

The Leadville Mining District.

The first house was built in Leadville, Colorado, in 1877; now it is said to have a population of 10,000. It is needless to add that it is an extremely lively town.

In 1864, Mr. Wm. H. Stevens, the founder of Leadville, went to Colorado from Lake Superior. He was a practical miner, and pursued his calling in Park and Gilpin counties until 1871, when he discovered the mines on Mount Bross and Mount Lincoln. In 1873 he prospected the tract about California Gulch, now so famous for silver; but he was looking for gold, and did not at first dream of the value of the carbonate ore that was so abundant about him. Ultimately he discovered its nature, and while ostensibly carrying on unprofitable placer mining operations, much to the derision of his neighbors, he discovered and defined the remarkable outcrop of silver-bearing ore that takes in the Adelaide, Camp Bird, Iron, Bull's Eye, Limestone, and Rock mines. The first placer claim was located by Mr. Stevens in 1874.

The limitation act of Congress took effect June, 1875, and soon after Mr. Stevens began to survey for patents. Then he told his neighbors that he was after silver, not gold; and the wonderful development of the Leadville district began. In the fall of 1876, Walls and Powell discovered the Adelaide, and shortly after the Gallaghers discovered Camp Bird. In the summer of 1877 Mr. Stevens began to work the Iron mine, which had been located by H. B. Woods in 1876, and conveyed to Stevens and Leiter.

The Fryer Hill deposits were discovered in the spring of 1878, suggested by Cooper's discovery in 1877 of the Carbonate mine on an outcrop lower than the line of the Iron mine outcrops. In that spring Stevens and Fryer made surveys for the prolongation, decided on a point to sink, and there, in the present plat of the New Discovery mine, the first ore was struck in Fryer Hill. Then Rische, Hook, and Tabor opened the Little Pittsburg, and the excitement that supervened carried a host armed with pick and shovel over to the attack of that mammoth deposit.

The situation and geology of this new mining district have been described by Francis L. Vinton, in the *Engineering and Mining Journal*, as follows:

"Nearly in the center of the State of Colorado, the crest line of the Rocky Mountains breaks abruptly to the direct east for twenty miles, departing from and then resuming a general course that closely approaches north. At this point are the headwaters of the Arkansas River, that flows thence southerly seventy miles in a beautifully timbered valley, between the main range on the west and the Park range on the east, a lateral elevation fifteen miles from the axis, beginning at the break and prolonging itself south into the Greenhorn and Wet Mountain ranges, a hundred miles below.

"About twenty miles from the head of this Arkansas valley is Leadville, situated near the river and within the general *déboûche* of several gulches—the Evans, Stray Horse, California, Iowa, and Empire, that have been cut in the western flank of the Park range by their torrents, exposing a uniform geological section throughout, and a series of faults and slips or throws, whose effect has been to arrange lines of similar outcrops, one above the other, like terraces.

"The upper sedimentary rock is limestone. This is underlain by quartzite and schists to gneiss, and covered above by a thick, solid formation of trachytic porphyry. In the vicinity of Leadville there is found often between the lime and porphyry a metallic deposit sometimes as regular as a true lode, consisting of iron oxides carrying a sort of pay vein of silver ore and some gold. This silver ore is characteristically argentiferous galena; but the lead is to a great extent modified into carbonate, and this, when disintegrated to sand, mingled with equally loose iron ore, has given origin to many peculiar belts so easy to mine, and of ore so adapted to smelting, that though their grade may be nothing extraordinary for first-class mineral, yet their economic value is remarkable. Moreover, in certain localities, a confused but immense volume, washed from the outcrops of this deposit, has accumulated in inchoate bodies, whose vertical dimension is anything from ten to fifty feet, whose title in silver is pretty regular, and whose almost only cost to work is for timbering.

"The porphyry that overlies Fryer Hill seems, by common admission of experts and miners, to differ structurally from that on the Iron Hill. It resembles a drift of porphyry bowlders, pebbles, and breccia, lightly cemented, and is described by the miners as gravel. The porphyry on the Iron Hill is massive, hard, compact, and homogeneous, a continuous formation back to the summit of the range, and containing well defined fissures of magnitude, bearing ore like true lodes; for example, the Printer Boy, a well known gold mine, a gash vein, and numerous silver mines, such as the Tiger, Nelly, and Last Chance, in the first of which, considerably exposed by shaft and drift, are two continuous veins of argentiferous galena from four to eight inches wide, in a crevice carrying iron oxide and pyrites for vein filling and gangue. The ore runs from thirty to eighty ounces of silver, and thirty to eighty per cent of lead; these fissures carry no carbonates, though, from late discoveries on the same horizon beyond Little Evans Gulch to the N. E., it may be supposed that they lead through porphyry to lime, and may merge into deposits identical with those below. The limestone that underlies the porphyry seems to pervade the entire country; it is believed to be the same as that at the Moose mine, and on the east of the Park range in Buckskin, and as developed also in the main range and across to the Gunnison, as well as south to Silver Cliff and Saguache.

Silurian fossils are found in it; the color is drab, and the quality often silicious. In contact with the iron veins it becomes deeply impregnated with rust; these veins are brown and red hematites, sometimes carrying magnetite and manganese oxide enveloping the lodes of argentiferous galena, carbonate of lead, chlorides of silver, and the native metal. Generally the carbonates and chlorides affect association with iron oxide; where that is deficient, the ore is galena.

"The Iron mine of Stevens & Leiter is a belt or zone or vein of hematite, about the color of brick to burned brick, from four to eight feet thick, lying on a downward dip to the east of 15°, between porphyry and lime, both well defined, but the whitish porphyry especially showing a line of contact unbrokenly continuous and everywhere sharply marked, not stained, with impregnations from the vein. The walls are undulating but not parallel, more resembling the expansions and contractions of vein walls, nor is there any appearance of stratification in the deposit, or of concordant regularity in the pay vein. At places the vein is disintegrated to sand, but it is mostly to be worked with powder. The carbonate of lead is sometimes found as cerussite, purely white and in clusters of long crystals; again, it is massive and pinkish, with a certain metallic aspect; or, again, compact and blue drab, not unlike limestone. It sometimes penetrates, sometimes surrounds, bunches of galena, which ore is often found in large pockets, and not to be distinguished from the similar ore of Clear Creek and Bowlder counties. The slide on the Iron mine is fifteen feet thick, but the outcrop of the vein at the surface of the rock in place is mathematically plane. This outcrop continues on the flats already mentioned; but above and below it are two other lines of distinct exposure, but underlain by the same series of rock, so that no observer can but imagine they all were once united."

The extremely slight dip of the Leadville veins has led to no little litigation, with decidedly conflicting decisions. In the case of Stevens & Leiter against Williams, the court decided that the deposits of Leadville came under the same law as fissure veins, the oldest claim holding the vein through all its dips and spurs and angles wherever it may go, so long as it does not go beyond the produced end lines of the claim. A later decision, in the case of the New Discovery lode against the Little Chief, denies that these deposits are veins or lodes, and lays down the rule that the miner cannot follow them beyond the limits of his surface location. If the first decision is sustained the vast wealth of the Leadville deposits will fall to a lucky few; if the latter, a multitude of men will share the spoil.

The Domestication of the Buffalo.

Col. Ezra Miller, of Mahwah, N. J., has been making some experiments which have led him to the conclusion that it will pay to breed buffaloes, both pure blood and crossed with our domestic cattle. Relating his experience with these animals lately, the Colonel said: "I have proved to my own satisfaction several points. First, that buffaloes can be tamed. Second, that it doesn't cost one half as much to keep a buffalo as to keep an ordinary cow. Third, they can be fattened as quickly as ordinary beefs, and on half the food, and their meat is just as good. Fourth, they are as good milkers as our Alderneys; and fifth, they are as good buttermakers. The milk of the buffalo is a little yellower than that of the Alderney, but very sweet and rich, and there is more cream than in the Alderney milk. As to the quantity of milk given by buffalo cows, they will average with the average milker. The udder of the buffalo cow is very small indeed, but the milk veins are immense. This is a provision whereby nature enables them to run faster than if cumbered by a large udder. I am of the opinion that the most desirable cross is with the big Dutch cattle that have such big udders. I think that crossing them with our short-horns will give remarkably good beef. But the beef from our buffaloes more than met my expectations. It was sweet and juicy and tender, not at all like the meat of the buffalo of the plains.

"Now, in drawing the balance between the buffalo and the ordinary cow, I find these facts: The buffalo can be kept at one half the cost of the cow: that's one point for the buffalo. We will assume, to give the cow a fair show, that she yields more milk and butter. That balances the account so far. The buffalo is fully equal to our stock in the quality of meat. So they are still on even terms; but its hide is worth four times as much, so it comes out far ahead in the last heat, as horsemen say. The hide from my bull was a beautiful specimen. It was better than a \$25 robe I bought to compare with it. The fur was longer and finer, the result of good feed, I think."

The buffaloes herded with the other cattle on the best of terms. What surprised the Colonel most was their weakness. He supposed they were very powerful; but they are not. He has seen a yearling Alderney bull push a three year old buffalo bull uphill. They are fast, but they are not strong. They are also very cowardly, very playful, and very cunning.

An eminent French coachmaker says: "I never build two carriages exactly alike, not because I do not build each one as well as I know how, but in building that I learn how to make the next one better. When I placed these carriages of mine in the Exhibition building, I thought them perfect, but now that I have spent three months looking over the carriages of other builders, I see that they are not so." Here is an illustration of the value of these shows to intelligent tradesmen.

WESTERN IOWA COAL FIELDS.

The Western Iowa coal basin lies at the foot of the "Middle Terrace" of the State Geological Survey. The newly opened fields are situated on the North Raccoon River, Green county, and are traversed east and west by the Iowa division of the Chicago and Northwestern Railroad, and north and south by the Des Moines and Fort Dodge Railroad. Mr. E. J. Couch, of Grand Junction, asserts that in these beds an abundance of fine bituminous coal is found at a depth of from 80 to 100 feet. Two strata, the upper and the lower, are each from 3½ to 4 feet in thickness, with other lesser strata.

The abundance of assured fuel, at cheap rates, is inviting the attention of seekers for new homes and those who desire to open new industries in a rapidly growing and prosperously rising new country. Coal of the best grades is sold at the banks at \$2 and \$2.50 a ton, while engine coal, slack, is sold at so low a rate that an ordinary manufacturing engine can be run at 25 cents a day. The lands are as yet mostly broken prairie; probably not one fourth is taken up in farms, and is held at from \$5 to \$10 an acre. The prairie is of as rich and fertile a quality as can be found in the West, and the elevation above the sea being 1,500 feet, gives the locality a salubrity of climate unsurpassed. Large numbers of cattle graze the free range, which, with hay costing only the labor of putting up, gives this locality advantages for stock purposes. Grand Junction promises to become an important manufacturing center. It has permanent water for steam, and the coal basin comes to the very limits of the town.

A New Ohio Coal Field.

Mr. Andrew Roy reports, in the *Coal Trade Journal*, the development of a new coal field in Ohio. The coal is known as the Hill or Wellston coal. The coal is remarkably pure and easy of access, and promises to play an important part in the history of coal mining in Ohio. Like some other rare coals, notably the block coals of the Shenango Valley of Pennsylvania, and the Mahanoy Valley of Ohio, the Wellston coal appears to be of limited area. So far as the search for it by boring and opening has gone, 75,000,000 to 100,000,000 tons have been developed. It does not, however, appear to be all equally good, some mines showing a larger percentage of ash than others; on its western limit also it falls below two feet six inches of height; eastward it rises to four feet six inches. Two narrow gauge railroads, the Springfield, Jackson, and Pomeroy, and the Dayton and Southeastern, will, when completed, run through the heart of this new coal field.

The Advantages of Silence.

Ishael P. Inman, who died in Utica recently, had uttered scarcely a word for more than half a century. He was not dumb; he could talk well enough; but he became convinced at an early stage of his life that more harm than good was wrought by speech, and remained true to his principles ever after. When his first child was born he rode seven miles in quest of a physician. He carried slate and pencil, wrote a statement of the situation, returned with the medicine man, and received the announcement of his paternal responsibilities in silence. His wife, who survives him, says no woman ever had a kinder husband. The relations between the couple were always pleasant, and Mrs. Inman has remarked to her neighbors: "If Ishael talked as much as I do, the Lord knows what might happen." Some of his written replies to the questions of acquaintances who were curious to know why he preferred silence to speech are worthy of mention. One retort was: "A good listener is to be preferred to a poor talker." Another was: "I want to prove that a man can be happy and hold his tongue." Another: "I am trying to think of something good enough to say out loud." A clergyman once asked Inman whether he didn't think the Lord gave him his tongue to be used. The penciled reply was: "The Lord gave me a mind that tells me when to use my tongue."

In 1842, while he was traveling with his wife in a stage between Syracuse and Rochester, the vehicle was halted in front of a country tavern. A child was sleeping on the porch. Inman, looking out, saw a large black snake crawl to the side of the infant. Grasping his wife's arm, he shouted, "See!" and, pointing to the snake, sprang from the stage, pursued the reptile some distance, and finally killed it. He left a snug fortune, which his son inherits. His last written message was: "Silence is golden." His oft-penciled admonition to his son was: "Keep your mouth shut."—*Syracuse Standard*.

Chloride of Lime as an Insecticide.

Le Cultivateur remarks that rats, mice, and insects will at once desert ground on which a little chloride of lime has been sprinkled. Plants may be protected from insect plagues by brushing their stems with a solution of it. It has often been noticed that a patch of land which has been treated in this way remains religiously respected by grubs, while the unprotected beds round about are literally devastated. Fruit trees may be guarded from the attacks of grubs by attaching to their trunks pieces of tow smeared with a mixture of chloride of lime and hog's lard, and ants and grubs already in possession will rapidly vacate their position.

WHENEVER a new and startling fact is brought to light in science, people first say "It is not true," then that "it is contrary to religion," and, lastly, that "everybody knew it before."—*Agassiz*.

Why so Depressing?

During the early spring months it is common to hear persons speak of their feelings in the manner the *London Lancet* describes, as follows:

"Unwonted depression and uneasiness, accompanied with loss of appetite and inability to sleep, are the prevalent causes of complaint just now among the 'tolerably well' section of the community; and, with a large measure of accuracy, the condition, modified as it is by individual peculiarities of state and idiosyncrasies, is attributed to the weather. The relations which subsist between such mental depression as constitutes melancholia and the defective discharge of its functions by the skin may help to explain the phenomenon. The connection of cause and effect may not be clearly made out, and the part which the nerve-centers play in the production of the result may be as obscure as that which they exercise in the control of occasional pigmentary deposits; but the broad fact remains. When the skin does not act freely, when its functions are seriously impeded or arrested, melancholy broods over the mind, just as in the case of a subject of melancholia, as a formulated disease, the skin becomes dense and inactive. It is not a random conjecture, therefore, that the intense and prolonged, albeit unaccustomed and unexpected, cold and damp work their depressing influences mainly through the skin. This is a trite remark, but it is one that may with advantage be made just now, because, in the interests of health-preservation, especial pains need to be taken to secure the freest possible action of the great surface system of excretory glands and the transuding apparatus generally. Warmer clothing, especially at night, frequent ablutions, with sufficient friction, and the promotion of skin activity by every legitimate form of exercise, are obvious measures of health which everybody ought to understand and all should practice."

AN IMPROVED PRESS.

The press shown in the accompanying engraving is designed more particularly for pressing tobacco in hogsheds, but it is equally applicable to pressing other bulky substances. The chief novelty of the invention consists in a suspended hydraulic jack, which may be readily moved from one hogshed to another, avoiding the necessity of a duplication of jacks and greatly facilitating the operation of pressing.

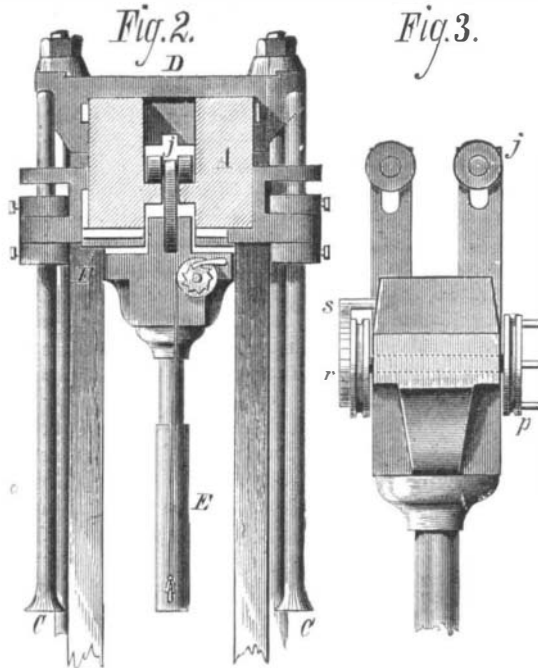
A general idea of the construction and the manner of working the press may be gained from the larger engraving. Details are shown in Figs. 2 and 3 which do not appear in the larger engraving. Two heavy beams, A, which are separated at their upper edges by a series of blocks, are clamped together by bolts and supported by standards that rest on two corresponding beams below, and are connected by iron rods, that are provided with a novel device which admits of easily removing the rods should occasion require. The lower timbers of the press are placed below the floor of the packing room to afford a smooth floor surface.

The timbers, A, are provided with iron or steel plates, F, on the underside, and rails, f, extend along their adjacent faces. From these rails the horizontal jack, E, is suspended by the slotted straps, h, and the rollers, j, the slots admitting of the free movement of the jack along the track when it is not in operation, and allowing the shoulders of the jack to come into contact with the plates, F, when pressure is exerted, without injury to the rollers.

The jack, E, after having compressed the contents of one package is moved to the next; but before this can be done the retaining bars, C, must be brought down upon the boards above the tobacco, and clamped by the collars and set screws at the top of the press. This prevents the tobacco from expanding as the jack is removed. When the cylinder of the jack is raised it is sometimes desirable to retain it in that po-

sition. For this purpose two chains are attached to its lower end and connected with a sort of diminutive windlass at the head of the jack, which is provided with the ratchet, r, and pawl, s.

The inventor says that with this press one man can do the pressing for nine packers, and that its capacity is about four times that of an ordinary screw press. The power of the

**DEANE'S HYDRAULIC TOBACCO PACKING PRESS.**

press is limited only by the strength of the timbers and the power of the jack; it may vary from one ton to one hundred tons. It is very compact, and is so simple that any ordinary wood worker may construct it.

Further particulars may be obtained from the inventor, Mr. Francis B. Deane, Lynchburg, Va.

The Netherlands Open to American Tools.

The Department of State is in receipt of a dispatch from the American Consul at Amsterdam, drawing attention to a

comprised all finished tools which serve mechanics as an aid in their work. Further, parts of tools, such as hammers, spades, chisels, etc., without handles, and augers without piercers, etc., provided they are in the condition in which they are bought by mechanics in the stores and afterward fitted for use by putting on the handles, piercers, etc. Tools of spelter or zinc remain dutiable, likewise mathematical, surgical, chirurgical, optical, and musical instruments."

RECENT AMERICAN PATENTS.

An improved mill for grinding bones, phosphates, and similar articles, has been patented by Mr. T. O. Cutler, of Jersey City, N. J. It consists of a stationary top section, having notched concentric ridges, and a revolving runner, provided with a series of beaters and a notched circular ridge, running between the ridges of the stationary portion.

Mr. Henry Groth, of New York city, has devised a motor for moving dancing figures and other mechanical toys. It consists of a heavy flywheel, which is impelled by unwinding a cord from a sleeve connected by a clutch with its shaft. A spring drum rewinds the cord, so that it may be unwound several times in succession to secure the required speed.

An improved matt for cotton-seed oil presses has been patented by Messrs. J. L. Perkins and G. O. Baker, of Selma, Ala. It consists of two plates of wood fitted to the press box, connected together by a canvas hinge, and provided with sheet metal linings and with an intermediate hinged sheet metal leaf.

A tool for rolling or expanding boiler flues or tubes has been patented by Mr. John H. McGraw, of Oswego, N. Y. It consists in a segmental head having grooves, in which are placed rollers. A central wedge pin is provided for expanding the head.

Mr. John Birks, of Ogdensburg, N. Y., has patented a measuring scoop, which will indicate both the weight and bulk of its contents. It has the usual marks of a liquid measure to indicate the quantity of an article, and it has attached to its handle a spring balance for weighing its contents.

An improved bird-seed reservoir has been patented by Mr. Owen W. Taft, of New York city. It consists in a reservoir pivoted in a frame which supports the cage. It may be arranged as a standard, or it may be provided with means for suspending the bird cage while it is itself suspended by a chain or cord.

An improvement in bed bottoms, patented by Mr. W. H.

Leininger, of Salem, Oregon, consists in forming the bottom of wires, which pass around pins set at the ends of the bed frame and over rubber strips. This arrangement gives elasticity to the bed bottom, and prevents the formation of sharp bends in the wire.

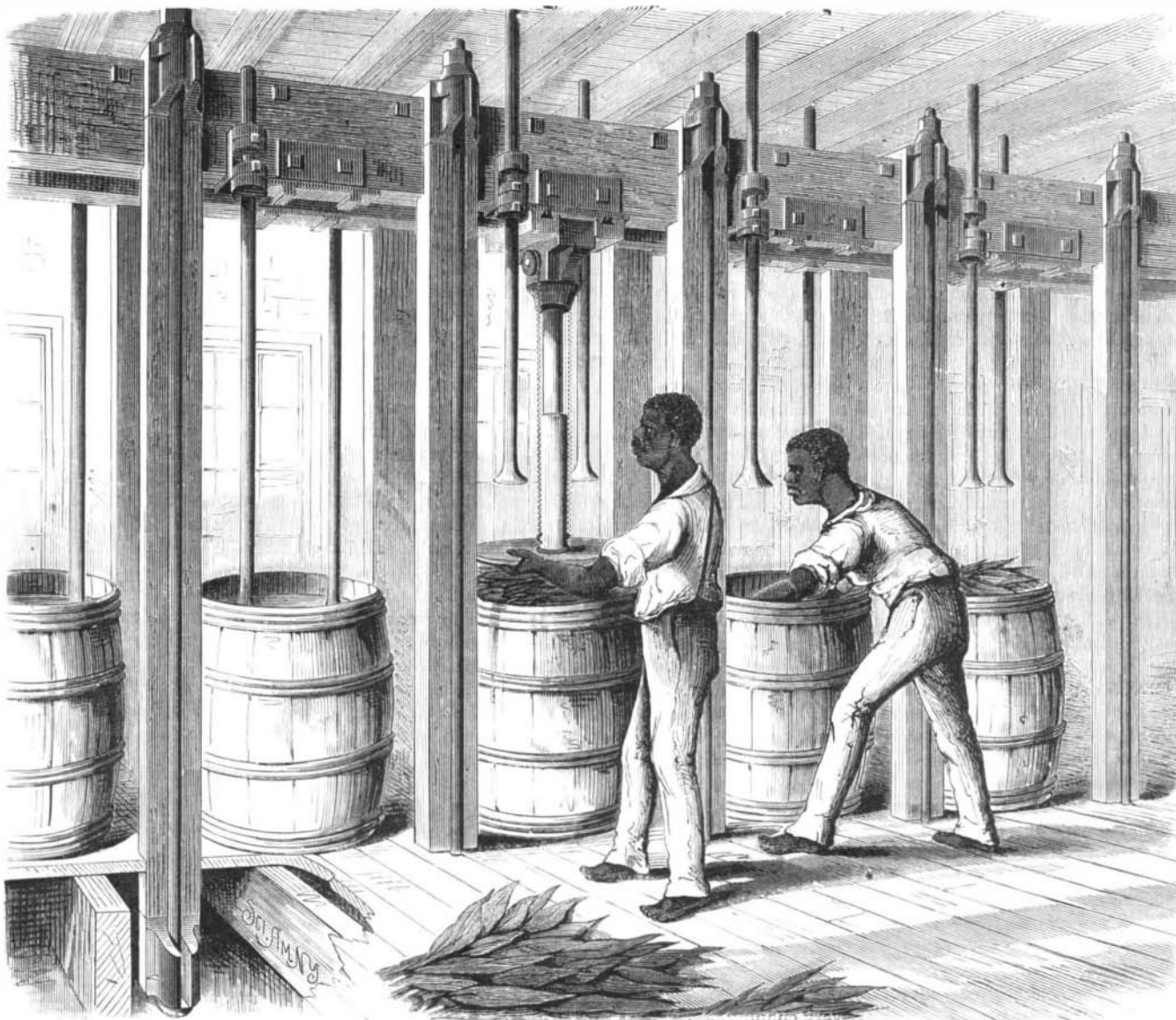
An improvement in the construction of buildings, which consists in sheathing the inside of the studding instead of the outside, and applying vertical strips to the sheathing to which the lathing is nailed, has been patented by Mr. H. R. Crane, of Crawfordsville, Ind.

Mr. William P. Silvernail, of Pittsfield, Mass., has patented an improved hose pipe supporter, by means of which the pipe may be easily directed and controlled under any practicable head of water.

An improved bridle bit, which may be used either with a hard-mouthed or a tender-mouthed horse by simply reversing it, has been patented by Messrs.

A. W. Holland and Edgar N. McKimm, of Lathrop, Miss.

Mr. J. R. Spencer, of Avilla, Mo., has devised an animal trap, in which there are two pivoted platforms whose free ends meet and are held by the same device, so that the platform on which the animal first steps will remain firm and unyielding until the weight comes upon the other.

**DEANE'S HYDRAULIC TOBACCO PACKING PRESS.**

ministerial resolution effecting an important change in the tariff of the Netherlands, and one which the Consul thinks is not generally known among American exporters. The following is a translation of the decree referred to:

"Tools of wood, iron, copper, steel, and other metals, as agricultural implements and sewing machines, are free of import duties; and it is stipulated that in this exemption are