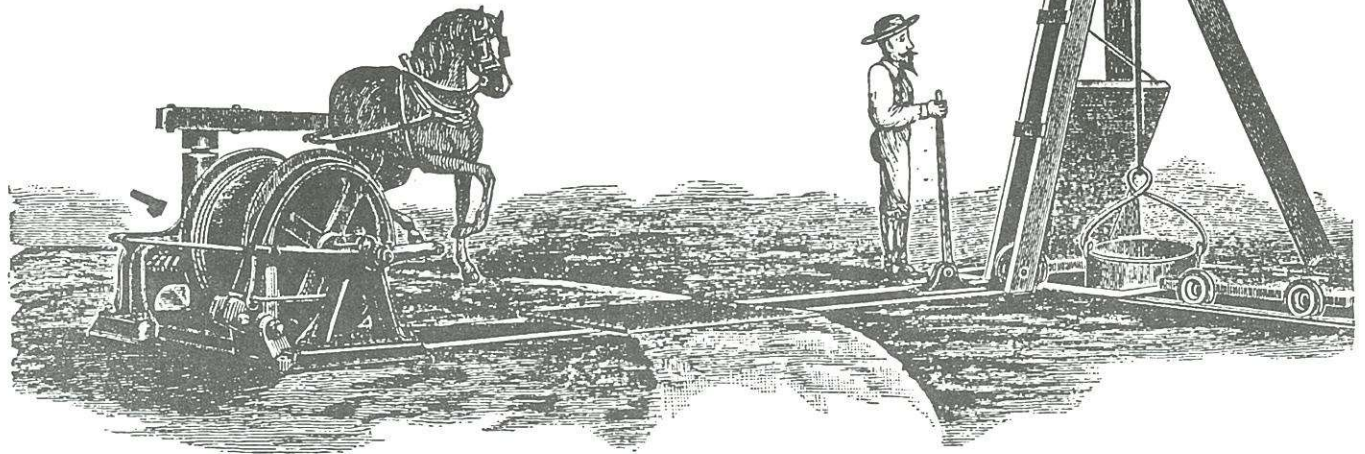


Davis Horse Whim

by Dave Johnson

THE "DAVIS" SAFETY BRAKE HORSE-POWER HOISTING WHIM

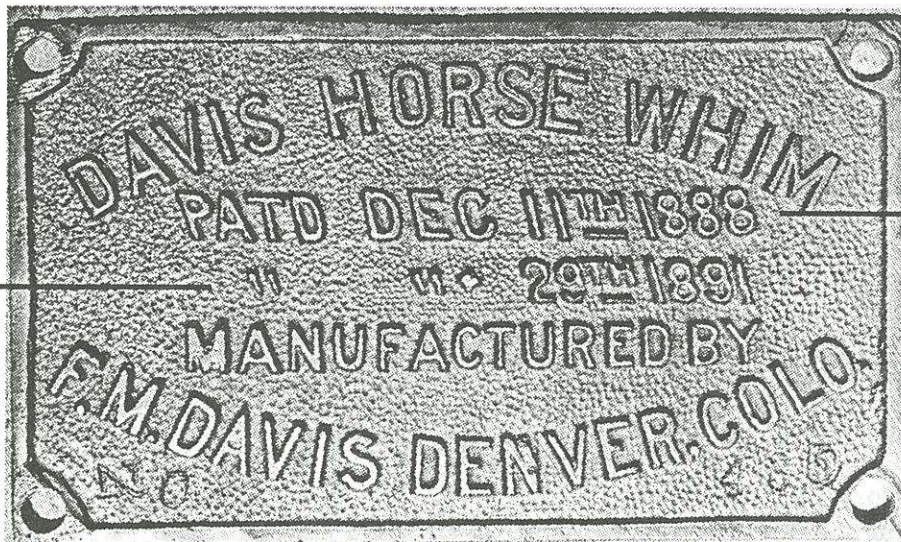
IN POSITION FOR OPERATION



The earliest means of raising ore from a mine shaft was by means of a hand windlass. However, this hand cranked hoist had a low capacity and was inefficient. Using a windlass with a barrel (drum) diameter of 6-9", a crank arm 15" in length and a crank handle 15" in length, two men at surface are able to hoist 7,200 lbs. from 100' in 8 hours at 75 lbs per load, allowing 3 minutes for filling, dumping and lowering. Windlass buckets generally averaged 60-75 lbs in weight.

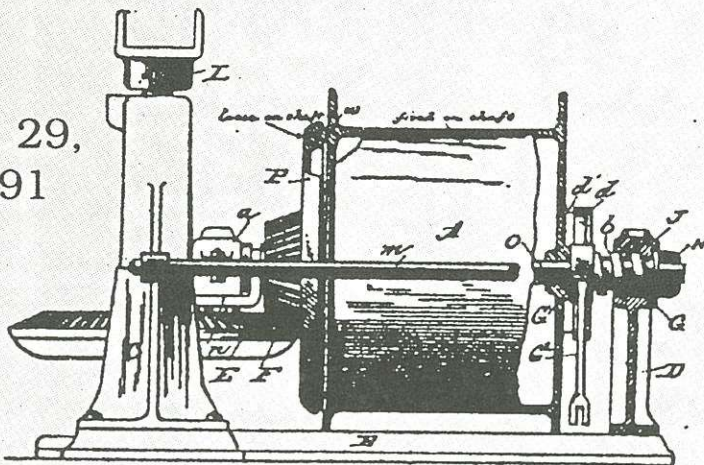
When depths became too great for a hand crank windlass and when more hoisting capacity was needed to increase productivity the horse whim came into use. The earliest horse whims used a vertical drum which required no gearing between the winding drum and the sweep (lever attached to the horse which turned the drum). The vertical drum whims had a sweep with a swivel on the end of the sweep allowing the horse to turn sharply to travel in either direction. The vertical drum was replaced by a horizontal drum (as seen in later steam and electric powered hoists). This configuration required gearing to turn the motion of the vertical sweep shaft into horizontal motion of the winding drum.

The horizontal drum whim was a marked improvement over the older vertical drum whim. The horizontal drum whim with its bevel gearing allowed the horse to travel continually in one direction while changing directions or stopping the drum, through the use of a friction clutch.



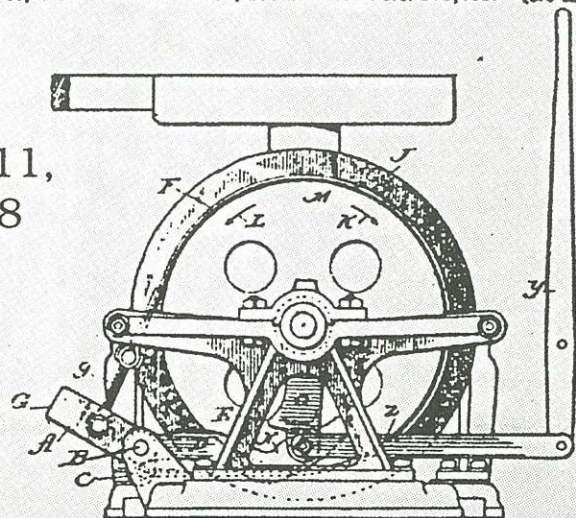
394,344. HOISTING APPARATUS. FRANCIS M. DAVIS, Denver, Colo. Filed May 12, 1888. Serial No. 273,705. (No model.)

Dec. 29,
1891



466,158. BRAKE FOR HOISTING-DRUMS. WILLIAM C. DAVIS, Denver, Colo. Filed June 10, 1891. Serial No. 395,795. (No model.)

Dec. 11,
1888



Cast brass
Davis Horse
Whim
nameplate
shows patent
dates for hoist
and brake.

Hoisting Whims

The " Davis" Horse-power Whims, with safety brake, shown in position on opposite page, are the most durable and safest whims in the market. They are built entirely of iron and steel mounted on heavy iron base plates, and are therefore durable and not affected by exposures to wet or dry atmospheres.

One of the chief points of their superiority is the Automatic Safety Brake. This brake allows the raising of the load or bucket, but prevents it running back or lowering until desired. This obviates the use of ratchets, on which the safety of other whims depends, and forms a whim which for perfect safety and ease in handling cannot be equalled.

The bevel gear on the drum shaft is loose, and in hoisting drives the drum through a friction clutch; this novel arrangement prevents the frequent accidents occurring in other whims, occasioned by the breaking of the gear-teeth when throwing them in and out of gear, and further permits the operations of hoisting, dumping the bucket and lowering, to be performed with the horse in constant motion in one direction, a feature that greatly increases the capacity of the whim, in avoiding the loss of time due to stopping and starting the horse.

Weight of whim, 1200 pounds. Total shipping weight, including sweep, level and sheaves, 1500 pounds.

Dimensions of hoist: Drum, 22 inches in diameter, 14 inches long; bed-plate, 4 feet long by 2 feet 8 inches wide. Half-inch wire or 1 1/4 inch hemp rope is the proper size to use with these whims.

Capacity, with one horse and single line, 800 pounds 75 feet per minute.

Prices quoted upon application.

Specifications of bill of lumber, bolts, etc., for foundation and gallows-frames will be furnished to purchasers.

Nos. 38-44 Fremont St., San Francisco, Cal.

A horse whim with two men at the surface, one horse and 4 muckers underground could hoist about 20 tons in an 8 hour shift. (Peale, 3rd edition) from 100 feet allowing for filling, dumping and lowering the bucket. This makes the horse whim 5.7 times more productive from the same depth of 100 feet and more productive at even greater depths.

The length of the sweep was recommended to be not less than 12- 14 feet as horses do not work well when traveling a circle of less than 24-28 feet. The longer the sweep the slower the hoisting speed on the same size drum, this can be counter acted by increasing the diameter of the drum. The buckets were generally 1/8" steel plate with an average capacity of 8-9 cubic feet and a weight of 130- 150 lbs. A wire rope of 1/2" to 5/8" diameter was recommended for use on horse whims over hemp which was generally used on hand windlasses since wire rope tended to kink on the small diameter drum of a hand windlass.

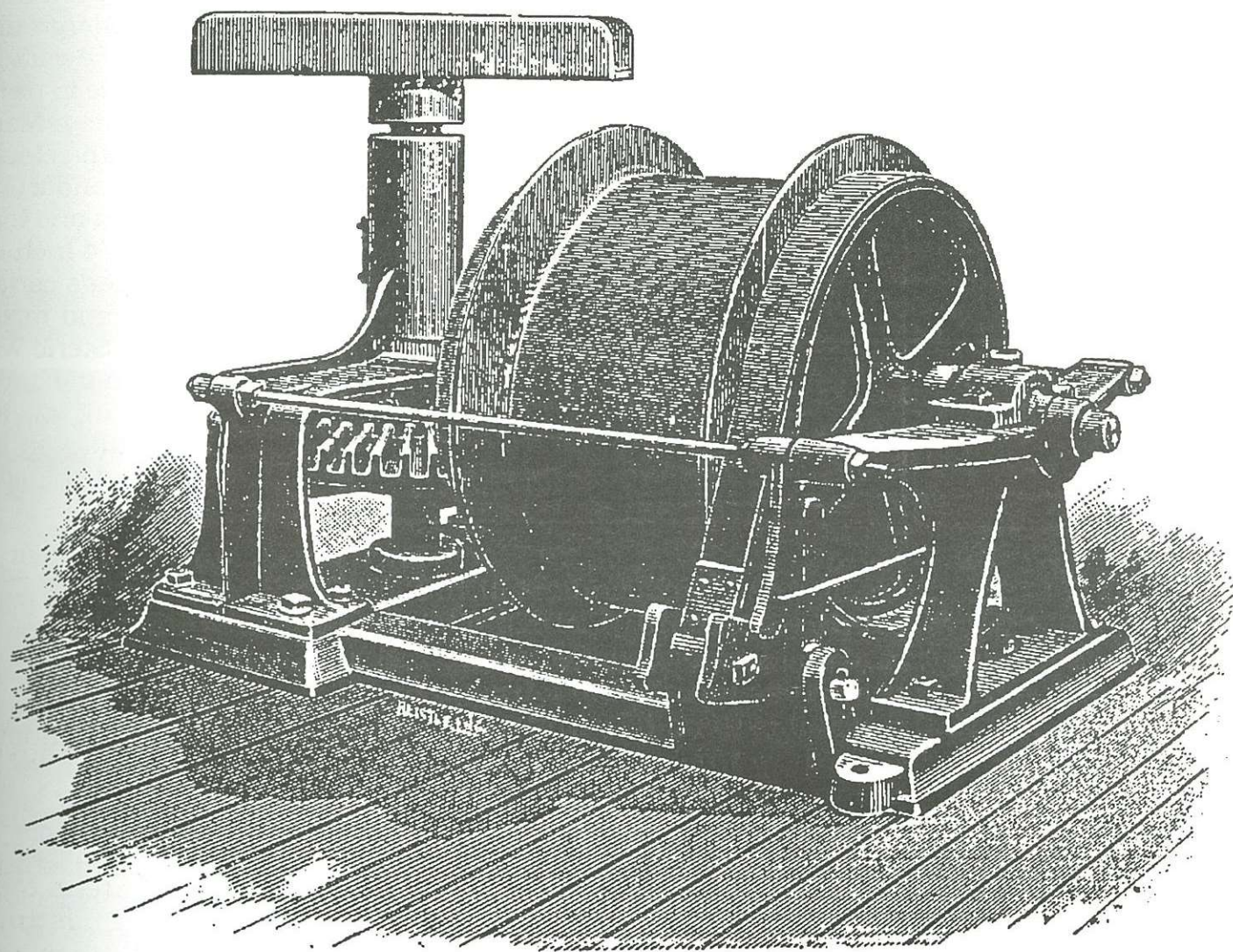
Among the best known of the horse whims were those produced F. M. Davis of Denver, Colorado. On December 11, 1888 Francis M. Davis received Patent No. 394,344 for a hoisting apparatus and William C. Davis received Patent No. 466,158 for a hoisting drum brake on December 29, 1891.

(Above) Reproduction of page 5 from the 1898 Joshua Hendy Machine Works catalog.

An advertisement from the 1898 Joshua Hendy Machine Works catalog supplement illustrates the Davis Horse Whim in its entirety and gives a description of the mechanism. The Mine and Smelter Supply Co. of Denver catalog illustrates a Davis Horse Whim, offering five different capacities with prices. Horse whims were generally used in shaft sinking and until a steam or electric hoist could be installed, or in small operations that did not warrant the expenditure for the much more expensive steam or electric hoists.

Thanks to Andy Martin for catalog information.

THE MINE AND SMELTER SUPPLY CO., DENVER, COLO.



IMPROVED HORSE WHIMS.