

where the hanks are formed. When removed from these machines the hanks are inspected by experts, who, by long practice, are enabled to detect a very small variation in the size of the thread, or any other imperfections.

While the thread is in hanks it is passed to the bleaching house, where it is bleached twice, being subjected during the process to a thorough soaping. After bleaching, the hanks are dried and passed to the hank winding machine, where the thread is wound on large spools preparatory to spooling. The spools, we are informed, are made in Maine, it having been found that they could be made and shipped cheaper than the wood could be shipped and worked at the manufactory.

The spooling machines, which are shown in one of the lower views of the engraving, seem the very embodiment of ingenuity. They take the spools, hold them between centers, revolve them, start the thread, wind it back and forth with the utmost precision, making allowance for the beveled ends, stop when the required amount is wound, nick the spool, put in the thread, cut it off, and release the spool, all without attention. All that is required of the attendant is to see that thread is supplied, and to keep the hoppers full of spools.

The tickets which are placed on the ends of the spools are printed in the establishment, two steam lithographic presses being employed for the purpose. The bronze is applied to the tickets by a bronzing machine, and they are gummed and punched by hand.

The tickets are very rapidly applied to the spools by girls, who hold a small package of them in one hand, passing them one at a time into one side of the mouth, while they are taken by the other hand from the other side of the mouth and applied to the spools. By continued practice the hand becomes very dexterous.

The boxes which contain the spools are made by an army of girls, and the label and other printing is done in a printing office containing two Hoe cylinder presses and two other small presses.

The Clark thread is well known throughout the world, and the familiar trade mark, O. N. T., is the guarantee of a good article.

The New York office of Messrs. Clark is on Broadway, at Walker Street.

THERAPEUTIC MACHINERY.

We herewith give illustrations from *Engineering* of some very interesting machines exhibited by Messrs. Goransson & Co., of Stockholm, at the recent Paris Exhibition. These

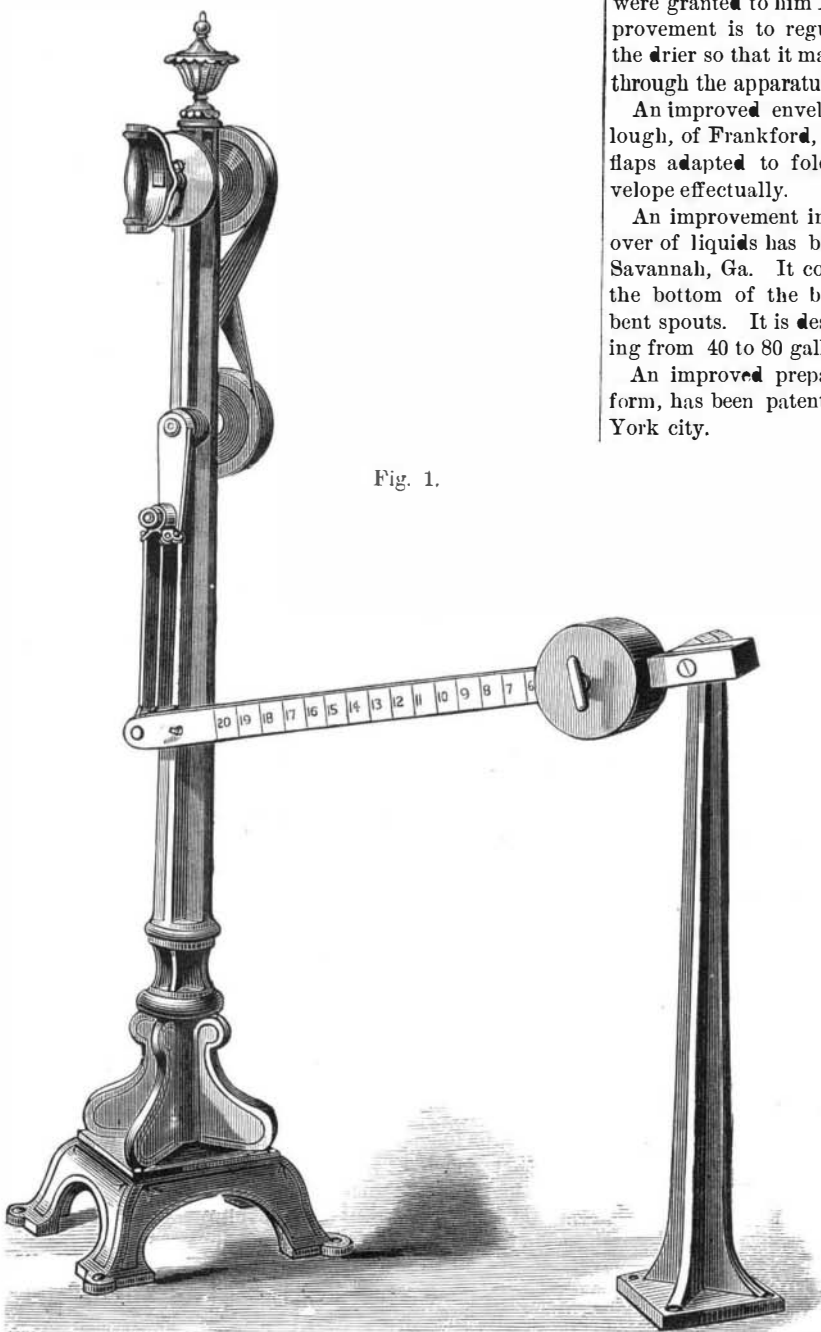


Fig. 1.

machines are intended for use in surgical gymnasia. The machine shown in Fig. 1 is intended for the development of the muscles of the wrist and arm, and is worked by means of the handle mounted on the spindle which carries the upper of two pulleys at the top of the frame. A crossed belt passes to a second pulley, on the axis of which is a crank that gives motion to a long lever hinged to a separate standard, and carrying a sliding weight by means of which the strain on the operator's wrist can be varied at will. The machine represented in Fig. 2 is specially intended for developing the muscles of the chest and back. The patient sits upon the stool in front of the machine, the height of which can be regulated at will; he then places his arms in the crutched rests, his back being toward the machine, and the latter is then started. Motion is imparted to the rests, which alternately recede and advance, as also does the padded lever below, the function of which is to exert a pressure against the patient's back, at the same moment that the rests recede, with the result of expanding his chest. The arrangement of the machine permits of the most minute adjustment for regulating the degree of expansion and speed of working.

MISCELLANEOUS INVENTIONS.

Mr. Albert Back, of New York city, has patented a design for neck ruching, in which a new ornamental effect is secured by giving it two or more folds, arranged so as to present parallel sides running in the direction of the length of the ruching.

An improved roofing composition, recently patented by Mr. Joseph E. Bowen, of Leavenworth, Kansas, has a coal tar base, combined with other ingredients, that render it efficient and durable.

An improvement in cabinet bedsteads, in which the detachable head board and its base are combined with a rod which forms the axial support for the upper end of the folding bed frame, has been patented by Mr. Mark Crosby, of Wakefield, Mass.

An improvement in sounding boards for upright and other pianos has been patented by Mr. Albert H. Wood, of New York city. The object of this invention is to prevent the escape of vibrations, and to utilize to the greatest extent the vibrations of the strings.

A blinder for taming and restraining vicious cattle has been patented by Mr. Byron W. Webster, of Acra, N. Y. It consists of a metallic plate united to a U-shaped wooden piece which is secured in place by buckles and straps.

Mr. Peter Provost, of Minneapolis, Minn., has patented an improvement on the grain drier for which letters patent were granted to him May 21, 1878. The object of the improvement is to regulate the passage of the grain through the drier so that it may be properly heated in its passage through the apparatus.

An improved envelope, patented by Mr. James P. McCullough, of Frankford, Philadelphia, has an inside pocket and flaps adapted to fold inside the pocket and close the envelope effectually.

An improvement in apparatus for preventing the boiling over of liquids has been patented by Mr. L. McLaws, of Savannah, Ga. It consists of a perforated cone rising from the bottom of the boiler and provided with downwardly bent spouts. It is designed especially for sugar pans holding from 40 to 80 gallons.

An improved preparation of coffee, in tablets or stick form, has been patented by Mr. Joseph B. Sultz, of New York city.

Mr. E. E. Hawkins, of New Lisbon, N. Y., has patented an improved whip socket, which is formed of wire coiled spirally, with its upper and lower coils closed together for receiving pieces of rubber for holding the whip.

Mr. William A. Bradford, of Goshen, Ind., has patented an improvement in school desks, in which the wooden slats forming the seat are secured by a cheap and novel fastening.

A cotton bale tie, in which the ordinary tie loop or buckle is used in connection with a fastening wedge, has been patented by Mr. Henry A. Burr, of Wilmington, N. C.

An improvement in dental forceps, in which the forceps, with the exception of the inside of the jaws, are covered with a non-conductor of electricity, has been patented by Mr. Amase Cobb, of Beloit, Ohio. The forceps are used in connection with a galvanic battery.

Mr. R. E. Miles, of Louisville, Ky., has patented an improved breast collar, which may be readily adjusted to any sized neck and allows great freedom to the motion of the horse.

An improvement in Venetian blinds, which consists in a novel mode of connecting the slats and a new arrangement of cords for operating the slats, has been patented by Mr. Thomas Langdon, of Castroville, Cal.

Mr. Henry N. Rawson, of Brattleborough, Vt., has devised an improved renovator for cleaning and renovating feathers, horse hair, and similar material, by exposing it to the action of steam. The apparatus cannot be clearly described without an engraving.

An improved fire escape ladder, devised by Mr. Joseph R. Winters, of Chambersburg, Pa., is designed to carry the fire engine hose as well as to afford a means of escape from burning buildings. It is strong, simple, and effective.

An improvement in portable railway tracks has been patented by Mr. Joseph Morgan, Jr., of Wilmington, Del. The invention consists in combining shoes made of channel shaped iron with the rail sections, so as to lock them securely together, and still admit of readily separating the sections.

Mr. Jacob Simonson, of Newark, N. J., has patented an improved railway platform guard, designed to protect passengers against falling or being pushed upon the track. It is readily folded out of the way to permit passengers to pass from the platform to the cars.

An improved steam railway brake has been patented by Messrs. J. F. Waite and S. Gavit, of Tyrone, Pa. It requires no brake couplings and it is always in condition to operate.

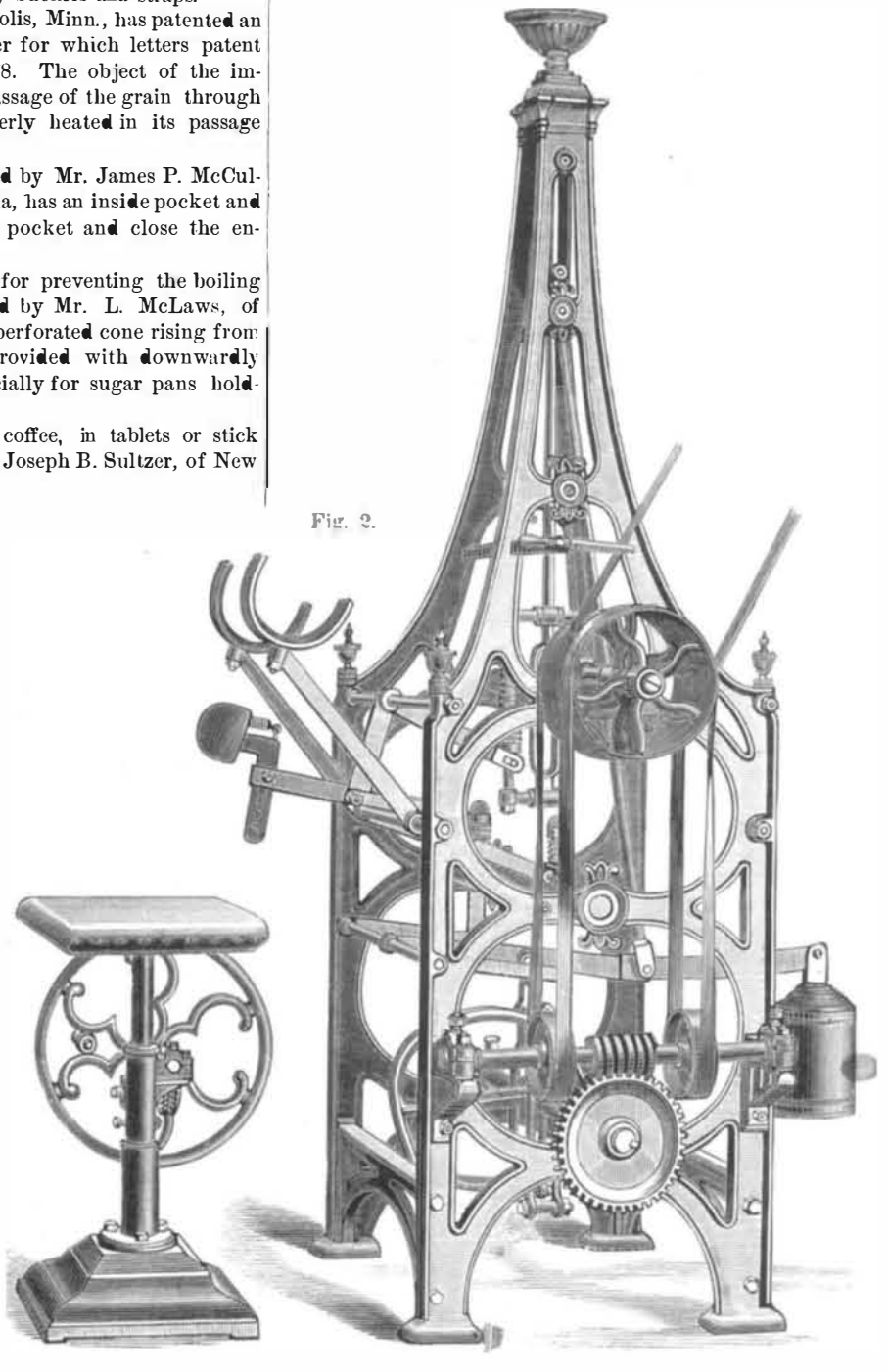


Fig. 2.

THERAPEUTIC MACHINERY.