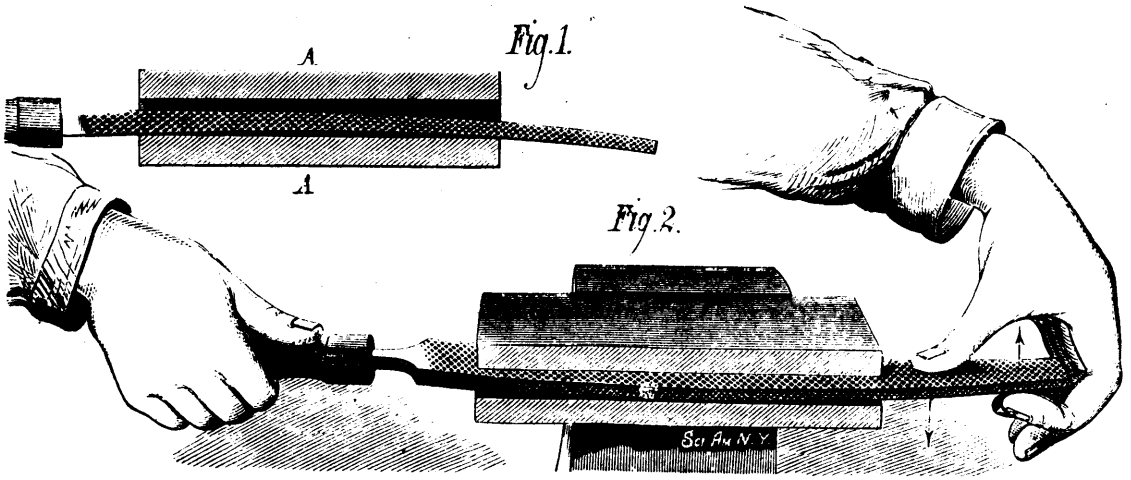

A WRINKLE IN FILING.

(Continued from page 330.)

There does not seem to be anything to urge against the principle of these, and they work well, but the plow Fig. 18 was preferred. In each case the long backwardly extending lever raises the forward end, so that the plows come out of the ground as the team reaches the end of the land ready for turning.

The Gilpin sulky plow made by Deere & Co., of Mouline, Illinois, was an object of much attention.

Besides the plows for executing the usual work, at this *concours* there were ridging, subsoil, trenching, and mole plows, implements for digging potatoes, pulling up beets; harrows, rollers, clod-crushers, potato-planters, grain and seed drills.

The ridging plows, *buttoirs*, were stocked with wooden or iron beams, and are much used in the potato and beet culture; the rows of these are so close that the *buttoir* will ridge up against the plants on both sides going once in a row. These plows weigh 120 lbs. and cost 85 francs.

The subsoil plows are those which work behind an ordinary plow to break up the hard pan, but not to elevate it above the surface mould. Quite a number were exhibited, of which Fig. 22 is fairly representative. The price is 45 francs.

The trenching or ditching plows exhibited at Petit-Bourg were of two kinds. One had a deep cutting share, a sloping breast, and a curved board which directed the excavated soil on to the land at the side of the ditch. This is shown in Fig. 23.

The other one is adapted for cutting drains in natural prairies. The sloping cutter and curved share cut the sod, which is lifted and thrown equally on each side of the ditch. The plow has an ordinary *avant-train*, not shown in the figure.

The *sous-sol*, or underground plow, known to us as the mole plow, from the mode and effect of its work, is used as with us as a mode of effecting drainage of soils where water stands too persistently.

The potato diggers were of single and double effect. One has but one set of lifting fingers, the other has two grids. The first runs beneath the hills of potatoes and lifts them, the soil falling between the bars of the grids, leaving the potatoes on the surface. The second grid repeats and completes the operation.

A beet puller, such as shown in Fig. 28, will deplant two and a half acres of beet roots per day, and is converted into a potato-digger, by detaching the fork, 1, Fig. 29, and attaching the grid, 2. The point of excellence in an instrument of this kind is that it shall not cut the beet, and that it shall raise it and turn it over and not wrench it out in such a manner as to break the tap root and cause it to bleed. The price of the machine, made in three sizes, is from 170 to 200 francs. — Abridged from the *Scientific American*.

A NEW patent law has just been passed by the Spanish Senate by which the cost of a patent in Spain and her colonies is much reduced. The term of a patent is extended to twenty years on payment of a small annual tax.

GRASPING AND CARRYING THE FILE.

In their new work entitled *Hints on Filing*, the Nicholson File Company, of Providence, Rhode Island, make the following points:

In using the larger files, intended to be operated by both hands, the handle should be grasped in such a manner that its end will fit into, and bring up against, the fleshy part of the palm, below the joint of the little finger, with the thumb lying along the top of the handle, in the direction of its length; the ends of the fingers pointing upward, or nearly in the direction of the operator's face.

The point of the file should be grasped by the thumb and first two fingers, the hand being so held as to bring the thumb, as its ball presses upon the top of the file, in a line with the handle, when heavy strokes are required. When a light stroke is wanted and the pressure demanded becomes less, the thumb and fingers may change their direction, until the thumb lies at a right angle, or nearly so, with the length of the file; the positions changing more or less, as may be needed to increase the downward pressure.

In holding the file with one hand, as is often necessary in filing light work, pins, &c., the handle should be grasped as already described, with the exception that the hand should be turned a quarter turn, bringing the forefinger on top, and lying along the handle nearly in the direction of its length. In this position the freest action of the hand and wrist may be had upon light work. Amateurs will find that by following these directions, the movements of the file will be simplified, and made somewhat easier than if grasped at random and without consideration.

The most natural movement of the hands and arms in filing is to carry the file in circular lines, the several joints of the limbs being the centers of motion; this movement of a convex file would apparently give a concavity to the work; the real tendency, however, especially on narrow work, is the reverse (owing to the work acting as a fulcrum, over which the file moves with more or less of a rocking motion,) giving an actual convexity to its surface, except when in the hands of a skilful operator. The real aim, therefore, should be to cause the file to depart only so much from a true, right line as will be necessary to feel that each inch of its stroke is brought into exact contact with the desired portion of the work.

The movements here referred to have reference to those in which both hands are used upon flat work, requiring nicety and trueness of finish, and the difficulties to be overcome in producing even a comparatively true flat surface with a file require much practice on the part of the operator. In point of economy, the pressure on the file should be relieved during the back stroke; this will be apparent to any one who will examine the formation of the points of the teeth, when it will be seen that the file can only cut during ordinary or advancing stroke, and that equal pressing during the back stroke must be very damaging to the points of the teeth.