

BRIDLES, BITS, HUBS, AND HORSESHOES.

Our extracts, for this week, from Knight's "Mechanical Dictionary,"\* include an interesting series of engravings relative to harness, carriage building, and blacksmithing; and in Fig. 1 we illustrate a number of

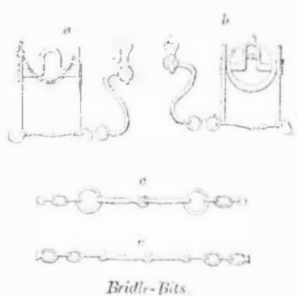
BRIDLES, having checking and safety devices. In *a* the driving reins

Fig. 1.



are attached at *E* by an elastic strap and snap hook, *C*, to the rings of the snaffle bit. Face pieces, *G G'*, are also secured to these rings, passing upward through the loops, *H I*, and uniting to form the throat latch, *K*, to which the hitching strap is fastened. The combined throat latch and face piece prevents the bridle slipping, as the draft upon the hitch strap draws the ring into the angles of the mouth. In driving, a pull on the line stretches the elastic and draws upon the face strap and throat latch, to carry back the bit. The device represented at *b* includes two pairs of branch reins attached to the ends of the driving lines, one, *I I*, leading directly to the bit rings, and the other, *c c'*, passing over the horse. The lower branches, *A*, connect with the same rings by a special spring within cases, *F*. In *c* the overdraw strap, *A*, and the check rein, *B*, are secured to the bit ring, *C*, and the driving rein, *D*, to a swivel on the bit. The driving rein passes through a ring on the end of the overdraw strap, and is also connected to the check rein. A strong pull on the driving rein throws up the horse's head and prevents him from kicking. The bit ring, *F*, in Fig. *d*, is suspended on each side from a ring, *D*, on the check strap, by a running strap, which, connected primarily to the bit ring, passes up and down through the check ring; the running strap is then carried down through the bit ring and connected by

Fig. 2.



a ring to a safety rein, *I*. The latter is also connected to the gag rein, *K*, so that pulling upon the safety rein shortens the gag rein, and at the same time draws up the bit toward the rein on the cheek strap. As shown in *e*, the driving reins run over pulleys attached to the bit rings and throat latch, and thence pass to the check hook. Stops on the check portion of the rein limit the length of the gag part. The bridle, *f*, has a safety attachment formed by sup-

\* Published in numbers of Messrs. Hurd & Houghton, New York city.

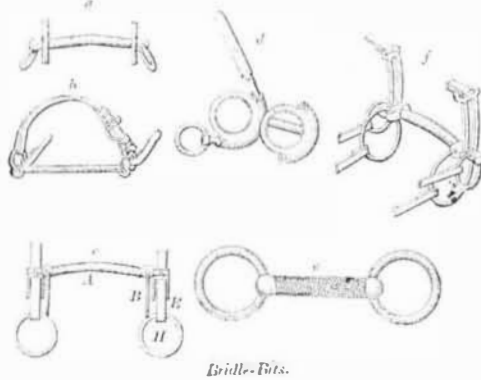
plemental reins, *A*, within the ordinary reins, and which, connecting directly to the check straps, pass through the rings of the bit and serve to pull the bit forcibly into the corners of the mouth. In Fig. *g*, the driving rein connects with the cheek strap, which is pulled through the bit ring, and draws the bit up into the angle of the mouth. In *h* a lever jaw, *A*, on each side, is suspended from the throat latch of the bridle. The jaws are kept apart by a spring; but by pulling on the rein, *C*, they may be brought together, so as to compress the horse's windpipe and choke him into submission. In Figs. 2 and 3 various forms of

BITS

are illustrated. Fig. 2 shows the bits used in the United States army. *a* is an ordinary curb bit, and *b* is the Mexican bit, in which the curb chain and its strap are replaced by a curb ring. By means of the branches, a leverage is obtained upon the horse's jaw, the chain behind forming the fulcrum. The snaffle, *c*, has two bars, jointed together in the middle of the mouth, and has also rings at the ends for the rein.

In Fig. 3, the stiff bit, *a*, has rein rings at the ends, and is

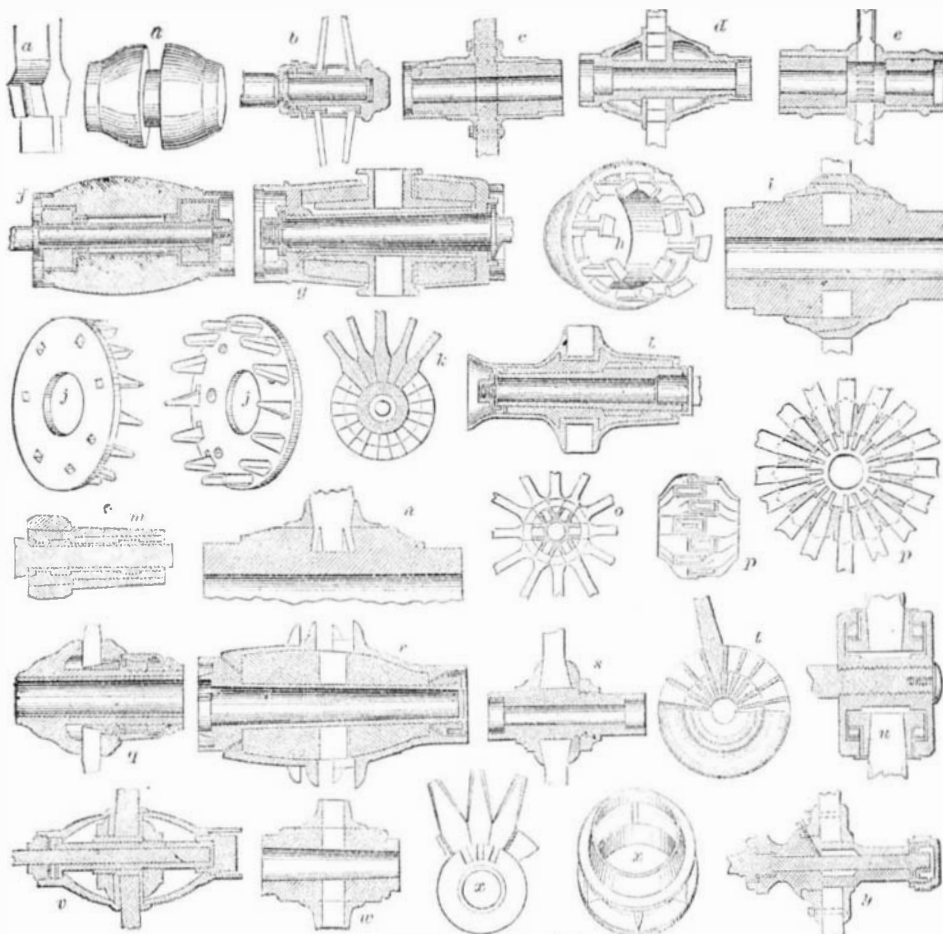
Fig. 3.



Bridle-Bits.

usually without branches. It lacks the middle joint of the snaffle. *b* is a new form of upper jaw bit. It is fastened by a nose strap to the upper jaw, and buckled to the gag-bearing rein. A safety rein passes to the usual bit rings, and is also connected to the bearing rein so as to pull the usual bit back against the jaws, and the upper jaw bit up into the angle of the mouth. The elastic bit, *c*, consists of a chain covered by closely coiled wire, between the bit rings. Another form is made of twisted wire with a soft rubber covering. The bit shown at *d* has tubular rings through which pass the straps connecting the driving reins to the head stall. When the lines are pulled upon the stiff bit is drawn up into the angle of the mouth. Bit, *e*, has a pulley frame swiveled to its ends. The driving reins are buckled to the rings, *H*; and when they are pulled, the straps, *E*, run through the pulleys and draw the bit up into the mouth. The bit shown at *f* is so made that one rein is connected to the bit ring and the other to the slotted check pieces. When

Fig. 4.



Carriage and Wagon Hubs.

the latter rein is pulled, the rigid bit slides up the slots and acts on the mouth.

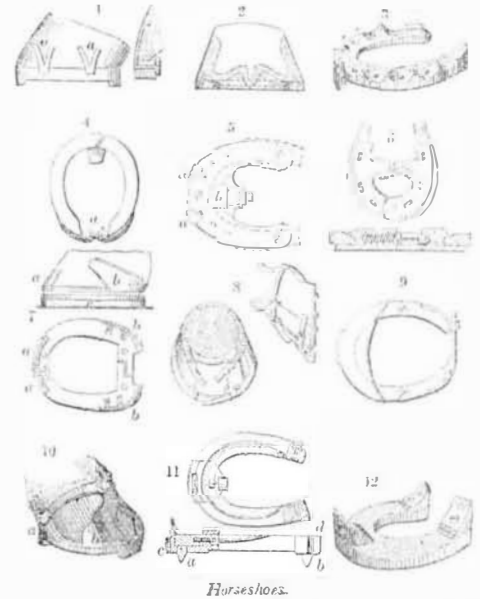
In Fig. 4 we give engravings of a large number of carriage and wagon wheel

HUBS.

*a* is a hub having a circumferential groove, in which the shoulders form a continuous band, while the tenons of the spokes are set in mortices in the bottom. *b* is a metallic hub, one portion of which forms the axle box, around which are

nuts on the inner ends of the double set of iron spokes. *c* has two metallic bands, between which the spokes are clamped. *d* has a hollow axle box around which are clamped two hollow disks, which have projecting lugs to form the spoke mortices. *e* has a metallic shell with a depressed center, in which the spoke mortices are formed, and has tubular cases driven in from the ends. *f* has rubber disks around the axle box at each end of the hub. *g* has a central disk forming the spoke sockets, and this is clamped by two outer disks with two intervening hollow cones. *h* has two hollow shells with T-shaped lugs, which interlock to form spoke sockets. *i* has two overlapping morticed hub bands. *j* has two metallic disks with projecting lugs to form spoke mortices; the disks are drawn together with bolts. *k* has a grooved hub with alternate projecting lugs to form dodging mortises. *l* has plaster material run in between the axle box

Fig. 5.



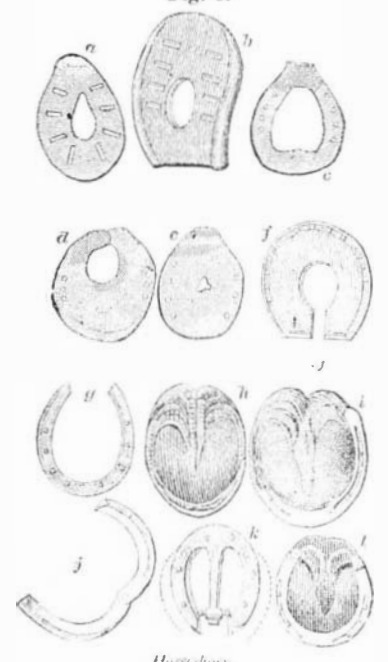
Horseshoes.

and shell. *m* is of similar construction. In *n* the hub has a dovetail mortice, wedges to prevent the withdrawal of the spokes, and beveled metallic bands as seats for the same. *o* has a morticed hub and metallic bands to clamp the spokes. In *p* the hub band has staggering metallic sockets, and the hub has mortises for the spoke tenons. The inner hub band in *q*, which screws on the sleeve of the outer portion, drives wedges against the spokes. *r* has a metallic shell with staggering mortises and projecting lips to support the spokes. *s* is a metallic hub formed in three parts, the axle box and inner hub band, the outer hub band, and the clamping nut. The circular spoke groove has a dovetail form. *t* has a metallic band with beveled mortice. In *u* the end flanges are screwed in a morticed flange ring, between which and the hub flanges are anti-friction rollers. *v* has a metallic hub shell, within which is a spoke socket formed by sleeve, nut, and projecting lips. *w* has a morticed metallic band on a wooden hub. *x* has a metallic band whose mortices receive the spokes in clusters. *y* has a metallic hub which forms the axle box, and has a lubricating chamber and spoke clamps.

Fig. 6 represents an interesting series of

HORSESHOES, showing ancient and curious forms. *a*

Fig. 6.



Horse shoes.

is an early Arabian shoe, and *b* an Arabian shoe of more modern date. *c* is the Moorish pattern, *d* the Persian, *e* the Portuguese, and *f* the old English. *g* is a racing plate, *h* a tip shoe, *i* a three quarter shoe, *j* a pointed shoe, *k* a screw shoe, and *l* a calked shoe. Fig. 5 shows a variety of new inventions in this line. At 1 the bifurcated springs, *a a*, clip the hoof, and are attached to the shoe by bolt and nut; 2, countersunk headed screws, parallel to the wall of the hoof, act as fastenings; 3, ridges and indentations are formed on

the sole of the shoe; 4 is a shoe for contracted hoofs. By means of the screw, *a*, and nuts between the heel clips, the branches of the screw may be spread. In 5, a supplemental roughing shoe is attached to the upper shoe by clips, *a a*, and a sliding screw block, *b*. Pins at the rear prevent lateral displacement. In 6, the shoe is hinged at the toe, and is designed to be permanent; it is beveled on its upper inner edge to receive the flange of a removable false shoe, that is expanded outwardly by a screw. In 7 is a double shoe; the upper one is hinged at the toe and has a jointed crossbar at the heel; curved clips, *a a b b*, fit the walls of the hoof and secure the hoof in place; to this the lower plate, *c*, is secured by screws; In 8, the shoe is attached to the hoof by pieces of leather and straps. In 9, the shoe has a toe cap, is jointed at the sides, and has clips and pivoted catch or connecting bar at the rear, dispensing with nails. 10 has rear clips, *a*, the cap, *b*, and strap, *c*, held by a button on the toe cap, to secure the shoe. In 11, the removable toe and heel calks, *a b*, are dovetailed into plates, *c d*, which are fastened to the shoe by screws. In 12, the toe and heel calks are adjustably attached by screws.

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**Inventions Patented in England by Americans.**

[Compiled from the Commissioners of Patents' Journal.]

From November 19 to December 2, 1875, inclusive.

- BOILER FURNACE, ETC.—H. M. Smith et al., Chicago, Ill.
- CARBURETTER.—J. R. Allen, Chicago, Ill.
- CLEANING BOILER FLUES.—A. Crosby, New York city, et al.
- DISTILLING APPARATUS.—J. W. Reford, New York city.
- ELECTRO-MAGNETIC MOTOR.—H. M. Paine, Newark, N. J.
- GAS MANUFACTURE.—J. W. Beatley, Brooklyn, N. Y.
- ICE MACHINE, ETC.—D. Coughlin, Mass.
- MAKING CIGARETTES.—A. A. Pope, Boston, Mass.
- MAKING PLUMBERS' TRAPS.—F. N. Du Bois, New York city.
- PADDLE WHEEL.—R. Forward, Cincinnati, Ohio.
- POTATO DIGGER.—L. A. Aspinwall, Albany, N. Y.
- PRINTING ON GLASS.—J. W. Wells, Philadelphia, Pa.
- SACK-SEWING MACHINE.—W. Webster, San Francisco, Cal.
- SAND BLAST.—R. A. Tighman, Philadelphia, Pa.
- SCREW NUT MACHINE, ETC.—A. Marland, Pittsburgh, Pa.
- SETTING CAR SPRINGS.—T. B. De Forest, Birmingham, Conn.
- SHUTTLE AND SPINDLE.—E. M. Stevens, Boston, Mass.
- SIGNAL BOY.—J. M. Courtenay, Cornwall, N. Y.
- TREATING OIL SEEDS.—A. B. Lawther, Chicago, Ill.

**Recent American and Foreign Patents.**

**NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.**

**IMPROVED WORK TABLE.**

John Cannon, Lines Hollow, Pa.—A revolving disk under the top of a round table has pockets depending from the outer edge for holding work or implements. The person using the table can turn the pockets around readily to the place where it is convenient to use them.

**IMPROVED WAGON BRAKE.**

Thomas H. Gourley and William R. Lovelace, Talbott, Tenn.—This is a new arrangement of brake mechanism of simple and ingenious construction, but which it would be impossible clearly to understand without a diagram. Generally, the operation of holding back on the neck yoke by the team applies the shoes to the wheels; and when the draft is applied to the double tree, the brake is removed.

**IMPROVED DRAFT EQUALIZER.**

Hiran Cartwright, Owantonns, Minn.—This is a novel assemblage of jointed levers and bars in connection with the tongue, the whole serving as an evener to equalize the draft among the horses.

**IMPROVED CARRIAGE CURTAIN.**

Henry C. Moody, Oswego, N. Y.—This invention is a shade or curtain attachment to the front bow of a child's carriage, for excluding the sun and rain. The curtain is divided at the center, and connected at each outer edge and the top to the bow by a cord. The general arrangement is such that the curtain is free to slip up and down on the bow.

**IMPROVED DUMPING CART.**

George B. Wiestling, Mont Alto, Pa.—This invention is an improvement in the class of dumping wagons which, while adapted to dump in the ordinary way, may be also adjusted for shooting the load through a chute, or over the curb stone, into the coal hole, without discharging on to the pavement or into the gutter. The cart has, in addition to the ordinary shaft frame, and an extra frame combined with the cart body and the axle, with the rear end of the body hinged to its rear end; and a ratchet mechanism, shaft, chain, and toggle bar are combined with the cart body.

**NEW MECHANICAL AND ENGINEERING INVENTIONS.**

**IMPROVED METHOD OF CASTING CAR WHEELS.**

William Wilmington, Toledo, Ohio.—This invention relates to a new method of casting car wheels designed to obviate chill cracks; and it consists in first introducing into the mold molten metal of the proper temperature, and then introducing metal of a higher temperature, which is allowed to escape from the mold in streams across the flange and tread portion, while the intermediate sections are being cooled, whereby the flaring metal is made to take up the shrinkage.

**IMPROVED CAR COUPLING.**

Derastus Harper, Hearne, Tex.—The link is placed on the lower projection of one drawhead, and a pin dropped, which balances the link in horizontal position ready for coupling with the approaching drawhead. The pin of the other drawhead is supported on the top part of a swinging gate, which is prevented from swinging to the outside by a top projection, but which is readily carried back by the entering link, so as to release the pin, and drop the same for coupling with the link. On raising the pin for uncoupling the link, the gate drops into vertical position, and supports the pin on a recessed part between arms.

**IMPROVED PUDDLING FURNACE DOOR.**

Joseph Boyland, Troy, N. Y.—In this invention there are the swing stops on the door frame or furnace wall, and curved ribs on the door with which the stops act to fasten the door shut. The ribs are a little eccentric to the pivots of the stops, so that in case any matters get under the door so as to prevent it from closing down tight the stops will fasten it all the same. The device seems to be capable of easy operation.

**IMPROVED MIDDINGS PURIFIER.**

John F. Gandolfo, Dubuque, Iowa.—This is a series of inclined sieves graduating from fine to coarse, in passing through which the middings are acted upon by a blast which increases as the coarser sieves are reached. By employing a shoe with an endwise movement, the middings are propelled forward over the sieves in a straight line with rapidity.

**IMPROVED SUBMERGED TIDE AND CURRENT WHEEL.**

John J. Hill, Hayden's Ferry, Arizona Ter.—This water wheel has curved vertical buckets tapered toward the outer edge, and having a thicker inner edge coming short of the shaft, a space being thus left around the shaft. This allows of watering entering at one side of the wheel and escaping at the other, thus affording two impulses, and rotating the wheel in whatever direction the current may be flowing.

**IMPROVED STOP COCK.**

Nehemiah Upham, Athol, Mass.—This inventor proposes an improved valve for water and steam pipes, that may be opened easily with little friction, and manufactured in a convenient manner. It consists of a valve case with sliding valve segment, operated by a pronged and raised spindle and intermediate friction roller, which is retained in place by a spring or its equivalent, when the valve is partially open.

**IMPROVED MECHANICAL MOVEMENT.**

Ellison Leslie, Brown's Cross Roads, Ky., assignor to himself and George W. Hunt, of same place.—These inventors have devised a simple mechanical arrangement of cranks, pitmen, and lever, by which they claim that loss of motion through the slipping of the belt used is prevented, and power transmitted more effectively.

**IMPROVED WINDMILL.**

David L. Osborn, Ashland, Neb.—The invention consists in vanes hinged by straps to arms that are outwardly inclined from the hub and in the mode of combining arms, rods, and hub extension. The vanes approximate the form of a screw to a greater extent than when arranged exactly radial and in the transverse plane of the wheel; and an adjustable weight expends its power in keeping them turned sideways to the wind. Other devices increase the resistance of the weight as it rises by increased power of the wind, so that the regulator is graduated to a considerable extent to the force of the wind.

**IMPROVED DRAWBRIDGE.**

Mitchell Vincent, St. Paul, Minn.—This is an improved pontoon drawbridge for railway and other traffic. It consists of two stationary pontoons supporting the approach bridges, and two pontoon piers carrying the drawbridge, and moving with the same, one being hinged to the stationary pontoon to swing with the drawbridge. The drawbridge is closed by a capstan and chain from the opposite stationary pontoon, and opened from a pier above or below the bridge in case no current for opening in the drawbridge is available.

**IMPROVED SELF-LOCKING CULTIVATOR TEETH.**

John Harris, Marquette, Wis.—The cultivator teeth in this device are so combined with an ingenious arrangement of springs and levers that, should the teeth strike an obstruction, they will unlock and swing back, and again lock themselves in place as soon as they have passed the obstruction.

**IMPROVED GEOGRAPHICAL GLOBE FOR SCHOOLS.**

Newbern Norris Browne, Woodstock, Ala.—This inventor proposes a globe made of rubber or other flexible material, which may be inflated by suitable disposition of a tubular axis.

**NEW HOUSEHOLD ARTICLES.**

**IMPROVED CLOTHES DRYER.**

George W. Green, High Point, N. C., assignor of one third his right to Oliver S. Causey, of same place.—This is a new combination of pivoted bars, which when folded together occupies but little space, and which, when extended, offers a large amount of drying surface. The construction appears to be strong and simple.

**IMPROVED FIREPLACE SCREEN.**

William C. Williamson, Newbern, Tenn.—The upper section of the mantle is made hollow, and provided with a hinged lid, which is opened and closed by a suitable locking device. A screen winds upon a roller in the hollow space, and passes through a bottom slot to the fireplace below. The lower end of the screen is attached to an ornamental rod, which is locked to the sides of the mantle when the screen is wound up entirely, so that the bottom rod closes the guide slot. The screen is drawn down to cover the fireplace when not used.

**IMPROVED CLOTHES DRYER.**

Frank M. Clark, South Tamworth, N. H.—This is a series of pivoted jointed arms connected to a morticed block, which may be secured to a wall. There is a simple device for extending and folding the arms. The whole may be compactly folded.

**IMPROVED WINDOW SCREEN.**

Henry B. Walbridge, Brooklyn, N. Y.—The ends of the gauze are wound around two small rollers, so that it may be adjusted to the width of a narrower or wider window, and said ends are confined by open ring springs slipped upon the rollers. The outer ends of the springs are extended in a tangent to said rollers, so that they may be slipped beneath keepers attached to the sides of the casing, in such positions that the portion of the gauze between the rollers may bear so snugly against the bottom rail of the sash as to prevent the passage of flies, mosquitoes, etc.

**IMPROVED CLOTHES DRYER.**

Willis Adams, Neelyville, Ill.—This is a new arrangement of pivoted arms and connecting pieces, so constructed that it may be easily folded into a very small compass for storage and transportation, and which can be conveniently folded and unfolded. When unfolded, the device affords a large amount of drying surface.

**IMPROVED WASHING MACHINE.**

John I. Shotwell, Welland, Can.—The new feature in this consists in alternately working plungers, that are carried by a revolving crank shaft against an adjustable spring rack with rubbing rollers. The spring rack presses the clothes with considerable force against the plungers, so that the thorough cleaning of a greater or smaller number of clothes is produced.

**NEW AGRICULTURAL INVENTIONS.**

**IMPROVED CIDER MILL AND PRESS.**

Henry Krumsick, Nashville, Ill.—This is such a combination of cider mill and press that the apples, grapes, or other fruit passing through the mill may be directly conveyed to the press box, and the press be worked in connection with or without the mill. The mill is supported on a frame, that is placed laterally across the press box, and attached to the standards or main posts of the press, the mill-operating shaft being journaled in bearings of the lateral frame, and made detachable with the same and the mill.

**IMPROVED PEARL BARLEY MILL.**

Henry S. Northrup, Quasqueton, Iowa.—The wheat or barley to be pearled passes to the inside of a stationary casing, near the eye or shaft of the revolving grindstone, being conducted by side channels with supply regulating slides, from the hopper at the top. The channels feed a continuous supply of barley to the casing, and keep the same packed full all the time, so that the stone may always act on a uniform quantity of barley, avoiding thereby the getting loose of the same in the case, and the increasing of the speed of the stone.

**IMPROVED HONEY PACKAGE.**

Lawrence Drake, New York city.—This improved package for honey is a glass jar contrived in form and shape for receiving and inclosing a comb and the frame in which the honey is made. The cover is of glass, sheet metal, paper, or any other approved material. The object is to provide a package that will protect the honey from flies, air, and dirt, and at the same time expose it to the inspection of the purchaser.

**IMPROVED PORTABLE HAY PRESS.**

Michael McCarty, Pueblo, Col. Ter.—In this press the follower is operated vertically by means of rods worked by chains and a windlass. The improvement consists, first, in jointing the rods to enable the follower to be tilted to one side of the top of the press case, to allow the hay or other material to be inserted; and second, in novel means for fastening the door of the case out of which the bales are discharged.

**IMPROVED HARROW.**

Henry Mehl, Yellow Stone, Wis.—This harrow has adjustable double lock bars, which serve also as guard pieces to carry the harrow sections over obstructions, exposing thereby the teeth in a less degree to violent shocks and injury. The harrow may be folded for being readily placed on a wagon for transportation to and from the fields.