poaching eggs, a novel combination egg poacher and plate warmer has been developed, as shown in Fig. 6. For warming the plates, such dry heat may be supplied as is necessary, and for poaching the eggs, a thin layer of water is utilized for a few minutes only.

Some of these cooking and heating devices are provided with resistance heat-regulating sockets, mounted between the supporting receptacle and the heating lamp, when found desirable, and another construction utilizes a thermostat plug between the porcelain receptacle and the tubular heating lamp for controlling the temperature as desired.

The electric sealing-wax heater is similar to the shaving cup, the wax receiving the heat by conduction from the shell itself, and when protected by an outer shell, a 4 or 8 candle-power lamp will keep the sealing wax continuously hot and ready for use in a bank, shipping or express office.

Another application of the incandescent lamp is that of the electric oatmeal cooker or glue heater (Fig. 8). An inner receptacle is heated by steam or water in the outer shell. In Fig. 9 will be noted a unique little tea steeper and egg poacher combined, for use in a sick room.

CARRYING WATER WITH THE HELP OF A HOOP.

BY A. F. BISHOP.

The accompanying sketch shows quite a clever wrinkle. I have used it a good many times, carrying

CARRYING WATER WITH THE HELP OF A HOOP.

water from quite a distance, and find the hoop a great help. It keeps the pails from chafing the limbs; you merely take the weight. You allow the pail handles to rest against the outside of the hoop. The hoop should be about 26 inches in diameter. It can be made out of a barrel hoop by splicing in a piece of another to give the desired diameter. The splices can be bound tightly with a cord, which will answer all purposes.

A CHEAP HOME-MADE ROLLER.

BY C. A. UMSELLE.

To make a good roller at a cost of less than \$5, get four old mowing-machine wheels *A* with their axles; break the lugs off the wheels with a hammer, and have $\frac{3}{8}$ -inch holes drilled in the rims 4 inches apart for the body. Cut 2 x 4 oak scantlings *B* in 3-foot lengths, dressing the inner corners so the outer edges

PLAN VIEW OF A ROLLER MADE FROM MOWING-MACHINE WHEEL.

will fit closely when they are laid flat against the rims of the wheel, where they are to be bolted fast. For the frame use 4 x 4 stuff, cutting two pieces *C* each 7½ feet long for the front and rear members. Two inches from each end cut a 1 x 3 mortise, in which to frame the side timbers *D*, and in the center of each piece cut a 2 x 4 notch for the tongue *E*, which is also of 4 x 4 stuff, long enough to reach the rear of the frame and form its central member. Cut the side members *D* of the frame long enough to let the frame clear the roller, making tenons on the ends to fit the mortises in the front and rear pieces. Now put the

frame together and pin it, bolting the tongue on solidly. If you can get three metal boxings to fit the axles, do so; if not, make hardwood boxing *G*, using mortise and tenon connections *F* where it joins the members *D*. Now put the frame over the two sections of the roller, putting the axles in the boxes and fastening them so that they cannot come out. Attach an old mowing-machine seat *H* to the frame, so the driver's weight will balance the tongue and take the weight

SIDE VIEW OF THE ROLLER.

off the horses' necks. To further strengthen the frame, it is best to have four corner irons *I* made with four holes in each to bolt into the corners, making all solid; then the roller will be complete. Anyone who is at all handy with tools can make a good one in a day. I have one that was made six years ago, and it is just as good as a \$35 roller.

EASILY CONSTRUCTED ELECTRIC TOASTER.

BY R. H. CRONIN.

An electric toaster can be made at a cost of less than a dollar, and without much work, which will nevertheless prove very serviceable. The following are the necessary materials: A piece of asbestos wood, $\frac{3}{8}$ by 7 by 17 inches; 22 screws, and 4 stove bolts with 8 nuts. If asbestos wood cannot be obtained, use slate of the same size and a thick piece of sheet asbestos 14¼ by 6¼ inches. In this case, 26 stove bolts and 30 nuts will be required. The other materials necessary are 2 binding posts, a piece of wire netting (not soldered) 14 by 15½ inches, 5 or 6 feet of flexible lamp wire, 1 lamp plug with fuse, about 40 feet of No. 20 German silver wire, and 22 small porcelain insulators about half an inch high.

If slate is used the first thing necessary is to bore holes through it with an awl at the points indicated in Fig. 1. The two rows of holes in brackets marked *A* are 5¼ inches apart, and each hole should be separated from the next by a space of 1¾ inches. The holes *B* are adapted to receive bolts, by means of which a piece of wood is clamped down on the slate and asbestos to keep the asbestos in place, as indicated in Fig. 3. The holes *C* are required for a pair of binding posts, while the holes *D* are used to receive four bolts, which serve as legs for the toaster. The holes marked *A* are adapted to receive bolts *F*, which fasten the insulators to the base. If asbestos wood is obtainable it will be unnecessary to drill these holes, for the insulators may be held in place by means of screws.

After the base has been prepared, the German silver wire is annealed by passing it through a flame until it is red hot, but before annealing, it should be wound in a long spiral spring by coiling it about a heavy wire or nail. The coil is now laid on two bricks, and

ELECTRIC TOASTER OF SIMPLE CONSTRUCTION.

the current is passed through it. If it remains black, although it gives out heat, it is too long. To find the right length, one of the wires through which the current is conducted is moved along the coil until a place is found where the spring remains a dull red. It should not be allowed to become hotter than this. At this point the coil is cut off, and then it is stretched out to a length of 12 feet. One end is secured to one of the insulators at the end of the row, and then the coil is passed back and forth about the insulators from one row to the other. At each insulator the coil is stretched out, so that it passes, as a single strand, about the insulator. The ends of the coil are carried through the holes *E* to the under side of the base plate, and connected to the binding posts *C*.

The toaster may now be tested by connecting it up to a lamp socket, using a 5-ampere fuse wire in the plug. If everything is satisfactory, the wire netting may be placed over the insulators and fastened down at various points by means of the bolts *F*, which are temporarily withdrawn from the insulators, and then inserted again through the wire netting.

HOLDER FOR BROKEN SAW BLADES.

BY T. FAGAN.

When the blade of a hack saw is broken—and every one knows that they break very easily—it is usually thrown into the scrap heap, because there is apparently no further use for it. The break may occur at the very end of the blade, leaving a long section that would be perfectly serviceable were there some method of mount-

HOLDER FOR BROKEN SAW BLADES.

ing it in a saw handle. The accompanying sketch shows a very simple method of doing this. Take a piece of $\frac{1}{2}$ by $\frac{1}{8}$ band iron, 14½ inches long. Taper one end of it, so that it may be driven into a wooden handle. Three holes should be drilled in the band iron, and threaded as indicated in the sketch. A second piece of band iron 12 inches long should be drilled with holes to mate the tapped holes in the other piece. The two plates are then clamped together by means of screws, and provide a pair of jaws between which two saw blades may be gripped. Any serviceable length of saw may thus be utilized for making shallow cuts.

A CONVENIENT DRAWING-BOARD.

BY CHAUNCEY W. NIEMAN.

A wooden drawing board, with T-square, thumb-tacks, and the other paraphernalia, is too heavy and clumsy for quick or intermittent use. The carpenter, machinist, or the man whose work is mostly at a business desk, cannot find space or opportunity to set himself seriously to mechanical drawing, and the result is a free-hand sketch which it takes time to explain to the workman, and which often leads to mistakes or demands for more time-wasting explanation.

The writer has found a board such as illustrated herewith to be of immense value. It can be constructed

A CONVENIENT DRAWING BOARD.

in about fifteen minutes. Procure a good, heavy piece of straw-board of convenient dimensions, and along one side glue a smooth-edge of wood one-eighth inch thick and about half an inch or a full inch wide. A paper clip at the top and two triangles complete the equipment. No thumb-tacks will be necessary; for if one clip does not hold firmly, two certainly will. One of the triangles should contain 60 deg. and 30 deg. angles, and the other two 45 deg. angles. Which will be found a handy equipment for all classes of work. There are many really fine points about this board which cannot be appreciated until tried, and the well-equipped professional draughtsman who may be inclined to sniff at anything so simple would be wise to restrain his scorn until he has seen one in use.