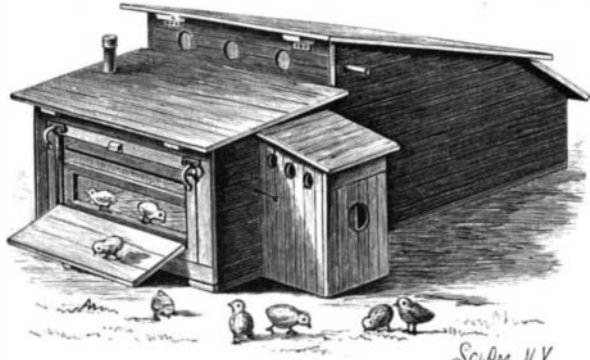


AN IMPROVED POULTRY BROODER.

The chicken brooder shown in the illustration is designed to keep the chickens provided with the requisite amount of heat and moisture, and also give them the necessary chance for exercise, while it is so made that it can be readily taken down and packed in small space for shipment. The picture represents a rear view of the brooder, the main coop of which is heated by the waste heat from the brooding chamber, the latter being a supplemental room built on to the back of the main coop. The main coop and the brood-

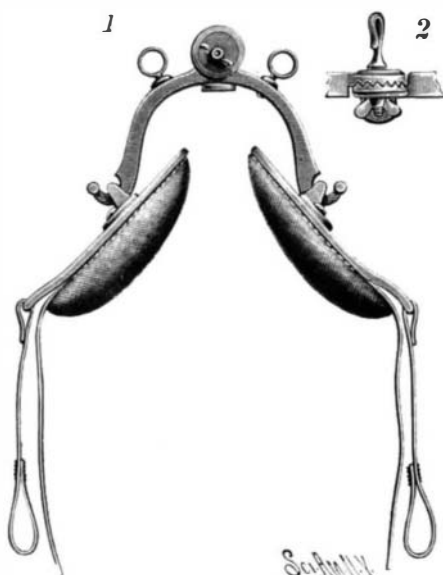


BARNEY'S POULTRY BROODER.

ing chamber are separated by a vertical partition, near the bottom of which is a transverse channel for the passage of air from the outside to the brooding chamber, and between the chamber and coop is a curtained aperture by which the chicks may pass to the coop. At one end of the brooding chamber is a small house containing a suitable heater or boiler, the boiler being connected with circulation pipes extending through the brooding chamber above and below the brooding tray. Supported on the pipes beneath the brooding tray are large flat tanks of water, which evaporates slowly, and the air passing up through the chamber and into the main coop is thus properly laden with moisture. It is designed that the heat shall thus be applied to the chicks much as if they were hovered by a hen, the main coop, receiving its heat only from the brooding chamber, being comparatively cool, and affording a suitable place for exercise, the rear door of the brooder being allowed to remain open, as shown, only for examination or when the chickens have become quite large. This construction is designed to afford a very large brooding surface for the number of chicks, and to brood up to market size the number first placed in the brooder. Having the air properly charged with moisture, and a perfect system of ventilation, it is adapted to successfully brood strong, healthy chickens. This improved brooder has been patented by Mr. Earl Barney, Schenectady, N. Y.

AN EASILY ADJUSTABLE HARNESS SADDLE.

A saddle which may be easily adjusted to fit horses of different sizes, which can be cheaply made, and will be strong and durable, is shown in the accompanying illustration, and has been patented by Mr. James A. Jamison, of Russellville, Ark. It has an upwardly



JAMISON'S HARNESS SADDLE.

curved center yoke which can by no possibility hit the back of the animal, this yoke comprising two members which terminate at their upper ends in nearly circular pieces, having interlocking teeth on their adjacent faces, as shown in the sectional view, Fig. 2. The clamping pieces are held together by a bolt which has a check hook on its front end, there being a thumb screw on the rear end of the bolt. A plate bent to form a loop to which the back strap may be conveniently secured is also held in position by the clamping pieces. The lower ends of the members of the center yoke are held in keepers on the pad plates, the latter forming the backing of pads of the usual construction. The lug straps are attached to the lower ends of the pad plates, and the belly girths are secured between the pads and pad plates. Owing to the pivotal

connection between the yoke and the pads, the saddle will fit any horse, being made more or less open for larger or smaller horses by means of the adjustable connection between the members of the yoke.

The Jack Rabbit Plague in California.

On the San Joaquin plains of California the jack rabbits are a nuisance, and the practice of the farmers is to thin them out by annual drives. A corral is formed with barbed wire fence, and around this, forming a circumference ten to twelve miles long, from 5,000 to 7,000 persons collect at the appointed time. Many are mounted, there are many hundreds of light wagons and other vehicles, the mass on foot form a skirmish line in advance, provided with clubs. As the line contracts the jacks are put up and headed for the corral. Marshals so direct the advance that the animals are massed on the opened side of the corral. The close of the latest drive is thus described by the *San Francisco Examiner*: "Before the contracting line of men, women, boys and girls lay about 500 acres of plain so thick with madly rushing hares that the ground was actually hidden from sight.

"Within a space of a few acres over 25,000 rabbits were huddled together. In one place the terror-stricken mass had rushed into one corner and lay there over a foot deep. It is estimated that at least 3,000 were never touched by club, but were simply smothered to death by the rush of those in the rear. Photographs were taken of the mass as they lay huddled up, and then the veteran guard of California, clubs in hand, were formed in line of battle, and with a yell moved down upon the mass of 25,000 bunnies, clubbing as they ran. A sickening slaughter took place, lasting about an hour."

Steam as an Agent in Causing the Spread of Diphtheria.

In a discussion on diphtheria, published in the *British Medical Journal* for September 19, 1891, Dr. Russell cited several instances in which steam had seemed to be an active factor in the propagation of the disease. Hot water and steam from a brewery were introduced into some old cesspools and evidently wakened into activity germs which, if undisturbed, would have remained dormant. An epidemic of diphtheria soon developed in the vicinity, and was not checked until the steam was turned into other channels, when it quickly ceased. If, as we now believe, the bacillus of diphtheria develops with special rapidity in the presence of warmth and moisture and absence of light, it is not unreasonable to suppose that the introduction of hot water or steam into cesspools or sewers may be a most dangerous procedure. The maintaining of a considerable degree of heat in sewers can certainly not be wise from a hygienic point of view. Yet this condition prevails quite largely in New York, where sewers and water pipes are in many places kept at a continuous high temperature by the close proximity of the pipes of the steam heating companies. No more favorable medium for the culture of micro-organisms could be found than warm sewage. Given an imperfect trap and a vulnerable mucous membrane, and an attack of diphtheria is almost assured.

A NINE-INCH SCREW CUTTING LATHE.

The lathe shown in the illustration swings 9 inches over shears and 7 inches over carriage, and is made in three lengths, to take 27, 39, and 51 inches between centers. The head spindle is made of 1 3/8 inch steel, having a 1/2 inch hole its entire length, and runs in gun metal boxes. The tail stock has an adjustable side movement for turning tapers. The rest is adjustable for taper boring or ball turning, and will swivel to any angle, permitting the use of the tool in any position. This lathe is adapted for turning iron, steel, brass, bone, wood, or ivory. It is manufactured by the Sebastian Lathe Co., Cincinnati, Ohio.

Collodion Varnish.

Hale's formula is as follows: Amyl acetate, 4 gallons; benzine (coal naphtha), 4 gallons; acetone, 2 gallons; pyroxyline, 2 1/2 pounds. The different ingredients are mixed and the pyroxyline dissolved therein.

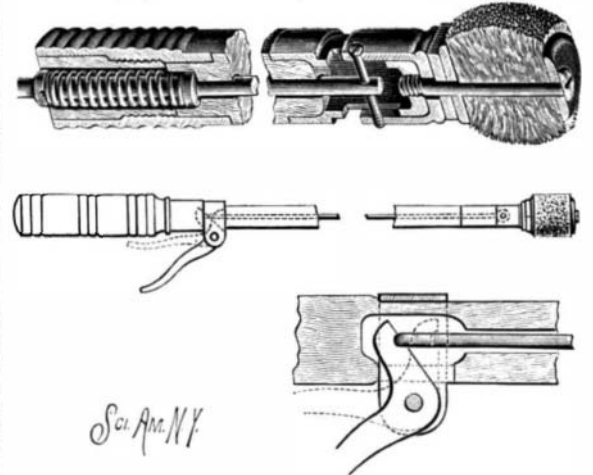
The metal article, having its surface polished and made free from water and grease by any ordinary or suitable means, is or may be dipped into a solution made according to either of the formulas and on removal therefrom suspended in a chamber out of the draught till the adhering coat or film dries or hardens, which takes place in about fifteen or twenty minutes. The drying may be hastened by artificial heat, and while the use of such heat at any stage of the process is not inconsistent with the invention, yet it is preferred to operate in the cold—that is, at ordinary temperatures. In damp weather the coating should be dried at a temperature of say 100° to 105° Fah. The varnish or solution may also be applied by brushing.

The coated articles when the coatings are dry have their metal surfaces provided with a substantial, even,

hard, thin, smooth, impervious, and transparent film of pyroxyline of sufficient tenacity, adhesion, and durability practically to resist the handling and exposure to which lacquered articles in general are subjected.

AN IMPROVED GUN CLEANING DEVICE.

A gun swab or cleaner which can be adjusted by direct or independent pressure to any required size, to be made to bear against the sides of the barrel after the cleaner has been put into the gun, is shown in the accompanying illustration, and has been patented by Mr. George H. Garrison, of Sumas, Washington. The top view represents in section the forward end of the cleaner, the second figure being an exterior broken view. It comprises a tubular outer rod or stick and an inner longitudinally movable rod, both made in

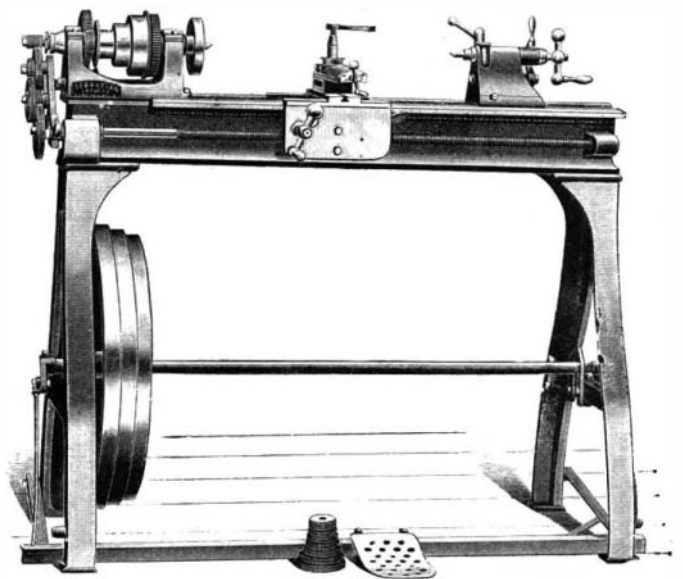


GARRISON'S GUN CLEANING DEVICE.

three sections or lengths, with the swab on the forward end of the front outer member, and a lever applied to the rear member or handle portion, as shown in the bottom figure, for moving the inner rod forward to give the necessary pressure to and lateral distension of the swab. The members are detachably connected by screw-threaded metal ferrules, and the front member has a cap-like ferrule to receive over it a longitudinally sliding compressing ferrule, which, when forced forward, produces lateral distension of the swab, as shown in the top view. The swab or cleaner is of felt or other soft and flexible material, a screw passing centrally through it and engaging at its inner end with the cap-like ferrule, so that when the sliding compressing ferrule is forced outward the swab will be expanded. Instead of a felt swab a cloth-covered rubber one similarly bound and held might be used, or a split metallic or other form of swab, the direct expansion of the swab after it has been put into the barrel being produced by the longitudinally movable inner rod. Any standard gun cleaner can be used on the outer rod if desired, without the inner rod direct-pressure attachment.

A New Tin Alloy.

An alloy of 95 parts of tin and 5 parts of copper will connect metals with glass. The alloy is prepared by pouring the copper into the molten tin, stirring with a wooden mixer, and afterward remelting. It adheres strongly to clean glass surfaces, and has nearly the same rate of expansion as glass. By adding from one-half to one per cent of lead or zinc the alloy may be rendered softer or harder, or more or less easily fusible, as required. It may also be used for coating metals,



AN IMPROVED SCREW CUTTING LATHE.

imparting to them a silvery appearance. — *Phar. Record*.

ONE million persons are employed by the railroads of the United States.