:39,000 --> 00:22:43,000

Oh, you couldn't go climbing there, but it's pretty stinky.

424

00:22:43,000 --> 00:22:44,000

You could suffocate.

425

00:22:44,000 --> 00:22:46,000

120 degrees.

426

00:22:46,000 --> 00:22:48,000

Time to get baking.

427

00:22:48,000 --> 00:22:49,000

Are you ready?

428

00:22:49,000 --> 00:22:50,000

Yeah.

429

00:22:50,000 --> 00:22:51,000

Okay.

430

00:22:51,000 --> 00:22:53,000

Leading brand flaky.

431

00:22:53,000 --> 00:22:55,000

Leading brand buttermilk.

432

00:22:55,000 --> 00:22:57,000

Competitor flaky.

433

00:22:57,000 --> 00:23:00,000

Competitor buttermilk.

434

00:23:00,000 --> 00:23:02,000

Unrefrigerated.

435

00:23:02,000 --> 00:23:04,000

Small tin.

436

00:23:06,000 --> 00:23:09,000

And the clock is ticking.

437

00:23:09,000 --> 00:23:13,000

I'll say within eight minutes.

438

00:23:13,000 --> 00:23:16,000

Two hours, maybe three.

439

00:23:16,000 --> 00:23:17,000

Really?

440

00:23:17,000 --> 00:23:18,000

Yeah.

441

00:23:18,000 --> 00:23:23,000

So, do I lose if I go over or if it's closer to eight minutes than two hours?

442

00:23:23,000 --> 00:23:26,000

So we're saying eight minutes or 120 minutes?

443

00:23:26,000 --> 00:23:27,000

Yeah.

444

00:23:27,000 --> 00:23:28,000

All right.

445

00:23:28,000 --> 00:23:30,000

I'll put a dollar down on that.

446

00:23:30,000 --> 00:23:32,000

Put it on the counter.

447

00:23:32,000 --> 00:23:34,000

Put it on the counter.

448

00:23:34,000 --> 00:23:36,000

I'll put a dollar down on that.

449

00:23:36,000 --> 00:23:39,000

Put it on the car.

450

00:23:39,000 --> 00:23:41,000

All right.

451

00:23:41,000 --> 00:23:43,000

Now we wait?

452

00:23:43,000 --> 00:23:44,000

Now we wait.

453

00:23:44,000 --> 00:23:45,000

All right.

454

00:23:45,000 --> 00:23:48,000

Can we see any physical change in them?

455

00:23:48,000 --> 00:23:50,000

Now I don't see any change in them.

456

00:23:50,000 --> 00:23:53,000

Your dashboard's starting to melt though.

457

00:23:53,000 --> 00:23:56,000

I've been working in this area for about 30 years.

458

00:23:56,000 --> 00:24:00,000

I've never heard of this type of thing happening.

459

00:24:00,000 --> 00:24:04,000

But as you think about it, you've got the potential there.

460

00:24:04,000 --> 00:24:10,000

Because if you have enough heat, the pressure that's created by the gas inside

461

00:24:10,000 --> 00:24:14,000

can cause that container to pop.

462

00:24:14,000 --> 00:24:16,000

Come on.

463

00:24:16,000 --> 00:24:18,000

There we go.

464

00:24:19,000 --> 00:24:22,000

Do you think the flakies are going to go first or the buttermilks?

465

00:24:22,000 --> 00:24:25,000

The small one's going to go first because it has less mass.

466

00:24:25,000 --> 00:24:31,000

It's going to take at least probably a half an hour for the interior of those things

467

00:24:31,000 --> 00:24:34,000

to show hardly any change in temperature.

468

00:24:34,000 --> 00:24:36,000

Much less enough to work through.

469

00:24:36,000 --> 00:24:37,000

Yeah.

470

00:24:37,000 --> 00:24:39,000

I mean, it's too much mass.

471

00:24:39,000 --> 00:24:41,000

It's still going to be way less than 120 minutes.

472

00:24:41,000 --> 00:24:43,000

I'll find out.

473

00:24:43,000 --> 00:24:46,000

The leavening agent is sodium bicarbonate.

474

00:24:46,000 --> 00:24:54,000

And it is reacting with an acid to produce carbon dioxide CO₂.

475

00:24:54,000 --> 00:24:59,000

If it is not released, you're going to create pressure in that container

476

00:24:59,000 --> 00:25:04,000

to the point where as the reaction continues, that container can burst.

477

00:25:05,000 --> 00:25:07,000

Whoa!

478

00:25:09,000 --> 00:25:12,000

Jamie, do you know what happened?

479

00:25:12,000 --> 00:25:13,000

What?

480

00:25:13,000 --> 00:25:15,000

It jumped out of the rack.

481

00:25:15,000 --> 00:25:17,000

That's the small can that was in the rack.

482

00:25:17,000 --> 00:25:20,000

It jumped out of the rack and into my cup holder.

483

00:25:20,000 --> 00:25:22,000

It'll all be done.

484

00:25:22,000 --> 00:25:25,000

And so where was our clock? Where were we at?

485

00:25:25,000 --> 00:25:28,000

We were at like 58 minutes on the nose.

486

00:25:28,000 --> 00:25:30,000

So you won the bet then?

487

00:25:30,000 --> 00:25:32,000

In fact, I did.

488

00:25:32,000 --> 00:25:36,000

I'd like to win that one before it bakes dough into my cup holder.

489

00:25:36,000 --> 00:25:39,000

Although I was right about which one was going to go first.

490

00:25:39,000 --> 00:25:41,000

You were absolutely right.

491

00:25:46,000 --> 00:25:48,000

Whoa!

492

00:25:49,000 --> 00:25:51,000

That was kind of spectacular.

493

00:25:51,000 --> 00:25:54,000

I mean, we're missing a whole tin. I don't even see it in there.

494

00:25:54,000 --> 00:25:56,000

Adam, which tin was it?

495

00:25:56,000 --> 00:25:59,000

That was the unrefrigerated.

496

00:25:59,000 --> 00:26:03,000

That was the unrefrigerated flaky dough.

497

00:26:05,000 --> 00:26:07,000

Well, now, there you go.

498

00:26:07,000 --> 00:26:10,000

I mean, it blew the top right off of that thing.

499

00:26:10,000 --> 00:26:13,000

That was the unrefrigerated leading brand.

500

00:26:13,000 --> 00:26:17,000

I mean, this is stupefyingly boring, but, you know, things are blowing up in my car.

501

00:26:17,000 --> 00:26:19,000

What could be better?

502

00:26:22,000 --> 00:26:24,000

Whoa!

503

00:26:24,000 --> 00:26:27,000

It's 137 degrees right now.

504

00:26:27,000 --> 00:26:31,000

Well, that seems to be the butter zone. I mean, everything's happened above 133 degrees.

505

00:26:31,000 --> 00:26:33,000

We should do this in Vegas.

506

00:26:33,000 --> 00:26:36,000

Then we can say, I went to Vegas and I blew some dough.

507

00:26:42,000 --> 00:26:45,000

Oh, that's a spectacular one.

508

00:26:45,000 --> 00:26:47,000

Whoa!

509

00:26:47,000 --> 00:26:49,000

Oh, man.

510

00:26:49,000 --> 00:26:53,000

I definitely could understand how you'd mistake this for brands here.

511

00:26:53,000 --> 00:26:56,000

Well, I'm not going to do anything with it.

512

00:26:56,000 --> 00:26:59,000

Well, no, feel it. Feel it. It grew with me.

513

00:26:59,000 --> 00:27:01,000

Yeah, it's definitely brands.

514

00:27:01,000 --> 00:27:03,000

Whoa!

515

00:27:03,000 --> 00:27:05,000

What, did another one go?

516

00:27:05,000 --> 00:27:07,000

I saw that.

517

00:27:07,000 --> 00:27:09,000

Did it look cool?

518

00:27:09,000 --> 00:27:11,000

That one spewed pretty good.

519

00:27:11,000 --> 00:27:14,000

That tin is just, like, decimated.

520

00:27:14,000 --> 00:27:17,000

That one was pretty energetic.

521

00:27:17,000 --> 00:27:20,000

It, like, ricocheted off the back of your seat.

522

00:27:20,000 --> 00:27:22,000

Really?

523

00:27:22,000 --> 00:27:25,000

You can see bits of it. See that little speck that's not there?

524

00:27:25,000 --> 00:27:27,000

Yeah, yeah, yeah, totally.

525

00:27:27,000 --> 00:27:29,000

That might be our smoking gun.

526

00:27:29,000 --> 00:27:34,000

The guys thought there might be a difference between flaky and buttermilk.

527

00:27:34,000 --> 00:27:36,000

Seems they're wrong again.

528

00:27:36,000 --> 00:27:39,000

Oh, no!

529

00:27:39,000 --> 00:27:41,000

Wow!

530

00:27:41,000 --> 00:27:44,000

That just went everywhere. I mean, I just saw it vaporize.

531

00:27:44,000 --> 00:27:46,000

Look, it's in the front seat.

532

00:27:46,000 --> 00:27:48,000

Yeah, the whole can landed in the front seat.

533

00:27:48,000 --> 00:27:50,000

The whole can landed in the front seat,

534

00:27:50,000 --> 00:27:52,000

which means it had to come across this way,

535

00:27:52,000 --> 00:27:54,000

easily hitting the head.

536

00:27:54,000 --> 00:27:57,000

Yes, there can be accidents,

537

00:27:57,000 --> 00:28:00,000

but I've never heard of an accident like this.

538

00:28:00,000 --> 00:28:03,000

I wouldn't worry about being hurt.

539

00:28:03,000 --> 00:28:06,000

I may have a premature bursting of my container,

540

00:28:06,000 --> 00:28:10,000

but I wouldn't worry about wounds from shrapnel from my dough.

541

00:28:10,000 --> 00:28:13,000

Of course, I don't leave my groceries in the car

542

00:28:13,000 --> 00:28:16,000

at 140 degrees Fahrenheit or higher anyway,

543

00:28:16,000 --> 00:28:18,000

because there are other problems we can run into

544

00:28:18,000 --> 00:28:20,000

with food products and microorganisms.

545

00:28:20,000 --> 00:28:22,000

There you go.

546

00:28:22,000 --> 00:28:26,000

I mean, I think we've definitively proved that this is entirely,

547

00:28:26,000 --> 00:28:28,000

not only plausible but possible.

548

00:28:28,000 --> 00:28:32,000

I think without a doubt, a can of Biscuit Dough has exploded in somebody's car.

549

00:28:32,000 --> 00:28:36,000

I mean, in a hot car, a can of Biscuit Dough will go off within three hours,

550

00:28:36,000 --> 00:28:38,000

three and a half hours.

551

00:28:38,000 --> 00:28:40,000

This is something of a first for mythbusters.

552

00:28:40,000 --> 00:28:43,000

We can show the myth as physically possible,

553

00:28:43,000 --> 00:28:48,000

but there's no hard evidence that it ever happened.

554

00:28:48,000 --> 00:28:50,000

I tried to track it down.

555

00:28:50,000 --> 00:28:52,000

I tried to find the friend of the friend.

556

00:28:52,000 --> 00:28:53,000

I couldn't do it.

557

00:28:53,000 --> 00:28:56,000

I tried to find the location where it actually happened.

558

00:28:56,000 --> 00:28:57,000

I couldn't.

559

00:28:57,000 --> 00:28:58,000

I looked for police reports.

560

00:28:58,000 --> 00:29:00,000

There were none.

561

00:29:00,000 --> 00:29:02,000

And the truth is, this didn't happen.

562

00:29:02,000 --> 00:29:08,000

There was no woman so stupid that she thought she was holding raw dough on her head.

563

00:29:08,000 --> 00:29:10,000

And that's kind of nice to know.

564

00:29:15,000 --> 00:29:18,000

So the falling lawyer, what's the story?

565

00:29:18,000 --> 00:29:25,000

Well, the story goes that there was a lawyer on the 24th floor of a high rise.

566

00:29:25,000 --> 00:29:32,000

He was showing off, showing off his masculinity and his bravery in front of some kind of class.

567

00:29:32,000 --> 00:29:37,000

He bounced up against his plate glass window, maybe trying to, you know, have some fun.

568

00:29:37,000 --> 00:29:40,000

And he did it repeatedly and had no problems.

569

00:29:40,000 --> 00:29:43,000

And then he did it again, and this time he simply went through.

570

00:29:43,000 --> 00:29:50,000

And down this guy goes, falling 24 floors from his office to the ground, and he promptly dies.

571

00:29:52,000 --> 00:29:56,000

Our task is to prove whether this is possible or not.

572

00:29:56,000 --> 00:29:59,000

So what are the elements we're going to need to replicate this?

573

00:29:59,000 --> 00:30:02,000

Well, we're going to need a pane of glass.

574

00:30:02,000 --> 00:30:05,000

We've got to build a mock-up body.

575

00:30:05,000 --> 00:30:12,000

We have to create some sort of a track and a means of loading this dummy body.

576

00:30:12,000 --> 00:30:17,000

We'll probably use some of, I've got a bunch of surgical rubber tubing that we can make a big sling shot.

577

00:30:17,000 --> 00:30:18,000

Okay.

578

00:30:18,000 --> 00:30:24,000

And we'll have to also rig various ways of measuring, so we're consistent about it,

579

00:30:24,000 --> 00:30:26,000

how much force we're putting on him.

580

00:30:26,000 --> 00:30:32,000

Right, I mean the figure we want to come up with is whether or not it's possible for a person running at a reasonable clip

581

00:30:32,000 --> 00:30:37,000

into the window has enough pounds of force behind him to actually break the window.

582

00:30:39,000 --> 00:30:43,000

The first reaction is complete disbelief, and then the second reaction is,

583

00:30:43,000 --> 00:30:48,000

well I heard that happened in New York or Moscow or Hong Kong or something like that.

584

00:30:48,000 --> 00:30:53,000

It's just one of those stories that seems to have kind of gone around the world.

585

00:30:57,000 --> 00:31:01,000

First we need to decide what kind of track it is, whether we want.

586

00:31:01,000 --> 00:31:05,000

I'm thinking that we should roll it along the ground kind of track rather than hang it.

587

00:31:05,000 --> 00:31:09,000

You've got the great, the dolly track for the skateboard wheels.

588

00:31:09,000 --> 00:31:10,000

Okay.

589

00:31:10,000 --> 00:31:12,000

That's got a really low friction.

590

00:31:18,000 --> 00:31:21,000

I've only broken one bone in my body.

591

00:31:21,000 --> 00:31:23,000

My neck.

592

00:31:23,000 --> 00:31:26,000

So, how to build a lawyer.

593

00:31:26,000 --> 00:31:30,000

We're going to assume that this guy wasn't a fat cat.

594

00:31:30,000 --> 00:31:33,000

Make him say 160 pounds.

595

00:31:33,000 --> 00:31:35,000

Well they're going to be about, call him 20 pounds a piece.

596

00:31:35,000 --> 00:31:39,000

They're 20 pounds each, so it's going to be eight.

597

00:31:41,000 --> 00:31:51,000

Now I'm about to weld a steel frame that will hold up the sandbags to distribute their mass roughly like a person's body.

598

00:31:51,000 --> 00:31:58,000

These wooden blocks will stop our lawyer from falling backwards when he accelerates.

599

00:31:58,000 --> 00:32:03,000

But he'll be free to fall when the cart stops at the end of the track.

600

00:32:03,000 --> 00:32:04,000

Hey.

601

00:32:04,000 --> 00:32:09,000

On to the next task, finding the right pane of glass.

602

00:32:09,000 --> 00:32:13,000

Something that would be suitable for the 24th floor of a skyscraper.

603

00:32:13,000 --> 00:32:19,000

It's normally a thickness, which is greater than the thickness of the floor.

604

00:32:19,000 --> 00:32:23,000

It's greater than the thickness that you see in house glass.

605

00:32:23,000 --> 00:32:27,000

You're talking about six millimeter or ten millimeter.

606

00:32:27,000 --> 00:32:33,000

At three quarters of an inch, this four foot by eight foot pane seems to be the standard size.

607

00:32:33,000 --> 00:32:37,000

So we successfully have a piece of glass for the falling lawyer.

608

00:32:37,000 --> 00:32:38,000

Thanks.

609

00:32:40,000 --> 00:32:43,000

I think I'll build the frame out of just plywood.

610

00:32:43,000 --> 00:32:47,000

And we'll seal it up with some caulk just like we would in aquarium.

611

00:32:47,000 --> 00:32:53,000

And we may want to put the tempered glass in the front.

612

00:32:53,000 --> 00:32:55,000

Look at that.

613

00:32:57,000 --> 00:32:58,000

Ready?

614

00:32:58,000 --> 00:33:00,000

Yeah, okay.

615

00:33:00,000 --> 00:33:03,000

Whoa. Could have counted three.

616

00:33:03,000 --> 00:33:05,000

Glass comes in sealed units.

617

00:33:05,000 --> 00:33:09,000

And they're set into recesses in frames.

618

00:33:09,000 --> 00:33:13,000

So that they're supported around the total perimeter usually.

619

00:33:13,000 --> 00:33:16,000

Our frame won't just support the glass.

620

00:33:16,000 --> 00:33:22,000

It'll also allow us to reproduce some of the forces at work inside tall buildings.

621

00:33:22,000 --> 00:33:28,000

And then we also have to think of things like, you know, if there's pressure in the building

622

00:33:28,000 --> 00:33:34,000

or that would either tend to, you know, make things different.

623

00:33:34,000 --> 00:33:36,000

Inside of a building, there's a lot of things happening.

624

00:33:36,000 --> 00:33:40,000

There's mechanical equipment, which is exhausting air.

625

00:33:40,000 --> 00:33:44,000

And there's mechanical equipment, which is pushing air into the building.

626

00:33:44,000 --> 00:33:49,000

And if you don't get the same amount of air going out as you're pushing in

627

00:33:49,000 --> 00:33:52,000

then you start to build up pressures within the building.

628

00:33:52,000 --> 00:33:58,000

This stack effect is just 1.47 pounds per square inch.

629

00:33:58,000 --> 00:34:01,000

But we think that's going to be crucial.

630

00:34:01,000 --> 00:34:08,000

Because the glass has, you know, it's like 4,600 square inches, the amount of force, there's not much of a...

631

00:34:08,000 --> 00:34:13,000

Yeah, well you wouldn't think so, but it's a funny thing about pressures like that.

632

00:34:13,000 --> 00:34:18,000

When you're thinking in terms of PSIs and so on, it adds up.

633

00:34:18,000 --> 00:34:25,000

Even a very small fraction of a PSI times 4,600 starts to get into, you know, 1,000 pounds of air.

634

00:34:25,000 --> 00:34:27,000

Oh right, across the whole face of the glass.

635

00:34:27,000 --> 00:34:31,000

So it could have played a significant factor in the windows breaking on that particular day.

636

00:34:31,000 --> 00:34:37,000

4,600 pounds of pressure is definitely something we want to factor in.

637

00:34:37,000 --> 00:34:43,000

So that means that our frame that the window is going in actually has to be a chamber.

638

00:34:43,000 --> 00:34:50,000

Right, we'll seal it off in the back and we'll hook a vacuum or a pressure pump up to it.

639

00:34:53,000 --> 00:34:58,000

Jamie doesn't have a pump large enough to increase the air pressure in the shop.

640

00:34:58,000 --> 00:35:04,000

Instead, he'll reproduce the stack effect by sucking air out of the chamber.

641

00:35:07,000 --> 00:35:10,000

I can see the plexiglass falling.

642

00:35:10,000 --> 00:35:17,000

This pump is too powerful. It's threatening to rip the plexiglass out of the chamber.

643

00:35:17,000 --> 00:35:23,000

And our vacuum gauge isn't sensitive enough.

644

00:35:23,000 --> 00:35:30,000

You know what I think we should do is that we should just rig our own gauge in terms of inches of water.

645

00:35:30,000 --> 00:35:36,000

I believe inches of water is going to be a lot more sensitive than inches of mercury because it's a lot lighter.

646

00:35:36,000 --> 00:35:42,000

And then what mercury is, I mean it's literally we put a tube in there like a U-shaped tube.

647

00:35:42,000 --> 00:35:49,000

It's just like a barometer and that's the kind of scale that we're dealing with is like barometric pressure.

648

00:35:49,000 --> 00:35:55,000

It'll be an interesting thing for us. With a tube of water we'll get all the sensitivity we want.

649

00:35:57,000 --> 00:36:02,000

So it should be about 4 inches of water for the minimum.

650

00:36:02,000 --> 00:36:05,000

No, no, no. Oh, point 0.0.

651

00:36:05,000 --> 00:36:08,000

So you're right. That's magnificent.

652

00:36:08,000 --> 00:36:11,000

We've rigged this leaf blower to suck.

653

00:36:11,000 --> 00:36:16,000

Hooked up to a variable switch, it should also be easier on the plexiglass.

654

00:36:16,000 --> 00:36:19,000

There we go.

655

00:36:19,000 --> 00:36:22,000

Alright. You want it? Okay.

656

00:36:22,000 --> 00:36:24,000

I'll tell you when we're... let's sit here.

657

00:36:24,000 --> 00:36:25,000

Oh, look at that.

658

00:36:25,000 --> 00:36:28,000

Oh, that's beautiful. We got sensitivity, baby.

659

00:36:28,000 --> 00:36:31,000

Keep going.

660

00:36:31,000 --> 00:36:34,000

Little more, little more, little more.

661

00:36:34,000 --> 00:36:37,000

Scotty, I need power.

662

00:36:37,000 --> 00:36:39,000

Do you want more? More.

663

00:36:39,000 --> 00:36:42,000

More? More.

664

00:36:42,000 --> 00:36:45,000

Three inches of water.

665

00:36:45,000 --> 00:36:48,000

Yes, little more.

666

00:36:48,000 --> 00:36:54,000

Ah, that's it. Is that it? That's it. 0.145 negative PSI.

667

00:36:55,000 --> 00:36:58,000

We've proved the principle.

668

00:36:58,000 --> 00:37:05,000

Now, with the addition of some glass tube, a scale, and food dye, we have a working gauge.

669

00:37:05,000 --> 00:37:10,000

Mr. Savage, if I could suggest that you put a drop of the coloring in there first.

670

00:37:10,000 --> 00:37:15,000

No, I was thinking I'd put it in after and then I'd go and like, fix it up.

671

00:37:15,000 --> 00:37:17,000

Thought that would be kind of cool.

672

00:37:17,000 --> 00:37:18,000

Okay.

673

00:37:18,000 --> 00:37:23,000

With the stack effect problem solved, it's time to rig the slingshot.

674

00:37:24,000 --> 00:37:26,000

Grrr.

675

00:37:26,000 --> 00:37:32,000

We'll rig our slingshot somehow on, you know, we can tie to the side of the shop or something like that.

676

00:37:32,000 --> 00:37:33,000

Right.

677

00:37:36,000 --> 00:37:42,000

So I was thinking for, to figure out his velocity, to figure out how fast he's traveling, we don't have a radar gun or anything like that.

678

00:37:42,000 --> 00:37:46,000

I was thinking we could take some flats and actually grid them.

679

00:37:46,000 --> 00:37:47,000

Okay.

680

00:37:47,000 --> 00:37:54,000

We can shoot from the side with one of the cameras, which give us, you know, 25 frames per second.

681

00:37:54,000 --> 00:37:57,000

And then we can, you know, slow them out through the tape.

682

00:37:57,000 --> 00:38:02,000

We can frame by frame through the tape and see exactly how fast that he's traveling.

683

00:38:03,000 --> 00:38:06,000

Finally, everything's in place.

684

00:38:09,000 --> 00:38:11,000

Three yards, that's my bet.

685

00:38:12,000 --> 00:38:14,000

I guess that it's going to go five yards.

686

00:38:14,000 --> 00:38:15,000

Five yards?

687

00:38:17,000 --> 00:38:19,000

This would be cool if I could see.

688

00:38:25,000 --> 00:38:26,000

Here we go.

689

00:38:27,000 --> 00:38:28,000

All right.

690

00:38:28,000 --> 00:38:30,000

First run from one yard.

691

00:38:33,000 --> 00:38:34,000

Nothing.

692

00:38:34,000 --> 00:38:35,000

Three yards.

693

00:38:36,000 --> 00:38:38,000

Here's my five bucks going to hell.

694

00:38:42,000 --> 00:38:44,000

Fettelty, five yards.

695

00:38:48,000 --> 00:38:53,000

160 pounds at three miles per hour.

696

00:38:53,000 --> 00:38:56,000

Our lawyer just isn't cutting the mustard.

697

00:38:56,000 --> 00:38:57,000

We got one more yard.

698

00:38:57,000 --> 00:38:59,000

I think we're going to end up going to two bands.

699

00:38:59,000 --> 00:39:00,000

What do you think?

700

00:39:00,000 --> 00:39:02,000

I think we're going to end up going to two bands too.

701

00:39:09,000 --> 00:39:10,000

We're ready?

702

00:39:10,000 --> 00:39:11,000

Ready.

703

00:39:11,000 --> 00:39:12,000

All right.

704

00:39:18,000 --> 00:39:19,000

Two yards.

705

00:39:20,000 --> 00:39:21,000

Go.

706

00:39:23,000 --> 00:39:24,000

Three yards.

707

00:39:24,000 --> 00:39:25,000

Go.

708

00:39:28,000 --> 00:39:33,000

Even with two elastic bands, our lawyer is still coming off second best.

709

00:39:33,000 --> 00:39:38,000

This is contacting here and all of this is bowing backwards.

710

00:39:38,000 --> 00:39:39,000

Right.

711

00:39:39,000 --> 00:39:44,000

And as this comes in for a second and then, you know, so it really is all these things

712

00:39:44,000 --> 00:39:46,000

aren't really making contact.

713

00:39:46,000 --> 00:39:47,000

Five yards.

714

00:39:49,000 --> 00:39:50,000

Here we go.

715

00:39:52,000 --> 00:39:53,000

All right.

716

00:39:53,000 --> 00:39:54,000

Okay.

717

00:39:54,000 --> 00:39:55,000

Ready?

718

00:39:55,000 --> 00:39:56,000

Ready and...

719

00:39:56,000 --> 00:39:57,000

Three, go.

720

00:40:00,000 --> 00:40:05,000

It is possible that it's not possible for a person to throw himself through the window.

721

00:40:05,000 --> 00:40:06,000

Entirely plausible.

722

00:40:06,000 --> 00:40:08,000

But we will make it through this window.

723

00:40:08,000 --> 00:40:10,000

I want to make it through the glass.

724

00:40:10,000 --> 00:40:13,000

But it may not be possible for a human to do that by himself.

725

00:40:14,000 --> 00:40:19,000

I'd be inclined to put all the steel bags or all the sand bags up high.

726

00:40:19,000 --> 00:40:20,000

Yeah, exactly.

727

00:40:20,000 --> 00:40:23,000

I mean starting here, you know, two, four, six, eight.

728

00:40:23,000 --> 00:40:27,000

Redistributing the weight up high will concentrate the impact.

729

00:40:27,000 --> 00:40:28,000

See something.

730

00:40:28,000 --> 00:40:32,000

Meanwhile, our structural engineer is working on a different theory.

731

00:40:32,000 --> 00:40:35,000

Glass is an unpredictable material.

732

00:40:35,000 --> 00:40:44,000

And although we use it and we see it performing very well in thousands of cases, there are

733

00:40:44,000 --> 00:40:48,000

certain things which will cause it to act in a way we don't expect.

734

00:40:48,000 --> 00:40:49,000

All right.

735

00:40:49,000 --> 00:40:51,000

So this is one yard.

736

00:40:51,000 --> 00:40:52,000

Two, three, go.

737

00:40:54,000 --> 00:40:59,000

If there's nicks in glass, it tends to cause what are called stress raisers.

738

00:40:59,000 --> 00:41:05,000

And so you can break the glass with less force than you would a piece of glass that isn't nicked.

739

00:41:05,000 --> 00:41:06,000

Two yards.

740

00:41:10,000 --> 00:41:12,000

One, two, three, go.

741

00:41:16,000 --> 00:41:17,000

That seems better.

742

00:41:17,000 --> 00:41:19,000

It's feeling pretty sturdy.

743

00:41:19,000 --> 00:41:20,000

Yeah.

744

00:41:20,000 --> 00:41:23,000

Probably a thousand times, nothing will happen.

745

00:41:23,000 --> 00:41:26,000

But you're dealing with a very brittle material.

746

00:41:26,000 --> 00:41:28,000

And it doesn't give you any warning.

747

00:41:28,000 --> 00:41:29,000

It doesn't bend like steel.

748

00:41:29,000 --> 00:41:31,000

It doesn't bow like wood.

749

00:41:31,000 --> 00:41:33,000

It just goes ka-pump.

750

00:41:33,000 --> 00:41:35,000

And then you're out on the street.

751

00:41:35,000 --> 00:41:36,000

Three yards.

752

00:41:39,000 --> 00:41:40,000

Ready?

753

00:41:40,000 --> 00:41:41,000

Ready.

754

00:41:41,000 --> 00:41:42,000

Two, three, go.

755

00:41:44,000 --> 00:41:45,000

Yeah!

756

00:41:52,000 --> 00:41:54,000

That was spectacular.

757

00:41:55,000 --> 00:41:56,000

It worked.

758

00:41:56,000 --> 00:41:58,000

It did, from three yards.

759

00:41:58,000 --> 00:42:00,000

I won myself five bucks.

760

00:42:02,000 --> 00:42:03,000

Wow.

761

00:42:03,000 --> 00:42:07,000

Yeah, the distribution of mass made a huge difference.

762

00:42:07,000 --> 00:42:08,000

Yeah.

763

00:42:08,000 --> 00:42:10,000

Listen to it.

764

00:42:10,000 --> 00:42:11,000

It's like Rice Krispies.

765

00:42:11,000 --> 00:42:13,000

That didn't look too fast to run at all.

766

00:42:13,000 --> 00:42:14,000

Yeah, it wasn't excessive.

767

00:42:14,000 --> 00:42:15,000

Very reasonable.

768

00:42:15,000 --> 00:42:17,000

And 160 pounds up on the torso.

769

00:42:17,000 --> 00:42:18,000

Yeah.

770

00:42:18,000 --> 00:42:20,000

Into a window with negative pressure.

771

00:42:20,000 --> 00:42:22,000

Nice.

772

00:42:22,000 --> 00:42:25,000

Yeah, it's not that far at all.

773

00:42:26,000 --> 00:42:29,000

Our lawyer covered 10 feet in 1.8 seconds,

774

00:42:29,000 --> 00:42:34,000

which works out at 5.7 miles per hour.

775

00:42:38,000 --> 00:42:41,000

You jumped like some bat landed in your hair, dude.

776

00:42:41,000 --> 00:42:44,000

Even if it's double the seven miles per hour,

777

00:42:44,000 --> 00:42:46,000

it's well within a human's ability to run.

778

00:42:46,000 --> 00:42:49,000

And it seems totally possible with that pressure

779

00:42:49,000 --> 00:42:51,000

that he could have broken the window.

780

00:42:51,000 --> 00:42:52,000

I'd agree.

781

00:42:52,000 --> 00:42:55,000

It looked like what I would probably the kind of speed

782

00:42:55,000 --> 00:42:57,000

I'd get up to if I was lunging at the wall.

783

00:42:57,000 --> 00:43:00,000

Yeah, especially with only three yards of start.

784

00:43:00,000 --> 00:43:03,000

It's only nine feet and you can't really get up that fast.

785

00:43:03,000 --> 00:43:05,000

This is absolutely a true story.

786

00:43:05,000 --> 00:43:10,000

It happened at this location, at this office tower behind us.

787

00:43:10,000 --> 00:43:12,000

The coroner who investigated the incident

788

00:43:12,000 --> 00:43:14,000

decided not to hold an inquest

789

00:43:14,000 --> 00:43:16,000

because it was such a freak accident.

790

00:43:16,000 --> 00:43:20,000

And it would be extremely rare to imagine

791

00:43:20,000 --> 00:43:22,000

someone else doing the same thing purposefully.

792

00:43:22,000 --> 00:43:23,000

That was fun.

793

00:43:23,000 --> 00:43:24,000

Yeah, that was fun.

794

00:43:26,000 --> 00:43:27,000

I like breaking things.

795

00:43:27,000 --> 00:43:29,000

Yeah, breaking things is cool.

796

00:43:31,000 --> 00:43:32,000

Yeah!