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FOR OVER A CENTURY, CINEMA HAS EXPLOITED THE POWER OF FIRE TO BURN UP THE SCREEN, AND TODAY, FILMMAKERS

AFTER THE REAL DEAL ARE TURNING UP THE HEAT. WE MEET THE FLAME-THROWERS ON THE FRONTLINES



Hollywood's big action movies are often built on escalation: knives give way to bullets, bullets to grenades, until there's nowhere left to go but fire. By the time 2025's *John Wick* spin-off *Ballerina* lets Ana de Armas' assassin Eve complete her revenge fantasy, all restraint has been tossed aside, the last half-hour an orgy of retribution. Rifling through a hidden cache, she uncovers something labelled simply, "Front toward enemy".

Its purpose is revealed in a pitch-black tunnel, from the perspective of half a dozen goons hunting her. It begins with a distant flicker, a single breath of flame, and then the darkness is swallowed by long, roaring jets of fire from Eve's flamethrower. One victim collapses in a ball of fire, rises, staggers, and crawls in a futile attempt to escape. The epic flamethrower-battle that then ensues between her and her assailants reduces an Austrian village to ash.

The flamethrowers were the real deal, built by the film's special-effects team as industrial-grade weapons powered by a large-volume nitrogen pressure pot, feeding fuel through an umbilical into a handheld unit capable of shooting flames nearly the length of an NBA court. "It was so shocking, [de Armas] had to take a moment during the tests," says Jayson Dumenigo, an expert in movie fire who helped design the sequence. "I had to pull my mask off to reassure her I was okay. But once she knew it was safe, she went full badass — and roasted us all."

This badassery was only possible because of a proprietary hydrogel from Action Factory, Dumenigo's stunt company. The gel, Play'n With Fire, created around 2009, has transformed the movie industry. Unlike older compounds that break down quickly under heat, it can be applied far in advance and handle multiple burns with a single set-up. (It's so effective that Dumenigo was recently honoured by the Academy of Motion Picture Arts and Sciences for the breakthrough.) Along with silicone masks and hands, flame-resistant fabrics and hidden air feeds, it has redefined the threshold of cinematic danger, and therefore modern action movies, by allowing filmmakers to place real flames — and the audience — so close to the heat, it seems to



**Above and left:** Feel the burn: *Ballerina*'s epic flamethrower battle. **Right:** Kurt Russell in *Backdraft*; Flaming hell: a pre-CGI fire in *The Towering Inferno*.

**Clockwise from near right:** Fire guru Jayson Dumenigo aflame during *Ballerina* prep; *The Trail Of '98*; *Gone With The Wind*.

physically touch us.

"It was a dangerous undertaking that allowed us to do about 200 burns without a single incident," says Dumenigo, who worked hand-in-hand with *Ballerina* producer Chad Stahelski on the sequence, as well as supervising stunt and fight coordinators Steve Dunlevy and Kyle Gardner, special-effects experts and a Hungarian stunt team. "You have to believe the risk, the danger, the damage that fire causes," says Dumenigo. "In my opinion, that's what separates good and great. Carry the story through and blow their minds!"

**THERE'S A PRIMITIVE, FRIGHTENING** shock factor to death by fire on screen, especially when you look at older titles like *The Trail Of '98* (1928) that feature full-body burns. "The early fire gags were largely unregulated and often dangerous," says historian Scott McGee,



whose book *Danger On The Silver Screen* traces the evolution of stunts, from the high-risk improvisation of the silent era to today's highly engineered practices. "A body consumed by fire is a visceral moment, no matter how it's engineered."

People still talk about David O. Selznick's burning of Atlanta in *Gone With The Wind* (1939). At the time, it was the largest controlled fire ever staged for a movie, using a sophisticated network of pipes to feed the fire with oil and gas, and an equally complex water-system to choke out the flames instantly. A little more than a decade later, 1951's *The Thing From Another World!* featured one of the most iconic burns on screen. In it, an alien at an Arctic research station is doused with buckets of kerosene and then ignited with a flare gun inside a closed set. "It was a risky stunt, with multiple people involved," says McGee, pointing out that stuntman Tom Steele was wearing an early version of the fire suit, featuring "protection for Steele's head, along with a breathing apparatus with a few seconds of oxygen."

The sheer scale of the fire sequences in disaster-blockbuster *The Towering Inferno* was unfathomable to moviegoers in 1974. This was pre-CGI; audiences knew they were watching a real, chemical-fuelled blaze. "It marked a turning point, pairing more advanced fire-protection with increasingly spectacular choreography," says McGee (whose day job is TCM's Senior Director of Original Programming). "High falls while fully engulfed — such as those performed by Cody Bearpaw — became legendary within the stunt community, demonstrating both the cinematic power of fire and the razor-thin margin for error."

Ron Howard's *Backdraft* (1991), about a sibling rivalry between two Chicago firefighters, set another benchmark with its immersive, enveloping pyrotechnics. They were captured by cinematographer Mikael Salomon, who donned a fire suit to follow the actors through burning sets. While experimenting in the shop at Special Effects Unlimited in Los Angeles, *Backdraft*'s special-effects team developed different fire looks and techniques. One device, the 'Ash-o-matic',

burned shredded cardboard and made a nice ash that would float through the air. The blazes seemed to have minds of their own.

"One of the big things we came up with was the 'brain flame'," remembers Bob Williams, who worked on the film's pyrotechnics. "It's that creeping, rolling fire you see moving along walls or floors. After that film, as soon as people figured out how to do it, it was everywhere."

To achieve the roiling black smoke everyone likes, the *Backdraft* production burned through gallons of diesel fuel, which turned out to be an environmental nightmare. It's this trade-off that worries Williams, who feels the physical aftermath of practical fire is too often ignored. Fire doesn't just perform: it can destroy sets and ruin equipment. Smoke clings to skin, clothes and gear for weeks. "It just ends up everywhere," says Williams. "The only people who would ever know about that are firefighters, because it is just brutal."

Limits were similarly tested with Quentin Tarantino's *Inglourious Basterds* (2009), which ends with an apocalyptic fire at the premiere of a Nazi propaganda film. Mid-screening, a hidden stash of notoriously volatile nitrate film-stock is ignited, trapping the Reich's top brass inside the auditorium, which is consumed by flames before the building collapses. Normally, these elements are shot separately and combined in post-production, but Tarantino insisted everything be done in-camera, turning it into arguably the most logistically complex fire gag ever done.

To handle the heat, the sequence was staged in a cement factory outside of Berlin, where world-class pyrotechnicians spent weeks testing a precise "recipe" of fabric types and IPA-based accelerants (applied like a garden sprayer). On the day of the burn, visual-effects cameraman Lester Dunton was perched atop a ladder pod, operating a 65mm camera, with a view of the entire set. It was an enormous challenge: 40 gas cannons spewing pyrotechnics, plus coordinated character action, 300 extras, and a screen that had to ignite perfectly in sync with dialogue

Burning up:  
Final Destination:  
Bloodlines.



Fire, walk with  
me: Sinners'  
speakeasy  
scene.



and story beats. What you don't see is the subtle lighting adjustment that keeps the projected images readable while the screen is in flames.

"It was big. It was hot, for sure. It was quite real," says Dunton, who — acting as a human light meter — called out live exposure changes to multiple cameras over radio during the shot. Although the equipment was covered with fire blankets, the rising heat kicked up a huge dust-cloud of soot from the factory walls. "No-one had counted on that, but it actually looked quite good." Amazingly, notes Dunton, the sequence was a "one-take wonder".

The boundaries of the craft continued to expand with the likes of *Oppenheimer* (2023) — in which Christopher Nolan chose a cocktail of gasoline, propane, aluminium powder and magnesium over CGI for the detonation of the first nuclear device — and *Mission: Impossible — The Final Reckoning* (2025), which captured Tom Cruise performing a flaming parachute-jump to avoid capture. His canopy was soaked in fuel and ignited mid-air.

Even in an era of meticulously choreographed action, the most arresting practical effect remains one that seems to put a human life on the line. Last year's *Final Destination: Bloodlines* proved this by setting a world record for the oldest person to execute a full-body burn, during the film's opening sequence — a feat performed by veteran stuntwoman Yvette Ferguson, who came out of retirement for the role. But achieving that level of visceral awe requires high risk.

### IT ISN'T EVERY DAY THAT YOU GET

the opportunity to be set on fire by trained professionals in a controlled environment. It's December 2025, and *Empire* is wearing

a heavily gelled base-layer of fire-retardant Nomex underwear and welding trousers, flanked by three fire squires, a medic and five safety personnel. We're about to be painted with a rubber-based accelerant, then set alight with a handheld propane ignition torch.

For the past few years, Frank Alfano Jr has been running a burn workshop out of a stunt gym here in Brooklyn, where performers learn how to handle "fire gags" on camera, from ignition to extinguishment. He's been both a fire performer and "fire rigger" — a term he coined because they do for fire what wire-riggers do for flying. To get a feel for what it's really like on set, students rotate through every role: 'Tanks' (wielding fire extinguishers), 'Furney' (laying fire blankets for talent and key crew), 'Prep' (applying fuel and protective layers), 'Burn' (performer), and 'De-prep' (removing fuel and gear afterward). "Fire stunts may look chaotic on screen, but behind the flames is an obsessive level of control, trust and performance discipline," observes Alfano Jr, who even after a decade-and-a-half in the line of fire says, "There's almost never a burn where I don't learn something new."

Fire gags are evolving, becoming safer and faster to execute, more precise. The goal isn't to eliminate danger, but control it. Learning how that's done firsthand is the only way to truly know what you'll do under pressure. At the workshop, the truth hits the instant the flames ignite on an "arm burn" and meet the air, producing a bloom of orange, a "big whoosh", that settles into a sustained flame. It flickers, moving about, lagging behind the performer's motion before whipping forward when momentum stops. Heart rates climb. The world beyond the fire is a blur. In that instant, this is

no longer a concept or a line in a screenplay ("Character is lit on fire"), but a real physical presence, capable of maiming or worse. After roughly 15 seconds — burn duration dictated by heat, not the clock — the performer drops to the floor and "starfishes", allowing the crew to extinguish the flames.

Throughout the day, Alfano Jr gives real-time notes during burns, reinforcing technique, correcting mistakes immediately. He details the many factors that contribute to how fire behaves, and ways it can shape performances. "A good fire gag is a big flame; fire always looks good," he explains. "But a great one is when the performer is reacting: suffering, moving like they're trying to escape, selling pain. That's what elevates it."

Each student today is given fully edited, colour-graded footage of their burns, shot by a professional cinematographer. The footage is more than a memento: it's how you get hired nowadays. "Twenty years ago, stunts were an invite-only system," Alfano Jr says. "Now, it's kind of hard to get people to take a chance on you, so if you can't show footage of a fire stunt at a high level, you won't get hired."

When it comes to recent movie burns, Alfano Jr loves Ryan Coogler's *Sinners*, notably a scene in which two stunt performers (one being Alfano Jr's former student) are slammed into a burning door during a melee and fully ignited. The film's centrepiece moment, though, is of course the big juke-joint number that begins when gifted blues musician Sammie (Miles Caton) slips into a trance as embers fall from the roof — on (actual and metaphorical) fire — exposing the sultry night air. It summons souls from distant cultures and eras, as well as a horde of vampire-drifters ravenous for his songs and stories.



Top to bottom:  
*Oppenheimer*;  
Tom Cruise  
goes down  
in a blaze of  
glory in *Mission:  
Impossible*  
— *The Final  
Reckoning*;  
Some like it hot:  
*Inglourious  
Basterds*.



Alamy, Jayson Dumenigo Action Factory LLC, Paramount Universal, Warner Bros.

To shoot the sequence, the crew built an old sawmill coated with fireproofing and equipped with hidden sprinklers beneath the floors in case fiery debris fell through the slats. The barn had a removable roof, covered by a special-effects material that burned from the centre outward. Light smoke was pumped in to evoke a Deep South speakeasy, and for the musical section, a specially designed cloth that burned at a controlled rate was dropped in front of the camera to create a curtain of flame that placed the audience in the heart of a spiritual inferno.

"All of these movies are remembered by millions of people because of how drawn in they are when they see practical fire-burns on screen," says *Sinners*' stunt coordinator Andy Gill of the pantheon Coogler's film has entered. "When people see the real thing, their senses rise, they get invested in the scene, and that scene stays with them for a lifetime."

### THE FIRST THING THAT BACKDRAFT'S

Bob Williams says when we begin our phone conversation is, "You know you're writing about a dying art? There's no reason to do this shit anymore. AI is quicker and easier and as good as the real thing." Some producers, he says, can no longer justify the cost, risk and schedule disruption when digital flames can safely sell the illusion. "Are you going to spend another million dollars and screw up your schedule for something maybe five per cent of the audience can tell is real? No, heck no."

But while some producers might have been favouring VFX of late, for filmmakers after the real deal, things are looking up. "The demand for fire stunts dwindled with CG, but I think the audience has learned [to spot digital fires], so

the shift now is back to real fire-burns with enhanced CGI fire added if needed," says Andy Gill. "With the new burn gels, protective clothing and the use of silicon masks and hands, practical fire burns are becoming much larger and longer."

Still, although fire gear and techniques have evolved, the survival of the craft may depend on these filmmakers willing to drag their crew, and audience, directly into the fire. "For someone like myself, making a living creating special effects practically in-camera, directors like Quentin Tarantino are wonderful," says *Once Upon A Time In Hollywood*'s special-effects supervisor Jeremy Hays. That film ends with Leonardo DiCaprio's Rick Dalton grabbing a period-accurate M1A1 flamethrower — a functional prop from the character's war movie "The 14 Fists Of McCluskey" — and incinerating the final assailant (Mikey Madison's psychotic Sadie) in the pool with a dramatic flourish. "Not only does QT want the effects to be practical," continues Hays, "he has the power and position to ensure big sequences are done that way without the studio pressuring him to take a visual-effects route to save money. That's becoming an increasing pressure in filmmaking these days, and fortunately, that is something he won't compromise [on]."

Once everywhere in movies, real fire is now saved for dynamic visual moments that call for realism or carry symbolic weight, making practical fire, in fact, all the more powerful. "*Gone With The Wind*, *Backdraft* and *Ballerina* — which I bet will still be remembered in 30 years for its iconic fire sequences — all proved that practical burns are here to stay," says Gill. Before adding: "For the time being."

Some fires refuse to die. ●