

**Heart of the “Richest Square Mile on Earth”
The Patch Glory Hole Mine
Central City, Gilpin County, Colorado
By Ken Kucera**

How did an enterprising dentist with a Barnumesque flair for business facilitate the making of one of Colorado’s most iconic mining landmarks?

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Introduction

This article provides information on a historically important group of mines in the Central City, Colorado, area known as the “Patch”. It will summarize aspects of the geology and developmental history of this area by weaving two stories together - a rich mining source of metals and an enterprising dentist turned mine owner. In particular, focus will be on the group of mines located on the eastern flank of Quartz Hill referred to locally as the “Patch Glory Hole Mine” or “Glory Hole”, and in the U.S. Geological Survey literature as the “Patch”.



**Figure 1 (above): The Patch Glory Hole Mine, 2018
(Credit: “Glory Hole Mine, Central City, Colorado” Rocky Mountain Flyers)**

View Drone Video of Patch Glory Hole
Credit: Rocky Mountain Flyers, 2018

To view video, click link below:

https://www.youtube.com/watch?v=om9mv_92Yn4

The Patch Glory Hole Mine near Central City in Gilpin County is one of the most iconic mining localities on Colorado’s front range. It’s an immense landmark located about one mile southwest of Central City on the eastern flank of Quartz Hill. (Figure 4) The Patch Glory Hole Mine is an open cut about 1100 feet long in an east-west direction and 800 feet wide on a north-south axis. (Figure 1) In 1928, the owner of the Patch mining claims controlled almost 80% of the potential productive ore in Gilpin County. While the rest of the United States was mired in the Great Depression, the mine was reportedly one of the largest mineral producers in the country. (Brazil and Lichtblau, 1994)

Quartz Hill is nicknamed “The Richest Square Mile on Earth”. Few who look out across the slopes of Quartz Hill at the dozens of mounds of yellow-colored mine tailings know that the area’s greatest mine was not on the hill. It was the hill.

Two of the Mines Museum of Earth Science links to the “Patch Glory Hole Mine” or the “Patch” are the rare gold specimens shown in the photos below. (Figures 2 and 3)



Gold, Patch Glory Hole Mine, Gilpin County, Colorado, 5.0 cm x 4.0 cm (CSM Geology Museum)

Figure 2 (above): Gold from the Patch Glory Hole Mine, Central City District, Gilpin County, Colorado. Specimen size 5.0 cm x 4.0 cm x 2.5 cm. Collection of the Mines Museum of Earth Science, catalog #NA. (Image credit: Author)



Figure 3 (above): Gold from the Patch Glory Hole Mine, Central City Mining District, Gilpin County, Colorado. Specimen size NA. Collection of the Mines Museum of Earth Science, catalog #51055. (Image credit: Ron Wolfe)

“To stand on the rim of this mighty hole and look into its maw is one of the awe-inspiring sights of the district.”
 (Gilpin County Metal Mining Association, 1951)

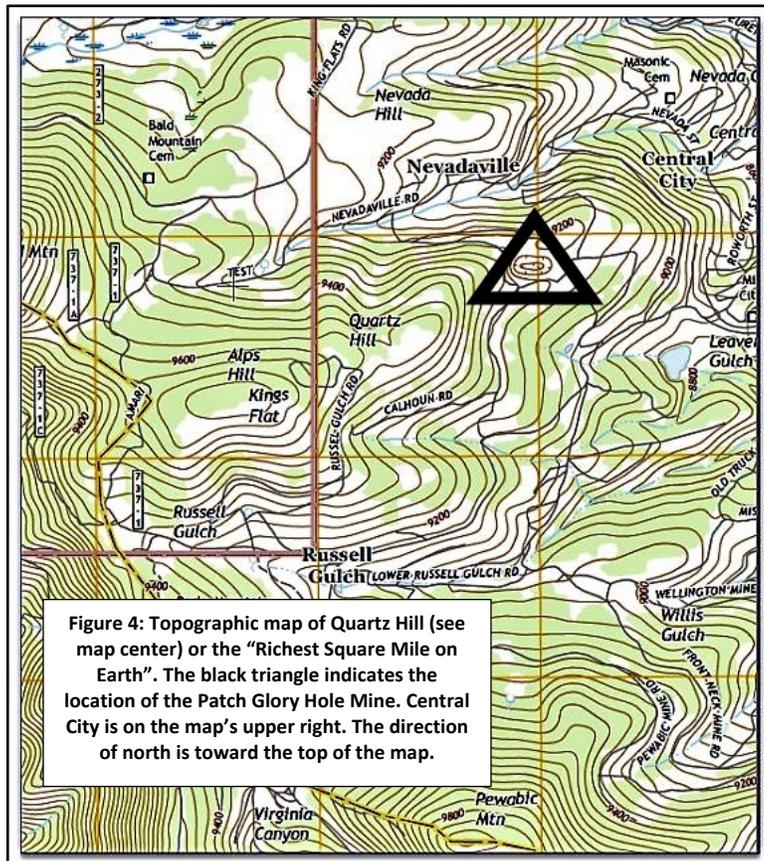


Figure 4: Topographic map of Quartz Hill (see map center) or the “Richest Square Mile on Earth”. The black triangle indicates the location of the Patch Glory Hole Mine. Central City is on the map’s upper right. The direction of north is toward the top of the map.

The Patch is situated in the Central City Mining District in Gilpin County, Colorado, on the eastern slope of the Rocky Mountain Front Range, about 30 miles west of Denver. The district occupies an area of about 12 square miles and is one of the most important mining areas in the Front Range mineral belt. It has produced hundreds of millions of dollars of gold, silver, uranium, and base metal ores since 1859. Gold has accounted for about 85% of the dollar value of the district’s ore. (Intermountain Exploration Co, 1980) In recent years, mining activity has been slow, the exception being a brief flurry of uranium activity in the early 1950’s.

Geologic features known as “stockworks” are pipes or chimney-shaped bodies of irregularly fractured and brecciated rock that have been cemented by ore minerals. The most famous “stockwork” in the Central City area is the Patch. The Patch was also comprised of a three-dimensional maze of underground workings, then an immense glory hole mine or open cut on the surface. Before the Patch was devoured by the cavernous open pit mining

starting in 1929, the surface area was a complex pattern of mostly patented mining claims covered by debris, mine dumps, and surface slide rock. (Figure 16). This area reportedly became known as the Patch because of the crazy-quilt pattern of mining claims on its surface.

Setting the Area Stage

By the end of the Civil War, word quickly spread of rich gold and silver deposits in the hills around Central City and nearby Black Hawk. They were reported to be so rich that President Abraham Lincoln dispatched a message to Central City miners, saying he was sending reinforcements to help unearth gold and silver to help relieve the nation's war debt. (Brazil and Lichtblau, 1994)

The first lode gold discovery in the Colorado Front Range was made at Gregory Gulch near the base of Quartz Hill. As a result of a large influx of miners to the area in the summer of 1860, the Gregory diggings quickly became overcrowded. Many problems ensued concerning mine dumps, rights-of-way, drainage, and claim trespass.

Many of the mining claims were small, commonly being only 100 feet or so in length and very narrow in width. Many claims were subdivided, giving some of the patented claims a length of only 25 feet. The relative richness of the mineral outcrops was a factor in the small size of the claims that hindered orderly and progressive development of mines. Consolidation of mining properties was also slowed by inflated capital and exorbitant demands of the many owners. (Sims, Drake, and Tooker, 1963)

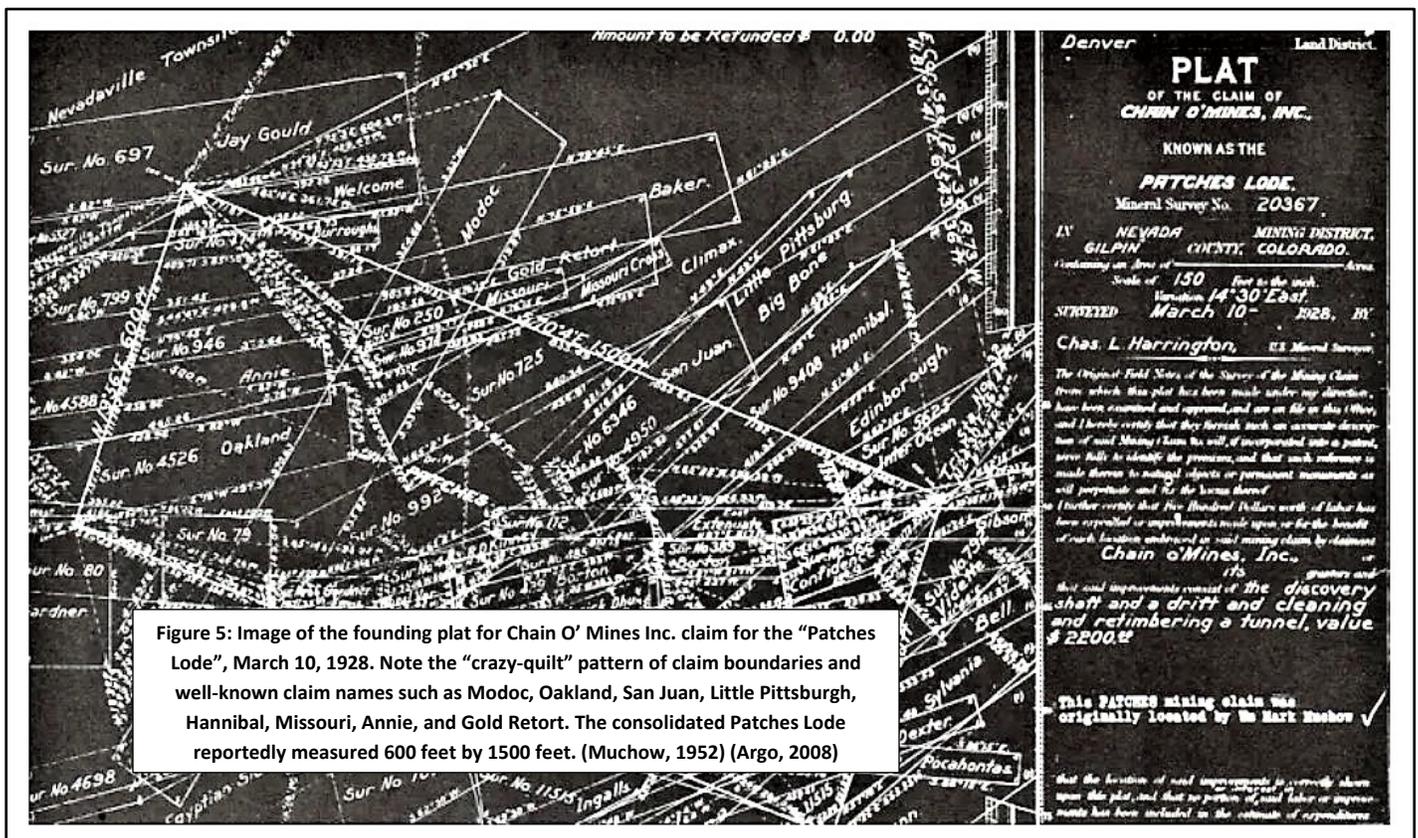


Figure 5: Image of the founding plat for Chain O' Mines Inc. claim for the "Patches Lode", March 10, 1928. Note the "crazy-quilt" pattern of claim boundaries and well-known claim names such as Modoc, Oakland, San Juan, Little Pittsburgh, Hannibal, Missouri, Annie, and Gold Retort. The consolidated Patches Lode reportedly measured 600 feet by 1500 feet. (Muchow, 1952) (Argo, 2008)

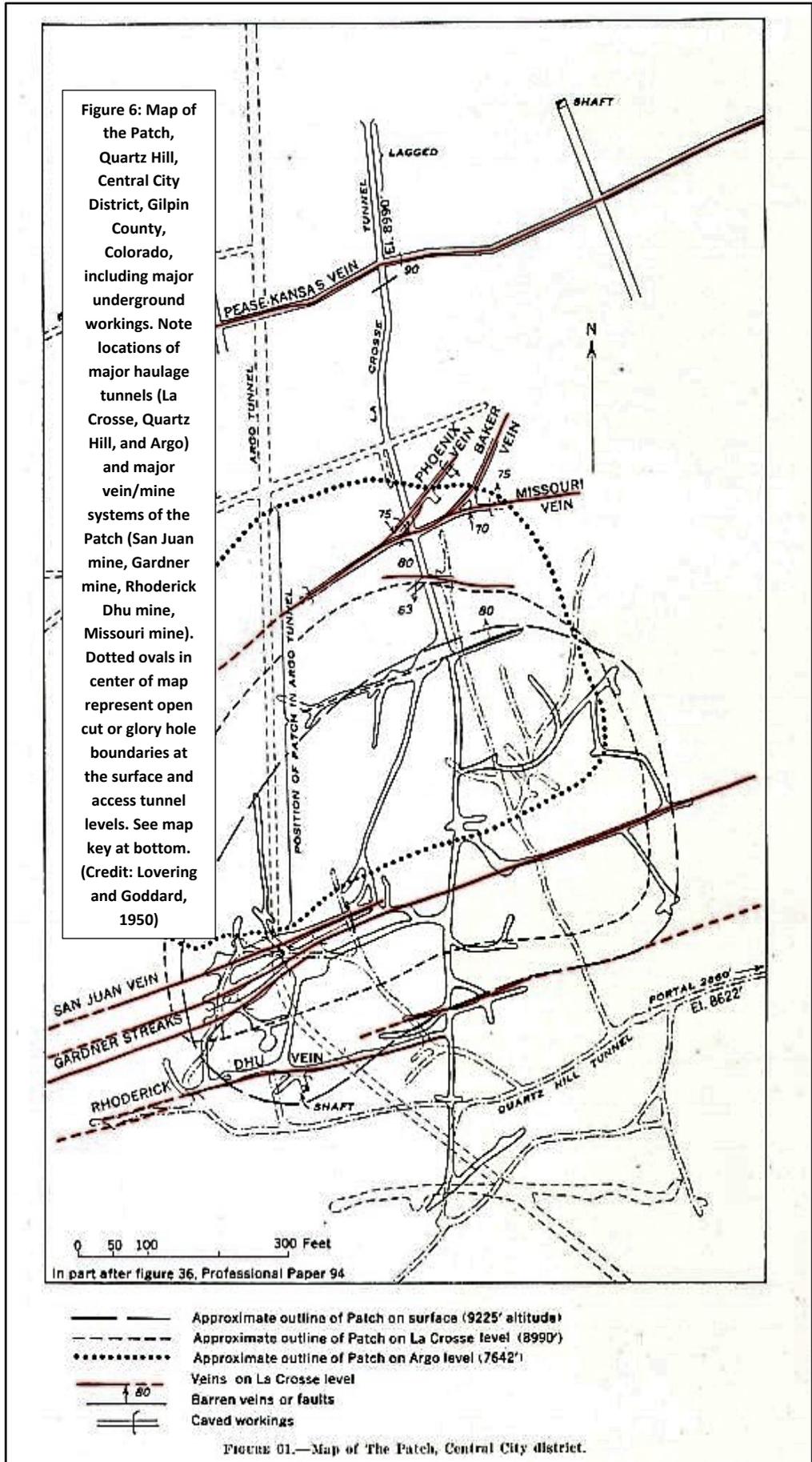
Another problem to mining development not only in the Central City area but in Colorado, resulted from the fact that many of the ore veins or bodies dipped at moderate angles and passed from one property onto another as depth increased. Miners tended to follow the ore, not the outline of the property lines above. Inevitably, this led to lawsuits galore and worse, the stopping of the development of many veins and ore bodies. (Cooney, 2016)

Central City's mining activity largely depended on the successes and failures of various milling and smelting processes to treat the ores. During the early years in the Central City district, mining was primarily confined to placer gravels and the

soft and free milling ores derived from surface gossans of veins. "Gossans" are highly ferruginous rock that are the product of oxidation by weathering and leaching of sulfide mineralization. "Free milling" is defined here as the treatment of gold or silver ore by crushing and amalgamation. (Figure 15) Ores that were soft and free milling could be mined easily and cheaply. As mining progressed to depths of 50 to 100 feet, the soft oxidized ores gave way to harder primary sulfides, where much of the gold was finely distributed through sulfides (e.g., pyrite, chalcopyrite) and gangue. These could not be treated profitably by simple methods used at the time such as sluices, cradles, arrastres, and crude stamp mills.

The difficulties in amalgamating primary ores resulted in the closing of many Central City district mines, especially in the early 1860's. It wasn't until 1866 that things turned around, when Nathaniel P. Hill, a professor at Brown University, pioneering mining executive and engineer, and a United States Senator from Colorado, completed successful experiments on smelting Gilpin County ores and opened the Hill smelter.

Because of its relatively low topographic relief, the mines of the Central City district including those on Quartz Hill, were developed primarily by shafts. As mining went deeper going after ores such as harder primary sulfides, the handling of excess water and lifting ore from depth became major



problems. It became difficult, if not impossible, to keep mines dry and at the same time lift enough ore to the surface to pay for the operations.

Three major tunnels were engineered to help resolve these problems: La Crosse tunnel, Quartz Hill tunnel, and Argo (Newhouse) tunnel. They intersected Quartz Hill and the Patch and were constructed for mine haulage ways and water drainage. (Figure 6) The La Crosse Tunnel was driven through the middle of Quartz Hill/Patch and entered from the north at the 300 ft. level. The La Crosse was the primary service tunnel for the Patch and its future glory hole mine. The Quartz Hill Tunnel entered from the east at the 700 ft. level. The Argo Tunnel (or Newhouse tunnel) was completed about 1907 and entered from the south at the 1,650 ft. level. The Argo Tunnel is probably the best known of the three historic tunnels. The Argo, with its main portal in Idaho Springs, had a total length of four miles. The Argo was 12 feet wide through the first 2.5 miles of the tunnel. It had two tracks where electric locomotives pulled ore cars from mine workings to Idaho Springs. (Figure 7) (Muchow, 1952) (Kile and Modreski, 1988) (Argo, 2008)



Figure 7 (above): Postcard photo showing Argo tunnel portal at Idaho Springs. Note double tracks and electric locomotives pulling ore cars from mines. Date unknown. (Credit: Denver Public Library digital archives)

An Illinois Dentist Wants the Perfect Gold



Figure 8 (above): William Mark Muchow, 1886 – 1969. (Credit: Unknown)

With more than 400 mining claims on Quartz Hill (roughly 40 mining claims in and around the Patch) and a limited number of veins of gold and other metals to go around, it wasn't a surprise that miners spent a lot of time upset with each other. As mines and prospects increased in number and started to conflict with each other, what could not be resolved with simple fisticuffs or worse, often ended up in court. But by 1925, legal fights had stopped many of the operations. (Fleming, 1994)

As miners continued punching out adits, shafts and each other, an enterprising, flamboyant, and some say controversial dentist from Illinois named William Mark "Doc" Muchow, got off a train from Chicago around the year 1924 to check out the Central City area. He was searching for a source of pale-colored gold (an "ivory hued light yellow") for dental applications and of course, some personal fortune. It just so happens that ore from the Patch produced Doc's perfect shade of yellow. (Fleming, 1994)

His search for the perfect dental gold was helped by the mineralogical fact that a lot of the gold produced in the Central City area is actually electrum - gold alloyed with silver – and thus, a more pale colored gold. Fossett reported an average composition for Gilpin County gold recovered by retort to be 78.7% gold, 19.8% silver, and 1.5% copper. (Fossett, 1880)

Because of the geology and mineralogy of the Patch, it was documented as early as 1907 that large reserves of gold, silver, and other base metal ores, could make continued mining profitable. "The Patch contains to a level of 50 feet below the La Crosse Tunnel, or say 300 feet from surface, approximately 4,500,000 tons of material which will yield \$1.10 per ton by amalgamation and concentration milling on standard lines." (Collins, 1907) Good enough for Doc.

Between the geologic prospects of profitable mining for the perfect colored dental gold and the legal conflicts prevalent among area miners, Doc was starting to see a Midas-like opportunity in the holes dotting the Patch.

General Geology and Mineralogy

The Patch ore body is an irregular stockwork that crops out on Quartz Hill. Stockworks are pipes or chimneys of irregularly fractured and brecciated rock that have been cemented by ore minerals. The ore body has ore minerals deposited in spaces between the fragments of breccia or in irregular networks of fractures. This stockwork's surface outline is oval, having a diameter of about 750 feet in a northeasterly direction and about 450 feet in a northwesterly direction. The pipelike body of mineralized breccia dips steeply north from the surface and extends down to the Argo Tunnel level at about 1,600 feet. (Figure 6) (Lovering and Goddard, 1950)

Portions of the Patch are barren of ore minerals, while others are heavily mineralized near intersections where veins cut the pipe. The zones of maximum brecciation are usually zones of maximum mineralization. Sulfides and gangue minerals occur primarily in the interstices among fragments of the breccia, but in part as true fissure fillings, and as replacement of silicates in the rock. For the most part, the Patch is heavily altered. Several northeasterly zones of maximum mineralization are distinguishable and have been followed by drifts in the San Juan Mine – a major set of underground mine workings of the Patch. (Lovering and Goddard, 1950) (Sims, Drake, and Tooker, 1963)

Two types of ore mineralization are prevalent: 1) Pyrite, chalcopyrite, and minor sphalerite and tetrahedrite/tennantite; and 2) Sphalerite, with subordinate amounts of galena, chalcopyrite, and pyrite. Ore in the southern part of the Patch Mine is composed mostly of the first ore type. While ore from the northern portion of the area, as exposed in the La Crosse Tunnel workings, is primarily composed of the second ore type. Gangue minerals associated with both ore types are mostly quartz and siderite with minor barite and ankerite. Native gold was occasionally found as aggregates of wires,

leaves, and fragments filling the breccia. Vugs reaching two to three inches across commonly held crystals of clear to white quartz. And more rarely, nice crystalline aggregates of sphalerite, chalcopyrite, and galena could be found. (Figures 10 - 13) (Lovering and Goddard, 1950) (Kile and Modreski, 1988)

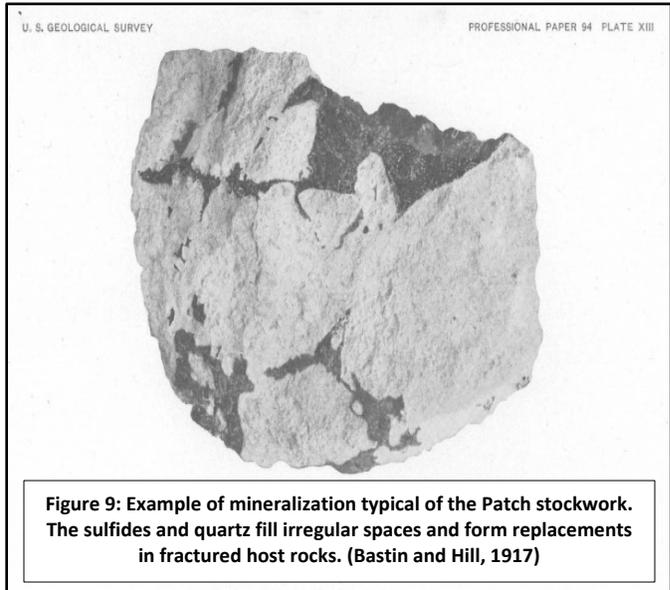


Figure 9: Example of mineralization typical of the Patch stockwork. The sulfides and quartz fill irregular spaces and form replacements in fractured host rocks. (Bastin and Hill, 1917)



Figure 10 (left): Pyrite and Quartz, Patch Glory Hole Mine, Central City District, Gilpin County, Colorado. Pyrite crystals to 3.0 cm on edge. Quartz includes sceptered crystals. Specimen size 8.0 cm x 10.5 cm x 6.5 cm. Anonymous collection.



Figure 11 (above): Galena and Sphalerite, Patch Glory Hole Mine, Central City District, Gilpin County, Colorado. Specimen size 6.5 cm x 5.0 cm x 2.5. Anonymous collection.



Figure 12 (above): Barite on Quartz, Patch Glory Hole Mine, Central City District, Gilpin County, Colorado. Specimen size NA. Catalog #50292, Mines Museum of Earth Science Collection. (Image Credit: Ron Wolfe)



Figure 13 (left): Sphalerite on Quartz, Patch Glory Hole Mine, Central City District, Gilpin County, Colorado. Sphalerite crystal 2.0 cm across. Specimen size 7.5 cm x 5.5 cm x 3.0 cm. Anonymous collection.

Gold, silver, copper, lead, zinc, and uranium (pitchblende) ores occur in Quartz Hill and the Patch, but ore shipments have owed most of their value to gold and silver. The primary source for gold values has been from the pyrite-chalcopyrite ore. As many of the Patch veins being worked were gold bearing, silver was not initially recognized as a valuable ore mineral until mining had extended to the underlying primary sulfide ores. (Lovering and Goddard, 1950)

For more detailed information about the geology and mineralogy of the Patch, refer to the following link:

Economic Geology of the Central City District, Gilpin County, Colorado; USGS Professional Paper 359
 Paul K. Sims, A.A. Drake, and E.W. Tooker
<https://pubs.usgs.gov/pp/0359/report.pdf>

“Doc” Muchow - Owner of Flossy Dental and Now, the Patch Mine

Doc believed the stockwork features and associated minerals of the Patch could be mined profitably if certain conditions were met. “...predicated on a large tonnage operation, using the cave-in-system. To do this, all the [Patch claim] ownerships have to be consolidated.” (Muchow, 1952) Muchow made it his mission to buy claims and mines in the Patch area and merge them into a gold-producing conglomerate. Forming a holding company to acquire mining claims, he named the company the Chain O’ Mines, Inc. By March 1928, he had spent four years raising capital and bought up nineteen mines and claims, representing many of the major and minor claims on the Patch. (Figure 5) A very persuasive pitchman, he was able to convince most of the claim holders that they could help their undercapitalized operations and end their fisticuffs and legal stalemates by selling to his company. And of course, he would offer to lease back operations

to them under a profit-sharing deal. These consolidated claims, known as the “Patches Lode”, reportedly gave Muchow and Chain O’ Mines control of almost 80% of the potential productive ore in Gilpin County at that time. (Denver Public Library Digital Archives, 2020) (Fleming, 1994) (Brazil and Lichtblau, 1994) (Intermountain Exploration Company, 1980)

This was no ordinary dentist. He profited handsomely from the recent phenomenon known as “dental floss” and was the owner of a company named the Flossy Dental Corporation, based in Chicago, Illinois. He was a prolific inventor who reportedly held close to fifty (50) patents on various dental processes and gadgets, including: dental floss containers and guides, “the amalgamator” - a machine that mixed materials for dental fillings; and, gold applications for false teeth. (Figure 14) (Patents.Google.com, 2020)

After the consolidation of Patch claims, Doc displayed a Barnumesque flair for business that brought a steady stream of fresh operating capital into the Chain O’ Mines. On train trips he reportedly liked to get the attention of fellow passengers by rolling a ten-pound ball of retort gold down the aisle. (Figure 15) Once he had retrieved the ball and the pandemonium subsided, he would chat with curious passengers about the mine that produced his ball of gold which, fortunately for his listeners, just happened to be looking for a few investors. Convenient. (Fleming, 1994)

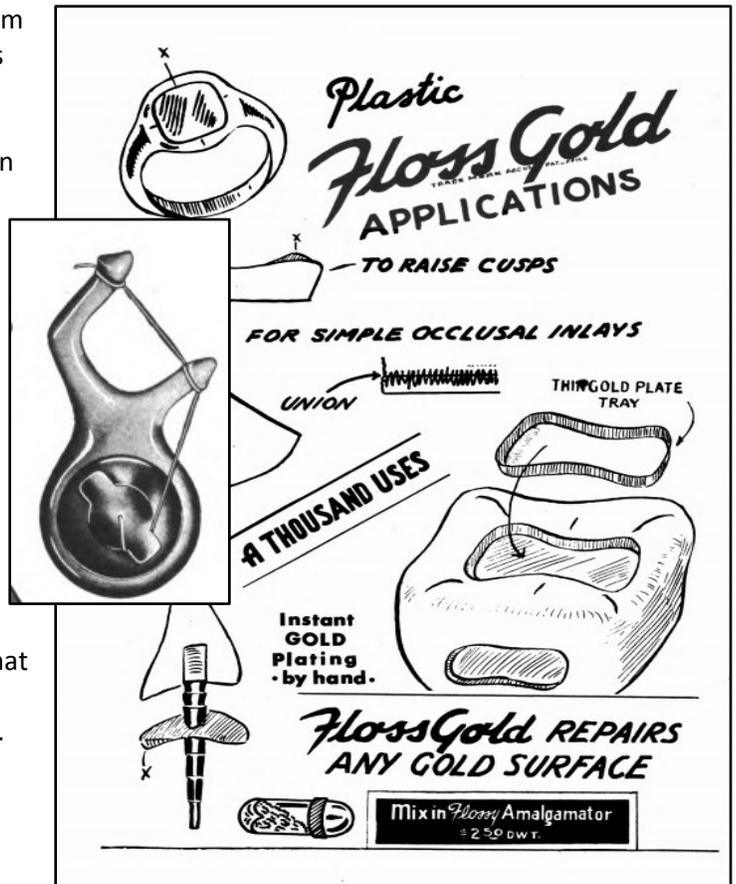


Figure 14 (above): Muchow promotional images for “Floss Gold” dental applications and patented dental floss holder (insert). (Muchow, 1952)

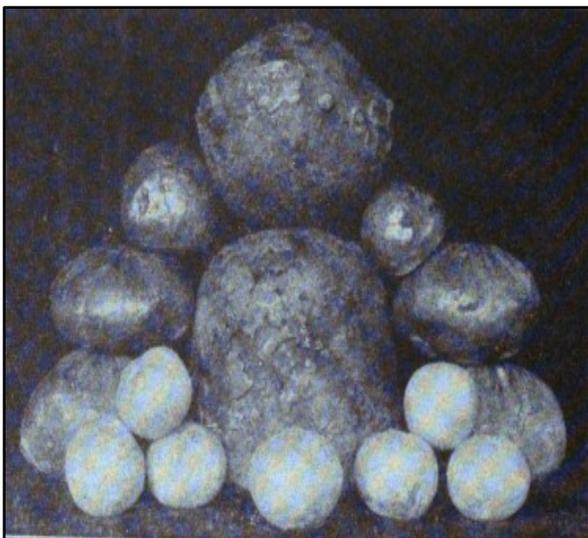


Figure 15 (left): One hundred pounds of gold balls produced from Patch gold ore by retorting. (Muchow, 1952)

Retorting 101: Amalgamation is the practice of bringing free gold particles into contact with mercury. When clean gold contacts with mercury, the two substances mix to form a compound called amalgam – an amalgam is simply an alloy of gold and mercury. At the end of the operation, the mercury and gold amalgam are separated. Mercury can be separated efficiently from other precious and base metals by a distillation procedure. Mercury removal from the amalgam is performed in retorts specifically designed for the distillation of mercury, hence the term retorting.

Underground and Glory Hole Workings on the Patch

Before Muchow arrived on the scene, mining operations in the Patch were confined to complex mazes of underground workings. These underground tunnels and stopes would be used to transition to the surface or open pit method of mining. (Figure 6) (Sims, Drake, and Tooker, 1963) (Kile and Modreski, 1988) (Muchow, 1952)

- The Patch had been chiefly mined through the San Juan Mine (San Juan vein) between 1888 and 1909. The San Juan was developed by a shaft 916 feet deep connecting with 11 levels.

- Many of the underground mineral-enriched portions of the Patch were mined out by operators leaving immense open chambers or stopes often 20 to 40 feet wide and over 100 feet high. Much of the ground above the northern part of the La Crosse was eventually stoped by glory hole or cave-in-mining methods and the resulting cavernous open space would extend several hundred feet below the original La Crosse tunnel level. (Figure 19)
- In addition to providing essential haulage and water drainage for mines of the Patch, numerous crosscuts and drifts were driven from the La Crosse tunnel to access ore inside the Patch. The La Crosse connected to the Climax shaft, the Protection and Rhoderick Dhu mines, and the fourth level of the San Juan mine. The portal of the La Crosse tunnel is on the north slope of Quartz Hill and was driven in a generally southerly direction in 1867 to dewater mines on the east slope of Quartz Hill to the level of Nevada Gulch. It would also provide a main haulage way for the Chain O' Mines surface mining operations for the future Glory Hole.
- The Patch was also accessed and developed by the Quartz Hill and Argo tunnels, the Rome-Gardner mine, the Mackey-Burroughs mine, and a short crosscut at the 1,300 level from the Phoenix-Burroughs mine.

Muchow believed the Patch could be profitably mined on the surface by a glory hole or cave-in-mining methods. So did others. In 1907, a Denver-based mining engineer named George E. Collins had formally addressed this question. In part, he wrote...“If the Patch were broken in an open cut, run through a glory hole and a long rock chute with a succession of stops [not stopes]...This method would moreover permit leaving the barren portions of the "Patch" unbroken. In some such way as this, I am inclined to think the better portions of the “Patch” will ultimately be mined, reducing the bulk of the milling ore to one-fourth or less of the mass but raising the grade almost proportionately...with a view to the working of its enriched portions, this is recommended as a good speculation.” (Collins 1907)



Figure 16 (above): Grainy image of the Patch surface workings before Muchow commenced cave-in-system or glory hole mining. The surface area of the Patch resembled something of a surreal moonscape. It was a complex pattern of mostly patented mining claims covered by mine dumps, surface slide rock, and debris, hiding a three-dimensional maze of underground mine workings underneath. Note several automobiles in the foreground for scale. Date circa 1925. (Muchow, 1952)

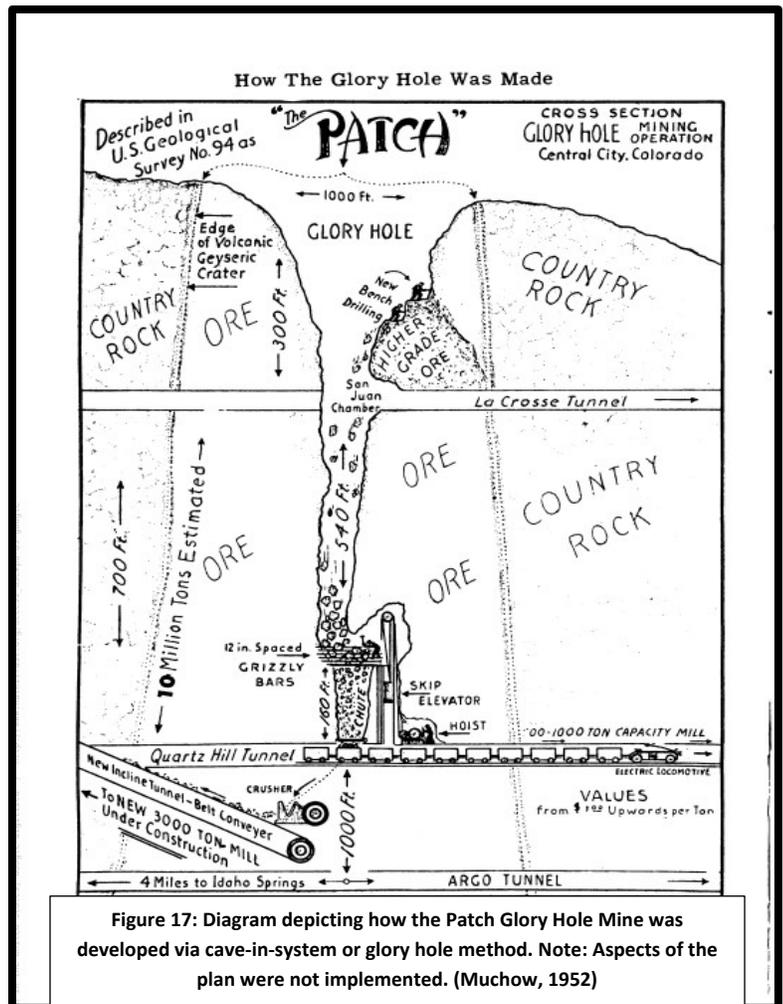
In 1929, after consolidating numerous claims and mining operations on the Patch, Doc located what would become the Patch Glory Hole Mine. Soon after, the San Juan mine's shaft and other underground workings would be mined out. The Chain O' Mines soon began working the rest of the Patch's large stockwork of mostly lower grade gold and base-metal ores.

Doc started his mining operations on the most heavily mined part of Quartz Hill. We can visualize how this cave-in-system worked by imagining a funnel with sand draining through it. At first, mining was done with underground workings to systematically collapse existing mines or claims. When the blasting reached the surface, an open pit or glory hole would start to form. (Figure 17) Mining was then conducted from the surface by blasting off sidewalls and dropping

them into underground pockets. As ore was broken loose from the periphery of the rim of the crater, it dropped long distances and was broken into smaller pieces. The fragmented ore was then passed through a large underground crushing station. After crushing, the ore was hauled by train through a tunnel, then transported to the milling plant. This cave-in-system method was cheaper than conventional mining because gravity did much of the work. The process turned the top of the Patch into an immense made-made crater, which earned it the name “The Glory Hole”. (Fleming, 1994) (Argo, 2008)

Glory hole mining operations continued on a large scale until 1937, then shut down during the start of World War II in 1941. Operations – both mining and milling - would be worked intermittently under Muchow’s ownership until his death in 1969. (Sims, Drake, and Hooker, 1963)

Although production of gold, silver, and base metals from the veins within the Patch – both underground and surface workings - was substantial, the records of total mineral production are fragmentary. Total mineral production is not known. (Intermountain Exploration Co.)



- Some of the ore shipped from the underground workings of the San Juan mine was rich. Assays of 117 tons of ore shipped from the mine between 1888 and 1909, show a trace to 12.2 (average 2.09) ounces of gold per ton, 2.15 to 34 (average 6.81) ounces of silver to the ton, and from less than 1.5% to 9% copper. (Lovering and Goddard, 1950)
- Records show most gold and silver ore shipped from the Patch after 1900 was relatively low grades. (Kile and Modreski, 1988) (Lovering and Goddard, 1950)
- Up to 1929, production from the San Juan vein workings was reported to have been about \$600,000, or about \$9,000,000 in 2020 dollars (author calculation). (Lovering and Goddard, 1950)
- From 1929 to 1950, a reported 1,428,135 tons of rock was shipped from the veins above the La Crosse tunnel workings yielding 20,239 tons of concentrates for milling, and 48 tons of smelting ore. The concentrates and crude ore reportedly contained 61,080.49 ounces of gold, 124,421 ounces of silver, 335,914 pounds of copper, 496,591 pounds of lead, and 2,322,429 pounds of zinc. This ore, if produced today (2020), would have a value of about \$114,000,000 (author calculation). (Measures of pounds and ounces of metals compiled by U.S. Bureau of Mines. Published by permission of owners - Sims, Drake, and Tooker, 1963)

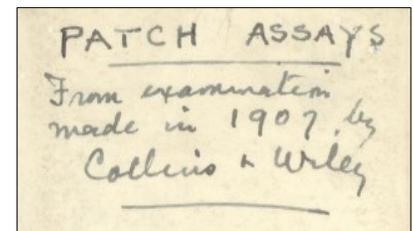


Figure 18: Report label for a Patch assay. (Collins, 1907)

Something of a “Soap Opera”

There were periods of time when kumbaya was in short supply for Chain O’ Mines. Before Doc finished consolidating claims into his “Patches Lode” in 1928, his first mill was under construction near the northeastern flank of Quartz Hill to process ore from the new operation. (Figure 20) The sheer volume of tailings from the mill soon overwhelmed the Chain O’ Mines ability to store it. On November 14, 1929, the Chain O’ Mines purchased several lots from the Town of Central

City to serve as tailing dumps for its mill. In August 1931, five Jefferson County landowners filed suit to curtail dumping. A 1932 trial resulted in an injunction against the company, which the Colorado Supreme Court upheld in 1934. The successful suit forced the original mill and some of the mining operation to be suspended. (Denver Public Library Digital Archives, 2020) Not being someone easily deterred, Muchow raised capital and commissioned a new larger mill to be built at Midwest Valley near the southern slope of Quartz Hill. It reportedly opened in 1950 and, instead of an aerial tram to move ore to the mill, it had a conveyor belt 1,500 feet long to move ore to the new mill directly from the underground rock crusher located beneath the Patch. (Kile and Modreski, 1988) (Argo, 2008)

Concerns about questionable ethics in the business practices have been raised since the inception of Chain O' Mines. "From the mid-1920s to World War II, Muchow ran the Glory Hole as both a gold mine and a cash cow, fattened on the green of investors...Some locals say the rock wasn't all that ore-laden. When ore production flagged in the mid-1930s, says one anonymous historian who still lives in Central City, Muchow brought in richer ore from other mines he was leasing, passing it off as bounty from his showpiece mine." (Fleming, 1994) The "Glory Hole" company business practices associated with sale of stock to secure investment capital were documented as being "fraudulent" by the Securities and Exchange Commission in 1956. (Securities and Exchange Commission, 1956)

By the 1950's, Chain O' Mines had become one of the few remaining active mining operators in the area. The company had survived in part because it retained its own mill and tunnels for haulage and dewatering. While there was still a large amount of gold left in the Patch, it had become increasingly unprofitable to mine because of increasing labor costs, government price controls, and the low grade of the remaining ore.

When William Muchow died in 1969, ownership of the company changed hands. By the 1960's, Chain O' Mines had all but stopped mining operations because of overhead costs and lack of investment capital. It was reported the company still possessed assets in the form of many mining claims it had acquired in its thirty or so years of operation. Some were being leased to individuals and smaller companies to work independently, with some lessees paying Chain O' Mines to mill their ore. A number of these claims were the basis of fraudulent business dealings in the 1970's and 1980's. In 1994, the Gilpin County sheriff seized the Chain O' Mines company from its owner. (Argo, 2008)

Despite its fame and riches, the Patch Glory Hole Mine has sat silent for much of its 90-year history, a testimony to the economic, legal, and political difficulties in mining for metal.



Figure 19 (above): The immense scale of the Glory Hole circa 1940 - 1950. Image shows multiple craters or funnels at bottom of pit resulting from cave-in-system of mining. Note trees on horizon for scale. (Credit: Denver Public Library digital archives)



Figure 20 (above): The original Chain O' Mines mill on the northeastern side of Quartz Hill, Circa 1930. (Credit: Denver Public Library digital archives.)

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