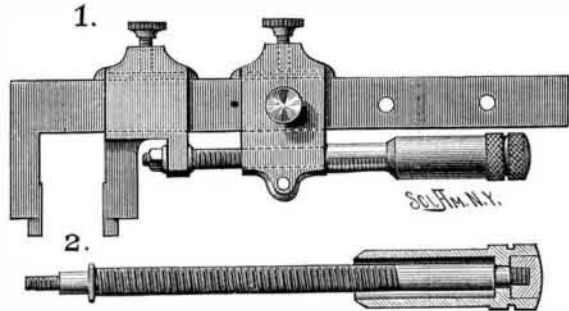


CALIPER GAUGE.

A caliper gauge arranged to be set by means of a screw and micrometer gauge graduations, whereby both internal and external measurements may be accurately made, has recently been patented by Mr. Eduard Sauter, of Hartford, Conn. One end of the beam is bent so as to form a right angle, and the inner end of the arm is reduced in size. A sliding jaw placed upon the long arm of the beam has an arm similar in shape to the first arm and placed parallel with it. A block or yoke also slides upon the long arm of the beam, but may be made fast to it by passing a pin through it and through either one of the holes in the beam, which are one inch apart. This permits the measurement of either long or short distances. To the rear edge of the yoke is secured a sleeve which is graduated and which forms the stationary graduation of the tool. The screw rod extends

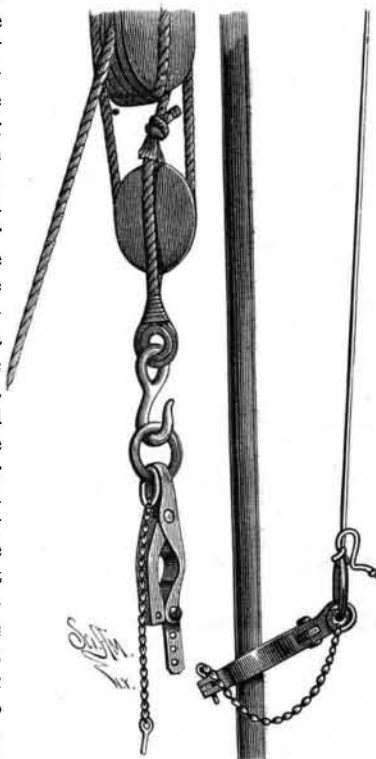


through the sleeve, the yoke being tapped to receive the rod, whose front end is secured to the sliding jaw by a suitable nut and collar. On the other end of the screw rod is a revolving graduated sleeve, which, in connection with the sleeve on the yoke, constitutes the complete graduation of the tool. The sleeve on the screw rod surrounds the other sleeve and is clamped to the rear end of the screw by a nut (the construction will be readily understood from Fig. 2, which is a section through the screw rod), and is milled to facilitate turning for moving the jaw forward and backward. By the nut on the end of the rod, the rod may be adjusted while assembling the parts of the tool, or any wear occasioned by use may be taken up. The lower edge of the yoke is split and a screw inserted in order that the parts may be drawn together and clamp the screw rod, if this should be rendered necessary by wear. The jaw and sliding yoke are each provided with thumb screws by which they may be held fast to the beam. Fig. 1 is a side elevation of the gauge.

PIPE GRAPPLE.

The grapple under consideration is for use in raising and lowering pumps or well tubing, and for other work of similar character. The grapple is made with two jaws hinged together at one end, and provided with a link for their connection at the other end. The upper ends of the jaws are hinged together by a pin, one jaw extending beyond the hinge pin and being provided with an eye for connection with a hook and chain. The other ends of the jaws are slotted, and in one slot a link is permanently secured by a pin, and a movable pin carried by a chain is provided for connecting the link to the other jaw, so as to hold the two jaws firmly together, and at the same time permit of their disconnection. The two jaws are formed with concaves on their inner sides so as to allow the couplings on the pipes to be passed through without opening the jaws. In using the grapple two of them are necessary; one is attached to the pulley block for raising or lowering the pipe, and the other is suspended by a chain to some stationary beam, one or the other always being loose on the pipe. To use the grapple the pin is drawn from the one attached to the pulley, the grapple is opened, and the jaws passed around the pipe, when the pin is replaced.

As soon as a strain is put upon the hoisting rope, the grapple assumes an angular position with reference to the pipe and grasps it firmly, so that it may be raised or lowered. The other grapple is applied to the pipe directly under the one attached to the pulley block, and in the same manner. When the pipe has been raised or lowered to the desired position the ropes are slackened, so that the grapple may as-



sume a right-angle position, allowing the coupling on the pipe to pass through freely. The stationary grapple holds the pipe while the other grapple is being shifted. The engraving represents one grapple attached to the pulley and the other in position on the pipe.

This invention has been patented by Mr. Elisha K. Green, of Los Angeles, Cal.

A Railroad in Palestine.

The first railroad in Palestine is being laid out, and the preliminary survey has been completed far as the Jordan. It is to run between Acre and Damascus, and it is called the Hamidié line, because it is named after his present Majesty, the Sultan Abdul Hamid, and probably one reason why the firman has been granted so easily lies in the fact that it passes through a great extent of property which he has recently acquired to the east of the plain of Esdraelon. The concession is held by ten or twelve gentlemen, some of whom are Moslems and some Christians, but all are Ottoman subjects resident in Syria. Among the most influential are the Messrs. Sursock, bankers, who own the greater part of the plain of Esdraelon, and who have, therefore, a large interest in the success of the line.

Starting from Acre, it will follow the curve of the bay for ten miles, in a southerly direction, at a distance of about two miles from the beach. Crossing the Kishon by a 60 foot bridge, it will turn east at the junction of a short branch line, two miles long, at Haifa. Hugging the foot of the Carmel Range, so as to avoid the Kishon marshes, it will pass through the gorge which separates that mountain from the lower ranges of the Galilee Hills, and debouch into the plain of Esdraelon. This plain it will traverse in its entire length. The station for Nazareth will be distant about twelve miles from that town; there may, however, be a short branch to the foot of the hills. So far there has only been a rise from the sea level in twenty miles of 210 feet, so that the grade is imperceptible. It now crosses the watershed and commences to descend across the plains of Jezreel to the valley of the Jordan. Here the Wady Jalud offers an easy incline as far as Beisan, the ancient Bethshan, and every mile of the country it has traversed so far is private property, and fairly cultivated.

At Beisan it enters upon a region which has, partly owing to malaria and partly to its insecurity, been abandoned to the Arabs, but it is the track of all others which the passage of a railway is likely to transfigure, for the abundance of the water, which is now allowed to stagnate in marshes, and which causes its unhealthiness, is destined to attract attention to its great fertility and natural advantages, which would, with proper drainage, render it the most profitable region in Palestine. Owing to the elevation of the springs, which send their copious streams across the site of Beisan, the rich plain which descends to the Jordan, 500 feet below, can be abundantly irrigated. There is a little bit of engineering required to carry the line down to the valley of the Jordan, here 800 feet below the level of the sea, which is then followed as far north as the Djisir el Medjâmieh.

Near this ancient Roman bridge of three arches, which is used to this day by the caravans of camels which bring the produce of the Hauran to the coast, the new railway bridge will cross the Jordan, probably the only one in the world which will have for its neighbor an actual bridge in use which was built by the Romans, thus, in this now semi-barbarous country, bringing into close contact an ancient and a modern civilization. After crossing the Jordan the line will follow the banks of that river to its junction with the Yarmuk, which it will also cross, and then traverse a fertile plain of rich alluvium, about five miles long and four wide, to the banks of the ridge which overlooks the eastern margin of the Sea of Tiberias. This is the extent to which the survey has been completed.

It is not decided whether to rise from the valley by the ridge which overlooks the Yarmuk, or to follow the east shore of the Lake of Tiberias to the Wady Semakh, which offers great advantages for a grade by which to ascend nearly 3,000 feet in about fifteen miles. This is the toughest bit of engineering on the line, and is in close proximity to the steep place down which the swine possessed by devils are said to have rushed into the sea. Once on the plateau, it will traverse the magnificent pasture lands of Jaulan and the grain growing country of Hauran, with probably a short branch to Mezrib, which is the principal grain emporium, and one of the most important halting places on the great pilgrimage road from Damascus to Mecca. It is calculated that the transport of grain alone from this region to the coast will suffice to pay a large dividend upon the capital required for the construction of the road, which will be about 130 miles in length. The grantees have also secured the right to put steam tugs upon the Lake of Tiberias, and under the influence of this new means of transportation the desolate shores will undergo transformation.—*Boston Advertiser.*

Burned by Melted Steel.

A very serious accident occurred during the meeting of the Iron and Steel Institute at Middlesborough, Eng., which painfully illustrates the danger incident to the visit of a large number of persons to industrial establishments. A number of members of the Institute visited the North-eastern Steel Works before the time appointed for their reception. When on the platform, on a level with the cupola top, one of the ladle buggies filled with molten metal stuck fast as it was pushed by a locomotive. The engineer backed

up and tried to force the buggy over the obstruction by running against it. The shock broke the clutch, and the ladder began to swing around, slowly emptying its contents on the platform in the direction in which the visitors and a number of men were standing. All of them were covered with a spray of molten metal, a number were more or less injured, and one gentleman, Mr. Samuel Davison, of the Horbury Bridge Iron Works, near Wakefield, was so seriously burnt that he expired a few hours afterward.

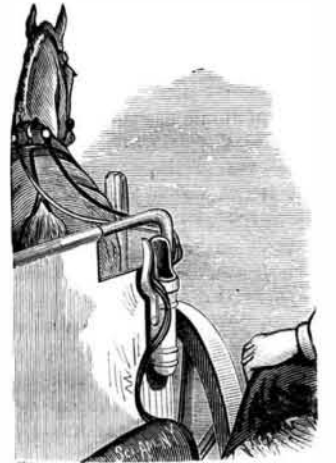
COMBINED WHIP AND REIN HOLDER.

The whip socket may be made of wood, metal, leather, or any other suitable material, and can be secured to the dashboard or other part of the vehicle convenient to the driver.

Its upper end is provided with a guide at the back for guiding the butt end of the whip down into the socket, which is a great convenience in putting away the whip while the carriage is in motion.

The device for holding the rein is a properly shaped flat spring, as shown in the engraving, secured to the side of the socket, with its upper end pressing against the outer surface of the socket or guide, so that the reins may be easily slipped between the spring and the socket,

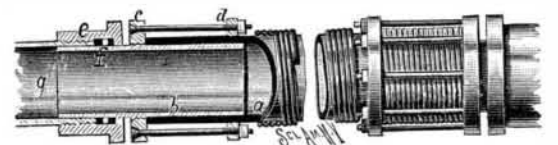
where they will be held by the pressure of the spring. The accompanying illustration shows the reins held by the spring. This invention has been patented by Messrs. Nathaniel Robertson and H. C. Doll, of Denver, Col.

**Firemen Bothered by Iron Shutters.**

At a fire in Lispenard Street, this city, on the 8th inst., the firemen lost considerable time in getting in the building, as the door and windows were guarded by iron shutters. As generally constructed, these shutters are rolled up by means of a crank or key upon the inside and cannot be raised or lowered from the outside. Upon this subject Chief Engineer Bates, of the Fire Department, said to a reporter: "Once inside the door the work is easy, though we have to fight for every inch of distance we raise them from the outside. They might just as well be made to work with the iron key of our hose carts, but they never are. The unnecessary delays to which firemen are subjected by such arrangements as these increase the aggregate loss from fires in this city from thirty to fifty per cent."

PIPE AND HOSE COUPLING.

The accompanying illustration of this coupling is a longitudinal elevation, parts being broken out and others shown in section. In each end of the rubber tube, *a*, is inserted a piece of metallic tubing, *b*, so that one-half of the latter projects from the end. At the end of the rubber tube, the metallic tube is threaded for the reception of a collar, *c*, against which the end of the rubber tube abuts. Wires are coiled firmly around the rubber tube to press it against the inner tube. A ring, *d*, rests against the other end of the coiled wire, and screw bolts having countersunk ends in the ring, *e*, pass through the ring, *d*, when by drawing the nuts up tightly the coiled wire will be pressed between the rings and against the rubber. Between the ends, the rubber tube



is wound with wire to strengthen it. The end of the metallic tube projecting from the rubber tube is provided with an annular ridge, *f*, between which and the adjoining ring, *c*, is the inwardly projecting end flange of a sleeve, *e*, which has its inner surface threaded to admit the end of the pipe, *g*. Packing rings are placed against both side surfaces of the annular ridge to insure a close joint. The pipe to be coupled is screwed into the collar, *c*, the end of the tube, *b*, passing into the end of the pipe, which rests against one of the packing rings.

This invention has been patented by Mr. J. Adolphe Perrottet, 413 Sixth Ave., New York city.

Resignation of Commissioner Marble.

The Secretary of the Interior has accepted the resignation of Edgar A. Marble, Commissioner of Patents, to take effect on October 31. Mr. Marble had tendered his resignation on three occasions during the present year, but it was withdrawn at the request of Secretary Teller. Several candidates for the commissionership have been considered, and the last rumor says the position has been offered to a Western ex-Congressman, but the report needs confirming.