

IMPROVED STONE CHANNELING MACHINE.

Blasting plays an important part in the quarrying of stone for burning lime, for road-bed ballast, rubble, street pavement, and is still resorted to in slate quarries; but in that important industry, the quarrying of dimension stone, the blast is now seldom heard, and the channeling process is daily growing in favor. This process consists in cutting long, narrow channels or deep grooves along the floor of the quarry, for the purpose of freeing the sides of the blocks of stone to be taken out. After the channels are cut to the required depth, and a free face obtained along one of the cuts, the next step, if there are no free beds, is to release the mass at the bottom. This is done by means of a "gadder," and consists in drilling or "gadding" a series of horizontal holes along the bottom of the bench, and in line with the new floor, and then releasing it by the splitting action of wedges, or "lofting" it, as it is called by quarrymen.

After the bench is thus raised from its bed in mass, it is next split into blocks of the required thickness or dimension by means of wedges or plugs and feathers. The process of cutting up the blocks after the channels are made varies somewhat in the different quarries, according to the nature of the stone, but the method above described is the one most generally used, and will serve to illustrate the principle.

It is thus seen that the channeling process is not, as it is popularly supposed to be, a complete cutting out of the stone in blocks; but it is a means by which artificial seams or beds are produced in positions most favorable for the action of the wedges or plugs and feathers.

The accompanying illustration represents an improved channeling machine recently introduced by the Ingersoll Rock Drill Company, of 10 Park Place, New York, the engraving being made from photographs taken at the Ohio Sandstone Quarries, which have not been slow to adopt this improvement. The apparatus consists of a direct-acting engine, having the piston and valve of the standard Ingersoll "Eclipse" drill, with a gang of cutting tools attached to a crosshead which is fixed to the piston rod, the whole mounted in a vertical position upon an adjustable support, fixed to a carriage which moves automatically upon a portable track laid alongside of the cut about to be made.

This machine is direct-acting, that is, the cutting tools being attached rigidly to the piston, the blow is dealt directly by the steam pressure in the cylinder and without any intervention of crank shafts, levers, or springs. The feed motion of the carriage upon the track is operated by and dependent upon the engine which strikes the blow. This is the only direct-acting channeling machine which possesses this feature.

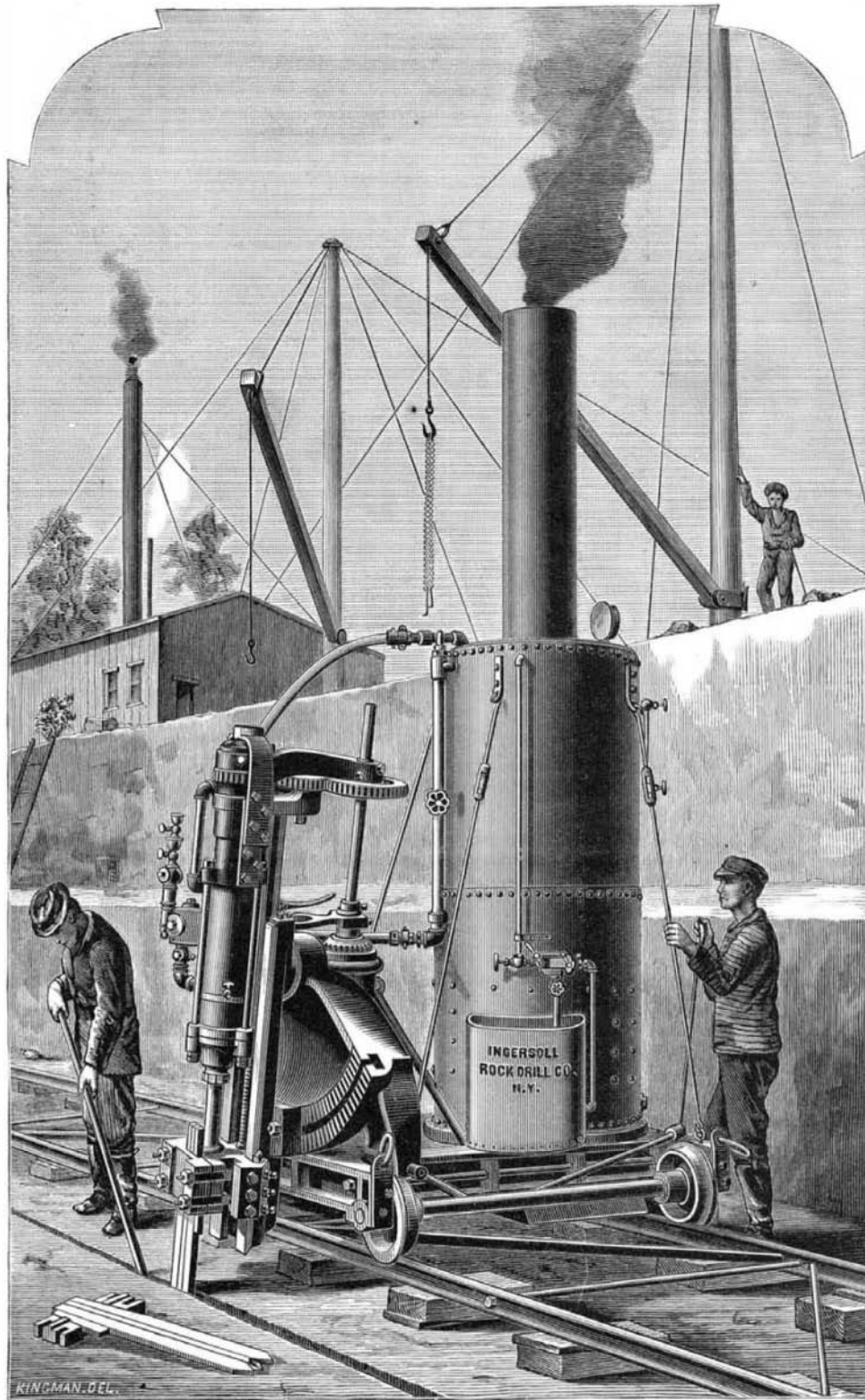
This feed motion is imparted to the car on the upward stroke of the piston only; the car remains stationary when the blow is struck. This feed averages three-quarters of an inch per stroke. The strokes average 240 per minute.

As the cutting tools are made adjustable to any angle to the right and left, and forward and backward, the machine is capable of making transverse and side-hill cuts, and does what is known as cutting out the corners in quarrying. The machine has but two quick-moving parts—the piston, with cutting tools attached, and the valve. The stroke varies about six inches in length, running from two to eight inches. This is accomplished without extra parts or mechanical adjustment. The machine will start with a stroke of three inches, and continue operating without attention until the cut is five inches deep. The engine and cutting tools are fed downward as the cutting proceeds, and the drills can cut a channel eighteen inches in depth without unclamping or stopping the machine. There is but one clamp, or chuck, for the drills, there being no upper clamp. Thus, the drills are short and handy for use in the shop and while being changed in the cut. By a stop valve placed in the lower steam port, the blow can be regulated so that it will strike with only a light touch or with a blow of 3,000 pounds in force. As the machine is

light in weight, and occupies but little space, it can be used in a chamber where the distance between the floor and the roof is but six feet.

The boiler is of an improved design, made specially for the purpose, with submerged flues, and has a water tank attached, from which the boiler is fed by means of an injector.

The efficiency and stability of this apparatus have been sufficiently tested and demonstrated by work in all kinds of stone. It has been most successfully used by the Vermont Marble Co., of West Rutland, Vt.; the Green Serpentine Marble Co., of Conowingo, Md.; by the Atlantic Stone Co., of La Grange, Ohio; and at many other well known quarries. The average capacity of the machine in various kinds of stone is given as



THE INGERSOLL STONE CHANNELING MACHINE.

follows: In marble, 80 to 100 square feet of channel cut in 10 hours; in limestone, 120 to 150 square feet; in sandstones, 150 to 200 square feet; in granite, 40 to 60 square feet. The machine has already made a record of 260 square feet in sandstone and 230 feet in limestone in a day of 10 hours.

A Fourteen Inch Type Writer.

Messrs. Wyckoff, Seamus & Benedict, exclusive dealers in Remington standard type writers, etc., 339 Broadway, have lately brought out a new machine, which takes paper fourteen inches in width, and any length from a few inches to a continuous roll, while its keyboard is but a trifle larger than that of the Standard No. 2 machine. It has 42 keys, writing 84 characters—caps, small letters, punctuation marks, etc.

This machine is more particularly adapted to the wants of the legal fraternity, insurance officers, real estate men, etc., and wherever an unusual width of paper or blanks is in use.

Orders are already being received for this machine from the legal profession in England, where, by act of Parliament, certain documents and most legal papers are required to be written upon paper of extraordinary width, commonly known on the other side as brief paper.

Old Fashioned Journalism.

He was an old New Yorker, and he talked with the precision of the printed page, says the *Turf, Field and Farm*, from which we quote: "Would you believe it? When the *Tribune* was started, it refused to publish theatrical advertisements or to chronicle the movements of players. Now it gives much space to the stage. When Mr. Bonner was pushing the *Ledger*, he bought a page in the daily, semi-weekly, and weekly *Tribune*, agreeing to pay \$3,000 for it. After the advertisement had appeared in the daily, Mr. Greeley raised the objection that it would hurt the weekly, which had a very large circulation, to allow one man to occupy so much space in it. Mr. Bonner insisted that the contract should be carried out in good faith, but Mr. Greeley was obstinate, and the matter was compromised by no charge being made for the page occupied in the daily.

"When Mr. Bennett, the founder of the *Herald*, heard of the transaction, he said to his trusted lieutenant, Joe Elliott, that the *Tribune* people were foolish; that no advertiser could ask for too much space at the regular rates in the *Herald*. Mr. Elliott repeated this conversation to Mr. Bonner, and the proprietor of the *Ledger* quickly remarked, 'Tell Mr. Bennett that I will take eight pages of his paper.' As the *Herald* was an eight page journal, the advertiser put in a bid for its entire space. Mr. Bennett was equal to the emergency. He put on sixteen pages, three pages of the *Ledger* advertisement going into one half section and five into the other half. This was the first time the *Herald* ever issued a sixteen page paper, and the feat was regarded as something wonderful. How different at the present, when more than thirty-two pages are sometimes caught and folded from the press! Sam Sinclair, the publisher of the *Tribune*, lived at that time in 28th Street, near Eighth Ave. The morning that the sixteen page *Herald* came out, he took his seat in the street car and bought a copy of Mr. Bennett's paper. When he opened the first half, and saw three of the pages monopolized by the *Ledger*, a scowl came on his face, and he tossed the sheet over his shoulder through the open window. Mr. Bonner, who had got into the same car, one block higher up, was amused by Sinclair's act, and he called out: 'You have thrown away the lesser part; you will find the greater in what you have kept.' Mr. Sinclair colored to the roots of his hair, and opened the sheet and was greatly surprised to see that five of the pages were given up to the *Ledger*.

"The fact then dawned on him that he and Greeley had made a mistake in refusing to carry out the contract with Mr. Bonner for one page in the *Tribune*. The first Sunday *Herald* was issued to get rid of the left-over matter which encumbered the galleys. It was an experiment; but it brought such

good results as to lead to the establishment of a regular Sunday edition of the paper. Mr. Bennett was quick to seize a point and profit by it. Now all the morning journals, including the *Tribune*, print a Sunday issue, and it is really the elaborate and most costly paper of the week. The changes in the newspaper world are marvelous to an old-timer like myself." A far-away look came into the eyes of the speaker as he uttered the last words, as if the faces of the elder Bennett, Horace Greeley, Henry J. Raymond, and other journalistic stars rose before him from the mists of the past. Then he muttered something about time moving on with remorseless tread, indifferent to change, and thrust his hands into his pockets and walked away.

At the funeral of the late King of Spain an imposing and curious scene occurred, which, it seems, is a custom peculiar to that country. When the procession reached the monastery connected with the Escorial Palace, the Duke de Sexto, the Royal Chamberlain, knocked, and requested admittance for Alfonso. When inside the gates, the Duke unlocked the coffin and called three times in Alfonso's ear. Then, according to the ritual, he said: "There is no reply. It is true, the King is dead!" He then relocked the coffin, and broke his wand of office.

THE HOBOKEN INCLINED CABLE RAILWAY.

(Continued from first page.)

blocks, which are bolted to iron plates riveted in between two iron channel bars, which, while adding strength to the structure, also act as guard rails. This mode of laying the track, dispensing with the wooden ties and substituting iron for wooden guard rails, is far preferable to that of the elevated roads of this city, as it is more durable, admits more light and air, and looks better.

The structure starts from the ferry at an elevation of about 8 feet, and gradually rises until it reaches the first street, where it is 15 feet high. It then continues level for about 3,500 feet, when it begins to rise at the rate of 5 feet in the hundred. There are two curves in the road, one at the ferry and the other at the foot of the steep grade.

The cable is of steel, $1\frac{1}{2}$ inches in diameter, and the total length is about $2\frac{1}{2}$ miles. The motive power is situated on top of the hill. There are four return-flue steel boilers, each of 125 horse power. There are two Corliss engines, having cylinders 30 inches in diameter and 5 feet stroke. The main shaft is 15 inches thick. The engines are so arranged that they can be used either singly or together. The flywheels are $20\frac{3}{4}$ feet in diameter, and each weighs 28 tons. The gearing for driving the cable drums—shown in Fig. 2—is similar to that illustrated in our article describing the Tenth Avenue Cable Railway, of this city, in the SCIENTIFIC AMERICAN of January 30, 1886, and was built by Messrs. Poole & Hunt, of Baltimore.

The arrangement and construction of the grips and rope lifters, Fig. 4, present many advantages over the old methods. The grips are not fastened to the body of the car, but to the wheel trucks, enabling the car to pass easily around the curves, and causing the grip to remain at the same distance from the cable, whether the car is loaded

or not. There is one grip on each of the two trucks of the car. The grips are of iron, 3 feet long, and the cable is in contact with the jaws of the grip for the entire 3 feet. The grip is opened and closed by the turning of a hand wheel on the platform. A worm gear and set of levers, forming a powerful and positive movement, transmit the motion of the hand wheel to the jaws of the grip. In front and in the rear of each grip are two claws which can be opened and closed, lowered and raised, by means of a lever on the platform to the left of the grip wheel, and which enables the grip man to pick up the rope without the aid of any other person, and at any place on the road, level or inclined, at or between stations.

The cars have the ordinary brakes to check the wheels. These brakes are tightened and loosened by the same wheel and worm gear which tightens and loosens the grip. A movement of a lever to the right of the hand wheel throws the brake into gear, and at the same time the grip out of gear, and *vice versa*, making it impossible to have the two forces (grip and brake power) operating against one another. In addition to the ordinary brakes, there are so-called track brakes, to be used in case of emergency on the incline and when the rails are slippery. Their shoes are about 2 feet long, are surfaced with wood, and can be pressed down with much force on the rough iron guard rails on each side of the track rails. By their action the car can be stopped anywhere on the incline or level, and in all kinds of weather. The construction of these brakes will be understood from the cross-sectional view, Fig. 3.

The loading and unloading of passengers at the ferry is quickly done, and without confusion. Near the terminus the down-track runs by a switch into the up-track, so that only one track enters the station. The down-cable continues, of course, in a straight direction, and leaves the down-track; it passes to the end of the station below the platform and around a large sheave, and then returns on the up-track. The single track in the station is flanked on each side by a wide platform. When a car arrives, it comes in by momentum, having let go of the cable some 700 or 800 feet before reaching the station. The passengers pass out of the car to the right and by the front door, and at the same time passengers enter the car from the left and by the rear door. Where the car stops to let out the passengers it remains until it has taken in passengers again, and is ready to start. One minute is sufficient to unload and load one car, or several if coupled together. The up cable is right underneath the car; the grip man lowers the rope lifter, raises the cable between the open jaws of the grip, closes them gradually, and the car moves off.

The advantages of this system are apparent: The incoming and outgoing passengers are completely separated from each other while in the station; only space

enough for the single track is taken up within the station, thus leaving ample platform room at either side; and as the loading and unloading go on simultaneously, no time is lost. Possibly some such system could be applied to the termini of the Brooklyn Bridge, where the shifting of cars from track to track is now slowly performed by engines.

How to Strengthen the Memory.

Dr. Holbrook, in his February number of the *Herald of Health*, says there one feature of the memory which has not before been considered, and that is its exaltation in some forms of disease.

An exaltation is where a multitude of recollections spring up involuntarily on every hand. It has its cause in an increase of the circulation of the blood in the brain. It frequently appears in acute diseases, especially fevers. It is common in maniacal patients, and it sometimes appears as a feature of hysteria and in the early stages of brain diseases.

This subject of exaltation of memory will be best

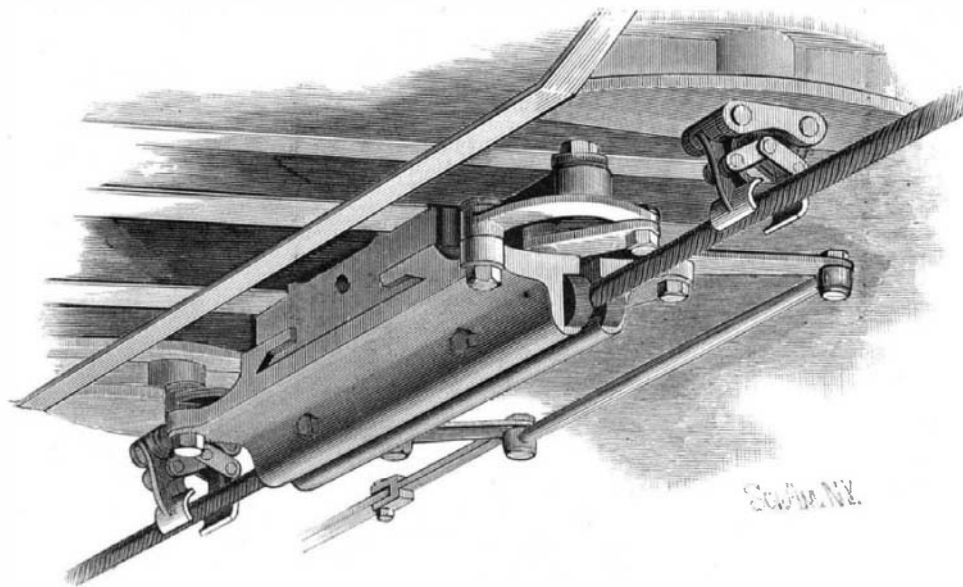


Fig. 4.—HOBOKEN CABLE RAILWAY.—THE GRIP AND ROPE LIFTERS.

understood by some simple illustrations. There have been many accounts of persons saved from imminent death by drowning who all agree that at the moment of asphyxia they seemed to see their entire lives unrolled before them, even to the minutest detail. Some go so far as to say that every instance of former life seems to flash across the memory, not as an outline merely, but with every detail filled in with the most remarkable minutia—every act of life, whether right or wrong, comes back with great vividness. Ribot cites the case of a clear-headed man who was in the act of crossing a railroad track when an express train running at full speed appeared close at hand. The man had barely time to throw himself down in the center of the road, between the two lines of rails; and as the train rushed over him, the feeling of impending danger brought to his recollection most vividly every act and incident of his former life in such an array as to suggest to him the opening of "the great book at the last great day."

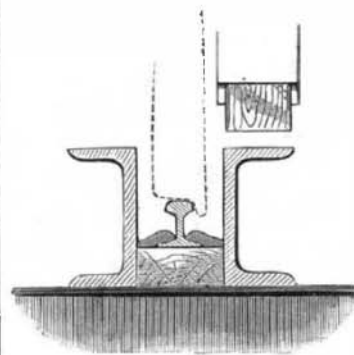


Fig. 3.—SECTION THROUGH TRACK.

There is no doubt much exaggeration in these statements; yet they show an enormous temporary increase or exaltation of the natural memory. De Quincey, in his "Confessions of an English Opium Eater," gives an experience which shows how the memory may be exalted by intoxication by the use of opium. He says: "Sometimes I seemed to have lived from 70 to 100 years in a single night. The minutest incidents of childhood or forgotten scenes of later years were often revived. I could not be said to recollect them, for if I had been told of them on awakening, I should not have been able to acknowledge them as a part of my experience; but placed before me in dream like intuitions, and clothed in all their evanescent circumstances and accompanying feelings, I recognized them instantly."

Such augmentations of the memory may be regarded as abnormal and undesirable, being indications of disease; but they teach one lesson to those who would strengthen their memories, and that is the value and necessity of a perfectly healthy and vigorous circulation of blood in the brain. The same lesson is taught by an opposite condition from that of an exaltation—a diminution of the normal memory by a decay or withering of the brain cells and a diminished supply of blood to the parts.

The loss of memory in the aged is a familiar example, and can only be accounted for by a deterioration of the brain elements and a diminution of blood supplied to them. One of the worst features of such cases is the fact that an old person is not, for a long time after decay has begun, aware of it. I am now treating a case of loss of memory in a person advanced in years, who did not know that his memory had failed most remarkably till I told him of it. He is making vigorous effort to bring it back again, and with partial success.

The method pursued is to spend two hours daily, one in the morning and one in the evening, in exercising this faculty. The patient is instructed to give the closest attention to all that he learns, so that it shall be impressed on the mind clearly. He is asked to recall every evening all the facts and experiences of the day, and again the next morning. Every name heard is written down and impressed on his mind clearly, and an effort made to recall it at intervals. Ten names from among public men are ordered to be committed to memory every week. A verse of poetry is to be learned, also a verse from the Bible, daily. He is asked to remember the number of the page in any book where any interesting fact is recorded. These and other methods are slowly resuscitating a failing memory.

The aged should all look to this danger in their lives, and resolve to combat it from the very first. By so doing they will make their declining years more enjoyable, and give much greater pleasure to their friends. Unceasing self-culture, especially in preserving the memory and intellectual faculties, should constitute a considerable part of the life of every aged person, even more than of the young. Only by it can this period of life be rendered pleasant and profitable.

Hints to Architects.

Notwithstanding the wide disparity of climatic conditions between this country and Japan, a perusal of Prof. E. S. Morse's recent book on "Japanese Homes," now in its second edition, the first having been exhausted in ten days, will reveal much of interest and value to our own builders.

The principles of Japanese decorative design have made steady progress among us since the Centennial Exposition, at Philadelphia. A characteristic feature is the universal adoption of the natural wood finish for inventors. A serious impediment to the general use of natural wood among us arises from the difficulty of matching the grain of different boards as they are furnished at the lumber yard. The simple precaution of tying up in bundles the sawn boards from each log by itself is there universal, and solves this difficulty.

Should not that be considered in some respects a happy country where scaffolds never fall, precipitating workmen to death or disaster? Yet this desideratum is attained by firmly binding together the structure with stout cords instead of using nails, the frequent use of which constantly weakens the materials employed.

Prof. Morse is most enthusiastic in eulogizing the artistic instincts of the Japanese, and considers it remarkable that a people with so few noteworthy public buildings should have so far surpassed ourselves in solving the problem of comfortable homes.

A Wrong Use of the Bible.

In all court houses in New York, very dirty copies of the Bible are used in a way which, the editor of the *Herald of Health* thinks, and in which almost every one will concur, is dangerous to health. When jurors or witnesses are sworn, they are expected to take the Bible in one hand, and after repeating the oath, to kiss the book with their lips. Clean and unclean people do this indiscriminately, and it does not take long to make the cover, and even the leaves, of this book very foul. Such a use of it, it seems to us, is unwarrantable.

The Bible says: "Swear not at all; neither by the heaven, for it is the throne of God; nor by the earth, for it is the footstool of his feet; nor by Jerusalem, for it is the city of the great King. Neither shalt thou swear by thy head, for thou canst not make one hair white or black. But let your speech be, Yea, yea; Nay, nay; and whatsoever is more than these cometh of the evil one."

Cleanly people, who do not wish to kiss a book sodden with grease and foul with filth, are allowed to affirm, which is certainly preferable. Others practice a harmless sort of evasion, by holding the book in such a way that they can kiss their thumbs without being observed by the officer of the court, who, by the way, is rarely very watchful, and is satisfied if one goes through with the form rather than the spirit of the oath.