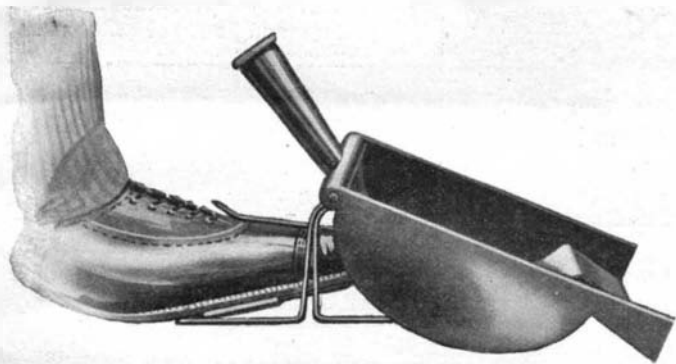


**DUSTPAN WITH FOOT ATTACHMENT.**

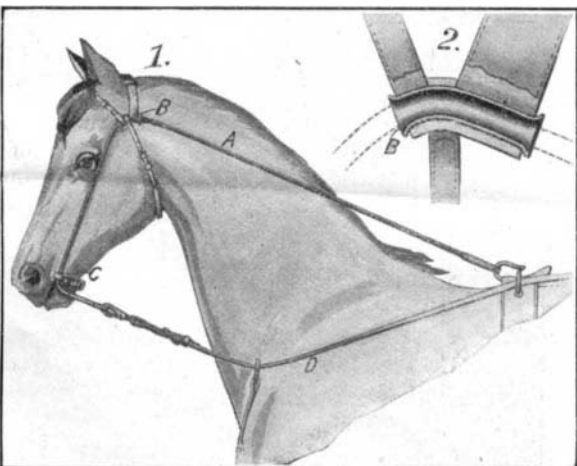
In the search for opportunities to exercise their ingenuity, inventors are only too apt to overlook the little details close at home, and hence it happens that the household, the oldest of institutions, is still sadly in need of many improvements. The accompanying engraving shows that there are possibilities for invention even in a dustpan. It seems odd that no one

**DUSTPAN WITH FOOT ATTACHMENT.**

before has thought of the incongruity of using a short-handled dustpan with a long-handled broom. Mr. C. W. Robinson, of 923 Fourth Street, San Diego, Cal., has devised the pan which we here show with a view to obviating the necessity of stooping over when sweeping dust into the pan. The improved pan is formed with means for attaching it to the foot of the operator, so that it can be conveniently held at the proper working angle while both hands are used in wielding the broom. The foot attachment is formed of wire, bent to such a form as to provide a support for the pan and also a stirrup for the foot. The stirrup is in the form of a spring clip, so that it will cling to the foot of the operator as it is moved from place to place. When disengaged from the foot the pan will stand at the proper working angle, being supported by the wire frame. The invention also provides an improvement in the pan itself. Instead of having a flat bottom, the pan is formed with a pocket in which the dirt may be received. This will prevent the dirt from sliding out of the pan when it is moved about.

AN IMPROVED BRIDLE.

The accompanying engraving illustrates an improved form of bridle which is of very simple construction and provides an effective means for bringing a horse to a quick stop. The bridle is humane in its action and is so arranged as to multiply the power at the bit as compared with that applied to the reins. It thus enables the driver to control the horse with small exertion. The check rein which is shown at A passes through an elbow, B, which is supported by the head and brow straps. Thence the check rein passes down through eyes formed on the ends of the bit and is buckled to the reins, D. The bit is concavo-convex in cross section with rounded edges so as not to injure the tongue or the mouth of the horse. It is preferably made of aluminium with a steel core and is arched over at its center to fit the lower jaw of the horse below the grinders and above the nippers in such a way as not to interfere with, or press on the animal's lips. In operation, when the reins are pulled, the bit is pressed on the horse's tongue, allowing the check rein to slide freely through the elbows, B, and eyes of the bit, C, thus drawing the horse's head upward with multiple force. It will be evident that by this arrangement with a slight pull on the reins the horse's head is forced to stand erect through the action of

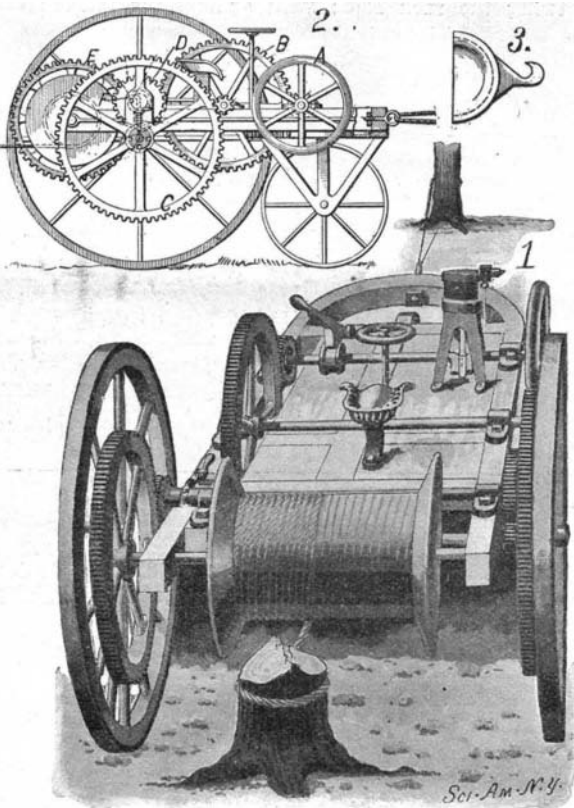
**AN IMPROVED BRIDLE.**

the check rein, and the check rein at the same time performs its ordinary function. The inventor of this improved bridle is Mr. Robert H. Williams, of Maize, Kan. (P. O. Box 28).

MOTOR-DRIVEN STUMP PULLER.

A recent invention covers an improved form of stump-puller provided with a motor, which may be used both for moving the machine from place to place, and also to furnish power for pulling stumps. As shown in the accompanying engraving, the machine consists of a platform supported on two traction wheels and a front steering wheel. The motor which drives the mechanism is mounted at the front of the platform, and drives a transverse power shaft on which the flywheel A is secured. The power shaft carries a pinion which meshes with a gear B. The latter is mounted on a shaft which carries a pinion meshing with a gear C. The gear C is mounted to turn freely on the rear axle of the machine. Securely fastened to this gear at the center is a pinion which meshes with a gear D, and the latter transmits the power of the motor through a pinion to a gear E. The gear E is keyed to a shaft which carries the winding drum of the machine. In operation, when it is desired to pull a stump, the machine is anchored by means of a cable, which is passed through an eyebolt in the front of the platform. The cable, which passes around the winding drum, is then attached to the stump to be pulled. One of the detailed views shows a

form of fastening block which will be found useful for attaching the cable to the stump. It will be evident that when the motor is started, the winding drum will be turned with considerable power, owing to the step-down transmission gearing. In the side view of the stump puller it will be observed that the wheel in the foreground is broken away, leaving only a section

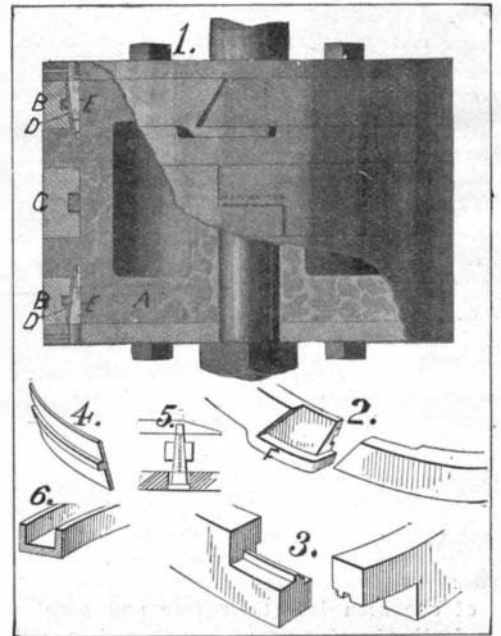
**MOTOR-DRIVEN STUMP PULLER.**

of the hub. It will be noted that the hub is formed with radial sockets, and that on the gear C a pin F is mounted to slide vertically. When it is desired to move the machine from one place to another, this pin F will be moved into engagement with one of the sockets, to couple the gear C with the hub of the wheel, so that the motor will operate to drive the traction wheels. The inventor of this improved stump puller is Mr. J. L. Jones, Rift, Ga.

METALLIC PISTON PACKING.

Illustrated herewith is an improved metallic piston packing for steam engines which is designed to impose very little resistance to the free movement of the piston, and at the same time remain tight in spite of considerable wear. The main body of the piston consists of a casting A formed with a pair of annular ribs. A disk is secured to each end of the casting and between these and the ribs a pair of recesses are formed in which the packing rings B are seated, and in the central recess between the ribs a bull ring C is seated. This bull ring is made in three sections connected together by step joints, the step projections being mortised together as shown in Figure 3 to assist in keeping the sections in proper relation to each other. The bull ring is formed with a groove on the inner side to receive a ring of spring metal which presses the sections into engagement with the cylinder. The main packing rings B are each formed

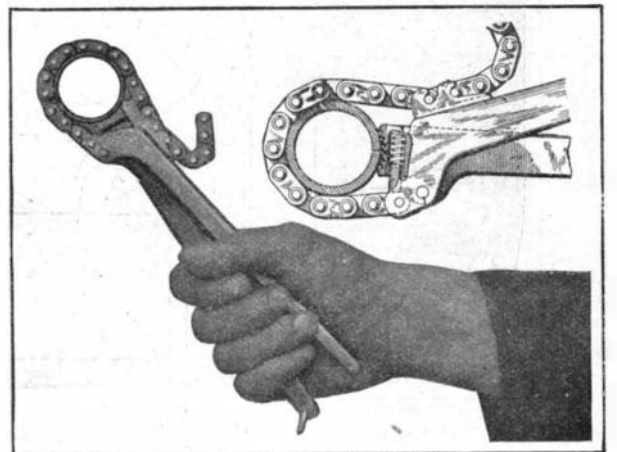
in a single piece joined as shown in Figure 2. It will be observed that one end is provided with an extension F which passes under the other end and that the rib on the casting is cut away to receive this extension. Within each packing ring a spring ring D is fitted, this ring being formed with a tongue, as shown

**METALLIC PISTON PACKING.**

in Figure 4, which is adapted to engage a groove in the packing ring. To adjust the tension of these rings a series of wedges E are fitted between them and the body of the piston. Each wedge is formed with a shank which enters an opening in the adjacent disk, and a pin seated in this disk engages a slot formed in the shank, the purpose of the pin being to limit the extent to which the wedge may be driven in behind the ring D. In Figure 6 an alternative form of ring is shown which may be used in place of ring D. Figure 5 shows an alternative method of spreading the ring D. In this construction the ends of the ring are formed with lugs between which the wedge E is driven to spread the ends apart. In the operation of the piston the bull ring serves as a packing and also as a guide for the piston in its movement, so that the wear is evenly distributed. The patent on this improved packing is controlled by P. H. Geoghegan, 35 Frankfort Street, New York.

IMPROVED PIPE WRENCH.

A recent invention, which we illustrate herewith, provides an improved pipe wrench of the chain type, in which a pipe of any diameter may be gripped, without any special adjustment of the chain, other than to hook it at the desired point. The wrench comprises two members, one of which is channel shaped in cross section, while the other is a bar of steel of such thickness as to fit into the channel. The two members are hinged together, and to the channel member near the hinge pin the chain is attached. The pivot pins, that connect the links of the chain, project beyond the links at each side. The channel member carries a pair of hooks, which are adapted to engage these projecting pins. The inner end of the bar member is formed with teeth adapted to engage the pipe. In use the two members are swung apart, so as to withdraw the toothed portion into the channel member. The chain is then passed around the pipe and hooked to one of the two hooks, after which the members are drawn together, forcing the toothed portion tightly against the pipe. A jacket is provided, which may be secured to the bar over the toothed end, thus adapting the tool for use on nickel-plated or polished pipes, which might be marred by the serrated surface. A spring-pressed plunger in the bar bears against the pivot of the first link of the chain, so that when the wrench is released the members will be spread apart. A ring on the bar may be slipped over the end of the

**IMPROVED PIPE WRENCH.**